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COMPANY NAME: Idaho Power Company

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If known, please select designation: ☒RE (Electric) ☐RG (Gas) ☐RW (Water) ☐RO (Other)

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LISA D. NORDSTROM
Lead Counsel
lnordstrom@idahopower.com

April 4, 2017

VIA ELECTRONIC FILING AND U.S. MAIL

Public Utility Commission of Oregon
Filing Center
201 High Street SE, Suite 100
P.O. Box 1088
Salem, Oregon 97308-1088

Re: Docket No. UM 1710
In the Matter of Idaho Power Company's Request for Cost-effectiveness Exceptions for Specific Demand-Side Management Electric Measures and Programs – *2016 Demand-Side Management Annual Report*

Attention Filing Center:

Public Utility Commission of Oregon Order No. 15-200 in the above-mentioned docket states that Idaho Power Company ("Idaho Power" or "Company") is to electronically file the Company's Demand-Side Management annual report in years that Idaho Power does not file for a cost-effectiveness exception request. Although Idaho Power did have a cost-effectiveness exceptions request in 2016, the Company is filing the attached *2016 Demand-Side Management Annual Report*, including Supplements 1 and 2 as an informational copy. A disk containing the Northwest Energy Efficiency Alliance ("NEEA") reports is housed in the back of Supplement 2. Due to the file size, file arrangement, and supplemental nature of the NEEA reports, they will only be provided on disk. Because the *2016 Demand-Side Management Annual Report* is over 100 pages, two copies of the report and its supplements are being sent via U.S. Mail.

The *2016 Demand-Side Management Annual Report*, its supplements, and the NEEA disk are also available on Idaho Power's website via the following link: https://www.idahopower.com/EnergyEfficiency/reports.cfm.

If you have any questions regarding this filing, please contact Jill Simpson at (208) 388-2517 or jsimpson@idahopower.com.

Sincerely,

Lisa D. Nordstrom

Lisa D. Nordstrom

LDN:kkt
Enclosures

P.O. Box 70 (83707)
1221 W. Idaho St.
Boise, ID 83702

DEMAND-SIDE MANAGEMENT

IDAHO POWER®
An IDACORP Company

2016 Annual Report

LOOKING BACK

MARCH 15 • 2017

SAFE HARBOR STATEMENT

This document may contain forward-looking statements, and it is important to note that the future results could differ materially from those discussed. A full discussion of the factors that could cause future results to differ materially can be found in Idaho Power's filings with the Securities and Exchange Commission.

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EXECUTIVE SUMMARY

In 2016, Idaho Power celebrated providing electric service to the residents of southern Idaho for 100 years. Since starting as a small company in 1916, Idaho Power has grown to serve over 500,000 customers in over 24,000 square miles in southern Idaho and eastern Oregon. In 2002, Idaho Power revitalized its energy efficiency programs and began the Idaho and Oregon Energy Efficiency Riders (Rider) to fund the pursuit of cost-effective energy efficiency. Energy efficiency and demand response provide economic and operational benefits to the company and its customers and supports the wise use of energy by Idaho Power customers.

Idaho Power's portfolio of energy efficiency program energy savings for 2016 increased to 170,792 megawatt-hours (MWh), including the estimated savings from the Northwest Energy Efficiency Alliance (NEEA), enough energy to power more than 14,000 average homes a year in Idaho Power's service area. This is a 4-percent increase from the 2015 energy savings of 163,672 MWh. In 2016, the company's energy efficiency portfolio was cost-effective from both the total resource cost (TRC) test and the utility cost (UC) test perspectives with ratios of 2.56 and 3.58, respectively. The portfolio was also cost-effective from the participant cost test ratio was 2.93. The savings from Idaho Power's energy efficiency programs alone, excluding NEEA savings, increased to 146,177 MWh in 2016 from 140,633 MWh in 2015.

Idaho Power successfully operated all three of its demand response programs in 2016. The total demand reduction achieved from the company's programs was 378 megawatts (MW) from an available capacity of 392 MW. Energy efficiency and demand response is an important aspect of Idaho Power's resource planning process. Idaho Power's 2016 achievements in energy savings exceeded the annual savings target identified in Idaho Power's *2015 Integrated Resource Plan* (IRP).

Total expenditures from all funding sources on demand-side management (DSM) activities increased by nearly 10 percent, to $43 million in 2016 from $39 million in 2015. DSM program funding comes from the Idaho and Oregon Riders, Idaho Power base rates, and the annual power cost adjustment (PCA). Idaho incentives for the company's demand response programs are recovered through base rates and the annual PCA, while Oregon demand response incentives are funded through the Oregon Rider.

With a goal of using customers' funds wisely, Idaho Power employees and leaders strive to provide conscientious, prudent, and responsible action and activities that result in cost-effective energy efficiency. This report's content offers descriptions of the 2016 activities and savings.

In 2016, Idaho Power expanded the reach and frequency of its residential energy efficiency campaign, added a Smart-saver Pledge to engage and encourage customers to make an energy-saving behavior change, significantly increased the amount of energy efficiency-related social media posts, and began marketing the company's commercial and industrial energy efficiency offerings as a single program. Idaho Power's residential energy efficiency advertising campaign was awarded second place at the E Source Forum in the category of Best Ad Campaign for an Investor-owned Utility.

Idaho Power continued to use stakeholder input to enhance its programs. The company met regularly with its Energy Efficiency Advisory Group (EEAG) and individual customers seeking input on program improvement. To keep growth in the program portfolio, the company relied on its Program Planning Group (PPG), initiated in 2014, and NEEA's Regional Emerging Technology Advisory Committee (RETAC) to fill the pipeline with ideas for offerings to its energy efficiency programs. Additionally, Idaho Power continued program improvement to make it easier for its customers to participate in programs.

In 2016, Idaho Power distributed Energy-Saving Kits (ESK) at no additional cost to customers on request. By the end of the year, the company had distributed over 34,000 kits to customers in Idaho and Oregon. The ESK included light-emitting diodes (LED) lightbulbs, digital thermometers, shower timers, water flow-rate test bags, LED night lights, and educational materials. Additionally, by the end of the year, Idaho Power employees had personally delivered energy-efficiency messages and distributed nearly 25,000 lightbulbs directly to customers.

This *Demand-Side Management 2016 Annual Report* provides a review of the company's DSM activities and finances throughout 2016 and outlines Idaho Power's plans for future DSM activities. This report also satisfies the reporting requirements set out in the Idaho Public Utilities Commission's (IPUC) Order Nos. 29026 and 29419. Idaho Power will provide a copy of the report to the Public Utility Commission of Oregon (OPUC) under Oregon Docket Utility Miscellaneous (UM) No. 1710.

INTRODUCTION

In 2016, Idaho Power celebrated its 100th anniversary. For the last sixteen years, the company has pursued cost-effective energy efficiency as a primary objective. Energy efficiency and demand response provide economic and operational benefits to the company and its customers. Idaho Power provides information and programs to ensure customers have opportunities to learn about their energy use, how to use energy, and participate in programs.

This report focuses on Idaho Power's demand-side management (DSM) activities and results for 2016 and previews planned activities for 2017. The appendices provide historical and detailed information on the company's DSM activities and detailed financial information from 2002 through 2016. The two supplements provide detailed cost-effectiveness data and copies of Idaho Power's evaluations, reports, and research conducted in 2016.

Idaho Power's main objectives for DSM programs are to achieve prudent, cost-effective energy efficiency savings and to provide an optimal amount of demand reduction from its demand response programs as determined through the Integrated Resource Plan (IRP) planning process. Idaho Power considers cost-effective energy efficiency the company's least-cost resource and pays particular attention to ensuring the best value to Idaho Power's customers. Idaho Power strives to provide customers with programs and information to help them manage their energy use wisely.

The company achieves these objectives through the implementation and careful management of programs that provide energy and demand savings and through outreach and education. For economic and administrative efficiency and to reduce customer confusion, Idaho Power endeavors to implement identical programs in its Idaho and Oregon service areas. Idaho Power has been locally operated since 1916 and serves nearly 530,000 customers throughout a 24,000-square-mile area in southern Idaho and eastern Oregon.

Figure 1. 2016 Idaho Power service area map

Idaho Power's energy efficiency programs focus on reducing energy use by identifying homes, buildings, equipment, or components for which an energy-efficient design, replacement, or repair can achieve energy savings. Energy efficiency programs sometimes include behavioral components, including the Residential Energy Efficiency Education Initiative and both the Smart-saver Pledge and the School Cohort, which began in 2016. Energy efficiency programs are available to all customer sectors in Idaho Power's service area.

Savings from these programs are measured in terms of kilowatt-hour (kWh) or megawatt-hour (MWh) savings. These programs usually supply energy savings throughout the year at different times depending on the energy-efficiency measure put in place. Idaho Power shapes these savings based on the end use to estimate energy reduction at specific times of the year and day. Idaho Power's energy efficiency offerings include programs in residential and commercial new construction (lost-opportunity savings); residential and commercial retrofit applications; and irrigation and industrial system improvement or replacement. Custom programs under the irrigation and industrial sectors offer a wide range of opportunities for Idaho Power and its customers to design and execute energy-saving projects.

Energy efficiency program and demand response funding comes from the Idaho and Oregon Energy Efficiency Riders (Rider), Idaho Power base rates, and the annual power cost adjustment (PCA). Idaho incentives for the company's demand response programs are recovered through base rates and the annual PCA, while Oregon demand response incentives are funded through the Oregon Rider. Total expenditures from all funding sources on DSM-related activities increased by about 10 percent, from $39 million in 2015 to $43 million in 2016.

Idaho Power started its modern demand response programs in 2002, and now has over 10 percent of its all-time peak load available under demand response programs. The goal of demand response at Idaho Power is to minimize or delay the need to build new supply-side peaking resources. The company estimates future capacity needs through the IRP planning process and plans resources to mitigate any system peak deficits that exist. Demand response programs are measured by the amount of demand reduction, in megawatts (MW), available to the company during system peak periods.

DSM Programs Performance

The 2016 savings consisted of 42,269 MWh from the residential sector, 88,161 MWh from the commercial/industrial sector, and 15,747 MWh from the irrigation sector. This represents a 4-percent increase from 2015 program savings. The industrial Custom Projects (formerly Custom Efficiency) program in the Commercial and Industrial Energy Efficiency Program contributed 33 percent of Idaho Power's direct program savings, while the residential sector Energy Efficient Lighting and Educational Distributions programs contributed 86 percent of the residential savings.

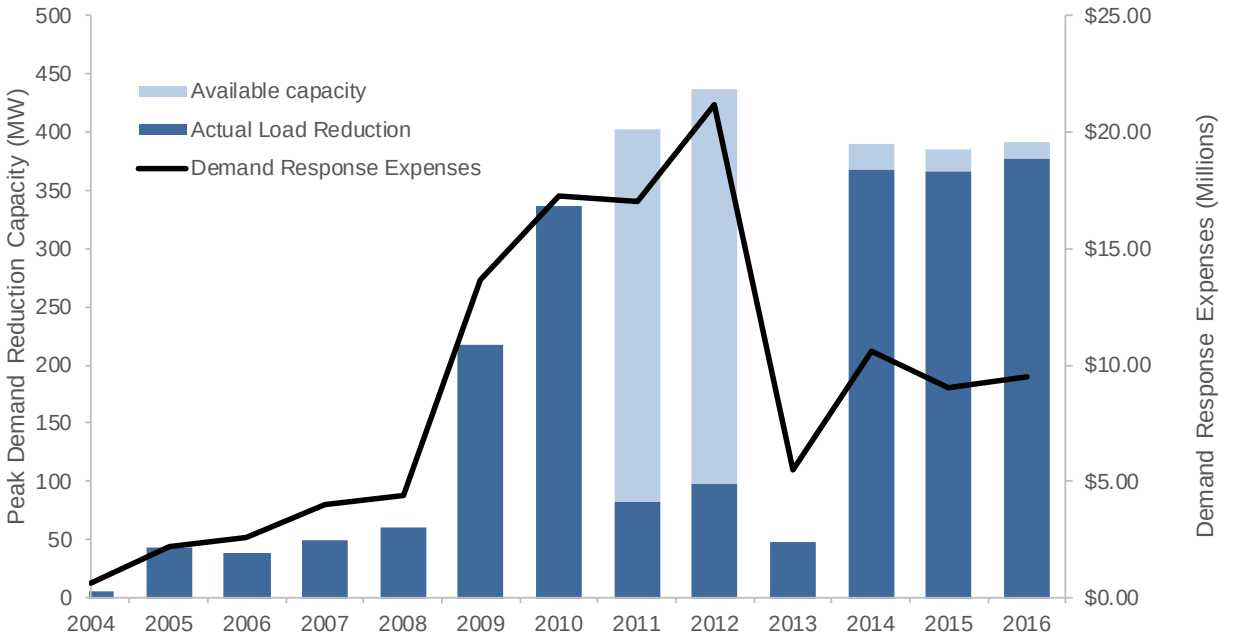

Figure 2. Peak demand-reduction capacity and demand response expenses, 2004–2016 (MW and millions [$])

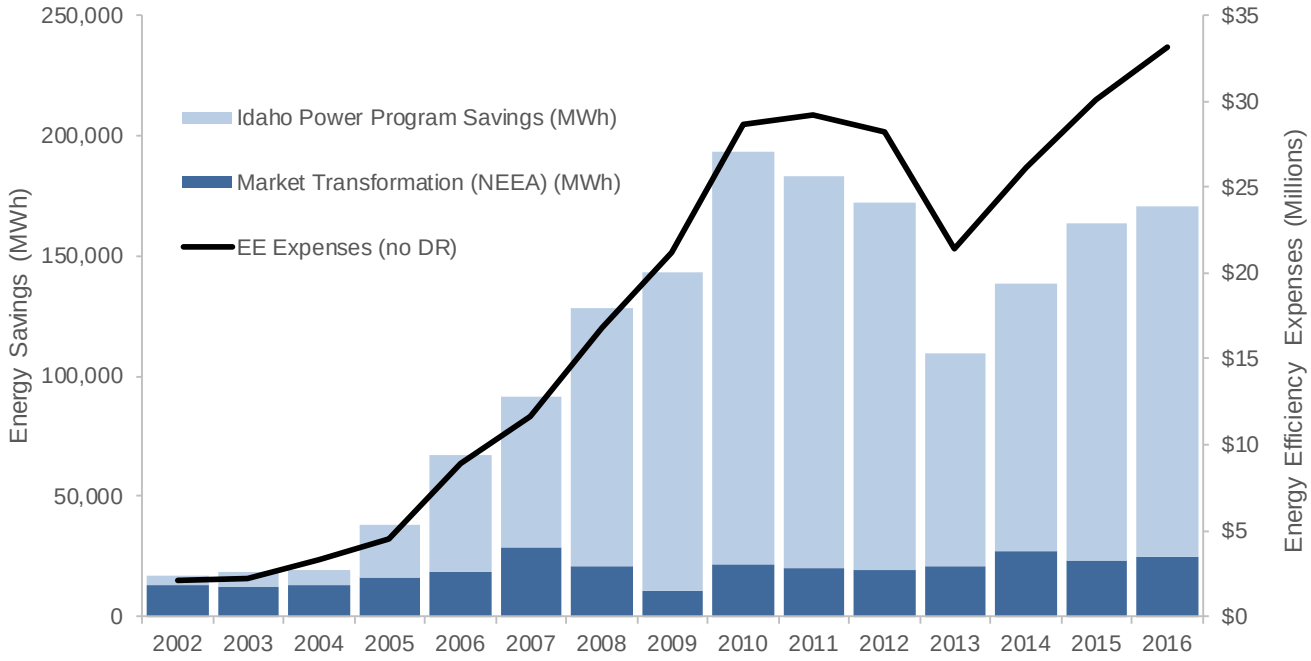

Figure 3. Annual energy savings and energy efficiency program expenses, 2002–2016 (MWh and millions [$])

Figure 3 demonstrates that as Idaho Powers energy-efficiency portfolio matures, and some savings become more difficult and costly to achieve, the expense per incremental savings increases.

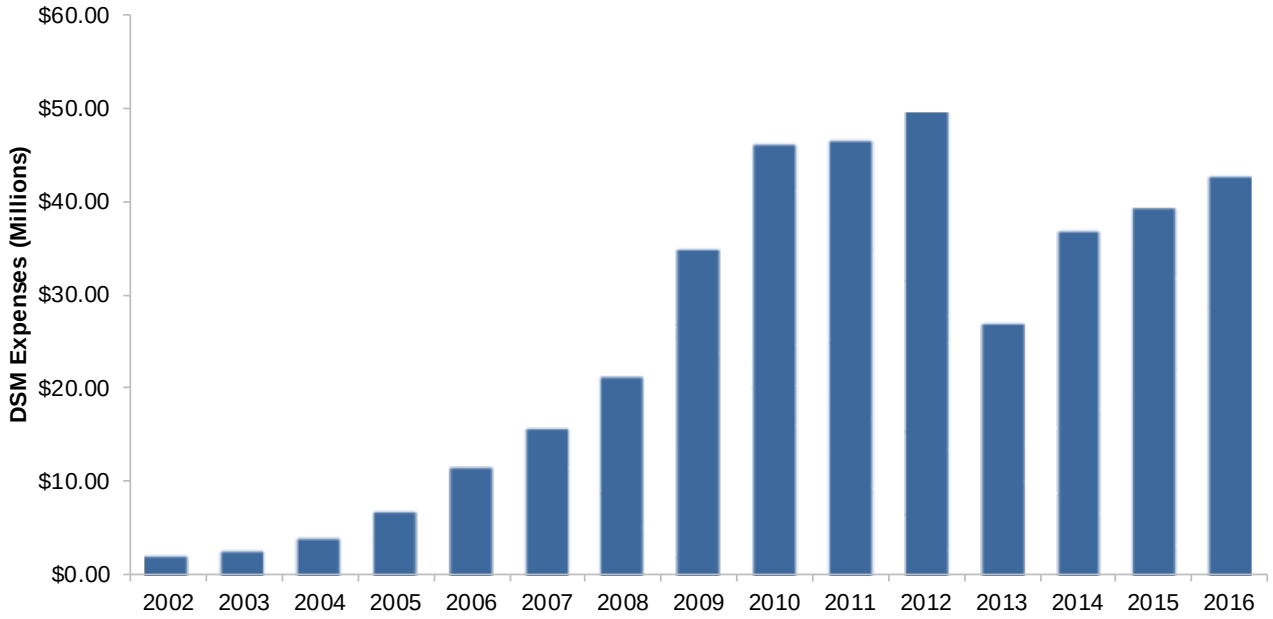

Figure 4. Total DSM expense history, including energy efficiency, demand response, and NEEA expenses, 2002–2016 (millions [$])

Energy efficiency and demand response is an important aspect of Idaho Power's resource planning process. Idaho Power's 2016 achievements in energy savings exceeded the annual savings target identified in Idaho Power's *2015 Integrated Resource Plan*. On a cumulative basis, the company's energy savings have exceeded the IRP targets every year since 2002.

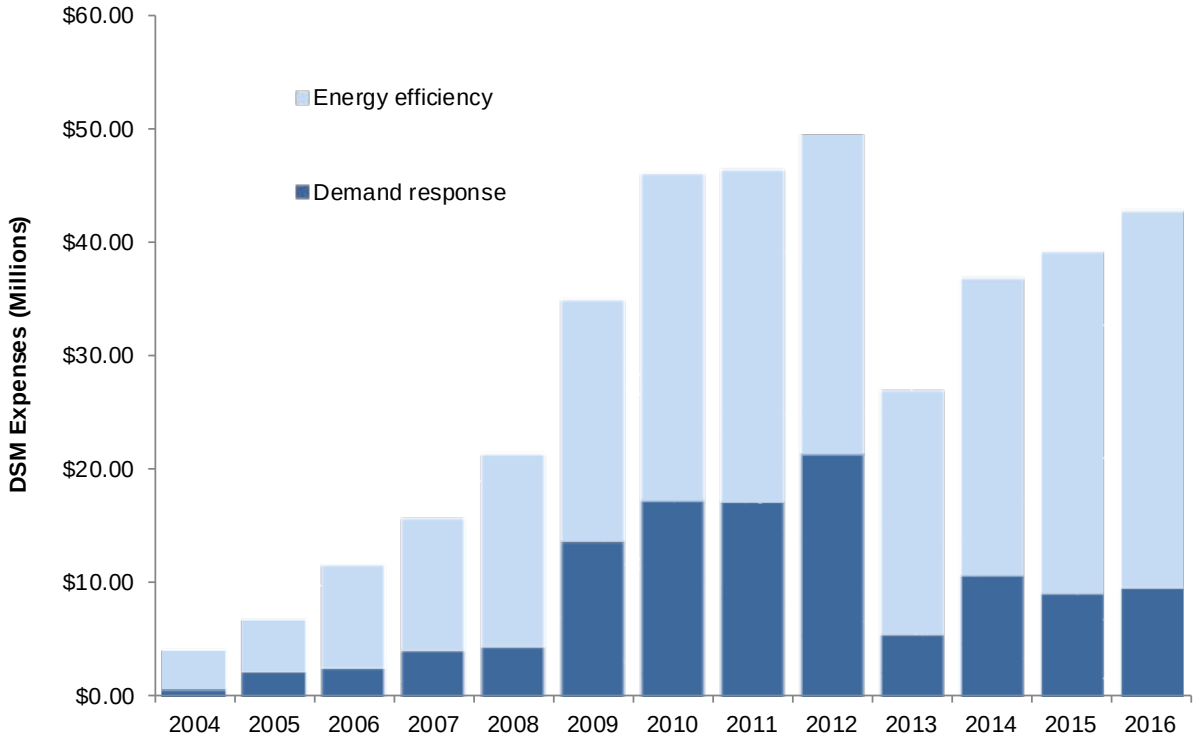

Figure 5. DSM expense history by program type, 2004–2016 (millions [$])

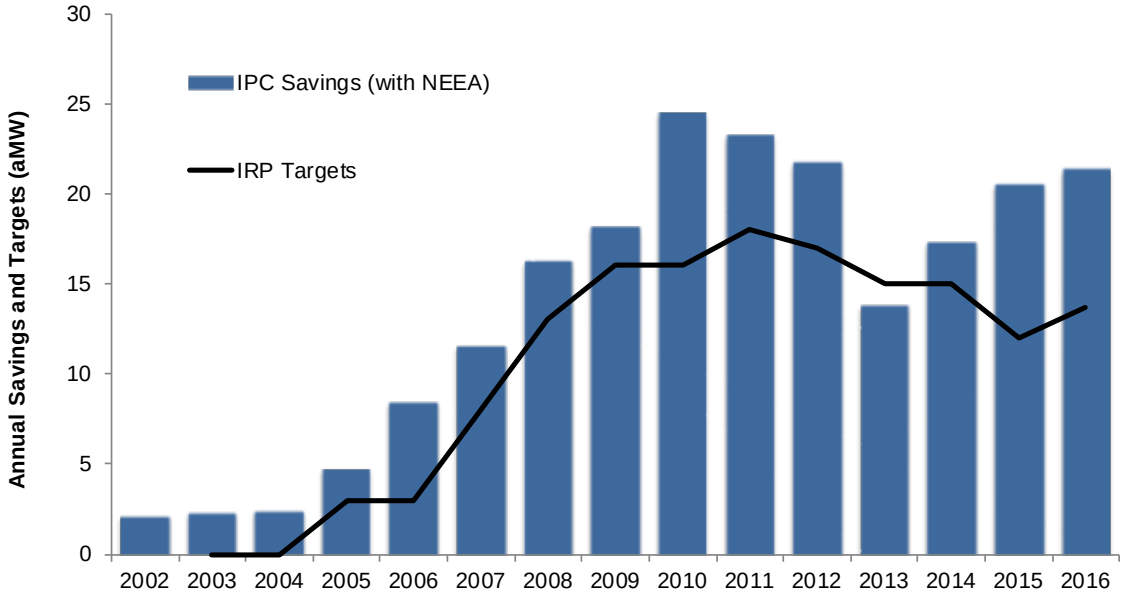

Figure 6. Annual incremental energy efficiency savings (aMW) compared with IRP targets, 2002–2016

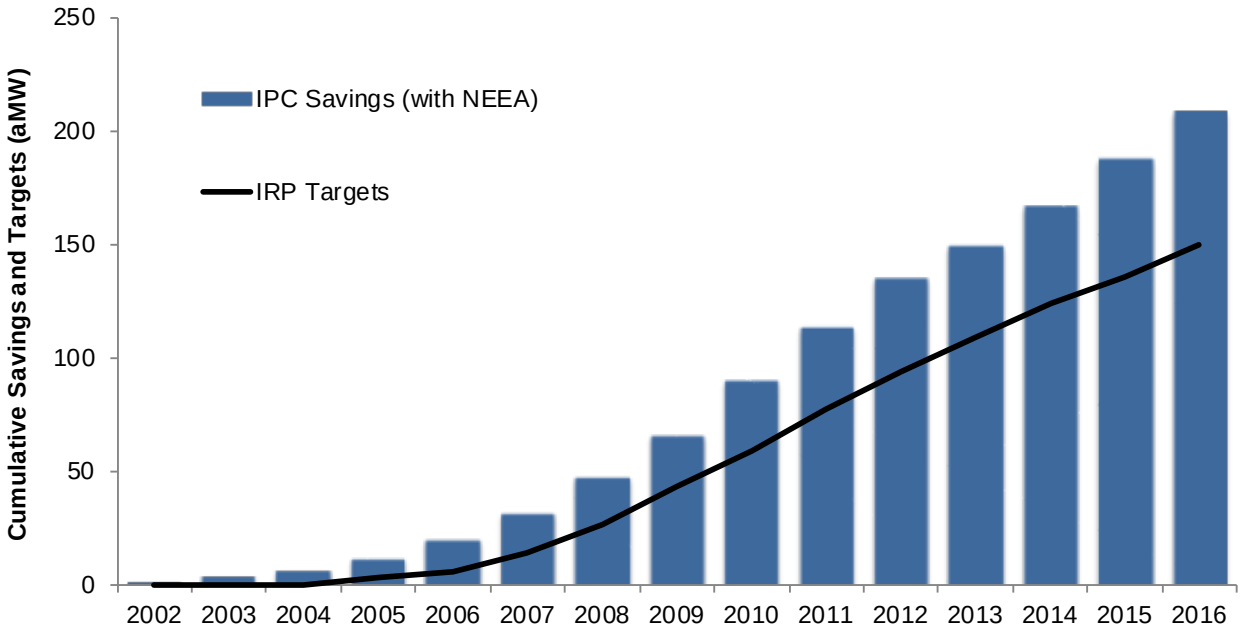

Figure 7. Annual cumulative energy efficiency savings (aMW) compared with IRP targets, 2002–2016

Idaho Power further increased its energy efficiency presence in the community by providing energy efficiency and program information through 92 outreach activities, including events, presentations, trainings, and other activities. In addition, Idaho Power customer representatives delivered 189 presentations to local organizations addressing energy efficiency programs and wise energy use.

In 2016, Idaho Power's community education representatives presented *The Power to Make a Difference* 91 times to 2,350 students and gave 53 classroom presentations of *Saving a World Full of Energy* to 1,411 students. At events and presentations, company staff distributed over 24,000 light-emitting

diodes (LED) lightbulbs in custom packaging that highlighted the advantages of energy-efficient lighting and encouraged participation in Idaho Power's myAccount online portal. The company also distributed over 34,000 Energy-Saving Kits (ESK) by request across its service area. On February 8, 2016, Idaho Power filed a request with the Public Utility Commission of Oregon (OPUC) to implement the Educational Distributions program in Oregon. The company received approval of Oregon Schedule 71 on March 9, 2016. This enabled Idaho Power to provide ESKs and LEDs to its Oregon customers.

Since 2008, commercial and industrial training activities have informed and educated commercial and industrial customers regarding energy efficiency, increased awareness of and participation in existing commercial and industrial energy efficiency and demand response programs, and enhanced customer satisfaction regarding the company's energy efficiency initiatives. Raising the knowledge level of commercial and industrial customers regarding the wise use of energy in their daily operations is important to the continued success of Idaho Power's commercial and industrial energy efficiency programs.

Idaho Power continued its internal commitment to energy efficiency in 2016. Idaho Power upgraded the company's substation buildings across its service area, renovated portions of the corporate headquarters (CHQ) in downtown Boise in 2016, and redesigned the heating, ventilation, and air conditioning (HVAC) delivery system for the Maintenance and Electrical Shop. Also in 2016, the new Twin Falls Operation Center was constructed to replace the 1951-built center used to house the operations staff. The design incorporates energy-efficient lighting, heating and cooling, daylight harvesting, and a rooftop solar array.

Demand Response Programs

In summer 2016, Idaho Power had a combined maximum actual non-coincidental load reduction from all three programs of 378 MW at the generation level. The amount of capacity available for demand response varies based on weather, the time of year, and how programs are used and managed. The 2016 capacity of demand response programs was 392 MW. The demand response capacity is calculated using total enrolled MW from participants with an expected maximum realization rate for those participants. This maximum realization rate is not always achieved for every program in any given event. This realization rate is expected to be approximately 73 percent of billing demand for Irrigation Peak Rewards and 100 percent of actual non-coincidental load reduction for A/C Cool Credit and the Flex Peak Program.

On Wednesday, June 29, 2016, the company used the Irrigation Peak Rewards program and reached a system peak of 3,085 MW. Had the program not been used, the company estimates the load would have been approximately 3,327 MW. Idaho Power's 2016 summer peak occurred on June 28 with a peak of 3,299 MW while the all-time summer peak was 3,407 MW on July 2, 2013.

Energy Efficiency Programs

Idaho Power's portfolio of energy efficiency program energy savings for 2016 increased to 170,792 MWh, including the estimated Northwest Energy Efficiency Alliance (NEEA) savings. This is a 4-percent increase from the 2015 energy savings of 163,672 MWh and enough to power over

14,000 average-sized homes a year in Idaho Power's service area. In 2016, the company's energy efficiency portfolio is cost effective from both the total resource cost (TRC) test and the utility cost (UC) test perspectives with ratios of 2.56 and 3.58, respectively. The savings from Idaho Power's energy efficiency programs alone (excluding NEEA savings) increased to 146,177 MWh in 2016 from 140,633 MWh in 2015.

Table 1. 2016 DSM programs by sector, operational type, location, and energy savings/demand reduction

Program by Sector	Operational Type	State	Savings/Demand Reduction
Residential			
A/C Cool Credit	Demand Response	ID/OR	34 MW
Easy Savings	Energy Efficiency	ID	403 MWh
Educational Distributions	Energy Efficiency	ID/OR	15,150 MWh
Energy Efficient Lighting	Energy Efficiency	ID/OR	21,094 MWh
Energy House Calls	Energy Efficiency	ID/OR	510 MWh
ENERGY STAR® Homes Northwest	Energy Efficiency	ID/OR	150 MWh
Fridge and Freezer Recycling Program (See ya later, refrigerator®)	Energy Efficiency	ID/OR	632 MWh
Heating & Cooling Efficiency Program	Energy Efficiency	ID/OR	1,114 MWh
Home Energy Audit	Energy Efficiency	ID	207 MWh
Home Improvement Program	Energy Efficiency	ID	500 MWh
Multifamily Energy Savings Program	Energy Efficiency	ID/OR	150 MWh
Oregon Residential Weatherization	Energy Efficiency	OR	3 MWh
Rebate Advantage	Energy Efficiency	ID/OR	411 MWh
Shade Tree Project	Other Programs and Activities	ID	n/a
Simple Steps, Smart Savings™	Energy Efficiency	ID/OR	577 MWh
Weatherization Assistance for Qualified Customers	Energy Efficiency	ID/OR	746 MWh
Weatherization Solutions for Eligible Customers	Energy Efficiency	ID	622 MWh
Commercial/Industrial			
Commercial and Industrial Efficiency Program			
Custom Projects (Custom Efficiency)	Energy Efficiency	ID/OR	47,519 MWh
New Construction (Building Efficiency)	Energy Efficiency	ID/OR	12,393 MWh
Retrofits (Easy Upgrades)	Energy Efficiency	ID/OR	28,125 MWh
Flex Peak Program	Demand Response	ID/OR	42 MW
Green Motors—Industrial	Energy Efficiency	ID/OR	124 MWh
Oregon Commercial Audits	Energy Efficiency	OR	n/a
Irrigation			
Green Motors—Irrigation	Energy Efficiency	ID/OR	74 MWh
Irrigation Efficiency Rewards	Energy Efficiency	ID/OR	15,674 MWh
Irrigation Peak Rewards	Demand Response	ID/OR	303 MW
All Sectors			
Northwest Energy Efficiency Alliance	Market Transformation	ID/OR	24,616 MWh

Table 2. 2016 program sector summary and energy usage/savings/demand reduction

	Energy Efficiency Program Impacts [a]				Idaho Power System Sales		
	Program Expenses	Energy Savings (kWh)	Average Energy (aMW)	Peak-Load Reduction (MW)[b]	Sector Total (MWh)	Percentage of Energy Usage	Number of Customers
Residential	$10,724,671	42,268,823	4.8		4,907,730	34.92%	444,431
Commercial/Industrial	$14,961,753	88,160,599	10.1		7,198,357	51.22%	69,462
Irrigation	$2,372,352	15,747,130	1.8		1,948,079	13.86%	20,638
Market Transformation	$2,676,387	24,615,600	2.8				
Demand Response	$9,471,367	n/a	n/a	378			
Direct Overhead	$293,039	n/a	n/a				
Total Direct Program Expenses	**$40,499,570**	**170,792,152**	**19.5**	**378**	**14,054,166**	**100.0%**	**534,531**

[a] Energy, average energy, and expense data have been rounded to the nearest whole unit, which may result in minor rounding differences.
[b] Includes peak-load reduction from both demand response and energy efficiency programs. Includes 9.7% peak line loss assumptions.

Program Evaluation Strategy

Idaho Power considers program evaluation an essential component of its DSM operational activities. The company uses third-party contractors to conduct impact, process, and other evaluations on a scheduled and as required basis.

Third-party contracts are generally awarded using a competitive bid process managed by Idaho Power's Strategic Sourcing department. In some cases, research and analysis is conducted internally and managed by Idaho Power's Research and Analysis team within the Customer Relations and Energy Efficiency (CR&EE) department. Third-party evaluations are specifically managed by the company's energy efficiency evaluator.

Idaho Power uses industry standard protocols for its internal and external evaluation efforts, including the National Action Plan for Energy Efficiency—Model Energy Efficiency Program Impact Evaluation Guide, the California Evaluation Framework, the International Performance Measurement and Verification Protocol (IPMVP), the Database for Energy Efficiency Resources, and the Regional Technical Forum's (RTF) evaluation protocols.

The company also supports regional and national studies to promote the ongoing cost-effectiveness of programs, the validation of energy savings and demand reduction, and the efficient management of its programs. Idaho Power considers primary and secondary research, cost-effectiveness analyses, potential assessments, impact and process evaluations, and customer surveys to be important resources in providing accurate and transparent program-savings estimates. Recommendations and findings from evaluations research and industry best practices are used to continuously refine Idaho Power's DSM programs. Historical evaluation plans, plans for 2017, and copies of 2016 evaluations and research can be found in *Supplement 2: Evaluation.*

Cost-Effectiveness

Idaho Power considers cost-effectiveness of primary importance in the design, implementation,

and tracking of energy efficiency and demand response programs. Idaho Power's energy efficiency and demand response opportunities are preliminarily identified through the IRP process. Idaho Power uses third-party energy efficiency potential studies to identify achievable cost-effective energy efficiency potential that is added to the resources included in the IRP. Because of Idaho Power's diversified portfolio of programs, most of the new potential for energy efficiency in Idaho Power's service area is based on additional measures to be added to existing programs rather than developing new programs.

Prior to the actual implementation of energy efficiency or demand response programs, Idaho Power performs a cost-effectiveness analysis to assess whether a potential program design or measure will be cost-effective from the perspective of Idaho Power and its customers. Incorporated in these models are inputs from various sources that use the most current and reliable information available.

Additionally, Idaho Power relies on the results of program impact evaluations and recommendations from consultants. In 2016, Idaho Power contracted with ADM Associates, Inc. (ADM); Applied Energy Group (AEG); CLEAResult Consulting, Inc. (CLEAResult); and Tetra Tech, MA for program evaluations and research.

Idaho Power's goal is for all programs to have benefit/cost (B/C) ratios greater than one for the TRC test, UC test, and participant cost test (PCT) at the program and measure level where appropriate. Each cost-effectiveness test provides a different perspective, and Idaho Power believes each test provides value when evaluating program performance. If a particular measure or program is pursued even though it will not be cost-effective from each of the three tests, Idaho Power works with the Energy Efficiency Advisory Group (EEAG) to get input. The company believes this aligns with the expectations of the Idaho Public Utilities Commission (IPUC) and OPUC.

Details on the cost-effectiveness assumptions and data are included in *Supplement 1: Cost-Effectiveness*.

Future Plans

Idaho Power will continue to pursue all prudent cost-effective energy efficiency as identified by third-party potential studies, and an appropriate amount of demand response based on the demand response settlement agreement approved in IPUC Order No. 32923 and OPUC Order No. 13-482. The forecast level of energy efficiency and the needed level of demand response are included in Idaho Power's biennial IRP planning process. Idaho Power includes all achievable cost-effective energy savings as identified in its potential studies in each IRP. Idaho Power considers this achievable potential a reasonable 20-year planning estimate. However, the company does not consider the achievable potential as a ceiling limiting energy efficiency acquisition. The IRP is developed in a public process that details Idaho Power's strategy for economically maintaining the adequacy of its power system into the future. The IRP process balances reliability, cost, risk, environmental concerns, and efficiency to develop a preferred portfolio of future resources to meet the specific energy needs of Idaho Power's customers.

Planning activities conducted in 2016 identified an opportunity for Idaho Power to increase its focus on small and medium business customers to build relationships and promote participation in energy

efficiency programs. A new position titled customer solutions advisor has been developed as a result of this effort. Eight customer solutions advisor positions have been developed and are scheduled to be in place and performing their assigned duties by May 1, 2017. The customer solutions advisors will focus on customer outreach by phone to "on-board" new business customers and support existing business customers by familiarizing them with Idaho Power's rates, billing and payment options, and energy-usage information available through myAccount and by answering any questions they may have about services and programs offered by Idaho Power. A primary function of the customer solutions advisor role will be promoting and educating business customers on energy efficiency and demand response programs.

The company will continue to explore new energy savings potential through third-party resources, conferences, and regional organizations, and will continue to assess and develop new program offerings through its Program Planning Group (PPG). Idaho Power will work in consultation with the EEAG to expand or modify its energy efficiency portfolio. Future plans for individual programs are included under each program's *2017 Program and Marketing Strategies*.

In 2017, Idaho Power will continue to enhance its marketing and outreach efforts as described in the Marketing section of this report and within each program section. Idaho Power will continue to work with NEEA on its market transformation activities during the 2015 to 2019 funding cycle.

The company will complete its research and evaluation, measurement, and verification (EM&V) projects included in the evaluation plan in *Supplement 2: Evaluation*.

Idaho Power will incorporate energy efficiency equipment and practices into its own facilities. In 2017, the company will continue renovations at the CHQ in downtown Boise. Idaho Power plans to remodel the ninth floor of the CHQ, exchanging the old T-12 parabolic lighting fixtures with T-8 lighting, and incorporating energy efficiency measures, such as lower partitions, lighting retrofits, and automated lighting controls.

In 2016, Idaho Power redesigned the HVAC delivery system for the Maintenance and Electrical Shops; construction on these projects is planned for 2018. Idaho Power estimates that with these improvements the shops may reduce their usage by 300,000 kWh in coming years.

DSM Annual Report Structure

The *Demand-Side Management 2016 Annual Report* consists of the main document and two supplements. *Supplement 1: Cost Effectiveness* shows the standard cost effectiveness tests for Idaho Power programs and includes a table that reports expenses by funding source and cost category. In 2016, the company continued its commitment to third party evaluation activities. Included in *Supplement 2: Evaluation* are copies of all of Idaho Power's 2016 evaluations, evaluations conducted by its regional partners, customer surveys and reports, Idaho Power's evaluation plans, general energy efficiency research, and demand response research. Additionally, the report and supplements will be provided under Oregon Docket UM 1710 to provide the OPUC and its staff information on the company's DSM programs and expenses.

This main *Demand-Side Management 2016 Annual Report* is organized primarily by the customer sectors residential, commercial/industrial, and irrigation. Each sector has a description, which is followed by information regarding programs in that sector. Each program description includes a table containing 2016 and 2015 program metrics, followed by a general description, 2016 activities, cost-effectiveness, customer satisfaction/evaluation, and 2017 plans. Each program section contains detailed information relating to program changes and the reasoning behind those changes, including information on cost-effectiveness and evaluation. Following the sector and program sections of the report are descriptions of Idaho Power's activities in other programs and activities, including market transformation, and Idaho Power's regulatory initiatives. Appendices 1 through 5 follow the written sections and contain a table on 2016 expenses and savings and historic information for all energy efficiency programs and demand response activities at Idaho Power.

In 2016, Idaho Power's commercial and industrial energy efficiency programs were combined in one umbrella program, the Commercial and Industrial Energy Efficiency Program, with options named to describe their purpose: New Construction (formerly Building Efficiency), Retrofits (formerly Easy Upgrades), and Custom Projects (formerly Custom Efficiency). The specific expenses and savings data are reported in the appendices separately for comparative purposes.

Also in 2016, Idaho Power filed with the IPUC to combine the Weatherization Assistance for Qualified Customers (WAQC) report, formerly filed with the IPUC annually on April 1, with Idaho Power's *Demand-Side Management 2016 Annual Report*. This change was approved by the IPUC in January 23, 2017, Order No. 33702 IPC-E-16-30, and the information formerly included in the WAQC annual report is now included in this report.

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2016 PROGRAM ACTIVITY

DSM Expenditures

Funding for DSM programs in 2016 came from several sources. The Idaho and Oregon Rider funds are collected directly from customers on their monthly bills. For 2016, the Idaho Rider was 4 percent of base rate revenues; the 2016 Oregon Rider was 3 percent of base rate revenues. Additionally, Idaho demand response program incentives were paid through base rates and the annual PCA mechanism. Energy efficiency and demand response related expenses not funded through the Rider are included as part of Idaho Power's ongoing operation and maintenance (O&M) costs.

Total DSM expenses funded from all sources were $43 million in 2016. At the beginning of 2016, the Idaho Rider balance was approximately $6.6 million, and by December 31, 2016, the positive balance was $10.7 million. At the beginning of the year, the Oregon Rider negative balance was approximately $4.5 million, and by year-end, the negative balance was $5.6 million.

Table 3 shows the total expenditures funded by the Idaho Rider, $31,291,579; the Oregon Rider, $2,168,868; and non-rider funding, $9,303,017, resulting in Idaho Power's total DSM expenditures of $42,763,464. The non-rider funding category includes Idaho Power demand response incentives, WAQC expenses, and O&M costs.

Table 3. 2016 funding source and energy savings

Funding Source	Expenses	kWh Savings
Idaho Rider	$ 31,291,579	162,765,429
Oregon Rider	2,168,868	7,280,560
Non-Rider Funding	9,303,017	746,162
Total	**$ 42,763,464**	**170,792,152**

Table 4 and Figure 8 indicate 2016 DSM program expenditures by category. The Materials & Equipment category includes items that directly benefit customers: ESKs and LED lightbulbs distributed at customer events ($2,105,557), and direct-install weatherization measures ($125,000). The expenses in the Other Expense category include marketing ($1,208,731), program evaluation ($198,210), program training ($455,117), and program audits ($174,861). The Purchased Services category includes payments made to NEEA and third-party contractors who help deliver Idaho Power's programs.

Table 4. 2016 DSM program expenditures by category

	Total	% of Total
Incentive Expense	$23,676,667	55%
Labor/Administrative Expense	3,580,600	8%
Materials & Equipment	2,417,071	6%
Other Expense	2,111,683	5%
Purchased Services	10,977,442	26%
Total 2016 DSM Expenditures, by Category	**$42,763,464**	**100%**

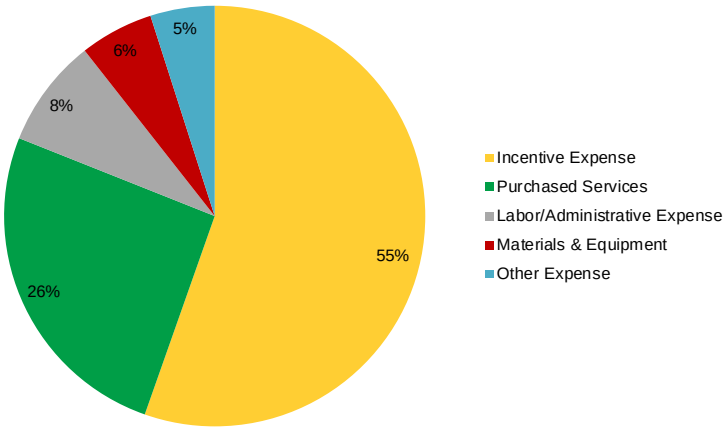

Figure 8. 2016 DSM program expenditures by category

Table 5 and Figure 9 describe the amount and percentage of incentives paid by segment and sector. There are two incentive segments (demand response and energy efficiency) and three sectors (residential, commercial/industrial, and irrigation). The incentives are funded by three mechanisms: the Idaho Rider, the Oregon Rider, and Idaho Power base rates. Market transformation related payments made to NEEA and payments made to third-party community action partners under the WAQC and Weatherization Solutions for Eligible Customers programs are not included in the incentive amounts.

Table 5. 2016 DSM program incentives totals by program type and sector

Program Type—Sector	Total	% of Total
DR[a]—Residential	$ 424,565	2%
DR—Commercial/Industrial	639,611	3%
DR—Irrigation	6,406,340	27%
EE[b]—Irrigation	2,007,311	8%
EE—Residential	2,680,473	11%
EE—Commercial/Industrial	11,518,366	49%
Total Incentive Expense	**$ 23,676,667**	**100%**

[a] DR = demand response
[b] EE = energy efficiency

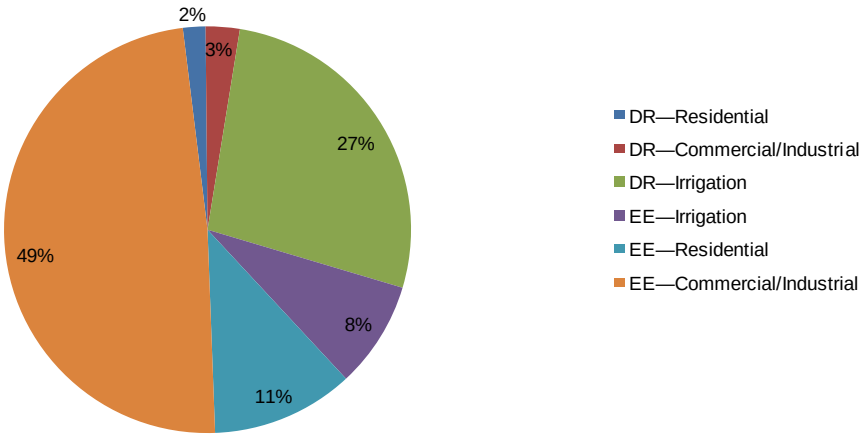

Figure 9. 2016 DSM program incentives by segment and sector

Marketing

Idaho Power used a variety of marketing, public relations, and research in 2016 to improve communication with its customers. Idaho Power takes advantage of all types of media and marketing. Owned media (social, website, newsletters) and paid media (advertising, sponsorships) allow Idaho Power to control content. Earned unpaid media (news outlets, Idaho Power's *News Briefs* sent to reporters, third-party publications, and television news appearances) gives Idaho Power access to an audience through other channels. Though Idaho Power has less control of the content with earned unpaid media, the value is established from the third-party endorsement.

The following describes a selection of the methods, approaches, and tactics used by Idaho Power to engage with customers regarding energy efficiency, along with their results.

All Sectors

Social Media

Approximately 17 percent of the company's total social media content promoted energy efficiency in 2016, a significant increase from 8 percent in 2015. Idaho Power distributed more than 200 messages about energy efficiency throughout the year via Facebook, Twitter, LinkedIn, and Instagram. Idaho Power also enjoyed the benefit from many energy efficiency-related organic posts on social media outlets. An organic post is one that originates from the customer.

In 2016, Idaho Power continued its *#TipTuesday* posts on Facebook and Twitter, a tactic launched in late 2015. *#TipTuesday* posts provide Idaho Power's Facebook and Twitter followers with a new energy efficiency tip or program information every Tuesday of the year. The posts use photos, when applicable, and include the hashtag *#TipTuesday* so the tips can be categorized together and easily searched by social media users. The company also posted information about several energy efficiency programs, sponsorships, and events on its social media pages.

Website

Idaho Power tracked the number of page views to the main energy efficiency pages—also known as landing pages—on the company's website. In 2016, the company's energy efficiency homepage received 34,938 page views; 74,984 page views on the residential landing page; 7,748 page views on the business landing page; and 1,829 page views on the irrigation landing page. The company uses Google Analytics to analyze web activity. Google's definition of page views is the total number of pages viewed, with repeated views of a single page being counted.

Bill Inserts

A January bill insert was sent to 371,600 customers with winter energy-saving tips. In February, 373,189 customers received a bill insert promoting Idaho Power's em**powered** community. Other program-specific bill inserts were also sent throughout the year. Information about those can be found in each program later in this report.

Print

Idaho Power updated the look and content of its print collateral, including a brochure and information card that provides a description of each energy efficiency program offering.

Public Relations

Public relations supported energy efficiency programs and activities through multiple channels: *Connections*, a monthly customer newsletter distributed in approximately 420,000 monthly bills and available online; *News Briefs*, a weekly email of interesting news items sent to all media in the company's service area; pitching and participating in news stories; KTVB (Boise/Twin Falls) and KPVI (Pocatello/Blackfoot) monthly energy-efficiency news segments; news releases and events (such as check presentations).

In 2016, the October and April issues of *Connections* were devoted to energy efficiency. The cover story of the March issue of *Connections* highlighted a customer who applied energy efficient measures on the job, by participating in Idaho Power's Commercial and Industrial Energy Efficiency Program, and at home. Other public relations activities are noted later in this report.

Staff

NEEA and Idaho Power staff held regular meetings throughout 2016 to coordinate, collaborate, and facilitate marketing. Monthly meetings were held via conference call, and meetings in person occurred in July and August in Portland, and September and November in Boise. All marketing activities are reviewed each month for progress, results, and collaborative opportunities.

To build marketing networks and to learn what works in other regions, Idaho Power staff attended the Chartwell Marketing and Communications Conference in March in Atlanta, the NEEA Efficiency Exchange in April in Coeur d'Alene, and the E Source Utility Marketing Executive Council and E Source Forum held in September in Denver.

Residential

Idaho Power ran a multi-faceted advertising campaign in the spring (March and April) and fall (September and October) to raise awareness of Idaho Power's energy efficiency programs for residential customers, and to demonstrate that saving energy doesn't have to be challenging. These campaigns included radio, television, newspaper advertisements (ads), digital ads, Facebook ads, *News Briefs* sent to the media, the *Connections* newsletter, and Idaho Power's website to reach a variety of demographics. In 2016, the company added a Smart-saver Pledge to the campaign to engage and encourage customers to make an energy-saving behavior change.

Figure 10 is an example of the campaign materials in 2016.

Figure 10. 2016 energy efficiency awareness campaign

The goals of the campaign are to raise awareness of the programs collectively rather than by individual program; use a variety of methods to reach various customer demographics; use all the methods in the same month to increase customer exposure to the message; and to let customers know they have options when it comes to saving energy. Messaging focused on many ways to create an energy-efficient home with Energy Savings Made Easy as a central theme, illustrating how easy energy efficiency can be with Idaho Power's help. The campaign was awarded second place in the category of Best Ad Campaign for an Investor-owned Utility at the E Source Utility Ad Awards.

Outside of the campaign, Idaho Power also deployed a number of marketing tactics to promote energy saving tips and the company's energy efficiency programs throughout the year. Results of the campaign and other marketing tactics are included below.

Television

Idaho Power used network television advertising for the spring and fall campaign. The campaign focused on primetime and news programming that reaches the highest percentage of the target market, adults age 35 to 64. Results of the spots were provided for the three major markets—Boise, Pocatello, and Twin Falls.

During the spring campaign, 95 percent of customers in Idaho Power's target audience viewing network television were exposed to the commercial. Targeted customers in Boise saw the ad an average of

13 times, while targeted customers in Pocatello and Twin Falls each saw the ad an average of 12 times. During the fall campaign, 95 percent of targeted customers saw the commercial. Targeted customers in Boise saw the ad an average of 13 times, 18 times in Pocatello, and 12 times in Twin Falls.

Radio

As part of its spring and fall campaign, Idaho Power ran 30-second radio spots on major commercial radio stations, Spanish speaking radio stations, and National Public Radio (NPR) stations in the service area. The commercial stations that ran the spots had a variety of station formats to obtain optimum reach, including classic rock, news/talk, country, adult alternative, adult contemporary, and classic hits. The message was targeted toward adults ages 35 to 64 throughout Idaho Power's service area.

Results of the spots were provided for the three major markets: Boise, Pocatello and Twin Falls. During the spring campaign, the spots reached 55 percent of the target audience in Boise and 60 percent of the target audience in Pocatello and Twin Falls. The target audience in Boise was exposed to the ad approximately nine times, 17 times in Pocatello, and 15 times in Twin Falls. During the fall campaign, the spots reached 60 percent of the target audience in all three major markets. The target audience was exposed to the message eight times in Boise and 16 times in both Pocatello and Twin Falls during the fall campaign.

In summary, Idaho Power ran 2,616 radio spots during the spring campaign and 2,590 spots during the fall campaign, totaling 5,206 radio spots in 2016.

In April and October, these 30-second spots also ran with accompanying visual banner ads on Pandora internet radio accessed by mobile and web-based devices. In April, records show 1,416,990 impressions and 2,427 banner clicks to the Idaho Power residential energy efficiency web page. October yielded 1,430,376 impressions and 2,058 banner clicks. Impressions are defined as the number of times the ad was displayed, regardless of the media type.

Print

As part of the spring and fall campaign, print advertising ran in the major daily and weekly newspapers throughout the service area. The ads conveyed individual energy efficiency programs or tips to customers, such as using insulation to keep cool air in and hot air out in summer. The ads were scheduled for 1,902,246 impressions in the spring and 2,087,983 impressions in the fall.

Social Media

Idaho Power Facebook ads reached 242,224 people and received 3,238,288 impressions and 11,399 clicks to the Idaho Power website during the spring campaign. The company also initially placed a video ad on Instagram, but discontinued the ad a few days later due to low views and click-through rates, and reallocated those funds to Facebook. During the fall campaign, the company reached 223,280 people, and the ad resulted in 1,918,264 impressions and 10,883 clicks to the Idaho Power website.

Throughout the year, Idaho Power also used Facebook boosts for various programs. A boosted post resembles a traditional Facebook post, but, for a fee, Facebook promotes the post higher in users'

News Feeds, increasing the likelihood that the targeted audience will see it. Boosting posts can help increase audience engagement and get more people interacting with the content.

Pledge

In 2016, Idaho Power launched a new offering, the Smart-saver Pledge (pledge), to encourage customers in Idaho to make an energy saving behavior change. Customers were asked to commit to making an energy-saving behavior change for 21 days, choosing from one of the following: turn thermostat down 1 to 3 degrees; wash full loads of laundry in cold water and hang dry when possible; register for myAccount, and review your energy use once a week; have a "no electronics" night once a week; and use the crockpot or barbeque once a week instead of the stove. In return, pledge participants were entered to win an ENERGY STAR® electric appliance. The pledge was primarily promoted through a bill insert that went to 367,221 customers, social media, *News Briefs*, the October issue of *Connections*, and television news segments on KTVB and KPVI.

Figure 11. The 2016 the Smart-saver Pledge bill insert

Idaho Power received 937 pledges throughout the pledge period and hundreds of additional pledges after the pledge ended. The company also received numerous positive notes from customers about the pledge and their energy habits. The company felt the participants were highly engaged and that the results were generally positive, providing good information for continuing the pledge in future years.

Customers were asked to complete a follow-up survey as part of the pledge. In return, participants were entered to win one $100 cash prize. Four hundred and eight customers responded to the follow-up survey. Highlights include the following:

- Ninety-six percent of respondents fulfilled all 21 days of their pledge.
- Of respondents who answered the question regarding whether they would continue their energy-saving changes, all but one respondent plans to continue with the energy saving changes since the pledge ended.
- Fifty-four percent of respondents indicated they were "very likely" to seek out additional ways to save energy.
- After taking the pledge, just over 97 percent of respondents are "somewhat likely" or "very likely" to participate in an Idaho Power energy efficiency program.

A copy of the full survey results can be found in *Supplement 2: Evaluation*.

Campaign Results

The response to the spring and fall Energy Savings Made Easy campaign was measured using Idaho Power's em**powered** community, an on-line panel of over 1,000 customers asked to share perceptions and feedback on a variety of topics each month. The following 2016 spring campaign survey results were obtained from 254 community members who hadn't participated in the 2015 campaign survey:

- Forty-four percent of respondents remember seeing or hearing one of the ads.
- Fifty percent of respondents recalled the television ads, the highest rate of recall.
- Eighty-six percent of respondents indicated they are "very likely" or "somewhat likely" to make energy-saving changes in their home after seeing the ads.
- Eighty-three percent are "very interested" or "somewhat interested" in more information about energy savings programs.
- Eighty-two percent of the respondents who recalled seeing or hearing the ads felt positive about them.

A copy of the results of the study is located in *Supplement 2: Evaluation*.

Energy-Saving Improvements Survey

In early 2016, Idaho Power used its em**powered** community to measure customer's planned energy-saving improvements and their motivation for making changes to their home. Key findings include the following:

- Nearly 74 percent of respondents were “somewhat” or “very likely” to make energy-saving improvements to their home in the next two to three years. The most common improvement is lighting, followed by windows, appliances, insulation, and other.
- The primary motivator for making energy-saving improvements is to save money.
- The biggest barriers to making energy-saving improvements are cost or already making improvements to the home, followed by the perception that these improvements are not needed.
- Financial incentives and free products and services are the top motivators for customers to participate in an Idaho Power energy-saving program.

A copy of the results of the study is located in *Supplement 2: Evaluation*.

Commercial and Industrial

In mid-2016, Idaho Power renamed the offerings under the overall Commercial and Industrial Energy Efficiency Program to better describe that the program offers customers financial incentives for New Construction, Custom Projects, and Retrofits. The company redesigned much of the program’s marketing materials, and began marketing these offerings, along with Flex Peak, as a single entity with something for every business customer. Marketing activities were targeted toward business customers, architects, engineers, and other design professionals.

Airport Advertising

Idaho Power expanded its use of airport signage in 2016. Each year, three million people travel through the Boise Airport. Fifty-nine percent of travelers have made purchasing decisions for their companies in the past year. To reach the business customer, Idaho Power placed two backlit display ads. One ad is located at the baggage claim and the other rotates throughout the airport display boards based on availability. Idaho Power also purchased digital network ads which played 10-second Idaho Power video clips on 15 television screens throughout the terminal as part of a three-minute advertising loop. The videos played an estimated 216,000 times per month.

Print

Several print ads ran in 2016, promoting the Commercial and Industrial Energy Efficiency Program. Ads ran in Alaska Airline’s *Horizon Air Magazine*, Building Owners and Managers Association (BOMA) membership directory and symposium program, American Institute of Architects Idaho Chapter membership directory, Business Insider, Grow Smart Awards event program. The company also placed an ad in the *Idaho Business Review* as part of the publication’s Top Projects Awards that congratulated the 10 companies that had the most energy savings throughout the year.

Revision and updating of the Commercial and Industrial Energy Efficiency Program brochure, business card, and industry specific energy efficiency tip brochures also began in 2016.

Bill Insert

In August, a bill insert promoting Idaho Power's Commercial and Industrial Energy Efficiency Program was included in 39,742 business customers' bills highlighting how Idaho Power's incentives can save customers money.

Newsletters

Idaho Power promotes energy efficiency and its programs through the company's *Energy@Work* newsletter. Written for small- and medium-sized business customers, Idaho Power published this newsletter in May and September 2016. Content included customer success stories and information on training opportunities, energy efficiency programs, electric vehicles, reduced wattage T-8 lightbulbs, the water supply optimization cohort (WSOC), and more.

Idaho Power also sends an email newsletter, *Energy Insights*, quarterly to large industrial customers. Topics included how businesses use energy, Idaho Power's environmental efforts, energy efficiency success stories, LED advantages, power quality devices, and more.

Public Relations

Idaho Power provides public relations support to commercial and industrial customers who want to publicize the work they have done to become more energy efficient. Upon request, Idaho Power creates large-format checks that are used for media events and/or board meetings. Idaho Power will continue to assist customers with public relations opportunities by creating certificates for display within the building and having an Idaho Power representative speak at press events, if requested.

Sponsorships

Idaho Power's Commercial and Industrial Energy Efficiency Program supports a number of associations and events, including sponsoring the Grow Smart awards, Top Projects Awards, BOMA symposium, American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE) Technical Conference, and the Idaho Energy and Green Building Conference.

Idaho Power sponsored the BOMA Commercial Real Estate Symposium February 9, in Boise. Idaho Power Vice President of Customer Operations, Vern Porter, spoke about why energy efficiency makes good business sense, how Idaho Power's programs can help businesses save energy and money, and provided an example of a recent energy efficiency project and a reminder about the importance of putting down your phone in the car to Just Drive.

Idaho Power and NEEA were also major sponsors of the Idaho Energy and Green Building Conference, and had two members on the planning committee. The conference, held November 1 and 2 at The Wyndham Garden Boise Airport Hotel, provided four training tracks on energy efficiency and green building, and attracted over 100 participants. The conference targeted policy makers, developers, architects, code officials, engineers, energy professionals, and industrial plant managers and operators.

Irrigation

See the Irrigation Efficiency Rewards section for 2016 irrigation-related marketing activities.

2017 Marketing Activities

In 2017, the Idaho Power marketing department plans on several approaches to reach and educate customers: updating the Residential Energy Efficiency Awareness Campaign, developing new Commercial and Industrial Energy Efficiency ads, and enhancing the company website.

The marketing team will refresh the Residential Energy Efficiency Awareness Campaign with new ads that promote different programs and tips. However, the campaign will continue to use the Energy Savings Made Easy theme and cartoon artwork that has resonated with customers. The team will also continue exploring a consistent look and feel for all residential program materials, and consider the potential for email marketing.

A new ad campaign will be implemented for the Commercial and Industrial Energy Efficiency Program. The campaign features former program participants and iconic local landscapes to capture the readers' attention. The ads will speak to small to large businesses, and show that saving energy and money is for everyone. Several of the customers in the ad campaign will be featured in videos about businesses that took advantage of Idaho Power's incentives and the resulting benefits. The ads will be placed in business and association publications, and event programs.

Idaho Power will also move toward a consistent look and feel for marketing materials for business customers. The company will update the remaining industry-specific energy efficiency tip brochures, and may add new industries and inserts highlighting the incentives available for each industry. Customer representatives will use these brochures on customer visits, and the company will consider mailing them to targeted customers.

The company will continue to support various organizations and programs, including the Intermountain Building Operators Association, Building Operators Certification, Center for Advanced Energy Studies Industrial Assessment Center, and more. Idaho Power will market the organizations' services during customer site visits and at technical training workshops and provide discounted registration when appropriate.

Additionally, the company will consider an ad campaign similar to the new Commercial and Industrial Energy Efficiency Program campaign for its irrigation programs.

Idaho Power will also redesign its website to an adaptive framework, including updating navigation for a better customer experience. The company's interactive approach, which began with myAccount in 2015, and saw additional user improvements in 2016, is scheduled for completion in 2017. Idaho Power's new adaptive site will enhance navigation to make energy efficiency program information easier to find. An adaptive website recognizes the device accessing the website and automatically responds or adapts to the dimensions of that device (e.g., a smart phone).

Cost-Effectiveness

In 2016, most of Idaho Power's energy-efficiency programs were cost-effective, except the Fridge and Freezer Recycling Program, Home Improvement Program and the weatherization programs for income-qualified customers.

The Fridge and Freezer Recycling Program has a UC of 0.92 and TRC of 1.31. In November 2015, the program vendor JACO Environmental, Inc. (JACO), entered receivership and ceased operations. Idaho Power then contracted with Appliance Recycling Center of America (ARCA) and re-launched the program in June 2016. Due to the mid-year launch, the company had forecasted that participation would be at 1,000 units, and the program would likely not be cost-effective from the UC perspective but would be cost-effective from the TRC perspective. This was discussed with the EEAG in February 2016. When considering individual measures within the program, both freezers and refrigerators fail the UC test with a ratio of 0.79 and 0.91 respectively. However, both freezers and refrigerators pass the TRC. However, by allowing the less cost-effective freezers into the program, it increase overall participation and increases the program cost-effectiveness by spreading the portion of the fixed administrative costs across more units.

The Home Improvement Program has a UC of 2.54, TRC of 0.60 and PCT of 0.80. The RTF reduced savings for single-family home weatherization projects in 2015. With the changes, average savings estimates per project for both 2015 and 2016 were just under 50 percent of 2014 projects. These new savings were a result of the nearly 18-month RTF process to calibrate residential savings models. Additionally, in early 2016, the RTF finished calibrating the savings models for multifamily weatherization. These lower savings as well as the DSM avoided costs from the 2015 IRP further reduces the TRC and PCT of the program. Idaho Power analyzed ways to modify the program to improve the cost-effectiveness, but the company concluded that the program would remain not cost-effective. At the November EEAG meeting, the company presented the non-cost-effective aspects of the Home Improvement Program, the result of the company's analysis, and informed EEAG of the company's plan to end the program in 2017.

WAQC had a TRC of 0.65 and a UC ratio of 0.73, and Weatherization Solutions for Eligible Customers had a TRC of 0.70 and a UC ratio of 0.59. The programs showed increased savings and increased cost-effectiveness ratios over 2015. Idaho Power performed a billing analysis of the 2013–2014 weatherization projects from both WAQC and Weatherization Solutions for Eligible Customers. The billing analysis was needed to reflect the increased replacement of forced-air electric resistance heat systems with efficient heat pump systems.

Eleven individual measures in various programs are shown to not be cost-effective from either the UC or TRC perspective. These measures will be discontinued, analyzed for additional NEBs, modified to increase potential per-unit savings, or monitored to examine their impact on the specific program's overall cost-effectiveness.

Table 6. Cost-effectiveness summary by program

Program/Sector	UC	TRC	Ratepayer Impact Measure (RIM)	PCT
Easy Savings	1.69	2.04	0.55	n/a
Educational Distributions	3.63	6.33	0.65	n/a
Energy Efficient Lighting	4.27	2.52	0.68	3.17
Energy House Calls	2.11	2.75	0.56	n/a
ENERGY STAR ® Homes Northwest	1.79	1.00	0.63	1.46
Fridge and Freezer Recycling Program	0.92	1.31	0.43	n/a
Heating & Cooling Efficiency Program	2.33	1.26	0.71	1.76
Home Improvement Program	2.54	0.60	0.64	0.80
Multifamily Energy Savings Program	1.43	2.55	0.51	n/a
Rebate Advantage	3.89	3.33	0.62	6.45
Simple Steps, Smart Savings	2.40	1.33	0.61	2.13
Weatherization Assistance for Qualified Customers	0.73	0.65	0.41	n/a
Weatherization Solutions for Eligible Customers	0.59	0.70	0.36	n/a
Residential Energy Efficiency Sector	**2.74**	**2.36**	**0.63**	**4.10**
Commercial and Industrial Energy Efficiency Program				
Custom Projects	5.26	2.86	1.44	1.92
New Construction	4.40	3.07	0.96	3.19
Retrofits	3.83	2.64	0.93	2.83
Commercial/Industrial Energy Efficiency Sector *	**4.67**	**2.81**	**1.19**	**2.31**
Irrigation Efficiency	4.95	3.21	1.34	2.78
Irrigation Energy Efficiency Sector **	**5.00**	**3.17**	**1.35**	**2.73**
Energy Efficiency Portfolio	**3.58**	**2.56**	**0.95**	**2.93**

* Commercial/Industrial Energy Efficiency Sector cost-effectiveness ratios include savings and participant costs from Green Motors projects.
** Irrigation Energy Efficiency Sector cost-effectiveness ratios include savings and participant costs from Green Motors projects.

Details on the cost-effectiveness assumptions and data are included in *Supplement 1: Cost-Effectiveness*.

Customer Satisfaction

Based on surveys conducted in 2015, Idaho Power ranked fifth out of seven utilities included in the west region midsize segment of the J.D. Power and Associates *2016 Electric Utility Business Customer Satisfaction Study*. Forty-one percent of the business customer respondents in this study indicated they were aware of Idaho Power's energy efficiency programs, and those customers were more satisfied with Idaho Power than customers who are unaware of the programs.

Based on surveys conducted in the last six months of 2015 and the first six months of 2016, Idaho Power ranked third out of 13 utilities included in the west region midsize segment of the J.D. Power and Associates *2016 Electric Utility Residential Customer Satisfaction Study*. Forty-nine percent of the residential respondents in this study indicated they were aware of Idaho Power's energy efficiency programs, and those customers were more satisfied with Idaho Power than customers who are unaware of the programs.

Idaho Power employs Burke, Inc., an independent, third-party research vendor, to conduct quarterly customer relationship surveys to measure the overall customer relationship and satisfaction with Idaho Power. The Burke Customer Relationship Survey measures the satisfaction of a number of aspects of the customer's relationship with Idaho Power, including energy efficiency at a very high level. However, it is not the intent of this survey to measure all aspects of energy efficiency programs offered by Idaho Power.

The 2016 results of Idaho Power's customer relationship survey showed an increase in overall satisfaction from the previous year. Sixty-five percent of customers indicated their needs were met or exceeded by Idaho Power encouraging energy efficiency among its customers.

Figure 12 depicts the annual change in the percent of customers who indicated Idaho Power met or exceeded their needs concerning energy efficiency efforts encouraged by Idaho Power. In 2016, offering energy efficiency programs was one of the overall top five attributes with a positive change in the Burke Customer Relationship Survey.

In 2016, offering energy efficiency programs was one of the overall top five attributes with a positive change in the Burke Customer Relationship Survey. Three questions related to energy efficiency programs in the general relationship survey continued in the 2016 survey: 1) Have you participated in any of Idaho Power's energy efficiency programs? 2) Which energy efficiency program did you participate in? and 3) Overall, how satisfied are you with the energy efficiency program? In 2016, 44 percent of the survey respondents across all sectors indicated they participated in at least one Idaho Power energy efficiency program, and 93 percent were "very" or "somewhat" satisfied with the program they participated in.

Idaho Power will not survey most energy efficiency program participants annually. This is due primarily to a concern of over-surveying program participants and because the measures and specifics of most program designs do not change annually. To ensure meaningful research in the future, Idaho Power will conduct program research periodically (every two to three years), unless there have been major program changes.

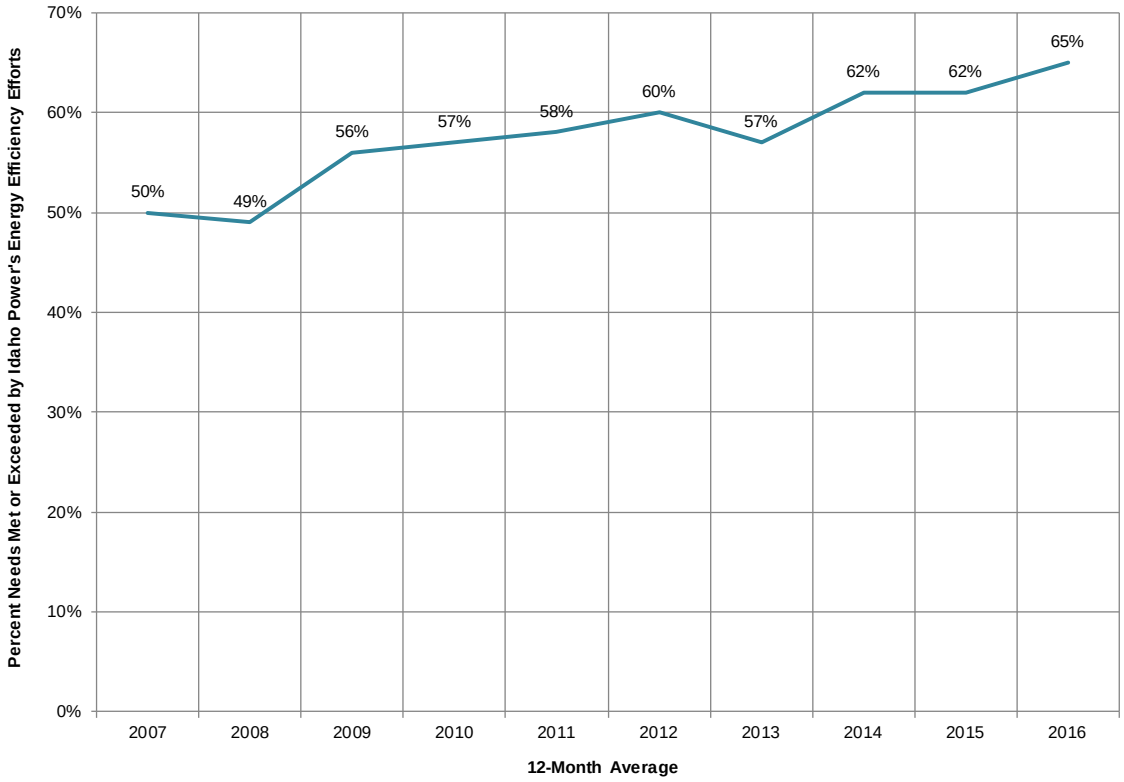

Figure 12. Customers' needs "met" or "exceeded" (percent), 2007–2016

In 2015, Idaho Power created the em**powered** community, an on-line community of residential customers, to measure customer perceptions on a variety of company-related topics, including energy efficiency. Recruiting for the community is conducted annually primarily through billing inserts and mailed postcards. The community has just over 1,000 active members. The em**powered** community includes customers from across Idaho Power's service area. Idaho Power sends out at least one survey per month to active members. Energy efficiency-related survey topics in 2016 included likelihood to install energy-saving improvements, recall of the spring 2016 energy efficiency marketing campaign, energy-efficient lighting, an engagement survey on air conditioning efficiency, thermostatic shower shut-off valves, an engagement survey on using energy-efficient cooking methods and holiday lighting. The average response rate for surveys conducted with the online community is 61.3 percent.

Results of these studies are included in *Supplement 2: Evaluation*.

Evaluations

In 2016, Idaho Power contracted with Leidos Engineering (Leidos) to conduct four program impact evaluations and two program process evaluations. Impact evaluations were performed for the Retrofit (Easy Upgrades), New Construction (Building Efficiency), Rebate Advantage, and Irrigation Efficiency Rewards programs. Process evaluations were performed for the Rebate Advantage and Irrigation Efficiency Rewards programs. CLEAResult, conducted impact evaluations of the A/C Cool Credit, and Flex Peak programs' 2016 demand response events.

Throughout 2016, Idaho Power administered several surveys regarding energy efficiency programs to measure customer satisfaction. Some surveys were administered by a third-party contractor; other surveys were administered by Idaho Power either through traditional means or through the company's em**powered** community on-line survey.

Final reports from all evaluations, research, and surveys completed in 2016 and an evaluation schedule is provided in *Supplement 2: Evaluation*.

Residential Sector Overview

Idaho Power's residential sector consists of over 444,431 customers. In 2016, the residential sector's number of customers increased by 8,329, an increase of 1.9 percent from 2015. The residential sector represents 43 percent of Idaho Power's actual total electricity usage and 35 percent of overall revenue in 2016.

Table 7 shows a summary of 2016 participants, costs, and savings from the residential energy efficiency programs.

Table 7. 2016 residential program summary

Program	Participants		Total Cost		Savings	
			Utility	Resource	Annual Energy (kWh)	Peak Demand (MW)
Demand Response						
A/C Cool Credit	28,315	homes	$1,103,295	$ 1,103,295	n/a	34
Total			**$1,103,295**	**$ 1,103,295**	**n/a**	**34**
Energy Efficiency						
Easy Savings	2,001	kits	$127,587	127,587	402,961	
Educational Distributions	67,065	kits/lightbulbs	2,392,884	2,392,884	15,149,605	
Energy Efficient Lighting	1,442,561	lightbulbs	3,080,708	10,770,703	21,093,813	
Energy House Calls	375	homes	206,437	206,437	509,859	
ENERGY STAR® Homes Northwest	110	homes	142,158	297,518	150,282	
Fridge and Freezer Recycling Program (See ya later, refrigerator®)	1,539	refrigerators/freezers	257,916	257,916	632,186	
Heating & Cooling Efficiency Program	486	projects	594,913	1,404,625	1,113,574	
Home Energy Audit	539	homes	289,812	289,812	207,249	
Home Improvement Program	482	homes	324,024	1,685,301	500,280	
Multifamily Energy Savings Program	3	projects	59,046	59,046	149,760	
Oregon Residential Weatherization	7	homes	3,930	5,900	2,847	
Rebate Advantage	66	homes	111,050	148,142	411,272	
Shade Tree Project	2,070	trees	76,642	76,642	n/a	
Simple Steps, Smart Savings	7,880	appliances/ showerheads	153,784	379,752	577,320	
Weatherization Assistance for Qualified Customers	246	homes/non-profits	1,289,809	1,934,415	746,162	
Weatherization Solutions for Eligible Customers	232	homes	1,323,793	1,323,793	621,653	
Total			**$10,434,493**	**$21,360,473**	**42,268,823**	**34**

Notes:
See Appendix 3 for notes on methodology and column definitions.
Totals may not add up due to rounding.

In 2016, the company added two new residential programs and reintroduced or modified others. The Multifamily Energy Savings Program was added in March, the ESK program launched in May, and the Fridge and Freezer Recycling program was re-introduced in June. The Home Energy Audits program was extended to customers with non-electric heat sources and a smart thermostat incentive was added to the Heating and Cooling Efficiency (H&CE) Program. Additionally, the residential team supported a Drying Rack Pilot Project.

Idaho Power conducts the Burke Customer Relationship Survey each year. In 2016, 54 percent of residential survey respondents indicated Idaho Power is meeting or exceeding their needs with information on how to use energy wisely and efficiently.

Sixty-three percent of residential respondents indicated Idaho Power is meeting or exceeding their needs by encouraging energy efficiency with its customers. Forty-eight percent of Idaho Power residential customers surveyed in 2016 indicated Idaho Power is meeting or exceeding their needs in offering energy efficiency programs, and 34 percent of the residential survey respondents indicated they have participated in at least one Idaho Power energy efficiency program. Of the residential survey respondents who have participated in at least one Idaho Power energy efficiency program, 86 percent are "very" or "somewhat" satisfied with the program. In 2016, offering energy efficiency programs was one of the residential top five attributes with a positive change in the Burke Customer Relationship Survey.

Forty-nine percent of the Idaho Power residential customers included in the *2016 J.D. Power and Associates Electric Utility Residential Customer Satisfaction Study* indicated they are familiar with Idaho Power's energy efficiency programs.

In 2016, the em**powered** community was surveyed regarding customer recall of the energy efficiency marketing campaign, shut-off shower valves, air conditioning efficiency, energy-efficiency tips, cooking methods, and holiday lighting. Results of these studies are included in *Supplement 2: Evaluation*.

During 2016, presentations to community groups and businesses continued to be an important method of communicating with Idaho Power customers. The company's customer representatives and community education representatives made hundreds of presentations in communities in Idaho Power's service area.

A/C Cool Credit

		2016	2015
Participation and Savings			
	Participants (participants)	28,315	29,000
	Energy Savings (kWh)	n/a	n/a
	Demand Reduction (MW)	34	36
Program Costs by Funding Source			
	Idaho Energy Efficiency Rider	$632,079	$659,471
	Oregon Energy Efficiency Rider	$41,833	$45,825
	Idaho Power Funds	$429,383	$443,639
	Total Program Costs—All Sources	$1,103,295	$1,148,935
Program Levelized Costs			
	Utility Levelized Cost ($/kWh)	n/a	n/a
	Total Resource Levelized Cost ($/kWh)	n/a	n/a
Benefit/Cost Ratios			
	Utility Benefit/Cost Ratio	n/a	n/a
	Total Resource Benefit/Cost Ratio	n/a	n/a

Description

Originating in 2003, A/C Cool Credit is a voluntary, dispatchable demand response program for residential customers in Idaho and Oregon. Using communication hardware and software, Idaho Power cycles participants' central air conditioning (A/C) units or heat pumps off and on via a direct load control device installed on the A/C unit. This program enables Idaho Power to reduce system capacity needs during times when summer peak load is high.

Customers' A/C units are controlled using switches that communicate by powerline carrier (PLC). A switch is installed on each customer's A/C unit and allows Idaho Power to cycle the customer's A/C unit during a cycling event.

The cycling season is June 15 through August 15. The maximum number of cycling hours available per season is 60 hours, with a minimum of three cycling events per season. The cycling rate is the percentage of an hour that the A/C unit will be turned off by the switch. For instance, with a 55 percent cycling rate, the switch should be off for 33 minutes of each hour on average, though not 33 consecutive minutes. Instead, the switch turns the A/C unit off for a period of time and then back on for a period of time.

Idaho Power measures the communication levels to validate whether the signal reaches the switches. Interruptions may be caused by a malfunctioning or broken switch, or by an A/C unit that is not powered on. The incentive is $15 per season, paid as a $5 bill credit on the July, August, and September bills. The program is not available on weekends or holidays, and the maximum length of an event is four hours.

Program Activities

In 2016, over 28,000 customers participated in the program. Three cycling events occurred, and all were successfully deployed.

The first event was Thursday, June 30 from 4 p.m. to 7 p.m. Communication levels were between 92.10 percent and 94.78 percent. The cycling rate was 55 percent. The Boise area temperature was 97 degrees, and the Pocatello/Twin Falls area temperature was 97 degrees. The expected demand reduction for the event was 1.02 kilowatt (kW) per participant for Boise and 0.7 kW per participant for Pocatello/Twin Falls for a total reduction of 27.63 MW. Analysis results show a max reduction of 1.11 kW per participant in Boise, 0.84 kW per participant in Pocatello/Twin Falls, and a total reduction of 30.165 MW. This is 109 percent of expected demand reduction.

The second event was Tuesday, July 26 from 4 p.m. to 7 p.m. Communication levels were between 93.6 percent and 93.99 percent. The cycling rate was 55 percent. The Boise area temperature was 99 degrees, and the Pocatello/Twin Falls area temperature was 95 degrees. The expected demand reduction for the event was 1.09 kW per participant for Boise and 0.68 kW per participant for Pocatello/Twin Falls for a total reduction of 29.23 MW. Analysis results show a max reduction of 1.1 kW per participant in Boise and 0.86 kW per participant in Pocatello/Twin Falls for a total reduction of 29.77 MW. This is 102 percent of expected demand reduction.

The third event was Thursday, July 28 from 4 p.m. to 7 p.m. Communication levels were between 93.99 percent and 94.25 percent. The cycling rate was 55 percent. The Boise area temperature was 99 degrees, and the Pocatello/Twin Falls area temperature was 95 degrees. The expected demand reduction for the event was 1.09 kW per participant for Boise and 0.68 kW per participant for Pocatello/Twin Falls for a total reduction of 29.15 MW. Analysis results show a max reduction of 1.13 kW per participant in Boise, 0.93 kW per participant in Pocatello/Twin Falls, and a total reduction of 30.935 MW. This is 106 percent of expected demand reduction.

Marketing Activities

Per the settlement agreement reached in Idaho Case No. IPC-E-13-14 and Oregon Case No. UM 1653, Idaho Power did not actively market the A/C Cool Credit program in 2016; however, Idaho Power did actively communicate with participants about the program in an effort to maintain participant retention.

Before the cycling season began, Idaho Power sent current participants a postcard reminding them of the program specifics. Idaho Power also attempted to recruit customers who had moved into a home that already had a load control device installed and previous participants who changed residences to a location that may or may not have a load-control device installed. The company used postcards, phone calls, direct-mail letters, and home visits, leaving door hangers for those not home, to recruit these customers. At the end of the summer, a thank-you postcard was sent to program participants.

Cost-Effectiveness

Idaho Power determines cost-effectiveness for it demand response program under the terms of IPUC Order No. 32923 and OPUC Order No. 13-482. Under the terms of the orders and the settlement, all of Idaho Power's demand response programs were cost-effective for 2016.

The A/C Cool Credit program was dispatched for 9 event hours and achieved a maximum demand reduction of 33.94 MW. The total expense for 2016 was $1,103,295 and would have remained the same if the program was fully used for 60 hours because there is no variable incentive paid for events beyond the three required events.

In 2016, the cost of operating the three demand response programs was $9.47 million. Idaho Power estimates that if the three programs were dispatched for the full 60 hours, the total costs would have been approximately $12.87 million and would have remained cost-effective.

A complete description of Idaho Power cost-effectiveness of its demand response programs is included in *Supplement 1: Cost-effectiveness.*

Customer Satisfaction and Evaluations

Idaho Power conducted no customer satisfaction surveys for this program in 2016.

Idaho Power contracted with CLEAResult to complete an impact evaluation of the 2016 A/C Cool Credit program. The goal of the evaluation was to estimate demand reduction achieved during three curtailment events and update the existing predictive model to incorporate results from the 2016 curtailment events.

CLEAResult completed analyses of curtailment events held on June 30, July 26, and July 28, each with a three-hour duration. Results of the analyses showed maximum single hour demand reductions of 1.07 kW, 1.06 kW, and 1.11 kW per participant, respectively, for the three events. The results of the curtailment event analyses showed maximum generation-level demand reductions of 33.09, 32.66, and 33.94 MW, respectively, for the three events. The results of the curtailment event analyses showed maximum meter-level demand reductions of 30.2, 29.8, and 30.9 MW, respectively, for the three events.

The results of the impact evaluation demonstrated that Idaho Power's A/C Cool Credit program functions as intended, and if properly maintained, can be relied on to provide dispatchable demand reduction to the electricity grid. Due to the distinct weather patterns between Boise and Pocatello/Twin Falls, each curtailment event analysis included region-specific results. A copy of the report is included in *Supplement 2: Evaluation*.

2017 Program and Marketing Strategies

Idaho Power anticipates no program changes in 2017.

Per the terms of the above-mentioned settlement agreements, Idaho Power will not actively promote the A/C Cool Credit program to solicit new participants through marketing but will accept new participants who request to participate, regardless of whether they were previous participants in the program.

Attempts will continue to be made to recruit previous participants who have moved, as well as new customers moving into homes that already have a load control device installed.

Easy Savings

	2016	2015
Participation and Savings		
Participants (kits)	2,001	2,068
Energy Savings (kWh)	402,961	624,536
Demand Reduction (MW)	n/a	n/a
Program Costs by Funding Source		
Idaho Energy Efficiency Rider	$0	$0
Oregon Energy Efficiency Rider	$0	$0
Idaho Power Funds	$127,587	$127,477
Total Program Costs—All Sources	$127,587	$127,477
Program Levelized Costs		
Utility Levelized Cost ($/kWh)	$0.035	$0.021
Total Resource Levelized Cost ($/kWh)	$0.035	$0.021
Benefit/Cost Ratios		
Utility Benefit/Cost Ratio	1.69	2.61
Total Resource Benefit/Cost Ratio	2.04	2.95

Description

The desired outcomes of the Easy Savings program are to educate recipients about saving energy in their homes by using energy wisely, to allow hands-on experience while installing low-cost measures, and to reduce the energy burden for energy assistance/Low Income Home Energy Assistance Program (LIHEAP) recipients.

As a result of IPUC Case No. IPC-E-08-10 under Order Nos. 30722 and 30754, Idaho Power committed to fund energy efficiency education for low-income customers and provide $125,000 to Community Action Partnership (CAP) agencies in the Idaho Power service area on a prorated basis. These orders specified that Idaho Power provide educational information to customers who heat their homes with electricity provided by Idaho Power in Idaho. This is accomplished through the development and distribution of kits containing low cost, self-install energy efficiency items and educational materials.

Initiated in 2009, the Easy Savings program straddles two calendar years. The LIHEAP program cycle starts annually in November at CAP agencies and follows the federal fiscal calendar, while Idaho Power summarizes activities annually based on a January to December cycle. However, the following report summarizes activities from November 2015 through October 2016 and covers future plans for the 2016 to 2017 program.

Program Activities

By April 2016, 2,001 kits from the 2015 to 2016 program year were distributed by regional CAP agencies to Idaho Power customers approved to receive LIHEAP benefits on their Idaho Power bills.

Each kit contained the following low-cost and no-cost energy-saving items and a survey:

- Three LED lightbulbs—9 watts (W)
- Set of draft stopping outlet gaskets
- Digital thermometer
- 1.5 gallons per minute (gpm) kitchen faucet aerator
- One single-line indoor clothesline
- LED nightlight with photocell and a set of reminder stickers and magnets
- Easy Savings Quick Start Guide to installation
- Mail-in survey and energy-savings information

Marketing Activities

Idaho Power does not actively market this program.

Cost-Effectiveness

The RTF LED giveaway deemed savings values are used for the three LED lightbulbs included in the kit because the savings are discounted to reflect the potential that all the kit items may not be installed. For the faucet aerator, the RTF does not provide a deemed savings estimate. In Idaho Power's 2012 *Energy Efficiency Potential Study*¸ AEG estimates the annual faucet aerator savings to be 106 kWh. For the single-line clothes line, Idaho Power used the assumptions for the clothes drying racks and discounted the annual savings to be 68 kWh. For further information regarding the clothes drying rack savings, see the *Cost-Effectiveness* section for the Educational Distributions program.

Customer Satisfaction and Evaluations

A mail-in survey inquiring about installation experiences and actions taken to reduce energy use was included in the 2,001 kits distributed. Returned surveys were analyzed to track the effectiveness and educational impact of the program.

There were 213 completed surveys received from customers describing their experience in installing kit items in their homes during the 2015 to 2016 program. The survey included questions about whether the customer took specific actions to reduce energy use as a result of receiving the kit, as well as questions confirming the installation of kit items.

Over 92 percent of respondents reported they have, or will lower their heat during the day, and just over 90 percent reported they have, or will lower their heat at night. Just over 85 percent of the respondents reported installing at least one of the LEDs provided in the kit. Just over 38 percent of the respondents reported installing the high indoor clothesline and another 30 percent reported they planned to install it.

Overall, survey results showed that almost 39 percent of the respondents installed all kit items. Just over 77 percent of the respondents reported learning a lot about saving energy and money in their home after

completing the *Easy Savings Quick Start Guide*. Copies of the survey and survey results can be found in *Supplement 2: Evaluation*.

During the 2015 to 2016 program, three gift certificates valued at $100 each were provided by Community Action Partnership Association of Idaho, Inc. (CAPAI), to encourage survey completion. A drawing from all returned surveys was held, and three households won a $100 gift certificate.

Idaho Power conducted no program evaluations in 2016.

2016 to 2017 Program and Marketing Strategies

For the 2016 to 2017 program period, Idaho Power sent checks totaling $125,000 in October to the five Idaho regional CAP agencies. Each agency signed a Memorandum of Understanding (MOU) agreeing to use 30 percent of the agency's allotment to cover expenses for administering the program at their agency. The 30 percent includes the provision for an agency certified energy educator to inform kit recipients about installation techniques and energy efficiency information.

CAP agencies ordered 2,470 kits in October 2016, and received them from the vendor in November. These kits, which include five LED lightbulbs and an indoor clothesline, will be distributed to customers throughout the 2016 to 2017 LIHEAP season.

Upon completion of kit distribution and receipt of corresponding surveys, Idaho Power and CAPAI will consider program changes for the future.

Educational Distributions

	2016	2015
Participation and Savings		
Participants (kits/lightbulbs)	67,065	28,197
Energy Savings (kWh)	15,149,605	1,669,495
Demand Reduction (MW)	n/a	n/a
Program Costs by Funding Source		
Idaho Energy Efficiency Rider	$2,334,206	$432,185
Oregon Energy Efficiency Rider	$56,164	$0
Idaho Power Funds	$2,514	$0
Total Program Costs—All Sources	$2,392,884	$432,185
Program Levelized Costs		
Utility Levelized Cost ($/kWh)	$0.016	$0.026
Total Resource Levelized Cost ($/kWh)	$0.016	$0.026
Benefit/Cost Ratios		
Utility Benefit/Cost Ratio	3.63	2.05
Total Resource Benefit/Cost Ratio	6.33	2.60

Description

Designated as a specific program in 2015, the Educational Distributions effort is administered through the Residential Energy Efficiency Education Initiative and seeks to use low-cost and no-cost channels to deliver energy efficiency items with energy savings directly to customers. As with the initiative, the goal for these distributions is to drive behavior change and create awareness of and demand for energy efficiency programs in Idaho Power's service area.

Items selected for distribution have an initial cost-effectiveness analysis that indicates the installed measure is either currently cost-effective or is expected to be cost-effective in the near future. Typically, selected items have additional benefits beyond traditional energy savings, such as educating customers about energy efficiency, expediting the opportunity for customers to experience newer technology, or allowing Idaho Power to gather data or validate potential energy savings resulting from behavior change.

Idaho Power recognizes that behavioral measures and programs require appropriate education and guidance to optimize savings and will plan education accordingly. Items may be distributed at events, presentations, through direct-mail, or home visits conducted by customer representatives.

Drying Rack Pilot Project

Idaho Power distributed drying racks to determine whether customers can comfortably shift about 25 percent of their clothes drying from an automatic dryer to a drying rack.

Energy-Saving Kits

Idaho Power knows that managing household energy use can be a challenge. To help make it easier for families, Idaho Power works with a kit vendor to provide two versions of free ESKs—one for homes

with electric water heaters and one for homes with alternate-source water heaters. Customers enroll online at idahopower.com/save2day, by calling 800-465-6045, or by returning a postcard. Kits are sent directly to the customer's home.

Each ESK contains nine LED lightbulbs—six 60-watt equivalent lightbulbs, three 45-watt equivalent lightbulbs, a digital thermometer (to check refrigerator, freezer and water temperatures), a shower timer, a water flow-rate test bag, an LED night light and educational materials. In addition, the kit for homes with electric water heaters contains a high-efficiency showerhead and three faucet aerators.

Figure 13. Ad for Idaho Power residential customers to order a 2016 ESK

LED Lightbulbs as Giveaways

LED lightbulbs are a welcome and effective way to connect Idaho Power with customers, and to begin productive conversations around energy efficiency. Idaho Power field staff and energy efficiency program managers seek opportunities to educate customers about LEDs, and to offer customers a free lightbulb to use immediately in their own homes.

Student Energy Efficiency Kit Program

The Student Energy Efficiency Kit (SEEK) program provides fourth- to sixth-grade students in schools in Idaho Power's service area with quality, age-appropriate instruction regarding the wise use of electricity. Each child who participates receives an energy efficiency kit. The products in the kit are selected specifically to encourage energy savings at home and engage families in activities that support and reinforce the concepts taught at school.

Once a class enrolls in the program, teachers receive curriculum and supporting materials. Students receive classroom study materials, a workbook, and a take-home kit containing three LED lightbulbs, a high-efficiency showerhead, an LED nightlight, a furnace filter alarm, a digital thermometer for measuring water, refrigerator and freezer temperatures, a water flow-rate test bag, and a shower timer. At the conclusion of the program, students and teachers return feedback to the vendor indicating how the program was received and which measures have been installed. The vendor uses this feedback to provide a comprehensive program summary report showing program results and savings.

Unlike other residential programs offered by Idaho Power, SEEK results are reported on a school-year basis.

Program Activities

On February 8, 2016, Idaho Power filed a request with the OPUC seeking authority to implement the Educational Distributions program in Oregon. The company received approval of Oregon Schedule 71 on March 9, 2016.

Drying Rack Pilot Project

Idaho Power gave away approximately 1,300 drying racks at eight events, primarily in the Treasure Valley and Pocatello areas. In the Boise area, attendees at select 2015 fall events filled out a card expressing interest in receiving a free drying rack. Idaho Power representatives explained the enrollment and distribution process, and enrollment emails were sent early in January 2016. Most participants enrolled online, confirming their eligibility and completing a survey about their current laundry habits. Customer distribution events in Boise and Nampa occurred in late January.

The first Pocatello event was held in Fort Hall in March with a slightly different distribution model—customers were enrolled on-site when they presented a current Idaho Power bill. Idaho Power staff administered the pre-survey verbally to each Fort Hall participant.

The Salmon and Pocatello events followed—again with the on-line enrollment strategy. The remaining drying racks were given to American Falls residents in August using a third distribution model. Participants were not pre-enrolled. Instead, customers reviewed eligibility requirements and signed an agreement confirming their eligibility and committing to take the survey within 24 hours of receiving the drying rack.

Education and information regarding efficient laundry practices was conveyed via the website enrollment tool, the enrollment survey, at each event via a "Ways to Save" card addressing ways to "Lighten Your Laundry Load," and through follow-up email prompts.

Energy-Saving Kits

By the end of 2016, 34,546 kits had been shipped—19,715 kits to homes with electric water heaters and 14,831 to homes with alternate-source water heaters. Kits were distributed to all geographic regions within Idaho Power's service area, including 33,682 to Idaho residences and 864 to Oregon homes.

LED Lightbulbs as Giveaways

Field staff distributed over 8,000 lightbulbs at Spring Home and Garden Shows in Pocatello, Twin Falls, and Boise. Participants in Earth Day Events and employee sustainability fairs in Caldwell, Nampa, and Pocatello received lightbulbs. In Boise at Wells Fargo and Hewlett Packard (HP) World Environment Day events attendees received lightbulbs. Oregon customers received lightbulbs at a St. Alphonsus's Safety Fair, Platt Electric Days and a Home Depot children's safety fair. LEDs were also distributed at the Smart Women, Smart Money Conference, West Valley Medical Center employee meetings, Paint the Town™, the Mountain Home Air Force Base, FitOne™ Expo, and through presentations at chambers of commerce and senior centers.

By the end of the year, Idaho Power employees had personally delivered a brief energy efficiency message and distributed 24,913 lightbulbs directly to customers.

SEEK Program

During the 2015 to 2016 school year, Idaho Power community education representatives actively recruited fourth- to sixth-grade teachers to participate in SEEK. As a result, Resource Action Programs (RAP) delivered 6,305 kits to 219 classrooms in 70 schools within Idaho Power's service area. This resulted in 1,542 MWh of savings.

Marketing Activities

Drying Rack Pilot Project

In the Boise area, attendees at select 2015 fall events filled out a card expressing interest in receiving a free drying rack. In other areas, flyers, posters, print ads, online calendars and social media marketing boosted participation to the desired levels. The cover story of the October *Connections* featured customers who had participated in the project, and KPVI in Pocatello ran a news story on the distribution of the drying racks.

Energy-Saving Kits

Marketing efforts included a direct-mail campaign from the kit vendor to about 15,000 customers in May, publicity via television news segments in May and June on KPVI and KTVB, and social media posts. The program was greatly bolstered by unsolicited social media—in one case, a single Facebook post garnered over 10,000 kit requests.

LED Lightbulbs as Giveaways

In 2016, Idaho Power field staff and energy efficiency program managers continued to seek opportunities to educate customers about LEDs, and offer customers a free LED lightbulb to use immediately in their own homes.

Student Energy Efficiency Kit Program

During the 2015 to 2016 school year, Idaho Power community education representatives actively recruited fourth- to sixth-grade teachers to participate in SEEK. In addition, community education representatives appeared on both KPVI (September) and KTVB (October) news segments sharing information about the kits.

Cost-Effectiveness

In situations where Idaho Power manages the education and distribution through existing distribution channels, the cost-effectiveness calculations will be based on the actual cost of the items. Conversely, if outside vendors are used to assist with distribution, the cost-effectiveness calculations will include all vendor-related charges.

Drying Rack Pilot Project

Idaho Power is currently assessing if this is an energy-saving and cost-effective measure to continue in the future. To determine an estimate of the potential savings for the drying rack, Idaho Power used estimates from NEEA's *2011 Residential Building Stock Assessment: Single-Family Characteristics and*

Energy Use (RBSA). Based on the Residential Building Stock Assessment (RBSA), study participants in Idaho wash 5.71 loads of laundry per week. Approximately 87.4 percent of those washer loads are dried in a clothes dryer. According to a RTF clothes washer workbook, the baseline dryer uses between 1.36 to 1.27 kWh per load. Using a simple average of these two values, Idaho Power estimates that clothes dryers use approximately 342 kWh per year. However, it must be noted that the NEEA 2014 RBSA Laundry Study estimates that dryers use 805 to 915 kWh per year. For a conservative estimate, Idaho Power kept the 342 kWh per year estimate and assumed that if customers shifted 25 percent of their drying load to a drying rack, they could save at least 85.5 kWh per year.

Energy-Saving Kits

The RTF provides mail-by-request deemed savings for LED lightbulbs and 1.75 gpm low-flow showerheads. The RTF mail-by-request deemed savings values are discounted to reflect the potential that all of the kit items may not be installed. The LED lightbulbs have a deemed savings value of 10 to 11 kWh per year depending on the lumens of the lightbulb. The 1.75 gpm low-flow showerhead is estimated to save 187 kWh per year. For the faucet aerator, the RTF does not provide a deemed savings estimate. In Idaho Power's 2012 *Energy Efficiency Potential Study*¸ AEG estimates the annual faucet aerator savings to be 106 kWh. The annual savings for an ESK for a home with an electric water heater is 601 kWh. The annual savings for a kit for a home with a non-electric water heater is 96 kWh.

LED Lightbulbs as Giveaways

In 2016, Idaho Power used the same savings and assumptions as were used in 2014. For the LED giveaways, Idaho Power used the giveaway deemed savings provided by the RTF. The RTF-deemed annual savings of 9 kWh includes assumptions regarding the installation rate, efficiency levels of the existing equipment, and the location of the installation.

SEEK Program

The cost-effectiveness analysis for the SEEK offering is based on the savings reported by RAP during the 2015 to 2016 school year. RAP calculated the annual savings based on information collected from the participants' home surveys and the installation rate of the kit items. Questions on the survey included the number of individuals in each home, water-heater fuel type, flow rate of old showerheads, and the wattage of any replaced lightbulbs. The response rate for the survey was nearly 71 percent. The survey gathers information on the efficiency level of the existing measure within the home and which efficient measure is installed. The energy savings will vary for each household based on the measures offered within the kit, the number of items installed, and the existing measure that is replaced. Based on the feedback received from the 2015 to 2016 school year, each kit saved approximately 245 kWh annually per household on average. A copy of the report is included in *Supplement 2: Evaluation*.

Customer Satisfaction and Evaluations

Drying Rack Pilot Project

When customers enrolled in this pilot, they completed a survey about their current laundry habits. Combined with the post-survey conducted in 2017, the company will analyze the results and determine the potential energy savings of a drying rack. While approximately 1,300 drying racks were distributed in 2016, 2,120 customers completed the pre-survey. Several hundred customers completed the survey, but did not pick up a drying rack

Of customers who own a clothes washer, nearly 35 percent of respondents indicated they have a washer that is less than 5 years old while just over 42 percent of respondents indicated they have a washer that is 5 to 10 years old. Approximately 50 percent of respondents said they own a top-loading clothes washer with a center agitator. Just over 51 percent of respondents wash 3 to 5 loads of laundry each week, while nearly 31 percent of respondents wash 6 to 10 loads of laundry each week.

Of customers who own a clothes dryer, nearly 30 percent of respondents reported that their dryer is less than 5 years old, while nearly 43 percent of respondents indicate their dryer is 5 to10 years old. Just over 29 percent of respondents said they dry 100 percent of their laundry in the dryer, while nearly 53 percent indicated they dry 75 to 99 percent of their laundry in the dryer. Of customers who indicated they dry some of their clothes outside of a clothes dryer, 72 percent of respondents indicated they hang their clothes to dry indoors. When asked how likely they would shift an additional 25 percent or more of their drying to the drying rack, nearly 72 percent of respondents said “very likely,” while just over 26 percent of respondents said “somewhat likely.” A copy of this report is included in *Supplement 2: Evaluation*.

At pickup events, customers were engaged and grateful, tweeting and sharing Facebook posts to let their friends and family know what they were doing.

Figure 14. Customer picking up his drying rack, 2016

Other customers sent emails: “Thank you for the clothes drying rack. I have already used it after picking it up on Saturday at 5 Mile and Franklin. The people were very kind and cheerful and all was organized well. Just wanted to say thank you”

The following Facebook post was indicative of those posted by a number of customers.

Figure 15. Screenshot showing customer appreciation for the drying rack, 2016

But the best part was when participants began to share their stories.

- One customer emailed saying "My drying rack has been so wonderful. About 99% of my laundry is on it. I bought a second one so I can hang the entire weekly batch. Thank you."
- Another emailed, "I am using the drying rack right at the moment! I have loved it. I really appreciate receiving it; I know we have saved energy because of it this summer.
- Another stopped by Idaho Power's booth at the FitOne Expo and raved about her drying rack, stating that she was saving $20 each month.

Other customers' stories were featured in the October edition of *Connections*.

Energy-Saving Kits

When customers ordered a kit, they completed a short enrollment survey. Upon receipt of the kit, they were encouraged to return a more in-depth survey to indicate which measures had been installed and how satisfied they were with the ordering process. Results from both surveys are included in Supplement 2: *Evaluation*.

Of the 19,715 electric kits distributed, RAP received 2,790 returned surveys for a response rate of just over 14 percent. Of the 14,831 non-electric kits distributed, RAP received 2,588 returned surveys for a response rate of over 17 percent. The overall response rate was over 15 percent.

Approximately 95 percent of respondents indicated they were "very satisfied" with the kit ordering process with 4 percent indicating they "somewhat satisfied." Nearly 94 percent of respondents said they were "very likely" to tell a friend or family member to order a kit. While just over 54 percent of respondents said they were not aware of that Idaho Power had energy efficiency programs and incentives prior to receiving their kit, 99 percent said they were either "very likely" or "somewhat likely" to participate in another energy efficiency program.

Customers organically promoted the ESKs through numerous social media posts similar to the one below. This single post generated tremendous buzz, receiving over 3000 shares and generating over 10,000 enrollments.

Figure 16. Screenshot showing customer excitement on Facebook about the Energy-Saving Kits, 2016

Another customer from Midvale reached out to Idaho Power via the website with this message, "After receiving the free package of LED light bulbs you offered, we have since retrofitted our home and shop with all LED light bulbs, and we love the increased brightness. Thank you for prompting us to make these changes. We definitely want to conserve energy and reduce our power bill to boot!"

LED Lightbulbs as Giveaways

Idaho Power conducted no customer satisfaction surveys for this offering in 2016.

Customers at events and presentations continued to readily express appreciation for receiving free LED lightbulbs.

SEEK Program

The SEEK program is evaluated annually regarding participant satisfaction. For more details on the SEEK program, view the most recent annual report, *Energy Wise® Program Summary Report* located in *Supplement 2: Evaluation*.

Teachers continued to be pleased with the program. One hundred percent of teachers who completed surveys would recommend the program to other colleagues, and 97 percent would conduct the program again. Student engagement remained high as well—71 percent of student surveys were returned, and 69 percent indicated their families changed the way they used energy as a result of the program. Parents also responded favorably, indicating the program was easy to use, they would like to see it continued in local schools, and they would continue to use the kit items at home after completion of the program.

Some participants posted YouTube videos reviewing their kits and the home activities: youtube.com/watch?v=0UrhdTP4ZKc and youtube.com/watch?v=-lyHxacMqvo.

2017 Program and Marketing Strategies

Drying Rack Pilot Project

The Drying Rack Project will be fully evaluated and analyzed to determine how effective the drying racks were in producing the desired behavior change, i.e., reducing automatic dryer use by at least 25 percent. If the project results are favorable, the project may be offered again.

Energy-Saving Kits

Idaho Power will augment its ESK program with an opportunity to use the basic non-electric water-heating kit as a giveaway, in limited quantities, to garner additional interest and participation at presentations and small events. Promotional materials will be readily available for staff-use at larger events. Social media posts and advertising in the semi-annual *Energy Efficiency Guide*s, *Connections*, and Idaho Power's website will all be used to promote ESKs. Direct and targeted digital marketing campaigns will be considered, as needed, to boost participation with more challenging geographic or demographic populations.

LED Lightbulbs as Giveaways

Idaho Power plans to continue to offer LED lightbulbs to customers at community events, presentations, and customer visits.

Other Educational Distributions

Idaho Power will continue to look for opportunities to engage customers with new technologies that stress the importance of energy-efficient behaviors at home. Idaho Power is currently evaluating thermostatic shower valves.

SEEK Program

Plans for the 2016 to 2017 school year include updating the marketing flyer and developing an electronic marketing piece for distribution to more remote schools and districts. The company will continue to leverage the positive relationships Idaho Power's community education representatives have

within the schools to maintain program participation levels and will heighten visibility to enrollments to add an element of competition amongst the geographic regions. Curriculum will be reviewed for continued relevance to state standards.

Energy Efficient Lighting

		2016	2015
Participation and Savings			
	Participants (lightbulbs)	1,442,561	1,343,255
	Energy Savings (kWh)	21,093,813	15,876,117
	Demand Reduction (MW)	n/a	n/a
Program Costs by Funding Source			
	Idaho Energy Efficiency Rider	$3,009,970	$1,997,292
	Oregon Energy Efficiency Rider	$63,200	$60,800
	Idaho Power Funds	$7,538	$5,291
	Total Program Costs—All Sources	$3,080,708	$2,063,383
Program Levelized Costs			
	Utility Levelized Cost ($/kWh)	$0.014	$0.013
	Total Resource Levelized Cost ($/kWh)	$0.049	$0.028
Benefit/Cost Ratios			
	Utility Benefit/Cost Ratio	4.27	4.53
	Total Resource Benefit/Cost Ratio	2.52	4.23

Description

Idaho Power and other regional utilities participate in the Simple Steps, Smart Savings™ program, managed by CLEAResult. Idaho Power promotes Simple Steps, Smart Savings offerings to customers in two areas: this lighting program and the appliance promotion program (see the Simple Steps, Smart Savings section of this report).

Initiated in 2002, the Energy Efficient Lighting program follows a markdown model that provides incentives directly to the manufacturers or retailers, with savings passed on to the customer at the point of purchase. The benefits of this model are low administration costs, better availability of products to the customer, and the ability to provide an incentive for specific products. The program goal is to help Idaho Power's Idaho and Oregon residential customers afford to adopt more efficient lighting technology.

ENERGY STAR® lightbulbs, including compact fluorescent lightbulbs (CFL) and LEDs, are a more efficient alternative to standard incandescent and halogen incandescent lightbulbs. Lightbulbs come in a variety of wattages, colors, and styles, including lightbulbs for three-way lights and dimmable fixtures. ENERGY STAR lightbulbs use 70 to 90 percent less energy and last 10 to 25 times longer than traditional incandescent lightbulbs.

Idaho Power pays a flat fee for each kWh savings achieved. The minimum base amount goes directly to buy down the price the product was reduced; the amount applied to administration and marketing varies and can be used for things like retailer promotions. Promotions may include special product placement, additional discounts, and other retail merchandising tactics designed to increase sales.

In addition to managing the program's promotions, CLEAResult is responsible for contracting with retailers and manufacturers, providing marketing materials at the point of purchase, and supporting and training to retailers.

Program Activities

In 2016, LED lightbulbs comprised 59 percent of lightbulb sales each month, an increase from the 32 percent of lightbulb sales in 2015. LED fixtures comprised approximately 5 percent of lighting sales, up from 3 percent of lighting sales in 2015.

Idaho Power continued to participate in the Bonneville Power Administration (BPA) Simple Steps, Smart Savings program focusing on ENERGY STAR CFLs and LEDs and light fixtures.

In 2016, Idaho Power worked with 16 participating retailers, representing 89 individual store locations throughout its service area. Of those participating retailers, 55 percent were smaller grocery, drug, and hardware stores, and the remaining 45 percent are big box retailers.

Marketing Activities

In 2016, CLEAResult and participating Simple Steps, Smart Savings utility partners decided the current logo was outdated and needed a new look. CLEAResult developed several new designs, and the utility partners decided the new logo would have a simple message: Simple + Smart. The logo colors were selected so they would standout on shelves to help customers identify qualifying products. Throughout the year, the old point-of-purchase pieces were replaced with the new Simple + Smart pieces.

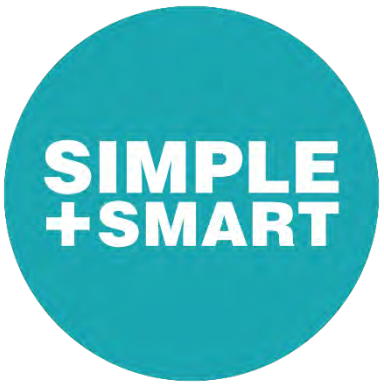

Figure 17. The new 2016 Simple + Smart logo

Several Simple Steps, Smart Savings promotions were conducted through CLEAResult at retail stores in 2016. These promotions generally involved special product placement and signs. CLEAResult staff continued to conduct monthly store visits in 2016 to check on stock, point-of-purchase signs, and displays.

Additional activities in 2016 involved education and marketing. During events where Idaho Power staffed a booth and distributed LED lightbulbs, customers were informed about the importance of using energy-efficient lighting, the quality of LED lightbulbs, and the special pricing available for the Simple Steps, Smart Savings products.

The company continued to host an Energy Efficient Lighting program website; to make available a *Change a Light* program brochure, designed to help customers select the right lightbulb for their needs; and to discuss energy-efficient lighting with customers at community events. Also, ads for the Fridge and Freezer Recycling Program promoted the free LED lightbulb offer. Several #*TipTuesday* posts on social media throughout the year also focused on energy-efficient lighting.

The Idaho Power winter *Energy Efficiency Guide* included two lighting-related articles, and the summer *Energy Efficiency Guide* included a mini-home assessment where customers could gauge how efficient their behaviors are in areas including, lighting, heating and cooling, and more. During energy efficiency segments in November on the KPVI morning news (broadcast in Pocatello) and on KTVB news (broadcast in Boise and Twin Falls), the discussion focused on energy-efficient holiday lighting, timers, inflatables, and laser lights.

Cost-Effectiveness

In 2016, the Energy Efficient Lighting program provided 50 percent of all energy savings derived from residential energy efficiency customer programs.

In 2016, Idaho Power used the same RTF-deemed savings for both CFLs and LEDs as were used in 2015. For other non-RTF lightbulb types, Idaho Power used the site savings approved by the BPA for the Simple Steps, Smart Savings promotion.

In August 2015, RTF updated and revisited the assumptions for both CFLs and LEDs to account for market changes due to the federal standards compliance. The number of lightbulb types was further reduced to combine three-ways with the general purpose and dimmables. Additionally, the lumen categories were shifted to reflect current consumer trends. Due to the timing of the RTF's update, BPA and CLEAResult did not implement the new savings in the Simple Steps, Smart Savings promotion in 2016.

For detailed cost-effectiveness assumptions, metrics, and sources, see *Supplement 1: Cost-Effectiveness*.

Customer Satisfaction and Evaluations

Idaho Power conducted no customer satisfaction surveys or program evaluations in 2016.

2017 Program and Marketing Strategies

Idaho Power will continue to participate in the Simple Steps, Smart Savings lighting program in 2017 by contracting with CLEAResult, who was awarded the annual BPA implementation contract. New savings will be calculated using the new RTF workbook, version 4.2.

Idaho Power will continue to monitor the number of participating retailers and geographic spread of these retailers, and to develop on-line promotions that allow customers to access promotional pricing regardless of location.

CLEAResult will continue to manage marketing at retailers, including point-of-purchase signs, special product placement, and displays. The program specialist and customer representatives will continue to staff educational events to promote the importance of using energy-efficient lighting.

Energy House Calls

	2016	2015
Participation and Savings		
Participants (homes)	375	362
Energy Savings (kWh)	509,859	754,646
Demand Reduction (MW)	n/a	n/a
Program Costs by Funding Source		
Idaho Energy Efficiency Rider	$188,253	$194,939
Oregon Energy Efficiency Rider	$15,815	$15,057
Idaho Power Funds	$2,368	$4,108
Total Program Costs—All Sources	$206,437	$214,103
Program Levelized Costs		
Utility Levelized Cost ($/kWh)	$0.029	$0.020
Total Resource Levelized Cost ($/kWh)	$0.029	$0.020
Benefit/Cost Ratios		
Utility Benefit/Cost Ratio	2.11	2.81
Total Resource Benefit/Cost Ratio	2.75	2.96

Description

Initiated in 2002, the Energy House Calls program gives homeowners of electrically heated manufactured homes an opportunity to reduce electricity use by improving the home's efficiency. Specifically, this program provides free duct-sealing and additional efficiency measures to Idaho Power customers living in Idaho or Oregon who use an electric furnace or heat pump. Participation is limited to one service call per residence.

Services and products offered through the Energy House Calls program include duct testing and sealing according to Performance Tested Comfort System (PTCS) standards set by the RTF and adopted by the BPA; installing up to eight LED lightbulbs; testing the temperature set on the water heater; installing water heater pipe covers when applicable; up to two low-flow showerheads and bathroom faucet aerators; a kitchen faucet aerator; two replacement furnace filters with installation instructions; and energy efficiency educational materials appropriate for manufactured-home occupants.

Idaho Power provides contractor contact information on its website and marketing materials. The customer schedules an appointment directly with one of the certified contractors in their region. The contractor verifies the customer's initial eligibility by testing the home to determine if it qualifies for duct-sealing. Additionally, contractors have been instructed to install LED lightbulbs only in high-use areas of the home and install bathroom aerators and showerheads only if the upgrade can be performed without damage to a customer's existing fixtures.

The actual energy savings and benefits realized by each customer depend on the measures installed and the repairs and/or adjustments made. Although participation in the program is free, a typical cost for a similar service call would be $400 to $600, depending on the complexity of the repair and the specific measures installed.

Program Activities

Since the addition of the direct-install measures in March 2015, there has been a slight increase in participation. In 2016, 375 homes received products and/or services through this program, resulting in 509,859 kWh savings (Figure 18).

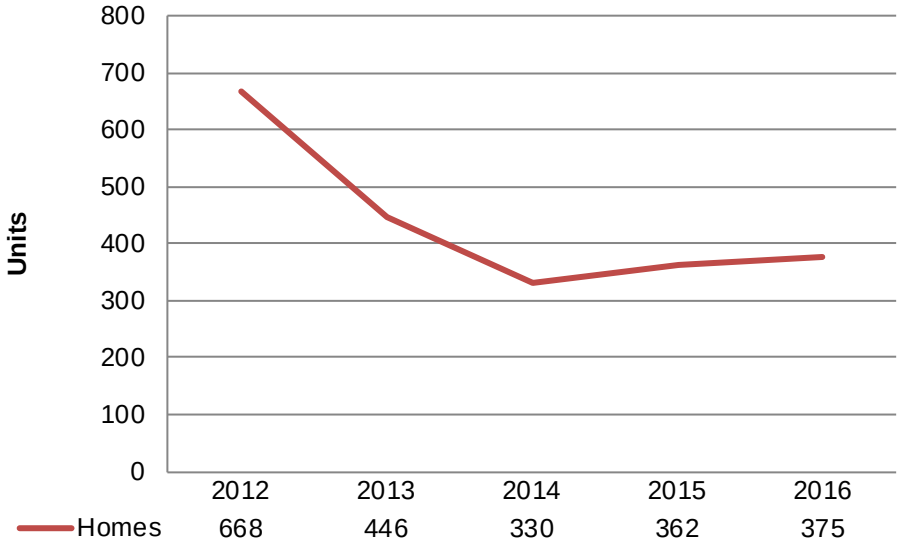

Figure 18. 2012–2016 participation in the Energy House Calls program

Of the total participating homes, 48 percent were located in the Canyon–West Region, 26 percent were located in the Capital Region, and 26 percent were located in the South–East Region.

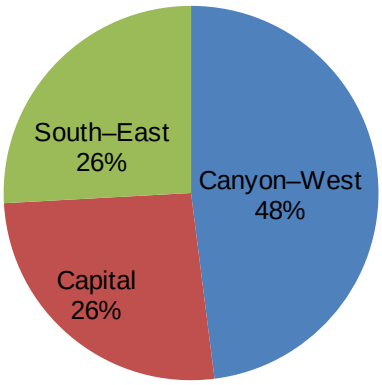

Figure 19. 2016 Energy House Calls participation by region

Duct-Sealing

Each year, a number of customers who apply for the Energy House Calls program cannot be served because the ducts do not require duct-sealing or cannot be sealed, for various reasons. These jobs are billed as a test-only job. Some reasons may be the home is too difficult to seal, or the initial duct blaster test identifies the depressurization with respect to the outdoors is less than 150 cubic feet per minute (CFM) and sealing is not needed. Additionally, if, after sealing the duct work, the contractor is unable to reduce leakage by 50 percent, the contractor will bill the job as a test-only job. Prior to 2015, these test-only jobs were not reported in the overall number of jobs completed for that year, because

there was no kWh savings to report. Because Idaho Power now offers direct-install measures in addition to the duct-sealing component, all homes are reported. While some homes may not have been duct sealed, they all would have had some of the direct-install measures included, which would allow us to report kWh savings for each home. Of the 375 homes that participated in 2016, 52 homes were serviced as test-only.

If a home had a blower door and duct blaster test completed, and it is determined that only duct-sealing is necessary, it will be billed as test and seal. For a home with a crossover duct system that needs replaced in addition to the duct-sealing, it will be charged as an x-over. When a home requires the existing belly return system to be decommissioned and have a new return installed along with the duct-sealing, it will be billed as a complex system. A complex system that also requires the installation of a new crossover and duct-sealing will be billed as a complex system and x-over job.

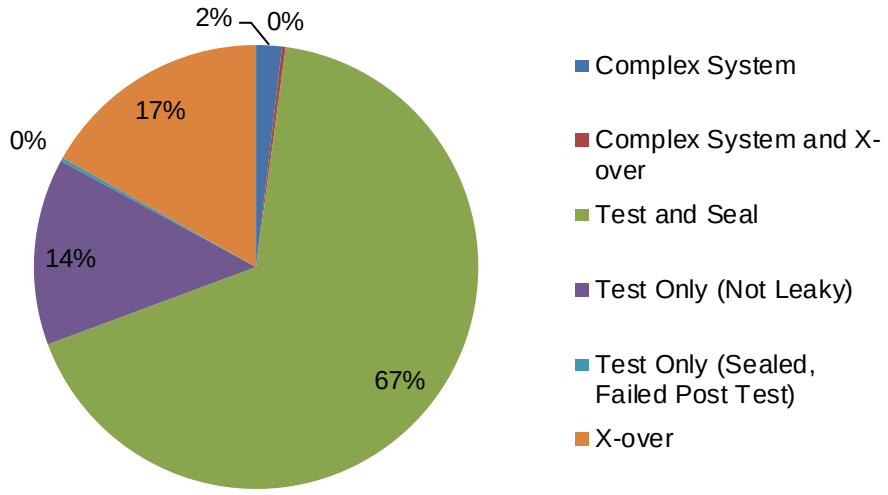

Figure 20. 2016 Energy House Calls participation by job type

Direct-Install Measures

In 2016, contractors installed 3,079 LED lightbulbs, 206 showerheads, 351 bathroom aerators and 233 kitchen faucet aerators.

Marketing Activities

Idaho Power updated all marketing materials in late 2015 and began using them in 2016 to better highlight the program as a free service for manufactured homes and to capture the attention of the target audience. Idaho Power sent two bill inserts to all residential customers in Idaho and Oregon. The March bill insert was shared with the Rebate Advantage program and sent to 374,301 customers, and the October bill insert promoted only the Energy House Calls program and was sent to 378,955 customers. The company sent postcards in February and September to residents of electrically heated manufactured homes who had not yet participated in the program. Written in English and Spanish, 9,042 postcards were delivered in February and 8,650 in September.

Idaho Power also used Facebook ads in February and July. The February ad reached 40,044 people and resulted in 707 website clicks and an increase in enrollments. The July ad reached 60,288 people and resulted in 1,303 website clicks and an increase in enrollment. In addition, Idaho Power customer

representatives and customer service representatives knowledgeable about the program continued to promote the program to qualified customers.

Cost-Effectiveness

In late 2015, RTF updated savings for performance-based duct-sealing in manufactured homes based on both the Simplified Energy Enthalpy Model (SEEM) calibration and the move toward prescriptive savings only. RTF approved the removal of PTCS requirements for duct-sealing. As a result of these changes, the 2016 deemed savings for duct-sealing are 19 to 60 percent lower than the deemed savings used in 2015.

Savings and a cost-effectiveness analysis for the direct-install measures, including low-flow showerheads, faucet aerators, and LED lightbulbs, were completed using deemed savings from the RTF.

For more detailed information about the cost-effectiveness savings and assumptions, see *Supplement 1: Cost-Effectiveness*.

Customer Satisfaction and Evaluations

Again this year, Idaho Power contractors reported that customers appreciated receiving the program services and direct-install measures, with most positive comments regarding the free LED lightbulbs. Customers continue to be pleased with the program.

To monitor quality assurance (QA) in 2016, third-party verifications were conducted by Momentum, LLC on approximately 5 percent of the 375 participant homes, resulting in 19 home audits. Homes were selected at random. The QA reports indicate customers were pleased with the work sub-contractors completed in their homes. Each home inspection included an on-site visual confirmation that the reported work had been completed. Weather permitting, blower door and duct blaster tests were also conducted to verify the results submitted by the sub-contractor.

2017 Program and Marketing Strategies

Idaho Power will continue to provide free duct-sealing and selected direct-install efficiency measures for all-electric manufactured/mobile homes in its service area.

Idaho Power will continue to include program promotional materials in its bill, to send direct-mail postcards, and to use social media and other proven marketing tactics. Contractors and customer representatives will also distribute door hangers in mobile-home parks and program literature at appropriate events and presentations. Idaho Power will continue to provide Energy House Calls program postcards to CAP agencies for distribution to customers who need assistance but do not qualify to receive weatherization assistance through these agencies.

ENERGY STAR® Homes Northwest

	2016	2015
Participation and Savings		
Participants (homes)	110	598
Energy Savings (kWh)	150,282	820,684
Demand Reduction (MW)	n/a	n/a
Program Costs by Funding Source		
Idaho Energy Efficiency Rider	$138,203	$646,991
Oregon Energy Efficiency Rider	$1,510	$2,692
Idaho Power Funds	$2,445	$3,990
Total Program Costs—All Sources	$142,158	$653,674
Program Levelized Costs		
Utility Levelized Cost ($/kWh)	$0.051	$0.046
Total Resource Levelized Cost ($/kWh)	$0.107	$0.099
Benefit/Cost Ratios		
Utility Benefit/Cost Ratio	1.79	2.10
Total Resource Benefit/Cost Ratio	1.00	1.04

Description

Initiated at Idaho Power in 2003, this program targets the lost-opportunity energy savings and summer-demand reduction that is achieved by increasing the efficiency of the residential-building envelope and air-delivery system above current building codes and building practices.

An ENERGY STAR® certified home is a home that has been inspected and tested by an independent, third-party ENERGY STAR Residential Services Network (RESNET)-certified rater working under a RESNET certified provider. The rater is hired by the builder to ensure the stringent ENERGY STAR requirements have been met. In addition to verifying the installation of building components and equipment during on-site inspections, the rater ensures the home passes a blower door test, an air-duct leakage test, and combustion back-draft tests. The ENERGY STAR Homes Northwest residential construction program promotes homes that use electric heat pump technology and are at least 15 percent more energy-efficient than those built to standard Idaho and Oregon code.

ENERGY STAR homes are more efficient, comfortable, and durable than homes constructed to standard building codes. Homes that earn the ENERGY STAR certification must meet six specifications: 1) effective insulation, 2) high-performance windows, 3) air-tight construction and sealed ductwork, 4) energy-efficient lighting, 5) ENERGY STAR qualified appliances, and 6) efficient heating and cooling equipment.

Prior to January 1, 2016, this ENERGY STAR Homes Northwest program was supported by a partnership between Idaho Power and NEEA's Northwest ENERGY STAR Homes to improve and promote the construction of energy-efficient homes using regional program guidelines approved by the United States (US) Environmental Protection Agency (EPA). NEEA has ended their oversight of the regional, single-family Northwest ENERGY STAR Homes program as of January 1, 2016.

All homes throughout the Northwest that were permitted on or after January 1, 2016, are now required to meet national EPA's ENERGY STAR program certification requirements. To receive the Idaho Power program incentive, certified homes in the company's service area must meet the national EPA Version 3, ENERGY STAR Homes requirements and be electrically heated. Additionally, an ENERGY STAR Homes RESNET-certified rater must enter home-related data into the regional AXIS database, which is maintained by NEEA. The AXIS database allows for utility tracking and review. The rater must also generate a Northwest Compliance Report that is consistent with Northwest REM/Rate™ modeling guidelines.

All single-family homes permitted prior to January 1, 2016 and certified by September 30, 2016, were allowed to be certified under the pre-existing NEEA Northwest ENERGY STAR Homes specifications. The regional Northwest ENERGY STAR Homes program retains oversight of multi-family ENERGY STAR Home certifications. To qualify for an Idaho Power Multifamily ENERGY STAR Homes incentive, the rater must certify the homes according to the Northwest Multifamily Builder Option Package (BOP) 1. The rater must enter the multi-family units into the AXIS database for utility tracking and review.

Program Activities

To encourage the construction of ENERGY STAR homes, the program offered qualified builders a $1,000 incentive per home built to the Northwest ENERGY STAR Single and Multifamily Homes requirements with heat pump technology. Builders who entered their homes in a Parade of Homes were eligible to receive the standard $1,000 incentive plus an additional $500 marketing incentive to cover their expenses for ENERGY STAR signage and brochures. Builders benefit by earning the right to use the ENERGY STAR Homes logo and the ENERGY STAR name to promote themselves as an ENERGY STAR qualified builder.

A large part of the program's role in 2016 was to provide support for the building contractors associations (BCA) throughout Idaho Power's service area.

The regional trend toward increased ENERGY STAR certifications for multi-family homes continued in 2016. Out of 110 total incentives paid through Idaho Power's program, 108 were for multi-family dwellings. The other two were for single-family homes located in McCall as part of NEEA's Next Step Home (NSH) pilot program.

Marketing Activities

Idaho Power maintained a strong presence in the building industry by supporting the Idaho Building Contractors Association (IBCA) and several of its local affiliates throughout Idaho Power's service area in 2016. The company presented the Energy Efficient Design and Construction Awards to builders who integrated energy efficiency features in their parade homes at the Building Contractors Association of Southwest Idaho (BCASWI) Parade of Homes awards banquet. In addition, the company participated in the BCASWI builder's expo and the Snake River Valley Building Contractors Association (SRVBCA) builder's expo.

Idaho Power supported Parade of Homes events with full-page ENERGY STAR ads in the Parade of Homes magazines of the following BCAs: The Magic Valley Builders Association (MVBA), the BCASWI, SRVBCA, and the Building Contractors Association of Southeast Idaho (BCASEI). Idaho Power also ran ads in the April 20 *Business Insider* and June 10 *Idaho Business Review* targeting residential contractors. Inserts were added to residential customers' billing statements in April and May informing them of Parade of Homes events in their area. Due to a change in tactics, one bill insert was not used in 2016 as originally planned. Instead, social media and a weekly *News Briefs* article to media were used to promote ENERGY STAR Homes and local Parade of Homes events. These tactics allowed Idaho Power to better target potential participants. In addition, the company sponsored the IBCA annual winter and summer meetings.

The program, in collaboration with NEEA, sponsored a Lunch & Learn course on September 27, 2016. This was a two-hour course presented by energy professionals from Advanced Energy. The purpose of this course was to facilitate a summit of residential real estate professionals to explore solutions leading to the increased market value of energy-efficient and green homes. The 35 professionals in attendance included sales agents, brokers, lenders, home inspectors, and home energy experts.

Cost-Effectiveness

Savings and cost-effectiveness assumptions for the primary multi-family-style home for 2016 were the same compared with 2015. The townhome/multi-family homes in the Boise–Nampa–Caldwell climate zone were cost-effective from a UC and a TRC perspective with the inclusion of the non-energy benefits (NEB). No single-family homes were certified in 2016. Two homes in NEEA's NSH pilot program were completed and incentives were paid in 2016.

For more detailed information about the cost-effectiveness savings and assumptions, see *Supplement 1: Cost-Effectiveness*.

Customer Satisfaction and Evaluations

Idaho Power conducted no customer satisfaction surveys for this program in 2016.

Independent, RESNET-certified program providers verified the rater's input for accuracy and confirmed that program requirements had been met. The provider then certified each home within the AXIS database. Providers performed file and on-site field QA, and offered technical assistance to the raters who had contracted with them. Per RESNET guidelines, the provider performed QA on minimum of 10 percent of files or desk checks and 1 percent QA on-site field QA of all projects. In 2016, the raters reported no issues resulting from the QAs.

2017 Program and Marketing Strategies

Idaho Power will continue to support NEEA's NSH, high-performance specification pilot program. This specification is designed to build homes that are 30 percent more efficient than homes built to standard building codes. Though NEEA is no longer recruiting homes for the pilot, it plans to analyze the data collected through in-home monitoring from all three phases of the pilot. Results are expected by the second quarter of 2017. Homes built during Phase III incorporated NSH minimum requirements,

guidelines, and best practices learned from Phase I and II. When completed, the final version of the NSH specification will be made available to utilities interested in offering NSH incentives. At this time, NEEA does not plan to offer a branded, customer-facing program, based on this specification, to the region.

Idaho Power plans to continue marketing efforts to promote this program to builders and new homebuyers. These marketing efforts include Parade of Homes ads in parade magazines for the BCASWI, SRVBCA, MVBA, and the BCASEI. The company also plans to continue supporting the general events and activities of the IBCA and its local affiliates. Bill inserts, social media, and other advertising will be considered based on past effectiveness.

Fridge and Freezer Recycling Program (See ya later, refrigerator®)

		2016	2015
Participation and Savings			
	Participants (refrigerators/freezers)	1,539	1,630
	Energy Savings (kWh)	632,186	720,208
	Demand Reduction (MW)	n/a	n/a
Program Costs by Funding Source			
	Idaho Energy Efficiency Rider	$250,535	$212,674
	Oregon Energy Efficiency Rider	$4,555	$11,497
	Idaho Power Funds	$2,826	$3,007
	Total Program Costs—All Sources	$257,916	$227,179
Program Levelized Costs			
	Utility Levelized Cost ($/kWh)	$0.062	$0.048
	Total Resource Levelized Cost ($/kWh)	$0.062	$0.048
Benefit/Cost Ratios			
	Utility Benefit/Cost Ratio	0.92	1.21
	Total Resource Benefit/Cost Ratio	1.31	1.53

Description

Since 2009, the Fridge and Freezer Recycling program (formerly See ya later, refrigerator®) achieves energy savings by removing and recycling qualified refrigerators and stand-alone freezers from residential homes throughout Idaho Power's service area.

Idaho Power uses a third-party contractor to provide most services for this program, including customer service and scheduling, unit pickup, unit recycling, and reporting. Applicants enroll online or by phone, and the contractor screens each to confirm the refrigerator or freezer unit under consideration meets these initial program eligibility requirements: residential grade; at least 10 cubic feet (ft^3) as measured using inside dimensions, but no larger than 30 ft^3; and in working condition. Idaho Power then screens each applicant to confirm participation eligibility; the program targets older, extra refrigerator and freezer units for maximum savings.

Program Activities

In late November 2015, Idaho Power learned the program vendor, JACO had entered into receivership and ceased operations. After multiple internal conversations and consulting with EEAG, Idaho Power reintroduced the program using a new vendor, Appliance Recycling Center of America (ARCA), and a new name, Fridge and Freezer Recycling Program. Idaho Power re-launched the program on June 1, 2016.

Despite temporarily suspending the program and reintroducing the program mid-year, Idaho Power received almost as many participants in 2016 as it did in 2015. Idaho Power was invoiced by JACO for 292 units that it picked up in October and November 2015. The invoices were received after JACO entered into receivership. To allow time to ensure all appliances were disposed of according to the terms

of the contract, Idaho Power paid the invoices in 2016. Because no savings from these units were claimed in 2015, the unit count and savings will be claimed in 2016.

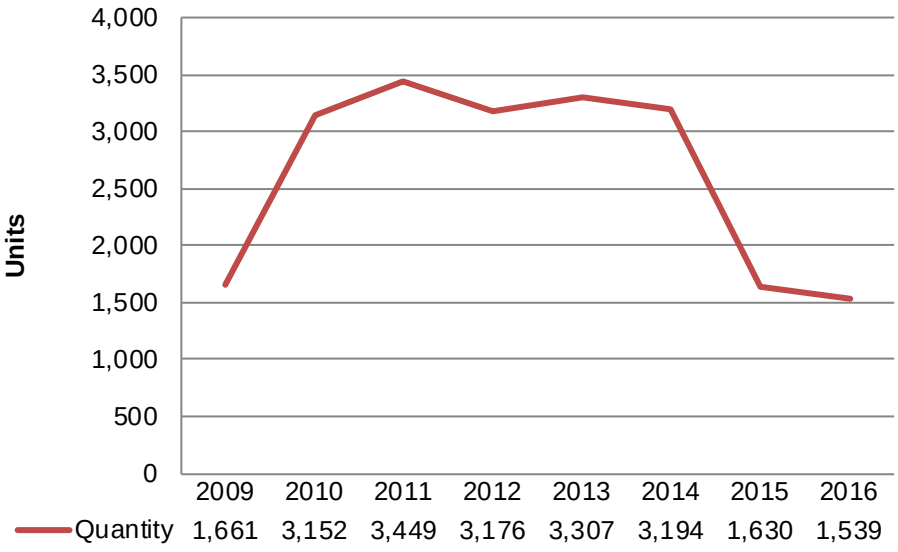

Figure 21. 2009–2016 Fridge and Freezer Recycling Program (See ya later, refrigerator®) participation by year

Marketing Activities

Idaho Power re-launched the program in June with a new name, new look, and updated web page. The marketing materials used the theme "Retire Your Old Fridge (or Freezer)" with images of a refrigerator retiring on the beach, lake, and Europe among other locations (Figure 22). The new messaging and imagery was chosen to resonate with the program's primary target audience, customers age 35 to 64, but skewing 55 and older. Idaho Power used bill inserts, direct-mail, Facebook, and earned media to promote the program.

Figure 22. 2016 Fridge and Freezer Recycling Program customer postcard

A *News Briefs* email was sent to reporters in June to alert the media and customers of the re-launch of the program. Bill inserts were sent to 228,961 residential customers in June; 377,345 customers in July; 378,671 customers in August; and 378,243 customers in September. In September, a postcard was

mailed to 15,000 customers thought to have a higher propensity to own a second fridge or freezer. The September issue of *Connections* included an ad for the Fridge and Freezer Recycling Program, and the re-launch of the program was mentioned in further detail in the October issue of *Connections*.

Idaho Power placed a Facebook ad in July targeted to customers ages 35 to 65 or older who have an interest in energy efficiency, home improvement, and do-it-yourself efforts. The ad reached nearly 35,000 customers and resulted in 615 clicks to the Fridge and Freezer Recycling Program web page.

In June, Idaho Power promoted the program and the savings that can occur as a result of recycling an older or second fridge or freezer on Pocatello's KPVI live morning news.

Although appliance retailers also refer customers to the program, Idaho Power does not pursue this marketing channel because the goal of the program is to promote the removal of secondary units rather than replacing existing units.

Cost-Effectiveness

In 2016, Idaho Power used the same savings and assumptions used in 2015. When Idaho Power re-introduced the program in mid-2016, the company forecasted that participation would be at 1,000 units, and the program would likely not be cost-effective from the UC perspective but would be cost-effective from the TRC perspective. Idaho Power discussed this with EEAG in February 2016. When the company filed for program reinstatement in Oregon, the company requested a cost-effectiveness exception as outlined in OPUC Order No. 94-590. The exception was approved by the OPUC in Advice No. 16-07.

Despite the temporary suspension of the program, 1,539 units were recycled in 2016. As a result, the program had a TRC of 1.31 and a UC of 0.92. Had the program been operational for the full 12 months, it is likely that the program would have passed the UC test. In late 2016, RTF revisited and approved new, lower savings for freezer and refrigerator decommissioning, as well as LED bulbs. Idaho Power believes the Fridge and Freezer Recycling Program could be cost-effective in 2017 at the TRC level because of the non-energy benefits associated with decommissioning a refrigerator and freezer. However, the program may not pass the UC test. The company will re-evaluate the program in 2017.

For cost-effectiveness details and assumptions, see *Supplement 1: Cost-Effectiveness*.

Customer Satisfaction and Evaluations

ARCA tracks individual statistics for each unit collected, including information on how customers heard about the program and when customers enrolled. Statistics about the unit collected include the age of the unit, its location on the customer's property, and other data.

The 2016 unit data showed 19 percent of units the program picked up were stand-alone freezers, and 81 percent of the units were refrigerators. Sixty-nine percent of the units were secondary, 27 percent were primary, and 4 percent were unknown. In 2016, 21 percent of the units collected were manufactured between 1965 and 1990, which generally represents the least efficient years of refrigerator

manufacturing. By comparison, in 2015, 34 percent of the units collected through this program were of this vintage.

ARCA and Idaho Power also tracked data related to the marketing effectiveness of the program. Results of customer tracking information indicate 42 percent of customers learned of the program through bill inserts, and 11 percent from a friend or neighbor.

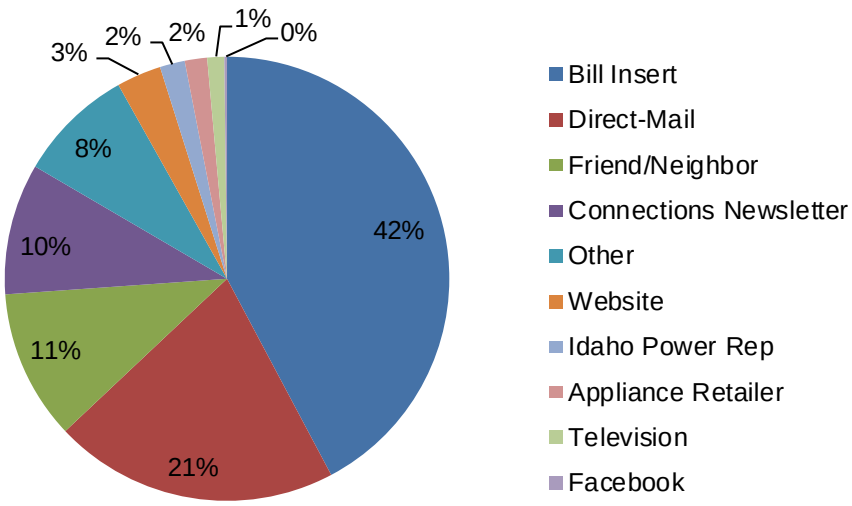

Figure 23. How customers heard about Fridge and Freezer Recycling Program in 2016

Figure 23 indicates ways customers heard about the program. The "Other" category includes sources, such as community events, repeat customers, the truck wrap ad, and unknown sources.

Sixty-seven percent of customers who enrolled used the toll-free telephone number, and 33 percent used the on-line enrollment form.

2017 Program and Marketing Strategies

Idaho Power plans to continue the Fridge and Freezer Recycling Program using the current program strategy in 2017, and to monitor its cost-effectiveness for long-term viability.

Idaho Power will continue to use customer information ARCA collected and the surveys from in-house evaluations to target future marketing efforts and increase the effectiveness of marketing. The company plans to use bill inserts, direct-mail, and paid and organic social media posts, and to reach out to customers at community events.

Heating & Cooling Efficiency Program

	2016	2015
Participation and Savings		
Participants (projects)	486	427
Energy Savings (kWh)	1,113,574	1,502,172
Demand Reduction (MW)	n/a	n/a
Program Costs by Funding Source		
Idaho Energy Efficiency Rider	$545,454	$583,663
Oregon Energy Efficiency Rider	$27,184	$25,186
Idaho Power Funds	$22,275	$17,520
Total Program Costs—All Sources	$594,913	$626,369
Program Levelized Costs		
Utility Levelized Cost ($/kWh)	$0.036	$0.028
Total Resource Levelized Cost ($/kWh)	$0.085	$0.092
Benefit/Cost Ratios		
Utility Benefit/Cost Ratio	2.33	3.11
Total Resource Benefit/Cost Ratio	1.26	1.05

Description

The Heating & Cooling Efficiency (H&CE) Program provides incentives to residential customers in Idaho Power's Idaho and Oregon service area for the purchase and proper installation of qualified heating and cooling equipment and services.

Initiated in 2007, the objective of the program is to acquire energy savings by providing customers with energy-efficient options for electric space heating and cooling. Incentive payments are provided to the residential customers for all measures. Three of the measures also include a payment to the installing contractor. The available measures in 2016 include ducted air-source heat pumps, ducted open-loop water-source heat pumps, ductless air-source heat pumps, duct-sealing, whole-house fans (WHF), electronically commutated motors (ECM), evaporative coolers, and smart thermostats.

Idaho Power requires licensed contractors to perform the installation services related to these measures, with the exception of evaporative coolers that can be self-installed. A licensed contractor must also be an Idaho Power participating contractor for the ducted air-source heat pump, ducted open-loop water-source heat pump, ductless air-source heat pump, and duct-sealing measures.

The H&CE Program's list of measures and incentives includes the following:

- Customer incentive for replacing an existing ducted air-source heat pump with a new ducted air-source heat pump is $250 for a minimum efficiency 8.5 Heating Seasonal Performance Factor (HSPF).

- Customer incentive for replacing an existing oil or propane heating system with a new ducted air-source heat pump is $400 for a minimum efficiency 8.5 HSPF. Participating homes must be located in areas where natural gas is unavailable.
- Customer incentive for replacing an existing electric forced-air or zonal electric heating system with a new ducted air-source heat pump is $800 for a minimum efficiency 8.5 HSPF.
- Incentive for customers or builders of new construction installing a ducted air-source heat pump in a new home is $400 for a minimum efficiency 8.5 HSPF. Participating homes must be located in areas where natural gas is unavailable.
- Customer incentive for replacing an existing ducted air-source heat pump with a new ducted open-loop water-source heat pump is $500 for a minimum efficiency 3.5 coefficient of performance (COP).
- The customer incentive for replacing an existing electric forced-air or zonal electric, oil, or propane heating system with a new ducted open-loop water-source heat pump is $1,000 for a minimum efficiency 3.5 COP. Participating homes with oil or propane heating systems must be located in areas where natural gas is unavailable.
- The incentive for customers or builders of new construction installing a ducted open-loop water-source heat pump in a new home is $1,000 for a minimum efficiency 3.5 COP. Participating homes must be located in areas where natural gas is unavailable.
- The customer incentive for displacing a zonal electric heating system with a new ductless air-source heat pump is $750.
- The customer incentive for duct-sealing services performed in an existing home with an electric forced-air heating system or a heat pump is $350.
- The customer incentive for a WHF installed in an existing home with central A/C, zonal cooling, or a heat pump is $200.
- The customer incentive for replacing a Permanent Split Capacitor (PSC) air handler motor with an ECM in an existing home with oil or propane or natural gas forced-air heat, electric forced-air heat, or a heat pump is $50.
- The customer incentive for installing an evaporative-cooler is $150.
- The customer incentive for a smart thermostat installed in an existing home with an electric forced-air furnace or a heat pump is $75.

Idaho Power uses Honeywell, Inc., a third-party contractor, to review and enter incentive applications into the Idaho Power system. Honeywell reviews and submits incentive applications for Idaho Power payment using a program database portal developed by Idaho Power. This allows Idaho Power to maintain the database within the company's system, which is secure yet accessible to the third-party contractor. They also perform on-site verifications (OSV) and provide technical support to the customer representatives and contractors. Honeywell offers local program and technical assistance to contractors through on-site visits at their businesses.

Program Activities

Idaho Power began offering one new measure through the program on March 31, 2016. The measure provided a cash incentive to customers who installed a smart thermostat. During the development stage of this measure, the company provided updates and requested input from EEAG at quarterly meetings. EEAG's feedback regarding the measure was generally positive. With EEAG's recommendation, Idaho Power piloted the measure in 2016, and additional recommendations will be considered when the pilot expands.

The expansion of Idaho Power's network of participating contractors remained a key growth strategy for the program. Idaho Power's goal is to support contractors currently in the program while adding new contractors. The company held meetings with several prospective contractors to support this strategy, and added 15 new companies to the program as authorized participating contractors in 2016.

To qualify to participate in this program, a contractor must first complete the required training regarding program guidelines and technical information on HVAC equipment. Idaho Power held 13 of these training sessions for contractors in 2016.

The 2016 Heating and Cooling Efficiency Program paid incentives are listed in Table 8.

Table 8. H&CE Program incentives paid in 2016 Program incentives paid in 2016

Incentive Measure	2016 Project Quantity
Ducted Air-Source Heat Pump	169
Ducted Open-Loop Water-Source Heat Pump	17
Ductless Heat Pump	150
Evaporative Cooler	22
Whole-House Fan	19
Electronically Commutated Motor	50
Duct-Sealing	3
Smart Thermostat	56

The customer representatives, Idaho Power's program contractor, and the program specialist continually engaged with over half of the participating contractors to help them increase participation in the program. Some of the barriers to participation were uncovered anecdotally. One barrier stems from, in many cases, a need for improved technical skills in the HVAC technicians. Employee turnover and a lack of having a repeatable sales process are other barriers addressed. These barriers were addressed by the program specialist through one-on-one discussions with the participating contractors, usually in person. The program has 109 participating contractors therefore much more work will be done in this area.

Marketing Activities

Idaho Power used multiple marketing methods for its H&CE Program. The company mailed a bill insert to 374,173 residential customers in April and 378,239 residential customers in September. The H&CE Program was also mentioned in the April issue of *Connections*, mailed to all residential customers with

their bill. Several *#TipTuesday* social media posts throughout 2016 focused on heating- and cooling-related tips. Two versions of a direct-mail postcard were sent to a total of 39,457 residential customers in November. The two versions were used as an A/B test (or a comparative test) to determine which new look resonated best with customers.

On several occasions, Idaho Power marketed the new smart thermostat incentive separate from the overall H&CE Program: on May 23, Idaho Power sent a *News Briefs* article to local media that was picked up by 1310 KLIX in Twin Falls; a May *#TipTuesday* social media post; the summer *Energy Efficiency Guide*; and the October issue of *Connections*.

In 2016, emphasis on Idaho Power's contractor portal was reduced since it was not being used by contractors and was found to be of lesser value compared to other support tactics, such as ongoing training on the program process and HVAC technical skills for new and existing contractor employees.

Cost-Effectiveness

Idaho Power implemented numerous changes to the H&CE Program measures for 2016 savings. Most changes were related to the measure definitions of heat pumps that were adopted by RTF in 2015.

Savings values for retrofit air source heat pumps were changed in 2015 by RTF to reflect different savings values that result from differing weatherization levels of the homes. The updated measure standard requires that a home's savings be assigned by whether the level of insulation is considered, "good," "fair," or "poor." Because of the quality installation component of the program, the overall condition of the home could be determined through contractor worksheets. Most homes had an insulation level of "fair" or "good" resulting in a slight decrease in savings than would have been seen from the previous measure definition not requiring judgment on the home's overall level of insulation.

For the measure level cost-effectiveness, cost data from RTF was used in lieu of actual project costs reported by customers. RTF costs contain updated baseline information for electric forced-air furnaces and air conditioning systems that was not available through local contractor surveys for 2016.

Air-source heat pumps installed in new construction or installed to replace existing less efficient heat pumps saw their claimed savings for 2016 drop significantly from approximately 2,500 kWh per unit to between 55 to 90 kWh depending on the climate zone. The drop was caused by the increased federal manufacturing standard for split system air source heat pumps in January 2015. This change was the biggest reason savings in the program dropped from 2015 levels while overall program participation increased. The air-source heat pump replacing an existing air-source heat pump measure, as with all heat pump measures in the program, mandates proper equipment commissioning, control setting, and sizing (CCS). CCS allows for an additional claimed savings of between 630 and 1,014 kWh per installed heat pump as deemed by RTF.

RTF geothermal heat pump savings, while specifically designed around closed loop systems, were deemed appropriate by RTF to be applied to open loop heat installations. Idaho Power replaced its previous engineering estimate of savings with the savings from the RTF workbook resulting in an

increase in average retrofit savings of 900 kWh and a decline of 300 kWh in annual savings for new construction situations.

Ductless heat pumps (DHP) continue to be not cost-effective using RTF regional costs rather than prices reported on customer applications. RTF costs were used for 2016 cost-effectiveness analysis because the DHP measure definition was changed to reflect differing heating system performance factors. The company does not have sufficient cost data from its projects to split out costs by different levels of efficiency.

For more detailed information about the cost-effectiveness savings, sources, calculations, and assumptions, see *Supplement 1: Cost-Effectiveness*.

Customer Satisfaction and Evaluations

Honeywell performed random OSV on 47 (10 percent) of the completed installations in Idaho Power's service area. These OSVs confirmed that the information submitted on the paperwork matched what was installed at customers' sites. Overall, the OSV results were favorable with respect to the contractors' quality of work. The program specialist continues to work with contractors to help them understand the importance of accurate documentation and quality installations.

Idaho Power accessed additional information from other sources. In 2016, NEEA provided two reports with identical content that updated the DHP Initiative. A copy of each is included on the CD accompanying *Supplement 2: Evaluation*. The following are highlights from the reports.

NEEA Reports E16-334 and E16-337, released July 2016

NEEA published this fifth Market Progress Evaluation Report (MPER) for the NW Ductless Heat Pump Project (Initiative). The report discusses findings obtained through extensive surveys, interviews, and focus groups comprised of homeowners, utilities, installers, and supply chain actors. The initiative was launched as a pilot in 2008 to demonstrate that DHPs were a viable technology to displace electric resistance heat in existing homes. The report describes the Initiative as well-designed and continuing to have a positive influence on the market. Some of the findings include the indication that interest continues to grow although lack of awareness remains a barrier. Word of mouth continues to be an initial source of information. DHP owners relied on their own research when making their purchasing decision. Financial considerations can be an opportunity or barrier because while DHPs can provide energy savings they can also be seen as expensive. The report provides detailed recommendations for NEEA to consider in the future.

2017 Program and Marketing Strategies

Idaho Power will provide program training to existing and prospective contractors to assist them in meeting program requirements and further their product knowledge. Sessions will be held on-site at contractor businesses and at Idaho Power facilities. Training sessions remain an important part of the program because they create opportunities to invite additional contractors into the program. The sessions also provide refresher training for existing participating contractors, and help them increase their customers' participation while improving the contractors' work quality. An additional dozen other interested companies will be taken through the authorization process by the program specialist.

Developing the existing network of participating contractors remains a key strategy for the program. The performance of the program is substantially dependent on the contractors' abilities to promote and leverage the measures offered. Idaho Power's primary goal in 2017 is to develop contractors currently in the program while adding new contractors. To meet this objective, the program specialist, along with Idaho Power customer representatives, will arrange frequent individual meetings to discuss the program with contractors in 2017.

The 2017 marketing strategy will include several tactics previously used, such as bill inserts, direct-mail, and social media, and will explore using additional tactics to market individual measures and the program as a whole.

Home Energy Audit

	2016	2015
Participation and Savings		
Participants (homes)	539	351
Energy Savings (kWh)	207,249	136,002
Demand Reduction (MW)	n/a	n/a
Program Costs by Funding Source		
Idaho Energy Efficiency Rider	$278,959	$192,873
Oregon Energy Efficiency Rider	$0	$0
Idaho Power Funds	$10,853	$9,084
Total Program Costs—All Sources	$289,812	$201,957
Program Levelized Costs		
Utility Levelized Cost ($/kWh)	n/a	n/a
Total Resource Levelized Cost ($/kWh)	n/a	n/a
Benefit/Cost Ratios		
Utility Benefit/Cost Ratio	n/a	n/a
Total Resource Benefit/Cost Ratio	n/a	n/a

Description

The current Home Energy Audit program is based on the insights gained from the Boise City Home Audit project conducted in 2011 and 2012, as described in the *Demand-Side Management 2012 Annual Report*. In 2014, the audit project became the Home Energy Audit program under Idaho Power's management.

The Home Energy Audit program is an in-home energy evaluation by a certified, third-party home performance specialist (HPS). It is used to identify areas of concern, and to provide specific recommendations to improve the efficiency, comfort, and health of the home. An audit includes a visual inspection of the crawl space and attic, a health and safety inspection, and a blower door test to identify and locate air leaks. In addition to the evaluation, some energy-saving improvements are installed at no additional cost to the customer if appropriate. After the audit is complete, the customer is supplied with a hardcopy or password-protected electronic copy of the HPS's findings and recommendations. Improvements available from Idaho Power include installation of the following:

- Up to 20 efficient lightbulbs (CFLs and LEDs)
- One high-efficiency showerhead
- Pipe insulation from the water heater to the home wall (approximately 3 feet)

To qualify for the Home Energy Audit program, a participant must live in Idaho and be the Idaho Power customer of record for a home. The home must be an existing site built home, and up until 2016, homes had to be all electric. Renters may participate with prior written permission from the landlord. Single-family homes, duplexes, triplexes, and fourplexes qualify, though multi-family homes must have

discrete heating units and meters for each unit. Manufactured homes, new construction, or buildings with more than four units do not qualify.

Participating customers pay $99 (all-electric homes) or $149 (other homes: gas, propane or other fuel sources) for the audit and installation of measures, with the remaining cost covered by the Home Energy Audit program. The difference in cost covers the additional testing that is necessary for homes that are not all-electric. These types of energy audits normally cost $300 or more, not including the select energy saving measures, materials, and labor. The retail cost of the materials installed in each home averages $145.

Program Activities

In 2016, this became a fuel-neutral program. This change allows more customers to participate and learn ways to be energy efficient. Even if the space or water heating source in a home is not electric, often there can be many opportunities to use electricity wisely.

Seven HPS companies served the program in 2016. Homes were randomly assigned to the HPSs serving each service area, grouping locations for each HPS to save on travel time and expense. When the program became fuel-neutral, Idaho Power required HPSs who hadn't had previous training in Combustion Appliance Zone (CAZ) testing within the last six months to participate in Idaho Power's CAZ refresher class, or to attend a refresher class offered through another source. Although all HPSs had previous CAZ training, Idaho Power provided a refresher course in February 2016, and all HPSs participated.

In 2016, the program completed 539 energy audits. The average age of participating homes was 34 years old. The homes were built between 1898 and 2015. Home sizes ranged from 288 square feet (ft^2) to 8,500 ft^2, with 2,403 ft^2average home size. Figure 24 depicts the program's reach across Idaho Power's service area, and Figure 25 depicts the space and water heating fuel types.

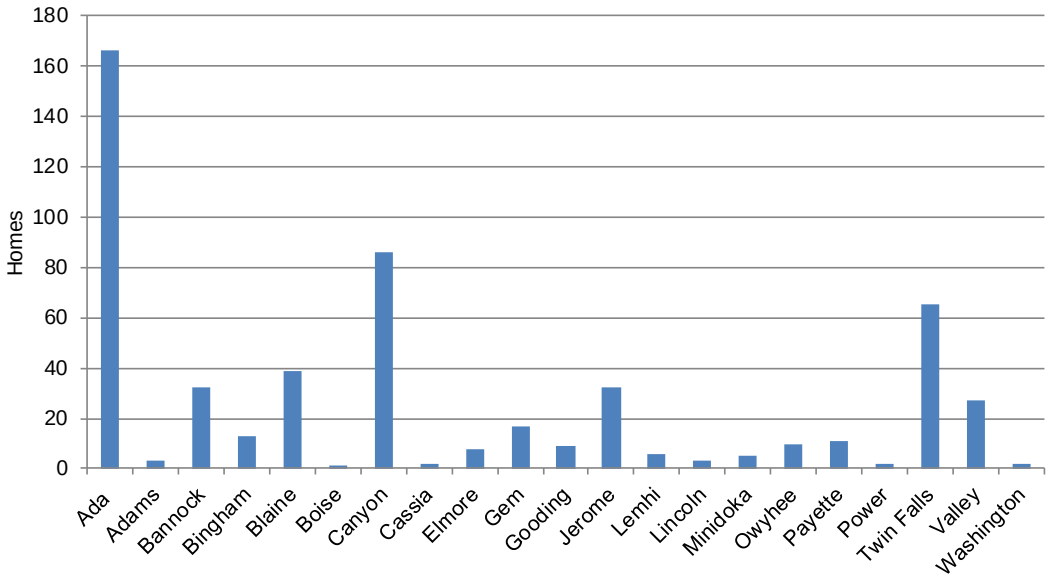

Figure 24. Home Energy Audit summary of participating homes in 2016, by county

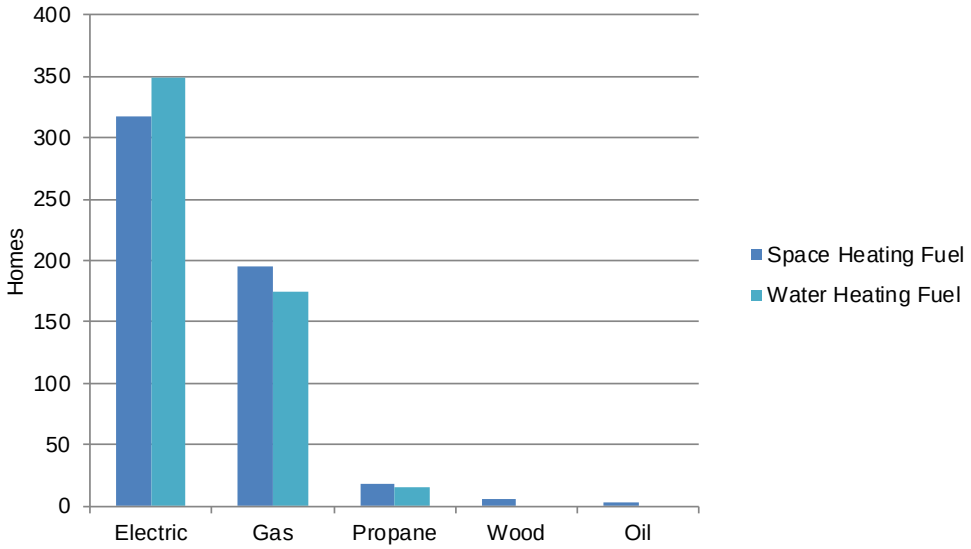

Figure 25. Home Energy Audit summary of space and water heating fuel types, 2016

The HPSs collected information on types and quantities of appliances and lighting in each home. The average number of incandescent lights per home was 21, and the average number of fluorescent or LED lights was 13. When performing an audit, the HPS determined which available measures were appropriate for the home, and, with homeowner approval, those measures were installed. Figure 26 indicates the total quantity of items installed by measure.

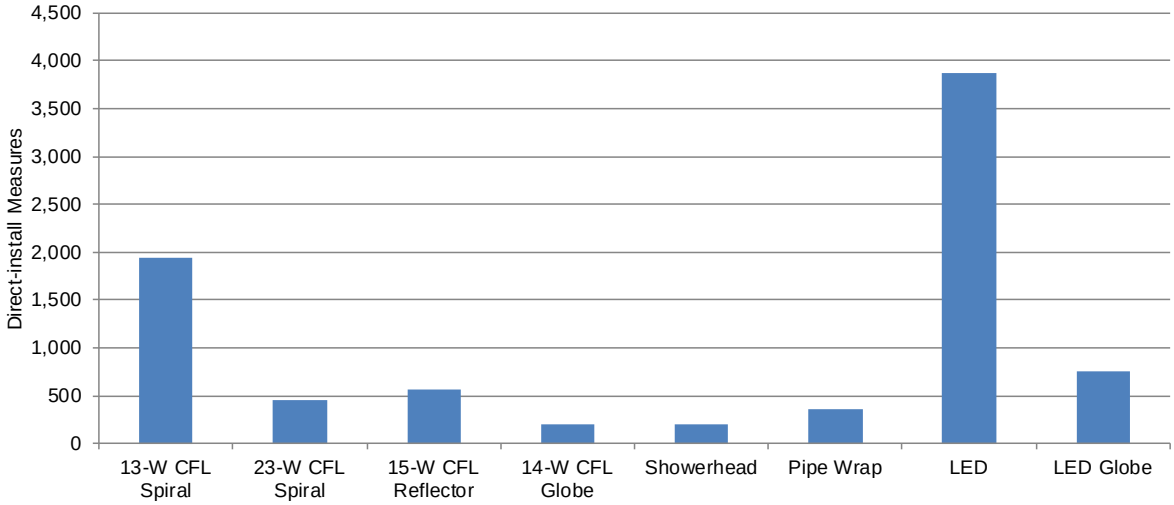

Figure 26. Home Energy Audit measures installed in participating homes in 2016

As Idaho Power's existing stock of CFLs has been used and the cost of LEDs has come down, all new lightbulb orders are for LEDs. With the exception of the CFL 15-watt reflectors, all lightbulbs being installed by the end of 2016 were LEDs.

The QA goal for the program was inspection of 10 percent of all audits, translating into approximately 53 audits in 2016. Ultimately, 34 QAs were completed in 2016, with all audits passing inspection. The 10 percent goal was unmet in 2016 because it was challenging to find participants willing to allow

the auditor into their home for a 1- to 2-hour period, especially if the participant worked outside the home.

Marketing Activities

In January 2016, all program materials including the website were updated to promote eligibility changes to include all Idaho residential customers, regardless of fuel type. Additionally, an infographic was designed and used online and in social media to provide a visual representation and additional detail on what occurs during the audit.

Idaho Power recruited participants for the program through small batches of 1,000 to 2,000 direct-mail letters. Customers interested in participating were directed to a website for additional information and the on-line application. Those who did not have internet access or were uncomfortable using the on-line application were encouraged to call Idaho Power to apply. A program brochure was added to some mailings, but did not result in an increase in enrollment compared to mailings without the brochure.

In October 2016, Idaho Power partnered with the University of Idaho's Valley County Extension Office to host an energy efficiency workshop in McCall, Idaho. Direct-mail letters were sent to residents, and posters were hung at local businesses inviting the community to attend the evening workshop. Attendees learned how to check their homes for efficiency, how to make improvements, and how to use myAccount. The Home Energy Audit program was emphasized as were various other Idaho Power efficiency programs. For attending, each person was given an LED lightbulb.

Bill inserts were sent to 369,000 residential customers in June and 355,000 residential customers in December. Articles highlighting the Home Energy Audit program were also included in the April and October issues of *Connections*, which is mailed along with the customer's bill.

The Home Energy Audit program was mentioned in the Idaho Power *Winter Energy Efficiency Guide* as a way to improve your home's performance. In addition, the program was the focus of the Idaho Power energy-efficiency segment on the KTVB afternoon news program in March.

Idaho Power used social media, including boosted Facebook posts, throughout 2016 to highlight the Home Energy Audit program. In May, a boosted post targeted to Idaho homeowners ages 35 and older with an interest in home improvement or energy efficiency reached 45,495 people, resulting in 1,745 post engagements (likes, comments and shares). In November and December, Idaho Power used boosted posts targeted to South–East Region customers. These boosted posts reached 44,662 people with 1,229 engagements, 97 shares, and 694 post clicks.

For several months throughout 2016, a short article about the program was also placed in the Pocatello-Chubbuck Chamber of Commerce e-newsletter.

Digital re-targeting advertising was also used to target the South-East Region customers. Customers who visited the Idaho Power website and then moved onto a different website were "followed" by a Home Energy Audits digital ad. Overall, 787,293 impressions were served resulting in 1,993 clicks with a total

click-through rate of 0.25 percent. The total click-through rate was 3.6 times higher than the national average.

Cost-Effectiveness

One of the goals of the Home Energy Audit program is to increase participants' understanding of how their home uses energy and to encourage their participation in Idaho Power's energy efficiency programs. Since the Home Energy Audit program is primarily an educational and marketing program, the company does not apply the traditional cost-effectiveness tests to the program.

For the items installed directly in the homes, Idaho Power used the same assumptions during 2016 as were used in 2015. Idaho Power used RTF savings for direct-install bulbs, which range from 17 to 30 kWh per year. RTF savings for 2.0 gpm showerheads directly installed in a home are 139 to 166 kWh per year. In Idaho Power's *Energy Efficiency Potential Study*, AEG estimates that pipe wraps save 150 kWh per year. Savings for both showerheads and pipe wrap were only counted for homes with electric water heaters.

In 2015 and 2016, the RTF reviewed and updated the savings assumptions for CFLs, LEDs, and showerheads. These new savings will be applied in 2017.

Customer Satisfaction and Evaluations

Throughout 2016, a survey was sent to 482 customers who had participated in the program between October 2015 and September 2016. The purpose of the survey was to assess customers' satisfaction with program enrollment, scheduling, the auditor, the personalized report, and information learned. Participants who supplied an email address on the initial program enrollment form were sent an electronic survey (320 participants); those without an email address were sent a hardcopy of the survey with a postage-paid envelope (162 participants). The response rate was just over 43 percent, with 208 participants responding. Program strengths and areas for improvement were also assessed. Results were reviewed for the program as a whole and for responses related to individual HPSs.

When asked a series of questions about their experience with the program, 96 percent of respondents "strongly agree" or "somewhat agree" they would recommend the program to a friend or relative, and just over 94 percent of respondents "strongly agree" or "somewhat agree" they were satisfied with their overall experience with the program. And, over 97 percent of the respondents indicated it was "very easy" or "somewhat easy" to apply for the program.

Over 34 percent of respondents reported accessing their report online through an email address supplied to Idaho Power on the enrollment application, while over 37 percent reported receiving a paper copy, and 28 percent reported receiving their report both ways. Of those who accessed their report online, nearly 64 percent indicated that accessing the report online was "very easy" or "somewhat easy."

HPSs were rated on a number of attributes including courteousness, professionalism, explanation of work/measurement to be performed, explanation of audit recommendations, and overall experience with the HPS. Respondents rated their HPSs as "good" or "excellent" 93 to 100 percent of the time.

When asked how strongly they agree or disagree with statements about what they learned during the audit process, just over 95 percent of respondents "strongly agree" or "somewhat agree" they were more informed about the energy use in their home. Over 81 percent reported they "strongly agree" or "somewhat agree" they were more informed about energy efficiency programs available through Idaho Power. Just over 89 percent indicated they "strongly agree" or "somewhat agree" they learned what additional no- to low-cost actions they could take.

According to the survey, nearly 48 percent of respondents indicated they visited the Idaho Power website after the audit, just over 50 percent unplugged appliances when not in use, over 33 percent signed up for myAccount, and just over 72 percent shared their experience with relatives and/or friends. Just over 78 percent of the respondents reported they replaced additional incandescent lightbulbs with CFLs or LEDs. Just over 37 percent indicated they serviced their heating equipment, and almost 35 percent serviced cooling equipment. Additional information on the actions respondents indicated they already completed or planned to do within the next year are shown in the survey results included in *Supplement 2: Evaluation*.

Survey participants were asked to identify all of the benefits they experienced from participating in the program. Over 73 percent of respondents indicated the biggest benefit they found in the audit was personal satisfaction, with over 75 percent citing raised awareness of energy use, almost 61 percent citing cost savings, nearly 49 percent citing home improvement, approximately 44 percent citing comfort, and almost 37 percent citing benefit to the environment. When survey participants were asked to identify all of the barriers they encounter when making energy-saving changes in their home, over 77 percent of respondents indicated the biggest barrier was cost. Figure 27 shows participant benefits experienced by category and percent.

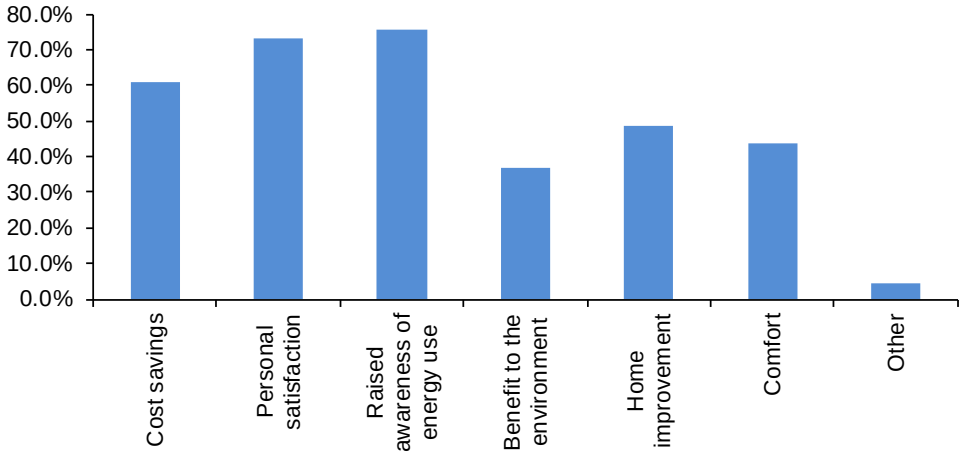

Figure 27. Home Energy Audit program participants' benefits experienced in 2016

Idaho Power conducted no program evaluations in 2016.

2017 Program and Marketing Strategies

The 2017 program goal is 500 participants, with approximately half being for all-electric homes and half for homes with other fuel sources for space and water heating. When the Home Energy Audit program

began, the company's goal was to perform QA on 10 percent of the homes audited. The cost of this level of QA was justified to make sure the auditors were complying with the program's specifications. The program is now more established and the QA is verifying that the auditors are meeting and exceeding the requirements. The company believes it is more reasonable to reduce the QA to 5 percent in addition to the online QA and survey results review. Additionally, the company has found it logistically difficult to find 10 percent of the participants who will take the additional time to allow a second visit by a QA auditor.

In 2017, Idaho Power will continue recruiting participants through small batches of direct-mail, social media, advertising, bill inserts and through the use of the trade show booth backdrop at select events. Additional digital advertising may be considered if the program needs to be strategically promoted in specific regions.

Home Improvement Program

	2016	2015
Participation and Savings		
Participants (homes)	482	408
Energy Savings (kWh)	500,280	303,580
Demand Reduction (MW)	n/a	n/a
Program Costs by Funding Source		
Idaho Energy Efficiency Rider	$309,799	$259,898
Oregon Energy Efficiency Rider	$0	$0
Idaho Power Funds	$14,225	$12,611
Total Program Costs—All Sources	$324,024	$272,509
Program Levelized Costs		
Utility Levelized Cost ($/kWh)	$0.034	$0.046
Total Resource Levelized Cost ($/kWh)	$0.174	$0.152
Benefit/Cost Ratios		
Utility Benefit/Cost Ratio	2.54	1.91
Total Resource Benefit/Cost Ratio	0.60	0.67

Description

Since 2008, the Home Improvement Program has offered incentives for upgrading insulation and windows in electrically heated homes/units. To qualify for an incentive under this program, the home must be a single-family home, a multi-family structure with individually metered residential units, or a manufactured home in Idaho Power's service area in Idaho. The home/units must have an electric heating system serving at least 80 percent of the home's conditioned floor area. The heating system can be a permanently installed electric furnace, heat pump, or electric zonal heating system.

Insulation

Insulation must be professionally installed between conditioned and unconditioned space by an insulation contractor.

- Customer incentives are 15 cents per ft^2 for attic insulation and 50 cents per ft^2 for wall and under-floor insulation for additional insulation professionally installed by Idaho residential customers, multi-family building owners, and property managers in Idaho Power's Idaho service area.
- Existing attic insulation must be an R-20 or less to qualify, and the final R-value must meet the local energy code. Idaho Power's service area includes climate zones 5 and 6, resulting in an R-38 requirement for climate zone 5 and R-49 requirement for climate zone 6.
- The existing insulation level in walls must be R-5 or less, and the final R-value must be R-19 or fill the cavity.
- The existing insulation level under floors must be R-5 or less, and the final R-value must be R-30 or fill the cavity.

Windows

Windows must be professionally installed.

- Customer incentives are $2.50 per ft^2 of window area to Idaho residential customers for installing energy-efficient windows and/or sliding glass doors with a U-factor of 0.30 or lower.
- Pre-existing windows/sliding glass doors must be single- or double-pane aluminum or single-pane wood.
- Customers must use a participating contractor to qualify for the Idaho Power incentive, which is processed by Idaho Power.

Program Activities

During 2016, the Home Improvement Program paid incentives on 482 window and insulation upgrades. Attic insulation accounted for 20 percent, under-floor insulation accounted for 9 percent, wall insulation accounted for 2 percent and windows accounted for 69 percent of completed jobs. Both multi-family and single-family homes took advantage of these program incentives.

Marketing Activities

In early 2016, Idaho Power developed a new look for all Home Improvement Program marketing materials to better capture the attention of customers, including multi-family building owners, and highlight available incentives. Based on customer feedback, the application form became a part of the updated brochure. The brochure also included a checklist of required documentation to enhance clarification for the customer.

To promote the program, the company ran a series of newspaper ads multiple times during February, March, and September 2016. Idaho Power placed ads in newspapers in rural areas with a higher concentration of electrically heated homes (a program eligibility requirement). The company also sent bill inserts to 361,455 customers in February; 362,473 customers in April; and 364,100 customers in May and a targeted direct-mail letter to 40,000 customers in April and November 2016.

Idaho Power ran Facebook ads in September and reached 86,631 customers, resulting in 10,586 link clicks, 83 likes, 12 shares and had a total cost-per-click of $0.19. Anything at or under that level is good; the $0.19 cost-per-click is considered above expectations for a utility company niche product.

In the April energy efficiency issue of *Connections*, the cover story focused on a customer who had participated in the Home Improvement Program and saw a large reduction in her bill since replacing 13 windows in her home. The *Connections* issue and the customer story was promoted through a *News Briefs* item in April.

Cost-Effectiveness

In 2015 and 2016, the Home Improvement Program was not cost-effective from the TRC perspective. RTF reduced savings for single-family home weatherization projects between 2013 and 2014, and the reduced savings were updated prior to the 2015 program year. With the changes, average savings

estimates per project were just under 50 percent of 2014 savings levels. These savings estimates were a result of an 18-month RTF process to calibrate residential savings models to billing and housing-characteristic data collected in the northwest, including Idaho, during 2011 as part of the RBSA. As a consequence, the majority of measure combinations in the Home Improvement Program are no longer cost-effective from the TRC perspective--neither is the overall program.

There are several factors that are impacting cost-effectiveness beyond the reduced regional average savings estimates. The few measure combinations that are cost-effective (insulations levels with R-values near zero or existing single-pane windows) are not common in single-family homes. Very little savings from weatherization measures occurs during the summer peak which limits the peak capacity cost-effectiveness benefits in the program.

Home Improvement Program was the only program in Idaho Power's energy efficiency portfolio requiring customer investment where the PCT B/C ratio was less than one at 0.80, which means the customer investment in weatherization on average exceeds the lifetime energy savings benefits, or that for every $1.00 invested by the customer to participate in the program, the customer only sees a $0.80 return through bill savings over 45 years.

For more detailed information about the cost-effectiveness calculations and assumptions, see *Supplement 1: Cost-Effectiveness*.

Customer Satisfaction and Evaluations

For QA purposes, third-party contractors performed random reviews of at least 5 percent of all installations completed in the Home Improvement Program. QA contractors verified the correct installation of measures. In addition, the QA contractors assisted and educated the contractors on program requirements. Of the 30 QA inspections completed in 2016, no major issues were reported.

The program incentive application form included an optional question asking customers how they heard about the program. The 482 projects came in on 459 applications. Customers answered the marketing question on 437 applications. The results are as follows:

- 248 respondents (56.8%) heard about the program from a program contractor.
- 114 respondents (26.1%) heard about the program from an Idaho Power bill insert.
- 45 respondents (10.3%) heard about the program from the Idaho Power website.
- 18 respondents (4.1%) received a referral from a friend or acquaintance.
- 4 respondents (.9%) heard about the program from a direct-mail piece.
- 8 respondents (1.8%) heard about the program from a newspaper, online, or television/radio ad.
- 0 respondents (0%) heard about the program from a home improvement show or fair.

2017 Program and Marketing Strategies

As reported in the *Demand-Side Management 2015 Annual Report*, the recalibrated savings from the RTF resulted in four of the six measures not being cost-effective from the TRC perspective. This program was not cost-effective from a TRC perspective in 2015. In 2016, the program was not cost-effective from a TRC or PCT perspective but was cost-effective from the UC perspective.

In 2016, the company evaluated the non-cost-effective measures and the potential impact of those measures on the program's overall cost-effectiveness. Idaho Power first discussed the concerns it had regarding the continued deterioration in cost-effectiveness of the Home Improvement Program with EEAG during the August 30, 2016 EEAG meeting, and Idaho Power committed to presenting its preliminary 2016 cost-effectiveness findings at the November 3, 2016 EEAG meeting.

At the November meeting, the company informed EEAG that the program was not cost-effective in 2016 based on preliminary savings information. The company advised EEAG that under the scenarios it evaluated, the cost-effectiveness of the Home Improvement Program would not improve. The company assured EEAG it would continue to encourage customers through education to continue to upgrade these measures even though an incentive may no longer be offered and asked for suggestions from EEAG members as to how Idaho Power could best sunset the program.

At this meeting, EEAG suggested the company wait until 2017 to end the program to ensure customers had adequate time to benefit from program incentives and look at a more targeted approach for the program.

Idaho Power analyzed different scenarios to modify the program to improve its cost-effectiveness. One scenario was to consider only offering the highest savings measure combinations in only the coldest climate zone (heating zone 3). These areas produce on average less than 5 percent of the projects annually. Under this scenario, the modified program would fail all the cost-effectiveness tests except the PCT.

In another scenario, Idaho Power analyzed offering only those measure combinations closest to being cost-effective; this modified program would only include window replacements in situations where there are existing single pane window, and insulation incentives where the existing home's R-value is essentially zero. Under this scenario, the program would remain not cost-effective under all tests except the UC test which would decrease from 2.54 as the program exists today to 1.42.

Due to the continued lack of cost-effectiveness, Idaho Power ceased marketing the program in the fourth quarter of 2016. The company plans to sunset the Home Improvement Program beginning on June 30, 2017. Customers will have 90 days from the day the job is started to submit their incentive applications, and those customers whose jobs were started on or before June 30, 2017, will qualify for an incentive.

Multifamily Energy Savings Program

	2016	2015
Participation and Savings		
Participants (projects)	3	n/a
Energy Savings (kWh)	149,760	n/a
Demand Reduction (MW)	n/a	n/a
Program Costs by Funding Source		
Idaho Energy Efficiency Rider	$55,758	n/a
Oregon Energy Efficiency Rider	$0	n/a
Idaho Power Funds	$3,288	n/a
Total Program Costs—All Sources	$59,046	n/a
Program Levelized Costs		
Utility Levelized Cost ($/kWh)	$0.040	n/a
Total Resource Levelized Cost ($/kWh)	$0.040	n/a
Benefit/Cost Ratios		
Utility Benefit/Cost Ratio	1.43	n/a
Total Resource Benefit/Cost Ratio	2.55	n/a

Description

The Multifamily Energy Savings Program provides for the direct installation of energy-saving products in electrically heated, multi-family dwellings in Idaho and Oregon. The definition of multi-family dwelling is a building consisting of five or more rental units. The products are: ENERGY STAR® LED lightbulbs, high-efficiency showerheads, kitchen and bathroom faucet aerators, and water heater pipe insulation, and are installed at no cost to the property owner/property manager or the tenant. To ensure energy savings and applicability, each building is pre-approved by the contracted energy efficiency measure installation contractor.

Program Activities

The program began in March 2016 with a successful pilot project in Pocatello. This was followed by direct install projects in Boise and Twin Falls in September and December respectively. Between all three projects, a total of 196 apartment units received some if not all of the following; ENERGY STAR LED lightbulbs, high-efficiency showerheads, kitchen and bathroom faucet aerators, and water heater pipe insulation.

- Fairway Apartments, Pocatello: 73 units
- Greenbriar Apartments, Boise: 43 units
- Washington Park Apartments, Twin Falls: 80 units

Marketing Activities

Tenants in participating apartment complexes received a door hanger before the service date informing them that contractors would be entering their home to install energy-saving products. Once installation

was complete, Idaho Power left materials to explain the new energy efficiency measures and to provide contact information should the tenant have any questions.

Cost-Effectiveness

The RTF provides deemed savings for LED lightbulbs and 2.0 gpm low-flow showerheads. The LED lightbulbs have a deemed savings value of 11 to 32 kWh per year depending on the type and lumens of the lightbulb. The 2.0 gpm low-flow showerhead is estimated to save 139 kWh per year. For the faucet aerator and pipe wrap, RTF does not provide a deemed savings estimate. In Idaho Power's 2012 *Energy Efficiency Potential Study*¸ AEG estimated the annual faucet aerator savings to be 106 kWh and the annual pipe wrap savings to be 150 kWh.

Customer Satisfaction and Evaluations

Idaho Power included a satisfaction survey on the leave behind materials for the Pocatello pilot project. Both an online and mail-in option were offered. The response rate was very low with only six of the 73 residents responding by mailing in the stamped survey cards, no on-line surveys were submitted. These results will be considered with the expansion of this program.

2017 Program and Marketing Strategies

In 2017, Idaho Power plans to expand the program to include a minimum of two, energy-efficient measure direct-installation projects in multi-family dwellings in each of our three regions.
The satisfaction survey will be revised and included in 2017 leave behind materials for all projects. Property managers/owners will also be surveyed.

Idaho Power will continue to use informative pre-installation door hangers and post-installation informational marketing pieces. Use of direct-mail will be explored to encourage engagement and participation from property owners/managers, and to increase program visibility.

Oregon Residential Weatherization

	2016	2015
Participation and Savings		
Participants (audits/projects)	7	19
Energy Savings (kWh)	2,847	11,910
Demand Reduction (MW)	n/a	n/a
Program Costs by Funding Source		
Idaho Energy Efficiency Rider	$0	$0
Oregon Energy Efficiency Rider	$3,906	$5,341
Idaho Power Funds	$24	$467
Total Program Costs—All Sources	$3,930	$5,808
Program Levelized Costs		
Utility Levelized Cost ($/kWh)	$0.079	$0.028
Total Resource Levelized Cost ($/kWh)	$0.118	$0.050
Benefit/Cost Ratios		
Utility Benefit/Cost Ratio	n/a	n/a
Total Resource Benefit/Cost Ratio	n/a	n/a

Description

Idaho Power offers free energy audits for electrically heated customer homes within the Oregon service area. This is a program required by Oregon Revised Statute (ORS) 469.633 offered under Oregon Tariff Schedule 78 since 1980. Upon a customer's request, an Idaho Power customer representative visits the home to analyze it for energy efficiency opportunities. An estimate of costs and savings for specific measures is given to the customer. Customers may choose either a cash incentive or a 6.5-percent interest loan for a portion of the costs for weatherization measures.

Program Activities

Seven customers returned a card from the brochure indicating interest in a home energy audit, weatherization loan, or incentive payment. Seven customers requested audits, three audits met the program requirements and were completed, and three customers did not have electric heat and were advised to contact their heating source supplier for program information. One customer did not move forward with the recommended energy efficiency upgrades. Two incentives were paid.

Idaho Power issued two incentives totaling $426.44 for 2,847 kWh savings. Both incentives and related savings were for ceiling insulation measures. There were no loans made through this program during 2016.

Marketing Activities

During May, as required, Idaho Power sent every Oregon residential customer an informational brochure about energy audits and home weatherization financing.

Cost-Effectiveness

The Oregon Residential Weatherization program is a statutory program described in Oregon Schedule 78, and includes a cost-effectiveness definition of this program. Pages three and four of the schedule identify the measures determined to be cost-effective and the specified measure life cycles for each. This schedule also includes the cost-effective limit (CEL) for measure lives of seven, 15, 25, and 30 years.

Two savings projects were completed under this program in 2016; both consisted of increasing attic insulation. Combined, the projects' annual energy savings is 2,847 kWh at a levelized TRC of $0.12 per kWh over the 30-year attic insulation measure life compared to a CEL of $0.85 per kWh as defined by Oregon Schedule 78.

Customer Satisfaction and Evaluations

Idaho Power conducted no customer satisfaction surveys or program evaluations in 2016.

2017 Program and Marketing Strategies

Idaho Power will complete requested audits and fulfill all incentives deemed cost-effective and loan applications as required by under Tariff Schedule 78. The company will continue to market the program to customers with a bill insert/brochure in their May bill.

Rebate Advantage

	2016	2015
Participation and Savings		
Participants (participants)	66	58
Energy Savings (kWh)	411,272	358,683
Demand Reduction (MW)	n/a	n/a
Program Costs by Funding Source		
Idaho Energy Efficiency Rider	$103,056	$80,243
Oregon Energy Efficiency Rider	$6,392	$4,351
Idaho Power Funds	$1,602	$843
Total Program Costs—All Sources	$111,050	$85,438
Program Levelized Costs		
Utility Levelized Cost ($/kWh)	$0.016	$0.014
Total Resource Levelized Cost ($/kWh)	$0.022	$0.020
Benefit/Cost Ratios		
Utility Benefit/Cost Ratio	3.89	4.54
Total Resource Benefit/Cost Ratio	3.33	3.45

Description

Initiated in 2003, the Rebate Advantage program helps Idaho Power customers in Idaho and Oregon with the initial costs associated with purchasing a new, energy-efficient, ENERGY STAR® qualified manufactured home. This enables the homebuyer to enjoy the long-term benefit of lower electric bills and greater comfort provided by these homes. The program also provides an incentive to the sales consultants to encourage more sales of ENERGY STAR qualified homes and more discussion of energy efficiency with their customers during the sales process.

In addition to offering financial incentives, the Rebate Advantage program promotes and educates buyers and retailers of manufactured homes about the benefits of owning energy-efficient models. The Northwest Energy Efficient Manufactured (NEEM) housing program establishes quality control (QC) and energy efficiency specifications for qualified homes. NEEM is a consortium of manufacturers and state energy offices in the Northwest. In addition to specifications and quality, NEEM tracks the production and on-site performance of ENERGY STAR qualified manufactured homes.

Program Activities

Idaho Power residential customers who purchased a new, all-electric, ENERGY STAR qualified manufactured home in 2016, and sited it in Idaho Power's service area were eligible for a $1,000 incentive through the Rebate Advantage program. Salespersons received $200 for each qualified home they sold.

During 2016, Idaho Power paid 66 incentives on new manufactured homes, which accounted for 411,272 annual kWh savings.

Marketing Activities

One bill insert, shared with the Energy House Calls program, was sent to 374,301 customers in Idaho and Oregon in March. A second bill insert and Facebook ads were not used because the program had exceeded its goal, and both techniques identified had limited options to target potential participants and proved less successful than direct dealer support.

Idaho Power continued to support dealerships in 2016 by providing them with Rebate Advantage program brochures, banners, and applications as needed. The program specialist and the customer representatives visited some of these dealerships to distribute materials, promote the program, and answer salespersons' questions.

Cost-Effectiveness

In 2016, Idaho Power used the same savings and assumptions as were used in 2015. The measures remained cost-effective for 2016.

Customer Satisfaction and Evaluations

Idaho Power conducted no customer satisfaction surveys for this program in 2016.

In 2016, Idaho Power contracted with Leidos to perform an impact and process evaluation for this program. The impact evaluation found that submitted applications were accurately assigned ex-ante unit energy savings values according to assigned equipment type, cooling zone, and heating zone codes in the tracking database.

Equipment type was determined to vary between ENERGY STAR with electric resistance heating, Eco-Rated with electric resistance heating, and ENERGY STAR with electric heat pump heating. This equipment appeared to be accurately coded in the tracking database (with the exception of two Eco-Rated projects which were assigned "regular" ENERGY STAR savings values). Accuracy of cooling zone and heating zone coding for each project could not be verified due to lack of information about how these codes were assigned. Overall, this impact evaluation found an ex-post savings realization rate that exceeds 100 percent.

The process evaluation found that the program processes in place are effective, efficient, and result in a high degree of accuracy in program tracking.

A copy of the evaluation can be found in *Supplement 2: Evaluation.*

2017 Program and Marketing Strategies

Idaho Power plans to distribute a bill insert to Idaho and Oregon customers and will look for additional opportunities to engage potential manufactured home buyers. Idaho Power will also continue to support dealers by providing them with program materials.

Shade Tree Project

	2016	2015
Participation and Savings		
Participants (trees)	2,070	1,925
Energy Savings (kWh)	n/a	n/a
Demand Reduction (MW)	n/a	n/a
Program Costs by Funding Source		
Idaho Energy Efficiency Rider	$70,669	$99,672
Oregon Energy Efficiency Rider	$0	–$66*
Idaho Power Funds	$5,973	$5,786
Total Program Costs—All Sources	$76,642	$105,392
Program Levelized Costs		
Utility Levelized Cost ($/kWh)	n/a	n/a
Total Resource Levelized Cost ($/kWh)	n/a	n/a
Benefit/Cost Ratios		
Utility Benefit/Cost Ratio	n/a	n/a
Total Resource Benefit/Cost Ratio	n/a	n/a

*Reversal of a 2014 charge to the Oregon Rider.

Description

The Shade Tree Project began as a pilot in 2013. According to the US Department of Energy (DOE), a well-placed shade tree can reduce energy used for summer cooling by 15 percent or more. Utility programs throughout the country report high customer satisfaction with shade tree programs and an enhanced public image for the utility related to sustainability and environmental stewardship. Other utilities report energy savings between 40 kWh per year (coastal climate San Diego) and over 200 kWh per year (Phoenix) per tree planted.

To be successful, trees should be planted to maximize energy savings and ensure survivability. Two technological developments in urban forestry—the state-sponsored Treasure Valley Urban Tree Canopy Assessment and the Arbor Day Foundation's Energy-Saving Trees tool—provided Idaho Power with the information to facilitate a shade tree project.

The Shade Tree Project operates in Ada and Canyon counties (Idaho), offering free shade trees to residential customers. Participants enroll using the on-line Energy-Saving Trees tool and pick up their tree at specific events. Unclaimed trees are donated to city partners and schools.

Using the on-line enrollment tool, participants locate their home on a map, select from a list of available trees, and evaluate the potential energy savings associated with planting in different locations. During enrollment, participants learn how trees planted to the west and east save more energy over time than trees planted to the south and north.

Ensuring the tree is planted properly helps it grow to provide maximum energy savings. At the tree pickup events, participants receive additional education on where to plant trees for maximum energy

savings and other tree care guidance from experts. Local specialists include city arborists from Boise, Kuna, Nampa, and Meridian; Idaho Power utility arborists; Canyon County master gardeners; and College of Western Idaho horticulture students.

In August each year, Idaho Power sends participants from the previous two offerings a newsletter filled with reminders on proper tree care and links to resources, such as tree care classes and educational opportunities in the region. This newsletter was developed after the 2015 field audits identified common customer tree care questions and concerns.

Program Activities

In 2016, Idaho Power distributed 2,070 shade trees to residential customers through the Shade Tree Project. Because the best time to plant shade trees is in the spring and fall, Idaho Power held offerings in April and October, with 701 trees and 1,369 trees distributed, respectively. Idaho Power purchased the trees from a local wholesale nursery in advance of each event. The species offered for each event depended on the trees available at the time of purchase. Idaho Power worked with city and state arborists to select a variety of large-growing, deciduous trees that traditionally grow well in the climate and soils of the two participating counties.

Participants picked up the trees at events throughout the Treasure Valley—four in the spring and four in the fall. By offering several pickup days, locations, and times, 88 percent of spring trees and 90 percent of fall trees were distributed to homeowners.

Idaho Power continues to track the program data in the DSM database. The database is also used to screen applicants during enrollment to determine whether participants meet the eligibility requirements for the project, such as residential status within the eligible counties (customer type and location).

In 2016, this project was partially funded by a US Forest Service Western Competitive States Grant, which was used to purchase all of the trees for both offerings. The grant also funded the development of an instructional tree planting video posted to Idaho Power's website.

Marketing Activities

For both offerings, Idaho Power developed a direct-mailing list using the state-sponsored Treasure Valley Urban Tree Canopy Assessment tool (tvcanopy.net/). The tool is the result of a geographic information system (GIS)-based study that mapped land use throughout the Treasure Valley, including existing trees and vegetation, buildings, roads, waterways, and parking lots. The study identified areas where a large-growing shade tree could be planted. Idaho Power used the tool to identify residential properties with potential planting sites to the west of the homes.

For both offerings, Idaho Power also sent emails to customers who had requested information about the project through Idaho Power's website. Project partners, such as the cities of Nampa, Kuna, Meridian and Boise, shared information through their networks. Idaho Power announced its Shade Tree Project to allied groups, such as the Idaho Conservation League, Idaho Chapter of the US Green Building Council (USGBC), and Treasure Valley Canopy Network. Information was sent to Green

Team leads at large employers, such as HP, Wells Fargo, Ch2MHill, and Citi Bank. The company also distributed program flyers at local events, where appropriate.

An Idaho Power Facebook post in the spring reached 1,478 people and resulted in 20 shares, 3 comments, 30 likes and 68 link clicks. A boosted Facebook post was used in the fall and reached 16,668 people and resulted in 909 post engagements (which includes likes, shares and comments). The boosted post cost-per-engagement was $0.07. The company also promoted the program in specific neighborhoods on Nextdoor.com in the spring and fall. This combination of marketing tactics was successful. The spring offering filled in 20 days; the fall offering filled in 16 days.

Cost-Effectiveness

Idaho Power does not calculate the cost-effectiveness tests for this program since no savings are currently being attributed to this program. The company plans to begin counting energy saving for the Shade Tree Program when the originally planted trees are five years old.

Customer Satisfaction and Evaluations

After each offering, a survey was emailed to participants. The survey asked questions related to program marketing, tree-planting education, and participant experience with the enrollment and tree pickup processes. Results are compared, offering to offering, to look for trends to ensure the program processes are still working, and to identify opportunities for improvement. Data are also collected about where and when the participant planted the tree. This data will be used by Idaho Power to refine energy-savings estimates.

In total, the survey was sent to 1,112 Shade Tree Project participants. The company received 531 responses for a response rate of 48 percent. Participants were asked how much they would agree or disagree that they would recommend the project to a friend; nearly 96 percent of respondents said they "strongly agree," and just over 3 percent said they "somewhat agree." Participants were asked how much they would agree or disagree that they were satisfied with the overall experience with the Shade Tree Project; nearly 93 percent of respondents indicated they "strongly agree," and just over 6 percent "somewhat agree" they were satisfied. View survey information in *Supplement 2: Evaluation*.

Idaho Power conducted no program evaluations in 2016.

2017 Program and Marketing Strategies

Idaho Power plans to continue the Shade Tree Project in 2017 using the Arbor Day enrollment tool; trees will be distributed at multiple events. This will be the last year of US Forest Service grant funding to help support the program. Idaho Power will use these funds to purchase some trees, and to send a representative to visit a subset of planting sites to collect data on tree placement and health.

Idaho Power will also explore expanding the program to new areas in western Idaho, such as Elmore County (Mountain Home) and the Payette area.

Idaho Power will continue to market the program through direct-mail, focusing on customers identified using the Urban Tree-Canopy Assessment. In addition, Idaho Power maintains a waiting list of

customers who were unable to enroll before previous offerings filled. Idaho Power will reach out to these customers through direct-mail or email for the 2017 offerings. Idaho Power will continue to leverage allied interest groups, and will use social media and boosted Facebook posts if enrollment response rates decline.

Simple Steps, Smart Savings™

		2016	2015
Participation and Savings			
	Participants (products)	7,880	9,343
	Energy Savings (kWh)	577,320	770,822
	Demand Reduction (MW)	n/a	n/a
Program Costs by Funding Source			
	Idaho Energy Efficiency Rider	$147,055	$130,575
	Oregon Energy Efficiency Rider	$3,535	$6,676
	Idaho Power Funds	$3,194	$1,845
	Total Program Costs—All Sources	$153,784	$139,096
Program Levelized Costs			
	Utility Levelized Cost ($/kWh)	$0.025	$0.018
	Total Resource Levelized Cost ($/kWh)	$0.063	$0.054
Benefit/Cost Ratios			
	Utility Benefit/Cost Ratio	2.40	3.37
	Total Resource Benefit/Cost Ratio	1.33	4.83

Description

Initiated in 2015, the Simple Steps, Smart Savings™ program is a promotion-based appliance program that aims to increase sales of qualified energy-efficient appliances. The payments provided by Idaho Power through this program are applied during special promotions, which align with holidays or events throughout the year at retail stores. Incentives are shared between the retailer, manufacturer, and the customer, though they may differ between promotions and between retailers and manufacturers.

Retailer and manufacturer incentives may be provided as co-marketing dollars to the retailer or manufacturer to fund activities such as promotional events, special product placement, point-of-purchase signage, retailer activities, event kits, sales associate training, training material, and other marketing activities during the promotional periods.

Customer rewards may include, but are not limited to, retailer gift cards, retailer credit to the customer or free laundry products for the purchase of qualified products. These promotions are available in Idaho and Oregon.

The program also includes promotions using retailer markdowns and retailer/manufacturer incentives. Markdowns reduce retail-end prices to the customer at the point-of-purchase. Retailer/manufacturer incentives drive the manufacture, distribution, and promotion of more energy-efficient consumer products. For example, since 2010 Idaho Power has offered retailer markdowns for low-flow showerheads. Program payments reduce the cost of the showerheads for customers at the retail level, as well as to retailers and manufacturers to drive the manufacture, distribution, and promotion of these products.

Idaho Power also participates in the BPA-sponsored, Simple Steps, Smart Savings energy-efficient lighting program, which is discussed further in the Energy Efficient Lighting program section of this report.

All Simple Steps, Smart Savings promotions are administered by the BPA and coordinated by CLEAResult.

Program Activities

On May 18, 2016, Idaho Power received approval to begin offering the appliance promotion to our customers in Oregon.

Appliances

In 2016, Idaho Power participated in five major Simple Steps, Smart Savings appliance promotions with these retailers: Sears, Sears Hometown, Dell's Home Appliance, Home Depot, and RC Willey. At each event, CLEAResult personnel staffed a table and answered customer questions about the appliance promotion. To further educate customers about the promotions, CLEAResult created an Idaho Power-branded promotional landing page that highlights promotion details and participating retailers.

The five promotions took place on the following dates: 1) the 2015 Black Friday took place in November through the first week of December—because these sales data were delayed, the sales from this promotion will be included with the remaining four 2016 promotions; 2) the President's Day promotion ran for two weeks in February; 3) the Memorial Day promotion ran for the last week in May and first week in June; 4) the Independence Day promotion ran for the last week in June and first two weeks in July; and 5) the Labor Day promotion ran for the last week in August and first week in September. In-store events were held at all participating retailers in Idaho Power's service area during the promotion.

Incentives for the purchase of an ENERGY STAR® clothes washer included a $10 gift card at Sears and Home Depot; a 180-load supply of free laundry detergent at Sears Hometown; a gift of free laundry products at Dell's Home Appliances; and a $25 gift card at RC Willey. RC Willey added their own $15 to the $10 provided to allow them to offer a $25 gift card to customers.

Showerheads

In early 2016, The Home Depot's contract to offer buy downs on qualified showerheads ended. Due to the length of time to prepare monthly reports for these sales, they declined to continue participating in the showerhead buy down. To make up for the decrease in showerhead sales after The Home Depot's departure, CLEAResult engaged Costco and Lowe's to begin offering qualified showerheads to their list of available buy down products.

Marketing Activities

In 2016, CLEAResult and participating Simple Steps, Smart Savings utility partners, decided the marketing was outdated and needed a new, fresh look. Several new designs were presented, and it was decided that the new logo would be Simple + Smart. See Figure 17 to see the updated logo. All table

tents and clings used for the 2016 Simple Steps, Smart Savings appliance promotions used the new Simple + Smart logo.

To help support the promotions, table tents and static clings were displayed on all qualifying appliances. These pieces informed customers about the promotion and the incentive they would receive. In-store gift cards were placed in gift card holders that displayed the Idaho Power logo. For purchases from Sears Hometown, where the customer received an instant markdown, customers also received a thank-you card with the Idaho Power logo.

During the promotions, Idaho Power placed Facebook and Twitter posts to notify customers of the details.

Cost-Effectiveness

Idaho Power used the same savings and cost assumptions for showerheads in 2016 as were used in 2015. In 2015 and 2016, RTF reviewed and updated the savings assumptions for showerheads, and Idaho Power will adopt those in 2017. The parameters that impacted the savings for showerheads the most were changes to the baseline showerhead, the showers per person per year, and the annual usage of each showerhead. Due to the timing of RTF's update, BPA and CLEAResult did not implement the new savings in the Simple Steps, Smart Savings promotion in 2016. The new RTF workbook, version 2.4, will be used in 2017.

In 2016, Idaho Power participated in five clothes washer promotions. Idaho Power applied the per-unit savings from the approved BPA's unit energy savings (UES) Measure List. While BPA applies the annual generator busbar savings of 73 kWh per unit, Idaho Power applies the annual site savings of 67 kWh per unit. This difference is due to the different line losses applied by Idaho Power and BPA. For the NEBs, Idaho Power used RTF's clothes washer workbook to determine the water and wastewater savings for the ENERGY STAR clothes washers.

For detailed information for all measures within the Simple Steps, Smart Savings program, see *Supplement 1: Cost-Effectiveness*.

Customer Satisfaction and Evaluations

Idaho Power conducted no customer satisfaction surveys or program evaluations in 2016.

2017 Program and Marketing Strategies

Idaho Power has committed to participate in the 2017 Simple Steps, Smart Savings appliance promotions. Five promotions are scheduled: 1) February for President's Day, 2) May to June for Memorial Day, 3) July for Independence Day, 4) August to September for Labor Day, and 5) November to December for Black Friday. Current participating retailers are Sears, Sears Hometown, RC Willey, and Dell's Home Appliance.

CLEAResult is in the process of working with local independent retailers to encourage their participation in the program. For each promotion, Idaho Power will provide incentives only for products that meet Idaho Power's cost-effectiveness requirements.

Idaho Power will also continue participation in the Simple Steps, Smart Savings energy-efficient showerheads buy-down program in 2017.

CLEAResult will continue to manage marketing at retailers, including point-of-purchase signs, Idaho Power-branded gift card holders, and thank-you cards. When provided, Idaho Power will continue to use Idaho Power-branded promotion landing pages and Facebook posts to notify customers of the promotions.

Weatherization Assistance for Qualified Customers

	2016	2015
Participation and Savings		
Participants (homes/non-profits)	246	243
Energy Savings (kWh)	746,162	550,021
Demand Reduction (MW)	n/a	n/a
Program Costs by Funding Source		
Idaho Energy Efficiency Rider	$0	$0
Oregon Energy Efficiency Rider	$0	$0
Idaho Power Funds	$1,289,809	$1,315,032
Total Program Costs—All Sources	$1,289,809	$1,315,032
Program Levelized Costs		
Utility Levelized Cost ($/kWh)	$0.105	$0.145
Total Resource Levelized Cost ($/kWh)	$0.158	$0.235
Benefit/Cost Ratios		
Utility Benefit/Cost Ratio	0.73	0.54
Total Resource Benefit/Cost Ratio	0.65	0.43

Description

The Weatherization Assistance for Qualified Customers (WAQC) program provides financial assistance to regional CAP agencies in Idaho Power's service area. This assistance helps fund weatherization costs of electrically heated homes occupied by qualified customers who have limited incomes. The WAQC program also provides a limited pool of funds for the weatherization of buildings occupied by non-profit organizations serving primarily special-needs populations, regardless of heating source, with priority given to buildings with electric heat. Weatherization improvements enable residents to maintain a more comfortable, safe and energy-efficient home while reducing their monthly electricity consumption. Improvements are available at no cost to qualified customers who own or rent their homes. These customers also receive educational materials and ideas on using energy wisely in their homes. Local CAP agencies determine participant eligibility according to federal and state guidelines.

In 1989, Idaho Power began offering weatherization assistance in conjunction with the State of Idaho Weatherization Assistance Program (WAP). In Oregon, Idaho Power offers weatherization assistance in conjunction with the State of Oregon WAP. Through the WAQC program, Idaho Power provides supplementary funding to state-designated CAP agencies for additional weatherization of electrically heated homes occupied by qualified customers and buildings occupied by non-profit organizations that serve special-needs populations. This allows CAP agencies to combine Idaho Power funds with federal LIHEAP weatherization funds to serve more customers in electrically heated homes with special needs.

Idaho Power has an agreement with each CAP agency for the WAQC program that specifies the funding allotment, billing requirements, and program guidelines. Currently, Idaho Power oversees the program in Idaho through five regional CAP agencies: Eastern Idaho Community Action Partnership (EICAP), El Ada Community Action Partnership (EL ADA), Aging, Weatherization and Human Services (CCOA,

now Metro Community Services), South Central Community Action Partnership (SCCAP), and Southeastern Idaho Community Action Agency (SEICAA). In Oregon, Community Connection of Northeast Oregon, Inc. (CCNO), and Community in Action (CINA) provide weatherization services for qualified customers in Idaho Power's service area.

The Idaho Department of Health and Welfare (IDHW) uses the energy audit program (EA5) for the Idaho WAP and therefore, the Idaho CAP agencies use the EA5. The EA5 is a software program approved for use by the DOE.

Annually, Idaho Power physically verifies approximately 10 percent of the homes that were weatherized under the WAQC program. This is done through two methods. The first method includes the Idaho Power program specialist participating in Idaho's and Oregon's state monitoring process that reviews weatherized homes. The process involves utility representatives; weatherization personnel from the CAP agencies; CAPAI; and a Building Performance Institute (BPI)-certified quality control inspector hired by the state reviewing homes weatherized by each of the CAP agencies.

The second method involves Idaho Power contracting with two companies—The Energy Auditor, Inc. (The Energy Auditor), and Momentum, LLC (Momentum)—that employ certified building performance specialists to verify installed measures in customer homes. The Energy Auditor verifies homes weatherized for the WAQC program in Idaho Power's eastern and southern Idaho regions. The owner of The Energy Auditor is certified by PTCS and is an ENERGY STAR® HPS. Momentum verifies weatherization services provided through the WAQC program in the Capital and Canyon–West regions of Idaho and in the company's Oregon service area. The owner of Momentum is a RESNET® certified home energy rater. After these companies verify installed measures, any required follow-up is done by the CAP agency personnel.

Regulatory Compliance

Idaho Power reports the activities related to the WAQC program in compliance with the IPUC Order No. 29505, as updated in Case No. IPC-E-16-30, Order No. 33702. This order approved Idaho Power's request to modify Order No. 29505 to consolidate the WAQC Annual Report with the DSM Annual Report.

Program Activities

All information previously available in the WAQC Annual Report is available in this section of the DSM Annual Report. In the future, WAQC activities will be reported solely in this manner. This report includes the following topics:

- Review of weatherized homes and non-profit buildings by county
- Review of measures installed
- Overall cost-effectiveness
- Customer education and satisfaction
- Plans for 2017

Weatherized Homes and Non-Profit Buildings by County

In 2016, Idaho Power made $1,250,693 available to Idaho CAP agencies. Of the funds provided, $1,186,192 were paid to Idaho CAP agencies in 2016, while $64,501 were accrued for future funding. Of the funds paid in 2016, $1,055,649 directly funded audits, energy efficiency measures, and health and safety measures for qualified customers' homes (production costs) in Idaho, and $105,565 funded administration costs to Idaho CAP agencies for those homes weatherized.

These funds provided for the weatherization of 231 Idaho homes and 3 Idaho non-profit buildings. The production cost of the non-profit building weatherization measures was $22,707, while $2,271 in administrative costs were paid for the Idaho non-profit building weatherization jobs. In Oregon, Idaho Power paid $29,742 in production costs for 12 qualified homes and $2,974 in CAP agency administrative costs for homes in Malheur and Baker Counties. Table 9 shows each CAP agency, the number of homes weatherized, production costs, the average cost per home, administration payments, and total payments per county made by Idaho Power.

Table 9. 2016 WAQC activities and Idaho Power expenditures by agency and county

Agency Idaho Homes	County	Number of Homes	Production Cost	Average Cost[1]	Administration Payment to Agency	Total Payment
CCOA	Adams	1	$ 6,313	$ 6,313	$ 631	$ 6,944
	Boise	1	5,588	5,588	559	6,146
	Canyon	35	170,066	4,859	17,007	187,073
	Gem	4	23,389	5,847	2,339	25,728
	Payette	4	38,345	9,586	3,834	42,179
	Valley	3	24,643	8,214	2,464	27,107
	Washington	1	6,201	6,201	620	6,821
	Agency Total	**49**	**$ 274,545**	**$ 5,603**	**$ 27,454**	**$ 301,999**
EICAP	Lemhi	4	11,625	2,906	1,163	12,788
	Agency Total	**4**	**$ 11,625**	**$ 2,906**	**$ 1,163**	**$ 12,788**
EL ADA	Ada	69	342,706	4,967	34,271	376,977
	Elmore	19	88,319	4,648	8,832	97,151
	Owyhee	17	85,773	5,045	8,577	94,351
	Agency Total	**105**	**$ 516,799**	**$ 4,922**	**$ 51,680**	**$ 568,479**
SCCAP	Blaine	3	6,737	2,246	674	7,411
	Gooding	2	9,302	4,651	930	10,232
	Jerome	8	34,366	4,296	3,437	37,803
	Lincoln	1	7,262	7,262	726	7,988
	Twin Falls	23	90,594	3,939	9,059	99,653
	Agency Total	**37**	**$ 148,261**	**$ 4,007**	**$ 14,826**	**$ 163,087**

Table 9. 2016 WAQC activities and Idaho Power expenditures by agency and county (continued)

Agency	County	Number of Homes	Production Cost	Average Cost[1]	Administration Payment to Agency	Total Payment
Idaho Homes						
SEICAA	Bannock	14	$ 41,254	$ 2,947	$ 4,125	$ 45,380
	Bingham	10	29,394	2,939	2,939	32,333
	Power	12	33,771	2,814	3,377	37,148
	Agency Total	**36**	**$ 104,419**	**$ 2,901**	**$ 10,442**	**$ 114,861**
Total Idaho Homes		**231**	**$ 1,055,649**	**$ 4,570**	**$ 105,565**	**$ 1,161,214**
Non-profit	Ada	1	10,387		1,039	11,426
Buildings	Lemhi	1	9,518		952	10,470
	Twin Falls	1	2,802		280	3,082
Total Non-Profit Buildings		**3**	**$ 22,707**	**$ 7,569**	**$ 2,271**	**$ 24,978**
Total Idaho		**234**	**$ 1,078,356**		**$ 107,836**	**$ 1,186,192**
Oregon Homes						
CCNO	Baker	1	3,831	3,831	383	4,214
	Agency Total	**1**	**$ 3,831**	**$ 3,831**	**$ 383**	**$ 4,214**
CINA	Malheur	11	25,911	2,356	2,591	28,503
	Agency Total	**11**	**$ 25,911**	**$ 2,356**	**$ 2,591**	**$ 28,503**
Total Oregon Homes		**12**	**$ 29,742**	**$ 2,479**	**$ 2,974**	**$ 32,717**
Total Program		**246**	**$ 1,108,098**		**$ 110,810**	**$ 1,218,908**

Note: Dollars are rounded.

The base funding for Idaho CAP agencies is $1,212,534 annually, which does not include carryover from the previous year. Idaho Power's agreements with CAP agencies include a provision that identifies a maximum annual average cost per home up to a dollar amount specified in the agreement between the CAP agency and Idaho Power. The intent of the maximum annual average cost is to allow CAP agency flexibility to service some homes with greater or fewer weatherization needs. It also provides a monitoring tool for Idaho Power to forecast year-end outcomes. The average cost per home weatherized is calculated by dividing the total annual Idaho Power production cost of homes weatherized by the total number of homes weatherized that the CAP agencies billed to Idaho Power during the year.
The maximum annual average cost per home the CAP agencies were allowed under the 2016 agreement was $6,000. In 2016, Idaho CAP agencies had a combined average cost per home weatherized of $4,570. In Oregon, the average was $2,479 per home weatherized.

There is no maximum annual average cost for the weatherization of buildings occupied by non-profit agencies.

CAP agency administration fees are equal to 10 percent of Idaho Power's per-job production costs. The average administration cost paid to agencies per Idaho home weatherized in 2016 was $457, and the average administration cost paid to Oregon agencies per Oregon home weatherized during the same period was $248. Not included in this report's tables are additional Idaho Power staff labor, marketing, home verification, and support costs for the WAQC program totaling $55,087 for 2016. These expenses were in addition to the WAQC program funding requirements in Idaho specified in IPUC Order No. 29505.

In compliance with IPUC Order No. 29505, WAQC program funds are tracked separately, with unspent funds carried over and made available to Idaho CAP agencies in the following year. In 2016, $38,159 in unspent funds from 2015 were made available for expenditures in Idaho. Table 10 details the funding base and available funds from 2015 and the total amount of 2016 spending. In 2015, the Idaho non-profit-pooled fund overspent by $10,529 which was deducted from the carryover amount to 2016.

Table 10. 2016 WAQC base funding and unspent funds made available

Agency	2016 Base	Available Funds from 2015	Total 2016 Allotment	2016 Spending
Idaho				
CCOA	$ 302,259	$ –	$ 302,259	$ 301,999
EICAP	12,788	–	12,788	12,788
EL ADA	568,479	–	568,479	568,479
SCCAP	167,405	45,430	212,835	163,087
SEICAA	111,603	3,258	114,861	114,861
Non-profit buildings	50,000	(10,529)	39,471	24,978
Idaho Total	**$ 1,212,534**	**$ 38,159**	**$ 1,250,693**	**$ 1,186,192**
Oregon				
CCNO	6,750	12,322	19,072	28,503
CINA	38,250	4,277	42,527	4,214
Oregon Total	**$ 45,000**	**$ 16,599**	**$ 61,599**	**$ 32,717**

Note: Dollars are rounded. Overspending of non-profit pooled fund in 2015 was deducted from 2016 non-profit available fund.

Weatherization Measures Installed

Table 11 details home and non-profit building counts for which Idaho Power paid all or a portion of each measure cost during 2016. The home counts column shows the number of times any percentage of that measure was billed to Idaho Power during the year. If totaled, measure counts would be higher than total homes weatherized because the number of measures installed in each home varies. For example, Table 11 shows 68 homes in Idaho received a lightbulb replacements measure. Each home received more than one lightbulb. Consistent with the Idaho WAP, the WAQC program offers several measures that have costs but do not necessarily save energy, or for which the savings cannot be measured. Included in this category are health and safety measures, vents, furnace repairs, other, and home energy audits. Health and safety measures are necessary to ensure weatherization activities do not cause unsafe situations in a customer's home or compromise a home's existing indoor air quality. Examples of health and safety items are smoke and carbon monoxide detectors, bathroom fans, and dryer vents.
Other non-energy-saving measures are allowed under this program because they interact with the energy-saving measures. Examples of items included in the other measure category include vapor barriers, dryer vent hoods, and necessary electrical upgrades.

Table 11. 2016 WAQC review of measures installed

	Home Counts		Production Costs
Idaho Homes			
Audit	142	$	14,139
Ceiling Insulation	111		86,188
Doors	93		63,495
Ducts	62		34,794
Floor Insulation	95		100,979
Furnace Repair	16		11,604
Furnace Replace	132		480,421
Health and Safety	45		14,423
Infiltration	143		36,850
Lighting Replacement	68		1,602
Other	37		9,807
Pipes	46		4,625
Refrigerator	8		6,373
Vents	14		912
Wall Insulation	12		5,909
Water Heater	24		23,204
Windows	110		160,324
Total Idaho Homes		**$**	**1,055,650**
Oregon Homes			
Ceiling Insulation	7		8,582
Ducts	4		2,437
Floor Insulation	2		5,084
Health and Safety	7		3,251
Infiltration	5		1,605
Pipes	2		105
Vents	1		660
Wall Insulation	2		2,141
Windows	3		5,878
Total Oregon Homes		**$**	**29,742**
Idaho Non-Profits			
Audit	3		$513
Ceiling Insulation	1		1,003
Doors	1		575
Ducts	1		988
Floor Insulation	1		3,546
Furnace Repair	1		509
Health and Safety	2		623
Infiltration	2		1,462
Lighting Replacement	2		35

Table 11. 2016 WAQC review of measures installed (continued)

	Home Counts		Production Costs
Idaho Non-Profits			
Other	1	$	120
Pipes	2		211
Refrigerator	1		10,357
Vents	1		67
Wall Insulation	1		667
Water Heater	1		20
Windows	1		2,013
Total Idaho Non-Profit Measures		**$**	**22,707**

Note: Dollars are rounded.

Marketing Activities

Idaho Power provided educational materials to each CAP agency to help qualified customers who receive weatherization assistance learn how to use energy efficiently. Included in the materials were copies of the Idaho Power publications: *Energy Efficiency Guide, Maintenance of Your High-Efficiency Water Fixtures,* and *Energy Saving Tips*, which describe energy conservation tips for the heating and cooling seasons, saving water, and a pamphlet that describes the energy-saving benefits of using CFLs, LEDs, and other tips for choosing the right lightbulb. Idaho Power developed and distributed a brochure that provided information about both the WAQC program and Weatherization Solutions for Eligible Customers program. This was meant to help customers realize there is more than one way to qualify for weatherization services. Idaho Power actively informed customers about WAQC through energy and resource fairs and other customer contacts including communication from its Customer Service Center.

Cost-Effectiveness

The WAQC program, while showing increases in savings and cost-effectiveness ratios, remains not cost-effective. The program had a total UC B/C ratio of 0.73, and a TRC B/C ratio of 0.65.

New savings values were introduced in 2016 that reflect an updated billing analysis completed in 2015. This analysis considered pre- and post-weather normalized consumption in homes weatherized during the 2013-2014 program years from both WAQC and Weatherization Solutions for Eligible Customers programs. The billing analysis was needed to reflect the increased replacement of forced-air electric resistance heat systems with efficient heat pump systems, and to ensure that the proper level of savings was captured for the average home. Variable-based degree-day analysis methods were used, consistent with other regional billing data studies and with whole-house consumption analysis methods published as part of the DOE's Uniform Methods project.

Table 12 shows the updated results that identify the difference between homes that only received weatherization versus homes that were weatherized and upgraded with an efficient heat pump.

Table 12. 2016 savings values for WAQC program

Home Type	Weatherization only		Weatherization and heating system change	
	kWh/project	kWh/project/ft^2	kWh/project	kWh/project/ft^2
Single-family Homes	1,797	1.16	4,154	2.48
Manufactured Homes	1,734	1.36	4,418	4.30
Multi-family Homes	n/a	1.16	n/a	2.48
Non-profit Buildings	n/a	1.16	n/a	2.48

Table 12 also shows, as expected, weatherization combined with the installation of an efficient heat pump results in savings nearly twice that from just installing weatherization measures. Manufactured homes demonstrate a higher savings per square foot of weatherized space than single-family homes in both projects where only weatherization measures were installed and cases where heating system upgrades occurred.

Idaho Power used savings of 1.16 kWh/ft^2 of weatherized heated space for multi-family projects where only weatherization measures were installed and 2.48 kWh/ft^2 where heating system were changed. In 2016 and previous program years, there has been insufficient data from multi-family projects in both the WAQC and Weatherization Solutions for Eligible Customers programs to conduct a billing analysis so savings are assumed to be similar on a savings per square foot basis as single-family homes where like measures were installed.

Idaho Power used savings of 1.16 kWh/ft^2 of weatherized heated space for non-profit projects where only weatherization measures were installed, which is the average per square foot savings values for weatherized single-family homes from the updated billing analysis. It is not feasible at this time to conduct a post-weatherization billing analysis or to create a commercial whole building simulation model prior to weatherization for non-profit projects.

The initial phase for assessing cost-effectiveness occurs during the initial contacts between CAP agency weatherization staff and the customer. In customer homes, the agency weatherization auditor uses the EA5 to conduct the initial audit of potential energy savings for a home. The EA5 compares the efficiency of the home prior to weatherization to the efficiency after the proposed improvements and calculates the value of the efficiency change into a savings-to-investment ratio (SIR). The output of the SIR is similar to the PCT ratio. If the EA5 computes an SIR of 1.0 or higher, the CAP agency is authorized to complete the proposed measures. The weatherization manager can split individual measure costs between Idaho Power and other funding sources with a maximum charge of 85 percent of total production costs to Idaho Power. Using the audit form to pre-screen projects ensures that each weatherization project will result in energy savings. The use of the audit tool is one of the primary reasons that consistent results have been seen from recent billing analysis of weatherization projects.

The following recommendations from the IPUC Order No. 32788 were used for the 2016 cost-effectiveness analysis:

- Applying a 100-percent net-to-gross (NTG) value to reflect the likelihood that WAQC weatherization projects would not be initiated without the presence of a program
- Claiming 100 percent of project savings
- Including an allocated portion of the indirect overhead costs
- Applying the 10-percent conservation preference adder
- Claiming $1 of benefits for each dollar invested in health, safety, and repair measures
- Amortizing evaluation expenses over a three-year period

Customer Satisfaction and Evaluations

Idaho Power used independent, third-party verification companies to ensure the stated measures were installed in the homes, and to discuss the program with these customers. In 2016, home verifiers visited 36 homes, requesting feedback about the program. When asked how much customers learned about saving electricity, 30 customers answered they learned "a lot" or "some." When asked how many ways they tried to save electricity, 31 customers responded "a lot" or "some."

A customer survey was used to assess major indicators of customer satisfaction throughout the service area. The *2016 Weatherization Programs Customer Survey* was provided to all program participants in all regions upon completion of weatherization in their homes. Survey questions gathered information about how customers learned of the program, reasons for participating, how much customers learned about saving energy in their homes, and the likelihood of household members changing behaviors to use energy wisely.

Idaho Power received survey results from 238 of 243 households weatherized by the program in 2016. Of the 238 completed surveys, 227 were from Idaho customers and 11 were from Oregon customers. Some highlights include the following:

- Over 37 percent of respondents learned of the program from a friend or relative, and another almost 23 percent learned of the program from an agency flyer. Nearly 8 percent learned about the weatherization program from direct-mail.
- Over 84 percent of the respondents reported that their primary reason for participating in the weatherization program was to reduce utility bills, and over 39 percent wanted to improve the comfort of their home.
- Over 73 percent reported they learned how air leaks affect energy usage, and just over 67 percent indicated they learned how insulation affects energy usage during the weatherization process.
- Over 56 percent of respondents said they learned how to use energy wisely. Seventy-five percent reported they were very likely to change habits to save energy, and almost 66 percent reported they have shared all of the information about energy use with members of their household.

- Over 87 percent of the respondents reported they think the weatherization they received will significantly affect the comfort of their home, and almost 94 percent said they were very satisfied with the program.
- Almost 86 percent of the respondents reported the habit they were most likely to change was turning off lights when not in use, and 61 percent said that washing full loads of clothes was a habit they were likely to adopt to save energy. Turning the thermostat up in the summer was reported by over 53 percent of the respondents, and turning the thermostat down in the winter was reported by 65 percent as a habit they and members of the household were most likely to adopt to save energy.

A summary of the report is included in the *Supplement 2: Evaluation*.

2017 Program and Marketing Strategies

As in previous years, unless directed otherwise, Idaho Power will continue to provide financial assistance to CAP agencies while exploring changes to improve program delivery. The company will continue to provide the most benefit possible to special-needs customers while working with Idaho and Oregon WAP personnel.

Idaho Power will continue to participate in the Idaho and Oregon state monitoring process of weatherized homes and will continue to verify approximately 10 percent of the homes weatherized under the WAQC program via certified home-verification companies.

In 2017, Idaho Power will support the whole-house philosophy of the WAQC program and Idaho and Oregon WAP by continuing to allow a $6,000 annual maximum average per-home cost. Based on the required funding, Idaho Power estimates approximately 182 homes and four non-profit buildings in Idaho will be weatherized, and approximately 11 homes in Oregon will be weatherized in 2017.

In Idaho during 2017, Idaho Power expects to contribute the base amount plus available funds from 2016 to total approximately $1,350,000 in weatherization measures and agency administration fees. Of this amount, approximately $64,490 will be provided to the non-profit pooled fund to weatherize buildings housing non-profit agencies that primarily serve qualified customers in Idaho.

Weatherization Solutions for Eligible Customers

		2016	2015
Participation and Savings			
	Participants (homes)	232	171
	Energy Savings (kWh)	621,653	432,958
	Demand Reduction (MW)	n/a	n/a
Program Costs by Funding Source			
	Idaho Energy Efficiency Rider	$1,226,540	$1,204,147
	Oregon Energy Efficiency Rider	$56,571*	$0
	Idaho Power Funds	$40,681	$39,122
	Total Program Costs—All Sources	$1,323,793	$1,243,269
Program Levelized Costs			
	Utility Levelized Cost ($/kWh)	$0.130	$0.175
	Total Resource Levelized Cost ($/kWh)	$0.130	$0.175
Benefit/Cost Ratios			
	Utility Benefit/Cost Ratio	0.59	0.45
	Total Resource Benefit/Cost Ratio	0.70	0.50

* Oregon Rider charges were reversed and charged to the Idaho Rider in February 2017.

Description

Weatherization Solutions for Eligible Customers is an energy efficiency program designed to serve Idaho Power residential customers in Idaho whose income falls between 175 percent and 250 percent of the most current federal poverty level. Initiated in 2008, the program is designed to mirror the WAQC program. These customers often do not have disposable income to participate in other residential energy efficiency programs, and they typically live in similar housing as WAQC customers.

Potential participants are interviewed by a contractor to determine household occupant income eligibility, as well as to confirm the home is electrically heated. If the home is a rental, the landlord must agree to maintain the unit's current rent for a minimum of one year, and to help fund a portion of the cost of weatherization. If the customer is eligible, an auditor inspects the home to determine which upgrades will save energy, improve indoor air quality, and/or provide health and safety for the residents. To be approved, energy efficiency measures and repairs must have a SIR of 1.0 or higher, interact with an energy-saving measure, or be necessary for the health and safety of the occupants.

The Weatherization Solutions for Eligible Customers program uses a home audit tool called the HAT14.1 which is similar to the EA5 audit tool used in WAQC. The home is audited for energy efficiency measures and the auditor proposes upgrades based on the SIR ratio calculated by HAT14.1. As in WAQC, if the SIR is 1.0 or greater, the contractor is authorized to upgrade that measure. Measures considered for improvement are window and door replacement, ceiling, floor and wall insulation, HVAC repair and replacement, water heater repair and replacement and pipe wrap. Also included is the potential to replace lightbulbs and refrigerators. Contractors invoice Idaho Power for the project costs and if the home is a rental, a minimum landlord payment of 10 percent of the cost is required.

Idaho Power's agreement with contractors includes a provision that identifies a maximum annual average cost per home for the program. The intent of the maximum annual average cost is to allow Contractors the flexibility to service homes with greater or fewer weatherization needs. It also provides a monitoring tool for Idaho Power to forecast year-end outcomes.

Program Activities

In 2016, a new contractor provided weatherization services to customers residing in Lemhi County, Idaho. Energy Solutions weatherized two homes in 2016 for the program with an average of approximately $4,125 each. With the addition of this new contractor, Idaho Power offers the Weatherization Solutions for Eligible Customers in all of its Idaho service area.

In 2016, the five contractors weatherized 232 Idaho homes for the program. In eastern Idaho, contractors Savings Around Power and Energy Solutions weatherized 26 homes. In Idaho Power's Canyon–West Region, Metro Contractors weatherized 56 homes. HEM-LLC weatherized 36 homes in south central Idaho, and Power Savers weatherized 114 homes in the Capital Region. Of those 232 homes weatherized, 148 were single-family and manufactured homes and 84 were low income multi-family apartments where LEDs, showerheads, kitchen and bath sink aerators, indoor clotheslines, and smoke detectors were installed.

Marketing Activities

Marketing was adjusted in 2016 to reach more customers who live in electrically heated homes and income-eligible households to increase participation in the program. Inserts were included in 263,625 residential bills in February and 367,222 bills in October. The program was promoted throughout the year at seasonal, resource, and conservation fairs, as well as at other events targeting people with limited incomes, including seniors. Ads and articles promoted the program in the *Seniors BlueBook*, *Healthy Idaho Magazine*, *Idaho Senior News*, and the *Idaho State Journal* boomers' edition. The program was also mentioned in Idaho Power's winter *Energy Efficiency Guide*.

Idaho Power's community relations representatives and customer representatives promoted the program at meetings in their communities, with specific emphasis on smaller Idaho communities. The program specialist and customer representatives promoted the program to home healthcare provider groups, religious groups, and members of the Idaho Nonprofit Center. Customer representatives used updated brochures (in English and Spanish) that included current income qualifications and location-specific contractor information. New contractor door hangers and flyers were also created so the program could be promoted by canvassing specific neighborhoods. Weatherization tips were also mentioned in various social media postings.

Cost-Effectiveness

While showing increases in savings and cost-effectiveness ratios from updated billing analysis and the addition of cost-effective direct-install options, the WAQC program remains not cost-effective. The 2016 program total UC B/C ratio is 0.59, and a TRC B/C ratio is 0.70. New savings values were introduced for 2016 that reflect an updated billing analysis completed in 2015 that analyzed pre- and post-weather normalized consumption in homes weatherized during the 2013-2014 program years from

both WAQC and Weatherization Solutions for Eligible Customers. The WAQC program section in this report offers a discussion of the billing analysis changes from previous versions.

Table 13 shows the updated savings results that identify the difference between homes that only received weatherization versus homes that were weatherized and upgraded with an efficient heat pump.

Table 13. 2016 savings values for Weatherization Solutions for Eligible Customers program

	Weatherization		Weatherization and heating system change	
Home Type	**kWh/project**	**kWh/project/ft^2**	**kWh/project**	**kWh/project/ft^2**
Single-family Homes	1,453	0.83	6,321	3.47
Manufactured Homes	897	0.39	5,355	4.50
Multi-family Homes	n/a	0.83	n/a	3.47

Similar to billing analysis results for WAQC, weatherization combined with the installation of an efficient heat pump results in savings nearly twice that from just installing weatherization measures. Manufactured homes demonstrate a higher savings per square foot of weatherized space than single family homes in cases where both weatherization and heating system upgrades occurred.

Idaho Power used savings of .83 kWh/ft^2 of weatherized heated space for multi-family projects where only weatherization measures were installed and 3.47 kwh/ft^2 where heating system where changed. Prior to 2015, insufficient data from multi-family projects existed to conduct a billing analysis so savings are assumed to be similar on a savings per square foot basis as single-family homes where like measures were installed.

Weatherization Solutions for Eligible Customers projects, similar to WAQC program guidelines, benefit from a pre-screening of measures through a home audit process. The home audit process ensures that there is an adequate number of kWh savings to justify the project and provides more consistent savings for billing analysis. See WAQC cost-effectiveness for a discussion of the audit and prescreening process which are similar for both programs.

For further details on the overall program cost-effectiveness assumptions, see *Supplement 1: Cost-Effectiveness*.

Customer Satisfaction and Evaluations

A 2016 customer survey was provided to all program participants upon completion of weatherization in their homes. Survey questions gathered information about how customers learned of the program, reasons for participating, the amount of information customers learned about saving energy in their homes, and the likelihood that household members would change their behavior to use energy wisely. Additionally, demographic information was gathered to determine future marketing strategies.

Idaho Power received survey results from 130 of the 232 households weatherized by the program in 2016. Some key highlights include the following:

- Almost 27 percent of respondents learned of the program through a letter in the mail and another 22 percent learned of the program from a friend or relative.
- Over 86 percent of the respondents reported their primary reason for participating in the weatherization program was to reduce utility bills.
- Almost 80 percent indicated they learned how insulation affects energy usage during the weatherization process, and over 85 percent reported they learned how air leaks affect energy usage. Another almost 60 percent of respondents said they learned how to use energy wisely.
- Over 79 percent reported they were very likely to change habits to save energy, and over 71 percent reported they have shared all of the information about energy use with members of their household.
- Almost 91 percent of the respondents reported they think the weatherization they received will significantly affect the comfort of their home, and nearly 92 percent said they were very satisfied with the program.

A summary of the report is included in *Supplement 2: Evaluation*.

Two independent companies performed random verifications of weatherized homes and visited with customers about the program. In 2016, 35 homes were verified, and 23 (66 percent), of those customers reported they learned "a lot" or "some" about saving electricity in their home. Another 33 customers (95 percent) reported they had tried "a lot" or "some" ways to save energy in their home.

2017 Program and Marketing Strategies

Idaho Power will update brochures to help spread the word about the program in all communities. Additional marketing for the program will include bill inserts and advertisements in *Healthy Idaho Magazine*, *Seniors BlueBook*, *Idaho Senior News*, and *Idaho State Journal* boomers, edition. Idaho Power will send a direct-mail letter to targeted residential customers mid-year, and use social media in an effort to reach a more customers. Customer testimonials will be posted online, and the door hangers produced late in 2016 will continue to be used when canvassing neighborhoods.

Commercial/Industrial Sector Overview

Idaho Power's commercial sector consists of over 69,341 customers. In 2016, the commercial sector's number of customers increased by 830, an increase of a little over 1 percent from 2015. The energy usage of commercial customers varies from a few kWh each month to several hundred thousand kWh per month. The commercial sector represents 28 percent of Idaho Power's actual total electricity sales.

The industrial and special contracts customers are Idaho Power's largest individual energy consumers. There are 121 Rate 19 and special contract industrial customers. These customers account for approximately 23 percent of Idaho Power's total electricity sales.

In June 2016, the three Commercial and Industrial Energy Efficiency programs were combined into a single program. Previously, the programs were: Building Efficiency, Custom Efficiency, and Easy Upgrades. The measure offerings to the customers remained relatively unchanged with prescriptive measures for new construction and major renovations, custom incentives for complex projects, and prescriptive measures for simple retrofits. The programs were combined with the intention to clarify program offerings and to improve marketing to customers. The combined program continues to be successful, with a reported overall savings of 88,161 MWh on 1,903 projects.

The 2016 season was the second year of the internally managed Flex Peak Program. The results were greatly improved from 2015 as was participation, including 65 participants enrolled with 137 sites in the program. Of those 137 sites, 67 were new—a 90 percent increase over 2015. Idaho Power also offers the statutory-required Oregon Commercial Audits program to medium and small commercial customers. The program identifies opportunities for commercial building owners to achieve energy savings.

Table 14. 2016 commercial/industrial program summary

		Total Cost		Savings	
Program	**Participants**	**Utility**	**Resource**	**Energy (kWh)**	**Demand (MW)**
Demand Response					
Flex Peak Program	137 sites	$ 767,997	$ 767,997	n/a	42
Total		**$ 767,997**	**$ 767,997**		**42**
Energy Efficiency					
Custom Projects (Custom Efficiency)	196 projects	$ 7,982,624	$ 16,123,619	47,518,871	
Green Motors—Industrial	14 projects			123,700	
New Construction (Building Efficiency)	116 projects	1,931,222	4,560,826	12,393,249	
Oregon Commercial Audits	7 audits	7,717	7,717	n/a	
Retrofits (Easy Upgrades)	1,577 projects	5,040,190	8,038,791	28,124,779	
Total		**$ 14,961,753**	**$ 28,730,952**	**88,160,599**	**42**

Note: See Appendix 3 for notes on methodology and column definitions.

Customer Satisfaction and Evaluations

Customer satisfaction research by sector includes the Idaho Power quarterly customer relationship surveys that ask questions about customer perceptions related to Idaho Power's energy efficiency

programs. Sixty-five percent of Idaho Power's large commercial and industrial customers surveyed in 2016 for the Burke Customer Relationship Survey indicated Idaho Power was meeting or exceeding their needs in offering energy efficiency programs. Sixty-one percent of survey respondents indicated Idaho Power was meeting or exceeding their needs with information on how to use energy wisely and efficiently. Seventy-four percent of respondents indicated Idaho Power was meeting or exceeding their needs by encouraging energy efficiency with its customers. Overall, 78 percent of the large commercial and industrial survey respondents indicated they have participated in at least one Idaho Power energy efficiency program. Of the large commercial and industrial customers surveyed and who had participated in at least one Idaho Power energy efficiency program, 98 percent are "very" or "somewhat" satisfied with the program. In 2016, offering energy efficiency programs was one of the large commercial and industrial top five attributes with a positive change in the Burke Customer Relationship Survey.

The results from surveying Idaho Power's small business customers indicated 51 percent of these customers said Idaho Power was meeting or exceeding their needs in offering energy efficiency programs. Fifty-four percent of survey respondents indicated Idaho Power was meeting or exceeding their needs with information on how to use energy wisely and efficiently. Sixty-three percent of respondents indicated Idaho Power was meeting or exceeding their needs with encouraging energy efficiency with its customers. Overall, 39 percent of the small business survey respondents indicated they have participated in at least one Idaho Power energy efficiency program. Of small business survey respondents who have participated in at least one Idaho Power energy efficiency program, 92 percent are "very" or "somewhat" satisfied with the program.

Forty-one percent of the Idaho Power business customers included in the *2016 J. D. Power and Associates Electric Utility Business Customer Satisfaction Study* indicated they are familiar with Idaho Power's energy efficiency programs.

Training and Education

Technical training and education continue to be important in helping Idaho Power commercial and industrial customers identify where they may have energy efficiency opportunities within their facilities. These activities increase awareness and participation in existing commercial and industrial energy efficiency and demand response programs, and enhance customer satisfaction regarding the company's energy efficiency activities.

Educating commercial and industrial customers requires working with and supporting multiple stakeholders and organizations. Examples of key stakeholders include the Integrated Design Lab (IDL), BOMA, USGBC, ASHRAE, and International Building Operators Association (IBOA). Through funding provided by Idaho Power, the IDL performed several tasks aimed at increasing the energy efficiency knowledge of architects, engineers, trade allies, and customers. Specific activities included sponsoring a Building Simulation Users Group (BSUG), conducting Lunch & Learn sessions held at various design and engineering firms, and offering a Tool Loan Library (TLL).

Idaho Power also used two newsletters to educate and inform our customers about energy efficiency. *Energy at Work*, which is new in 2016, was mailed to commercial and industrial customers twice in

2016; the major customer representatives emailed *Energy Insights* to 400 of Idaho Power's largest industrial customers each quarter.

Idaho Power delivered eight technical classroom-based training sessions in 2016. Of the eight sessions, one was a two-day class, and the others were one-day classes. Topics included industrial refrigeration, energy auditing, an introduction to unitary A/C, advanced unitary A/C, pump systems, motors, variable speed drives, and commercial refrigeration. A schedule of training events is posted on Idaho Power's website and marketed through *Energy at Work* and *Energy Insights*. Commercial and Industrial Energy Efficiency personnel or the major customer representatives also give an overview of the commercial and industrial programs during each technical training session offered to commercial and industrial customers.

The level of participation in 2016 remained high, with 217 attendees. Customer feedback indicated the average satisfaction level was 94 percent.

Idaho Power's average cost to deliver trainings in 2016 was approximately $5,300 per class. For NEEA's 2015 to 2019 funding period, Idaho Power chose not to participate in NEEAs industrial trainings. Prior to the current funding period from 2010 to 2014, NEEA offered an average of nine trainings per year at an approximate cost of $22,000 per class. By Idaho Power providing these trainings directly to Idaho Power customers, the company has realized significant cost reduction for its customers.

Idaho Power posted prior years' webinar recordings and related PDFs on the commercial and industrial training page on the Idaho Power website. Also, on Idaho Power's industrial training page is a listing of all IBOA events. Idaho Power covered at least 50 percent of cost for Idaho Power customers to take part in their educational classes including the Building Operator Certification Level 1, consisting of eight day-long classes, and Level 2, consisting of seven day-long classes. In 2016, 42 customers attended the Level 1 classes, and eight attended the Level 2 classes.

Field Staff Activities

Idaho Power field staff are on-site with customers each day. The field staff uses a variety of Idaho Power-developed programs, tools, and services to help customers with their energy-related questions and challenges. The customer representatives and major customer representatives have specific goals related to proactive activities, such as a specific number of visits or projects, designed to engage commercial and industrial customers in the energy efficiency. Additionally, program specialists and engineers work closely with customer representatives and major customer representatives to use their established relationships with customers. Customer representatives and major customer representatives distribute informational materials to trade allies and other market participants who, in turn, support and promote Idaho Power's energy efficiency programs.

Customers regularly ask how to get the most out of their energy dollar. Idaho Power staff has been trained to properly advise customers in the wise use of energy-specific energy efficiency measures and, when needed, can recommend where to find answers. Idaho Power is equipped with experienced

engineers, technically proficient personnel, and an extensive network of nationally recognized organizations and energy efficiency clearing houses to handle energy-related questions.

Commercial and Industrial Energy Efficiency Program

		2016*	2015*
Participation and Savings			
	Participants (projects)	1,903	1,463
	Energy Savings (kWh)**	88,160,599	102,073,910
	Demand Reduction (MW)	n/a	n/a
Program Costs by Funding Source			
	Idaho Energy Efficiency Rider	$14,319,999	$14,629,149
	Oregon Energy Efficiency Rider	$508,538	$798,424
	Idaho Power Funds	$125,500	$97,921
	Total Program Costs—All Sources	$14,954,036	$15,525,494
Program Levelized Costs			
	Utility Levelized Cost ($/kWh)	$0.014	$0.014
	Total Resource Levelized Cost ($/kWh)	$0.026	$0.031
Benefit/Cost Ratios			
	Utility Benefit/Cost Ratio	4.67	4.48
	Total Resource Benefit/Cost Ratio	2.81	2.13

*Metrics for each option (New Construction, Custom Projects, and Retrofits) are reported separately in appendices and in *Supplement 1: Cost-Effectiveness.*

***2016 total includes 123,700 kWh of energy savings from 14 Green Motors projects.*

Description

Three major program options targeting different energy efficiency projects are available to commercial/industrial customers in the company's Idaho and Oregon service areas.

Custom Projects (Custom Efficiency)

The Custom Projects option incentivizes energy efficiency modifications for new and existing facilities. The goal is to encourage commercial and industrial energy savings in Idaho and Oregon service areas by helping customers implement energy efficiency upgrades. Incentives reduce customers' payback periods for customize modifications that might not be completed otherwise. The Custom Projects option offers an incentive level 70 percent of the project cost or 18 cents per kWh for first year estimated savings, whichever is less. The Custom Projects option also offers energy auditing services to help identify and evaluate potential energy saving modifications or projects.

Interested customers submit applications to Idaho Power for potential modifications that have been identified by the customers, Idaho Power, or by a third-party consultant. Idaho Power reviews each application and works with the customer and vendors to gather sufficient information to support the energy-savings calculations.

Once completed, customers submit a payment application; in some cases, large, complex projects may take as long as two years to complete. Every payment application is verified by Idaho Power staff or an Idaho Power contractor. All lighting modifications utilize the Idaho Power lighting tool to determine incentive.

Each project is reviewed to ensure energy savings are achieved. Idaho Power engineering staff or a third-party consultant verifies the energy savings methods and calculations. Through the verification process, end-use measure information, project photographs, and project costs are collected.

On many projects, especially the larger and more complex projects, Idaho Power or a third-party consultant conducts on-site power monitoring and data collection before and after project implementation. The measurement and verification process helps ensure the achievement of projected energy savings. Verifying applicants' information confirms energy savings are obtained and are within program guidelines. If changes in scope take place in a project, a recalculation of energy savings and incentive amounts occurs based on the actual installed equipment and performance. The measurement and verification reports provided to Idaho Power include a verification of energy savings, costs, estimates of measure life, and any final recommendations.

New Construction (Building Efficiency)

The New Construction option enables customers in Idaho Power's Idaho and Oregon service areas to apply energy-efficient design features and technologies in new commercial or industrial construction, expansion, or major remodeling projects. New construction and major renovation project design and construction life is much longer than small retrofits and often encompasses multiple calendar years. Originated in 2004, the program currently offers a menu of measures and incentives for efficient lighting, cooling, building shell, controls, appliances, and refrigeration options. These measures may otherwise be lost opportunities for savings on customers' projects.

Twenty-four prescriptive measures are offered: interior lighting, exterior lighting, daylight photo controls, occupancy sensors, high-efficiency exit signs, efficient A/C and heat pump units, efficient variable refrigerant flow units, efficient chillers, air-side economizers, direct evaporative coolers, evaporative pre-coolers on air-cooled condensers, reflective roof treatment, energy-management control systems, guest room energy-management systems, HVAC variable-speed drives, kitchen hood variable-speed drives, onion/potato shed ventilation variable-speed drives, efficient laundry machines, ENERGY STAR® under-counter dishwashers, ENERGY STAR commercial dishwashers, refrigeration head-pressure controls, refrigeration floating-suction controls, efficient condensers, and smart power strips.

Retrofits (Easy Upgrades)

The Retrofits option is Idaho Power's prescriptive measure option for existing commercial and industrial facilities. This part of the program encourages commercial and industrial customers in Idaho and Oregon to implement energy efficiency upgrades by offering incentives on a defined list of measures. Eligible measures cover a variety of energy-saving opportunities in lighting, HVAC, building shell, variable-frequency drives (VFD), food-service equipment, and other commercial measures. Customers can also apply non-standard lighting incentives. A complete list of the measures offered through Retrofits (Easy Upgrades) is included in *Supplement 1: Cost-Effectiveness*.

Program Activities

Custom Projects

Incentive levels for the non-lighting projects remained the same in 2016 at 18 cents per kWh of first year savings with a 70-percent project cost cap on the incentive.

The Custom Projects option had another very successful year with a total of 196 projects, including 11 in Oregon, completed by 103 customers. However, related energy savings decreased in 2016 by 14 percent over 2015, from 55,186 MWh to 47,519 MWh. Idaho Power also received 248 new applications representing a potential of 61,240 MWh of savings on future projects.

Idaho Power made the following tariff changes in 2016: The required 100,000 kWh minimum savings was removed to allow for projects that may not meet that threshold to receive a Custom Projects incentive, such as Streamlined Custom Efficiency (SCE). The three-year term requirement was removed for the self-direct projects, which eliminates the need to file for tariff changes for every new three-year term.

Custom Projects may reach some level of saturation through program maturity, over 95 percent of the large-power service customers have participated in the program. With the high percentage of industrial customers who have taken advantage of the program, deeper energy savings may be challenging to achieve. The company is addressing this ongoing challenge in several ways by continuing to use multiple channels to reach customers and to encourage new energy-saving modifications. The company has expanded the cohort offerings, SCE, and expanded its ability to conduct energy audits through an expanded list of engineering firms.

Table 15 indicates the program's 2016 annual energy savings by primary project measures.

Table 15. 2016 Custom Projects annual energy savings by primary project measure

Program Summary by Measure	Number of Projects	kWh Saved
Lighting	117	9,386,277
Refrigeration	11	23,681,463
HVAC	6	4,839,312
Compressed Air	18	2,726,482
Commissioning	7	2,739,491
Controls	1	224,756
Pump	3	708,555
VFD	32	3,158,906
Other	1	53,629
Total [a]	196	47,518,871

[a] Does not include Green Motor Initiative project counts and savings.

Facility energy auditing, customer technical training, and education services are key components used to encourage customers to consider energy efficiency modifications. The Municipal Water Supply Optimization Cohort (MWSOC) and Wastewater Energy Efficiency Cohort (WWEEC) program offerings are also driving a significant number of new projects in addition to increasing vendor engagement from the SCE offering. The 2016 activities in the key components are described below.

Facility Energy Auditing

Idaho Power funds the cost of engineering services, up to $3,500, for conducting energy scoping audits to encourage its larger customers to adopt energy efficiency improvements. Currently, there are 11 different firms on contract to provide scoping audits and general energy efficiency engineering support services.

In 2016, Idaho Power consultants completed 25 scoping audits and two detailed audits on behalf of Idaho Power customers. These audits identified over 20,000 MWh of savings potential. Most of the customers engaged in these audits used the information to move forward with projects or expressed interest in moving forward in the near future.

Program Education and Offerings

Custom Projects engineers and the major customer representatives set up numerous visits with the large commercial and industrial customers in 2016. The visits ranged from commercial/industrial efficiency program training to a comprehensive targeted technical training sessions for a larger audience on potential energy-saving opportunities for different measure types, such as refrigeration, pumps and fans, compressed air, HVAC, lighting, etc. In addition to the eight comprehensive targeted technical training sessions that were held by Idaho Power, Custom Projects engineers also gave presentations on Idaho Power programs and offerings at a multi-industrial customer program training sessions, such as the Northwest Chapter of American Association of Airport Executives Airfield and Facilities Management Conference, the International Society of Healthcare Engineers (ISHE) Conference, the Energy Community Partnership Workshop facilitated by Mountain Home Air Force Base, and the Idaho Green Building and Energy Conference. In 2016, Custom Projects continued three offerings to increase the total program savings—WWEEC, MWSOC, and SCE. A new, fourth offering launched in November 2016—Continuous Energy Improvement (CEI) Cohort for Schools.

Wastewater Energy Efficiency Cohort

In January 2014, Custom Projects launched WWEEC, its third program offering since 2013, to increase the total program savings. WWEEC is a cohort training approach to low-cost or no-cost energy improvements. WWEEC is a two-year engagement with 11 Idaho Power service area municipalities and ended in 2016. WWEEC provided a series of five technical training workshops with a cohort training approach. In addition, WWEEC provided energy audits in conjunction with a qualified wastewater system expert and an energy management assessment conducted by a strategic energy management professional for each participating facility. Customers were able to immediately implement low-cost and no-cost energy efficiency improvements by actions as simple as turning off equipment or adjusting control points for systems. They also implemented many energy management principles, including forming an energy team, setting energy goals, and establishing energy policies in their organization for persistence of savings. Energy savings were tracked via Idaho Power-provided, third-party software using an energy model for each facility. WWEEC participants also completed several capital projects that received separate incentives from our Commercial and Industrial Energy Efficiency Program. Additionally, multiple pre-planning meetings were held with consultants and municipalities for upcoming new wastewater construction projects.

Due to involvement with our WWEEC, Custom Projects engineers also set up multiple program informational meetings with the area civil engineering firms specializing in water and wastewater designs to educate them on the Commercial and Industrial Energy Efficiency Program, audit process, energy efficiency opportunities, and available tools and resources. Presentations on Idaho Power offerings were given at a multi-industrial customer program training session in Boise, the annual Southwest Idaho Operators Section (SWIOS) Conference, the national annual Water Environment Federation Technical Exhibition and Conference (WEFTEC) in New Orleans, and Idaho Power had a booth at the Pacific Northwest Section American Water Works Association (PNWS-AWWA) regional conference.

Year-one incentives and savings totaled $57,559 and 2,561,177 kWh/year. In all cases, the incentive was capped at 70 percent of the eligible costs. Year-one incentives and savings were processed in 2016. Additionally, some WWEEC participants completed capital projects that were encouraged and discussed in the workshops and energy audits. These capital projects' savings are captured separately and not included in the above number. Year-two of the offering consisted of phone call check-ins with the participants and model data updates. Year-two incentives and savings will be processed in 2017.

Municipal Water Supply Optimization Cohort

In September 2015, Idaho Power held a recruiting/training session for municipal water supply operators and public works personnel garnering interest in a third Strategic Energy Management cohort—the MWSOC, similar to WWEEC but for clean water operators. The program officially launched in January 2016. The goal of the cohort is to equip water professionals with the skills necessary to identify and implement energy efficiency opportunities on their own, and to ensure that these energy and cost savings are maintained long term.

A series of three workshops were held in the Twin Falls area with representatives from the 15 participating organizations. Sessions included technical training, hands-on learning exercises to demonstrate simple low-cost and no-cost actions to diagnose problems and save energy, and peer-to-peer sharing of lessons learned as the classes progressed. MWSOC provided energy audits of the participants' facilities. Customers were able to immediately implement low-cost and no-cost energy efficiency improvements by actions as simple as changing pressure regulating valve (PRV) settings or well level adjustments. Participants had engineering support between each workshop, facilitated by an expert team of energy engineers with specific experience in optimizing water supply systems. Participants all received tools, such as a baseline hydraulic model (updated and modernized with the energy modules loaded), a mass balance for water, and an energy map showing locations of stored and lost energy, as well as the energy footprint of the various pumps within each system. A top down baseline energy model was constructed for each participant that uses electric data normalized for system operating data and weather. The baseline energy model will be used in conjunction with on-going actual energy, production and weather data to determine the energy savings for the offering.

Continuous Energy Improvement Cohort for Schools

In November 2016, Idaho Power held a recruiting/training session for school district personnel garnering interest in this cohort. Representatives from 19 school districts attended. The session introduced the

upcoming cohort whose goal is to equip district personnel with hands-on training and guidance to help get the most out of their systems while reducing energy consumption. Idaho Power and the company's consultants gave an overview what Continuous Energy Improvement is and how numerous low-cost or no-cost measures can be uncovered in schools. By 2016 year-end, 9 school districts have signed up for the cohort. The Cohort for Schools Kickoff Workshop is scheduled for late January 2017, in Boise with a final Report-out Workshop to be scheduled in December 2017. Energy savings for this offering are tracked with multi-variant regression models that are custom-built for each participating facility and based on historical utility data and current operations.

Streamlined Custom Efficiency

The SCE offering was initially started in 2013 and continues to keep vendor engagement high and provides custom incentives for small compressed air system improvements, fast-acting doors in cold-storage spaces, refrigeration controllers for walk-in coolers, and process-related VFDs. This offering targets projects that may have typically been too small to participate in the Custom Projects due to the resources required to adequately determine measure savings. Idaho Power contracted with a third party to manage SCE data collection and analysis for each project. In 2016, the SCE offering processed 42 projects, totaling 2,837,200 kWh per year of savings and $399,523 in incentives paid.

New Construction

The New Construction option completed 116 projects, the largest total number of projects completed in a calendar year, resulting in 12,393,249 kWh in annual energy savings in Idaho and Oregon. The total number of projects increased by over 43 percent from 81 projects in 2015.

Maintaining a consistent offering is important for large projects with long construction periods, though changes are made to enhance customers' options or to meet new code changes. Idaho Power ideally tries to keep the New Construction option consistent by making less frequent changes, approximately every other year. The option was modified in mid-2016 to include the addition of four new measures; evaporative pre-coolers on air-cooled condensers, kitchen hood variable-speed drives, onion/potato shed ventilation variable-speed drives, and smart-strip power strips.

Idaho Power contracted with ADM in 2015 to update the Technical Reference Manual (TRM) to address code changes that occurred January 1, 2015 in Idaho. The revised TRM provided updated savings for existing measures and savings for new measures that were added to the program. Minor modifications were also made to several existing measures to update requirements based on the code changes.

Thirty projects received the Professional Assistance Incentive, an incentive given to architects and/or engineers for supporting technical aspects and documentation of the project, in 2016 (equal to 10 percent of the participant's total incentive, up to a maximum amount of $2,500) compared to nine projects in 2015.

In 2016, Idaho Power continued its contract with GreenSteps to target the commercial real estate industry by continuing to support the Kilowatt Crackdown™ competition past participants. The original competition, which included benchmarking each building in ENERGY STAR® Portfolio Manager,

encouraged builders to implement low-cost and no-cost efficiency measures. Idaho Power also expanded engagement with participants through Strategic Energy Management (SEM). GreenSteps worked with 26 buildings in Boise and Ketchum, and six property management firms. A summary of the report is located in *Supplement 2: Evaluations.*

Idaho Power customer representatives visited 20 architectural and engineering firms in Boise, Meridian, Nampa, Hailey, Ketchum, Twin Falls, and Pocatello in 2016. Customer representatives visited with 100 professionals total to build relationships with the local design community, and to discuss Idaho Power's commercial and industrial energy efficiency programs.

Retrofits

The Retrofits option experienced increases in participation and energy savings in 2016. Some of the increase was attributed to the mid-June program change to adjust the screw-in LED incentive. The option received a noticeable number of projects with screw-in LED product before that change became effective. This also resulted in increased energy savings. Overall, Retrofits received more LED-only projects, which had a significant contribution to energy savings.

Several measure changes were implemented mid-year. The most notable changes were to adjust the screw-in LED incentive, to add the tube LEDs (TLED), and to add seven non-lighting measures to the incentive menu.

For the Retrofits option, Idaho Power facilitated eight workshops across the Idaho Power service area targeting contractors and large customers. The purpose of the workshops was to review option updates with market participants.

Idaho Power staff and contractors contacted over 195 trade allies to respond to inquiries, strengthen relationships, encourage participation, increase knowledge of the incentives, and receive feedback about the market, and individual experiences. This targeted outreach was to electrical contractors, electrical distributors, HVAC contractors, and food service equipment suppliers.

Idaho Power continued its contracts with Evergreen Consulting Group, LLC, Honeywell, Inc., and RM Energy Consulting to provide ongoing program support for lighting and non-lighting reviews and inspections as well as trade ally outreach.

Marketing Activities

Most marketing activities engaged in for the Commercial and Industrial Energy Efficiency Program can be found in the Marketing section of this report. Below are the 2016 activities specific to the option within the overall program.

Custom Projects

Idaho Power's Custom Projects option is unique from the company's other energy efficiency options by providing individualized energy efficiency solutions to a somewhat limited number of customers. Idaho Power's major customer representatives often act as the company's sales force. Marketing supports the major customer representatives by providing written program materials to help

them inform customers of the measures and benefits available to them. Idaho Power presented the Simplot Don Plant in Pocatello an incentive check for $197,335 toward energy efficiency upgrades to a pumping project.

New Construction

Idaho Power placed ads in the Idaho Association of General Contractors membership directory specific to the New Construction option. The New Construction brochure was also updated to include a list of current measures and provided to customers planning new construction and major renovation projects. Idaho Power alerted the media to its presentation of a cash incentive to Vallivue School District 139. During a board meeting, the School District accepted a check for more than $193,000 it had earned for adopting energy-efficient construction measures at two schools in Caldwell, Idaho.

Retrofits

Ads thanking contractors for their participation ran in numerous papers in December 2015, and continued in the *Business Insider, Southeast Idaho Business Journal, Idaho Business Review,* and *Business News* within the *Blackfoot Morning-News* in January 2016. Idaho Power also ran an ad promoting energy-efficient Retrofit incentives in the January Boise Chamber of Commerce newsletter.

Cost-Effectiveness

Custom Projects

All projects submitted through the Custom Projects option must meet cost-effectiveness requirements, which include TRC, UC, and PCT tests from a project perspective. The program requires all costs related to the energy efficiency implementation and energy-savings calculations are gathered and submitted with the program application. Payback is calculated with and without incentives, along with the estimated dollar savings for installing energy efficiency measures. As a project progresses, any changes to the project are used to recalculate energy savings and incentives before the incentives are paid to the participant. To aid in gathering or verifying the data required to conduct cost-effectiveness and energy-savings calculations, third-party engineering firms are sometimes used via a scoping audit, detailed audit, or engineering measurement and verification services available under the Custom Projects option. Details for cost-effectiveness are in *Supplement 1: Cost-Effectiveness*.

New Construction

To calculate energy savings for the New Construction option, Idaho Power verifies the incremental efficiency of each measure over a code or standard practice installation baseline. Savings are calculated through two main methods. When available, savings are calculated using actual measurement parameters, including the efficiency of the installed measure compared to code-related efficiency. Another method for calculating savings is based on industry standard assumptions, when precise measurements are unavailable. Since the New Construction option is prescriptive and the measures are installed in new buildings, there are no baselines of previous measurable kWh usage in the building. Therefore, Idaho Power uses industry standard assumptions from the International Energy Conservation Code (IECC) to calculate the savings achieved over how the building would have used energy absent of efficiency measures.

New Construction incentives are based on a variety of methods depending on the measure type. Incentives are calculated mainly through a dollar-per-unit equation using square footage, tonnage, operating hours, or kW reduction.

To prepare for 2016 program changes, ADM, under contract with Idaho Power, updated the TRM for New Construction. The TRM, which provides savings and costs related to existing and new measures for the New Construction option, was updated to include the IECC 2012 baseline. These new savings were applied in 2016 when other program changes were implemented.

Based on the deemed savings value from the TRM, nearly all measures were cost-effective, with the exception of some air conditioning units and daylight photo controls. Idaho Power determined these measures met at least one of the cost-effectiveness exceptions outlined in OPUC Order No. 94-590. Idaho Power had received a cost-effectiveness exception on these measures when it filed changes to the program in 2014 under Advice No. 14-10. When Idaho Power filed Advice No. 16-08 for the combined commercial and industrial program, the company requested and received another cost-effectiveness exception for variant refrigerant flow (VRF) heat pumps.

Complete measure level details for cost-effectiveness can be found in *Supplement 1: Cost-Effectiveness*.

Retrofits

In 2016, Idaho Power used most of the same savings and assumptions as were used in 2015 for the Retrofits option. For all lighting measures, Idaho Power uses a lighting tool calculator developed by Evergreen Consulting, Group LLC. An initial analysis was conducted to see if the lighting measures shown in the tool were cost-effective based on the average input of watts and hours of operation, while the actual savings for each project are calculated based on specific information regarding the existing and replacement fixture. For most non-lighting measures, deemed savings from the TRM or RTF are used to calculate the cost-effectiveness. To prepare for 2016 program changes, ADM, under contract with Idaho Power, updated the TRM for the Retrofit option. The TRM which provides savings and costs related to existing and new measures for the Retrofit option. The TRM was updated to include the IECC 2012 baseline for several heating and cooling measures.

Several measures that are not cost-effective remain in the program. These measures include high-efficiency A/C units and heat pump units. After reviewing these measures, Idaho Power determined the measures met at least one of the cost-effectiveness exceptions outlined in OPUC Order No. 94-590. These cost-effectiveness exceptions were approved by the OPUC in Advice No 14-06 in 2014. When Idaho Power filed Advice No. 16-08 for the combined commercial and industrial program, the company requested and received another cost-effectiveness exception for VRF heat pumps.

Complete measure level details for cost-effectiveness can be found in *Supplement 1: Cost-Effectiveness*.

Customer Satisfaction and Evaluations

Customer satisfaction with regards to the Commercial and Industrial Energy Efficiency Program is mentioned in the Commercial and Industrial sector overview. Activities that are specific to each component of the program are mentioned below.

Custom Projects

No specific activities were conducted in 2016.

New Construction

The New Construction option continued random installation verification on 10 percent of projects in 2016. The purpose of the verifications is to confirm program guidelines and requirements are adequate and ensure participants are able to provide accurate and precise information with regard to energy efficiency measure installations. The IDL completed on-site field verifications on 12 of the 116 projects, which encompass approximately 10 percent of the total completed projects in the program. Out of the 12 projects verified, only minor discrepancies were discovered. The minor discrepancies consist of the addition or subtraction of lighting fixtures compared to what was claimed on the application. Random project installation verification will continue in 2017.

In 2016, Idaho Power contracted with Leidos to conduct an impact evaluation of this option. The evaluation determined a high level of ex-post realization for option demand and energy savings at .99 and .98 respectively, as well as high realization at the measure level. The kWh confidence and precision ratios were 90 percent confidence at +/- 0.2 percent precision and 90 percent confidence at +/-4.8 percent for kW. In general, project documentation was adequate for verifying most measure impacts, and project data are recorded and tracked with high accuracy. Final reports are provided in *Supplement 2: Evaluation.*

Retrofits

In 2016, Idaho Power contracted with Leidos Engineering to perform an impact evaluation for the incentives paid in 2015 under the Retrofits option. The final report indicated that the option is well designed, well managed, and well implemented. The project documentation was adequate for verifying most measure impacts, and project data are recorded and tracked with high accuracy. The evaluation also determined a high level of ex-post realization for energy savings, as well as high realizations at the measure level. The 2015 kWh savings realization rate was 0.99 with 90 percent confidence at +/- 0.2 percent precision. Final reports are provided in *Supplement 2: Evaluation.*

2017 Program and Marketing Strategies

Future marketing for the overall Commercial and Industrial Energy Efficiency Program is described in the Marketing section of this report. Below are specific strategies that apply to the individual components of the program.

Custom Projects

Over the years, the Custom Projects option has achieved a high service-area penetration rate. As stated previously, over 95 percent of the large-power service customers have submitted applications for a project. Company staff is actively working to support these customers in new ways and find additional opportunities for cost-effective energy saving projects. Additional program offerings are currently under consideration for implementation in 2017.

Idaho Power will report the second year of energy savings and incentives for WWEEC in the *Demand-Side Management 2017 Annual Report*. Idaho Power will report the first year of energy

savings, and incentives in 2017 or early 2018 for the MWSOC offering. Activities and coaching will continue for the MWSOC participants and the report-out workshop will be held in 2017. The first year of the CEI Cohort for Schools will commence in January 2017. Three half-day workshops and a final report-out workshop will be held in 2017 along with monthly activities and frequent coaching. The SCE offering will continue in 2017, and new measures, processes, and other improvements will be evaluated to continuously improve the effectiveness of this offering.

Idaho Power will continue to provide site visits by Custom Projects engineers and energy scoping audits for project identification and energy-savings opportunities; measurement and verification of larger, complex projects; technical training for customers; and funding for detailed energy audits for larger, complex projects.

Custom Projects will continue to be marketed as part of Idaho Power's Commercial and Industrial Energy Efficiency Program.

New Construction

The following strategies are planned for 2017:

- Continue to perform random post-project verifications on a minimum of 10 percent of completed projects.
- Continue to sponsor technical training through the IDL to address the energy efficiency education needs of design professionals throughout the Idaho Power service area.
- Support organizations focused on promoting energy efficiency in commercial construction.
- Actively support the 2017 Idaho Energy and Green Building Conference as a member of the conference planning committee. Participate in planning the conference agenda and energy efficiency sessions.
- Continue to sponsor the BOMA symposium and offer energy efficiency training and support to the real estate market.
- Continue customer representative relationship building with local design professionals by targeting Idaho Power's Boise and Pocatello areas.

The New Construction option will continue to be marketed as part of Idaho Power's Commercial and Industrial Energy Efficiency Program.

Retrofits

Idaho Power will review and address the recommendations from the Leidos impact evaluation, and offer technical lighting classes to trade allies.

Retrofits will continue to be marketed as part of Idaho Power's Commercial and Industrial Energy Efficiency Program.

Flex Peak Program

		2016	2015
Participation and Savings			
	Participants (sites)	137	72
	Energy Savings (kWh)	n/a	n/a
	Demand Reduction (MW)	42	26
Program Costs by Funding Source			
	Idaho Energy Efficiency Rider	$105,116	$86,445
	Oregon Energy Efficiency Rider	$247,897	$219,654
	Idaho Power Funds	$414,984	$286,773
	Total Program Costs—All Sources	$767,997	$592,872
Program Levelized Costs			
	Utility Levelized Cost ($/kWh)	n/a	n/a
	Total Resource Levelized Cost ($/kWh)	n/a	n/a
Benefit/Cost Ratios			
	Utility Benefit/Cost Ratio	n/a	n/a
	Total Resource Benefit/Cost Ratio	n/a	n/a

Description

The Flex Peak Program is a voluntary program available in Idaho and Oregon service areas. It's designed for Idaho Power's large commercial and industrial customers, with the objective to reduce the demand on Idaho Power's system during periods of extreme peak electricity use. By reducing demand on extreme system load days during summer months, the program reduces the amount of generation and transmission resources required to serve customers. Program participants earn a financial incentive for reducing load during peak electricity use: non-holiday weekdays, June 15 to August 15, between the hours 2:00 p.m. and 8:00 p.m. Reduction events may be called a maximum of 60 hours per season.

Customers with the ability to offer load reduction of at least 20 kW are eligible to enroll in the program. The 20-kW threshold allows a broad range of customers the ability to participate in the program. Participants receive notification of a load reduction event two hours prior to the start of the event, and events last between two to four hours.

The program originated in 2009 as the FlexPeak Management program managed by a third-party contractor. In 2015, Idaho Power took over full administration, and changed the name to Flex Peak Program. The IPUC issued Order No. 33292 on May 7, 2015, while the OPUC approved Advice No. 15-03 on May 1, 2015, authorizing Idaho Power to implement an internally managed Flex Peak Program (Schedule No. 82 in Idaho and Schedule No. 76 in Oregon), and to continue recovery of its demand response program costs in the previous manner.

Program Activities

In 2016, 65 participants enrolled 137 sites in the program. Of those 137 sites, 67 were new—a 90-percent increase over 2015. Participants had a nominated load reduction of 34.2 MW in the first week of the program, which was the highest committed load reduction for the season. This weekly commitment, or nomination, was comprised of all 137 sites, 70 of which had participated in the 2015 season. The maximum realization rate during the season was 120 percent and the average for all three events combined was 98.8 percent. The realization rate is the percentage of load reduction achieved versus the amount of load reduction committed for an event. The highest hourly load reduction achieved was 41.5 MW during the July 26 event.

The first event was called on Thursday, June 30. Participants were notified at 2:00 p.m. of a four-hour event from 4:00 p.m. to 8:00 p.m. The total nomination for this event was 34.2 MW for each hour. The average load reduction was 32.8 MW, with the highest hourly load reduction of 34.8 MW from 6:00 p.m. to 7:00 p.m. The realization rate for this event was 96 percent.

A second event was called on Tuesday, July 26. Participants were notified at 2:00 p.m. of a four-hour event from 4:00 p.m. and 8:00 p.m. The total nomination for this event was 33.5 MW for each hour. The average load reduction was 40.3 MW, with the highest hourly load reduction of 41.5 MW from 4:00 p.m. to 5:00 p.m. The realization rate for this event was 120 percent.

The third event was called on Thursday, July 28. Participants were notified at 2:00 p.m. of a four-hour event from 4:00 p.m. to 8:00 p.m. The total nomination for this event was 33.9 MW. The average load reduction was 27 MW, with the highest hourly load reduction of 27.7 MW from 4:00 p.m. to 5:00 p.m. The realization rate for this event was 80 percent. Some larger sites underperformed or reduced participation because this was the second event in one week, therefore the realization rate was lower.

The Idaho Power CHQ building participated in the program again in 2016, and committed to reduce up to 200 kW of electrical demand during events—an increase from the 150 kWs nominated during the 2015 season. Unlike other program participants, Idaho Power does not receive any financial incentives for its participation. Idaho Power's CHQ participated in all three demand response events in 2016. The average reduction achieved by the facility across the three events was 348 kW, which exceeded the nominated amount. The maximum hourly reduction was 685 kW, achieved on July 28. Reductions were mostly obtained by turning off lights, adjusting chiller set points, decreasing fan speeds, and curtailing elevator use. Besides the benefit of experiencing firsthand what participants experience with the program, Idaho Power now has a quantifiable energy-reduction plan in place that can be executed when needed. Idaho Power will continue to look for opportunities to enroll more of its facilities in the program for future seasons.

Marketing Activities

Idaho Power developed new program literature including a new program brochure. These were sent by direct-mail to encourage both past participants and new customers to enroll in 2016. Idaho Power launched an additional marketing campaign early in 2016 using customer representatives to recruit new participants. Customer representatives conducted field visits in early winter and followed up with

additional communication in early spring. This marketing campaign focused on identifying customer characteristics that make successful program participants based on load size, load shape, and type of operation. Customer representatives also communicated available incentive amounts based on customer load size.

The program's marketing campaign goals were expanded to increase the number and size diversity (in terms of nominated load reduction) of customers enrolled. By having a larger diversity of customer sizes enrolled, it was expected that the program would be less prone to volatility in its realization rate. The company also included an advertisement in the spring *Energy at Work* newsletter and published an article promoting the program in its commercial and industrial electronic newsletter, *Energy Insights*.

Idaho Power implemented an educational campaign with currently enrolled participants and potential participants to promote a variety of demand-reduction strategies. The goal was to refine the amount of nominated load reduction from each site to more realistically align with load reduction potential.

The Flex Peak Program was also marketed along with the Commercial and Industrial Energy Efficiency Program. Additional details can be found in the Marketing section of this report.

Cost-Effectiveness

Idaho Power determines cost-effectiveness for it demand response program under the terms of IPUC Order No. 32923 and OPUC Order No. 13-482. Under the terms of the orders and the settlement, all of Idaho Power's demand response programs were cost-effective for 2016.

The Flex Peak Program was dispatched for 12 event hours and achieved a maximum reduction of 41.5 MW. The total cost of the program in 2016 was $767,997, had the Flex Peak Program been used for the full 60 hours, the cost would have been approximately $1,004,000.

In 2016, the cost of operating the three demand response programs was $9.47 million. Idaho Power estimates that if the three programs were dispatched for the full 60 hours, the total costs would have been approximately $12.87 million and would have remained cost-effective. A complete description of Idaho Power cost-effectiveness of its demand response programs is included in *Supplement 1: Cost-effectiveness.*

Customer Satisfaction and Evaluations

Idaho Power conducted a post-season survey that was sent via email to all participants enrolled in the program. The survey was sent to 97 individuals representing 64 participating customer sites. Idaho Power received feedback from 34 individuals for a response rate of 35 percent. When customers were asked how satisfied they were with the Flex Peak Program, nearly 97 percent of respondents indicated they were "very satisfied" or "somewhat satisfied." When asked how likely they would be to re-enroll in the Flex Peak Program, 100 percent of respondents indicated they were likely to re-enroll next year with just over 91 percent indicating they were "very likely" to re-enroll. The complete details of the survey results are in *Supplement 2: Evaluation*, as is the *Flex Peak Program 2016 Report*.

Idaho Power contracted CLEAResult to conduct an impact evaluation of the 2016 Flex Peak Program. The goals of the impact evaluation were to determine the demand reduction (in MW) and realization rate for the three curtailment events during the program's June 15 through August 15, 2016 season.

The results of the analyses showed maximum demand reductions of 34.8, 41.5, and 27.7 MW, respectively, for the three events, and an average of 34.7 MW. The events achieved realization rates of 96.0 percent, 120 percent, and 80 percent, respectively, averaging 98.8 percent. These results are different than those listed in the CLEAResult report; these have been converted to generation-level reductions, while the CLEAResult report lists meter-level reductions.

The results of the impact evaluation show that Idaho Power's 2016 Flex Peak Program functioned as intended, and provided up to 42 MW to the electricity grid. A summary of the results is in *Supplement 2: Evaluation*.

2017 Program and Marketing Strategies

The company is exploring opportunities to improve the re-enrollment process for participants, and has filed a tariff advice with both the IPCU and OPUC to request that existing participants would be automatically enrolled each year without having to complete a new application and program agreement. Customers would still have the ability to change their nomination amounts and decline participation.

Recruitment efforts for the 2017 season will begin in the first quarter to encourage participation. Idaho Power will meet with existing participants during the winter/spring months to discuss past-season performance and upcoming season details.

For the upcoming season, Idaho Power plans to focus on retaining currently enrolled customers and to recruit new customers that show interest and are a good fit for the program. However, the company does not plan to actively market the program like it did in 2016 because the capacity from this past season remained around 35 MW, which comports with the desired program capacity set forth in the settlement agreement.

The company will continue to use its customer representatives to retain the currently enrolled sites and encourage new sites to participate. Flex Peak will also be marketed along with Idaho Power's Commercial and Industrial Energy Efficiency Program. See the Marketing section of this report for 2017 marketing strategies.

Oregon Commercial Audits

	2016	2015
Participation and Savings		
Participants (a)	7	17
Energy Savings (kWh)	n/a	n/a
Demand Reduction (MW)	n/a	n/a
Program Costs by Funding Source		
Idaho Energy Efficiency Rider	$0	$0
Oregon Energy Efficiency Rider	$7,717	$4,251
Idaho Power Funds	$0	$0
Total Program Costs—All Sources	$7,717	$4,251
Program Levelized Costs		
Utility Levelized Cost ($/kWh)	n/a	n/a
Total Resource Levelized Cost ($/kWh)	n/a	n/a
Benefit/Cost Ratios		
Utility Benefit/Cost Ratio	n/a	n/a
Total Resource Benefit/Cost Ratio	n/a	n/a

Description

The Oregon Commercial Audits identifies opportunities for commercial building owners to achieve energy savings. Initiated in 1983, this statutory required program (ORS 469.865) is offered under Oregon Tariff Schedule No. 82.

Through this program, Idaho Power provides free energy audits, evaluations, and educational products to customers. Energy audits provide the opportunity to discuss utility incentives available to customers who install qualifying energy efficiency measures. Business owners can make the decisions to change operating practices, or make capital improvements designed to use energy wisely.

Program Activities

Seven customers requested audits. Of those audits, EnerTech Services, a third-party contractor, completed four, Idaho Power personnel completed two, and one customer received only the program-related booklet. No customers cancelled their audits. The costs were down in 2016 from 2015 because the third-party contractor performed only four audits.

Auditors inspected the building shell, HVAC equipment, lighting systems, and operating schedules, if available, and reviewed the customer's past billing data. Additionally, these visits provided a venue for auditors to discuss incorporating specific business operating practices for energy savings, and to distribute energy efficiency program information.

Marketing Activities

Idaho Power sent out its annual mailing to 1,413 Oregon commercial customers in mid-September 2016 regarding the no-cost or low-cost energy audits, and the availability of Idaho Power's *Saving Energy Dollars* booklet.

Cost-Effectiveness

As previously stated, the Oregon Commercial Audits program is a statutory program offered under Oregon Schedule 82, the Commercial Energy Conservation Services Program. Because the required parameters of the Oregon Commercial Audit program are specified in Oregon Schedule 82 and the company abides by these specifications, this program is deemed to be cost-effective. Idaho Power claims no energy savings from this program.

Customer Satisfaction and Evaluations

Idaho Power conducted no customer satisfaction surveys or evaluations in 2016.

Historically, customers have been pleased with the audit process because the audits help identify energy-saving opportunities that may not be obvious to the business owner.

2017 Program and Marketing Strategies

The Oregon Commercial Audits program will continue to be an important avenue for Idaho Power to help customers identify energy-saving opportunities.

Idaho Power will continue to market the program through the annual customer notification.

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Irrigation Sector Overview

The irrigation sector is comprised of agricultural customers operating water-pumping or water-delivery systems to irrigate agricultural crops or pasturage. End-use electrical equipment primarily consists of agricultural irrigation pumps and center pivots. The irrigation sector does not include water pumping for non-agricultural purposes, such as the irrigation of lawns, parks, cemeteries, golf courses, or domestic water supply.

In December 2016, the active and inactive irrigation service locations totaled 20,638 system-wide. This was an increase of 1.7 percent compared to 2015, primarily due to the addition of service locations for pumps and pivots to convert land previously furrow irrigated to sprinkler irrigation. Irrigation customers accounted for 1,948,079 MWh of energy usage in 2016, which was a decrease from 2015 of approximately 4.8 percent primarily due to variations in weather. This sector represented nearly 14 percent of Idaho Power's total electricity sales, and approximately 33 percent of July sales. Energy usage for this sector has not grown significantly in many years; however, there is substantial yearly variation in usage due primarily to the impact of weather on customer irrigation needs.

Idaho Power offers two programs to the irrigation sector:

1. Irrigation Efficiency Rewards, an energy efficiency program designed to encourage the replacement or improvement of inefficient systems and components

2. Irrigation Peak Rewards, a demand response program designed to provide a system peak resource

The Irrigation Efficiency Rewards program, including Green Motor Initiative, experienced increased annual savings, from 14,027 MWh in 2015 to 15,747 MWh in 2016. Annual savings were up in 2016 likely because several large projects were completed this year.

In 2016, the Irrigation Peak Rewards program was in its third full season of full operation after temporarily being suspended for the 2013 season. Idaho Power successfully recruited the majority of prior participants to continue their participation in 2016, with a small increase of 1.2 percent in eligible service points participating over 2015.

Table 16 summarizes the overall expenses and program performance for both the energy efficiency and demand response programs provided to irrigation customers.

Table 16. 2016 irrigation program summary

Program	Participants	Total Cost		Savings	
		Utility	Resource	Annual Energy (kWh)	Peak Demand (MW)
Demand Response					
Irrigation Peak Rewards	2,286 service points	$ 7,600,076	$ 7,600,076	n/a	303
Total		**$ 7,600,076**	**$ 7,600,076**	**n/a**	**303**
Energy Efficiency					
Green Motors—Irrigation	23 motor rewinds			73,617	
Irrigation Efficiency Rewards	851 projects	$ 2,372,352	$ 8,162,206	15,673,513	
Total		**$ 2,372,352**	**$ 8,162,206**	**15,747,130**	**303**

Note: See Appendix 3 for notes on methodology and column definitions.

Each year, the company conducts a customer relationship survey. Overall, 56 percent of Idaho Power irrigation customers surveyed in 2016 for the Burke Customer Relationship Survey indicated Idaho Power was meeting or exceeding their needs in offering energy efficiency programs. Fifty-three percent of survey respondents indicated Idaho Power is meeting or exceeding their needs with information on how to use energy wisely and efficiently. Sixty-seven percent of respondents indicated Idaho Power is meeting or exceeding their needs with encouraging energy efficiency with its customers. Overall, 41 percent of the irrigation survey respondents indicated they have participated in at least one Idaho Power energy efficiency program. Of irrigation survey respondents who have participated in at least one Idaho Power energy efficiency program, 93 percent are “very” or “somewhat” satisfied with the program.

Training and Education

Idaho Power continued to market its irrigation programs by varying the location of workshops and offering new presentations to irrigation customers. In 2016, Idaho Power provided eight workshops promoting the Irrigation Efficiency Rewards program. Approximately 200 customers attended workshops in Twin Falls, Emmett, McCall, Homedale, Mini-Cassia, Shoshone, American Falls, and Oxbow. The company displayed exhibits at regional agricultural trade shows, including the Eastern Idaho Agriculture Expo, Western Idaho Agriculture Expo, the Agri-Action Ag show and the Treasure Valley Irrigation Conference.

Idaho Power sends out *Irrigation News* to all irrigation customers in Idaho and Oregon. The newsletter focuses on the Idaho Power Irrigation topics. This newsletter provides an opportunity to increase awareness, and to promote our Irrigation programs.

Field Staff Activities

Idaho Power’s agricultural representatives offer customer education, training, and irrigation-system assessments and audits across the service area. Agricultural representatives also engage agricultural irrigation equipment dealers in training sessions, with the goal to share expertise about energy-efficient system designs, and to bring awareness about the program. Agricultural representatives and the irrigation segment coordinator, a licensed agricultural engineer, participate in annual training to maintain

or obtain their Certified Irrigation Designer and Certified Agricultural Irrigation Specialist accreditation. This training allows Idaho Power to maintain its high level of expertise in the irrigation industry and is sponsored by the nationally based Irrigation Association.

Irrigation Efficiency Rewards

	2016	2015
Participation and Savings		
Participants (projects)	851	902
Energy Savings (kWh)*	15,747,130	14,027,411
Demand Reduction (MW)	n/a	n/a
Program Costs by Funding Source		
Idaho Energy Efficiency Rider	$1,672,328	$1,714,399
Oregon Energy Efficiency Rider	$634,101	$61,295
Idaho Power Funds	$65,923	$60,018
Total Program Costs—All Sources	$2,372,352	$1,835,711
Program Levelized Costs		
Utility Levelized Cost ($/kWh)	$.018	$0.016
Total Resource Levelized Cost ($/kWh)	$.063	$0.085
Benefit/Cost Ratios		
Utility Benefit/Cost Ratio	4.95	6.00
Total Resource Benefit/Cost Ratio	3.21	3.84

*2016 total includes 73,617 kWh of energy savings from 23 Green Motors projects.

Description

Initiated in 2003, the Irrigation Efficiency Rewards program encourages energy-efficient equipment use and design in irrigation systems. Qualified irrigators in Idaho Power's Idaho and Oregon service areas can receive financial incentives and reduce their electricity usage through participation in the program. Two options help meet the needs for major or minor changes to new or existing systems: Custom Incentive and Menu Incentive.

Custom Incentive Option

The Custom Incentive Option addresses extensive retrofits or installation of an efficient new system.

New Systems: For a new system, the incentive is based on installation of a system Idaho Power determines to be more energy efficient than standard. Water source changes to an existing system are treated as a new system. The incentive is 25 cents per annual kWh saved, not to exceed 10 percent of the project cost.

Existing Systems: For existing system upgrades, the incentive is 25 cents per annual kWh saved or $450 per kW demand reduction, whichever is greater. The incentive is limited to 75 percent of the total project cost.

The qualifying energy efficiency measures include any hardware changes that result in a reduction of the potential kWh use of an irrigation system.

Idaho Power reviews, analyzes, and makes recommendations on each project. All project information is reviewed for each completed project before final payment. Prior usage history, actual invoices, and, in most situations, post-usage demand data are used to verify savings and incentives.

Menu Incentive Option

The Menu Incentive Option covers a significant portion of the costs of repairing and replacing specific components that help the irrigation system use less energy. This option is designed for systems where small maintenance upgrades provide energy savings from 11 separate measures. These measures are as follows:

- New flow-control type nozzles
- New nozzles for impact, rotating, or fixed-head sprinklers
- New or rebuilt impact or rotating type sprinklers
- New or rebuilt wheel-line levelers
- New complete low-pressure pivot package
- New drains for pivots or wheel-lines
- New riser caps and gaskets for hand-lines, wheel-lines, and portable mainlines
- New wheel-line hubs
- New pivot gooseneck and drop tube
- Leaky pipe repair
- New center pivot base boot gasket

Payments are calculated on predetermined average kWh savings per component.

Program Activities

Of the 851 irrigation efficiency projects completed in 2016, 728 were associated with the Menu Incentive Option, providing an estimated 10,357 MWh of energy savings and 2.02 MW of demand reduction. The Custom Incentive Option had 123 projects, of which 65 were new irrigation systems and 58 were on existing systems. This option provided 5,316 MWh of energy savings and 2.03 MW of demand reduction for the year.

Marketing Activities

In addition to training and education mentioned in the overview section, Idaho Power agricultural representatives targeted visits with a selected number of customers who had not participated in the program to increase customer education. Idaho Power maintained a database of irrigation dealers and vendors for direct-mail communication. Irrigation dealers and vendors are a key component to the successful marketing of the program. Therefore, Idaho Power's face-to-face interactions and direct-mailings containing the most up-to-date program information, brochures, and dealer-specific meetings ensured correct program promotion.

In 2016, the company sent a copy of *Irrigation News* to all irrigation customers in Idaho and Oregon. The August 2016 newsletter focused on the Irrigation Efficiency Rewards program: why read dates are important and summary bill options. This newsletter provides an opportunity to increase transparency, and to promote the Irrigation Efficiency Rewards program.

Idaho Power also placed numerous ads in print agricultural publications including the *Argus Observer*, *Gem State Producer*, *Capital Press, Power County Press,* and *Potato Grower Magazine;* updated and distributed the program brochure; and used radio advertising during Agri-Action and FFA week.

Cost-Effectiveness

Idaho Power calculates cost-effectiveness using different savings and benefits assumptions and measurements under the Custom Incentive Option and the Menu Incentive Option of Irrigation Efficiency Rewards.

Each application under the Custom Incentive Option received by Idaho Power undergoes an assessment to estimate the energy savings that will be achieved through a customer's participation in the program. On existing system upgrades, Idaho Power calculates the savings of a project by determining what changes are being made and comparing it to the service point's previous five years of electricity usage history on a case-by-case basis. On new system installations, the company uses standard practices as the baseline and determines the efficiency of the applicant's proposed project. Based on the specific equipment to be installed, the company calculates the estimated post-installation energy consumption of the system. The company verifies the completion of the system design through aerial photographs, maps, and field visits to ensure the irrigation system is installed and used in the manner the applicant's documentation describes.

Each application under the Menu Incentive Option received by Idaho Power also undergoes an assessment to ensure deemed savings are appropriate and reasonable. Payments are calculated on a prescribed basis by measure. In some cases, the energy-savings estimates in the Menu Incentive Option are adjusted downward from deemed RTF savings to better reflect known information on how the components are actually being used. For example, a half-circle rotation center pivot will only save half as much energy per sprinkler head as a full-circle rotation center pivot. All deemed savings are based on seasonal operating hour assumptions by region. If a system's usage history indicates it has lower operating hours than the assumptions, like the example above, the deemed savings are adjusted.

Based on the deemed savings from the RTF, all the measures offered under the Menu Incentive Option are cost-effective. Complete measure-level details for cost-effectiveness can be found in *Supplement 1: Cost-Effectiveness*.

Customer Satisfaction and Evaluations

Idaho Power conducted no customer satisfaction surveys for this program.

In 2016, Idaho Power contracted with Leidos to conduct an impact and process evaluation of this program. The evaluation team conducted 46 desk reviews; 30 for a stratified sample of Menu Option

projects and 16 for a stratified sample of Custom Option projects. The team also completed site visits for 11 custom incentive projects.

The findings of the impact evaluation indicate a realization rate of 98 percent, with a relative precision of +/- 2.4 percent overall at 90 percent confidence, on the ex-post kWh savings for both the Menu Option and the Custom Option savings combined. The realization rate on the ex-post kW impacts was 97 percent for the Menu Option and 75 percent for the Custom Option, respectively. The overall combined realization rate for the program demand savings was 90 percent with a relative precision of +/-3.3 percent at 90 percent confidence. The realization rate is the percent comparison of the expected savings or load reduction to the realized savings or load reduction.

The process evaluation indicated that the program is well designed, well managed and well implemented. A summary of the results is in *Supplement 2: Evaluation*.

2017 Program and Marketing Strategies

Marketing plans for 2017 include conducting six to eight customer-based irrigation workshops. Additionally, Idaho Power will continue to participate in four regional agricultural trade shows. Idaho Power will work closely with customers who have participated in the Irrigation Efficiency Rewards program, and continue to take photos for program promotion highlighting efficient irrigation system designs.

Idaho Power will continue to promote the program in agriculturally focused editions of newspapers and magazines, and to provide valuable information in its *Irrigation News* newsletter.

Irrigation Peak Rewards

		2016	2015
Participation and Savings			
	Participants (participants)	2,286	2,259
	Energy Savings (kWh)	n/a	n/a
	Demand Reduction (MW)	303	305
Program Costs by Funding Source			
	Idaho Energy Efficiency Rider	$1,082,113	$1,018,139
	Oregon Energy Efficiency Rider	$218,906	$222,614
	Idaho Power Funds	$6,299,056	$6,018,079
	Total Program Costs—All Sources	$7,600,076	$7,258,831
Program Levelized Costs			
	Utility Levelized Cost ($/kWh)	n/a	n/a
	Total Resource Levelized Cost ($/kWh)	n/a	n/a
Benefit/Cost Ratios			
	Utility Benefit/Cost Ratio	n/a	n/a
	Total Resource Benefit/Cost Ratio	n/a	n/a

Description

Idaho Power's Irrigation Peak Rewards program is a voluntary program available only to Idaho and Oregon agricultural irrigation customers with metered service locations that have participated in the past. Initiated in 2004, the purpose of the program is to minimize or delay the need to build new supply-side resources. By reducing demand on the most extreme load days in the most extreme summer conditions, the Irrigation Peak Rewards program can reduce the amount of generation and transmission resources Idaho Power needs to build.

The program pays irrigation customers a financial incentive to interrupt the operation of specified irrigation pumps with the use of one or more load control devices. Historically, the Irrigation Peak Rewards program provides approximately 300 MW of load reduction during the program season of June 15 through August 15, which is nearly 9 percent of Idaho Power's all-time system peak.

The program offers two interruption options: an Automatic Dispatch Option and a Manual Dispatch Option. To participate in the Automatic Dispatch Option, either an advanced metering infrastructure (AMI) or a cellular control device is attached to the customer's electrical panel that allows Idaho Power to remotely control the pumps. To participate in the Manual Dispatch Option, Idaho Power must determine that the service location cannot take advantage of the current installation and communication technology, or the service point offers at least 1,000 cumulative horse power (hp). These customers must nominate a particular amount of kW reduction by June 1 of the program year.

For either interruption option, load control events could occur up to four hours per day, up to 15 hours per week, but no more than 60 hours per season. Customers will experience at least three events per season between 1:00 p.m. and 9:00 p.m. on weekdays and Saturday.

The incentive structure consists of fixed and variable payments. The fixed incentive is paid to those who participate during each of the first three events. A variable incentive is paid to those who participate in subsequent events. Customers who participate from 5:00 p.m. until 9:00 p.m. can receive a higher variable incentive.

Program rules allow customers the ability to opt out of dispatch events up to five times per service point. The first three opt outs each incur a penalty of $5 per kW, while the remaining two each incur a penalty of $1 per kW based on the current month's billing kW. The opt-out penalty may be prorated to correspond with the dates of program operation, and are accomplished through manual bill adjustments. The penalties will never exceed the amount of the incentive that would have been paid with full participation.

Program Activities

Idaho Power filed a request in December 2015 to modify the existing Irrigation Peak Rewards program to allow the company to use more of its AMI technology for load control as well as to allow greater flexibility for some customers to participate in the Manual Dispatch Option. After approval in Idaho and Oregon in February 2016, Idaho Power decided not to renew the contract with program provider, EnerNOC/M2M Communications.

Idaho Power enrolled 2,286 service points in the program in 2016, an increase of 1 percent over 2015. The enrolled service points accounted for approximately 82 percent of the eligible service points (where there is a load control device installed). The incentive rate remained the same in 2016. The customer's incentive is a demand credit of $5.00/kW and an energy credit of $0.0076/kWh applied to the monthly bills for the period of June 15 through August 15. The demand credit is calculated by multiplying the monthly billing kW by the demand-related incentive amount. The energy credit is calculated by multiplying the monthly billing kWh usage by the energy-related incentive amount. Credits were prorated for periods when reading/billing cycles did not align with the program season dates from June 15 to August 15. The incentive structure also includes a "variable" payment for more than three events of $0.148/event kWh, with an increased variable credit of $0.198/event kWh for service points that voluntarily participate in the "extended" 9 p.m. interruption period.

The three load control events occurred June 29, July 27, and July 29, 2016 with the highest load reduction occurring on June 29, providing an estimated 316.9 MW at the generation level.

Marketing Activities

Idaho Power used workshops, trade shows, and direct-mailings to encourage past participants to re-enroll in the program. See the Irrigation Sector Overview section. The company updated an informational flyer to increase appeal and readability by using a brochure format. Idaho Power mailed the new brochure, program enrollment application, and program agreement, to all eligible participants in February 2016.

Cost-Effectiveness

Idaho Power determines cost-effectiveness for it demand response program under the terms of IPUC Order No. 32923 and OPUC Order No. 13-482. Under the terms of the orders and the settlement, all of Idaho Power's demand response programs were cost-effective for 2016.

The Irrigation Peak Rewards program was dispatched for 12 event hours and achieved a maximum demand reduction of 302.7 MW. The total expense for 2016 was $7,600,075 and would have been approximately $10.8 million if the program was fully used for 60 hours.

In 2016, the cost of operating the three demand response programs was $9.47 million. Idaho Power estimates that if the three programs were dispatched for the full 60 hours, the total costs would have been approximately $12.87 million and would have remained cost-effective. A complete description of Idaho Power cost-effectiveness of its demand response programs is included in *Supplement 1: Cost-Effectiveness.*

Customer Satisfaction and Evaluations

On the June 29 event, the program experienced two unexpected problems. The AMI signal to the load control device was not able to process all of the necessary commands because the communication settings were incorrect. The issue was discovered near the beginning of the event, and was corrected within two hours of the event starting time. Additionally, the EnerNOC/M2M device notification process did not work as intended, consequently not all of the participants were notified. EnerNOC/M2M corrected the issue, and it did not happen in subsequent events.

Each year, Idaho Power produces an internal annual report for the Irrigation Peak Rewards program. This report includes a load-reduction analysis, cost-effectiveness information, and program changes. A copy is included in *Supplement 2: Evaluation.*

In 2016, Idaho Power conducted a potential realization rate analysis and, as in past years, that potential event date has a large influence on the expected realization rate. Table 18 shows the season in two-week blocks and the potential realization rate associated with each. The rate drops off significantly in August due to a higher percentage of pumps turned off during the baseline period. The 2016 counterfactual realization rate peaked the last two weeks of June. The analysis determined that the highest realization rate of 76.9 percent occurred June 29. A further breakdown of the load reduction for each event by is shown in Table 17.

Table 17. Irrigation Peak Rewards program load reduction for each 2016 event by program option

Event	Automatic Dispatch Option (MW)	Manual Dispatch Option (MW)	Total Load (MW)
June 29	233,589	69,171	302,760
July 27	177,685	66,911	244,569
July 29	185,180	64,096	249,275

Table 18. Irrigation Peak Rewards 2016 potential realization rate

2016 Season Timeframe	Average Potential Realization Rate
June 15–June 30	68.82%
July 1–July 15	62.42%
July 16–July 31	58.89%
August 1– August 15	55.66%

2017 Program and Marketing Strategies

The company is in the process of exchanging all of the EnerNOC/M2M communication devices with load control units that work with its AMI meters or company designed cell phone-controlled devices. Once the exchanges are complete, the program will no longer use EnerNOC/M2M to provide services for the program. This change out of devices is expected to reduce overall program costs and potentially reduce the complexity of coordinating communications and load control commands.

Idaho Power will continue to recruit past participants in this program for the 2017 irrigation season. The company will conduct six to eight workshops throughout its service area to familiarize customers with the program details and eligibility requirements. Each eligible customer will be sent a comprehensive packet containing an informational brochure, sign-up worksheet, and contract agreement encouraging their participation. Idaho Power agricultural representatives will continue one-on-one customer contact to inform and encourage program participation.

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OTHER PROGRAMS AND ACTIVITIES

Idaho Power recognizes the value of energy efficiency awareness and education to create behavioral change to help customers use energy wisely. The goal of other programs and activities is to promote energy efficiency programs, projects, and behavior in customers. These awareness efforts increase customer demand for, and satisfaction with, Idaho Power's programs and activities. These activities include customer outreach, marketing, research, project development, and education programs. This category includes the Residential Energy Efficiency Education Initiative, Easy Savings Program, Commercial Education, and Educational Distributions.

Building-Code Improvement

Since 2005, the State of Idaho has been adopting a state-specific version of the IECC. The Idaho Building Code Board convened another Energy Code Collaborative in late 2015 in an effort to address implementation of the new series of building-related codes.

The Idaho Building Code Board requested the collaborative review of the 2015 codes and suggested recommendations to the board regarding adoption of codes. The first meeting occurred on December 2, 2015 and three subsequent meetings occurred in 2016.

Idaho Power participated and offered support in those collaborative meetings, which was attended by members of the building industry, local building officials, code development officials, and other interested stakeholders. The Energy Code Collaborative is an ongoing effort in which Idaho Power will continue to participate. Additional meetings will be scheduled in 2017.

Energy Efficiency Advisory Group

Formed in 2002, EEAG provides input on enhancing existing DSM programs and on implementing energy efficiency programs. Currently, EEAG consists of 13 members from Idaho Power's service area and the Northwest. Members represent a cross-section of customers from the residential, industrial, commercial, and irrigation sectors, as well as representatives from low-income households, environmental organizations, state agencies, public utility commissions, and Idaho Power. EEAG meetings are generally open to the public and attract a diverse audience. Idaho Power appreciates the input from the group, and acknowledges the commitment of time and resources the individual members give to participate in EEAG meetings and activities.

EEAG met four times in 2016: February 18, May 5, August 30, and November 3. Additionally, EEAG held two conference calls on February 16 and November 28. During these meetings, Idaho Power discussed and requested feedback on new program ideas and new measure proposals, marketing methods, and specific measure details; provided a status of the Idaho and Oregon Rider funding and expenses; gave an update of ongoing programs and projects; and supplied general information on DSM issues and other important issues occurring in the region. Idaho Power relies on input from EEAG to provide a customer and public-interest view of energy efficiency and demand

response programs and expenses. A summary of each meeting and phone call is below; the complete notes from the 2016 EEAG meetings are included in *Supplement 2: Evaluation*.

February 16, 2016: EEAG members participated in a confidential conference call to discuss the *2015 Flex Peak Program One-Time Report*. This report was submitted to the IPUC by May 7, 2016, and compares the current Flex Peak Program to the prior program managed by EnerNOC.

February 18, 2016: Darrel Anderson, President and CEO of Idaho Power, addressed the group and thanked members of EEAG for their time and guidance throughout the years. He commented that Idaho Power has benefited by having the EEAG as a resource that brings new thoughts and ideas about energy efficiency. CLEAResult presented results of the demand response program evaluations. Idaho Power sought feedback from the group on two programs: See ya later, refrigerator® and the Multifamily Direct Install project (Multifamily Energy Savings Program). The group supported continuing See ya later, refrigerator® in 2016, and provided good ideas for other measures that could be included in the Multifamily Direct Install project. Idaho Power also discussed its website redesign; spring 2016 residential energy efficiency ad campaign tactics, including a new customer pledge; and results from an em**powered** community survey to gauge customers' interest in making energy-saving improvements to their homes.

May 5, 2016: Idaho Power demonstrated its myAccount web tool, and handed out an abridged home assessment form for the group to fill out. The Energy Savings Pledge (later named the Smart-saver Pledge) was discussed and EEAG was asked for feedback on behavioral change options that could be included in the pledge. The group provided several options that pledge participants could choose from. Idaho Power presented its Program Planning Update, and asked EEAG for feedback on a couple of new residential ideas it is researching. The group suggested Idaho Power continues the Multifamily Direct Install project and continues to look for ways to encourage the installation of DHPs into new multi-family housing units if they appear to be cost-effective. The history of the Idaho and Oregon Rider was presented to the group and included the financial history for both Idaho and Oregon balances since their inception. Idaho Power provided EEAG with results from the spring residential energy efficiency ad campaign, further discussed plans for the Smart-saver Pledge, and reviewed Idaho Power's social media channels and specific energy efficiency posts and ads on each channel.

August 30, 2016: EEAG member and CSHQA president, Kent Hanway, hosted this meeting at the CSHQA office on Broad Street in Boise. Along with a presentation of the building's energy efficiency measures, EEAG members and guest were given a tour of the building. A presentation covering 2017 preliminary cost-effectiveness provided a summary of all programs and how anticipated changes may impact programs for 2017. Idaho Power updated the group on activities related to customer alerts and home energy reports, and presented the results of an analysis conducted by the company to quantify the estimated value of deferral of transmission and distribution investments that could occur as a result of energy-efficiency efforts. Idaho Power discussed results from an em**powered** community survey about the spring residential energy efficiency ad campaign, plans for the fall ad campaign, and 2017 marketing efforts.

November 3, 2016: EEAG members were given an update on the development of a home energy report pilot to be deployed in 2017. EEAG was asked for feedback on target audience type for these reports. The Commercial Program Performance presentation highlighted energy savings and participation and feedback was requested from EEAG regarding some possible changes to the Flex Peak Program for 2017. Idaho Power provided an update about its various surveys and how they impact marketing, shared results from the fall residential energy efficiency ad campaign and Smart-saver Pledge, discussed plans for new Commercial and Industrial Energy Efficiency Program ads, and shared some new initiatives and successes from 2016. The company presented the non-cost-effective aspects of the Home Improvement Program and advised EEAG of the company's plan no longer offer the program.

November 28, 2016: A conference call was held to discuss Idaho Power's recommendations to decrease the collection percentage of the Rider.

Green Motors Initiative

Idaho Power participates in the Green Motors Practices Group's (GMPG) Green Motors Initiative (GMI). Under the GMI, service center personnel are trained and certified to repair and rewind motors in an effort to improve reliability and efficiency. If a rewind returns a motor to its original efficiency, the process is called a "Green Rewind." By rewinding a motor under this initiative, customers may save up to 40 percent when compared to buying a new motor. The GMI is available to Idaho Power's agricultural, commercial, and industrial customers.

Twenty-one service centers in Idaho Power's service area have the training and equipment to participate in the GMI, and perform an estimated 1,200 Green Rewinds annually. Of the 21 service centers, currently nine have signed on as GMPG members. The GMPG will work to expand the number of service centers participating in the GMI, leading to market transformation and an expected kWh savings in southern Idaho and eastern Oregon.

Under the initiative, Idaho Power pays service centers $2 per hp for each National Electrical Manufacturers Association (NEMA)-rated motor up to 5,000 hp that received a verified Green Rewind. Half of that incentive is passed on to customers as a credit on their rewind invoice. The GMPG requires all member service centers to sign and adhere to the GMPG Annual Member Commitment Quality Assurance agreement. The GMPG is responsible for verifying quality assurance.

In 2016, a total of 37 motors were rewound under the GMI. Table 19 provides a breakdown of energy savings and the number of motors by customer segment.

Table 19. 2016 Green Motor Initiative savings, by sector and state

Sector	State	Number of Motors	Sum of kWh Savings
Irrigation	ID	22	72,871
	OR	1	746
Irrigation Total		**23**	**73,617**
Commercial and Industrial	ID	12	50,955
	OR	2	72,745
Commercial and Industrial Total		**14**	**123,700**
Grand Total		**37**	**197,317**

Idaho Power's Internal Energy-Efficiency Commitment

Idaho Power continues to upgrade the company's substation buildings across its service area. Focus for 2017 will be to provide energy-efficient heating and cooling, and to develop a plan to replace all T-12 lighting with LED fixtures in substation buildings.

Renovation projects continued at CHQ in downtown Boise in 2016. The company remodeled the eighth floor, and exchanged the old T-12 parabolic lighting fixtures with T-8 lighting. Remodels continue to incorporate energy efficiency measures, such as lower partitions, lighting retrofits, and automated lighting controls. In 2017, Idaho Power plans to remodel the ninth floor of the CHQ.

Also in 2106, the new Twin Falls Operation Center was constructed to replace the 1951-built center used to house the South-East Region operations staff. The design incorporates LED lighting, energy-efficient heating and cooling by way of a VRF design, and lighting control that includes daylight harvesting to reduce power consumption. The building also features a rooftop solar array to offset the amount of energy the building uses from the grid.

In 2016, Idaho Power redesigned the HVAC delivery system for the Maintenance and Electrical Shops; construction on these projects is planned for 2018. Idaho Power estimates that with these improvements the shops may reduce their usage by 300,000 kWh in coming years.

Idaho Power continued its major sustainability initiative by installing more electric vehicle (EV) charging stations at the company's EV Workplace Charging Center at CHQ and at several operations centers. The company continues to provide a variety of models of EV charging stations to promote awareness, use, and information dissemination about EVs. More employees now have the opportunity to charge their EV while at work. In addition to adding more EVs to the Idaho Power fleet, employees' personal use of EVs will further promote the financial and environmental benefits of EVs.

Idaho Power's internal energy efficiency projects and initiatives are funded by non-rider funds.

Local Energy Efficiency Funds

The purpose of LEEF is to provide modest funding for short-term projects and activities that do not fit within other categories of energy efficiency programs, but still provide energy savings or a defined benefit to the promotion of energy-efficient behaviors or activities.

Idaho Power received two applications for LEEF in 2016. Both applications were reviewed and found to be standard practice, and not appropriate for LEEF. A residential program specialist followed up with these applicants, and directed them to the residential energy efficiency resources found on Idaho Power's website. One project involved replacing all lighting in the applicant's house with LED lighting. The other project involved replacing single-pane windows with new, more energy-efficient windows.

Market Transformation

Market transformation is an effort to change the existing market for energy efficiency goods and services by engaging and influencing large national companies to manufacture or supply more energy-efficient equipment. Market transformation can also attempt to identify barriers and opportunities to increase the market adoption of efficiency. Idaho Power achieves market transformation savings primarily through its participation in the NEEA.

Northwest Energy Efficiency Alliance

Idaho Power has been a funding member of NEEA since its inception in 1997. NEEA's role in this process is to look to the future to find emerging opportunities and to create a path forward to make those opportunities a reality in the region.

NEEA's current, five-year funding cycle began 2015. In this cycle the 2015 to 2019 NEEA business plan is forecast to obtain 145 average megawatt (aMW) of regional energy savings at a cost savings of about $3 million over the next five years to Idaho Power customers as compared to the previous five-year business plan. The NEEA plan also offered some optional programs and activities to prevent overlap of activities when local utilities have the capability to provide the same services at a lower cost or more effectively.

Idaho Power participates in all of NEEA's committees and workgroups including representation on the Regional Portfolio Advisory Committee and the Board of Directors. In 2016, Idaho Power continued to help with the implementation of the Commercial and Industrial Lighting Regional Market Plan.

NEEA performs several MPERs on various energy efficiency efforts each year. In addition to the MPERs, NEEA provides market-research reports, through third-party contractors, for energy efficiency initiatives throughout the Pacific Northwest. Copies of these reports are included on the CD accompanying *Supplement 2: Evaluation* and on NEEA's website under Market Effects Evaluation.

NEEA Marketing

As stated in Idaho Power's agreement with NEEA for the 2015 to 2019 funding cycle: "Idaho Power will fund, create, and deliver specific market transformation activities for all initiatives that are relevant for the Idaho Power service area." In 2016, these activities included educating residential customers on heat pump technology and heat pump water heaters, and promoting reduced wattage T-8 lightbulbs to business customers.

Idaho Power placed an article about heat pump technology and included heat pump water heaters as an example in its summer *Energy Efficiency Guide*. The company also issued a *News Briefs* article titled *New, More-Efficient Heat Pump Water Heater!* on heat pump water heaters to media April 25, and promoted the products on social media and in the October issue of *Connections.*

To promote reduced wattage lightbulb replacement, Idaho Power published an article in its fall *Energy @Work* newsletter, placed a promo pod linking to a newly developed flyer (PDF) on the company's Retrofits web page, and wrote an article that was included in BOMA's member email in November.

Residential NEEA Activities

Idaho Power participates in the Residential Advisory Committee, Efficient Homes Workgroup, the Manufactured Homes Interest Group, the Retail Products Platform (RPP) Initiative, the DHP research project, the Smart Water Heat Initiative (previously known as the HPWH Initiative), Efficient Homes Workgroup, the Super Efficient Dryers Workgroup, the Northwest Regional Strategic Market Plan for Consumer Products group, and Northwest Regional Retail Collaborative. During 2016, NEEA combined the Efficient Homes Workgroup and the Manufactured Homes Interest Group and renamed it the Better Built NW Workgroup.

NEEA provides Better Built NW builder and contractor training, manages the regional-homes database, develops regional marketing campaigns, and coordinates energy-efficient new construction activities with utilities in Idaho, Montana, Oregon, and Washington.

In 2016, NEEA completed the sun setting of their ENERGY STAR® Homes Northwest program. All single-family and multi-family builders seeking ENERGY STAR certification must now go through the national EPA ENERGY STAR Homes program. NEEA will continue oversight of a regional database for utilities to access ENERY STAR Home certifications for incentive payments and will continue working towards the creation of a single-family Residential Performance Path program to offer utilities flexibility in program design and the opportunity to capture all above building code savings on residential new construction projects.

In 2016, NEEA formed the Super Efficient Dryers Initiative to support the acceleration of heat pump dryers into the market and Idaho Power participated in the workgroup. The initiative focuses on influencing manufacturer product development and executing strategies to overcome the barriers of this new technology. Barriers include a high incremental cost, limited consumer awareness, and product availability. The initiative offers incentives to reduce the retail price. A second goal of the initiative is

lab and field-testing to better understand how heat pump dryers perform in real-world conditions, evaluate consumer preferences, and gather data to support RTF provisional energy savings.

Idaho Power participated in RETAC which met quarterly to review the emerging technology pipeline for BPA, NEEA, and the Northwest Power and Conservation Council (NWPCC) Seventh Power Plan. RETAC is developing a regional database to increase coordination among the utilities to identify and track emerging technologies; plan and conduct research; and develop, implement, and assess pilots and field demonstrations.

Idaho Power continued participation in the RBSA. The purpose of the RBSA is to determine common attributes of residential homes, and develop a profile of the existing residential buildings in the Northwest.

Commercial and Industrial NEEA Activities

NEEA continued to provide support for commercial and industrial energy efficiency activities in Idaho in 2016, which included partial funding of the IDL for trainings and additional tasks.

The Idaho Building Code Board requested the Idaho Code Collaborative review the 2015 codes and make a recommendation to the board on adoption. NEEA facilitated the Code Collaborative meetings and Idaho Power participated.

NEEA facilitated regional webinars for the Commercial Code Enhancement (CCE) initiative for new construction to discuss how utilities can effectively align code changes and utility programs. NEEA is using the code collaborative in Idaho and Montana as examples of success for other regions.

NEEA facilitated the conference planning committee and, along with Idaho Power, supported the 2016 Idaho Energy and Green Building Conference held in Boise on November 1 and 2, 2016. Idaho Power had two active members on the conference planning committee.

NEEA's work on SEM in the commercial and industrial sectors continued in 2016. The primary focus in 2016 was to consolidate all of the SEM templates, guidelines, and documents into the new SEM Hub website.

NEEA's work with the Refrigerating Engineers & Technicians Association (RETA) on the RETA certified refrigeration energy specialist (CRES) certification process continued in 2016. A new CRES contractor was hired in 2016 to work with RETA marketing of the RETA CRES certification, improving the RETA CRES training materials, and improving the RETA CRES practice exams.

Idaho Power kept abreast on NEEA's initiatives in the commercial lighting arena via periodic conference calls and in-person meetings. Idaho Power continued participation as a member of the NEEA Commercial Lighting Program Manager Work Group.

The Reduced Wattage Lamp Replacement (RWLR) initiative achieved some success in 2016, especially in Idaho. NEEA worked with 20 branches across five electrical distributor organizations in Idaho Power's service area, with new distributors added to the initiative in 2016. Preliminary data shows

the 2016 market penetration of reduced wattage T-8 lightbulb in the company's service area is between 30 to33 percent, which is higher than the average 22 percent penetration across all four Pacific Northwest states. Overall, linear fluorescent lightbulb sales continue to decline at roughly 10 percent per year. Market sales of linear LEDs are increasing, which is having an impact on the RWLR initiative; however, NEEA estimates 2017 will continue to see good participation from distributors in reduced wattage T-8 sales.

In 2016, the NEEA Top-Tier Trade Ally (TTTA) training was renamed NXT Level. Ultimately, the plan is to offer lighting trade allies throughout the region the opportunity for multi-tiered training, each level building on the one before, over the next few years. NEEA rolled out Level 1 on-line training to the Idaho Power service area June 2016. Level 1 is geared toward more seasoned trade allies. In October, the company's first trade ally completed the course and received the Level 1 designation. Several other trade allies in the Idaho Power service area are in process of taking the course.

Idaho Power continued participation in the Regional Strategic Market Planning Collaborative for commercial and industrial lighting. The collaborative formed in 2015 to create regional strategic market plans in four market segments. Commercial and industrial lighting was the first segment of focus because it was identified as the collaborative's top priority. Idaho Power is represented on a steering committee formed to monitor and oversee the progress of the regional commercial and industrial lighting plan.

The NEEA Existing Building Renewal (EBR) pilot project in Boise, which began in 2013 and phased through 2016, saw no significant results in 2016. The project has not resulted in any Idaho Power incentive applications.

NEEA completed several assessment studies related to irrigated agriculture to support their scanning activities. Idaho Power has kept apprised of these activities, and has reviewed each of these assessments. Copies of the reports are included on the CD accompanying *Supplement 2: Evaluation* and on NEEA's website under NEEA Market Effects Evaluations.

NEEA Funding

In 2016, Idaho Power began the second year of the 2015 to 2019 *Regional Energy Efficiency Initiative Agreement* with NEEA. Per this agreement, Idaho Power is committed to fund NEEA based on a quarterly estimate of expenses up to the five-year total direct funding amount of $16.5 million in support of NEEA's implementation of market transformation programs in Idaho Power's service area. Of this amount in 2016, 100 percent was funded through the Idaho and Oregon Riders.

In 2016, Idaho Power paid $2,676,387 to NEEA. The Idaho jurisdictional allocation of the payments was $2,542,567, while $133,820 was paid for the Oregon jurisdiction. Other expenses associated with Idaho Power's participation in NEEA activities, such as administration and travel, were paid from Idaho and Oregon Riders.

Final NEEA savings for 2016 will be released in June 2017. Preliminary estimates reported by NEEA for 2016 indicate Idaho Power's share of regional market transformation MWh savings for 2016 is

24,616 MWh. These savings are reported in two categories; codes- and standards-related savings of 20,060 MWh and non-codes and standards related savings of 4,556 MWh.

In the *Demand-Side Management 2015 Annual Report*, preliminary funding share estimated savings reported were 21,900 MWh. The revised estimate included in this report for 2015 final funding share NEEA savings is 23,039 MWh. These saving include savings from code-related initiatives as well as non-code-related initiatives. Idaho Power relies on NEEA to report the energy savings and other benefits of NEEA's regional portfolio of initiatives. For further information about NEEA, visit their website at neea.org.

Program Planning Group

In 2014, Idaho Power convened an internal PPG to explore new opportunities to expand current DSM programs and offerings. The group consisted of residential program specialists, commercial and industrial engineers, energy efficiency analysts, marketing specialists, energy efficiency program leaders, and the research and analysis leader. The PPG does not perform program execution. Instead, the group's role is to determine if a measure has energy-saving potential, has market adoption potential, and is potentially cost-effective.

Throughout 2016, the group met regularly to explore new ideas to promote energy efficiency including evaluating new potential programs and measures. Idaho Power incorporated five new ideas from the PPG into the overall portfolio of residential program offerings: 1) mailing energy efficiency kits, 2) initiating a multi-family direct-install project, 3) installing smart thermostats, and 4) distributing clothes drying racks for educational purposes. The first three offerings will continue to be available in 2017. Idaho Power will evaluate the drying rack offering for its long-term viability.

In the commercial sector, the company began the school cohort. In November 2016, Idaho Power recruited school districts to establish a structured energy program where each district will have an individualized initiative and develop a program to implement energy efficiency measures and behaviors at their schools.

Three other PPG ideas were presented to EEAG and are being considered for implementation in 2017: 1) Home Energy Reports, mailed to customers to inform them of their energy use and how it compares to others; 2) an on-line marketplace for customers to review and purchase energy-efficient appliances; and 3) installation of a thermostatic shower valve to reduce hot water use. Each of these measures has an element of behavior change.

Idaho Power will continue to use the PPG to review, evaluate, and deliver new energy efficiency offerings in 2017 and beyond.

Regional Technical Forum

The RTF is a technical advisory committee to the NWPCC, established in 1999 to develop standards to verify and evaluate energy efficiency savings. Since 2004, Idaho Power has supported the RTF by

providing annual financial support, regularly attending monthly meetings, participating in sub-committees, and sharing research and data beneficial to the forum's efforts.

The forum is made up of both voting members and corresponding members from investor-owned and public utilities, consultant firms, advocacy groups, Energy Trust of Oregon, and BPA, all with varied expertise in engineering, evaluation, statistics, and program administration. The RTF advises the NWPCC during the development and implementation of the regional power plan in regards to the following listed in the RTF charter:

- Developing and maintaining a readily accessible list of eligible conservation resources, including the estimated lifetime costs and savings associated with those resources and the estimated regional power system value associated with those savings.
- Establishing a process for updating the list of eligible conservation resources as technology and standard practices change, and an appeals process through which utilities, trade allies, and customers can demonstrate that different savings and value estimates should apply.
- Developing a set of protocols by which the savings and system value of conservation resources should be estimated with a process for applying the protocols to existing or new measures.
- Assisting the Council in assessing: 1) the current performance, cost and availability of new conservation technologies and measures; 2) technology development trends; and 3) the effect of these trends on the future performance, cost and availability of new conservation resources.
- Tracking regional progress toward the achievement of the region's conservation targets by collecting and reporting on regional research findings and energy savings annually.

When possible, Idaho Power uses the savings estimates, measure protocols, and supporting work documents provided by the RTF, and when the work products are applicable to the Idaho climate zones and load characteristics. In 2016, Idaho Power staff participated in all RTF meetings as a voting member and the RTF Policy Advisory Committee.

During 2016, RTF impacted measure changes include savings tier additions to DHPs, updates to multi-family weatherization and new construction measures, updates to low-flow showerhead savings, and the addition of connected or "smart" thermostats as a supported RTF measure. All implementations of changes were accounted for in planning and budgeting for 2017. Idaho Power considered the multi-family weatherization measure updates when it decided to sunset the Home Improvement Program. A complete list of RTF decisions in 2016 can be accessed at rtf.nwcouncil.org.

Residential Energy Efficiency Education Initiative

Idaho Power recognizes the value of general energy efficiency awareness and education in creating behavioral change and customer demand for, and satisfaction with, its programs. The Residential Energy Efficiency Education Initiative (REEEI) promotes energy efficiency to the residential sector. The company achieves this by creating and delivering educational materials and programs that result in

wise and informed choices regarding energy use and increase Idaho Power's energy efficiency program participation.

REEEI continued to produce semiannual *Energy Efficiency Guide*s in 2016. Idaho Power distributed these guides primarily via insertion in local newspapers and at events across Idaho Power's service area. The *Winter Energy Efficiency Guide* was published and distributed by 16 newspapers in Idaho Power's service area the week of January 26, in accordance with the new distribution plan outlined in 2015. The *Boise Weekly* also inserted the guide, increasing circulation by 30,000, which focused on ways to find the truth about energy-saving claims, seven ways to improve a home's energy efficiency, ventilation and lighting for optimum health and efficiency, and tips for hiring a home improvement contractor. The information was applicable to all residential customers, but the design was adapted and enhanced for particular usefulness and appeal to the senior population. Idaho Power included a story from the guide in the January *News Briefs* and promoted it that month on KPVI during the energy efficiency news segment.

The *Summer Energy Efficiency Guide* was delivered nearly 222,000 homes the week of July 24, 2016. This guide focused on saving energy as a family and highlighted why Idaho Power promotes energy efficiency, energy-saving computer settings, behavior change, smart technology, and making saving energy fun for the whole family. The guide also featured a mini home assessment so customers could gauge how energy efficient their behaviors were.

The release of the summer guide received public relations support through numerous communication channels, including an item in Idaho Power's weekly *News Briefs* email to all media in the Idaho Power service area on July 18 and 25, promotion on KTVB and KPVI in the July energy efficiency news segments, on Idaho Power's social media accounts, and using banner ads and native ads on the Idaho Statesman website. A banner ad appears as a traditional advertisement; a native ad is formatted as an on-line news article, with several paragraphs of text, but is, in fact, paid media. The native ad includes a disclaimer that reads "Advertisement."

In 2016, the company distributed over 6,000 guides, including issues from past years, at energy efficiency presentations and events, which continued to reinforce the overall value of these guides. On its website, Idaho Power provides a link to the most current seasonal guide, and to a list of historical guides.

REEEI distributed energy efficiency messages through a variety of other communication methods during 2016. Idaho Power increased customer awareness of energy-saving ideas via continued distribution of the third printing of the 96-page booklet *30 Simple Things You Can Do to Save Energy*, a joint publishing project between Idaho Power and The Earthworks Group. In 2016, the program distributed 2,595 English and 480 Spanish copies directly to customers. This was accomplished via community events and local libraries; by customer representatives during in-home visits; by participating contractors in the Home Improvement Program, Energy House Calls program, H&CE Program, and Fridge and Freezer Recycling Program; through direct web requests; and in response to inquiries received by Idaho Power's Customer Service Center. Agency partners also used the books to educate clients about Energy Efficiency. Additionally, more than 34,000 customers had an opportunity

to request the booklet and/or the most recent *Energy Efficiency Guide* when they ordered their ESK online.

Idaho Power continues to recognize that educated employees are effective advocates for energy efficiency and Idaho Power's energy efficiency programs. Idaho Power customer relations and energy-efficiency staff reached out to each of Idaho Power's geographical regions and the Customer Service Center to speak with customer representatives and other employees to discuss educational initiatives and answer questions about the company's energy efficiency programs.

The Kill A Watt™ Meter Program remained active in 2016. Idaho Power's Customer Service Center and field staff continued to encourage customers to learn about the energy used by specific appliances and activities within their homes by visiting a local library to check out a Kill A Watt meter. The Kill A Watt meters were mentioned on live television studio news programs on KTVB and KPVI in Idaho Power's monthly energy efficiency segments.

As in previous years, Idaho Power continued to strengthen the energy education partnership with secondary school educators through continued participation on the Idaho Science, Technology, Engineering and Mathematics (iSTEM) Steering Committee. In 2016, 16 teachers completed the four-day, two-credit professional development seminar, Energy for Future Citizens, facilitated by Idaho Power and co-sponsored by Intermountain Gas and the Idaho National Laboratory (INL). Among other things, participating teachers received a classroom kit containing Kill A Watt meters and other tools to facilitate student learning related to energy efficiency and wise energy use.

Idaho Power continued to engage customers in energy efficiency discussions at many community events throughout Idaho Power's service area. In February, Idaho Power participated in the Smart Women, Smart Money conference for the second year and educated nearly 2,000 women about the benefits of energy-efficient choices and LED lighting. In February, March, April, and May Idaho Power participated in the Twin Falls Home and Garden Show, the College of Southern Idaho's Sustainability Show, the Centennial Ribbon Cutting at the Twin Falls Visitor Center, Platt's Super Tool Day, Pocatello's Spring Home Show and the Portneuf Valley Community Environmental Fair—actively promoting wise energy use and participation in energy efficiency programs while distributing over 16,000 LED lightbulbs at these specific events.

In September 2016, Idaho Power participated in the FitOne Expo in Boise, Idaho. The event continued to be important to the initiative due to the size of the audience and because Idaho Power's prior participation confirmed the demographics of attendees appear to align with the company's residential energy efficiency target audience. In 2016, Idaho Power staff at the event once again focused attendee attention on the benefits of LED lighting technology, distributed LED lightbulbs, and promoted participation in the ESK program.

Idaho Power further increased its energy efficiency presence in the community by providing energy efficiency and program information through 92 outreach activities, including events, presentations, trainings, and other activities. In addition, Idaho Power customer representatives delivered 189 presentations to local organizations addressing energy efficiency programs and wise

energy use. In 2016, Idaho Power's Community Education team provided 91 presentations on *The Power to Make a Difference* to 2,350 students and 53 classroom presentations on *Saving a World Full of Energy* to 1,411 students. The community education representatives and other staff also completed 14 senior citizen presentations on energy efficiency programs and shared information about saving energy to 592 senior citizens in the company's service area. Additionally, Idaho Power's energy efficiency program managers responded with detailed answers to 364 customer questions about energy efficiency and related topics received via Idaho Power's website.

As part of National Energy Awareness Month in October, Idaho Power held its sixth annual student art contest in the Idaho Power service area, bringing energy education into the classroom and inspiring students and families to think more about energy. This year, the contest set a new record with more than 2,239 entries representing all regions. The contest, which featured "Ways to Save Energy" as one of the highlighted categories, was promoted in a late September *News Briefs* and results were publicized in *Connections*. Regional and overall winning students and their teachers were recognized.

The Residential Energy Efficiency Education Initiative continued to provide energy efficiency tips in response to media inquiries and in support of Idaho Power's *#TipTuesday* posts. In addition to supplying information for various Idaho Power publications, such as the *News Scans* weekly employee newsletter, the *Connections* customer newsletter, and Idaho Power's Facebook page, energy efficiency tips, and content was provided for weekly *News Briefs* and monthly KTVB (Boise) and KPVI (Pocatello) live news segments.

The initiative completed the program design phase of the ESK program and implemented the new program. Each kit was shipped with a mini-home assessment to cross-market other energy efficiency programs, promote the use of myAccount and help families learn about other energy-saving behavior changes. Savings and expenses have been reported under Educational Distributions.

The initiative continued to coordinate LED lightbulb distributions aimed at getting the newest lighting technology into customer hands along with customer education and answers to their common questions. At events and presentations, company staff distributed over 24,900 LEDs in custom packaging that highlighted the advantages of energy-efficient lighting and encouraged participation in Idaho Power's myAccount on-line portal. LED lightbulbs were mentioned on nine of the news segments on KTVB and KPVI. The energy savings resulting from this effort and from the SEEK for the school year 2015 to 2016, are reported in the Educational Distributions program section of this report.

In 2016, the initiative implemented the Drying Rack Pilot Project—a behavioral change program with the goal of helping customers reduce their automatic clothes dryer use by 25 percent or more. Educational messages to support the behavior change were delivered to customers at the point of enrollment, when drying racks were picked up and during the project period. Additional information about the project can be found in the Educational Distributions program in this report.

In the fall, the initiative conducted a survey with the em**powered** community to learn more about customers' shower behaviors—in particular, details around how they warm up the water prior to taking a shower. Information from the survey may be used to improve potential future offerings such as the

addition of a thermostatic shower valve as an educational distribution option. A copy of the survey can be found in *Supplement 2: Evaluation*.

The initiative's 2017 goals are to increase program participation and promote education and energy saving ideas that result in energy-efficient, conservation-oriented behaviors and choices. In addition to producing and distributing educational materials, the initiative will continue to manage the company's Educational Distributions program responsible for distributing educational measures that have associated savings. Examples of activities conducted under Educational Distributions include LED lighting education, distribution of LED lightbulbs to customers, the SEEK program, the Drying Rack Project and the ESK program. In addition to these activities, the initiative plans to implement a home energy report pilot project.

The initiative will continue to work with the PPG to explore additional behavioral program opportunities that may include distribution of thermostatic shower valves, increased promotion of myAccount, or a pilot program to test other behavioral messages.

Evaluation and Best Practices Review

In 2016, the company contracted with Leidos to perform a process evaluation and best practices review of the REEEI. Leidos found that REEEI is comprised of 23 different activities, efforts and elements that educate, inform, and persuade residential electric customers to install energy-efficient measures and to take other actions that decrease energy use. They also found the initiative both investigates and engages in various behavioral change strategies.

Leidos also found Idaho Power has a comprehensive presence on both traditional and social media channels. The 23 initiative elements reach over 415,000 customers in a variety of ways ranging from: 1) in-person contacts and presentations, courtesy of five community educational and approximately 20 customer representatives in the field daily; 2) newsletters, guides, mailers, conventional broadcasting, social media; and 3) gamification reward systems, sponsorships, educational materials and training.

Interviews with Idaho Power staff and initiative efforts indicate a strong focus on driving customers to use the myAccount on-line portal located on the company website, where customers check on energy use via near real-time smart-meters, billing and account information with links to tools, rebates and other resources that aid in understanding their energy use and reduction strategies. Daily customer logins to myAccount have steadily increased over the last four and a half years, from 2,000 logins in mid-2012, to about 5,000 in late-2016. Moreover, the number of myAccount registrations per month is also increasing, from 2,000 to4,000 accounts per month in 2010 through 2011, up to 3,000 to 5,000 per month more recently.

Idaho Power is marketing energy-savings programs and activities by linking them to home improvement, money savings, comfort, and other NEBs to capture interest in energy efficiency and move it to top-of-mind. Surveys conducted with external program managers, subject-matter experts, and Idaho Power staff rated their customers' non-energy motivational drivers on a 10-point scale.

"Saving money" was rated highest (9.4), followed by improved comfort (9.1), health and safety (7.6), and being/feeling "green" and reducing environmental impacts (7.3).

External program managers, subject-matter experts, and Idaho Power staff rated marketing channels that involve person-to-person interaction and active learning environments higher than more passive, informal channels, to reach and educate customers. On a 10-point scale, situations where strong in-group social identity exists were rated most effective/useful (8.0), followed by on-line customer utility accounts (7.7), universities and college settings (7.6), public or community events, on-line energy dashboards and smart or real-time meters (all 7.3).

Leidos estimates conservatively that Idaho Power staff conducted over 590 in-person (or webinar) outreach activities, training sessions and events recorded in the Outreach Tracker database (from early 2012 to mid-2016) with an average attendance of 8091 people per event.

The SEEK and *The Power to Make a Difference* presentation (given by Idaho Power staff 124 times to 3,359 students in 2015) are also features of REEEI. Both received numerous positive comments from customers and build strong customer-utility relations. "The children always express that they tried everything included [in the kits] with their parents or family members. The adults express they are happy to have the free materials especially the lightbulbs and showerheads…teachers cannot thank us enough for this program!" Eighteen high school teachers participated in a three-day professional development seminar (facilitated by iSTEM) that empowered teachers with information and classroom tools to teach students to think critically about energy, including; the science of energy, energy generation and sources, wise energy use and social impacts.

A literature review of best practices regarding energy education programs was performed and indicated there are four basic types of behavioral change programs and strategies: 1) informational programs, 2) socially interactive approaches, 3) education and training, and 4) a stacked approach. Leidos states the four types of behavioral change strategies are well represented in the breadth of REEEI elements described in the final report.

The final report can be found in *Supplement 2: Evaluation.*

University of Idaho Integrated Design Lab

Idaho Power is a founding supporter of the IDL. The IDL is dedicated to the development of high-performance, energy-efficient buildings in the Intermountain West. Idaho Power has worked with the IDL since its inception in 2004 to educate the public about how energy-efficient business practices benefit the business and the customer. In 2016, Idaho Power entered into an agreement with the IDL to perform the following tasks and services.

Foundational Services

The goal of this task was to provide energy efficiency technical assistance and project-based training to building industry professionals and customers. When the IDL receives requests for their involvement in

building projects, the projects are categorized into one of three types. Phase I projects are simple requests that can be addressed with minimal IDL time. Phase II projects are more complex requests that require more involvement and resources from the lab. Phase III projects are significantly more complex and must be co-funded by the customer.

In 2016, the IDL provided technical assistance on a total of 38 projects in the Idaho Power service area. There were 32 Phase I projects, five Phase II projects, and one Phase III project. An additional three projects, currently in early stages, and the full scope of work is yet to be determined. Overall, 44 percent of the projects were on new buildings, 38 percent were on existing buildings and 18 percent were not building specific. The report is located in the IDL section of *Supplement 2: Evaluation*.

Lunch & Learn

The goal of the Lunch & Learn task was to educate architects, engineers, and other design and construction professionals about energy efficiency topics through a series of educational lunch sessions.

In 2016, the IDL scheduled 20 technical training lunches in Boise, and Ketchum. The trainings were coordinated directly with architecture and engineering firms and organizations; a total of 161 architects, engineers, interior designers, project managers, and others attended.

Eighteen lunches were offered in Boise, and two in Ketchum. The topics of the lunches (and number of each) were: The Classroom of the Future: A DOE project (1); New Design Recommendations for Exterior Lighting (1); Case Study—Daimler Truck North America (1); Passive House Standard for Multifamily Projects (1); Life Sciences Building Path to High-Performance Design and Construction (1); Integrated Design Principles (1); Daylight Performance Metrics for Human Health, Productivity, and Satisfaction (1); Cold Feet: Managing Controls and Condensation with Simulating Radiant Slab Cooling (1); Daylight in Buildings: Schematic Design Methods (1); Radiant Heating and Cooling Design Considerations (1); Benchmarking and Energy Goal Setting (1); Integrated Design Case Studies (2); Hybrid Ground Source Heat Pump (2); and Daylight in Buildings: Getting the Details Right (5). The report is located in the IDL section of *Supplement 2: Evaluation*.

Building Simulation Users Group

The goal of this task was to facilitate the Idaho BSUG, which is designed to improve the energy efficiency-related simulation skills of local design and engineering professionals.

In 2016, six monthly BSUG sessions were hosted by IDL. The sessions were attended by 73 professionals in person and were made available remotely, attended by 48 professionals. Evaluation forms were completed by attendees for each session. On a scale of 1 to 5, with 5 being “excellent” and 1 being “poor,” analyzing results from the first six questions, the average session rating was 4.34 for 2016. For the final question “The content of the presentation was…” on a scale of 1 to 5, with 1 being “too basic,” 3 being “just right,” and 5 being “too advanced,” the average session rating was 3.15 for 2016.

Each presentation was archived on the BSUG 2.0 website along with general BSUG-related content. The BSUG 2.0 site logged 994 page views with 234 specific to Idaho users in 2016. The report is located in the IDL section of *Supplement 2: Evaluation*.

New Construction (Building Efficiency) Verification

The goal of this task was to continue random installation verification of over 10 percent of New Construction program participants who received incentives. This consisted of conducting a full review of documentation and complete on-site inspections to validate whether noted systems and components had been installed. The purpose of this verification was to confirm program guidelines and requirements were adequately facilitating participants to provide accurate and precise information with regard to energy efficiency measure installations.

This task also included the review of all daylight photo-control incentives to verify site conditions and improve the quality of design and installation.

The IDL completed on-site field verifications for the New Construction program as summarized in the New Construction Customer Satisfaction and Evaluations section presented earlier in this report. The verification report is located in the IDL section of *Supplement 2: Evaluation*.

Tool Loan Library

The TLL gives customers access to equipment that enables them to measure and monitor energy consumption on various systems within their operation. The goal of this task was to operate and maintain measurement equipment, including a web-based equipment tool loan-tracking system, and to provide technical training on how each tool is intended to be used.

The inventory of the TLL now consists of over 900 individual pieces of equipment. In 2016, two new tools and eight manuals were added to the library. Additionally, 25 tools were calibrated in 2016. The tools and manuals are available for customers, engineers, architects, and contractors in Idaho Power's service area to borrow at no cost to aid in the evaluation of energy efficiency projects and equipment they are considering.

There were 49 tool loan requests in 2016, which included a total of 206 tools loaned. The tools were loaned to 30 unique customers, including engineering firms, equipment representatives, educational institutions, industrial plants, and office/commercial facilities. The report is located in the IDL section of *Supplement 2: Evaluation*.

Building Metrics Labeling

The goal of this task was to continue the support and promotion of the Building Metrics Labeling (BML) sheet, a graphical display of four building metrics on a single sheet that was developed in a task that began in 2012. The metrics displayed are Energy Use Intensity, ENERGY STAR® score, Walk Score®, and Space Daylit Area. The purpose of the BML sheet is to increase awareness of building energy use and to promote energy efficiency during the sale or lease of commercial properties. The final version of the BML tool became available for public use in early 2014.

The IDL continued support and maintenance of the sheet in 2016. The tool was discussed and/or flyers were distributed at twenty Lunch & Learn presentations to architecture or engineering firms and organizations, multiple Central Addition Planning meetings hosted by the USGBC, six BSUG events, and during calls or visits to five building owners within the Central Addition (LIV District). One-on-one support was also available if requested, but no requests were made in 2016. The report is located in the IDL section of *Supplement 2: Evaluation*.

Heat Pump Calculator/Climate Design Tools

This task was a continuation of work done in a task that began in 2013 and continued through 2016. The goal of the original task was to develop an Excel-based heat pump analysis tool to calculate energy use and savings based on site-specific variables for commercial buildings. Previously, IDL identified a lack of sophisticated heat pump energy-use calculators available with the capability of comparing the energy use of heat pumps in commercial buildings against other technologies in a quick, simple fashion.

The calculator has been updated to reflect feedback from validation testing, including an improved user interface and the ability to integrate Typical Meteorological Year, version three (TMY3) weather files for locations where that data is available. A few years ago, the IDL completed a set of Climate Design Tools intended to inform sustainable design and calculate the impacts of five innovative types of systems: earth tubes, passive heating, cross ventilation, stack ventilation, and night flush ventilation/thermal mass. In 2015, the IDL integrated three of the five climate design tools into the Heat Pump Calculator. This unification produced a single platform life-cycle analysis tool for several energy efficiency measures not currently well-supported with other tools in the industry.

The work in 2016 included the unification of two additional climate design tools to the calculator and the addition of seven unique weather files for sites around Idaho. The report for this task is located in the IDL section of *Supplement 2: Evaluation*.

Daylight Training

New in 2016, this task involved advance preparation work to provide daylight training sessions for local professionals in 2017. The training will enhance knowledge of, and appreciation for, daylight, and keep professionals informed of the latest advances in daylighting technologies.

The 2016 preparation included recommissioning lighting controls in the IDL, gathering of installed lighting controls manuals, writing a protocol for demonstration, and reviewing new lighting control technologies. A market-needs assessment was performed in the third quarter of 2016 to determine the need for a daylight training class, as well as to help develop the curriculum. Initial marketing began in November 2016 for the 2017 sessions. The report for this task is located in the IDL section of *Supplement 2: Evaluation*.

2017 IDL Strategies

In 2017, the IDL will continue or expand work on the Foundational Services, Lunch & Learn sessions, BSUG, Building Efficiency Verifications, TLL, Heat Pump Calculator, and Daylight Training tasks. IDL will also provide work on one new task in 2017, an Absorption Chiller Feasibility Study.

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REGULATORY OVERVIEW

Idaho Power believes there are three essential components of an effective regulatory model for DSM: 1) the timely recovery of DSM program costs, 2) the removal of financial disincentives, and 3) the availability of financial incentives. By working with its stakeholders and regulators through negotiations and filings, Idaho Power seeks to move DSM regulatory treatment toward achieving all of these goals.

Timely Recovery of DSM Program Costs: Energy Efficiency Rider and Prudence Determination of Expenditures

Since 2002, Idaho Power has recovered most of its DSM program costs through the Rider with the intended result of providing a more timely recovery of DSM expenditures. In addition, since January 1, 2012, Idaho demand response program incentives expenses have been included in base rates and tracked in the annual PCA mechanism.

Annual DSM Expense Review Filing and Order No. 33583

On March 15, 2016, Idaho Power filed Case No. IPC-E-16-03 with the IPUC requesting an order finding the company had prudently incurred $35,196,964 in DSM expenses in 2015, including $28,495,701 in Rider expenses and $6,701,263 in demand response program incentives. The filing included three reports: *Demand-Side Management 2015 Annual Report*, *Supplement 1: Cost-Effectiveness*, and *Supplement 2: Evaluation*. Due to previous IPUC decisions in Order Nos. 32667, 32690, and 32953 to defer Idaho Power's request to deem prudent the increases in the company's Rider-funded labor-related expenses for 2011and 2012, Idaho Power did not request a prudence determination for labor-related expenses of $441,856 in the 2015 filing. The 2015 labor-related expenses of $441,856 bring the cumulative balance of increases in Rider-funded labor-related expenses that have not yet received a prudence determination to $1,313,407 through 2015. Idaho Power plans to request a prudence determination on these amounts in its 2016 DSM prudence request.

In Order No. 33583, dated September 14, 2016, the IPUC deemed $35,196,964 as prudently incurred.

Since 2012, the company has experienced a mismatch in Rider funding levels compared to expenditures in that the Rider has been collecting more than the company has been spending on its DSM efforts. As part of Order No. 33583, the IPUC directed Idaho Power to work with staff and other stakeholders to examine an adjustment to the Rider percentage and to submit a proposal for revising the Rider percentage to the commission no later than December 30, 2016.

Following collaboration with the parties to the case (staff, Industrial Customers of Idaho Power [ICIP] and Idaho Conservation League [ICL]) and a conference call with EEAG, on December 22, 2016, Idaho Power filed an application in Case No. IPC-E-16-33 requesting an order approving: 1) a decrease to the Rider collection percentage from 4 to 3.75 percent of base rate revenues, effective March 1, 2017; 2) a $13 million refund of previously collected Rider funds to be included in the 2017/2018 PCA effective June 1, 2017, and 3) the elimination of the annual transfer of $4 million of Rider funds through

the PCA. The annual transfer of $4 million of Rider funds through the PCA is more fully described in the following paragraph.

Energy Efficiency Rider-Funds Transfer

On April 15, 2016, Idaho Power filed the annual PCA Case No. IPC-E-16-08 with the IPUC. As part of that case, the company proposed that the commission approve a transfer of $3,970,036 from the Rider to customers as a credit, or reduction, in the 2016/2017 PCA on customers' bills. In Order No. 33526, the commission approved the transfer. This transfer is needed to maintain the revenue neutrality associated with the June 2014 update to the normalized level of net power supply expense included in base rates approved by Order No. 33000.

Removal of Financial Disincentives: Fixed-Cost Adjustment

To address the removal of financial disincentives, Idaho Power has in place a fixed-cost adjustment (FCA) mechanism in Idaho. Under the FCA, rates for Idaho residential and small general-service customers are adjusted annually up or down to recover or refund the difference between the fixed costs authorized by the IPUC in the most recent general rate case and the fixed costs Idaho Power received the previous year through actual energy sales. This mechanism removes the financial disincentive that exists when Idaho Power promotes energy efficiency programs designed to reduce customer usage. The FCA addresses, for residential and small general-service customers, the percentage of fixed costs that are recovered through their volumetric energy charges.

On May 27, 2016, the IPUC issued Order No. 33527 approving the company's request to implement FCA rates beginning June 1, 2016, for the 2015 fixed-cost deferrals. The overall rate adjustment was a 2.2 percent increase for residential and small general-service customers to collect a combined $28 million. This adjustment was an increase of $11 million from the previous year's FCA. Residential customers pay an FCA of 0.5416 cents per kWh, while small general-service customers pay an FCA of 0.6875 cents per kWh. The rate will be in place until May 31, 2017.

Promotion of Energy Efficiency through Electricity Rate Design

Idaho Power believes rates offered to customers should reflect their cost of service to provide cost-based price signals, and encourage the wise and efficient use of energy.

Since 2012, Idaho Power has offered a Time-of-Day (TOD) Pilot pricing plan to residential customers in Idaho. The overall goal of this TOD pricing plan is to use the AMI system to offer customers a choice of pricing plans while providing them with tools to manage their energy use, to provide the company with the opportunity to further study the effects of a time-variant rate on customers' use, and to help shape the company's future communication efforts. The plan provides participants the opportunity to shift their usage from higher-priced, on-peak time periods to lower-priced, off-peak time periods and possibly lower their bills. As of the end of 2016, approximately 1,300 Idaho customers were TOD plan participants. A description of this plan is at Idaho Power's website (idahopower.com/TOD).

GLOSSARY OF ACRONYMS

A/C—Air Conditioning/Air Conditioners
ADM—ADM Associates, Inc.
Ads—Advertisement
AEG—Applied Energy Group
AMI—Advanced Metering Infrastructure
aMW—Average Megawatt
ARCA—Appliance Recycling Center of America
ASHRAE—American Society of Heating, Refrigeration, and Air Conditioning Engineers
B/C—Benefit/Cost
BCA—Building Contractors Association
BCASEI—Building Contractors Association of Southeast Idaho
BCASWI—Building Contractors Association of Southwestern Idaho
BML—Building Metrics Labeling
BOMA—Building Owners and Managers Association
BOP—Builder Option Package
BPA—Bonneville Power Administration
BPI—Building Performance Institute
BSUG—Building Simulation Users Group
CAP—Community Action Partnership
CAPAI—Community Action Partnership Association of Idaho, Inc.
CAZ—Combustion Appliance Zone
CCE—Commercial Code Enhancement
CCOA—Aging, Weatherization and Human Services
CCNO—Community Connection of Northeast Oregon, Inc.
CEI—Continuous Energy Improvement
CEL—Cost-Effective Limit
CFL—Compact Fluorescent Lamp/Lightbulb
CFM—Cubic Feet per Minute
CHQ—Corporate Headquarters (Idaho Power)
CINA—Community in Action
CLEAResult—CLEAResult Consulting, Inc.
COP—Coefficient of Performance
CR&EE—Customer Relations and Energy Efficiency
CRES—Certified Refrigeration Energy Specialist
DHP—Ductless Heat Pump
DOE—Department of Energy
DSM—Demand-Side Management
EA5—EA5 Energy Audit Program
EBR—Existing Building Renewal
ECM—Electronically Commutated Motors

EEAG—Energy Efficiency Advisory Group
EICAP—Eastern Idaho Community Action Partnership
EL ADA—El Ada Community Action Partnership
EM&V—Evaluation, Measurement, and Verification
EPA—Environmental Protection Agency
ESK—Energy-Savings Kit
EV—Electric Vehicle
FCA—Fixed-Cost Adjustment
ft^2—Square Feet
ft^3—Cubic Feet
GIS—Geographic Information System
GMI—Green Motors Initiative
GMPG—Green Motors Practice Group
gpm—Gallons per Minute
H&CE—Heating & Cooling Efficiency Program
HP—Hewlett Packard
hp—Horsepower
HPS—Home Performance Specialist
HPWH—Heat Pump Water Heater
HSPF—Heating Seasonal Performance Factor
HUD—Housing and Urban Development
HVAC—Heating, Ventilation, and Air Conditioning
IBCA—Idaho Building Contractors Association
IBOA—International Building Operators Association
ICIP—Industrial Customers of Idaho Power
ICL—Idaho Conservation League
IDHW—Idaho Department of Health and Welfare
IDL—Integrated Design Lab (in Boise)
IECC—International Energy Conservation Code
INL—Idaho National Laboratory
IPMVP—International Performance Measurement and Verification Protocol
IPUC—Idaho Public Utilities Commission
IRP—Integrated Resource Plan
ISHE—International Society of Healthcare Engineers
iSTEM—Idaho Science, Technology, Engineering and Mathematics
JACO—JACO Environmental, Inc.
kW—Kilowatt
kWh—Kilowatt-hour
LED—Light-Emitting Diode
LEEF—Local Energy Efficiency Funds
LIHEAP—Low Income Home Energy Assistance Program
MOU—Memorandum of Understanding
MPER—Market Progress Evaluation Report

MVBA—Magic Valley Builders Association
MW—Megawatt
MWh—Megawatt-hour
MWSOC—Municipal Water Supply Optimization Cohort
n/a—Not Applicable
NEB—Non-Energy Benefit
NEEA—Northwest Energy Efficiency Alliance
NEEM—Northwest Energy Efficient Manufactured
NEMA—National Electrical Manufacturers Association
NPR—National Public Radio
NSH—Next Step Home
NTG—Net to Gross
NWPCC—Northwest Power and Conservation Council
O&M—Operation and Maintenance
OHCS—Oregon Housing and Community Services
OPUC—Public Utility Commission of Oregon
ORS—Oregon Revised Statute
OSV—On-Site Verification
PCA—Power Cost Adjustment
PCT—Participant Cost Test
PLC—Powerline Carrier
PNWS–AWWA—Pacific Northwest Section American Water Works Association
PPG—Program Planning Group
PRV—Pressure Regulating Valve
PSC—Permanent Split Capacitor
PTCS—Performance Tested Comfort System
QA—Quality Assurance
QC—Quality Control
RAP—Resource Action Programs
RBSA—Residential Building Stock Assessment
REEEI—Residential Energy Efficiency Education Initiative
RESNET—Residential Services Network
RETA—Refrigerating Engineers and Technicians Association
RETAC—Regional Emerging Technologies Advisory Committee
Rider—Idaho Energy Efficiency Rider and Oregon Energy Efficiency Rider
RIM—Ratepayer Impact Measure
RPP—Retail Products Platform
RTF—Regional Technical Forum
RWLR—Reduced Wattage Lamp Replacement
SCCAP—South Central Community Action Partnership
SCE—Streamlined Custom Efficiency
SEEK—Students for Energy Efficiency Kit
SEEM—Simplified Energy Enthalpy Model

SEICAA—Southeastern Idaho Community Action Agency
SEM—Strategic Energy Management
SIR—Savings-to-Investment Ratio
SRVBCA—Snake River Valley Building Contractors Association
SWIOS—Southwest Idaho Operators Conference
TLED—Tube LED
TLL—Tool Loan Library
TMY3—Typical Meteorological Year, version three
TOD—Time of Day
TRC—Total Resource Cost
TRM—Technical Reference Manual
TTTA—Top-Tier Trade Ally
UC—Utility Cost
UES—Unit Energy Savings
UM—Utility Miscellaneous
US—United States
USGBC—US Green Building Council
VFD—Variable-Frequency Drive
VRF—Variable Refrigerant Flow
W—Watt
WAP—Weatherization Assistance Program
WAQC—Weatherization Assistance for Qualified Customers
WEFTEC—Water Environment Federation Technical Exhibition and Conference
WHF—Whole-House Fan
WSOC—Water Supply Optimization Cohort
WWEEC—Wastewater Energy Efficiency Cohort

APPENDICES

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Appendix 1. Idaho Rider, Oregon Rider, and NEEA payment amounts (January–December 2016)

Idaho Energy Efficiency Rider [a]		
2016 Beginning Balance	$	6,554,074
2016 Funding plus Accrued Interest as of 12-31-16		39,437,692
Total 2016 Funds		**45,991,766**
2016 Expenses as of 12-31-16		(31,291,579)
Rider Transfer to PCA (IPUC Order 33306)		(3,970,036)
Ending Balance as of 12-31-2016	**$**	**10,730,151**
Oregon Energy Efficiency Rider		
2016 Beginning Balance	$	(4,482,485)
2016 Funding plus Accrued Interest as of 12-31-16		1,099,211
Total 2016 Funds		**(3,383,273)**
2016 Expenses as of 12-31-16		(2,168,868)
Ending Balance as of 12-31-2016	**$**	**(5,552,141)**
NEEA Payments		
2016 NEEA Payments as of 12-31-2016	$	2,676,387
Total	**$**	**2,676,387**

[a] Liability accounts

Appendix 2. 2016 DSM expenses by funding source (dollars)

Sector/Program	Idaho Rider	Oregon Rider	Non-Rider Funds	Total
Energy Efficiency/Demand Response				
Residential				
A/C Cool Credit	$ 632,079	$ 41,833	$ 429,383	$ 1,103,295
Easy Savings	–	–	127,587	127,587
Educational Distributions	2,334,206	56,164	2,514	2,392,884
Energy Efficient Lighting	3,009,970	63,200	7,538	3,080,708
Energy House Calls	188,253	15,815	2,368	206,437
ENERGY STAR® Homes Northwest	138,203	1,510	2,445	142,158
Fridge and Freezer Recycling Program (See ya later, refrigerator®)	250,535	4,555	2,826	257,916
Heating & Cooling Efficiency Program/DHP Pilot	545,454	27,184	22,275	594,913
Home Energy Audit	278,959	–	10,853	289,812
Home Improvement Program	309,799	–	14,225	324,024
Multifamily Energy Savings Program	55,758	–	3,288	59,046
Oregon Residential Weatherization	–	3,906	24	3,930
Rebate Advantage	103,056	6,392	1,602	111,050
Shade Tree Program	70,669	–	5,973	76,642
Simple Steps, Smart Savings™	147,055	3,535	3,194	153,784
Weatherization Assistance for Qualified Customers	–	–	1,289,809	1,289,809
Weatherization Solutions for Eligible Customers	1,226,540	56,571	40,681	1,323,793
Commercial/Industrial				
Building Efficiency	1,863,584	42,559	25,079	1,931,222
Custom Efficiency	7,664,563	237,146	80,916	7,982,624
Easy Upgrades	4,791,852	228,834	19,505	5,040,190
Flex Peak Program	105,116	247,897	414,984	767,997
Oregon Commercial Audit	–	7,717	–	7,717
Irrigation				
Irrigation Efficiency Rewards	1,672,328	634,101	65,923	2,372,352
Irrigation Peak Rewards	1,082,113	218,906	6,299,056	7,600,076
Energy Efficiency/Demand Response Total	**$ 26,470,093**	**$ 1,897,824**	**$ 8,872,049**	**$ 37,239,965**
Market Transformation				
NEEA	2,542,567	133,820	–	2,676,387
Market Transformation Total	**$ 2,542,567**	**$ 133,820**	**$ –**	**$ 2,676,387**
Other Programs and Activities				
Residential Energy Efficiency Education Initiative	259,301	12,071	18,806	290,179
Energy Efficiency Direct Program Overhead	238,767	16,965	37,307	293,039
Other Programs and Activities Total	**$ 498,068**	**$ 29,036**	**$ 56,114**	**$ 583,218**
Indirect Program Expenses				
Commercial/Industrial Energy Efficiency Overhead	222,704	16,653	86,715	326,072
Energy Efficiency Accounting & Analysis	848,975	49,358	251,197	1,149,530
Energy Efficiency Advisory Group	14,365	806	954	16,125
Residential Energy Efficiency Overhead	783,384	44,818	35,987	864,189
Special Accounting Entries	(88,576)	(3,447)	–	(92,024)
Indirect Program Expenses Total	**$ 1,780,851**	**$ 108,187**	**$ 374,854**	**$ 2,263,893**
Grand Total	**$ 31,291,579**	**$ 2,168,868**	**$ 9,303,017**	**$ 42,763,464**

Appendix 3. 2016 DSM program activity

Program	Participants	Total Costs		Savings		Measure Life (Years)	Nominal Levelized Costs [a]	
		Utility [b]	Resource [c]	Annual Energy (kWh)	Peak Demand [d] (MW)		Utility ($/kWh)	Total Resource ($/kWh)
Demand Response								
A/C Cool Credit[1]	28,315 homes	$ 1,103,295	$ 1,103,295	n/a	34	n/a	n/a	n/a
Flex Peak Program[1]	137 sites	767,997	767,997	n/a	42	n/a	n/a	n/a
Irrigation Peak Rewards[1]	2,286 service points	7,600,076	7,600,076	n/a	303	n/a	n/a	n/a
Total		**$ 9,471,367**	**$ 9,471,367**	**n/a**	**378**			
Energy Efficiency								
Residential								
Easy Savings	2,001 kits	$ 127,587	$127,587	402,961	9		$0.035	$0.035
Educational Distributions	67,065 kits/lightbulbs	2,392,884	2,392,884	15,149,605	10		0.016	0.016
Energy Efficient Lighting	1,442,561 lightbulbs	3,080,708	10,770,703	21,093,813	11		0.014	0.049
Energy House Calls	375 homes	206,437	206,437	509,859	18		0.029	0.029
ENERGY STAR® Homes Northwest	110 homes	142,158	297,518	150,282	36		0.051	0.107
Fridge and Freezer Recycling Program (See ya later, refrigerator®)	1,539 refrigerators/freezers	257,916	257,916	632,186	6		0.062	0.062
Heating & Cooling Efficiency Program	486 projects	594,913	1,404,625	1,113,574	20		0.036	0.085
Home Energy Audit	539 audits	289,812	289,812	207,249	11		n/a	n/a
Home Improvement Program	482 projects	324,024	1,685,301	500,280	45		0.034	0.178
Multifamily Energy Savings Program	3 projects	59,046	59,046	149,760	10		0.040	0.040
Oregon Residential Weatherization	7 homes	3,930	5,900	2,847	30		0.079	0.118
Rebate Advantage	66 homes	111,050	148,142	411,272	25		0.016	0.022
Simple Steps, Smart Savings™	7,880 appliances/showerheads	153,784	379,752	577,320	11		0.025	0.063
Weatherization Assistance for Qualified Customers	246 homes/non-profits	1,289,809	1,934,415	746,162	25		0.105	0.158
Weatherization Solutions for Eligible Customers	232 homes	1,323,793	1,323,793	621,653	25		0.130	0.130
Sector Total		**$ 10,357,850**	**$21,283,831**	**42,259,823**	**8**		**$ 0.029**	**$ 0.059**
Commercial								
Custom Projects (Custom Efficiency)	196 projects	$ 7,982,624	$16,123,619	47,518,871	11		$ 0.013	$ 0.026
Green Motors—Industrial	14 motor rewinds			123,700	16		n/a	n/a
New Construction (Building Efficiency)	116 projects	1,931,222	4,560,826	12,393,249	12		0.014	0.033
Retrofits (Easy Upgrades)	1,577 projects	5,040,190	8,038,791	28,124,779	11		0.016	0.026
Sector Total		**$ 14,954,036**	**$ 28,723,235**	**88,160,599**	**14**		**$ 0.014**	**$ 0.026**

Appendix 3. 2016 DSM program activity (continued)

Program	Participants	Total Costs		Savings		Measure Life (Years)	Nominal Levelized Costs [a]	
		Utility [b]	Resource [c]	Annual Energy (kWh)	Peak Demand [d] (MW)		Utility ($/kWh)	Total Resource ($/kWh)
Irrigation								
Green Motors—Irrigation	23 motor rewinds			73,617		11	n/a	n/a
Irrigation Efficiency Reward	851 projects	$ 2,372,352	$ 8,162,206	15,673,513		8	$ 0.018	$ 0.063
Sector Total		**$ 2,372,352**	**$ 8,162,206**	**15,747,130**		**8**	**$ 0.018**	**$ 0.062**
Energy Efficiency Portfolio Total		**$ 27,684,239**	**$ 58,169,272**	**146,176,552**		**12**	**$ 0.017**	**$ 0.036**
Market Transformation								
Northwest Energy Efficiency Alliance		$ 2,676,387	$ 2,676,387	24,615,600				
Other Programs and Activities								
Residential								
Residential Energy Efficiency Education Initiative		$ 290,179	$ 290,179					
Shade Tree Project	2,070 trees	76,642	76,642					
Commercial								
Oregon Commercial Audits	7 audits	7,717	7,717					
Other								
Energy Efficiency Direct Program Overhead		293,039	293,039					
Total Program Direct Expense		**$ 40,499,570**	**$ 70,984,603**	**170,792,152**	**378**			
Indirect Program Expenses		2,263,893						
Total DSM Expense		**$ 42,763,464**						

[a] Levelized Costs are based on financial inputs from Idaho Power's 2013 IRP, and calculations include line-loss adjusted energy savings.

[b] The Total Utility Cost is the cost incurred by Idaho Power to implement and manage a DSM program.

[c] The Total Resource Cost is the total expenditures for a DSM program from the point of view of Idaho Power and its customers as a whole.

[d] Demand response program reductions are reported with 9.7-percent peak loss assumptions.

[1] Peak demand is the peak performance of the program during summer 2016.

[2] Savings are preliminary estimates provided by NEEA. Final savings for 2016 will be provided by NEEA May 2017.

Appendix 4. Historical DSM expense and performance, 2002–2016

Program/Year	Participants	Total Costs		Savings and Demand Reductions			Measure Life (Years)	Levelized Costs [a]		Program Life Benefit/Cost Ratios [b]	
		Utility Cost [c]	Resource Cost [d]	Annual Energy (kWh)	Average Energy [e] (aMW)	Peak Demand [f] (MW)		Total Utility ($/kWh)	Total Resource ($/kWh)	Utility	Total Resource
Demand Response											
A/C Cool Credit											
2003	204	$ 275,645	$ 275,645			0.0					
2004	420	287,253	287,253			0.5					
2005	2,369	754,062	754,062			3					
2006	5,369	1,235,476	1,235,476			6					
2007	13,692	2,426,154	2,426,154			12					
2008	20,195	2,969,377	2,969,377			26					
2009	30,391	3,451,988	3,451,988			39					
2010	30,803	2,002,546	2,002,546			39					
2011	37,728	2,896,542	2,896,542			24					
2012	36,454	5,727,994	5,727,994			45					
2013	n/a	663,858	663,858			n/a					
2014	29,642	1,465,646	1,465,646			44					
2015	29,000	1,148,935	1,148,935			36					
2016	28,315	1,103,295	1,103,295			34					
Total		**$26,408,770**	**$ 26,408,770**								
Flex Peak Program											
2009	33	528,681	528,681			19					
2010	60	1,902,680	1,902,680			48					
2011	111	2,057,730	2,057,730			59					
2012	102	3,009,822	3,009,822			53					
2013	100	2,743,615	2,743,615			48					
2014	93	1,563,211	1,563,211			40					
2015	72	592,872	592,872			26					
2016	137	767,997	767,997			42					
Total		**$13,166, 608**	**$ 13,166,608**								
Irrigation Peak Rewards											
2004	58	344,714	344,714			6					
2005	894	1,468,282	1,468,282			40					
2006	906	1,324,418	1,324,418			32					

Appendix 4. Historical DSM expense and performance, 2002–2016 (continued)

Program/Year	Participants	Total Costs: Utility Cost [c]	Total Costs: Resource Cost [d]	Savings and Demand Reductions: Annual Energy (kWh)	Savings and Demand Reductions: Average Energy [e] (aMW)	Savings and Demand Reductions: Peak Demand [f] (MW)	Measure Life (Years)	Levelized Costs [a]: Total Utility ($/kWh)	Levelized Costs [a]: Total Resource ($/kWh)	Program Life Benefit/Cost Ratios [b]: Utility	Program Life Benefit/Cost Ratios [b]: Total Resource
Demand Response											
Irrigation Peak Rewards											
2007	947	$ 1,615,881	$ 1,615,881			37					
2008	897	1,431,840	1,431,840			35					
2009	1,512	9,655,283	9,655,283			160					
2010	2,038	13,330,826	13,330,826			250					
2011	2,342	12,086,222	12,086,222			320					
2012	2,433	12,423,364	12,423,364			340					
2013	n/a	2,072,107	2,072,107			n/a					
2014	2,225	7,597,213	7,597,213			295					
2015	2,259	7,258,831	7,258,831			305					
2016	2,286	7,600,076	7,600,076			303					
Total		**$ 78,209,056**	**$ 78,209,056**								
Residential Efficiency											
Ductless Heat Pump Pilot											
2009	96	202,005	451,605	409,180	0.05		18	$ 0.031	$ 0.086		
2010	104	189,231	439,559	364,000	0.04		20	0.044	0.103		
2011	131	191,183	550,033	458,500	0.05		20	0.028	0.081		
2012	127	159,867	617,833	444,500	0.05		20	0.024	0.094		
2013	215	237,575	992,440	589,142	0.07		15	0.032	0.132		
2014	179	251,446	884,211	462,747	0.05		15	0.042	0.148		
Total	**852**	**$ 1,231,307**	**$ 3,935,681**	**2,728,069**			**15**	**$ 0.044**	**$ 0.138**		
Easy Savings Kits											
2015	2,068	127,477	127,477	624,536			10	0.021	0.021		
2016	2,001	127,587	127,587	402,961			9	0.035	0.035		
Total	**4,069**	**$ 255,063**	**$ 255,063**	**1,027,497**			**9**	**$0.033**	**$0.033**	**2.24**	**2.24**
Educational Distributions											
2015	28,197	432,185	432,185	1,669,495			10	0.026	0.026		
2016	67,065	2,392,884	2,392,884	15,149,605			10	0.016	0.016		
Total		**$ 2,825,069**	**$ 2,825,069**	**16,819,100**			**10**	**$0.021**	**$0.021**	**3.41**	**3.41**

Appendix 4. Historical DSM expense and performance, 2002–2016 (continued)

Program/Year	Participants	Total Costs		Savings and Demand Reductions			Measure Life (Years)	Levelized Costs [a]		Program Life Benefit/Cost Ratios [b]	
		Utility Cost [c]	Resource Cost [d]	Annual Energy (kWh)	Average Energy [e] (aMW)	Peak Demand [f] (MW)		Total Utility ($/kWh)	Total Resource ($/kWh)	Utility	Total Resource
Residential Efficiency											
Energy Efficiency Packets											
2002	2,925	755	755	155,757			7	0.001	0.001		
Total	**2,925**	**$ 755**	**$ 755**	**155,757**			**7**	**$ 0.001**	**$ 0.001**	**4.24**	**2.05**
Energy Efficient Lighting											
2002	11,618	243,033	310,643	3,299,654	0.38		7	0.012	0.015		
2003	12,662	314,641	464,059	3,596,150	0.41		7	0.014	0.021		
2004											
2005	43,760	73,152	107,810	1,734,646	0.20		7	0.007	0.010		
2006	178,514	298,754	539,877	6,302,794	0.72		7	0.008	0.014		
2007	219,739	557,646	433,626	7,207,439	0.82		7	0.012	0.017		
2008	436,234	1,018,292	793,265	14,309,444	1.63		7	0.011	0.013		
2009	549,846	1,207,366	1,456,796	13,410,748	1.53		5	0.020	0.024		
2010	1,190,139	2,501,278	3,976,476	28,082,738	3.21		5	0.020	0.031		
2011	1,039,755	1,719,133	2,764,623	19,694,381	2.25		5	0.015	0.024		
2012	925,460	1,126,836	2,407,355	16,708,659	1.91		5	0.012	0.025		
2013	1,085,225	1,356,926	4,889,501	9,995,753	1.14		8	0.016	0.058		
2014	1,161,553	1,909,823	7,148,427	12,882,151	1.47		8	0.018	0.066		
2015	1,343,255	2,063,383	4,428,676	15,876,117	1.81		10	0.013	0.028		
2016	1,442,561	3,080,708	10,770,703	21,093,813	2.41		11	0.014	0.049		
Total	**9,640,321**	**$ 17,470,970**	**$ 40,491,837**	**174,194,487**			**8**	**$ 0.012**	**$ 0.027**	**4.32**	**1.87**
Energy House Calls											
2002	17	26,053	26,053	25,989	0.00		20	0.082	0.082		
2003	420	167,076	167,076	602,723	0.07		20	0.023	0.023		
2004	1,708	725,981	725,981	2,349,783	0.27		20	0.025	0.025		
2005	891	375,610	375,610	1,775,770	0.20		20	0.017	0.017		
2006	819	336,701	336,701	777,244	0.09		20	0.035	0.035		
2007	700	336,372	336,372	699,899	0.08		20	0.039	0.039		
2008	1,099	484,379	484,379	883,038	0.10		20	0.045	0.045		
2009	1,266	569,594	569,594	928,875	0.11		20	0.052	0.052		
2010	1,602	762,330	762,330	1,198,655	0.14		20	0.054	0.054		

Appendix 4. Historical DSM expense and performance, 2002–2016 (continued)

Program/Year	Participants	Total Costs: Utility Cost [c]	Total Costs: Resource Cost [d]	Savings and Demand Reductions: Annual Energy (kWh)	Savings and Demand Reductions: Average Energy [e] (aMW)	Savings and Demand Reductions: Peak Demand [f] (MW)	Measure Life (Years)	Levelized Costs [a]: Total Utility ($/kWh)	Levelized Costs [a]: Total Resource ($/kWh)	Program Life Benefit/Cost Ratios [b]: Utility	Program Life Benefit/Cost Ratios [b]: Total Resource
Residential Efficiency											
Energy House Calls											
2011	881	483,375	483,375	1,214,004	0.14		20	0.027	0.027		
2012	668	275,884	275,884	1,192,039	0.14		18	0.016	0.016		
2013	411	199,995	199,995	837,261	0.10		18	0.016	0.016		
2014	297	197,987	197,987	579,126	0.07		18	0.030	0.030		
2015	362	214,103	214,103	754,646	0.09		18	0.020	0.020		
2016	375	206,437	206,437	509,859	0.06		18	0.029	0.029		
Total	**11,516**	**$ 5,361,876**	**$ 5,361,877**	**14,328,911**			**18**	**$ 0.032**	**$ 0.032**	**2.47**	**2.47**
ENERGY STAR® Homes Northwest											
2003		13,597	13,597	0							
2004	44	140,165	335,437	101,200	0.01		25	0.103	0.246		
2005	200	253,105	315,311	415,600	0.05		25	0.045	0.056		
2006	439	469,609	602,651	912,242	0.10		25	0.038	0.049		
2007	303	475,044	400,637	629,634	0.07		25	0.056	0.047		
2008	254	302,061	375,007	468,958	0.05		25	0.048	0.059		
2009	474	355,623	498,622	705,784	0.08		25	0.039	0.055		
2010	630	375,605	579,495	883,260	0.10		25	0.033	0.051		
2011	308	259,762	651,249	728,030	0.08		32	0.020	0.051		
2012	410	453,186	871,310	537,447	0.06		35	0.046	0.089		
2013	267	352,882	697,682	365,370	0.04		36	0.053	0.104		
2014	243	343,277	689,021	332,682	0.04		36	0.055	0.111		
2015	598	653,674	1,412,126	773,812	0.09		36	0.046	0.099		
2016	110	142,158	297,518	150,282	0.02		36	0.051	0.107		
Total	**4,280**	**$ 4,589,747**	**$ 7,739,664**	**7,004,301**			**36**	**$ 0.043**	**$ 0.073**	**2.48**	**1.47**
ENERGY STAR Homes Northwest (gas heated)											
2014	282			195,372	0.04		22				
2015	69			46,872	0.09		22				
Total	**351**			**242,244**							

Appendix 4. Historical DSM expense and performance, 2002–2016 (continued)

Program/Year	Participants	Total Costs: Utility Cost [c]	Total Costs: Resource Cost [d]	Savings and Demand Reductions: Annual Energy (kWh)	Savings and Demand Reductions: Average Energy [e] (aMW)	Savings and Demand Reductions: Peak Demand [f] (MW)	Measure Life (Years)	Levelized Costs [a]: Total Utility ($/kWh)	Levelized Costs [a]: Total Resource ($/kWh)	Program Life Benefit/Cost Ratios [b]: Utility	Program Life Benefit/Cost Ratios [b]: Total Resource
Residential Efficiency											
Fridge and Freezer Recycling Program/See ya later, refrigerator®											
2009	1,661	$ 305,401	$ 305,401	1,132,802	0.13		8	$ 0.041	$ 0.041		
2010	3,152	565,079	565,079	1,567,736	0.18		8	0.054	0.054		
2011	3,449	654,393	654,393	1,712,423	0.20		8	0.046	0.046		
2012	3,176	613,146	613,146	1,576,426	0.18		8	0.046	0.046		
2013	3,307	589,054	589,054	1,442,344	0.16		6	0.061	0.061		
2014	3,194	576,051	576,051	1,390,760	0.16		6	0.062	0.062		
2015	1,630	227,179	227,179	720,208	0.08		6	0.048	0.048		
2016	1,539	257,916	257,916	632,186	0.07		6	0.062	0.062		
Total	**21,108**	**$ 3,788,219**	**$ 3,788,219**	**10,174,885**			**6**	**$ 0.068**	**$ 0.068**	**1.21**	**1.21**
Heating & Cooling Efficiency Program											
2006		17,444	17,444								
2007	4	488,211	494,989	1,595	0.00		18	27.344	27.710		
2008	359	473,551	599,771	561,440	0.06		18	0.073	0.092		
2009	349	478,373	764,671	1,274,829	0.15		18	0.034	0.054		
2010	217	327,669	1,073,604	1,104,497	0.13		20	0.025	0.083		
2011	130	195,770	614,523	733,405	0.08		20	0.018	0.056		
2012	141	182,281	676,530	688,855	0.08		20	0.018	0.066		
2013	210	329,674	741,586	1,003,730	0.11		20	0.022	0.050		
2014	230	362,014	1,247,560	1,099,464	0.13		20	0.022	0.075		
2015	427	626,369	2,064,055	1,502,172	0.17		20	0.028	0.092		
2016	486	594,913	1,404,625	1,113,574	0.13		20	0.036	0.085		
Total	**2,553**	**$ 4,076,270**	**$ 9,699,358**	**9,083,561**			**20**	**$ 0.037**	**$ 0.087**	**2.87**	**1.20**
Home Energy Audit											
2013		88,740	88,740								
2014	354	170,648	170,648	141,077			10				
2015	351	201,957	201,957	136,002			10				
2016	539	289,812	289,812	207,249			11				
Total	**1,244**	**$ 751,157**	**$ 776,006**	**483,569**			**11**				

Appendix 4. Historical DSM expense and performance, 2002–2016 (continued)

Program/Year	Participants	Total Costs		Savings and Demand Reductions			Measure Life (Years)	Levelized Costs [a]		Program Life Benefit/Cost Ratios [b]	
		Utility Cost [c]	Resource Cost [d]	Annual Energy (kWh)	Average Energy [e] (aMW)	Peak Demand [f] (MW)		Total Utility ($/kWh)	Total Resource ($/kWh)	Utility	Total Resource
Residential Efficiency											
Home Improvement											
2008	282	123,454	157,866	317,814	0.04		25	$ 0.029	$ 0.037		
2009	1,188	321,140	550,148	1,338,876	0.15		25	0.019	0.032		
2010	3,537	944,716	2,112,737	3,986,199	0.46		45	0.016	0.035		
2011	2,275	666,041	2,704,816	917,519	0.10		45	0.038	0.155		
2012	840	385,091	812,827	457,353	0.05		45	0.044	0.093		
2013	365	299,497	1,061,314	616,044	0.07		45	0.025	0.090		
2014	555	324,717	896,246	838,929	0.10		45	0.020	0.055		
2015	408	272,509	893,731	303,580	0.03		45	0.046	0.152		
2016	482	324,024	1,685,301	500,280	0.06		45	0.034	0.177		
Total	**9,932**	**$ 3,661,190**	**$ 10,874,986**	**9,267,594**			**45**	**$ 0.025**	**$ 0.074**	**4.30**	**1.45**
Multifamily Energy Savings Program											
2016	3	59,046	59,046	149,760	0.02		10	0.040	0.040		
Total	**3**	**$ 59,046**	**$ 59,046**	**149,760**			**10**	**$ 0. 040**	**$ 0.040**	**1.43**	**1.43**
Oregon Residential Weatherization											
2002	24	(662)	23,971	4,580			25	0.010	0.389		
2003		(943)									
2004	4	1,057	1,057								
2005	4	612	3,608	7,927	0.00		25	0.006	0.034		
2006		4,126	4,126								
2007	1	3,781	5,589	9,971	0.00		25	0.028	0.042		
2008	3	7,417	28,752	22,196	0.00		25	0.025	0.096		
2009	1	7,645	8,410	2,907	0.00		25	0.203	0.223		
2010	1	6,050	6,275	320	0.00		30	0.011	0.062		
2011	8	7,926	10,208	21,908	0.00		30	0.021	0.027		
2012	5	4,516	11,657	11,985	0.00		30	0.022	0.056		
2013	14	9,017	14,369	14,907	0.00		30	0.035	0.055		
2014	13	5,462	9,723	11,032	0.00		30	0.028	0.050		
2015	19	5,808	10,388	11,910	0.00		30	0.028	0.050		

Appendix 4. Historical DSM expense and performance, 2002–2016 (continued)

Program/Year	Participants	Total Costs: Utility Cost [c]	Total Costs: Resource Cost [d]	Savings and Demand Reductions: Annual Energy (kWh)	Savings and Demand Reductions: Average Energy [e] (aMW)	Savings and Demand Reductions: Peak Demand [f] (MW)	Measure Life (Years)	Levelized Costs [a]: Total Utility ($/kWh)	Levelized Costs [a]: Total Resource ($/kWh)	Program Life Benefit/Cost Ratios [b]: Utility	Program Life Benefit/Cost Ratios [b]: Total Resource
Residential Efficiency											
Oregon Residential Weatherization											
2016	7	$ 3,930	$ 5,900	2,847	0.00		30	$ 0.079	$ 0.118		
Total	**89**	**$ 65,742**	**$ 144,033**	**122,490**			**30**	**$ 0.037**	**$ 0.082**	**2.94**	**1.34**
Rebate Advantage											
2003	73	27,372	79,399	227,434	0.03		45	0.008	0.022		
2004	105	52,187	178,712	332,587	0.04		45	0.010	0.034		
2005	98	46,173	158,462	312,311	0.04		45	0.009	0.032		
2006	102	52,673	140,289	333,494	0.04		45	0.010	0.027		
2007	123	89,269	182,152	554,018	0.06		45	0.010	0.021		
2008	107	90,888	179,868	463,401	0.05		45	0.012	0.025		
2009	57	49,525	93,073	247,348	0.03		25	0.015	0.029		
2010	35	39,402	66,142	164,894	0.02		25	0.018	0.031		
2011	25	63,469	85,044	159,325	0.02		25	0.024	0.033		
2012	35	37,241	71,911	187,108	0.02		25	0.012	0.024		
2013	42	60,770	92,690	269,891	0.03		25	0.014	0.021		
2014	44	63,231	89,699	269,643	0.03		25	0.014	0.020		
2015	58	85,438	117,322	358,683	0.04		25	0.014	0.020		
2016	66	111,050	148,142	411,272	0.05		25	0.016	0.022		
Total	**970**	**$ 868,688**	**$ 1,682,906**	**4,291,409**			**25**	**$ 0.015**	**$ 0.029**	**7.40**	**3.82**
Simple Steps Smart Savings											
2007		9,275	9,275	0							
2008	3,034	250,860	468,056	541,615	0.06		15	0.044	0.082		
2009	9,499	511,313	844,811	1,638,038	0.19		15	0.031	0.051		
2010	16,322	832,161	1,025,151	1,443,580	0.16		15	0.057	0.070		
2011	15,896	638,323	1,520,977	1,485,326	0.17		15	0.034	0.080		
2012	16,675	659,032	817,924	887,222	0.10		14	0.061	0.075		
2013	13,792	405,515	702,536	885,980	0.10		12	0.041	0.071		
2014	10,061	227,176	302,289	652,129	0.07		12	0.031	0.041		
2015	9,343	139,096	408,032	770,822	0.09		10	0.018	0.053		
2016	7,880	153,784	379,752	577,320	0.07		11	0.025	0.063		
Total	**102,502**	**$ 3,826,535**	**$ 6,468,669**	**8,882,032**			**11**	**$ 0.050**	**$ 0.085**	**1.93**	**1.14**

Appendix 4. Historical DSM expense and performance, 2002–2016 (continued)

Program/Year	Participants	Total Costs: Utility Cost [c]	Total Costs: Resource Cost [d]	Savings and Demand Reductions: Annual Energy (kWh)	Savings and Demand Reductions: Average Energy [e] (aMW)	Savings and Demand Reductions: Peak Demand [f] (MW)	Measure Life (Years)	Levelized Costs [a]: Total Utility ($/kWh)	Levelized Costs [a]: Total Resource ($/kWh)	Program Life Benefit/Cost Ratios [b]: Utility	Program Life Benefit/Cost Ratios [b]: Total Resource
Residential Efficiency											
Weatherization Solutions for Eligible Customers											
2008	16	52,807	52,807	71,680	0.01		25	0.057	0.057		
2009	41	162,995	162,995	211,719	0.02		25	0.059	0.059		
2010	47	228,425	228,425	313,309	0.04		25	0.056	0.056		
2011	117	788,148	788,148	1,141,194	0.13		25	0.042	0.042		
2012	141	1,070,556	1,070,556	257,466	0.03		25	0.254	0.254		
2013	166	1,267,791	1,267,791	303,116	0.03		25	0.240	0.240		
2014	118	791,344	791,344	290,926	0.03		25	0.163	0.163		
2015	171	1,243,269	1,243,269	432,958	0.05		25	0.175	0.175		
2016	232	1,323,793	1,323,793	621,653	0.07		25	0.130	0.130		
Total	**1,049**	**$ 6,929,127**	**$ 6,929,128**	**3,644,021**			**30**	**$ 0.132**	**$ 0.132**	**0.74**	**0.74**
Window AC Trade-Up Pilot											
2003	99	6,687	10,492	14,454			12	0.051	0.079		
Total	**99**	**$ 6,687**	**$ 10,492**	**14,454**			**12**	**$ 0.051**	**$ 0.079**		
Residential—Weatherization Assistance for Qualified Customers (WAQC)											
WAQC—Idaho											
2002	197	235,048	492,139								
2003	208	228,134	483,369								
2004	269	498,474	859,482	1,271,677	0.15		25	0.029	0.050		
2005	570	1,402,487	1,927,424	3,179,311	0.36		25	0.033	0.045		
2006	540	1,455,373	2,231,086	2,958,024	0.34		25	0.037	0.056		
2007	397	1,292,930	1,757,105	3,296,019	0.38		25	0.029	0.040		
2008	439	1,375,632	1,755,749	4,064,301	0.46		25	0.025	0.032		
2009	427	$ 1,260,922	$ 1,937,578	4,563,832	0.52		25	0.021	0.033		
2010	373	1,205,446	2,782,597	3,452,025	0.39		25	0.026	0.060		
2011	273	1,278,112	1,861,836	2,648,676	0.30		25	0.036	0.053		
2012	228	1,321,927	1,743,863	621,464	0.07		25	0.159	0.210		
2013	245	1,336,742	1,984,173	657,580	0.08		25	0.152	0.226		
2014	244	1,267,212	1,902,615	509,620	0.06		25	0.185	0.277		

Appendix 4. Historical DSM expense and performance, 2002–2016 (continued)

Program/Year	Participants	Total Costs		Savings and Demand Reductions			Measure Life (Years)	Levelized Costs [a]		Program Life Benefit/Cost Ratios [b]	
		Utility Cost [c]	Resource Cost [d]	Annual Energy (kWh)	Average Energy [e] (aMW)	Peak Demand [f] (MW)		Total Utility ($/kWh)	Total Resource ($/kWh)	Utility	Total Resource
Residential—(WAQC)											
WAQC—Idaho											
2015	233	$ 1,278,159	$ 2,072,901	529,426	0.06		25	$ 0.179	$ 0.291		
2016	234	1,254,338	1,870,481	722,430	0.08		25	0.129	0.192		
Total	**4,877**	**$ 16,690,936**	**$ 25,662,398**	**28,474,386**			**25**	**$ 0.043**	**$ 0.067**	**2.79**	**1.82**
WAQC—Oregon											
2002	31	24,773	47,221	68,323	0.01		25	0.027	0.051		
2003	29	22,255	42,335	102,643	0.01		25	0.016	0.031		
2004	17	13,469	25,452	28,436	0.00		25	0.035	0.067		
2005	28	44,348	59,443	94,279	0.01		25	0.035	0.047		
2006							25				
2007	11	30,694	41,700	42,108	0.00		25	0.054	0.074		
2008	14	43,843	74,048	73,841	0.01		25	0.040	0.068		
2009	10	33,940	46,513	114,982	0.01		25	0.023	0.031		
2010	27	115,686	147,712	289,627	0.03		25	0.030	0.038		
2011	14	46,303	63,981	134,972	0.02		25	0.026	0.035		
2012	10	48,214	76,083	26,840	0.00		25	0.134	0.212		
2013	9	54,935	67,847	24,156	0.00		25	0.170	0.210		
2014	11	52,900	94,493	24,180	0.00		25	0.162	0.290		
2015	10	36,873	46,900	20,595	0.00		25	0.133	0.169		
2016	12	35,471	63,934	23,732	0.00		25	0.111	0.200		
Total	**233**	**$ 603,703**	**$ 897,662**	**1,068,714**			**25**	**$ 0.042**	**$ 0.062**	**2.79**	**1.87**
WAQC—BPA Supplemental											
2002	75	55,966	118,255	311,347	0.04		25	0.013	0.028		
2003	57	49,895	106,915	223,591	0.03		25	0.017	0.036		
2004	40	69,409	105,021	125,919	0.01		25	0.041	0.062		
Total	**172**	**$ 175,270**	**$ 330,191**	**660,857**			**25**	**$ 0.020**	**$ 0.037**	**5.75**	**3.05**
WAQC Total		**$ 17,469,910**	**$ 26,890,251**	**30,203,957**			**25**	**$ 0.043**	**$ 0.066**	**2.83**	**1.84**

Appendix 4. Historical DSM expense and performance, 2002–2016 (continued)

Program/Year	Participants	Total Costs		Savings and Demand Reductions			Measure Life (Years)	Levelized Costs [a]		Program Life Benefit/Cost Ratios [b]	
		Utility Cost [c]	Resource Cost [d]	Annual Energy (kWh)	Average Energy [e] (aMW)	Peak Demand [f] (MW)		Total Utility ($/kWh)	Total Resource ($/kWh)	Utility	Total Resource
Commercial											
Air Care Plus Pilot											
2003	4	$ 5,764	$ 9,061	33,976			10	$ 0.021	$ 0.033		
2004		344	344								
Total	**4**	**$ 6,108**	**$ 9,405**	**33,976**			**10**	**$ 0.022**	**$ 0.034**		
New Construction (Building Efficiency)											
2004		28,821	28,821								
2005	12	194,066	233,149	494,239	0.06	0.2	12	0.043	0.052		
2006	40	374,008	463,770	704,541	0.08	0.3	12	0.058	0.072		
2007	22	669,032	802,839	2,817,248	0.32	0.5	12	0.015	0.040		
2008	60	1,055,009	1,671,375	6,598,123	0.75	1.0	12	0.017	0.028		
2009	72	1,327,127	2,356,434	6,146,139	0.70	1.3	12	0.024	0.043		
2010	70	1,509,682	3,312,963	10,819,598	1.24	0.9	12	0.016	0.035		
2011	63	1,291,425	3,320,015	11,514,641	1.31	0.9	12	0.010	0.026		
2012	84	1,592,572	8,204,883	20,450,037	2.33	0.6	12	0.007	0.036		
2013	59	1,507,035	3,942,880	10,988,934	1.25	1.1	12	0.012	0.032		
2014	69	1,258,273	3,972,822	9,458,059	1.08	1.2	12	0.012	0.037		
2015	81	2,162,001	6,293,071	23,232,017	2.65		12	0.008	0.024		
2016	116	1,931,222	4,560,826	12,393,249	1.41		12	0.014	0.033		
Total	**748**	**$ 14,900,273**	**$ 39,163,849**	**115,616,825**			**12**	**$ 0.014**	**$ 0.037**	**5.55**	**2.11**
Retrofits (Easy Upgrades)											
2006		31,819	31,819								
2007	104	711,494	1,882,035	5,183,640	0.59	0.8	12	0.015	0.040		
2008	666	2,992,261	10,096,627	25,928,391	2.96	4.5	12	0.013	0.043		
2009	1,224	3,325,505	10,076,237	35,171,627	4.02	6.1	12	0.011	0.032		
2010	1,535	3,974,410	7,655,397	35,824,463	4.09	7.8	12	0.013	0.024		
2011	1,732	4,719,466	9,519,364	38,723,073	4.42		12	0.011	0.022		
2012	1,838	5,349,753	9,245,297	41,568,672	4.75		12	0.012	0.020		
2013	1,392	3,359,790	6,738,645	21,061,946	2.40		12	0.014	0.029		
2014	1,095	3,150,942	5,453,380	19,118,494	2.18		12	0.015	0.025		

Appendix 4. Historical DSM expense and performance, 2002–2016 (continued)

Program/Year	Participants	Total Costs: Utility Cost [c]	Total Costs: Resource Cost [d]	Savings and Demand Reductions: Annual Energy (kWh)	Savings and Demand Reductions: Average Energy [e] (aMW)	Savings and Demand Reductions: Peak Demand [f] (MW)	Measure Life (Years)	Levelized Costs [a]: Total Utility ($/kWh)	Levelized Costs [a]: Total Resource ($/kWh)	Program Life Benefit/Cost Ratios [b]: Utility	Program Life Benefit/Cost Ratios [b]: Total Resource
Commercial											
Retrofits (Easy Upgrades)											
2015	1,222	$ 4,350,865	$ 7,604,200	23,594,701	2.69		12	$ 0.017	$ 0.029		
2016	1,577	5,040,190	8,038,791	28,124,779	3.21		12	0.016	0.026		
Total	**12,385**	**$ 37,006,495**	**$ 76,341,791**	**274,299,786**			**12**	**$ 0.015**	**$ 0.031**	**5.36**	**2.60**
Holiday Lighting											
2008	14	28,782	73,108	259,092	0.03		10	0.014	0.035		
2009	32	33,930	72,874	142,109	0.02		10	0.031	0.066		
2010	25	46,132	65,308	248,865	0.03		10	0.024	0.034		
2011	6	2,568	2,990	66,189	0.01		10	0.004	0.005		
Total	**77**	**$ 111,412**	**$ 214,280**	**716,255**			**10**	**$ 0.019**	**$ 0.037**	**2.89**	**1.50**
Oregon Commercial Audit											
2002	24	5,200	5,200								
2003	21	4,000	4,000								
2004	7	0	0								
2005	7	5,450	5,450								
2006	6										
2007		1,981	1,981								
2008		58	58								
2009	41	20,732	20,732								
2010	22	5,049	5,049								
2011	12	13,597	13,597								
2012	14	12,470	12,470								
2013	18	5,090	5,090								
2014	16	9,464	9,464								
2015	17	4,251	4,251								
2016	7	7,717	7,717								
Total	**212**	**$ 95,059**	**$ 95,059**								
Oregon School Efficiency											
2005		86	86								
2006	6	24,379	89,771	223,368	0.03		12	$ 0.012	$ 0.044		
Total	**6**	**$ 24,465**	**$ 89,857**	**223,368**			**12**	**$ 0.012**	**$ 0.044**		

Appendix 4. Historical DSM expense and performance, 2002–2016 (continued)

Program/Year	Participants	Total Costs		Savings and Demand Reductions			Measure Life (Years)	Levelized Costs [a]		Program Life Benefit/Cost Ratios [b]	
		Utility Cost [c]	Resource Cost [d]	Annual Energy (kWh)	Average Energy [e] (aMW)	Peak Demand [f] (MW)		Total Utility ($/kWh)	Total Resource ($/kWh)	Utility	Total Resource
Industrial											
Custom Projects (Custom Efficiency)											
2003		$ 1,303	$ 1,303								
2004	1	112,311	133,441	211,295	0.02		12	$ 0.058	$ 0.069		
2005	24	1,128,076	3,653,152	12,016,678	1.37		12	0.010	0.033		
2006	40	1,625,216	4,273,885	19,211,605	2.19		12	0.009	0.024		
2007	49	3,161,866	7,012,686	29,789,304	3.40	3.6	12	0.012	0.026		
2008	101	4,045,671	16,312,379	41,058,639	4.69	4.8	12	0.011	0.044		
2009	132	6,061,467	10,848,123	51,835,612	5.92	6.7	12	0.013	0.024		
2010	223	8,778,125	17,172,176	71,580,075	8.17	9.5	12	0.014	0.027		
2011	166	8,783,811	19,830,834	67,979,157	7.76	7.8	12	0.012	0.026		
2012	126	7,092,581	12,975,629	54,253,106	6.19	7.6	12	0.012	0.021		
2013	73	2,466,225	5,771,640	21,370,350	2.43	2.4	12	0.010	0.024		
2014	131	7,173,054	13,409,922	50,363,052	5.75	5.6	12	0.013	0.024		
2015	160	9,012,628	20,533,742	55,247,192	6.31		11	0.016	0.035		
2016	196	7,982,624	16,123,619	47,518,871	5.42		16	0.013	0.026		
Total	**1,422**	**$ 67,424,957**	**$148,052,531**	**522,434,936**			**12**	**$ 0.014**	**$ 0.031**	**5.75**	**2.62**
Irrigation											
Irrigation Efficiency Rewards											
2003	2	$ 41,089	$ 54,609	36,792	0.00	0.0	15	$ 0.106	$ 0.141		
2004	33	120,808	402,978	802,812	0.09	0.4	15	0.014	0.048		
2005	38	150,577	657,460	1,012,883	0.12	0.4	15	0.014	0.062		
2006	559	2,779,620	8,514,231	16,986,008	1.94	5.1	8	0.024	0.073		
2007	816	2,001,961	8,694,772	12,304,073	1.40	3.4	8	0.024	0.103		
2008	961	2,103,702	5,850,778	11,746,395	1.34	3.5	8	0.026	0.073		
2009	887	2,293,896	6,732,268	13,157,619	1.50	3.4	8	0.026	0.077		
2010	753	2,200,814	6,968,598	10,968,430	1.25	3.3	8	0.030	0.096		
2011	880	2,360,304	13,281,492	13,979,833	1.60	3.8	8	0.020	0.113		
2012	908	2,373,201	11,598,185	12,617,164	1.44	3.1	8	0.022	0.110		
2013	995	2,441,386	15,223,928	18,511,221	2.11	3.0	8	0.016	0.098		

Appendix 4. Historical DSM expense and performance, 2002–2016 (continued)

Program/Year	Participants	Total Costs: Utility Cost [c]	Total Costs: Resource Cost [d]	Savings and Demand Reductions: Annual Energy (kWh)	Savings and Demand Reductions: Average Energy [e] (aMW)	Savings and Demand Reductions: Peak Demand [f] (MW)	Measure Life (Years)	Levelized Costs [a]: Total Utility ($/kWh)	Levelized Costs [a]: Total Resource ($/kWh)	Program Life Benefit/Cost Ratios [b]: Utility	Program Life Benefit/Cost Ratios [b]: Total Resource
Irrigation											
Irrigation Efficiency Rewards											
2014	1,128	$ 2,446,507	$ 18,459,781	18,463,611	2.11	4.6	8	$ 0.016	$ 0.119		
2015	902	1,835,711	9,939,842	14,027,411	1.60	1.6	8	0.016	0.085		
2016	851	2,372,352	8,162,206	15,673,513	1.79		8	0.018	0.063		
Total	**9,713**	**$ 25,521,929**	**$114,541,128**	**160,287,765**			**8**	**$ 0.023**	**$ 0.105**	**4.93**	**1.61**
Other Programs											
Building Operator Training											
2003	71	$ 48,853	$ 48,853	1,825,000	0.21		5	$ 0.006	$ 0.006		
2004	26	43,969	43,969	650,000	0.07		5	0.014	0.014		
2005	7	1,750	4,480	434,167	0.05		5	0.001	0.002		
Total	**104**	**$ 94,572**	**$ 97,302**	**2,909,167**			**5**	**$ 0.007**	**$ 0.007**		
Commercial Education Initiative											
2005		3,497	3,497								
2006		4,663	4,663								
2007		26,823	26,823								
2008		72,738	72,738								
2009		120,584	120,584								
2010		68,765	68,765								
2011		89,856	89,856								
2012		73,788	73,788								
2013		66,790	66,790								
2014		76,606	76,606								
2015		65,250	65,250								
Total		**$ 669,360**	**$ 669,360**								
Comprehensive Lighting											
2011		2,404	2,404								
2012		64,094	64,094								
Total		**$ 66,498**	**$ 66,498**								

Appendix 4. Historical DSM expense and performance, 2002–2016 (continued)

Program/Year	Participants	Total Costs: Utility Cost [c]	Total Costs: Resource Cost [d]	Savings and Demand Reductions: Annual Energy (kWh)	Savings and Demand Reductions: Average Energy [e] (aMW)	Savings and Demand Reductions: Peak Demand [f] (MW)	Measure Life (Years)	Levelized Costs [a]: Total Utility ($/kWh)	Levelized Costs [a]: Total Resource ($/kWh)	Program Life Benefit/Cost Ratios [b]: Utility	Program Life Benefit/Cost Ratios [b]: Total Resource
Other Programs											
Distribution Efficiency Initiative											
2005		21,552	43,969								
2006		24,306	24,306								
2007		8,987	8,987								
2008		(1,913)	(1,913)								
Total		**$ 52,932**	**$ 75,349**								
DSM Direct Program Overhead											
2007		$ 56,909	$ 56,909								
2008		169,911	169,911								
2009		164,957	164,957								
2010		117,874	117,874								
2011		210,477	210,477								
2012		285,951	285,951								
2013		380,957	380,957								
2014		478,658	478,658								
2015		272,858	272,858								
2016		293,039	293,039								
Total		**$ 2,431,591**	**$ 2,431,591**								
Green Motors Rewind—Industrial				123,700			7				
2016											
Total				**123,700**			**7**			**n/a**	**n/a**
Green Motors Rewind—Irrigation				73,617			19				
2016											
Total				**73,617**			**19**			**n/a**	**n/a**
Local Energy Efficiency Fund											
2003	56	5,100	5,100								
2004		23,449	23,449								
2005	2	14,896	26,756	78,000	0.01		10	$ 0.024	$ 0.042		
2006	480	3,459	3,459	19,027	0.00		7	0.009	0.009		
2007	1	7,520	7,520	9,000	0.00		7	0.135	0.135		

Appendix 4. Historical DSM expense and performance, 2002–2016 (continued)

Program/Year	Participants	Total Costs: Utility Cost [c]	Total Costs: Resource Cost [d]	Savings and Demand Reductions: Annual Energy (kWh)	Savings and Demand Reductions: Average Energy [e] (aMW)	Savings and Demand Reductions: Peak Demand [f] (MW)	Measure Life (Years)	Levelized Costs [a]: Total Utility ($/kWh)	Levelized Costs [a]: Total Resource ($/kWh)	Program Life Benefit/Cost Ratios [b]: Utility	Program Life Benefit/Cost Ratios [b]: Total Resource
Other Programs											
Local Energy Efficiency Fund											
2008	2	22,714	60,100	115,931	0.01		15	0.019	0.049		
2009	1	5,870	4,274	10,340	0.00		12	0.064	0.047		
2010	1	251	251		0.00						
2011	1	1,026	2,052	2,028			30	0.036	0.071		
2012											
2013											
2014	1	9,100	9,100	95,834			18				
Total	**545**	**$ 93,385**	**$ 142,061**	**330,160**			**14**	**$ 0.028**	**$ 0.043**	**2.80**	**1.84**
Other C&RD and CRC BPA											
2002		$ 55,722	$ 55,722								
2003		67,012	67,012								
2004		108,191	108,191								
2005		101,177	101,177								
2006		124,956	124,956								
2007		31,645	31,645								
2008		6,950	6,950								
Total		**$ 495,654**	**$ 495,654**								
Residential Economizer Pilot											
2011		101,713	101,713								
2012		93,491	93,491								
2013		74,901	74,901								
Total		**$ 270,105**	**$ 270,105**								
Residential Education Initiative											
2005		7,498	7,498								
2006		56,727	56,727								
2007											
2008		150,917	150,917								
2009		193,653	193,653								

Appendix 4. Historical DSM expense and performance, 2002–2016 (continued)

Program/Year	Participants	Total Costs: Utility Cost [c]	Total Costs: Resource Cost [d]	Savings and Demand Reductions: Annual Energy (kWh)	Savings and Demand Reductions: Average Energy [e] (aMW)	Savings and Demand Reductions: Peak Demand [f] (MW)	Measure Life (Years)	Levelized Costs [a]: Total Utility ($/kWh)	Levelized Costs [a]: Total Resource ($/kWh)	Program Life Benefit/Cost Ratios [b]: Utility	Program Life Benefit/Cost Ratios [b]: Total Resource
Other Programs											
Residential Education Initiative											
2010		$ 222,092	$ 222,092								
2011		159,645	159,645								
2012		174,738	174,738								
2013		416,166	416,166								
2014	6,312	423,091	423,091	1,491,225			10				
2015		149,903	149,903								
2016		290,179	290,179								
Total	**6,312**	**$ 2,244,609**	**$ 2,244,609**	**1,491,225**			**10**				
Shade Tree Project											
2014	2,041	147,290	147,290								
2015	1,925	105,392	105,392								
2016	2,070	76,642	76,642								
Total	**6,036**	**$ 329,324**	**$ 329,324**								
Solar 4R Schools											
2009		42,522	42,522								
Total		**$ 42,522**	**$ 42,522**								
Market Transformation											
Consumer Electronic Initiative											
2002		160,762	160,762								
Total		**$ 160,762**	**$ 160,762**								
NEEA											
2002		1,286,632	1,286,632	12,925,450	1.48						
2003		1,292,748	1,292,748	11,991,580	1.37						
2004		1,256,611	1,256,611	13,329,071	1.52						
2005		476,891	476,891	16,422,224	1.87						
2006		930,455	930,455	18,597,955	2.12						
2007		893,340	893,340	28,601,410	3.27						
2008		942,014	942,014	21,024,279	2.40						

Appendix 4. Historical DSM expense and performance, 2002–2016 (continued)

Program/Year	Participants	Total Costs: Utility Cost [c]	Total Costs: Resource Cost [d]	Savings and Demand Reductions: Annual Energy (kWh)	Savings and Demand Reductions: Average Energy [e] (aMW)	Savings and Demand Reductions: Peak Demand [f] (MW)	Measure Life (Years)	Levelized Costs [a]: Total Utility ($/kWh)	Levelized Costs [a]: Total Resource ($/kWh)	Program Life Benefit/Cost Ratios [b]: Utility	Program Life Benefit/Cost Ratios [b]: Total Resource
Market Transformation											
NEEA											
2009		$ 968,263	$ 968,263	10,702,998	1.22						
2010		2,391,217	2,391,217	21,300,366	2.43						
2011		3,108,393	3,108,393	20,161,728	2.30						
2012		3,379,756	3,379,756	19,567,984	2.23						
2013		3,313,058	3,313,058	20,567,965	2.35						
2014		3,305,917	3,305,917	26,805,600	3.06						
2015		2,582,919	2,582,919	23,038,800	2.50						
2016		2,676,387	2,676,387	24,615,600	2.81						
Total		**$ 28,804,600**	**$ 28,804,600**	**289,653,011**							
Annual Totals											
2002		1,932,520	2,366,591	16,791,100	1.92	0					
2003		2,566,228	3,125,572	18,654,343	2.12	0					
2004		3,827,213	4,860,912	19,202,780	2.19	7					
2005		6,523,348	10,383,577	37,978,035	4.34	44					
2006		11,174,181	20,950,110	67,026,303	7.65	44					
2007		14,896,816	27,123,018	91,145,357	10.40	59					
2008		20,213,216	44,775,829	128,508,579	14.67	75					
2009		33,821,062	53,090,852	143,146,365	16.34	236					
2010		44,643,541	68,981,324	193,592,637	22.10	358					
2011		44,877,117	79,436,532	183,476,312	20.94	420					
2012		47,991,350	77,336,341	172,054,327	19.64	454					
2013		26,100,091	54,803,353	109,505,690	12.23	55					
2014		35,648,260	71,372,414	145,475,713	16.40	390					
2015		37,149,893	70,467,082	163,671,955	18.27	367					
2016		41,705,957	70,984,603	170,792,152	19.50	379					
Total Direct Program		**$ 373,070,793**	**$ 660,058,113**	**1,661,021,647**							

Appendix 4. Historical DSM expense and performance, 2002–2016 (continued)

Program/Year	Participants	Total Costs		Savings and Demand Reductions			Measure Life (Years)	Levelized Costs [a]		Program Life Benefit/Cost Ratios [b]	
		Utility Cost [c]	Resource Cost [d]	Annual Energy (kWh)	Average Energy [e] (aMW)	Peak Demand [f] (MW)		Total Utility ($/kWh)	Total Resource ($/kWh)	Utility	Total Resource
Indirect Program Expenses											
DSM Overhead and Other Indirect											
2002		128,855									
2003		(41,543)									
2004		142,337									
2005		177,624									
2006		309,832									
2007		765,561									
2008		980,305									
2009		1,025,704									
2010		1,189,310									
2011		1,389,135									
2012		1,335,509									
2013		741,287									
2014		1,065,072									
2015		1,891,042									
2016		2,263,893									
Total		**$ 13,363,923**									
Total Expenses											
2002		2,061,375									
2003		2,524,685									
2004		3,969,550									
2005		6,700,972									
2006		11,484,013									
2007		15,662,377									
2008		21,193,521									
2009		34,846,766									
2010		45,832,851									
2011		46,266,252									
2012		49,326,859									

Appendix 4. Historical DSM expense and performance, 2002–2016 (continued)

Program/Year	Participants	Total Costs		Savings and Demand Reductions			Measure Life (Years)	Levelized Costs [a]		Program Life Benefit/Cost Ratios [b]	
		Utility Cost [c]	Resource Cost [d]	Annual Energy (kWh)	Average Energy [e] (aMW)	Peak Demand [f] (MW)		Total Utility ($/kWh)	Total Resource ($/kWh)	Utility	Total Resource
Total Expenses											
2013		$ 26,841,378									
2014		36,713,333									
2015		39,040,935									
2016		42,763,464									
Total 2002–2016		**$ 385,228,330**									

[a] Levelized Costs are based on financial inputs from Idaho Power's *2013 Integrated Resource Plan* and calculations include line loss adjusted energy savings.

[b] Program life benefit/cost ratios are provided for active programs only.

[c] The Total Utility Cost is all cost incurred by Idaho Power to implement and manage a DSM program.

[d] The Total Resource Cost is the total expenditures for a DSM program from the point of view of Idaho Power and its customers as a whole.

[e] Average Demand = Annual Energy/8,760 annual hours.

[f] Peak Demand is reported for programs that directly reduce load or measure demand reductions during summer peak season. Peak demand reduction for demand response programs is reported at the generation level assuming 13 percent peak line losses.

[1] Savings are preliminary funder share estimates. Final results will be provided by NEEA in May 2017.

Appendix 5. 2016 DSM program activity by state jurisdiction

Program	Idaho Participants	Idaho Utility Costs	Idaho Demand Reduction/ Annual Energy Savings (MW)	Oregon Participants	Oregon Utility Costs [a]	Oregon Demand Reduction/ Annual Energy Savings(MW)
Demand Response						
A/C Cool Credit	27,947 homes	$ 1,061,450	33	368 homes	$ 41,845	0.4
Flex Peak Program	128 sites	520,088	29	9 sites	247,909	13
Irrigation Peak Rewards	2,236 service points	7,378,725	295	50 service points	221,351	7
Total		**$ 8,960,263**	**357**		**$ 511,104**	**21**
Energy Efficiency						
Residential						
Easy Savings	2,001 kits	127,587	402,961	– kits	–	–
Educational Distributions	65,749 kits/bulbs	2,336,721	14,680,660	1,316 kits/bulbs	56,164	468,945
Energy Efficient Lighting	1,405,052 bulbs	3,017,507	20,646,094	37,509 bulbs	63,200	447,719
Energy House Calls	343 homes	190,621	470,535	32 homes	15,815	39,324
ENERGY STAR® Homes Northwest	110 homes	140,648	150,282	– homes	1,510	–
Fridge and Freezer Recycling Program	1,527 refrigerators/ freezers	253,362	627,104	12 refrigerators/freezers	4,555	5,082
Heating & Cooling Efficiency Program	469 projects	567,729	1,073,380	17 projects	27,184	40,194
Home Energy Audit	539 audits	289,812	207,249	audits		
Home Improvement Program	482 projects	324,024	500,280	projects		
Multifamily Energy Savings Program	3 projects	59,046	149,760	projects		
Oregon Residential Weatherization				7 homes	3,930	2,847
Rebate Advantage	62 homes	104,658	385,528	4 homes	6,392	25,744
Simple Steps, Smart Savings™	7,822 appliances/ showerheads	150,249	570,581	94 appliances/showerheads	3,535	6,739
Weatherization Assistance for Qualified Customers	234 homes/ non-profits	1,254,338	722,430	12 homes/non-profits	35,471	23,732
Weatherization Solutions for Eligible Customers	232 homes	1,323,793	621,653	homes		
Sector Total		**$ 10,140,095**	**41,208,496**		**$ 217,756**	**1,060,326**
Commercial						
Custom Projects (Custom Efficiency)	185 projects	7,745,408	46,614,955	11 projects	237,216	903,916
Green Motors—Industrial	2 motor rewinds		50,955	2 motor rewinds	0	72,745
New Construction (Building Efficiency)	113 projects	1,888,663	12,254,358	3 projects	42,559	138,891
Retrofits (Easy Upgrades)	1,518 projects	4,811,357	27,040,532	59 projects	228,834	1,084,247
Sector Total		**$ 14,445,428**	**85,960,800**		**$ 508,608**	**2,199,799**

Appendix 5. 2016 DSM program activity by state jurisdiction (continued)

Program	Idaho Participants	Idaho Utility Costs	Idaho Demand Reduction/ Annual Energy Savings	Oregon Participants	Oregon Utility Costs	Oregon Demand Reduction/ Annual Energy Savings
Irrigation						
Green Motors—Irrigation	22 motor rewinds		72,871	1 motor rewind		746
Irrigation Efficiency Rewards	798 projects	$ 1,737,168	12,860,872	53 projects	$ 635,185	2,812,641
Sector Total		**$ 1,737,168**	**12,933,743**		**$ 635,185**	**2,813,387**
Market Transformation						
Northwest Energy Efficiency Alliance [1]		2,542,567	23,384,820		133,820	1,230,780
Other Programs and Activities						
Residential						
Energy Efficiency Education Initiative		278,108			12,071	
Shade Tree Project		76,642			–	
Commercial						
Oregon Commercial Audits		–			7,717	
Other						
Energy Efficiency Direct Program Overhead		276.074			16,964	
Total Program Direct Expense		**$ 38,456,344**			**$ 2,043,225**	
Indirect Program Expenses		2,147,479			116,414	
Total Annual Savings			**163,487,859**			**7,304,292**
Total DSM Expense		**$ 40,603,823**			**$ 2,159,639**	

[a] Levelized Costs are based on financial inputs from Idaho Power's *2013 Integrated Resource Plan* and calculations include line loss adjusted energy savings.

[1] Savings are preliminary funder share estimates provided by NEEA. Final savings for 2016 will be provided by NEEA May 2017.

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Appendix 3. 2016 DSM program activity—corrected

Program	Participants	Total Costs		Savings		Measure Life (Years)	Nominal Levelized Costs [a]	
		Utility [b]	Resource [c]	Annual Energy (kWh)	Peak Demand [d] (MW)		Utility ($/kWh)	Total Resource ($/kWh)
Demand Response								
A/C Cool Credit[1]	28,315 homes	$ 1,103,295	$ 1,103,295	n/a	34	n/a	n/a	n/a
Flex Peak Program[1]	137 sites	767,997	767,997	n/a	42	n/a	n/a	n/a
Irrigation Peak Rewards[1]	2,286 service points	7,600,076	7,600,076	n/a	303	n/a	n/a	n/a
Total		**$ 9,471,367**	**$ 9,471,367**	**n/a**	**378**			
Energy Efficiency								
Residential								
Easy Savings	2,001 kits	$ 127,587	$127,587	402,961		9	$0.035	$0.035
Educational Distributions	67,065 kits/lightbulbs	2,392,884	2,392,884	15,149,605		10	0.016	0.016
Energy Efficient Lighting	1,442,561 lightbulbs	3,080,708	10,770,703	21,093,813		11	0.014	0.049
Energy House Calls	375 homes	206,437	206,437	509,859		18	0.029	0.029
ENERGY STAR® Homes Northwest	110 homes	142,158	297,518	150,282		36	0.051	0.107
Fridge and Freezer Recycling Program (See ya later, refrigerator®)	1,539 refrigerators/freezers	257,916	257,916	632,186		6	0.062	0.062
Heating & Cooling Efficiency Program	486 projects	594,913	1,404,625	1,113,574		20	0.036	0.085
Home Energy Audit	539 audits	289,812	289,812	207,249		11	n/a	n/a
Home Improvement Program	482 projects	324,024	1,685,301	500,280		45	0.034	0.178
Multifamily Energy Savings Program	3 projects	59,046	59,046	149,760		10	0.040	0.040
Oregon Residential Weatherization	7 homes	3,930	5,900	2,847		30	0.079	0.118
Rebate Advantage	66 homes	111,050	148,142	411,272		25	0.016	0.022
Simple Steps, Smart Savings™	7,880 appliances/showerheads	153,784	379,752	577,320		11	0.025	0.063
Weatherization Assistance for Qualified Customers	246 homes/non-profits	1,289,809	1,934,415	746,162		25	0.105	0.158
Weatherization Solutions for Eligible Customers	232 homes	1,323,793	1,323,793	621,653		25	0.130	0.130
Sector Total		**$ 10,357,850**	**$21,283,831**	**42,268,823**		**8**	**$ 0.029**	**$ 0.059**
Commercial								
Custom Projects (Custom Efficiency)	196 projects	$ 7,982,624	$16,123,619	47,518,871		11	$ 0.013	$ 0.026
Green Motors—Industrial	14 motor rewinds			123,700		16	n/a	n/a
New Construction (Building Efficiency)	116 projects	1,931,222	4,560,826	12,393,249		12	0.014	0.033
Retrofits (Easy Upgrades)	1,577 projects	5,040,190	8,038,791	28,124,779		11	0.016	0.026
Sector Total		**$ 14,954,036**	**$ 28,723,235**	**88,160,599**		**14**	**$ 0.014**	**$ 0.026**

Appendix 3. 2016 DSM program activity (continued)—corrected

Program	Participants	Total Costs		Savings		Measure Life (Years)	Nominal Levelized Costs [a]	
		Utility [b]	Resource [c]	Annual Energy (kWh)	Peak Demand [d] (MW)		Utility ($/kWh)	Total Resource ($/kWh)
Irrigation								
Green Motors—Irrigation	23 motor rewinds			73,617		11	n/a	n/a
Irrigation Efficiency Reward	851 projects	$ 2,372,352	$ 8,162,206	15,673,513		8	$ 0.018	$ 0.063
Sector Total		**$ 2,372,352**	**$ 8,162,206**	**15,747,130**		**8**	**$ 0.018**	**$ 0.062**
Energy Efficiency Portfolio Total		**$ 27,684,239**	**$ 58,169,272**	**146,176,552**		**12**	**$ 0.017**	**$ 0.036**
Market Transformation								
Northwest Energy Efficiency Alliance		$ 2,676,387	$ 2,676,387	24,615,600				
Other Programs and Activities								
Residential								
Residential Energy Efficiency Education Initiative		$ 290,179	$ 290,179					
Shade Tree Project	2,070 trees	76,642	76,642					
Commercial								
Oregon Commercial Audits	7 audits	7,717	7,717					
Other								
Energy Efficiency Direct Program Overhead		293,039	293,039					
Total Program Direct Expense		**$ 40,499,570**	**$ 70,984,603**	**170,792,152**	**378**			
Indirect Program Expenses		2,263,893						
Total DSM Expense		**$ 42,763,464**						

[a] Levelized Costs are based on financial inputs from Idaho Power's 2013 IRP, and calculations include line-loss adjusted energy savings.

[b] The Total Utility Cost is the cost incurred by Idaho Power to implement and manage a DSM program.

[c] The Total Resource Cost is the total expenditures for a DSM program from the point of view of Idaho Power and its customers as a whole.

[d] Demand response program reductions are reported with 9.7-percent peak loss assumptions.

[1] Peak demand is the peak performance of the program during summer 2016.

[2] Savings are preliminary estimates provided by NEEA. Final savings for 2016 will be provided by NEEA May 2017.

DEMAND-SIDE MANAGEMENT

IDAHO POWER®
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2016 Annual Report

SUPPLEMENT 1: COST-EFFECTIVENESS

MARCH 15 • 2017

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Supplement 1: Cost-Effectiveness

Cost-Effectiveness

Idaho Power considers cost-effectiveness of primary importance in the design, implementation, and tracking of energy efficiency and demand response programs. Idaho Power's energy efficiency and demand response opportunities are preliminarily identified through the Integrated Resource Plan (IRP) process. Idaho Power uses third-party energy efficiency potential studies to identify achievable cost-effective energy efficiency potential, which is added to the resources included in the IRP. Idaho Power's Program Planning Group (PPG) explores new opportunities to expand current demand-side management (DSM) programs and offerings.

Prior to the actual implementation of energy efficiency or demand response programs, Idaho Power performs a cost-effectiveness analysis to assess whether a potential program design or measure will be cost-effective from the perspective of Idaho Power and its customers. Incorporated in these models are inputs from various sources that use the most current and reliable information available. When possible, Idaho Power leverages the experiences of other utilities in the region and/or throughout the country to help identify specific program parameters. This is accomplished through discussions with other utilities' program managers and researchers. Idaho Power also uses electric industry research organizations, such as E Source, the Consortium for Energy Efficiency (CEE), American Council for an Energy-Efficient Economy (ACEEE), Advanced Load Control Alliance (ALCA), and Association of Energy Service Professionals (AESP), to identify similar programs and their results. Additionally, Idaho Power relies on the results of program impact evaluations and recommendations from consultants.

Idaho Power's goal is for all programs to have benefit/cost (B/C) ratios greater than one for the total resource cost (TRC) test, utility cost (UC) test, and participant cost test (PCT) at the program and measure level where appropriate. Each cost-effectiveness test provides a different perspective, and Idaho Power believes each test provides value when evaluating program performance. If a particular measure or program is found to be not cost-effective from each of the three tests, Idaho Power works with the Energy Efficiency Advisory Group (EEAG) to get input. If the measure or program is indeed offered, the company explains why the measure or program was implemented or continued. The company believes this aligns with the expectations of the Idaho Public Utilities Commission (IPUC) and Public Utility Commission of Oregon (OPUC).

In IPUC Order No. 33365, page 9, the IPUC states the following:

> We thus find it reasonable for the Company to continue screening potential programs using each test as a guideline, and to advise us on how the Company's programs fare under each test. When the Company ultimately seeks to recover its prudent investment in such programs, however, we believe the Company may (but need not exclusively) emphasize the UCT—and that test's focus on Company-controlled benefits and costs—to argue whether the programs were cost-effective.

In the OPUC Order No. 94-590, issued in Utility Miscellaneous (UM) 551, the OPUC outlines specific cost-effectiveness guidelines for energy efficiency measures and programs managed by program administrators. It is the expectation of the OPUC that measures and programs pass both the UC and TRC tests. Measures and programs that do not pass these tests may be offered by a utility if they meet one or more of the following additional conditions specified by Section 13 of Order No. 94-590:

A. The measure produces significant non-quantifiable non-energy benefits (NEB)

B. Inclusion of the measure will increase market acceptance and is expected to lead to reduced cost of the measure

C. The measure is included for consistency with other DSM programs in the region

D. Inclusion of the measure helps increase participation in a cost-effective program

E. The package of measures cannot be changed frequently, and the measure will be cost-effective during the period the program is offered

F. The measure or package of measures is included in a pilot or research project intended to be offered to a limited number of customers

G. The measure is required by law or is consistent with OPUC policy and/or direction

If Idaho Power determines a program or measure is not cost-effective but meets one or more of the exceptions set forth by Order No. 94-590, the company files an exceptions request with the OPUC to continue offering the measure or program within it its Oregon service area.

For operational and administrative efficiency, Idaho Power endeavors to offer identical programs in both its Oregon and Idaho jurisdictions. Some customers, contractors, and trade allies operate in both states. Program consistency is important for the participants' overall satisfaction with the programs. Offering different program designs would create confusion in the marketplace and could inhibit participation. In addition, program infrastructure is designed to implement consistent programs across the service area.

Methodology

For its cost-effectiveness methodology, Idaho Power relies on the Electric Power Research Institute (EPRI) *End Use Technical Assessment Guide* (TAG); the *California Standard Practice Manual* and its subsequent addendum, the National Action Plan for Energy Efficiency's (NAPEE) *Understanding Cost Effectiveness of Energy Efficiency Programs: Best Practices, Technical Methods, and Emerging Issues for Policy-Makers*; and the *National Action Plan on Demand Response*. For resource planning, Idaho Power has primarily used the TRC test and the UC test to develop B/C ratios to determine the cost-effectiveness of DSM programs. These tests are still used because, as defined in the TAG and *California Standard Practice Manual*, they are most similar to supply-side tests and provide a useful basis to compare demand-side and supply-side resources. The PCT provides the company the opportunity to assess a program or measure from the participant perspective and to determine if it is in the best interest of the average customer.

For energy efficiency programs, each program's cost-effectiveness is reviewed annually from a one-year perspective. The annual energy-savings benefit value is summed over the life of the measure or program and is discounted to reflect 2016 dollars. The result of the one-year perspective is shown in *Supplement 1: Cost-Effectiveness*. Appendix 4 of the main *Demand-Side Management 2016 Annual Report* includes the program cost-effectiveness to date by including the culmination of actual historic savings values and expenses, as well as the ongoing energy-savings benefit over the life of the measures included in a program.

The goal of demand response programs is to minimize or delay the need to build new supply-side resources. Unlike energy efficiency programs, demand response programs must acquire and retain participants each year to maintain a level of demand-reduction capacity for the company.

As part of the public workshops on Case No. IPC-E-13-14, Idaho Power and other stakeholders agreed on a new methodology for valuing demand response. The settlement agreement, as approved in IPUC Order No. 32923 and OPUC Order No. 13-482, defined the annual cost of operating the three demand response programs for the maximum allowable 60 hours to be no more than $16.7 million. This $16.7 million value is the levelized annual cost of a 170-megawatt (MW) deferred resource over a 20-year life. The demand response value calculation will include this value even in years when the IRP shows no peak-hour capacity deficits. The annual value calculation will be updated with each IRP based on changes that include, but are not limited to, need, capital cost, or financial assumptions. In 2016, the cost of operating the three demand response programs was $9.47 million. Idaho Power estimates that if the three programs were dispatched for the full 60 hours, the total costs would have been approximately $12.87 million and would have remained cost-effective.

Assumptions

Idaho Power relies on research conducted by third-party sources to obtain savings and cost assumptions for various measures. These assumptions are routinely reviewed and updated as new information becomes available. For many of the measures within *Supplement 1: Cost-Effectiveness*, savings, costs, and load shapes were derived from either the Regional Technical Forum (RTF) or the *Idaho Power Energy Efficiency Potential Study* conducted by EnerNOC Utility Solutions Consulting Group (EnerNOC) in 2012. In 2013, EnerNOC provided Idaho Power updated end-use load shapes. Those updated load shapes have been applied to each program and measure when applicable. Applied Energy Group (AEG) acquired EnerNOC and refreshed the energy efficiency potential analysis in 2014 and 2016. Due to the timing of the 2016 potential study, Idaho Power used the load shape and other measure savings assumptions from the 2012 and 2014 potential studies for the 2016 cost-effectiveness analyses.

The RTF regularly reviews, evaluates, and recommends eligible energy efficiency measures and the estimated savings and costs associated with those measures. As the RTF updates these assumptions, Idaho Power applies them to current program offerings and assesses the need to make any program changes. Idaho Power staff participates in the RTF by attending monthly meetings and contributing to various sub-committees. Because cost data from the RTF information is in 2006 or 2012 dollars,

measures with costs from the RTF are escalated to 2016 dollars. For workbooks still in 2006 dollars, the costs are escalated by 14.6 percent. For workbooks in 2012 dollars, the costs are escalated by 3.3 percent. This percentage is provided by the RTF in workbook RTFStandardInformationWorkbook_v2_6.xlsx.

Idaho Power uses a technical reference manual (TRM) developed by ADM Associates, Inc. for the Commercial and Industrial Energy Efficiency Program's New Construction and Retrofit options. Idaho Power also relies on other sources, such as the Northwest Power and Conservation Council (NWPCC), Northwest Energy Efficiency Alliance (NEEA), the Database for Energy Efficiency Resources (DEER), the Energy Trust of Oregon (ETO), the Bonneville Power Administration (BPA), third-party consultants, and other regional utilities. Occasionally, Idaho Power will also use internal engineering estimates and calculations for savings and costs based on information gathered from previous projects.

The company freezes savings assumptions when the budgets and goals are set for the next calendar year unless code and standard changes or program updates necessitate a need to use updated savings. As a general rule, the 2016 energy savings reported for most programs will use the assumption set at the beginning of the year. These assumptions are discussed in more detail in the cost-effectiveness sections for each program.

The remaining inputs used in the cost-effectiveness models are obtained from the IRP process. Since Idaho Power's 2015 IRP was acknowledged by the IPUC and OPUC after the budgets and goals were set for 2016, the 2013 IRP remains the source of all the financial assumptions for the cost-effectiveness analysis. *Appendix C—Technical Appendix* of Idaho Power's 2013 IRP contains the DSM alternative costs, discount rate, and escalation rate. These DSM alternative costs vary by season and time of day and are applied to an end-use load shape to obtain the value of that particular measure or program. The DSM alternative energy costs are based on both the projected fuel costs of a peaking unit and forward electricity prices as determined by Idaho Power's power supply model, AURORAxmp® Electric Market Model. The avoided capital cost of capacity is based on a gas-fired, simple-cycle turbine. In the 2013 IRP, the annual avoided capacity cost is $102 per kilowatt (kW).

As part of the 2015 IRP Case IPC-E-15-19 and 2014 DSM prudence Case IPC-E-15-06, parties requested Idaho Power review how transmission and distribution (T&D) costs are treated in the IRP. Idaho Power committed to reviewing the T&D benefits, and the analysis was presented to EEAG in August 2016. The estimated average value of energy efficiency on T&D deferral is $3.76/kW per year or $0.000429/kilowatt-hour (kWh). In compliance with Order No. 33365, this value was added to the 2013 DSM alternative energy costs and included in the cost-effectiveness analysis for 2016.

As recommended by the NAPEE *Understanding Cost-Effectiveness of Energy Efficiency Programs,* Idaho Power's weighted average cost of capital (WACC) of 6.77 percent is used to discount future benefits and costs to today's dollars. Once the DSM alternative costs and load shapes are applied to the annual kWh savings of a measure or program, the WACC is used to calculate the net present value (NPV) of the annual benefit for the UC and TRC B/C ratios. However, determining the appropriate discount rate for participant cost and benefits is difficult because of the variety of potential discount

rates that can be used by the different participants as described in the TAG. Since the participant benefit is based on the anticipated bill savings of the customer, Idaho Power believes the WACC is not an appropriate discount rate to use. Because the customer bill savings is based on Idaho Power's 2016 average customer segment rate and is not escalated, the participant bill savings is discounted using a real discount rate of 3.66 percent, which is based on the 2013 IRP's WACC of 6.77 percent and an escalation rate of 3 percent. The real discount rate is used to calculate the NPV of any participant benefits or costs for the PCT or ratepayer impact measure (RIM) B/C ratios.

The formula to calculate the real discount rate is as follows:

$$((1 + \text{WACC}) \div (1 + \text{Escalation})) - 1 = \text{Real}$$

Line-loss percentages are applied to the metered-site energy savings to find the energy savings at the generation level. The *Demand-Side Management 2016 Annual Report* shows the estimated electrical savings at the customer meter level. Cost-effectiveness analyses are based on generation-level energy savings. The demand response program reductions are reported at the generation level with the line losses. In 2014, Idaho Power reviewed the system loss coefficients from 2012. Based on this study, the line-loss factors were updated and reduced from 10.9 to 9.6 percent. The summer peak line-loss factor was reduced from 13 to 9.7 percent.

Conservation Adder

The *Pacific Northwest Electric Power Planning and Conservation Act* (Northwest Power Act) states the following:

> …any conservation or resource shall not be treated as greater than that of any non-conservation measure or resource unless the incremental system cost of such conservation or resource is in excess of 110 per centum of the incremental system cost of the nonconservation measure or resource.

As a result of the Northwest Power Act, most utilities in the Pacific Northwest add a 10-percent conservation adder in energy efficiency cost-effectiveness analyses. In OPUC Order No. 94-590, the OPUC states:

> We support the staff's position that the effect of conservation in reducing uncertainty in meeting load growth is included in the ten percent cost adder and that no separate adjustment is necessary.

Additionally, in IPUC Order No. 32788 in Case No. GNR-E-12-01, "Staff noted that Rocky Mountain Power and Avista use a 10% conservation adder when calculating the cost-effectiveness of all their DSM programs." Staff recommended the utilities have the option to use a 10-percent adder, and the IPUC agreed with the recommendation to allow utilities to use the 10-percent adder in the cost-effectiveness analyses for low-income programs.

After reviewing the practices of other utilities in the Pacific Northwest, as well as the OPUC Order No. 94-590 and IPUC Order 32788, Idaho Power began applying the 10-percent conservation adder in all energy efficiency measure and program cost-effectiveness analyses in 2014. However, upon further examination, Idaho Power observed that both Avista and Rocky Mountain Power only apply the 10-percent conservation adder when calculating the TRC test. Previously, Idaho Power had applied the adder to the TRC test and the UC and RIM tests. The conservation adder has now been removed from the UC and RIM tests in the program and measure cost-effectiveness calculations for 2016.

Net-to-Gross

Net-to-gross (NTG), or net-of-free-ridership (NTFR), is defined by NAPEE's *Understanding Cost Effectiveness of Energy Efficiency Programs: Best Practices, Technical Methods, and Emerging Issues for Policy-Makers* as a ratio that does as follows:

> Adjusts the impacts of the programs so that they only reflect those energy efficiency gains that are the result of the energy efficiency program. Therefore, the NTG deducts energy savings that would have been achieved without the efficiency program (e.g., 'free-riders') and increases savings for any 'spillover' effect that occurs as an indirect result of the program. Since the NTG attempts to measure what the customers would have done in the absence of the energy efficiency program, it can be difficult to determine precisely.

Capturing the effects of Idaho Power's energy efficiency efforts on free-ridership and spillover is difficult. Due to the uncertainty surrounding NTG percentages, Idaho Power used an NTG of 100 percent for all measure cost-effectiveness analyses. For the program cost-effectiveness analyses, the B/C ratios shown are based on a 100-percent NTG. A sensitivity analysis was conducted to show what the minimum NTG percentage needs to be for the program to remain (or become) cost-effective from either the TRC or UC perspective. These NTG percentages are shown in the program cost-effectiveness pages of *Supplement 1: Cost-Effectiveness*.

Results

Idaho Power determines cost-effectiveness on a measure basis, where relevant, and program basis. As part of *Supplement 1: Cost-Effectiveness* and where applicable, Idaho Power publishes the cost effectiveness by measure, calculating the PCT and RIM test at the program level, listing the assumptions associated with cost-effectiveness, and citing sources and dates of metrics used in the cost-effectiveness calculation.

The B/C ratio from the participant cost perspective is not calculated for the Easy Savings, Educational Distributions, Energy House Calls, Fridge and Freezer Recycling Program, Multifamily Energy Savings Program, Weatherization Assistance for Qualified Customers (WAQC), and Weatherization Solutions for Eligible Customers programs. These programs have few or no customer costs. For energy efficiency programs, the cost-effectiveness models do not assume ongoing participant costs.

For most programs, the *Demand-Side Management 2016 Annual Report* Appendix 4 contains program UC and TRC B/C ratios using actual cost information over the life of the program through 2016. *Supplement 1: Cost-Effectiveness* contains annual cost-effectiveness metrics for each program using actual information from 2016 and includes results of the PCT. Current customer energy rates are used in the calculation of the B/C ratios from a PCT and RIM perspective. Rate increases are not forecasted or escalated. A summary of the cost-effectiveness by program can be found in Table 3.

In 2016, most of Idaho Power's energy efficiency programs were cost-effective, except the Fridge and Freezer Recycling Program, Home Improvement Program, and the weatherization programs for income-qualified customers.

The Fridge and Freezer Recycling Program has a UC of 0.92 and a TRC of 1.31. In November 2015, the program vendor, JACO, entered receivership and ceased operations. Idaho Power then contracted with Appliance Recycling Center of America (ARCA) and re-launched the program in June 2016. Due to the mid-year launch, the company had forecasted that participation would be at 1,000 units, and the program would likely not be cost-effective from the UC perspective but would be cost-effective from the TRC perspective. This was discussed with EEAG in February 2016. When considering individual measures within the program, both freezers and refrigerators fail the UC test with a ratio of 0.79 and 0.91, respectively. Both freezers and refrigerators pass the TRC. However, by allowing the less cost-effective freezers into the program, it increases overall participation and increases the program cost-effectiveness by spreading a portion of the fixed administrative costs across more units. When Idaho Power filed for the program to be reinstated in Oregon, the company requested a cost-effectiveness exception as outlined in OPUC Order No. 94-590. The exception was approved by the OPUC in Advice No. 16-07. Despite the temporary suspension of the program, 1,539 units were recycled in 2016.

The Home Improvement Program has a UC of 2.54, a TRC of 0.60, and a PCT of 0.80. The RTF reduced savings for single-family home weatherization projects in 2015. With the changes, average savings estimates per project for both 2015 and 2016 were just under 50 percent of 2014 projects. These new savings were a result of the nearly 18-month RTF process to calibrate residential savings models. Additionally, in early 2016, the RTF finished calibrating the savings models for multifamily home weatherization projects. These new savings were approved by the RTF in March 2016 and will be applied in 2017. These updated savings, as well as the DSM avoided costs from the 2015 IRP, further reduce the TRC and PCT of the program. Idaho Power analyzed ways to modify the program to improve the cost-effectiveness, but the company concluded the program would remain not cost-effective. At the August EEAG meeting, the company presented the preliminary cost-effectiveness estimates for 2017 and shared that the Home Improvement Program would likely be cost-effective from the UCT perspective but not from the TRC perspective. The company presented the non-cost-effective aspects of the program at the November EEAG meeting. EEAG was shown the results of the company's analysis that the program would again not be cost-effective in 2016, and Idaho Power advised EEAG of the company's plan to end the program.

WAQC had a TRC of 0.65 and a UC ratio of 0.73, and Weatherization Solutions for Eligible Customers had a TRC of 0.70 and a UC ratio of 0.59. The programs showed increased savings and increased cost-effectiveness ratios over 2015. Idaho Power performed a billing analysis of the 2013 to 2014

weatherization projects from both WAQC and Weatherization Solutions for Eligible Customers. The billing analysis was needed to reflect the increased replacement of forced-air electric resistance heat systems with efficient heat pump systems. Idaho Power adopted the following IPUC staff's recommendations from Case No. GNR E-12-01 for calculating the programs' cost-effectiveness:

- Applied a 100-percent NTG.
- Claimed 100 percent of energy savings for each project.
- Included indirect administrative overhead costs. The overhead costs of 5.294 percent were calculated from the $2,263,893 of indirect program expenses divided by the total DSM expenses of $42,763,464 as shown in Appendix 3 of the *Demand-Side Management 2016 Annual Report*.
- Applied the 10 percent conservation preference adder.
- Amortized evaluation expenses over a three-year period.
- Claimed one dollar of NEBs for each dollar of utility and federal funds invested in health, safety, and repair measures.

Eleven individual measures in various programs are shown to not be cost-effective from either the UC or TRC perspective. These measures will be discontinued, analyzed for additional NEBs, modified to increase potential per-unit savings, or monitored to examine their impact on the specific program's overall cost-effectiveness. For several measures, Idaho Power filed cost-effectiveness exception requests with the OPUC in compliance with Order No. 94-590. Measures and programs that do not pass these tests may be offered by the utility if they meet one or more of the additional conditions specified by Section 13 of Order No. 94-590. These exception requests were approved under Order No. 15-200 on June 23, 2015, or with the specific program advice filings. The filings and exception requests are noted in Table 1.

Table 1. 2016 non-cost-effective measures

Program	Number of Measures	Notes
New Construction and Retrofits	2	Measures offered in both options. Cost-effectiveness exception request filed and approved with OPUC Advice No. 14-06, 14-10, and 16-08. OPUC Order No. 94-590, Section 13. Exceptions C and D.
New Construction	1	Cost-effectiveness exception request filed and approved with OPUC Advice No. 14-10. OPUC Order No. 94-590, Section 13. Exceptions A and D.
Energy Efficient Lighting	1	Program is cost-effective with a UC of 4.27 and TRC of 2.52. The non-cost-effective measure has a UC of 3.74 and a TRC of 0.95. These bulbs represent 1.8% of overall bulbs in the program.
Heating & Cooling Efficiency Program	3	Cost-effectiveness exception request for ductless heat pumps (DHP) and open-loop water source heat pumps filed with the OPUC under UM-1710. OPUC Order No. 94-590, Section 13. Exceptions A and C. Approved under Order No. 15-200. Smart thermostat currently being piloted.
Home Improvement Program	2	The program will sunset in 2017.
Fridge and Freezer Recycling Program	2	Cost-effectiveness exception request filed with the OPUC with Advice No. 16-07. OPUC Order No. 94-590, Section 13. Exceptions C and D. Program to be reviewed in 2017.
Total	**11**	

Following the annual program cost-effectiveness results are tables that include measure-level cost-effectiveness. Exceptions to the measure-level tables are programs that are analyzed at the project level. These programs include Easy Savings, Custom Projects, the custom option of Irrigation Efficiency Rewards, WAQC, and Weatherization Solutions for Eligible Customers.

The measure-level cost-effectiveness includes inputs of measure life, energy savings, incremental cost, incentives, program administration cost, and net benefit. Program administration costs include all non-incentive costs: labor, marketing, training, education, purchased services, and evaluation. Energy and expense data have been rounded to the nearest whole unit.

2016 DSM Detailed Expenses by Program

Included in this supplement is a detailed breakout of program expenses as shown in Appendix 2 of the *Demand Side Management 2016 Annual Report*. These expenses are broken out by funding source major-expense type (labor/administration, materials, other expenses, purchased services, and incentives).

Table 2. 2016 DSM detailed expenses by program (dollars)

Sector/Program	Idaho Rider	Oregon Rider	Idaho Power	Total Program
Energy Efficiency/Demand Response				
Residential				
A/C Cool Credit	**$ 632,079**	**$ 41,833**	**$ 429,383**	**$ 1,103,295**
Labor/Administrative Expense	47,229	3,014	10,375	**60,619**
Materials and Equipment	(47,382)	1	–	**(47,381)**
Other Expense	42,037	2,212	–	**44,250**
Purchased Services	590,195	31,048	–	**621,242**
Incentives	–	5,558	419,007	**424,565**
Easy Savings	–	–	**127,587**	**127,587**
Labor/Administrative Expense	–	–	2,587	**2,587**
Materials and Equipment	–	–	125,000	**125,000**
Education Distributions	**2,334,206**	**56,164**	**2,514**	**2,392,884**
Labor/Administrative Expense	11,710	–	2,514	**14,225**
Materials and Equipment	2,051,894	53,664	–	**2,105,557**
Other Expense	265,327	2,500	–	**267,827**
Purchased Services	5,275	–	–	**5,275**
Energy Efficient Lighting	**3,009,970**	**63,200**	**7,538**	**3,080,708**
Labor/Administrative Expense	45,623	2,801	7,538	**55,961**
Other Expense	42	2	–	**44**
Purchased Services	869,876	19,963	–	**889,839**
Incentives	2,094,430	40,434	–	**2,134,864**
Energy House Calls	**188,253**	**15,815**	**2,368**	**206,437**
Labor/Administrative Expense	15,289	929	2,368	**18,587**
Materials and Equipment	11,630	612	–	**12,242**
Other Expense	16,625	809	–	**17,434**
Purchased Services	144,709	13,465	–	**158,174**
ENERGY STAR® Homes Northwest	**138,203**	**1,510**	**2,445**	**142,158**
Labor/Administrative Expense	14,326	882	2,445	**17,654**
Materials and Equipment	474	25	–	**499**
Other Expense	13,235	594	–	**13,828**
Purchased Services	167	9	–	**176**
Incentives	110,000	–	–	**110,000**

Table 2. 2016 DSM detailed expenses by program (dollars) (continued)

Sector/Program	Idaho Rider	Oregon Rider	Idaho Power	Total Program
Fridge and Freezer Recycling Program	**$ 250,535**	**$ 4,555**	**$ 2,826**	**$ 257,916**
Labor/Administrative Expense	20,549	1,234	2,826	**24,610**
Materials and Equipment	12,042	634	–	**12,675**
Other Expense	27,008	1,173	–	**28,181**
Purchased Services	190,937	1,513	–	**192,450**
Heating & Cooling Efficiency Program	**545,454**	**27,184**	**22,275**	**594,913**
Labor/Administrative Expense	113,453	7,143	22,275	**142,871**
Materials and Equipment	2,934	154	–	**3,089**
Other Expense	28,561	1,390	–	**29,951**
Purchased Services	181,056	8,771	–	**189,827**
Incentives	219,450	9,725	–	**229,175**
Home Energy Audit	**278,959**	–	**10,853**	**289,812**
Labor/Administrative Expense	52,990	–	10,853	**63,843**
Materials and Equipment	33,851	–	–	**33,851**
Other Expense	66,688	–	–	**66,688**
Purchased Services	125,431	–	–	**125,431**
Home Improvement Program	**309,799**	–	**14,225**	**324,024**
Labor/Administrative Expense	71,564	–	14,225	**85,789**
Other Expense	85,646	–	–	**85,646**
Purchased Services	7,424	–	–	**7,424**
Incentives	145,166	–	–	**145,166**
Multifamily Energy Savings Program	**55,758**	–	**3,288**	**59,046**
Labor/Administrative Expense	15,314	–	3,288	**18,603**
Materials and Equipment	22,482	–	–	**22,482**
Other Expense	815	–	–	**815**
Purchased Services	17,147	–	–	**17,147**
Oregon Residential Weatherization	–	**3,906**	**24**	**3,930**
Labor/Administrative Expense	–	2,635	24	**2,660**
Other Expense	–	844	–	**844**
Incentives	–	426	–	**426**
Rebate Advantage	**103,056**	**6,392**	**1,602**	**111,050**
Labor/Administrative Expense	10,159	619	1,602	**12,380**
Other Expense	18,477	972	–	**19,449**
Purchased Services	74,420	4,801	–	**79,221**
Shade Tree Project	**70,669**	–	**5,973**	**76,642**
Labor/Administrative Expense	20,256	–	5,973	**26,229**
Other Expense	16,158	–	–	**16,158**
Purchased Services	34,255	–	–	**34,255**
Simple Steps, Smart Savings™	**147,055**	**3,535**	**3,194**	**153,784**
Labor/Administrative Expense	36,631	2,095	3,194	**41,920**
Other Expense	40	2	–	**42**
Purchased Services	50,411	570	–	**50,981**
Incentives	59,973	868	–	**60,841**
Weatherization Assistance for Qualified Customers	–	–	**1,289,809**	**1,289,809**
Labor/Administrative Expense	–	–	48,208	**48,208**
Materials and Equipment	–	–	18	**18**
Other Expense	–	–	2,304	**2,304**
Purchased Services	–	–	1,239,279	**1,239,279**
Weatherization Solutions for Eligible Customers	**1,226,540**	**56,571**	**40,681**	**1,323,793**
Labor/Administrative Expense	6,470	–	40,681	**47,151**
Materials and Equipment	7,019	–	–	**7,019**
Other Expense	16,212	–	–	**16,212**
Purchased Services	1,196,840	56,571	–	**1,253,411**
Residential Total	**$ 9,290,536**	**$ 280,664**	**$ 1,966,587**	**$ 11,537,787**

Table 2. 2016 DSM detailed expenses by program (dollars) (continued)

Sector/Program	Idaho Rider	Oregon Rider	Idaho Power	Total Program
Commercial/Industrial				
New Construction (Building Efficiency)	**$ 1,863,584**	**$ 42,559**	**$ 25,079**	**$ 1,931,222**
Labor/Administrative Expense	150,397	9,243	25,079	**184,719**
Other Expense	33,022	1,738	–	**34,760**
Purchased Services	186,606	8,976	–	**195,582**
Incentives	1,493,559	22,602	–	**1,516,161**
Custom Projects (Custom Efficiency)	**7,664,563**	**237,146**	**80,916**	**7,982,624**
Labor/Administrative Expense	477,233	29,296	80,916	**587,445**
Other Expense	248,405	6,471	–	**254,876**
Purchased Services	964,847	61,212	–	**1,026,060**
Incentives	5,974,077	140,167	–	**6,114,243**
Retrofits (Easy Upgrades)	**4,791,852**	**228,834**	**19,505**	**5,040,190**
Labor/Administrative Expense	282,547	15,896	19,505	**317,947**
Other Expense	43,750	2,303	–	**46,053**
Purchased Services	749,147	39,082	–	**788,228**
Incentives	3,716,409	171,553	–	**3,887,962**
Flex Peak Program	**105,116**	**247,897**	**414,984**	**767,997**
Labor/Administrative Expense	77,438	4,951	16,862	**99,251**
Materials and Equipment	65	3	–	**68**
Other Expense	23,091	1,215	–	**24,307**
Purchased Services	4,522	238	–	**4,760**
Incentives	–	241,489	398,122	**639,611**
Oregon Commercial Audits	–	**7,717**	**–**	**7,717**
Labor/Administrative Expense	–	2,693	–	**2,693**
Other Expense	–	74	–	**74**
Purchased Services	–	4,950	–	**4,950**
Commercial/Industrial Total	**$ 14,425,115**	**$ 764,152**	**$ 540,483**	**$ 15,729,750**
Irrigation				
Irrigation Efficiency Rewards	**1,672,328**	**634,101**	**65,923**	**2,372,352**
Labor/Administrative Expense	206,096	13,175	65,923	**285,194**
Materials and Equipment	5,930	310	–	**6,239**
Other Expense	64,813	3,411	–	**68,225**
Purchased Services	5,296	87	–	**5,383**
Incentives	1,390,193	617,118	–	**2,007,311**
Irrigation Peak Rewards	**1,082,113**	**218,906**	**6,299,056**	**7,600,076**
Labor/Administrative Expense	36,699	2,350	56,766	**95,814**
Materials and Equipment	128,886	4,268	–	**133,154**
Other Expense	23,266	1,225	–	**24,490**
Purchased Services	893,263	47,014	–	**940,277**
Incentives	–	164,050	6,242,290	**6,406,340**
Irrigation Total	**$ 2,754,442**	**$ 853,008**	**$ 6,364,979**	**$ 9,972,428**
Energy Efficiency/Demand Response Total	**$ 26,470,093**	**$ 1,897,824**	**$ 8,872,049**	**$ 37,239,965**
Market Transformation				
NEAA	**2,542,567**	**133,820**	**–**	**2,676,387**
Purchased Services	2,542,567	133,820	–	**2,676,387**
Market Transformation Total	**$ 2,542,567**	**$ 133,820**	**$ –**	**$ 2,676,387**

Table 2. 2016 DSM detailed expenses by program (dollars) (continued)

Sector/Program	Idaho Rider	Oregon Rider	Idaho Power	Total Program
Other Programs and Activities				
Residential Education Initiative	$ 259,301	$ 12,071	$ 18,806	$ 290,179
Labor/Administrative Expense	87,585	5,597	18,806	**111,989**
Materials and Equipment	1,540	81	–	**1,621**
Other Expense	165,572	6,151	–	**171,722**
Purchased Services	4,604	242	–	**4,846**
Energy Efficiency Direct Program Overhead	**238,767**	**16,965**	**37,307**	**293,039**
Labor/Administrative Expense	173,750	11,109	37,307	**222,166**
Other Expense	65,017	5,856	–	**70,873**
Other Programs and Activities Total	**$ 498,068**	**$ 29,036**	**$ 56,114**	**$ 583,218**
Indirect Program Expenses				
Commercial/Industrial Energy Efficiency Overhead	**222,704**	**16,653**	**86,715**	**326,072**
Labor/Administrative Expense	70,119	8,149	86,715	**164,983**
Materials and Equipment	329	14	–	**343**
Other Expense	130,708	6,833	–	**137,541**
Purchased Services	21,548	1,658	–	**23,205**
Energy Efficiency Accounting and Analysis	**848,975**	**49,358**	**251,197**	**1,149,530**
Labor/Administrative Expense	405,270	25,906	247,240	**678,416**
Materials and Equipment	560	29	–	**590**
Other Expense	46,761	2,470	3,957	**53,189**
Purchased Services	396,383	20,952	–	**417,336**
Energy Efficiency Advisory Group	**14,365**	**806**	**954**	**16,125**
Labor/Administrative Expense	4,443	284	954	**5,681**
Other Expense	9,921	522	–	**10,444**
Residential Energy Efficiency Overhead	**783,384**	**44,818**	**35,987**	**864,189**
Labor/Administrative Expense	97,406	7,014	35,987	**140,407**
Materials and Equipment	4	0	–	**4**
Other Expense	661,490	35,992	–	**697,482**
Purchased Services	24,484	1,812	–	**26,296**
Special Accounting Entries	**(88,576)**	**(3,447)**	**–**	**(92,024)**
Special Accounting Entry	(88,576)	(3,447)	–	**(92,024)**
Indirect Program Expenses Total	**$ 1,780,851**	**$ 108,187**	**$ 374,854**	**$ 2,263,893**
Grand Total	**$ 31,291,579**	**$ 2,168,868**	**$ 9,303,017**	**$ 42,763,464**

Table 3. Cost-effectiveness of 2016 programs by B/C test

Program/Sector	UC	TRC	RIM	PCT
Easy Savings	1.69	2.04	0.55	N/A
Education Distributions	3.63	6.33	0.65	N/A
Energy Efficient Lighting	4.27	2.52	0.68	3.17
Energy House Calls	2.11	2.75	0.56	N/A
ENERGY STAR® Homes Northwest	1.79	1.00	0.63	1.46
Fridge and Freezer Recycling Program	0.92	1.31	0.43	N/A
Heating & Cooling Efficiency Program	2.33	1.26	0.71	1.76
Home Improvement Program	2.54	0.60	0.64	0.80
Multifamily Energy Savings Program	1.43	2.55	0.51	N/A
Rebate Advantage	3.89	3.33	0.62	6.45
Simple Steps, Smart Savings	2.40	1.33	0.61	2.13
Weatherization Assistance for Qualified Customers	0.73	0.65	0.41	N/A
Weatherization Solutions for Eligible Customers	0.59	0.70	0.36	N/A
Residential Energy Efficiency Sector	**2.74**	**2.36**	**0.63**	**4.10**
Custom Projects	5.26	2.86	1.44	1.92
New Construction	4.40	3.07	0.96	3.19
Retrofits	3.83	2.64	0.93	2.83
Commercial/Industrial Energy Efficiency Sector*	**4.67**	**2.81**	**1.19**	**2.31**
Irrigation Efficiency Rewards	4.95	3.21	1.34	2.78
Irrigation Energy Efficiency Sector**	**5.00**	**3.17**	**1.35**	**2.73**
Energy Efficiency Portfolio	**3.58**	**2.56**	**0.95**	**2.93**

*Commercial/Industrial Energy Efficiency Sector cost-effectiveness ratios include savings and participant costs from Green Motors Rewinds.
**Irrigation Energy Efficiency Sector cost-effectiveness ratios include savings and participant costs from Green Motors Rewinds.

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Cost-Effectiveness Tables by Program

Easy Savings

Segment: Residential
2016 Program Results

Cost Inputs			Ref
Program Administration	$	127,587	
Program Incentives		–	I
Total UC	**$**	**127,587**	P
Measure Equipment and Installation (Incremental Participant Cost)	$	–	M

Summary of Cost-Effectiveness Results					
Test		**Benefit**		**Cost**	**Ratio**
UC Test	$	215,005	$	127,587	1.69
TRC Test		260,217		127,587	2.04
RIM Test		215,005		392,804	0.55
PCT		N/A		N/A	N/A

Net Benefit Inputs (NPV)				Ref
Resource Savings				
2016 Annual Gross Energy (kWh)	402,961			
NPV Cumulative Energy (kWh)	3,191,271	$	215,005	S
10% Credit (Northwest Power Act)			21,501	
Total Electric Savings		**$**	**236,506**	A
Participant Bill Savings				
NPV Cumulative Participant Bill Savings		$	265,217	B
Other Benefits				
Non-Utility Rebates/Incentives		$	–	NUI
NEBs		$	23,712	NEB

Benefits and Costs Included in Each Test		
UC Test	= S * NTG	= P
TRC Test	= (A + NUI + NEB) * NTG	= P
RIM Test	= S * NTG	= P + (B * NTG)
PCT	N/A	N/A

Assumptions for Levelized Calculations	
Discount Rate	
Nominal (WACC)	6.77%
Real ((1 + WACC) / (1 + Escalation)) – 1	3.66%
Escalation Rate	3.00%
Net-to-Gross (NTG)	100%
Minimum NTG Sensitivity	59%
Average Customer Segment Rate/kWh	$0.086
Line Losses	9.60%

Notes: NEBs include the present value (PV) of periodic bulb (capital) replacement costs.
No participant cost.

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Education Distributions

Segment: Residential
2016 Program Results

Cost Inputs			Ref
Program Administration	$	2,392,884	
Program Incentives		–	I
Total UC	**$**	**2,392,884**	P
Measure Equipment and Installation (Incremental Participant Cost)	$	–	M

Summary of Cost-Effectiveness Results					
Test		**Benefit**		**Cost**	**Ratio**
UC Test	$	8,696,521	$	2,392,884	3.63
TRC Test		15,158,067		2,392,884	6.33
RIM Test		8,696,521		13,285,551	0.65
PCT		N/A		N/A	N/A

Net Benefit Inputs (NPV)				Ref
Resource Savings				
2016 Annual Gross Energy (kWh)	15,149,605			
NPV Cumulative Energy (kWh)	129,492,498	$	8,696,521	S
10% Credit (Northwest Power Act)			869,652	
Total Electric Savings		**$**	**9,566,173**	A
Participant Bill Savings				
NPV Cumulative Participant Bill Savings		$	10,892,667	B
Other Benefits				
Non-Utility Rebates/Incentives		$	–	NUI
NEBs		$	5,591,894	NEB

Benefits and Costs Included in Each Test		
UC Test	= S * NTG	= P
TRC Test	= (A + NUI + NEB) * NTG	= P
RIM Test	= S * NTG	= P + (B * NTG)
PCT	N/A	N/A

Assumptions for Levelized Calculations	
Discount Rate	
Nominal (WACC)	6.77%
Real ((1 + WACC) / (1 + Escalation)) – 1	3.66%
Escalation Rate	3.00%
Net-to-Gross (NTG)	100%
Minimum NTG Sensitivity	28%
Average Customer Segment Rate/kWh	$0.086
Line Losses	9.60%

Notes: Energy savings as reported by the *Resource Action Plan* for the 2015 to 2016 student kits.
NEBs for giveaway bulbs, student kit bulbs, and energy-savings kits include PV of periodic bulb (capital) replacement costs.
NEBs for student kit and energy-savings kit showerheads include the NPV of water and wastewater savings.
No participant cost.

Year: 2016 **Program**: Education Distributions **Market Segment**: Residential **Program Type**: Energy Efficiency

						Benefit			Cost			B/C Tests		
Measure Name	**Measure Descriptions**	**Replacing**	**Measure Unit**	**End Use**	**Measure Life (yrs)[a]**	**Annual Gross Energy Savings (kWh/yr)[b]**	**NPV Avoided Costs[c]**	**NEB**	**Gross Incremental Participant Cost[d]**	**Incentive/ Unit**	**Admin Cost ($/kWh)[e]**	**UC Ratio[f]**	**TRC Ratio[g]**	**Source**
General Purpose LED Give away	Efficient Technology: LED Lamp Type: General purpose and dimmable Lumen Category: 665 to 1,439 lumens Space Type: Any	Baseline bulb	Lamp	ENRes_SF_Lighting	13	9.00	$6.50	$3.95	–	–	$0.158	4.57	7.81	1
Drying Rack	Drying rack	25% of clothes dryer use	Rack	ENRes_SF_Dryer	5	85.48	$26.90	–	–	–	$0.158	1.99	2.19	2
Student Energy Efficiency Kit (SEEK) Program	2015–2016 kit offering. Kits include: high-efficiency showerhead, shower timer, 3 LEDs, FilterTone alarm, digital thermometer, LED nightlight.	No kit	Kit	IPC_Student Kits	11	244.51	$152.77	$11.86	–	–	$0.158	3.96	4.66	3
Energy-Savings Kit	Three 250–664-lumen general purpose bulbs Six 665–1439-lumen general purpose bulbs One 1.75-gallons per minute (gpm) high-efficiency showerheads (electric kit only) Three faucet aerators (electric kit only)	No kit	Kit	IPC_Energy-savings Kits	11	384.20	$240.22	$133.86	–	–	$0.158	3.96	6.56	4

[a] Average measure life.
[b] Estimated kWh savings measured at the customer's meter, excluding line losses.
[c] Sum of NPV of avoided cost. Based on end-use load shape, measure life, savings including line losses, and alternative costs by pricing period as provided in the 2013 IRP. TRC test benefit calculation includes 10% conservation adder from the Northwest Power Act.
[d] No participant cost.
[e] Average program administration and overhead costs to achieve each kWh of savings. Calculated from 2016 actuals.
[f] UC Ratio = (NPV Avoided Costs) / ((Admin Cost/kWh * kWh Savings) + Incentives)
[g] TRC Ratio = ((NPV Avoided Costs * 110%) + NEB / ((Admin Cost/kWh * kWh Savings) + Incentives + (Incremental Participant Cost - Incentives))
[1] RTF. ResLightingCFLandLEDLamps_v3_3.xlsm. 2014.
[2] Idaho Power calculations based on data from the NEEA's 2011 Residential Building Stock Assessment and RTF's clothes washer workbook.
[3] Resource Action Programs. *2015–2016 Idaho Power Energy Wise Program Summary Report*. 2016.
[4] Lightbulbs—RTF. ResLightingCFLandLEDLamps_v3_3.xlsm. Showerhead - RTF. ResShowerheads_v2_1.xlsm. 2011. Faucet aerators—AEG. Potential Study.

Energy Efficient Lighting

Segment: Residential
2016 Program Results

Cost Inputs		Ref
Program Administration	$ 945,844	
Program Incentives	2,134,864	I
Total UC	$ **3,080,708**	P
Measure Equipment and Installation (Incremental Participant Cost)	$ 9,821,995	M

Summary of Cost-Effectiveness Results			
Test	**Benefit**	**Cost**	**Ratio**
UC Test	$ 13,153,997	$ 3,080,708	4.27
TRC Test	27,112,104	10,767,839	2.52
RIM Test	13,153,997	19,485,267	0.68
PCT	31,182,131	9,821,995	3.17

Net Benefit Inputs (NPV)			Ref
Resource Savings			
2016 Annual Gross Energy (kWh)	21,093,813		
NPV Cumulative Energy (kWh)	192,709,405	$ 13,153,997	S
10% Credit (Northwest Power Act)		1,315,400	
Total Electric Savings		**$ 14,469,397**	A
Participant Bill Savings			
NPV Cumulative Participant Bill Savings		$ 16,404,560	B
Other Benefits			
Non-Utility Rebates/Incentives		$ –	NUI
NEBs		$ 12,642,707	NEB

Benefits and Costs Included in Each Test		
UC Test	= S * NTG	= P
TRC Test	= (A + NUI + NEB) * NTG	= P + ((M-I) * NTG)
RIM Test	= S * NTG	= P + (B * NTG)
PCT	= B + I + NUI + NEB	= M

Assumptions for Levelized Calculations	
Discount Rate	
Nominal (WACC)	6.77%
Real ((1 + WACC) / (1 + Escalation)) – 1	3.66%
Escalation Rate	3.00%
Net-to-Gross (NTG)	100%
Minimum NTG Sensitivity	23%
Average Customer Segment Rate/kWh	$0.086
Line Losses	9.60%

Note: NEBs include PV of periodic bulb (capital) replacement costs.

Year: 2016 **Program**: Energy Efficient Lighting **Market Segment**: Residential **Program Type**: Energy Efficiency

						Benefit			Cost			B/C Tests		
Measure Name	**Measure Descriptions**	**Replacing**	**Measure Unit**	**End Use**	**Measure Life (yrs)[a]**	**Annual Gross Energy Savings (kWh/yr)[b]**	**NPV Avoided Costs[c]**	**NEB**	**Gross Incremental Participant Cost[d]**	**Incentive/ Unit**	**Admin Cost ($/kWh)[e]**	**UC Ratio[f]**	**TRC Ratio[g]**	**Source**
Decorative and Mini-base CFL Retailer	Efficient Technology: Compact fluorescent Lamp Type: Decorative and mini-base Lumen Category: 250 to 664 lumens Space Type: Any	Baseline bulb	Lamp	ENRes_SF_Lighting	9	9.00	$4.67	$9.57	$1.63	$1.05	$0.045	3.21	7.23	1
Decorative and Mini-base CFL Retailer	Efficient Technology: Compact fluorescent Lamp Type: Decorative and mini-base Lumen Category: 665 to 1,439 lumens Space Type: Any	Baseline bulb	Lamp	ENRes_SF_Lighting	9	16.00	$8.31	$13.76	$0.06	$1.42	$0.045	3.88	29.36	1
Decorative and Mini-base CFL Retailer	Efficient Technology: Compact fluorescent Lamp Type: Decorative and mini-base Lumen Category: 1,440 to 2,600 lumens Space Type: Any	Baseline bulb	Lamp	ENRes_SF_Lighting	9	20.00	$10.39	–	$0.39	$2.00	$0.045	3.58	8.86	1
General Purpose CFL Retailer	Efficient Technology: Compact fluorescent Lamp Type: General purpose and dimmable Lumen Category: 250 to 664 lumens Space Type: Any	Baseline bulb	Lamp	ENRes_SF_Lighting	9	8.00	$4.15	$10.13	$0.06	$0.50	$0.045	4.83	35.00	1
General Purpose CFL Retailer	Efficient Technology: Compact fluorescent Lamp Type: General purpose and dimmable Lumen Category: 665 to 1,439 lumens Space Type: Any	Baseline bulb	Lamp	ENRes_SF_Lighting	9	8.00	$4.15	$2.82	$0.06	$0.50	$0.045	4.83	17.59	1
General Purpose CFL Retailer	Efficient Technology: Compact fluorescent Lamp Type: General purpose and dimmable Lumen Category: 1,440 to 2,600 lumens Space Type: Any	Baseline bulb	Lamp	ENRes_SF_Lighting	8	14.00	$6.50	$2.76	$0.06	$0.51	$0.045	5.70	14.37	1
Globe CFL Retailer	Efficient Technology: Compact fluorescent Lamp Type: Globe Lumen Category: 250 to 664 lumens Space Type: Any	Baseline bulb	Lamp	ENRes_SF_Lighting	12	6.00	$4.04	$10.63	$0.06	$0.60	$0.045	4.64	45.68	1

						Benefit			Cost			B/C Tests		
Measure Name	Measure Descriptions	Replacing	Measure Unit	End Use	Measure Life (yrs)[a]	Annual Gross Energy Savings (kWh/yr)[b]	NPV Avoided Costs[c]	NEB	Gross Incremental Participant Cost[d]	Incentive/ Unit	Admin Cost ($/kWh)[e]	UC Ratio[f]	TRC Ratio[g]	Source
Globe CFL Retailer	Efficient Technology: Compact fluorescent Lamp Type: Globe Lumen Category: 665 to 1,439 lumens Space Type: Any	Baseline bulb	Lamp	ENRes_SF_Lighting	12	8.00	$5.39	$16.62	$0.06	$1.00	$0.045	3.96	53.68	1
Reflectors and Outdoor CFL Retailer	Efficient Technology: Compact fluorescent Lamp Type: Reflectors and outdoor Lumen Category: 250 to 664 lumens Space Type: Any	Baseline bulb	Lamp	ENRes_SF_Lighting	8	11.00	$5.11	$23.30	$0.06	$1.23	$0.045	2.96	52.11	1
Reflectors and Outdoor CFL Retailer	Efficient Technology: Compact fluorescent Lamp Type: Reflectors and outdoor Lumen Category: 665 to 1,439 lumens Space Type: Any	Baseline bulb	Lamp	ENRes_SF_Lighting	7	18.00	$7.34	$21.07	$0.06	$2.06	$0.045	2.56	33.50	1
Reflectors and Outdoor CFL Retailer	Efficient Technology: Compact fluorescent Lamp Type: Reflectors and outdoor Lumen Category: 1,440 to 2,600 lumens Space Type: Any	Baseline bulb	Lamp	ENRes_SF_Lighting	5	46.00	$13.39	$37.43	$2.29	$2.00	$0.045	3.29	11.96	1
Three-Way CFL Retailer	Efficient Technology: Compact fluorescent Lamp Type: Three-way Lumen Category: 1,440 to 2,600 lumens Space Type: Any	Baseline bulb	Lamp	ENRes_SF_Lighting	8	33.00	$15.33	$29.61	$6.09	$2.00	$0.045	4.40	6.13	1
Decorative and Mini-base LED Retailer	Efficient Technology: LED Lamp Type: Decorative and mini-base Lumen Category: 250 to 664 lumens Space Type: Any	Baseline bulb	Lamp	ENRes_SF_Lighting	12	13.00	$8.75	$10.57	$8.41	$2.00	$0.045	3.39	2.25	1
General Purpose LED Retailer	Efficient Technology: LED Lamp Type: General purpose and dimmable Lumen Category: 250 to 664 lumens Space Type: Any	Baseline bulb	Lamp	ENRes_SF_Lighting	12	10.00	$6.73	$11.21	$2.50	$1.49	$0.045	3.47	6.31	1

						Benefit			Cost			B/C Tests		
Measure Name	Measure Descriptions	Replacing	Measure Unit	End Use	Measure Life (yrs)[a]	Annual Gross Energy Savings (kWh/yr)[b]	NPV Avoided Costs[c]	NEB	Gross Incremental Participant Cost[d]	Incentive/ Unit	Admin Cost ($/kWh)[e]	UC Ratio[f]	TRC Ratio[g]	Source
General Purpose LED Retailer	Efficient Technology: LED Lamp Type: General purpose and dimmable Lumen Category: 665 to 1,439 lumens Space Type: Any	Baseline bulb	Lamp	ENRes_SF_Lighting	12	11.00	$7.41	$4.00	$7.04	$1.41	$0.045	3.89	1.61	1
General Purpose LED Retailer	Efficient Technology: LED Lamp Type: General purpose and dimmable Lumen Category: 1,440 to 2,600 lumens Space Type: Any	Baseline bulb	Lamp	ENRes_SF_Lighting	12	22.00	$14.81	$3.92	$20.34	$2.97	$0.045	3.74	0.95	1, 2
Globe LED Retailer	Efficient Technology: LED Lamp Type: Globe Lumen Category: 250 to 664 lumens Space Type: Any	Baseline bulb	Lamp	ENRes_SF_Lighting	12	8.00	$5.39	$10.63	$4.31	$1.02	$0.045	3.90	3.55	1
Globe LED Retailer	Efficient Technology: LED Lamp Type: Globe Lumen Category: 665 to 1,439 lumens Space Type: Any	Baseline bulb	Lamp	ENRes_SF_Lighting	12	12.00	$8.08	$16.62	$3.75	$2.01	$0.045	3.17	5.95	1
Reflectors and Outdoor LED Retailer	Efficient Technology: LED Lamp Type: Reflectors and outdoor Lumen Category: 250 to 664 lumens Space Type: Any	Baseline bulb	Lamp	ENRes_SF_Lighting	12	16.00	$10.77	$26.09	$16.57	$1.95	$0.045	4.04	2.19	1
Reflectors and Outdoor LED Retailer	Efficient Technology: LED Lamp Type: Reflectors and outdoor Lumen Category: 665 to 1,439 lumens Space Type: Any	Baseline bulb	Lamp	ENRes_SF_Lighting	12	27.00	$18.18	$21.03	$11.62	$2.91	$0.045	4.41	3.20	1
Reflectors and Outdoor LED Retailer	Efficient Technology: LED Lamp Type: Reflectors and outdoor Lumen Category: 1,440 to 2,600 lumens Space Type: Any	Baseline bulb	Lamp	ENRes_SF_Lighting	12	60.00	$40.40	$44.01	$25.77	$3.00	$0.045	7.09	3.11	1
Three-Way LED Retailer	Efficient Technology: LED Lamp Type: Three-way Lumen Category: 665 to 1,439 lumens Space Type: Any	Baseline bulb	Lamp	ENRes_SF_Lighting	12	27.00	$18.18	–	$11.29	$3.00	$0.045	4.31	1.60	3
Three-Way LED Retailer	Efficient Technology: LED Lamp Type: Three-way Lumen Category: 1,440 to 2,600 lumens Space Type: Any	Baseline bulb	Lamp	ENRes_SF_Lighting	12	60.00	$40.40	–	$16.39	$2.87	$0.045	7.25	2.33	3

						Benefit			Cost			B/C Tests		
Measure Name	Measure Descriptions	Replacing	Measure Unit	End Use	Measure Life (yrs)[a]	Annual Gross Energy Savings (kWh/yr)[b]	NPV Avoided Costs[c]	NEB	Gross Incremental Participant Cost[d]	Incentive/ Unit	Admin Cost ($/kWh)[e]	UC Ratio[f]	TRC Ratio[g]	Source
CFL Fixture Retailer	CFL fixture	Baseline bulb	Fixture	ENRes_SF_Lighting	15	98.29	$80.22	–	$20.90	$8.00	$0.045	6.46	3.48	3
LED Indoor Fixture Retailer	LED fixture retailer	Baseline bulb	Fixture	ENRes_SF_Lighting	18	28.54	$27.81	$2.58	$6.65	$3.93	$0.045	5.33	4.18	3, 4
LED Outdoor Fixture Retailer	LED fixture—outdoor retailer	Baseline bulb	Fixture	IPC_Outdoor Lighting	12	63.55	$32.02	$6.48	$22.13	$6.06	$0.045	3.59	1.67	3, 4

[a] Average measure life.
[b] Estimated kWh savings measured at the customer's meter, excluding line losses.
[c] Sum of NPV of avoided cost. Based on end-use load shape, measure life, savings including line losses, and alternative costs by pricing period as provided in the 2013 IRP. TRC test benefit calculation includes 10% conservation adder from the Northwest Power Act.
[d] Incremental participant cost prior to customer incentives.
[e] Average program administration and overhead costs to achieve each kWh of savings. Calculated from 2016 actuals.
[f] UC Ratio = (NPV Avoided Costs) / ((Admin Cost/kWh * kWh Savings) + Incentives)
[g] TRC Ratio = ((NPV Avoided Costs * 110%) + NEB) / ((Admin Cost/kWh * kWh Savings) + Incentives + (Incremental Participant Cost - Incentives))
[1] RTF. ResLightingCFLandLEDLamps_v3_3.xlsm. 2014.
[2] Measure not cost-effective. Will monitor in 2017.
[3] BPA. UES_Measures_List_4_1_20151021.xlsx. 2015.
[4] Weighted average of savings for BPA LED fixtures based on 2016 sales.

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Energy House Calls

Segment: Residential
2016 Program Results

Cost Inputs			Ref
Program Administration	$	206,437	
Program Incentives		–	I
Total UC	**$**	**206,437**	P
Measure Equipment and Installation (Incremental Participant Cost)	$	–	M

Summary of Cost-Effectiveness Results					
Test		**Benefit**		**Cost**	**Ratio**
UC Test	$	435,705	$	206,437	2.11
TRC Test		567,279		206,437	2.75
RIM Test		435,705		784,828	0.56
PCT		N/A		N/A	N/A

Net Benefit Inputs (NPV)				Ref
Resource Savings				
2016 Annual Gross Energy (kWh)	509,859			
NPV Cumulative Energy (kWh)	6,287,232	$	435,705	S
10% Credit (Northwest Power Act)			43,571	
Total Electric Savings		**$**	**479,276**	A
Participant Bill Savings				
NPV Cumulative Participant Bill Savings		$	578,391	B
Other Benefits				
Non-Utility Rebates/Incentives		$	–	NUI
NEBs		$	88,003	NEB

Benefits and Costs Included in Each Test		
UC Test	= S * NTG	= P
TRC Test	= (A + NUI + NEB) * NTG	= P
RIM Test	= S * NTG	= P + (B * NTG)
PCT	N/A	N/A

Assumptions for Levelized Calculations	
Discount Rate	
Nominal (WACC)	6.77%
Real ((1 + WACC) / (1 + Escalation)) – 1	3.66%
Escalation Rate	3.00%
Net-to-Gross (NTG)	100%
Minimum NTG Sensitivity	47%
Average Customer Segment Rate/kWh	$0.086
Line Losses	9.60%

Notes: NEBs include PV of periodic bulb (capital) replacement costs for direct install LED bulbs.
NEBs for showerheads include the NPV of water and wastewater savings.
No participant cost.

Year: 2016 **Program**: Energy House Calls **Market Segment**: Residential **Program Type**: Energy Efficiency

						Benefit			Cost			B/C Tests		
Measure Name	Measure Descriptions	Replacing	Measure Unit	End Use	Measure Life (yrs)[a]	Annual Gross Energy Savings (kWh/yr)[b]	NPV Avoided Costs[c]	NEB	Gross Incremental Participant Cost[d]	Incentive/ Unit	Admin Cost ($/kWh)[e]	UC Ratio[f]	TRC Ratio[g]	Source
PTCS Duct Sealing	Manufactured Home Prescriptive Duct Sealing—Electric Forced Air Furnace (FAF)—Heating Zone 1	Pre-existing duct leakage	Home	ENRes_MH_Heater	18	973.00	$761.80	–	–	–	$0.405	1.93	2.13	1
PTCS Duct Sealing	Manufactured Home Prescriptive Duct Sealing—Electric FAF—Heating Zone 2 or 3	Pre-existing duct leakage	Home	ENRes_MH_Heater	18	1,248.00	$977.10	–	–	–	$0.405	1.93	2.13	1
PTCS Duct Sealing	Manufactured Home Prescriptive Duct Sealing—Heat Pump—Heating Zone 1	Pre-existing duct leakage	Home	ENRes_MH_Heater	18	615.00	$481.51	–	–	–	$0.405	1.93	2.13	1
PTCS Duct Sealing	Manufactured Home Prescriptive Duct Sealing—Heat Pump—Heating Zone 2 or 3	Pre-existing duct leakage	Home	ENRes_MH_Heater	18	876.00	$685.85	–	–	–	$0.405	1.93	2.13	1
General Purpose LED Direct Install	Efficient Technology: LED Lamp Type: General purpose and dimmable Lumen Category: 665 to 1,439 lumens Space Type: ANY	Baseline bulb	Lamp	ENRes_SF_Lighting	12	18.00	$12.12	$17.57	–	–	$0.405	1.66	4.24	2
Low-Flow Faucet Aerator	1.0–1.5 gpm kitchen or bathroom faucet aerator	Non-low-flow faucet aerator	Aerator	ENRes_SF_WtrHtr	10	106.00	$60.88	–	–	–	$0.405	1.42	1.56	3
Water Heater Pipe Covers	Up to 6 feet	No existing coverage	Pipe wrap	ENRes_SF_WtrHtr	15	150.00	$122.83	–	–	–	$0.405	2.02	2.22	3
Low-Flow Showerheads	Residential Showerhead Replacement_2_00gpm_Any Shower_ Electric Water Heating_Direct Install	Any showerhead 2.2 gpm or higher	Showerhead	ENRes_SF_WtrHtr	10	139.00	$79.83	$110.12	–	–	$0.405	1.42	3.52	4
Low-Flow Showerheads	Residential Showerhead Replacement_1_75gpm_Any Shower_ Electric Water Heating_Direct Install	Any showerhead 2.2 gpm or higher	Showerhead	ENRes_SF_WtrHtr	10	222.00	$127.50	$172.11	–	–	$0.405	1.42	3.47	4

[a] Average measure life.
[b] Estimated kWh savings measured at the customer's meter, excluding line losses.
[c] Sum of NPV of avoided cost. Based on end-use load shape, measure life, savings including line losses, and alternative costs by pricing period as provided in the 2013 IRP. TRC test benefit calculation includes 10% conservation adder from the Northwest Power Act.
[d] No participant cost.
[e] Average program administration and overhead costs to achieve each kWh of savings. Calculated from 2016 actuals.
[f] UC Ratio = (NPV Avoided Costs) / ((Admin Cost/kWh * kWh Savings) + Incentives)
[g] TRC Ratio = ((NPV Avoided Costs * 110%) + NEB) / ((Admin Cost/kWh * kWh Savings) + Incentives + (Incremental Participant Cost - Incentives))
[1] RTF. ResHeatingCoolingDuctSealingMH_v2_0.xlsm. 2015.
[2] RTF. ResLightingCFLandLEDLamps_v3_3.xlsm. 2014.
[3] AEG. Potential Study.
[4] RTF. ResShowerheads_v2_1.xlsm. 2011.

ENERGY STAR® Homes Northwest

Segment: Residential
2016 Program Results

Cost Inputs			Ref
Program Administration	$	32,158	
Program Incentives		110,000	I
Total UC	**$**	**142,158**	P
Measure Equipment and Installation (Incremental Participant Cost)	$	265,360	M

Summary of Cost-Effectiveness Results					
Test		**Benefit**		**Cost**	**Ratio**
UC Test	$	254,666	$	142,158	1.79
TRC Test		296,775		297,518	1.00
RIM Test		254,666		401,901	0.63
PCT		386,386		265,360	1.46

Net Benefit Inputs (NPV)				Ref
Resource Savings				
2016 Annual Gross Energy (kWh)	150,282			
NPV Cumulative Energy (kWh)	2,424,906	$	254,666	
10% Credit (Northwest Power Act)			25,467	
Total Electric Savings		**$**	**280,133**	S
Participant Bill Savings				
NPV Cumulative Participant Savings		$	259,743	B
Other Benefits				
Non-Utility Rebates/Incentives		$	–	NUI
NEBs		$	16,643	NEB

Benefits and Costs Included in Each Test		
UC Test	= S * NTG	= P
TRC Test	= (A + NUI + NEB) * NTG	= P + ((M-I) * NTG)
RIM Test	= S * NTG	= P + (B * NTG)
PCT	= B + I + NUI + NEB	= M

Assumptions for Levelized Calculations	
Discount Rate	
Nominal (WACC)	6.77%
Real ((1 + WACC) / (1 + Escalation)) – 1	3.66%
Escalation Rate	3.00%
Net-to-Gross (NTG)	100%
Minimum NTG Sensitivity	100%
Average Customer Segment Rate/kWh	$0.086
Line Losses	9.60%

Notes: 2009 International Energy Conservation Code (IECC) adopted in Idaho in 2011.
Oregon Residential Specialty Code adopted in Oregon in 2011.

Year: 2016 **Program**: ENERGY STAR Homes Northwest **Market Segment**: Residential **Program Type**: Energy Efficiency

						Benefit			Cost			B/C Tests		
Measure Name	**Measure Descriptions**	**Replacing**	**Measure Unit**	**End Use**	**Measure Life (yrs)[a]**	**Annual Gross Energy Savings (kWh/yr)[b]**	**NPV Avoided Costs[c]**	**NEB**	**Gross Incremental Participant Cost[d]**	**Incentive/ Unit**	**Admin Cost ($/kWh)[e]**	**UC Ratio[f]**	**TRC Ratio[g]**	**Source**
ENERGY STAR home	Multifamily—Heat Pump—Heating Zone 1 Cooling Zone 3	Multi-family home built to IECC 2009 Code. Adopted 2011.	Home	Prog_Energy Star Homes NW	36	1,294.00	$2,192.80	$154.10	$2,286.27	$1,000.00	$0.214	1.72	1.00	1
Next Step Home	Next Step Home	Single family home built to IECC 2009 Code. Adopted 2011.	Home	IPC_Residential	36	5,265.00	$10,761.23	–	$9,087.00	$1,000.00	$0.214	5.06	1.16	2

[a] Average measure life.
[b] Estimated kWh savings measured at the customer's meter, excluding line losses.
[c] Sum of NPV of avoided cost. Based on end-use load shape, measure life, savings including line losses, and alternative costs by pricing period as provided in the 2013 IRP. TRC test benefit calculation includes 10% conservation adder from the Northwest Power Act.
[d] Incremental participant cost prior to customer incentives.
[e] Average program administration and overhead costs to achieve each kWh of savings. Calculated from 2016 actuals.
[f] UC Ratio = (NPV Avoided Costs) / ((Admin Cost/kWh * kWh Savings) + Incentives)
[g] TRC Ratio = ((NPV Avoided Costs * 110%) + NEB) / ((Admin Cost/kWh * kWh Savings) + Incentives + (Incremental Participant Cost - Incentives))
[1] RTF. ResNewSFEStarOR_v3_0.xlsm. 2014.
[2] NEEA Next Step Home.

Fridge and Freezer Recycling Program (See ya later, refrigerator®)

Segment: Residential
2016 Program Results

Cost Inputs			Ref
Program Administration	$	257,916	
Program Incentives		–	I
Total UC	**$**	**257,916**	P
Measure Equipment and Installation (Incremental Participant Cost)	$	–	M

Summary of Cost-Effectiveness Results				
Test		**Benefit**	**Cost**	**Ratio**
UC Test	$	236,992	$ 257,916	0.92
TRC Test		336,682	257,916	1.31
RIM Test		236,992	549,967	0.43
PCT		N/A	N/A	N/A

Net Benefit Inputs (NPV)				Ref
Resource Savings				
2016 Annual Gross Energy (kWh)	632,186			
NPV Cumulative Energy (kWh)	3,646,797	$	236,992	S
10% Credit (Northwest Power Act)			23,699	
Total Electric Savings		**$**	**260,691**	A
Participant Bill Savings				
NPV Cumulative Participant Bill Savings		$	292,051	B
Other Benefits				
Non-Utility Rebates/Incentives		$	–	NUI
NEBs		$	75,991	NEB

Benefits and Costs Included in Each Test		
UC Test	= S * NTG	= P
TRC Test	= (A + NUI + NEB) * NTG	= P
RIM Test	= S * NTG	= P + (B * NTG)
PCT	N/A	= M

Assumptions for Levelized Calculations	
Discount Rate	
Nominal (WACC)	6.77%
Real ((1 + WACC) / (1 + Escalation)) – 1	3.66%
Escalation Rate	3.00%
Net-to-Gross (NTG)	100%
Minimum NTG Sensitivity	109%
Average Customer Segment Rate/kWh	$0.086
Line Losses	9.60%

Notes: Program re-launched on June 1, 2016.
No participant cost.

Year: 2016 **Program**: Fridge and Freezer Recycling Program **Market Segment**: Residential **Program Type**: Energy Efficiency

						Benefit			Cost			B/C Tests		
Measure Name	**Measure Descriptions**	**Replacing**	**Measure Unit**	**End Use**	**Measure Life (yrs)[a]**	**Annual Gross Energy Savings (kWh/yr)[b]**	**NPV Avoided Costs[c]**	**NEB**	**Gross Incremental Participant Cost[d]**	**Incentive/ Unit**	**Admin Cost ($/kWh)[e]**	**UC Ratio[f]**	**TRC Ratio[g]**	**Source**
Freezer Recycling	Freezer removal and decommissioning	–	Freezer	ENRes_SF_ Freezer	5	570.00	$182.67	$50.86	–	–	$0.408	0.79	1.08	1, 2
Refrigerator Recycling	Refrigerator removal and decommissioning	–	Refrigerator	ENRes_SF_ SecRef	6	356.00	$132.67	$41.42	–	–	$0.408	0.91	1.29	1, 2
General Purpose LED Give away	Give away_LED_General Purpose, Dimmable, and Three-Way_250 to 1,049 lumens	Baseline bulb	Lamp	ENRes_SF_ Lighting	13	9.00	$6.50	$3.95	–	–	$0.408	1.77	3.02	3

[a] Average measure life.
[b] Estimated kWh savings measured at the customer's meter, excluding line losses.
[c] Sum of NPV of avoided cost. Based on end-use load shape, measure life, savings including line losses, and alternative costs by pricing period as provided in the 2013 IRP. TRC test benefit calculation includes 10% conservation adder from the Northwest Power Act.
[d] No participant cost.
[e] Average program administration and overhead costs to achieve each kWh of savings. Calculated from 2016 actuals.
[f] UC Ratio = (NPV Avoided Costs) / ((Admin Cost/kWh * kWh Savings) + Incentives)
[g] TRC Ratio = ((NPV Avoided Costs * 110%) + NEB) / ((Admin Cost/kWh * kWh Savings) + Incentives + (Incremental Participant Cost - Incentives))
[1] RTF. ResFridgeFreezeDecommissioning_v3_1.xlsm. 2014.
[2] Measure not cost-effective. Will monitor in 2017.
[3] RTF. ResLightingCFLandLEDLamps_v3_3.xlsm. 2014.

Heating & Cooling Efficiency Program

Segment: Residential
2016 Program Results

Cost Inputs			Ref
Program Administration	$	365,738	
Program Incentives		229,175	I
Total UC	**$**	**594,913**	P
Measure Equipment and Installation (Incremental Participant Cost)	$	1,038,887	M

Summary of Cost-Effectiveness Results					
Test		**Benefit**		**Cost**	**Ratio**
UC Test	$	1,387,634	$	594,913	2.33
TRC Test		1,767,557		1,404,625	1.26
RIM Test		1,387,634		1,954,477	0.71
PCT		1,829,900		1,038,887	1.76

Net Benefit Inputs (NPV)				Ref
Resource Savings				
2016 Annual Gross Energy (kWh)	1,113,574			
NPV Cumulative Energy (kWh)	14,484,058	$	1,387,634	S
10% Credit (Northwest Power Act)			138,763	
Total Electric Savings		**$**	**1,526,397**	A
Participant Bill Savings				
NPV Cumulative Participant Bill Savings		$	1,359,564	B
Other Benefits				
Non-Utility Rebates/Incentives		$	–	NUI
NEBs		$	241,161	NEB

Benefits and Costs Included in Each Test		
UC Test	= S * NTG	= P
TRC Test	= (A + NUI + NEB) * NTG	= P + ((M-I) * NTG)
RIM Test	= S * NTG	= P + (B * NTG)
PCT	= B + I + NUI + NEB	= M

Assumptions for Levelized Calculations	
Discount Rate	
Nominal (WACC)	6.77%
Real ((1 + WACC) / (1 + Escalation)) – 1	3.66%
Escalation Rate	3.00%
Net-to-Gross (NTG)	100%
Minimum NTG Sensitivity	62%
Average Customer Segment Rate/kWh	$0.086
Line Losses	9.60%

Note: NEBs include NPV of RTF values for annual operation and maintenance (O&M) savings and monetized comfort savings.

Year: 2016 **Program**: Heating & Cooling Efficiency Program **Market Segment**: Residential **Program Type**: Energy Efficiency

						Benefit			Cost			B/C Tests		
Measure Name	**Measure Descriptions**	**Replacing**	**Measure Unit**	**End Use**	**Measure Life (yrs)[a]**	**Annual Gross Energy Savings (kWh/yr)[b]**	**NPV Avoided Costs[c]**	**NEB**	**Gross Incremental Participant Cost[d]**	**Incentive/ Unit**	**Admin Cost ($/kWh)[e]**	**UC Ratio[f]**	**TRC Ratio[g]**	**Source**
Heat Pump (HP) Conversion	Existing single family and manufactured home heating, ventilation, and air conditioning (HVAC) conversion to heat pump with commissioning and sizing (Heating & Cooling Zone Weighted Average)	Conversion to high-efficiency heat pump	Unit	ENRes_SF_HeatPump	15	5,457.00	$5,261.52	$993.00	$3,981.00	$800.00	$0.328	2.03	1.17	1, 2, 3, 4
Heat Pump Upgrade	Existing single family and manufactured home HVAC heat pump upgrade (Heating & Cooling Zone Weighted Average)	Heat pump to heat pump upgrade	Unit	ENRes_SF_HeatPump	15	881.00	$849.44	$92.00	$240.00	$250.00	$0.328	1.58	1.94	1, 2, 3, 4
Heat Pump Upgrade	New construction single family and manufactured home HVAC heat pump upgrade (Heating & Cooling Zone Weighted Average)	Heat pump to heat pump upgrade	Unit	ENRes_SF_HeatPump	15	948.00	$914.04	$85.00	$240.00	$250.00	$0.328	1.63	1.98	1, 2, 3, 4
Open Loop HP	Open loop water source heat pump for existing homes—14.00 EER 3.5 COP (Heating & Cooling Zone Weighted Average)	Electric resistance/ oil propane	Unit	ENRes_SF_HeatPump	20	9,610.00	$11,973.85	–	$7,660.00	$1,000.00	$0.328	2.88	1.22	5
Open Loop HP	Open loop water source heat pump for new construction—14.00 EER 3.5 COP (Heating & Cooling Zone Weighted Average)	Electric resistance/ oil propane	Unit	ENRes_SF_HeatPump	20	8,481.00	$10,567.14	–	$11,951.00	$1,000.00	$0.328	2.79	0.79	5, 6
Open Loop HP	Open loop water source heat pump—14.00 EE 3.5 COP (Heating & Cooling Zone Weighted Average)	Heat pump	Unit	ENRes_SF_HeatPump	20	9,095.00	$11,332.17	–	$3,816.00	$500.00	$0.328	3.25	1.83	5
Ductless Heat Pump	Zonal to DHP. (Heating & Cooling Zone Weighted Average)	Zonal electric	Unit	ENRes_SF_HeatPump	15	2,334.00	$2,250.39	$1,020.00	$3,220.00	$750.00	$0.328	1.48	0.88	1, 6
Evaporative Cooler	Evaporative cooler	Central air conditioning (A/C)	Unit	ENRes_SF_CAC	12	457.00	$644.33	–	–	$150.00	$0.328	2.15	2.36	7
Prescriptive Duct Sealing	Duct tightness—PTCS duct sealing—average heating system. Weighted average of Heating Zones 1–3.	Pre-existing duct leakage	Unit	ENRes_SF_Heater	20	1,095.00	$960.24	–	$612.00	$350.00	$0.328	1.35	1.09	8
Electronically Commutated Motor (ECM) Blower Motor	ECM blower motor	Permanent split capacitor (PSC) motor	Unit	ENRes_SF_HVAC	18	515.00	$586.79	–	$300.00	$50.00	$0.328	2.68	1.38	9

						Benefit			Cost			B/C Tests		
Measure Name	Measure Descriptions	Replacing	Measure Unit	End Use	Measure Life (yrs)[a]	Annual Gross Energy Savings (kWh/yr)[b]	NPV Avoided Costs[c]	NEB	Gross Incremental Participant Cost[d]	Incentive/ Unit	Admin Cost ($/kWh)[e]	UC Ratio[f]	TRC Ratio[g]	Source
Whole House Fan	Whole house fan	Displaced forced air dx cooling	Unit	ENRes_SF_CAC	18	446.00	$865.92	–	$700.00	$200.00	$0.328	2.50	1.13	7
Smart Thermostat	Smart thermostat	–	Unit	ENRes_SF_Heater	10	758.00	$344.27	–	$303.96	$75.00	$0.328	1.06	0.69	10, 11

[a] Average measure life.
[b] Estimated kWh savings measured at the customer's meter, excluding line losses.
[c] Sum of NPV of avoided cost. Based on end-use load shape, measure life, savings including line losses, and alternative costs by pricing period as provided in the 2013 IRP. TRC test benefit calculation includes 10% conservation adder from the Northwest Power Act.
[d] Incremental participant cost prior to customer incentives.
[e] Average program administration and overhead costs to achieve each kWh of savings. Calculated from 2016 actuals.
[f] UC Ratio = (NPV Avoided Costs) / ((Admin Cost/kWh * kWh Savings) + Incentives)
[g] TRC Ratio = ((NPV Avoided Costs * 110%) + NEB) / ((Admin Cost/kWh * kWh Savings) + Incentives + (Incremental Participant Cost - Incentives))
[1] RTF. ResSFExistingHVAC_v4_1.xlsx. Weighted average of 2016 participants in heating and cooling zones 1–3.
[2] RTF. ResHeatingCoolingCommissioningControlsSizingSF_v3_6.xlsm. Weighted average of 2016 participants in heating and cooling zones 1–3.
[3] RTF. ResMHExistingHVAC_v3_3.xlsx. Weighted average of 2016 participants in heating and cooling zones 1–3.
[4] RTF. ResMHHeatingCoolingCommissioningControlsSizing_v3_3.xlsx. Weighted average of 2016 participants in heating and cooling zones 1–3.
[5] RTF. ResGSHP_v2_6. 2016. Median 2014–2016 participant costs. Weighted average of 2016 participants in heating and cooling zones 1–3.
[6] Measure not cost-effective.
[7] AEG. Potential Study.
[8] RTF. ResSFPerformanceBasedDuctSealing_v3_2.xlsm.
[9] Idaho Power engineering calculations based on Integrated Design Lab inputs. 2015.
[10] RTF. ResConnectedTstats_v1.1.xlsm
[11] Measure not cost-effective. Measure is being piloted and will be monitored in 2017.

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Home Improvement Program

Segment: Residential
2016 Program Results

Cost Inputs			Ref
Program Administration	$	178,858	
Program Incentives		145,166	I
Total UC	**$**	**324,024**	P
Measure Equipment and Installation (Incremental Participant Cost)	$	1,506,443	M

Summary of Cost-Effectiveness Results				
Test		**Benefit**	**Cost**	**Ratio**
UC Test	$	821,746	$ 324,024	2.54
TRC Test		1,011,503	1,685,301	0.60
RIM Test		821,746	1,278,959	0.64
PCT		1,207,683	1,506,443	0.80

Net Benefit Inputs (NPV)				Ref
Resource Savings				
2016 Annual Gross Energy (kWh)	500,280			
NPV Cumulative Energy (kWh)	8,448,495	$	821,746	S
10% Credit (Northwest Power Act)			82,175	
Total Electric Savings		**$**	**903,920**	A
Participant Bill Savings				
NPV Cumulative Participant Bill Savings		$	954,935	B
Other Benefits				
Non-Utility Rebates/Incentives		$	–	NUI
NEBs		$	107,582	NEB

Benefits and Costs Included in Each Test		
UC Test	= S * NTG	= P
TRC Test	= (A + NUI + NEB) * NTG	= P + ((M-I) * NTG)
RIM Test	= S * NTG	= P + (B * NTG)
PCT	= B + I + NUI + NEB	= M

Assumptions for Levelized Calculations	
Discount Rate	
Nominal (WACC)	6.77%
Real ((1 + WACC) / (1 + Escalation)) – 1	3.66%
Escalation Rate	3.00%
Net-to-Gross (NTG)	100%
Minimum NTG Sensitivity	N/A
Average Customer Segment Rate/kWh	$0.086
Line Losses	9.60%

Notes: NEBs include NPV of RTF values for annual wood fuel savings.
Unable to perform minimum NTG sensitivity analysis. Program fails the TRC test regardless of the NTG percentage.

Year: 2016 **Program**: Home Improvement Program **Market Segment**: Residential **Program Type**: Energy Efficiency

						Benefit			Cost			B/C Tests		
Measure Name	Measure Descriptions	Replacing	Measure Unit	End Use	Measure Life (yrs)[a]	Annual Gross Energy Savings (kWh/yr)[b]	NPV Avoided Costs[c]	NEB	Gross Incremental Participant Cost[d]	Incentive/ Unit	Admin Cost ($/kWh)[e]	UC Ratio[f]	TRC Ratio[g]	Source
Multi Family—Floor Insulation	Greater than R38. Electric heat. Program weighted average.	Attic Insulation R20 or less	Square Feet	ENRes_MF_Heater	45	0.73	$1.13	–	$0.72	$0.15	$0.358	2.75	1.27	1
Multi Family—Attic Insulation	Greater than R30 or fill floor cavity. Electric heat. Program weighted average.	Floor Insulation R5 or less	Square Feet	ENRes_MF_Heater	45	2.20	$3.41	–	$1.18	$0.50	$0.358	2.65	1.91	1
Multi Family—Windows	U-Factor of 0.30 or lower. Electric heat. Program weighted average.	Single pane metal, Single pane wood or double pane metal.	Square Feet	ENRes_MF_Heater	45	17.60	$27.26	–	$20.55	$2.50	$0.358	3.10	1.12	1, 2
Single Family—Attic Insulation	Greater than R38. Electric heat. Program weighted average.	Attic Insulation R20 or less	Square Feet	ENRes_SF_Heater	45	0.44	$0.69	$0.14	$0.84	$0.15	$0.358	2.22	0.90	3, 4
Single Family—Floor Insulation	Greater than R30 or fill floor cavity. Electric heat. Program weighted average.	Floor Insulation R5 or less	Square Feet	ENRes_SF_Heater	45	0.84	$1.29	$0.27	$1.12	$0.50	$0.358	1.62	1.19	3
Single Family—Wall Insulation	Greater than R11 or fill wall cavity. Electric heat. Program weighted average.	Wall Insulation R5 or less	Square Feet	ENRes_SF_Heater	45	1.29	$2.00	$0.41	$1.84	$0.50	$0.358	2.08	1.14	3
Single Family—Window	U-Factor of 0.30 or lower. Electric heat. Program weighted average.	Single pane metal, Single pane wood or double pane metal.	Square Feet	ENRes_SF_Heater	45	7.72	$11.96	$2.84	$40.22	$2.50	$0.358	2.27	0.37	3, 4, 5

[a] Average measure life.
[b] Estimated kWh savings measured at the customer's meter, excluding line losses.
[c] Sum of NPV of avoided cost. Based on end-use load shape, measure life, savings including line losses, and alternative costs by pricing period as provided in the 2013 IRP. TRC test benefit calculation includes 10% conservation adder from the Northwest Power Act.
[d] Based on average 2016 customer costs.
[e] Average program administration and overhead costs to achieve each kWh of savings. Calculated from 2016 actuals.
[f] UC Ratio = (NPV Avoided Costs) / ((Admin Cost/kWh * kWh Savings) + Incentives)
[g] TRC Ratio = ((NPV Avoided Costs * 110%) + NEB) / ((Admin Cost/kWh * kWh Savings) + Incentives + (Incremental Participant Cost - Incentives))
[1] RTF. Weighted average of savings by heating and cooling zone, heating and cooling system, and insulation level or U-Factor. ResWXMF_v2_2.xls. 2011.
[2] RTF. Incremental costs from ResWxMF_v2_2.xls. 2011.
[3] RTF. Weighted average of savings by heating and cooling zone, heating and cooling system, and insulation level or U-Factor. ResWXSF_v3_4.xls. 2015.
[4] Measure not cost-effective.
[5] RTF. Incremental costs from ResWxSF_v3_4.xls. 2015.

Multifamily Energy Savings Program

Segment: Residential
2016 Program Results

Cost Inputs			Ref
Program Administration	$	59,046	
Program Incentives		–	I
Total UC	**$**	**59,046**	P
Measure Equipment and Installation (Incremental Participant Cost)	$	–	M

Summary of Cost-Effectiveness Results					
Test		**Benefit**		**Cost**	**Ratio**
UC Test	$	84,438	$	59,046	1.43
TRC Test		150,761		59,046	2.55
RIM Test		84,438		166,725	0.51
PCT		N/A		N/A	N/A

Net Benefit Inputs (NPV)				Ref
Resource Savings				
2016 Annual Gross Energy (kWh)	149,760			
NPV Cumulative Energy (kWh)	1,280,081	$	84,438	S
10% Credit (Northwest Power Act)			8,444	
Total Electric Savings		**$**	92,882	A
Participant Bill Savings				
NPV Cumulative Participant Bill Savings		$	107,678	B
Other Benefits				
Non-Utility Rebates/Incentives		$	–	NUI
NEBs		$	57,879	NEB

Benefits and Costs Included in Each Test		
UC Test	= S * NTG	= P
TRC Test	= (A + NUI + NEB) * NTG	= P + ((M-I) * NTG)
RIM Test	= S * NTG	= P + (B * NTG)
PCT	N/A	N/A

Assumptions for Levelized Calculations	
Discount Rate	
Nominal (WACC)	6.77%
Real ((1 + WACC) / (1 + Escalation)) – 1	3.66%
Escalation Rate	3.00%
Net-to-Gross (NTG)	100%
Minimum NTG Sensitivity	70%
Average Customer Segment Rate/kWh	$0.086
Line Losses	9.60%

Year: 2016 **Program**: Multifamily Energy Savings Program **Market Segment**: Residential **Program Type**: Energy Efficiency

						Benefit			Cost			B/C Tests		
Measure Name	Measure Descriptions	Replacing	Measure Unit	End Use	Measure Life (yrs)[a]	Annual Gross Energy Savings (kWh/yr)[b]	NPV Avoided Costs[c]	NEB	Gross Incremental Participant Cost[d]	Incentive/ Unit	Admin Cost ($/kWh)[e]	UC Ratio[f]	TRC Ratio[g]	Source
General Purpose LED Retailer	Efficient Technology: LED Lamp Type: General purpose and dimmable Lumen Category: 665 to 1,439 lumens Space Type: ANY	Baseline bulb	Lamp	ENRes_SF_ Lighting	12	11.00	$7.41	$4.00	–	–	$0.394	1.71	2.80	1, 2
General Purpose LED Direct Install	Efficient Technology: LED Lamp Type: General purpose and dimmable Lumen Category: 665 to 1,439 lumens Space Type: ANY	Baseline bulb	Lamp	ENRes_SF_ Lighting	12	18.00	$12.12	$17.57	–	–	$0.394	1.71	4.36	1
Reflector LED Direct Install	Efficient Technology: LED Lamp Type: Reflectors and outdoor Lumen Category: 665 to 1,439 lumens Space Type: Moderate and High-use Interior	Baseline bulb	Lamp	ENRes_SF_ Lighting	12	32.00	$21.55	$64.27	–	–	$0.394	1.71	6.98	1
Globe LED Direct Install	Efficient Technology: LED Lamp Type: Globe Lumen Category: 250 to 664 lumens Space Type: Moderate and high-use interior	Baseline bulb	Lamp	ENRes_SF_ Lighting	12	12.00	$8.08	$16.87	–	–	$0.394	1.71	5.45	1
Low-Flow Showerheads Direct Install	Residential Showerhead Replacement_2_00gpm_ Any Shower_ Electric Water Heating_Direct Install	Any showerhead 2.2 gpm or higher	Showerhead	ENRes_SF_ WtrHtr	10	139.00	$79.83	$110.12	–	–	$0.394	1.46	3.61	3
Water Heater Pipe Covers	Up to 6 feet	No existing coverage	Pipe wrap	ENRes_SF_ WtrHtr	15	150.00	$122.83	–	–	–	$0.394	2.08	2.29	4
Low-Flow Faucet Aerator	1.0–1.5 gpm kitchen or bathroom faucet aerator	Non-low-flow faucet aerator	Aerator	ENRes_SF_ WtrHtr	10	106.00	$60.88	–	–	–	$0.394	1.46	1.60	4

[a] Average measure life.
[b] Estimated kWh savings measured at the customer's meter, excluding line losses.
[c] Sum of NPV of avoided cost. Based on end-use load shape, measure life, savings including line losses, and alternative costs by pricing period as provided in the 2013 IRP. TRC test benefit calculation includes 10% conservation adder from the Northwest Power Act.
[d] No participant cost.
[e] Average program administration and overhead costs to achieve each kWh of savings. Calculated from 2016 actuals.
[f] UC Ratio = (NPV Avoided Costs) / ((Admin Cost/kWh * kWh Savings) + Incentives)
[g] TRC Ratio = ((NPV Avoided Costs * 110%) + NEB) / ((Admin Cost/kWh * kWh Savings) + Incentives + (Incremental Participant Cost - Incentives))
[1] RTF. ResLightingCFLandLEDLamps_v3_3.xlsm. 2014.
[2] Used the retail savings assumptions for the Pocatello LED installations due to the replacement of some CFLs. RTF direct install savings assume the replacement of incandescent and halogens. RTF retail savings assume the replacement of incandescent, halogens, and CFLs.
[3] RTF. ResShowerheads_v2_1.xlsm. 2011.
[4] AEG. Potential Study.

Rebate Advantage

Segment: Residential
2016 Program Results

Cost Inputs			Ref
Program Administration	$	45,050	
Program Incentives		66,000	I
Total UC	**$**	**111,050**	P
Measure Equipment and Installation (Incremental Participant Cost)	$	103,092	M

Summary of Cost-Effectiveness Results					
Test		**Benefit**		**Cost**	**Ratio**
UC Test	$	432,209	$	111,050	3.89
TRC Test		493,456		148,142	3.33
RIM Test		432,209		691,673	0.62
PCT		664,649		103,092	6.45

Net Benefit Inputs (NPV)				Ref
Resource Savings				
2016 Annual Gross Energy (kWh)	411,272			
NPV Cumulative Energy (kWh)	5,902,930	$	432,209	S
10% Credit (Northwest Power Act)			43,221	
Total Electric Savings		**$**	**475,430**	A
Participant Bill Savings				
NPV Cumulative Participant Bill Savings		$	580,623	B
Other Benefits				
Non-Utility Rebates/Incentives		$	–	NUI
NEBs		$	18,026	NEB

Benefits and Costs Included in Each Test		
UC Test	= S * NTG	= P
TRC Test	= (A + NUI + NEB) * NTG	= P + ((M-I) * NTG)
RIM Test	= S * NTG	= P + (B * NTG)
PCT	= B + I + NUI + NEB	= M

Assumptions for Levelized Calculations	
Discount Rate	
Nominal (WACC)	6.77%
Real ((1 + WACC) / (1 + Escalation)) – 1	3.66%
Escalation Rate	3.00%
Net-to-Gross (NTG)	100%
Minimum NTG Sensitivity	26%
Average Customer Segment Rate/kWh	$0.086
Line Losses	9.60%

Year: 2016 **Program**: Rebate Advantage **Market Segment**: Residential **Program Type**: Energy Efficiency

						Benefit			Cost			B/C Tests		
Measure Name	Measure Descriptions	Replacing	Measure Unit	End Use	Measure Life (yrs)[a]	Annual Gross Energy Savings (kWh/yr)[b]	NPV Avoided Costs[c]	NEB	Gross Incremental Participant Cost[d]	Incentive/ Unit	Admin Cost ($/kWh)[e]	UC Ratio[f]	TRC Ratio[g]	Source
ENERGY STAR® manufactured home	New Energy Star Manufactured Home with Electric FAF—Heating Zone 1	Manufactured home built to Housing and Urban Development (HUD) code	Home	ENRes_MH_Heater	26	5,420.00	$5,873.50	$270.44	$1,577.57	$1,000.00	$0.110	3.68	3.10	1
ENERGY STAR manufactured home	New Energy Star Manufactured Home with Electric FAF—Heating Zone 2	Manufactured home built to HUD code	Home	ENRes_MH_Heater	27	6,847.00	$7,638.07	$276.61	$1,577.57	$1,000.00	$0.110	4.36	3.72	1
ENERGY STAR manufactured home	New Energy Star Manufactured Home with Electric FAF—Heating Zone 3	Manufactured home built to HUD code	Home	ENRes_MH_Heater	27	8,057.00	$8,987.87	$276.61	$1,577.57	$1,000.00	$0.110	4.76	4.12	1
ENERGY STAR manufactured home	New Energy Star Manufactured Home with Heat Pump—Heating Zone 1 Cooling Zone 3	Manufactured home built to HUD code	Home	ENRes_SF_ HeatPump	23	3,254.00	$4,525.55	$250.52	$1,577.57	$1,000.00	$0.110	3.33	2.70	1
ENERGY STAR manufactured home	New Energy Star Manufactured Home with Heat Pump—Heating Zone 2 Cooling Zone 1	Manufactured home built to HUD code	Home	ENRes_SF_ HeatPump	25	4,346.00	$6,424.51	$264.04	$1,577.57	$1,000.00	$0.110	4.35	3.57	1
ENERGY STAR manufactured home	New Energy Star Manufactured Home with Heat Pump—Heating Zone 2 Cooling Zone 2	Manufactured home built to HUD code	Home	ENRes_SF_ HeatPump	25	4,390.00	$6,489.55	$264.04	$1,577.57	$1,000.00	$0.110	4.38	3.59	1
ENERGY STAR manufactured home	New Energy Star Manufactured Home with Heat Pump—Heating Zone 2 Cooling Zone 3	Manufactured home built to HUD code	Home	ENRes_SF_ HeatPump	25	4,472.00	$6,610.77	$264.04	$1,577.57	$1,000.00	$0.110	4.43	3.64	1
ENERGY STAR manufactured home	New Energy Star Manufactured Home with Heat Pump—Heating Zone 3 Cooling Zone 1	Manufactured home built to HUD code	Home	ENRes_SF_ HeatPump	26	5,516.00	$8,381.93	$270.44	$1,577.57	$1,000.00	$0.110	5.22	4.34	1
ENERGY STAR manufactured home	New EcoRated Manufactured Home with Electric FAF—Heating Zone 1	Manufactured home built to HUD code	Home	ENRes_SF_ HeatPump	26	5,691.00	$8,647.85	$270.44	$1,993.00	$1,000.00	$0.110	5.32	3.74	1
ENERGY STAR manufactured home	New EcoRated Manufactured Home with Electric FAF—Heating Zone 2	Manufactured home built to HUD code	Home	ENRes_SF_ HeatPump	27	7,438.00	$11,598.01	$276.61	$1,993.00	$1,000.00	$0.110	6.38	4.64	1

[a] Average measure life.
[b] Estimated kWh savings measured at the customer's meter, excluding line losses.
[c] Sum of NPV of avoided cost. Based on end-use load shape, measure life, savings including line losses, and alternative costs by pricing period as provided in the 2013 IRP. TRC test benefit includes 10% conservation adder from the Northwest Power Act.
[d] Incremental participant cost prior to customer incentives.
[e] Average program administration and overhead costs to achieve each kWh of savings. Calculated from 2016 actuals.
[f] UC Ratio = (NPV Avoided Costs) / ((Admin Cost/kWh * kWh Savings) + Incentives)
[g] TRC Ratio = ((NPV Avoided Costs * 110%) + NEB) / ((Admin Cost/kWh * kWh Savings) + Incentives + (Incremental Participant Cost - Incentives))
[1] RTF. NewMH_EStar_EcoRated_v1_3.xls. 2013.

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Simple Steps, Smart Savings™

Segment: Residential
2016 Program Results

Cost Inputs			Ref
Program Administration	$	92,943	
Program Incentives		60,841	I
Total UC	**$**	**153,784**	P
Measure Equipment and Installation (Incremental Participant Cost)	$	286,809	M

Summary of Cost-Effectiveness Results					
Test		**Benefit**		**Cost**	**Ratio**
UC Test	$	368,523	$	153,784	2.40
TRC Test		506,754		379,752	1.33
RIM Test		368,523		602,763	0.61
PCT		611,199		286,809	2.13

Net Benefit Inputs (NPV)				Ref
Resource Savings				
2016 Annual Gross Energy (kWh)	577,320			
NPV Cumulative Energy (kWh)	5,274,322	$	368,523	S
10% Credit (Northwest Power Act)			36,852	
Total Electric Savings		**$**	**405,375**	A
Participant Bill Savings				
NPV Cumulative Participant Bill Savings		$	448,979	B
Other Benefits				
Non-Utility Rebates/Incentives		$	–	NUI
NEBs		$	101,379	NEB

Note: NEBs include the NPV of water savings from low-flow showerheads and clothes washers.

Benefits and Costs Included in Each Test		
UC Test	= S * NTG	= P
TRC Test	= (A + NUI + NEB) * NTG	= P + ((M-I) * NTG)
RIM Test	= S * NTG	= P + (B * NTG)
PCT	= B + I + NUI + NEB	= M

Assumptions for Levelized Calculations	
Discount Rate	
Nominal (WACC)	6.77%
Real ((1 + WACC) / (1 + Escalation)) – 1	3.66%
Escalation Rate	3.00%
Net-to-Gross (NTG)	100%
Minimum NTG Sensitivity	55%
Average Customer Segment Rate/kWh	$0.086
Line Losses	9.60%

Year: 2016 **Program**: Simple Steps, Smart Savings **Market Segment**: Residential **Program Type**: Energy Efficiency

						Benefit			Cost			B/C Tests		
Measure Name	Measure Descriptions	Replacing	Measure Unit	End Use	Measure Life (yrs)[a]	Annual Gross Energy Savings (kWh/yr)[b]	NPV Avoided Costs[c]	NEB	Gross Incremental Participant Cost[d]	Incentive/ Unit	Admin Cost ($/kWh)[e]	UC Ratio[f]	TRC Ratio[g]	Source
Clothes Washer	ENERGY STAR® clothes washer—Any	Baseline clothes washers	Clothes washer	ENRes_SF_Washer	14	67.00	$56.65	$12.49	$61.47	$10.23	$0.161	2.70	1.04	1, 2
Low-Flow Showerhead	Low-flow showerhead 2.0 gpm Any shower any water Heating Retail	Showerhead 2.2 gpm or higher	Showerhead	ENRes_SF_WtrHtr	10	66.78	$38.35	$104.86	$27.50	$7.00	$0.161	2.16	3.84	3
Low-Flow Showerhead	Low-flow showerhead 1.75 gpm Any shower any water Heating Retail	Showerhead 2.2 gpm or higher	Showerhead	ENRes_SF_WtrHtr	10	99.77	$57.30	$153.83	$27.50	$7.00	$0.161	2.48	4.98	3
Low-Flow Showerhead	Low-flow showerhead 1.5 gpm Any shower any water Heating Retail	Showerhead 2.2 gpm or higher	Showerhead	ENRes_SF_WtrHtr	10	129.12	$74.16	$195.54	$27.50	$7.00	$0.161	2.67	5.74	3

[a] Average measure life.
[b] Estimated kWh savings measured at the customer's meter, excluding line losses.
[c] Sum of NPV of avoided cost. Based on end-use load shape, measure life, savings including line losses, and alternative costs by pricing period as provided in the 2013 IRP. TRC test benefit calculation includes 10% conservation adder from the Northwest Power Act.
[d] Incremental participant cost prior to customer incentives.
[e] Average program administration and overhead costs to achieve each kWh of savings. Calculated from 2016 actuals.
[f] UC Ratio = (NPV Avoided Costs) / ((Admin Cost/kWh * kWh Savings) + Incentives)
[g] TRC Ratio = ((NPV Avoided Costs * 110%) + NEB) / ((Admin Cost/kWh * kWh Savings) + Incentives + (Incremental Participant Cost - Incentives))
[1] BPA. UES_Measures_List_4_1_20151021.xlsx. 2015.
[2] NEBs and participant costs from RTF. Based on the CEE tiers and the weighted average of sales. ResClothesWashersSF_v5_2.xlsm. 2015.
[3] RTF. ResShowerheads_v2_1.xlsm. 2011. Adjusted savings by changing Electric Water Heating saturation from 64% to 52% to match IPC mix.

Weatherization Assistance for Qualified Customers

Segment: Residential
2016 Program Results

Cost Inputs			Ref
Program Administration	$	181,711	
Community Action Partnership (CAP) Agency Payments		1,108,098	
Total UC	**$**	**1,289,809**	P
Idaho Power Indirect Overhead Expense Allocation—5.294%	$	68,282	OH
Additional State Funding		644,606	M

Net Benefit Inputs (NPV)				Ref
Resource Savings				
2016 Annual Gross Energy (kWh)	746,162			
NPV Cumulative Energy (kWh)	10,709,122	$	994,297	S
10% Credit (Northwest Power Act)			99,430	
Total Electric Savings		**$**	**1,093,726**	A
Participant Bill Savings				
NPV Cumulative Participant Bill Savings		$	1,053,412	B
Other Benefits				
Non-Utility Rebates/Incentives		$	–	NUI
NEBs				
Health and Safety		$	185,571	
Repair		$	27,432	
Other			–	
NEBs Total		**$**	**213,003**	NEB

Summary of Cost-Effectiveness Results					
Test		**Benefit**		**Cost**	**Ratio**
UC Test	$	994,297	$	1,358,091	0.73
TRC Test		1,306,729		2,002,697	0.65
RIM Test		994,297		2,411,503	0.41
PCT		N/A		N/A	N/A

Benefits and Costs Included in Each Test		
UC Test	= S * NTG	= P + OH
TRC Test	= (A + NUI + NEB) * NTG	= P + OH + M
RIM Test	= S * NTG	= P + OH + (B * NTG)
PCT	N/A	N/A

Assumptions for Levelized Calculations	
Discount Rate	
Nominal (WACC)	6.77%
Real ((1 + WACC) / (1 + Escalation)) – 1	3.66%
Escalation Rate	3.00%
Net-to-Gross (NTG)	100%
Minimum NTG Sensitivity	153%
Average Customer Segment Rate/kWh	$0.086
Line Losses	9.60%

Notes: Savings from the billing analysis of the 2013–2014 weatherization projects.
Program cost-effectiveness incorporated IPUC staff recommendations from case GNR-E-12-01. Recommendations include: Claimed 100% of savings; increased NTG to 100%; added a 10% conservation preference adder; health, safety, and repair NEBs; and allocation of indirect overhead expenses.
No customer participant costs. Costs shown are from the DOE state weatherization assistance program.

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Weatherization Solutions for Eligible Customers

Segment: Residential
2016 Program Results

Cost Inputs			Ref
Program Administration	$	262,940	
Weatherization LLC Payments		1,060,853	
Total UC	**$**	**1,323,793**	P
Idaho Power Indirect Overhead Expense Allocation—5.294%	$	70,082	OH
Additional State Funding		–	M

Net Benefit Inputs (NPV)				Ref
Resource Savings				
2016 Annual Gross Energy (kWh)	621,653			
NPV Cumulative Energy (kWh)	8,922,127	$	828,382	S
10% Credit (Northwest Power Act)			82,838	
Total Electric Savings		**$**	**911,220**	A
Participant Bill Savings				
NPV Cumulative Participant Bill Savings		$	877,633	B
Other Benefits				
Non-Utility Rebates/Incentives		$	–	NUI
NEBs				
Health and Safety			47,109	
Repair			12,109	
Other			–	
NEBs Total		**$**	**59,218**	NEB

Summary of Cost-Effectiveness Results				
Test		**Benefit**	**Cost**	**Ratio**
UC Test	$	828,382	$ 1,393,874	0.59
TRC Test		970,438	1,393,874	0.70
RIM Test		828,382	2,271,507	0.36
PCT		N/A	N/A	N/A

Benefits and Costs Included in Each Test		
UC Test	= S * NTG	= P +OH
TRC Test	= (A + NUI + NEB) * NTG	= P + OH + M
RIM Test	= S * NTG	= P + OH + (B * NTG)
PCT	N/A	N/A

Assumptions for Levelized Calculations	
Discount Rate	
Nominal (WACC)	6.77%
Real ((1 + WACC) / (1 + Escalation)) – 1	3.66%
Escalation Rate	3.00%
Net-to-Gross (NTG)	100%
Minimum NTG Sensitivity	168%
Average Customer Segment Rate/kWh	$0.086
Line Losses	9.60%

Notes: Savings from the billing analysis of the 2013–2014 weatherization projects.
Program cost-effectiveness incorporated IPUC staff recommendations from case GNR-E-12-01. Recommendations include: Claimed 100% of savings; increased NTG to 100%; added a 10% conservation preference adder; health, safety, and repair NEBs; and allocation of indirect overhead expenses.
No customer participant costs.

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New Construction (Building Efficiency)

Segment: Commercial
2016 Program Results

Cost Inputs			Ref
Program Administration	$	415,061	
Program Incentives		1,516,161	I
Total UC	**$**	**1,931,222**	P
Measure Equipment and Installation (Incremental Participant Cost)	$	2,629,604	M

Summary of Cost-Effectiveness Results					
Test		**Benefit**		**Cost**	**Ratio**
UC Test	$	8,500,742	$	1,931,222	4.40
TRC Test		9,350,816		3,044,665	3.07
RIM Test		8,500,742		8,812,392	0.96
PCT		8,397,331		2,629,604	3.19

Net Benefit Inputs (NPV)				Ref
Resource Savings				
2016 Annual Gross Energy (kWh)	12,393,249			
NPV Cumulative Energy (kWh)	120,039,923	$	8,500,742	S
10% Credit (Northwest Power Act)			850,074	
Total Electric Savings		**$**	**9,350,816**	A
Participant Bill Savings				
NPV Cumulative Participant Bill Savings		$	6,881,170	B
Other Benefits				
Non-Utility Rebates/Incentives		$	–	NUI
NEBs		$	–	NEB

Benefits and Costs Included in Each Test		
UC Test	= S * NTG	= P
TRC Test	= (A + NUI + NEB) * NTG	= P + ((M-I) * NTG)
RIM Test	= S * NTG	= P + (B * NTG)
PCT	= B + I + NUI + NEB	= M

Assumptions for Levelized Calculations	
Discount Rate	
Nominal (WACC)	6.77%
Real ((1 + WACC) / (1 + Escalation)) – 1	3.66%
Escalation Rate	3.00%
Net-to-Gross (NTG)	100%
Minimum NTG Sensitivity	23%
Average Customer Segment Rate/kWh	$0.057
Line Losses	9.60%

Year: 2016 **Program**: New Construction **Market Segment**: Commercial **Program Type**: Energy Efficiency

						Benefit			Cost			B/C Tests		
Measure Name	Measure Descriptions	Replacing	Measure Unit	End Use	Measure Life (yrs)[a]	Annual Gross Energy Savings (kWh/yr)[b]	NPV Avoided Costs[c]	NEB	Gross Incremental Participant Cost[d]	Incentive/ Unit	Admin Cost ($/kWh)[e]	UC Ratio[f]	TRC Ratio[g]	Source
Lighting	Interior light load reduction. Part A: 10–19.9% below code.	Code standards	sq ft	ENComm_InsLt	14	0.51	$0.44	–	$0.26	$0.10	$0.039	3.63	1.71	1
Lighting	Interior light load reduction. Part B: 20–29.9% below code.	Code standards	sq ft	ENComm_InsLt	14	1.03	$0.88	–	$0.51	$0.20	$0.039	3.66	1.76	1
Lighting	Interior light load reduction. Part C: Equal to or greater than 30% below code.	Code standards	sq ft	ENComm_InsLt	14	2.33	$1.99	–	$0.89	$0.30	$0.039	5.09	2.23	1
Lighting	Exterior light load reduction. Minimum of 15% below code.	Code standards	kW	IPC_Outdoor Lighting	15	4,059.00	$2,494.63	–	$168.00	$200.00	$0.039	6.96	8.41	1
Lighting	Daylight photo controls	Code standards	sq ft	ENComm_InsLt	14	0.94	$0.80	–	$0.91	$0.25	$0.039	2.80	0.93	1, 2
Lighting	Occupancy sensors	Code standards	Sensor	ENComm_InsLt	8	366.00	$190.08	–	$38.26	$25.00	$0.039	4.84	3.98	1
Lighting	High-efficiency exit signs	Code standards	Sign	IPC_8760	16	28.00	$24.67	–	$10.83	$7.50	$0.039	2.87	2.28	1
A/C IECC 2009	>5–11 ton A/C unit that meets CEE Tier 1 >11–19 ton A/C unit that meets CEE Tier 1 >19–25 ton A/C unit that meets CEE Tier 1 (≥65,000 British thermal units/hour [Btu/hr] & ≤300,000 Btu/hr)	Code standards	Tons	ENComm_Cooling	15	40.30	$46.50	–	$36.18	$30.00	$0.039	1.47	1.36	3
A/C IECC 2012	>5–11 ton A/C unit that meets CEE Tier 1 >11–19 ton A/C unit that meets CEE Tier 1 >19–25 ton A/C unit that meets CEE Tier 1 (≥65,000 Btu/hr & ≤300,000 Btu/hr)	Code standards	Tons	ENComm_Cooling	15	96.30	$111.12	–	$81.57	$30.00	$0.039	3.29	1.43	3
A/C IECC 2009 & 2012	≤5 ton A/C unit that meets CEE Tier 2 >5–11 ton A/C unit that meets CEE Tier 2 >11–19 ton A/C unit that meets CEE Tier 2 >19–25 ton A/C unit that meets CEE Tier 2 (≤300,000 Btu/hr)	Code standards	Tons	ENComm_Cooling	15	90.16	$104.04	–	$115.37	$75.00	$0.039	1.33	0.96	2, 4, 5

						Benefit			Cost			B/C Tests		
Measure Name	Measure Descriptions	Replacing	Measure Unit	End Use	Measure Life (yrs)[a]	Annual Gross Energy Savings (kWh/yr)[b]	NPV Avoided Costs[c]	NEB	Gross Incremental Participant Cost[d]	Incentive/ Unit	Admin Cost ($/kWh)[e]	UC Ratio[f]	TRC Ratio[g]	Source
A/C IECC 2009	≤5 ton HP unit that meets CEE Tier 1 >5–11 ton HP unit that meets CEE Tier 1 >11–19 ton HP unit that meets CEE Tier 1 >19–25 ton HP unit that meets CEE Tier 1 (≤300,000 Btu/hr)	Code standards	Tons	ENComm_Cooling	15	27.25	$31.44	–	$31.83	$30.00	$0.039	1.01	1.05	4
A/C IECC 2012	≤5 ton HP unit that meets CEE Tier 1 >5–11 ton HP unit that meets CEE Tier 1 >11–19 ton HP unit that meets CEE Tier 1 >19–25 ton HP unit that meets CEE Tier 1 (≤300,000 Btu/hr)	Code standards	Tons	ENComm_Cooling	15	45.18	$52.13	–	$28.03	$30.00	$0.039	1.64	1.93	4
A/C IECC 2009	>5–11 ton A/C VRF unit that meets CEE Tier 1 >11–19 ton A/C VRF unit that meets CEE Tier 1 >19–25 ton A/C VRF unit that meets CEE Tier 1 (≥65,000 Btu/hr & ≤300,000 Btu/hr)	Code standards	Tons	ENComm_Cooling	15	132.60	$153.01	–	$115.37	$75.00	$0.039	1.91	1.40	3
A/C IECC 2012	>5–11 ton A/C VRF unit that meets CEE Tier 1 >11–19 ton A/C VRF unit that meets CEE Tier 1 >19–25 ton A/C VRF unit that meets CEE Tier 1 (≥65,000 Btu/hr & ≤300,000 Btu/hr)	Code standards	Tons	ENComm_Cooling	15	188.51	$217.53	–	$161.54	$75.00	$0.039	2.64	1.42	3
A/C IECC 2009	>5–11 ton HP VRF unit that meets CEE Tier 1 >11–19 ton HP VRF unit that meets CEE Tier 1 >19–25 ton HP VRF unit that meets CEE Tier 1 (≥65,000 Btu/hr & ≤300,000 Btu/hr)	Code standards	Tons	ENComm_Cooling	15	138.52	$159.84	–	$97.36	$75.00	$0.039	1.99	1.71	3
A/C IECC 2012	>5–11 ton HP VRF unit that meets CEE Tier 1 >11–19 ton HP VRF unit that meets CEE Tier 1 >19–25 ton HP VRF unit that meets CEE Tier 1 (≥65,000 Btu/hr & ≤300,000 Btu/hr)	Code standards	Tons	ENComm_Cooling	15	56.80	$65.54	–	$91.88	$75.00	$0.039	0.85	0.77	2, 3, 5

						Benefit			Cost			B/C Tests		
Measure Name	Measure Descriptions	Replacing	Measure Unit	End Use	Measure Life (yrs)[a]	Annual Gross Energy Savings (kWh/yr)[b]	NPV Avoided Costs[c]	NEB	Gross Incremental Participant Cost[d]	Incentive/ Unit	Admin Cost ($/kWh)[e]	UC Ratio[f]	TRC Ratio[g]	Source
A/C	Air-cooled chiller condenser, IPLV 14.0 EER or higher	Code standards	Tons	ENComm_Cooling	20	472.44	$696.03	–	$86.12	$80.00	$0.039	7.07	7.32	1
A/C	Water-cooled chiller electronically operated, reciprocating and positive displacement	Code standards	Tons	ENComm_Cooling	20	212.96	$313.75	–	$38.82	$40.00	$0.039	6.50	7.32	6
A/C	Airside economizer	Code standards	Ton of cooling	ENComm_Cooling	15	190.00	$219.25	–	$81.36	$75.00	$0.039	2.66	2.72	6
A/C	Direct evaporative cooler IECC 2009	Code standards	Tons	ENComm_Cooling	15	399.00	$460.42	–	$364.00	$200.00	$0.039	2.14	1.33	1
A/C	Direct evaporative cooler IECC 2012	Code standards	Tons	ENComm_Cooling	15	386.00	$445.42	–	$364.00	$200.00	$0.039	2.07	1.29	1
Evaporative Pre-Cooler	Pre-cooler added to condenser	Standard air-cooled chiller unit	Ton	IPC_Evap Cooler (ky)	15	106.00	$169.37	–	$173.00	$20.00	$0.039	7.02	1.05	1
Building Shell	Reflective roof treatment	Code standards	ft^2 roof area	ENComm_Cooling	15	0.12	$0.13	–	$0.05	$0.05	$0.039	2.46	2.70	1
Controls	Energy Management System (EMS) controls. Part A: 2 strategies	Code standards	Tons of cooling	ENComm_Cooling	15	418.00	$482.34	–	$162.49	$70.00	$0.039	5.59	2.97	1
Controls	EMS controls. Part B: 3 strategies	Code standards	Tons of cooling	ENComm_Cooling	15	484.00	$558.50	–	$162.49	$80.00	$0.039	5.65	3.39	7
Controls	EMS controls. Part C: 4 strategies	Code standards	Tons of cooling	ENComm_Cooling	15	484.00	$558.50	–	$162.49	$90.00	$0.039	5.13	3.39	1
Controls	EMS controls. Part D: 5 strategies	Code standards	Tons of cooling	ENComm_Cooling	15	633.00	$730.44	–	$162.49	$100.00	$0.039	5.86	4.29	7
Controls	Guest room energy mananagement system IECC 2009	Code standards	Ton	ENComm_HVAC	11	581.00	$444.20	–	$57.50	$50.00	$0.039	6.11	6.10	1
Controls	Guest room energy mananagement system IECC 2012	Code standards	Ton	ENComm_HVAC	11	572.00	$437.32	–	$57.50	$50.00	$0.039	6.05	6.03	1
Controls	Part A. Variable speed drive on HVAC system applications: • Chilled water pumps • Condenser water pumps • Cooling tower fans	Code standards	HP	ENComm_HVAC	15	268.00	$265.98	–	$165.33	$60.00	$0.039	3.78	1.66	1
Controls	Part B. Variable speed drive on HVAC system applications: • Supply • Return • Outside air • Make-up air • Hot water pumps	Code standards	HP	ENComm_HVAC	15	996.00	$988.48	–	$142.05	$100.00	$0.039	7.12	6.01	1

						Benefit			Cost			B/C Tests		
Measure Name	Measure Descriptions	Replacing	Measure Unit	End Use	Measure Life (yrs)[a]	Annual Gross Energy Savings (kWh/yr)[b]	NPV Avoided Costs[c]	NEB	Gross Incremental Participant Cost[d]	Incentive/ Unit	Admin Cost ($/kWh)[e]	UC Ratio[f]	TRC Ratio[g]	Source
Variable-speed controls	Part C: Variable speed drive on Potato/Onion Storage Shed Ventilation	No variable speed drive (VSD)	Horsepower	IPC_Onion Potato VSD	10	1,993.00	$1,017.52	–	$300.00	$200.00	$0.039	3.66	2.96	8
Demand Controlled Kitchen Ventilation Exhaust Hood	Demand Controlled Kitchen Ventilation Exhaust Hood	Kitchen ventilation hood	Horsepower	ENComm_Cooking	15	3,838.00	$3,464.54	–	$2,000.00	$200.00	$0.039	9.91	1.77	9
Appliances with Electric Water Heating	Efficient Laundry Machines (electric)	Code standards	Unit	ENComm_WtrHtr	10	756.00	$452.14	–	$200.00	$125.00	$0.039	2.93	2.17	1
Appliances with Electric Water Heating	ENERGY STAR® undercounter (residential style) dishwasher	Code standards	Machine	ENComm_Misc	12	2,210.00	$1,593.82	$245.73	$232.00	$200.00	$0.039	5.57	6.28	1, 10
Appliances with Electric Water Heating	ENERGY STAR commercial dishwasher	Code standards	Machine	ENComm_Misc	12	5,561.00	$4,010.51	$662.72	$3,978.00	$500.00	$0.039	5.60	1.21	1, 10
Refrigeration	Refrigeration head pressure controls	Code standards	Horsepower	ENComm_ Refrigeration	16	225.00	$208.41	–	$166.60	$40.00	$0.039	4.27	1.31	1
Refrigeration	Refrigeration floating suction controls	Code standards	Horsepower	ENComm_ Refrigeration	16	77.00	$71.32	–	$53.75	$10.00	$0.039	5.49	1.38	1
Refrigeration	Efficient refrigeration condensers	Code standards	Tons of refrigeration	ENComm_ Refrigeration	15	114.00	$99.24	–	$35.00	$20.00	$0.039	4.06	2.77	1
Smart Power Strips	Load-sensing, motion-sensing, or timer-controlled power strip	No exisiting load or motion-sensing, or timer-controlled power strip	Power strip	ENComm_Office	4	118.00	$29.03	–	$21.00	$10.00	$0.039	1.99	1.25	11

[a] Average measure life.
[b] Estimated kWh savings measured at the customer's meter, excluding line losses.
[c] Sum of NPV of avoided cost. Based on end-use load shape, measure life, savings including line losses, and alternative costs by pricing period as provided in the 2013 IRP. TRC test benefit calculation includes 10% conservation adder from the Northwest Power Act.
[d] Incremental participant cost prior to customer incentives.
[e] Average program administration and overhead costs to achieve each kWh of savings. Calculated from 2016 actuals.
[f] UC Ratio = (NPV Avoided Costs) / ((Admin Cost/kWh * kWh Savings) + Incentives)
[g] TRC Ratio = ((NPV Avoided Costs * 110%) + NEB) / ((Admin Cost/kWh * kWh Savings) + Incentives + (Incremental Participant Cost - Incentives))
[1] Idaho Power TRM prepared by ADM Associates, Inc. 2015.
[2] Measure not cost-effective.
[3] Idaho Power TRM prepared by ADM Associates, Inc. 2015. Weighted average of 5–25 ton units.
[4] Idaho Power TRM prepared by ADM Associates, Inc. 2015. Weighted average of 0–25 ton units.
[5] Measure not cost-effective. Measure to be monitored in 2017. Measure included in the program to increase participation in a cost-effective program and to encourage adoption of higher efficiency equipment.
[6] Idaho Power TRM prepared by ADM Associates, Inc. 2015. Averaged water cooled chillers.
[7] Idaho Power TRM prepared by ADM Associates, Inc. 2015. Calculated from TRM spreadsheets.
[8] RTF. AgPotatoOnionShedVFD_v3_0.xlsm. IPC Costs.
[9] IPC engineering analysis.
[10] Idaho Power TRM prepared by ADM Associates, Inc. 2015. NEBs from water savings from RTF. ComDishwasher_v1_2.xlsm. 2012.
[11] RTF. ComSmartPlugPower_v3_1.xlsm. Updated incremental costs based on IPC research.

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Custom Projects (Custom Efficiency)

Segment: Industrial
2016 Program Results

Cost Inputs			Ref
Program Administration	$	1,868,381	
Program Incentives		6,114,243	I
Total UC	**$**	**7,982,624**	P
Measure Equipment and Installation (Incremental Participant Cost)	$	14,255,237	M

Summary of Cost-Effectiveness Results					
Test		**Benefit**		**Cost**	**Ratio**
UC Test	$	41,986,723	$	7,982,624	5.26
TRC Test		46,185,395		16,123,619	2.86
RIM Test		41,986,723		29,195,882	1.44
PCT		27,327,501		14,255,237	1.92

Net Benefit Inputs (NPV)				Ref
Resource Savings				
2016 Annual Gross Energy (kWh)	47,518,871			
NPV Cumulative Energy (kWh)	549,397,237	$	41,986,723	S
10% Credit (Northwest Power Act)			4,198,672	
Total Electric Savings		**$**	**46,185,395**	A
Participant Bill Savings				
NPV Cumulative Participant Savings		$	21,213,258	B
Other Benefits				
Non-Utility Rebates/Incentives		$	–	NUI
NEBs		$	–	NEB

Benefits and Costs Included in Each Test		
UC Test	= S * NTG	= P
TRC Test	= (A + NUI + NEB) * NTG	= P + ((M-I) * NTG)
RIM Test	= S * NTG	= P + (B * NTG)
PCT	= B + I + NUI + NEB	= M

Assumptions for Levelized Calculations	
Discount Rate	
Nominal (WACC)	6.77%
Real ((1 + WACC) / (1 + Escalation)) – 1	3.66%
Escalation Rate	3.00%
Net-to-Gross (NTG)	100%
Minimum NTG Sensitivity	21%
Average Customer Segment Rate/kWh	$0.037
Line Losses	9.60%

Notes: Energy savings are unique by project and are reviewed by Idaho Power engineering staff or third-party consultants. Each project must complete a certification inspection.
Green Rewind initiative is available to agricultural, commercial, and industrial customers. Commercial and industrial motor rewinds are paid under Custom Projects, but the savings are not included in the program cost-effectiveness.
Green Rewind savings are included in the sector cost-effectiveness.

Year: 2016 **Program**: Custom Projects **Market Segment**: Industrial **Program Type**: Energy Efficiency

						Benefit			Cost			B/C Tests		
Measure Name	Measure Descriptions	Replacing	Measure Unit	End Use	Measure Life (yrs)[a]	Annual Gross Energy Savings (kWh/yr)[b]	NPV Avoided Costs[c]	NEB	Gross Incremental Participant Cost[d]	Incentive/ Unit	Admin Cost ($/kWh)[e]	UC Ratio[f]	TRC Ratio[g]	Source
Green Motors Program Rewind: Motor size 15 HP	Green Motors Program Rewind: Motor size 15 HP	Standard rewind practice	Motor	MF_Motors	8	601.00	$301.14	–	$153.77	$30.00	$0.050	5.01	1.80	1
Green Motors Program Rewind: Motor size 20 HP	Green Motors Program Rewind: Motor size 20 HP	Standard rewind practice	Motor	MF_Motors	8	804.00	$402.86	–	$171.56	$40.00	$0.050	5.02	2.09	1
Green Motors Program Rewind: Motor size 25 HP	Green Motors Program Rewind: Motor size 25 HP	Standard rewind practice	Motor	MF_Motors	8	1,052.00	$527.13	–	$196.01	$50.00	$0.050	5.14	2.33	1
Green Motors Program Rewind: Motor size 30 HP	Green Motors Program Rewind: Motor size 30 HP	Standard rewind practice	Motor	MF_Motors	8	1,133.00	$567.71	–	$215.29	$60.00	$0.050	4.87	2.30	1
Green Motors Program Rewind: Motor size 40 HP	Green Motors Program Rewind: Motor size 40 HP	Standard rewind practice	Motor	MF_Motors	8	1,319.00	$660.91	–	$263.09	$80.00	$0.050	4.53	2.21	1
Green Motors Program Rewind: Motor size 50 HP	Green Motors Program Rewind: Motor size 50 HP	Standard rewind practice	Motor	MF_Motors	8	1,418.00	$710.52	–	$291.24	$100.00	$0.050	4.16	2.16	1
Green Motors Program Rewind: Motor size 60 HP	Green Motors Program Rewind: Motor size 60 HP	Standard rewind practice	Motor	MF_Motors	9	1,476.00	$825.50	–	$343.49	$120.00	$0.050	4.26	2.18	1
Green Motors Program Rewind: Motor size 75 HP	Green Motors Program Rewind: Motor size 75 HP	Standard rewind practice	Motor	MF_Motors	9	1,519.00	$849.55	–	$371.28	$150.00	$0.050	3.76	2.09	1
Green Motors Program Rewind: Motor size 100 HP	Green Motors Program Rewind: Motor size 100 HP	Standard rewind practice	Motor	MF_Motors	9	2,005.00	$1,121.36	–	$460.58	$200.00	$0.050	3.73	2.20	1
Green Motors Program Rewind: Motor size 125 HP	Green Motors Program Rewind: Motor size 125 HP	Standard rewind practice	Motor	MF_Motors	8	2,598.00	$1,301.78	–	$517.27	$250.00	$0.050	3.43	2.21	1
Green Motors Program Rewind: Motor size 150 HP	Green Motors Program Rewind: Motor size 150 HP	Standard rewind practice	Motor	MF_Motors	8	3,089.00	$1,547.80	–	$576.19	$300.00	$0.050	3.41	2.33	1
Green Motors Program Rewind: Motor size 200 HP	Green Motors Program Rewind: Motor size 200 HP	Standard rewind practice	Motor	MF_Motors	8	4,088.00	$2,048.37	–	$693.65	$400.00	$0.050	3.39	2.51	1
Green Motors Program Rewind: Motor size 250 HP	Green Motors Program Rewind: Motor size 250 HP	Standard rewind practice	Motor	MF_Motors	9	4,972.00	$2,780.75	–	$891.52	$500.00	$0.050	3.71	2.68	1
Green Motors Program Rewind: Motor size 300 HP	Green Motors Program Rewind: Motor size 300 HP	Standard rewind practice	Motor	MF_Motors	9	5,935.00	$3,319.34	–	$901.16	$600.00	$0.050	3.70	3.05	1
Green Motors Program Rewind: Motor size 350 HP	Green Motors Program Rewind: Motor size 350 HP	Standard rewind practice	Motor	MF_Motors	9	6,919.00	$3,869.68	–	$944.51	$700.00	$0.050	3.70	3.30	1

						Benefit			Cost			B/C Tests		
Measure Name	Measure Descriptions	Replacing	Measure Unit	End Use	Measure Life (yrs)[a]	Annual Gross Energy Savings (kWh/yr)[b]	NPV Avoided Costs[c]	NEB	Gross Incremental Participant Cost[d]	Incentive/ Unit	Admin Cost ($/kWh)[e]	UC Ratio[f]	TRC Ratio[g]	Source
Green Motors Program Rewind: Motor size 400 HP	Green Motors Program Rewind: Motor size 400 HP	Standard rewind practice	Motor	MF_Motors	9	7,848.00	$4,389.25	–	$1,054.93	$800.00	$0.050	3.68	3.34	1
Green Motors Program Rewind: Motor size 450 HP	Green Motors Program Rewind: Motor size 450 HP	Standard rewind practice	Motor	MF_Motors	9	8,811.00	$4,927.84	–	$1,153.12	$900.00	$0.050	3.68	3.40	1
Green Motors Program Rewind: Motor size 500 HP	Green Motors Program Rewind: Motor size 500 HP	Standard rewind practice	Motor	MF_Motors	9	9,804.00	$5,483.21	–	$1,245.76	$1,000.00	$0.050	3.68	3.47	1
Green Motors Program Rewind: Motor size 600 HP	Green Motors Program Rewind: Motor size 600 HP	Standard rewind practice	Motor	MF_Motors	7	14,689.00	$6,474.07	–	$1,835.78	$1,200.00	$0.050	3.35	2.77	1
Green Motors Program Rewind: Motor size 700 HP	Green Motors Program Rewind: Motor size 700 HP	Standard rewind practice	Motor	MF_Motors	7	17,065.00	$7,521.27	–	$2,002.84	$1,400.00	$0.050	3.34	2.90	1
Green Motors Program Rewind: Motor size 800 HP	Green Motors Program Rewind: Motor size 800 HP	Standard rewind practice	Motor	MF_Motors	7	19,461.00	$8,577.29	–	$2,222.20	$1,600.00	$0.050	3.33	2.95	1
Green Motors Program Rewind: Motor size 900 HP	Green Motors Program Rewind: Motor size 900 HP	Standard rewind practice	Motor	MF_Motors	7	21,847.00	$9,628.90	–	$2,449.87	$1,800.00	$0.050	3.33	2.99	1
Green Motors Program Rewind: Motor size 1,500 HP	Green Motors Program Rewind: Motor size 1,500 HP	Standard rewind practice	Motor	MF_Motors	7	35,891.00	$15,818.69	–	$3,612.90	$3,000.00	$0.050	2.28	2.30	1
Green Motors Program Rewind: Motor size 3,000 HP	Green Motors Program Rewind: Motor size 3,000 HP	Standard rewind practice	Motor	MF_Motors	7	70,147.00	$30,916.76	–	$6,446.18	$6,000.00	$0.050	2.24	2.39	1

[a] Average measure life.
[b] Estimated kWh savings measured at the customer's meter, excluding line losses.
[c] Sum of NPV of avoided cost. Based on end-use load shape, measure life, savings including line losses, and alternative costs by pricing period as provided in the 2013 IRP. TRC test benefit calculation includes 10% conservation adder from the Northwest Power Act.
[d] Incremental participant cost prior to customer incentives.
[e] Average program administration and overhead costs to achieve each kWh of savings. Calculated from 2016 actuals.
[f] UC Ratio = (NPV Avoided Costs) / ((Admin Cost/kWh * kWh Savings) + Incentives)
[g] TRC Ratio = ((NPV Avoided Costs * 110%) + NEB) / ((Admin Cost/kWh * kWh Savings) + Incentives + (Incremental Participant Cost - Incentives))
[1] RTF. IndGreenMotorsRewind_v2_0.xlsm. 2013.

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Retrofits (Easy Upgrades)

Segment: Commercial
2016 Program Results

Cost Inputs			Ref
Program Administration	$	1,152,228	
Program Incentives		3,887,962	I
Total UC	**$**	**5,040,190**	P
Measure Equipment and Installation (Incremental Participant Cost)	$	6,886,563	M

Summary of Cost-Effectiveness Results					
Test		**Benefit**		**Cost**	**Ratio**
UC Test	$	19,291,267	$	5,040,190	3.83
TRC Test		21,220,394		8,038,791	2.64
RIM Test		19,291,267		20,656,062	0.93
PCT		19,503,834		6,886,563	2.83

Net Benefit Inputs (NPV)				Ref
Resource Savings				
2016 Annual Gross Energy (kWh)	28,124,779			
NPV Cumulative Energy (kWh)	272,414,144	$	19,291,267	S
10% Credit (Northwest Power Act)			1,929,127	
Total Electric Savings		**$**	**21,220,394**	A
Participant Bill Savings				
NPV Cumulative Participant Savings		$	15,615,872	B
Other Benefits				
Non-Utility Rebates/Incentives		$	–	NUI
NEBs		$	–	NEB

Benefits and Costs Included in Each Test		
UC Test	= S * NTG	= P
TRC Test	= (A + NUI + NEB) * NTG	= P + ((M-I) * NTG)
RIM Test	= S * NTG	= P + (B * NTG)
PCT	= B + I + NUI + NEB	= M

Assumptions for Levelized Calculations	
Discount Rate	
Nominal (WACC)	6.77%
Real ((1 + WACC) / (1 + Escalation)) – 1	3.66%
Escalation Rate	3.00%
Net-to-Gross (NTG)	100%
Minimum NTG Sensitivity	28%
Average Customer Segment Rate/kWh	$0.057
Line Losses	9.60%

Note: Measure inputs from Evergreen Consulting Group or the TRM prepared by ADM Associates, Inc., unless otherwise noted.

Year: 2016 **Program**: Retrofits **Market Segment**: Commercial **Program Type**: Energy Efficiency

						Benefit			Cost			B/C Tests		
Measure Name	Measure Descriptions	Replacing	Measure unit	End Use	Measure Life (yrs)[a]	Annual Gross Energy Savings (kWh/yr)[b]	NPV Avoided Costs[c]	NEB	Gross Incremental Participant Cost[d]	Incentive/ Unit	Admin Cost ($/kWh)[e]	UC Ratio[f]	TRC Ratio[g]	Source
Standard/High Performance T8 Fluorescents	4-foot T8	4-foot T12	Fixture	ENComm_InsLt	11	180.28	$125.18	–	$61.15	$34.42	$0.039	3.02	2.02	1
Standard T8 Fluorescents	6-foot T8	6-foot T12	Fixture	ENComm_InsLt	11	332.20	$230.66	–	$76.03	$16.00	$0.039	7.97	2.85	1
Standard T8 Fluorescents	8-foot T8	8-foot T12	Fixture	ENComm_InsLt	11	262.06	$181.96	–	$80.56	$22.75	$0.039	5.52	2.21	1
Standard/High Performance T8 Fluorescents	4-foot & 8-foot T8	8-foot T12HO	Fixture	ENComm_InsLt	11	564.84	$392.19	–	$75.36	$47.52	$0.039	5.64	4.43	1
T5 (Non-HO) Fluorescents	4-foot T5	4-foot T12	Fixture	ENComm_InsLt	11	156.85	$108.91	–	$76.21	$36.18	$0.039	2.58	1.46	1
T5/T8 High Bay— New Fixture	4-foot T8/T5	Fixture using >200 input watts	Fixture	ENComm_InsLt	11	1,194.00	$829.04	–	$216.24	$137.04	$0.039	4.52	3.47	1
Relamp T8/ T5HO to Reduced Wattage T8/ T5HO	Reduced wattage T8/T5 re-lamp		Fixture	ENComm_InsLt	8	130.58	$67.81	–	$23.07	$1.00	$0.039	11.14	2.65	1
Permanent Fixture Removal	Permanent fixture removal		Fixture	ENComm_InsLt	8	878.14	$456.05	–	$35.78	$19.09	$0.039	8.55	7.17	1
Screw-in CFLs/ cold-cathode	Screw-in CFLs/ cold-cathode	Fixture using >40 input watts	Fixture	ENComm_InsLt	6	164.23	$64.51	–	$33.23	$5.08	$0.039	5.62	1.79	1
Hardwired CFLs	Hardwired CFLs	Fixture using >90 input watts	Fixture	ENComm_InsLt	6	366.94	$144.13	–	$94.75	$50.00	$0.039	2.24	1.45	1
LED Replacement Lamps	LED replacement lamps	Fixture using >20 input watts	Fixture	ENComm_InsLt	12	154.10	$115.42	–	$48.66	$15.00	$0.039	5.49	2.32	1
Pulse Start/ Electronic Metal Halide	Pulse start/electronic metal halide	Fixture using >170 input watts	Fixture	ENComm_InsLt	11	1,091.70	$758.01	–	$153.66	$105.55	$0.039	5.12	4.25	1
LED Exit Sign	LED exit sign	Exit sign using ≥18 watts	Fixture	IPC_8760	12	230.68	$157.63	–	$68.69	$40.00	$0.039	3.22	2.23	1
Lighting Controls	Lighting controls	Manual controls	Fixture	ENComm_InsLt	10	187.75	$119.78	–	$94.75	$47.51	$0.039	2.18	1.29	1
Standard/High Performance T8 Fluorescents	4-foot T8	4-foot T12	Fixture	IPC_Outdoor Lighting	11	166.42	$77.49	–	$61.15	$13.80	$0.039	3.82	1.26	1
Standard T8 Fluorescents	6-foot T8	6-foot T12	Fixture	IPC_Outdoor Lighting	11	386.42	$179.92	–	$76.03	$14.00	$0.039	6.19	2.17	1
Standard T8 Fluorescents	8-foot T8	8-foot T12	Fixture	IPC_Outdoor Lighting	11	303.92	$141.51	–	$80.56	$19.50	$0.039	4.51	1.68	1

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Measure Name	Measure Descriptions	Replacing	Measure unit	End Use	Measure Life (yrs)[a]	Annual Gross Energy Savings (kWh/yr)[b]	NPV Avoided Costs[c]	NEB	Gross Incremental Participant Cost[d]	Incentive/ Unit	Admin Cost ($/kWh)[e]	UC Ratio[f]	TRC Ratio[g]	Source
Standard/High-Performance T8 Fluorescents	4-foot & 8-foot T8	8-foot T12HO	Fixture	IPC_Outdoor Lighting	11	913.16	$425.18	–	$75.36	$21.48	$0.039	7.45	4.22	1
T5 (Non-HO) Fluorescents	4-foot T5	4-foot T12	Fixture	IPC_Outdoor Lighting	11	181.22	$84.38	–	$76.21	$20.47	$0.039	3.06	1.11	1
T5/T8 High Bay—New Fixture	4-foot T8/T5	Fixture using >200 input watts	Fixture	IPC_Outdoor Lighting	11	1,643.60	$765.28	–	$216.24	$102.71	$0.039	4.59	3.00	1
Permanent Fixture Removal	Permanent Fixture Removal		Fixture	IPC_Outdoor Lighting	8	1,018.40	$350.76	–	$35.78	$14.09	$0.039	6.52	5.11	1
Screw-in CFLs/ cold-cathode	Screw-in CFLs/cold-cathode	Fixture using >40 input watts	Fixture	IPC_Outdoor Lighting	6	190.46	$48.86	–	$33.23	$5.08	$0.039	3.91	1.32	1
Hardwired CFLs	Hardwired CFLs	Fixture using >90 input watts	Fixture	IPC_Outdoor Lighting	6	425.55	$109.18	–	$94.75	$35.00	$0.039	2.12	1.08	1
LED Replacement Lamps	LED Replacement Lamps	Fixture using >20 input watts	Fixture	IPC_Outdoor Lighting	12	178.71	$90.05	–	$48.66	$19.25	$0.039	3.43	1.78	1
Pulse Start/ Electronic Metal Halide	Pulse Start/Electronic Metal Halide	Fixture using >170 input watts	Fixture	IPC_Outdoor Lighting	11	1,265.40	$589.18	–	$153.66	$45.68	$0.039	6.20	3.19	1
Refrigeration Case Lighting	Case # 1—T8 fluorescent lighting and electronic ballast (per lamp)	Case #1—T12 fluorescent lighting	Lamp	ENComm_ Refrigeration	6	309.31	$116.64	–	$44.70	$15.00	$0.039	4.31	2.26	2
Refrigeration Case Lighting	Case # 2—LED display case lighting (per linear foot)	Case #2—T12 fluorescent lighting	Linear foot	ENComm_ Refrigeration	8	111.25	$55.52	$17.21	$42.56	$15.00	$0.039	2.87	1.67	3
Refrigeration Case Lighting	Case # 3—LED display case lighting (per linear foot)	Case #3—T8 fluorescent lighting	Linear foot	ENComm_ Refrigeration	8	77.75	$38.80	$15.95	$44.21	$10.00	$0.039	2.98	1.24	4
Refrigeration Case Lighting	Case #4—TLED display case lighting	Case #4—T12 fluorescent lighting	Linear foot	ENComm_ Refrigeration	12	34.49	$24.84	$2.48	$8.48	$1.50	$0.039	8.73	3.03	5
Refrigeration Case Lighting	Case #5—TLED display case lighting	Case #5—T8 fluorescent lighting	Linear foot	ENComm_ Refrigeration	12	9.86	$7.10	$2.48	$8.48	$1.50	$0.039	3.77	1.16	5
A/C Units	≤5 ton A/C unit that meets CEE Tier 2 >5–11 ton A/C unit that meets CEE Tier 2 >11–19 ton A/C unit that meets CEE Tier 2 >19–25 ton A/C unit that meets CEE Tier 2 (≤300,000 Btu/hr)	Standard ≤5 ton A/C/HP unit Standard >5–11 ton A/C/HP unit Standard >11–19 ton A/C/HP unit Standard >19–25 ton A/C/HP unit (code standard)	Tons	ENComm_Cooling	15	90.16	$104.04	–	$115.37	$75.00	$0.039	1.33	0.96	6, 7

						Benefit			Cost			B/C Tests		
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A/C Units	>5–11 ton A/C unit that meets CEE Tier 1 >11–19 ton A/C unit that meets CEE Tier 1 >19–25 ton A/C unit that meets CEE Tier 1 (≥65,000 Btu/hr & ≤300,000 Btu/hr)	Standard >5–11 ton A/C/HP unit Standard >11–19 ton A/C/HP unit Standard >19–25 ton A/C/HP unit (code standard)	Tons	ENComm_Cooling	15	96.30	$111.12	–	$81.57	$30.00	$0.039	3.29	1.43	8
A/C Units	>5–11 ton A/C VRF unit that meets CEE Tier 1 >11–19 ton A/C VRF unit that meets CEE Tier 1 >19–25 ton A/C VRF unit that meets CEE Tier 1 (≥65,000 Btu/hr & ≤300,000 Btu/hr)	Standard >5–11 ton A/C/HP unit Standard >11–19 ton A/C/HP unit Standard >19–25 ton A/C/HP unit (code standard)	Tons	ENComm_Cooling	15	188.51	$217.53	–	$161.54	$75.00	$0.039	2.64	1.42	8
Heat Pump (HP) units	≤5 ton HP unit that meets CEE Tier 1 >5–11 ton HP unit that meets CEE Tier 1 >11–19 ton HP unit that meets CEE Tier 1 >19–25 ton HP unit that meets CEE Tier 1 (≤300,000 Btu/hr)	Standard ≤5 ton A/C/HP unit Standard >5–11 ton A/C/HP unit Standard >11–19 ton A/C/HP unit Standard >19–25 ton A/C/HP unit (code standard)	Tons	ENComm_Cooling	15	45.18	$52.13	–	$28.03	$30.00	$0.039	1.64	1.93	6
HP Units	>5–11 ton HP VRF unit that meets CEE Tier 1 >11–19 ton HP VRF unit that meets CEE Tier 1 >19–25 ton HP VRF unit that meets CEE Tier 1 (≥65,000 Btu/hr & ≤300,000 Btu/hr)	Standard >5–11 ton A/C/HP unit Standard >11–19 ton A/C/HP unit Standard >19–25 ton A/C/HP unit (code standard)	Tons	ENComm_Cooling	15	56.80	$65.54	–	$91.88	$75.00	$0.039	0.85	0.77	7, 8
Chillers	Air-cooled chiller condenser, IPLV 14.0 EER or higher	Standard air-cooled chiller	Tons	ENComm_Cooling	20	472.44	$696.03	–	$86.12	$80.00	$0.039	7.07	7.32	9
Chillers	Water-cooled chiller electronically operated, reciprocating and positive displacement	Standard water-cooled chiller	Tons	ENComm_Cooling	20	212.96	$313.75	–	$38.82	$40.00	$0.039	6.50	7.32	10
Economizers	Airside economizer control addition	No prior control	Ton of cooling	ENComm_Cooling	15	285.00	$328.87	–	$155.01	$100.00	$0.039	2.96	2.18	9
Economizers	Airside economizer control repair	Non-functional economizer	Ton of cooling	ENComm_Cooling	15	285.00	$328.87	–	$73.65	$50.00	$0.039	5.38	4.27	9
Evaporative coolers/ Pre-coolers	Direct evaporative cooler	Replacing standard A/C unit	Tons	ENComm_Cooling	15	386.00	$445.42	–	$364.00	$200.00	$0.039	2.07	1.29	9

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Automated Controls	EMS controls with 2 strategies	Proposed strategy not existing (retrofit system)	Tons of cooling	ENComm_Cooling	15	636.00	$733.90	–	$197.98	$125.00	$0.039	4.90	3.62	9
Automated Controls	EMS controls with 3 strategies	Proposed strategy not existing (retrofit system)	Tons of cooling	ENComm_Cooling	15	794.00	$916.22	–	$197.98	$150.00	$0.039	5.06	4.40	11
Automated Controls	EMS controls with 4 strategies	Proposed strategy not existing (retrofit system)	Tons of cooling	ENComm_Cooling	15	794.00	$916.22	–	$197.98	$175.00	$0.039	4.45	4.40	9
Automated Controls	EMS controls with 5 strategies	Proposed strategy not existing (retrofit system)	Tons of cooling	ENComm_Cooling	15	1,842.00	$2,125.54	–	$197.98	$200.00	$0.039	7.82	8.67	11
Automated Controls	EMS controls with 2 strategies	Proposed strategy not existing (new system)	Tons of cooling	ENComm_Cooling	15	418.00	$482.34	–	$162.49	$70.00	$0.039	5.59	2.97	9
Automated Controls	EMS controls with 3 strategies	Proposed strategy not existing (new system)	Tons of cooling	ENComm_Cooling	15	484.00	$558.50	–	$162.49	$80.00	$0.039	5.65	3.39	11
Automated Controls	EMS controls with 4 strategies	Proposed strategy not existing (new system)	Tons of cooling	ENComm_Cooling	15	484.00	$558.50	–	$162.49	$90.00	$0.039	5.13	3.39	9
Automated Controls	EMS controls with 5 strategies	Proposed strategy not existing (new system)	Tons of cooling	ENComm_Cooling	15	633.00	$730.44	–	$162.49	$100.00	$0.039	5.86	4.29	11
Automated Controls	Lodging room occupancy controls	Manual controls	Ton	ENComm_HVAC	11	665.00	$508.42	–	$150.61	$75.00	$0.039	5.04	3.17	9
Evaporative Pre-Cooler	Pre-cooler added to condenser	Standard air-cooled chiller unit	Ton	IPC_Evap Cooler (ky)	15	106.00	$169.37	–	$173.00	$20.00	$0.039	7.02	1.05	9
Electronically Commutated Motor (ECM)	ECM motor in HVAC application	Shaded pole or permanent split capacitor motor	Motor	ENComm_HVAC	15	724.00	$718.54	–	$140.00	$100.00	$0.039	5.60	4.70	5
Notched V-Belt in HVAC Applications	Type AX notched V-belt Type BX notched V-belt	Type A solid V-belt Type B solid V-belt	hp	ENComm_HVAC	6	54.92	$23.94	–	$7.52	$5.00	$0.039	3.35	2.73	5
Premium Windows	Low U-value, U-factor of .30 or less	Standard windows	ft^2 window area	ENComm_HVAC	25	5.89	$8.93	–	$5.92	$2.50	$0.039	3.27	1.60	9
Reflective Roofing	Adding reflective roof treatment	Non-reflective low pitch roof	ft^2 roof area	ENComm_Cooling	15	0.12	$0.13	–	$0.05	$0.05	$0.039	2.46	2.70	9
Wall Insulation	Increase to R11 min. insulation	Insulation level, R2.5 or less	ft^2 wall area	ENComm_HVAC	25	0.41	$0.63	–	$0.66	$0.40	$0.039	1.51	1.02	9
Wall Insulation	Increase to R19 min. insulation	Insulation level, R2.5 or less	ft^2 wall area	ENComm_HVAC	25	0.47	$0.71	–	$0.66	$0.55	$0.039	1.24	1.14	9
Computers	PC network power management	No central control software in place	Unit	ENComm_Office	4	135.00	$33.21	–	$12.00	$10.00	$0.039	2.18	2.12	9

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Laundry Machines	High efficiency washer	Standard washer, electric HW	Unit	ENComm_WtrHtr	10	756.00	$452.14	–	$200.00	$125.00	$0.039	2.93	2.17	9
Stock Tank/ Fountain	Energy free freeze-resistant stock tank	Thermostatically controlled electric resistance element freeze protection	Unit	Comm_Agriculture	10	1,176.00	$979.19	–	$431.76	$100.00	$0.039	6.71	2.26	12
Residential-Type Electric Water Heater	EF 0.94 or higher, 25–54 gallon EF 0.95 or higher, 45–54 gallon EF 0.93 or higher, 55–74 gallon EF 0.92 or higher, 75–99 gallon EF 0.85 or higher, 100–119 gallon	Standard electric water heater	Unit	ENComm_WtrHtr	13	154.14	$116.16	–	$66.22	$50.00	$0.039	2.07	1.77	13
Commercial-Type Electric Water Heater	25–34 gallon, standby loss 157 or lower 35–44 gallon, standby loss 185 or lower 45–54 gallon, standby loss 201 or lower 55–74 gallon, standby loss 238 or lower 75–99 gallon, standby by loss 249 or lower 100–119 gallon, standby loss 287 or lower	Standard electric water heater	Unit	ENComm_WtrHtr	13	68.17	$51.37	–	$29.00	$20.00	$0.039	2.27	1.78	14
Commercial Showerhead, Electric Water Heat	2.0 gpm or less installed in health club/fitness business	Showerhead using 2.2 gpm or greater	Unit	ENComm_WtrHtr	10	2,431.00	$1,453.91	–	$13.00	$15.00	$0.039	13.25	14.84	15
Commercial Showerhead, Electric Water Heat	2.0 gpm or less installed in commercial business (non-health club/fitness business)	Showerhead using 2.2 gpm or greater	Unit	ENComm_WtrHtr	10	129.00	$77.15	–	$13.00	$9.00	$0.039	5.50	4.71	15
Smart Power Strips	Load-sensing, motion-sensing, or timer-controlled power strip	No exisiting load or motion-sensing, or timer-controlled power strip	Power strip	ENComm_Office	4	118.00	$29.03	–	$21.00	$10.00	$0.039	1.99	1.25	16
Standby Generator Engine Block Heater	Stationary pump-driven circulating block heater; must operate continuously	Thermosiphon electric resistance circulating block heater <3 kW	Unit	IPC_Engine Block	10	3,415.00	$1,537.79	–	$1,287.31	$200.00	$0.039	4.62	1.19	5

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Standby Generator Engine Block Heater	Stationary pump-driven circulating block heater; must operate continuously	Thermosiphon electric resistance circulating block heater 3 kW or greater	Unit	IPC_Engine Block	10	17,524.00	$7,891.14	–	$3,090.77	$1,500.00	$0.039	3.62	2.30	5
Refrigeration	Add refrigeration line insulation	No insulation present	Linear ft	ENComm_ Refrigeration	11	9.75	$6.51	–	$4.46	$2.00	$0.039	2.73	1.48	9
Refrigeration	Install auto-closer—walk-in	No/damaged auto-closer, low temp	Door	ENComm_ Refrigeration	8	2,547.00	$1,271.15	–	$139.32	$125.00	$0.039	5.67	5.86	9
Refrigeration	Install auto-closer—reach-in	Damaged auto-closer, low temp	Door	ENComm_ Refrigeration	8	560.00	$279.48	–	$139.32	$100.00	$0.039	2.29	1.91	9
Refrigeration	Install auto-closer—walk-in	No/damaged auto-closer, med. temp	Door	ENComm_ Refrigeration	8	575.00	$286.97	–	$139.32	$100.00	$0.039	2.34	1.95	9
Refrigeration	Install auto-closer—reach-in	Damaged auto-closer, med. temp	Door	ENComm_ Refrigeration	8	373.00	$186.16	–	$139.32	$70.00	$0.039	2.20	1.33	9
Refrigeration	Add anti-sweat heat controls	Low/med. temp case w/out controls	Linear ft	ENComm_ Refrigeration	8	208.00	$103.81	–	$40.00	$40.00	$0.039	2.16	2.37	9
Evaporative Fans	Add evaporative fan controls	Low or med. temp. walk-in or reach-in with no controls	Fan	ENComm_ Refrigeration	15	408.00	$355.17	–	$161.74	$75.00	$0.039	3.91	2.20	9
Evaporative Fans	Install ECM/PSC evap fan motor	Med. or low temp. walk-in	Motor	ENComm_ Refrigeration	15	593.00	$516.21	–	$296.78	$100.00	$0.039	4.19	1.78	9
Evaporative Fans	Install ECM/PSC evap fan motor	Med. or low temp. reach-in	Motor	ENComm_ Refrigeration	15	318.00	$276.82	–	$84.45	$60.00	$0.039	3.82	3.14	9
Floating Head/Suction Pressures	Head pressure controller	Standard head pressure control	Horsepower	ENComm_ Refrigeration	16	440.00	$407.55	–	$272.60	$80.00	$0.039	4.20	1.55	9
Floating Head/Suction Pressures	Suction pressure controller	Standard suction pressure control	Horsepower	ENComm_ Refrigeration	16	104.00	$96.33	–	$86.91	$20.00	$0.039	4.00	1.16	9
Demand Controlled Kitchen Ventilation Exhaust Hood	VFD installed on kitchen exhaust and/or makeup air fan	Kitchen hood with constant speed ventilation	HP	ENComm_Cooking	15	3,838.00	$3,464.54	–	$2,000.00	$200.00	$0.039	9.91	1.77	5
Vending Machines	Non-cooled snack control	Vending machine with no sensor	Sensor	ENComm_Misc	5	387.00	$121.79	–	$75.00	$50.00	$0.039	1.87	1.49	9
Commercial kitchen equipment	ENERGY STAR® undercounter (residential style) dishwasher	Standard dishwasher	Machine	ENComm_Misc	12	2,210.00	$1,593.82	$245.73	$232.00	$200.00	$0.039	5.57	6.28	17

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Commercial kitchen equipment	ENERGY STAR commercial dishwasher	Standard commercial dishwasher	Machine	ENComm_Misc	12	5,561.00	$4,010.51	$662.72	$3,978.00	$500.00	$0.039	5.60	1.21	17
Commercial kitchen equipment	ENERGY STAR listed electric combination oven (6–14 pans)	Standard electric oven	Oven	ENComm_Cooking	10	12,999.00	$8,269.44	–	$1,632.82	$1,100.00	$0.039	5.15	4.25	18
Commercial kitchen equipment	ENERGY STAR listed electric combination oven (15–20 pans)	Standard electric oven	Oven	ENComm_Cooking	10	17,877.00	$11,372.62	–	$446.11	$300.00	$0.039	11.41	10.95	18
Commercial kitchen equipment	ENERGY STAR listed electric convection oven	Standard electric oven	Oven	ENComm_Cooking	10	1,672.00	$1,063.66	–	$923.04	$300.00	$0.039	2.91	1.18	19
Commercial kitchen equipment	ENERGY STAR listed electric fryer	Standard fryer	Fryer	ENComm_Cooking	8	2,671.00	$1,382.96	–	$788.29	$400.00	$0.039	2.74	1.70	20
Commercial kitchen equipment	ENERGY STAR listed electric steamer—3 pan	Standard steamer	Steamer	ENComm_Cooking	9	21,470.00	$12,409.31	–	$361.17	$80.00	$0.039	13.54	11.40	21
Commercial kitchen equipment	ENERGY STAR listed electric steamer—4 pan	Standard steamer	Steamer	ENComm_Cooking	9	28,564.00	$16,509.52	–	$137.86	$100.00	$0.039	13.61	14.52	21
Commercial kitchen equipment	ENERGY STAR listed electric steamer—5 pan	Standard steamer	Steamer	ENComm_Cooking	9	35,659.00	$20,610.31	–	$(270.07)	$150.00	$0.039	13.39	20.25	21
Commercial kitchen equipment	ENERGY STAR listed electric steamer—6 pan	Standard steamer	Steamer	ENComm_Cooking	9	42,754.00	$24,711.11	–	$59.79	$175.00	$0.039	13.42	15.75	21
Commercial kitchen equipment	ENERGY STAR listed electric steamer—10 pan or larger	Standard steamer	Steamer	ENComm_Cooking	9	71,133.00	$41,113.70	–	$4,094.23	$200.00	$0.039	13.83	6.59	21
Variable-speed controls	Variable-speed drive on HVAC system applications: • Chilled water pumps • Condenser water pumps • Cooling tower fans	Single speed HVAC system fan/pump	HP	ENComm_HVAC	15	268.00	$265.98	–	$165.33	$60.00	$0.039	3.78	1.66	9
Variable-speed controls	Variable-speed drive on HVAC system applications: • Supply • Return • Outside air • Make-up air • Hot water pumps	Single speed HVAC system fan/pump	HP	ENComm_HVAC	15	996.00	$988.48	–	$142.05	$100.00	$0.039	7.12	6.01	9

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Variable-speed controls	Variable-speed drive (VSD) on potato and onion storage shed ventilation	No existing VSD	HP	IPC_Onion Potato VSD	10	1,993.00	$1,017.52	–	$300.00	$200.00	$0.039	3.66	2.96	22

[a] Average measure life.
[b] Estimated kWh savings measured at the customer's meter, excluding line losses.
[c] Sum of NPV of avoided cost. Based on end-use load shape, measure life, savings including line losses, and alternative costs by pricing period as provided in the 2013 IRP. TRC test benefit calculation includes 10% conservation adder from the Northwest Power Act.
[d] Incremental participant cost prior to customer incentives.
[e] Average program administration and overhead costs to achieve each kWh of savings. Calculated from 2016 actuals.
[f] UC Ratio = (NPV Avoided Costs) / ((Admin Cost/kWh * kWh Savings) + Incentives)
[g] TRC Ratio = ((NPV Avoided Costs * 110%) + NEB) / ((Admin Cost/kWh * kWh Savings) + Incentives + (Incremental Participant Cost - Incentives))
[1] Evergreen Consulting Group, LLC. Idaho Power Lighting Tool. 2016.
[2] Idaho Power *Demand-Side Management Potential Study* by Nexant, Inc. IPC DSM Potential—Commercial Model 081209.xlsm. 2009.
[3] RTF. ComGroceryDisplayCaseLEDs_v2_2 and ComGroceryCaseLEDs_v1.1.xls. 2013. T12 to LED. Averaged the measures for less than 4 watts/linear foot (W/ln ft) and 4–8.5 W/ln ft.
[4] RTF. ComGroceryDisplayCaseLEDs_v2_2 and ComGroceryCaseLEDs_v1.1.xls. 2013. T8 to LED. Averaged the measures for less than 4 W/ln ft and 4–8.5 W/ln ft.
[5] IPC engineering analysis.
[6] Idaho Power TRM prepared by ADM Associates, Inc. 2015. Weighted average of 0–25 ton units.
[7] Measure not cost-effective. Measure to be monitored in 2017. Measure included in the program to increase participation in a cost-effective program and to encourage adoption of higher-efficiency equipment.
[8] Idaho Power TRM prepared by ADM Associates, Inc. 2015. Weighted average of 5–25 ton units.
[9] Idaho Power TRM prepared by ADM Associates, Inc. 2015.
[10] Idaho Power TRM prepared by ADM Associates, Inc. 2015. Averaged water cooled chillers.
[11] Idaho Power TRM prepared by ADM Associates, Inc. 2016. Calculated from TRM spreadsheets.
[12] RTF. AgStockWateringTank_v2_0.xlsm. 2013. Simple average of heating zones 1, 2, & 3.
[13] RTF. ComDHWEfficientTank_v3_0.xlsm. 2014. Simple average of residential style water heaters.
[14] RTF. ComDHWEfficientTank_v3_0.xlsm. 2014. Simple average of commercial style water heaters.
[15] RTF. ComDHWShowerhead_v3_0.xlsm. 2013.
[16] RTF. ComSmartPlugPower_v3_1.xlsm. Updated incremental costs based on IPC research.
[17] Idaho Power TRM prepared by ADM Associates, Inc. 2015. NEBs from water savings from RTF. ComDishwasher_v1_2.xlsm. 2012.
[18] RTF. ComCookingCombinationOven_v2_0.xlsm. 2013.
[19] RTF. ComCookingConvectionOven_v2_0.xlsm. Simple average of half and full-size ovens. 2013.
[20] RTF. ComCookingFryer_v2_0.xlsm. 2013.
[21] RTF. ComCookingSteamer_v2_0.xlsm. 2013.
[22] RTF. AgPotatoOnionShedVFD_v3_0.xlsm. IPC costs.

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Irrigation Efficiency Rewards

Segment: Irrigation
2016 Program Results

Cost Inputs			Ref
Program Administration	$	365,041	
Program Incentives		2,007,311	I
Total UC	**$**	**2,372,352**	P
Measure Equipment and Installation (Incremental Participant Cost)	$	7,797,164	M

Summary of Cost-Effectiveness Results					
Test		**Benefit**		**Cost**	**Ratio**
UC Test	$	11,753,203	$	2,372,352	4.95
TRC Test		26,203,681		8,162,206	3.21
RIM Test		11,753,203		8,740,273	1.34
PCT		21,650,388		7,797,164	2.78

Net Benefit Inputs (NPV)				Ref
Resource Savings				
2016 Annual Gross Energy (kWh)	15,673,513			
NPV Cumulative Energy (kWh)	113,632,386	$	11,753,203	S
10% Credit (Northwest Power Act)			1,175,320	
Total Electric Savings		**$**	**12,928,524**	A
Participant Bill Savings				
NPV Cumulative Participant Bill Savings		$	6,367,920	B
Other Benefits				
Non-Utility Rebates/Incentives		$	–	NUI
NEBs		$	13,275,157	NEB

Benefits and Costs Included in Each Test		
UC Test	= S * NTG	= P
TRC Test	= (A + NUI + NEB) * NTG	= P + ((M-I) * NTG)
RIM Test	= S * NTG	= P + (B * NTG)
PCT	= B + I + NUI + NEB	= M

Assumptions for Levelized Calculations	
Discount Rate	
Nominal (WACC)	6.77%
Real ((1 + WACC) / (1 + Escalation)) – 1	3.66%
Escalation Rate	3.00%
Net-to-Gross (NTG)	100%
Minimum NTG Sensitivity	20%
Average Customer Segment Rate/kWh	$0.058
Line Losses	9.60%

Notes: Energy savings are combined for projects under the Custom and Menu program. Savings under each Custom project is unique and individually calculated and assessed.
NEBs including yield, labor, and other benefits reported by the customer.
Green Rewind initiative is available to agricultural, commercial, and industrial customers. Agricultural motor rewinds are paid under Irrigation Efficiency Rewards, but the savings are not included in the program cost-effectiveness.
Green Rewind savings are included in the sector cost-effectiveness.

Year: 2016 **Program**: Irrigation Efficiency Rewards **Market Segment**: Irrigation **Program Type**: Energy Efficiency

						Benefit			Cost			B/C Tests		
Measure Name[a]	Measure Descriptions	Replacing	Measure Unit	End Use	Measure Life (yrs)[b]	Annual Gross Energy Savings (kWh/yr)[c]	NPV Avoided Costs[d]	NEB	Gross Incremental Participant Cost[e]	Incentive/ Unit	Admin Cost ($/kWh)[f]	UC Ratio[g]	TRC Ratio[h]	Sources
Nozzle Replacement	New flow-control-type nozzles replacing existing brass nozzles or worn out flow control nozzles of same flow rate or less	Brass nozzles or worn out flow control nozzles of same flow rate or less	Unit	IPC_Irrigation	4	40.60	$15.77	–	$6.50	$1.50	$0.023	6.48	2.33	1
Nozzle Replacement	New nozzles replacing existing worn nozzles of same flow rate or less	Worn nozzle of same flow rate or less	Unit	IPC_Irrigation	4	40.60	$15.77	–	$2.43	$0.25	$0.023	13.32	5.16	1
Sprinklers	Rebuilt or new brass impact sprinklers		Unit	IPC_Irrigation	5	28.26	$13.63	–	$14.13	$2.75	$0.023	4.01	1.01	1
Levelers	Rebuilt or new wheel line levelers		Unit	IPC_Irrigation	5	41.76	$20.14	–	$3.72	$0.75	$0.023	11.77	4.73	1
Sprinklers	Center pivot/linear move: Install new sprinkler package on an existing system		Unit	IPC_Irrigation	5	100.19	$48.32	–	$29.26	$8.00	$0.023	4.69	1.68	1
Gasket Replacement	New gaskets for hand lines, wheel lines, or portable mainline		Unit	IPC_Irrigation	5	170.00	$81.99	–	$4.49	$1.00	$0.023	16.70	10.74	1
Drain Replacement	New drains, hand lines, wheel lines, or portable mainline		Unit	IPC_Irrigation	5	176.25	$85.00	–	$15.67	$3.00	$0.023	12.05	4.74	1
Hub Replacement	New wheel line hubs		Unit	IPC_Irrigation	10	73.06	$66.76	–	$57.30	$12.00	$0.023	4.88	1.25	1
New Goose Necks	New goose neck with drop tube or boomback		Outlet	IPC_Irrigation	15	14.50	$18.51	–	$4.78	$1.00	$0.023	13.88	3.98	1
Pipe Repair	Cut and pipe press or weld repair of leaking hand lines, wheel lines, and portable mainline		Joint	IPC_Irrigation	8	84.48	$63.35	–	$20.63	$8.00	$0.023	6.37	3.09	1
Gasket Replacement	New center pivot base boot gasket		Unit	IPC_Irrigation	8	1,456.40	$1,092.17	–	$286.50	$125.00	$0.023	6.89	3.75	1

[a] Available measures in the Irrigation Efficiency Rewards Menu Incentive Option. For the Custom Incentive Option, projects are thoroughly reviewed by Idaho Power staff.
[b] Average measure life.
[c] Estimated peak demand reduction measured at the customer's meter, excluding line losses.
[d] Sum of NPV of avoided cost. Based on end-use load shape, measure life, savings including line losses, and alternative costs by pricing period as provided in the 2013 IRP. TRC test benefit calculation includes 10% conservation adder from the Northwest Power Act.
[e] Incremental participant cost prior to customer incentives.
[f] Average program administration and overhead costs to achieve each kWh of savings. Calculated from 2016 actuals.
[g] UC Ratio = (NPV Avoided Costs) / ((Admin Cost/kWh * kWh Savings) + Incentives)
[h] TRC Ratio = ((NPV Avoided Costs * 110%) + NEB) / ((Admin Cost/kWh * kWh Savings) + Incentives + (Incremental Participant Cost - Incentives))
[1] RTF. AgIrrigationHardware_v3.xlsm. 2013. Weighted average of western Idaho, eastern Washington and Oregon, and eastern and southern Idaho.

Year: 2016 **Program**: Irrigation Efficiency Rewards—Green Motors **Market Segment**: Irrigation **Program Type**: Energy Efficiency

						Benefit			Cost			B/C Tests		
Measure Name	Measure Descriptions	Replacing	Measure Unit	End Use	Measure Life (yrs)[a]	Annual Gross Energy Savings (kWh/yr)[b]	NPV Avoided Costs[c]	NEB	Gross Incremental Participant Cost[d]	Incentive/ Unit	Admin Cost ($/kWh)[e]	UC Ratio[f]	TRC Ratio[g]	Source
Green Motors Program Rewind: Motor size 15 HP	Green Motors Program Rewind: Motor size 15 HP	Standard rewind practice	Motor	IPC_Irrigation	18	317.00	$471.57	–	$153.77	$30.00	$0.050	10.29	3.06	1
Green Motors Program Rewind: Motor size 20 HP	Green Motors Program Rewind: Motor size 20 HP	Standard rewind practice	Motor	IPC_Irrigation	18	425.00	$632.24	–	$171.56	$40.00	$0.050	10.32	3.61	1
Green Motors Program Rewind: Motor size 25 HP	Green Motors Program Rewind: Motor size 25 HP	Standard rewind practice	Motor	IPC_Irrigation	17	595.00	$844.72	–	$196.01	$50.00	$0.050	10.59	4.12	1
Green Motors Program Rewind: Motor size 30 HP	Green Motors Program Rewind: Motor size 30 HP	Standard rewind practice	Motor	IPC_Irrigation	17	640.00	$908.60	–	$215.29	$60.00	$0.050	9.88	4.04	1
Green Motors Program Rewind: Motor size 40 HP	Green Motors Program Rewind: Motor size 40 HP	Standard rewind practice	Motor	IPC_Irrigation	17	746.00	$1,059.09	–	$263.09	$80.00	$0.050	9.03	3.88	1
Green Motors Program Rewind: Motor size 50 HP	Green Motors Program Rewind: Motor size 50 HP	Standard rewind practice	Motor	IPC_Irrigation	17	802.00	$1,138.59	–	$291.24	$100.00	$0.050	8.13	3.78	1
Green Motors Program Rewind: Motor size 60 HP	Green Motors Program Rewind: Motor size 60 HP	Standard rewind practice	Motor	IPC_Irrigation	20	765.00	$1,235.55	–	$343.49	$120.00	$0.050	7.81	3.56	1
Green Motors Program Rewind: Motor size 75 HP	Green Motors Program Rewind: Motor size 75 HP	Standard rewind practice	Motor	IPC_Irrigation	20	788.00	$1,272.70	–	$371.28	$150.00	$0.050	6.72	3.41	1
Green Motors Program Rewind: Motor size 100 HP	Green Motors Program Rewind: Motor size 100 HP	Standard rewind practice	Motor	IPC_Irrigation	20	1,040.00	$1,679.71	–	$460.58	$200.00	$0.050	6.67	3.60	1
Green Motors Program Rewind: Motor size 125 HP	Green Motors Program Rewind: Motor size 125 HP	Standard rewind practice	Motor	IPC_Irrigation	20	1,157.00	$1,868.67	–	$517.27	$250.00	$0.050	6.07	3.57	1
Green Motors Program Rewind: Motor size 150 HP	Green Motors Program Rewind: Motor size 150 HP	Standard rewind practice	Motor	IPC_Irrigation	20	1,376.00	$2,222.38	–	$576.19	$300.00	$0.050	6.03	3.79	1
Green Motors Program Rewind: Motor size 200 HP	Green Motors Program Rewind: Motor size 200 HP	Standard rewind practice	Motor	IPC_Irrigation	20	1,821.00	$2,941.10	–	$693.65	$400.00	$0.050	5.99	4.12	1
Green Motors Program Rewind: Motor size 250 HP	Green Motors Program Rewind: Motor size 250 HP	Standard rewind practice	Motor	IPC_Irrigation	20	2,823.00	$4,559.44	–	$891.52	$500.00	$0.050	7.11	4.86	1
Green Motors Program Rewind: Motor size 300 HP	Green Motors Program Rewind: Motor size 300 HP	Standard rewind practice	Motor	IPC_Irrigation	20	3,370.00	$5,442.90	–	$901.16	$600.00	$0.050	7.08	5.60	1
Green Motors Program Rewind: Motor size 350 HP	Green Motors Program Rewind: Motor size 350 HP	Standard rewind practice	Motor	IPC_Irrigation	20	3,929.00	$6,345.74	–	$944.51	$700.00	$0.050	7.08	6.12	1

						Benefit			Cost			B/C Tests		
Measure Name	Measure Descriptions	Replacing	Measure Unit	End Use	Measure Life (yrs)[a]	Annual Gross Energy Savings (kWh/yr)[b]	NPV Avoided Costs[c]	NEB	Gross Incremental Participant Cost[d]	Incentive/ Unit	Admin Cost ($/kWh)[e]	UC Ratio[f]	TRC Ratio[g]	Source
Green Motors Program Rewind: Motor size 400 HP	Green Motors Program Rewind: Motor size 400 HP	Standard rewind practice	Motor	IPC_Irrigation	20	4,456.00	$7,196.90	–	$1,054.93	$800.00	$0.050	7.04	6.20	1
Green Motors Program Rewind: Motor size 450 HP	Green Motors Program Rewind: Motor size 450 HP	Standard rewind practice	Motor	IPC_Irrigation	20	5,003.00	$8,080.36	–	$1,153.12	$900.00	$0.050	7.03	6.33	1
Green Motors Program Rewind: Motor size 500 HP	Green Motors Program Rewind: Motor size 500 HP	Standard rewind practice	Motor	IPC_Irrigation	20	5,567.00	$8,991.28	–	$1,245.76	$1,000.00	$0.050	7.03	6.49	1
Green Motors Program Rewind: Motor size 600 HP	Green Motors Program Rewind: Motor size 600 HP	Standard rewind practice	Motor	IPC_Irrigation	20	6,193.00	$10,002.33	–	$1,835.78	$1,200.00	$0.050	6.63	5.13	1
Green Motors Program Rewind: Motor size 700 HP	Green Motors Program Rewind: Motor size 700 HP	Standard rewind practice	Motor	IPC_Irrigation	20	7,195.00	$11,620.67	–	$2,002.84	$1,400.00	$0.050	6.60	5.41	1
Green Motors Program Rewind: Motor size 800 HP	Green Motors Program Rewind: Motor size 800 HP	Standard rewind practice	Motor	IPC_Irrigation	20	8,205.00	$13,251.92	–	$2,222.20	$1,600.00	$0.050	6.59	5.54	1
Green Motors Program Rewind: Motor size 900 HP	Green Motors Program Rewind: Motor size 900 HP	Standard rewind practice	Motor	IPC_Irrigation	20	9,211.00	$14,876.71	–	$2,449.87	$1,800.00	$0.050	6.58	5.62	1
Green Motors Program Rewind: Motor size 1,500 HP	Green Motors Program Rewind: Motor size 1,500 HP	Standard rewind practice	Motor	IPC_Irrigation	20	12,681.00	$20,481.12	–	$3,612.90	$3,000.00	$0.050	4.51	4.37	1

[a] Average measure life.
[b] Estimated kWh savings measured at the customer's meter, excluding line losses.
[c] Sum of NPV of avoided cost. Based on end-use load shape, measure life, savings including line losses, and alternative costs by pricing period as provided in the 2013 IRP. TRC test benefit calculation includes 10% conservation adder from the Northwest Power Act.
[d] Incremental participant cost prior to customer incentives.
[e] Average program administration and overhead costs to achieve each kWh of savings. Calculated from 2016 actuals.
[f] UC Ratio = (NPV Avoided Costs) / ((Admin Cost/kWh * kWh Savings) + Incentives)
[g] TRC Ratio = ((NPV Avoided Costs * 110%) + NEB) / ((Admin Cost/kWh * kWh Savings) + Incentives + (Incremental Participant Cost - Incentives))
[1] RTF. AgMotorsRewind_v2_0.xlsm. 2013.

DEMAND-SIDE MANAGEMENT

IDAHO POWER®
An IDACORP Company

2016 Annual Report

SUPPLEMENT 2: EVALUATION

MARCH 15 • 2017

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TABLE OF CONTENTS

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EVALUATION AND RESEARCH SUMMARY

Idaho Power considers program evaluation an essential component of its demand-side management (DSM) operational activities. The company contracts with third-party contractors to conduct impact, process, and other evaluations on a scheduled and as-required basis.

Third-party contracts are generally awarded using a competitive bid process managed by Idaho Power's Strategic Sourcing department. In some cases, research and analysis is conducted internally and managed by Idaho Power's Research and Analysis team within the Customer Relations and Energy Efficiency (CR&EE) department. Third-party evaluations are specifically managed by the company's energy efficiency evaluator.

Idaho Power uses industry-standard protocols for its internal and external evaluation efforts, including the *National Action Plan for Energy Efficiency—Model Energy Efficiency Program Impact Evaluation Guide*, the *California Evaluation Framework, the International Performance Measurement and Verification Protocol* (IPMVP), the *Database for Energy Efficiency Resources*, and the Regional Technical Forum's (RTF) evaluation protocols.

The company also supports regional and national studies to promote the ongoing cost-effectiveness of programs, the validation of energy savings and demand reduction, and the efficient management of its programs. Idaho Power considers primary and secondary research, cost-effectiveness analyses, potential assessments, impact and process evaluations, industry best practice analyses, and customer surveys as important resources in providing accurate and transparent program savings estimates. Recommendations and findings from evaluations and research are used to continuously refine Idaho Power's DSM programs.

In 2016, Idaho Power contracted with Leidos Engineering (Leidos) to conduct four program impact evaluations and two program process evaluations. Impact evaluations were performed for the Retrofit (Easy Upgrades), New Construction (Building Efficiency), Rebate Advantage, and Irrigation Efficiency Rewards programs. Process evaluations were performed for the Rebate Advantage and Irrigation Efficiency Rewards programs. CLEAResult Consulting, Inc. (CLEAResult) conducted impact evaluations of the A/C Cool Credit, and Flex Peak programs' 2016 demand response events.

Throughout 2016, Idaho Power administered several surveys regarding energy efficiency programs to measure customer satisfaction. Some surveys were administered by a third-party contractor; other surveys were administered by Idaho Power either through traditional means or through the company's em**powered** community online survey.

Final reports from all evaluations, research, and surveys completed in 2016 and an evaluation schedule are provided in *Supplement 2: Evaluation*.

EVALUATION PLAN

Customer Relations and Energy Efficiency 2012–2017 Program Evaluation Plans

Customer Relations and Energy Efficiency 2012–2017 Program Evaluation Plan

	2012			2013			2014			2015			2016			2017		
Residential Programs	Impact	Process	Other	Impact	Process	Other	Impact	Process	Other	Impact	Process	Other	Impact	Process	Other	Impact	Process	Other
Ductless Heat Pump Pilot										✓	✓							
Educational Distributions																		✓
Energy Efficient Lighting					✓		✓											
Energy House Calls																		✓
ENERGY STAR® Homes Northwest					✓		✓											
Fridge and Freezer Recycling Program (See ya later, refrigerator®)	✓									✓	✓				✓			
Heating & Cooling Efficiency Program	✓				✓											✓	✓	
Home Energy Audit								✓								✓		
Home Improvement Program										✓	✓							
Multi-Family Energy Savings Program																		
Rebate Advantage													✓	✓				
Residential Energy Efficiency Education Initiative																		
Shade Tree Project								✓										✓
Simple Steps, Smart Savings™[c]																		
Weatherization Assistance for Qualified Customers	✓				✓				✓									✓
Weatherization Solutions for Eligible Customers	✓				✓				✓									✓
Commercial/Industrial Program																		
Custom (Custom Efficiency)							✓	✓									✓	
New Construction (Building Efficiency)	✓												✓				✓	
Retrofits (Easy Upgrades)	✓				✓								✓				✓	
Irrigation Program																		
Irrigation Efficiency Rewards			✓	✓					✓				✓	✓				
Demand Response Programs																		
A/C Cool Credit		✓	✓			✓	✓			✓			✓					✓
Flex Peak Program			✓		✓	✓				✓			✓					✓
Irrigation Peak Rewards			✓			✓	✓			✓								✓

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ENERGY EFFICIENCY ADVISORY GROUP MINUTES

The following pages include minutes from EEAG meetings held on February 18, May 5, August 30, and November 3, 2016.

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Energy Efficiency Advisory Group (EEAG)
Notes dated February 18, 2016

Present:

Catherine Chertudi–City of Boise, Public Works Dept.
Ken Robinette–South Central Comm. Action Partnership
Stacey Donohue–Idaho Public Utilities Commission
Diego Rivas–Northwest Energy Coalition
Tami White–Idaho Power
Michael Breish-Public Utility Commission of Oregon (via phone)
Tina Jayaweera-Northwest Power & Conservation Council (via phone)
Don Strickler–Simplot
Lynn Young–AARP
John Chatburn–Office of Energy Resources
Sid Erwin–Idaho Irrigation Pumpers Association
Ben Otto-Idaho Conservation League
Quentin Nesbitt*–Idaho Power

Not Present:

Kent Hanway-CSHQA
Name–Company
Name–Company

Guests and Presenters*:

Pete Pengilly*–Idaho Power
Roger Lawless*–Idaho Power
Shelley Martin–Idaho Power
Darrel Anderson*–Idaho Power
Nick Bengston*–Clearesult
Billie McWinn–Idaho Power
Bill Shawver*–Idaho Power
Roberta Rene*-Idaho Power
Todd Greenwell-Idaho Power
Lynn Tominaga-Idaho Irrigation Pumpers Association
Cheryl Paoli-Idaho Power
Amanda Richards-Honeywell
Mary Hacking-Idaho Power
Chellie Jensen-Idaho Power
Robert Everett-Idaho Power
Connie Aschenbrenner-Idaho Power
Shirley Lindstrom-Northwest Power & Conservation Council
Cory Read–Idaho Power
Theresa Drake–Idaho Power
Andrea Simmonsen–Idaho Power
Jennifer Pope–Office of Energy Resources
Donn English–Idaho Public Utility Commission
Gary Grayson-Idaho Power
Mindi Shodeen-Idaho Power
Tracey Burtch*-Idaho Power
Denise Humphreys-Idaho Power
Brenda Tominaga-Idaho Irrigation Pumpers Association
Randy Thorn-Idaho Power
Pete Richardson-ICIP
Shelley Martin-Idaho Power
Sheree Willhite-Idaho Power
Chris Pollow-Idaho Power
Zeke VanHooser-Idaho Power

Meeting Facilitator:

Rosemary Curtin-(RBCI)

Recording Secretary:

Shawn Lovewell (Idaho Power) with Kathy Yi (Idaho Power)

Meeting Convened at 9:31am

Rosemary started the meeting with introductions of members and guests.

9:33am-Comments—Darrel Anderson, President and CEO, Idaho Power

Darrel started his comments with a safety discussion. He reminded everyone of the new traffic patterns downtown and urged everyone to be safe when using crosswalks. He thanked the members of EEAG for their time and guidance throughout the years. Darrel noted that Idaho Power is celebrating its centennial this year and that things have changed over Idaho Power's long history noting that, as an example, this conference room is now filled with employees and stakeholders that are trying to encourage Idaho Power customers to use energy wisely through cost-effective efficiency. Darrel said that the company is benefitted by having EEAG as a resource that challenges the company and brings new thoughts and ideas about energy efficiency. He spoke of demand response and how it worked just as expected this year. Darrel then asked the EEAG a question, "When energy efficiency is viewed as a resource similar to the way we view a power plant, shouldn't it be treated the same so that the company can at least recover dollar for dollar that it spends, or perhaps even earn a return?"

Darrel showed the group a copy of the cookbook that was designed and printed for the centennial and asked that each EEAG member receive a copy before they leave. He also shared a personal story about changing all the lights in his home to LED's. He then asked the group for any comments or questions and received these comments.

- A member has been very impressed with how Idaho Power presents information at offsite events. As a customer and consumer it is appreciated.

- In these meetings the benefit of using success stories and how effective they are was discussed. What could be a better success story than the CEO of Idaho Power changing out the lights in his home?

Darrel thanked the group again for their participation in EEAG.

9:47-November Meeting Notes-Announcements

There were no comments or questions on the November meeting notes.

Stacey gave an update on the Memorandum of Understanding (MOU). The staff of the Idaho Public Utilities Commission (IPUC) has decided not to issue a memo outlining staff's expectations for prudency review, which is a change from its decision back in November.

There were questions and discussion about:

- As a stakeholder it is hard to know the principals without having something in writing. To make sure everyone is on the same page, it would be good to have a document. Stacey stated that she could appreciate that as an intervener; however the document would be between commission staff and utilities. The language in that document has been in staff comments, intervener, and even commission comments. There shouldn't be any surprises because the parties involved know the expectations and how programs should be administered. That is the reason a new document will not be published.

Theresa Drake addressed the group regarding employee development changes. Billie McWinn who had been the residential leader in 2015, is making a lateral move, still as a program leader, but will now be focused on non-

Rider projects such as net metering, Green Power and special projects like community solar. Theresa then introduced Roger Lawless as the new residential leader who joined the department in January. His experience includes 13 years in the customer service organization with the last seven of those years as a leader. Roger then gave a brief overview of his background to the group.

9:55am-2015 Financials/Portfolio Results—Pete Pengilly

Pete reviewed the 2015 preliminary DSM expenses to be included in Appendix 1&2 of the Demand-Side-Management 2015 Annual Report.

Key points presented:

- Appendix 1 highlights the Idaho and Oregon Rider balances and the Northwest Energy Efficiency Alliance (NEEA) payment amounts for 2015. Appendix 2 highlights 2015 expenses and preliminary energy savings by program.

- The presentation highlighted current Idaho and Oregon Rider balance as of January 2016, demand response results comparison from 2004-2015, energy efficiency savings from 2002-2015, and cumulative Integrated Resource Plan (IRP) targets & Idaho Power savings from 2002-2015.

There were questions and discussion about:

- Does Idaho Power have plans to address the increasing Rider balance amount? Tami answered that there are no plans at this point to change the Rider percentage. In the past when the company collected a smaller percentage, the Rider had a negative balance and that didn't prohibit the company from pursuing cost-effective energy efficiency. The Rider percentage was then increased and the demand response incentives were moved to another account and the Rider balance moved to a positive balance.

- The company needs to make sure there is enough money in the Rider to market its programs to customer, but not so much money that it appears that the company is holding onto that money.

- The company has done a good job with the Rider and thank you for clarifying how demand response is not actually paid for from that account. It does appear that the balance seems to be continually trending upward.

- Are the savings numbers from NEEA for Idaho Power's service area and is that what they report? Pete answered that some of it is and some of it is allocated. NEEA is moving to geographically assigned savings. Some of it is from residential and commercial but not much from the industrial customers.

10:28am-2015 Commercial Program Performance—Quentin Nesbitt

Quentin highlighted savings, participation, and updates for the commercial, industrial, and irrigation programs. He presented the comparisons for the years 2013, 2014, and 2015.

Key points presented:

- Due to some large projects being finalized for Building Efficiency, it had the largest savings increase in 2015 over 2013 and 2014. Construction is on the rise in Boise and Twin Falls. The Easy Upgrades program savings for 2015 have surpassed both 2013 and 2014. Several small business approaches were reviewed and it has been determined there are currently quite a few small businesses that participate in the current program and other approaches reviewed would cause confusion and customer issues with why are we doing something different for some businesses and not all. There will be a continued effort to make

the current offering easy for all customers to participate in. The Irrigation Efficiency program is slightly over target goals for 2015. Commodity prices are down which affects an irrigator's ability to invest in their irrigation systems.

- A tracking system is now in place for the Flex Peak program so that Customer Reps can record customer interactions for this program.

There were questions and discussion about:

- Regarding the direct install for small businesses, is there a reason why some business can or can't participate and was the company able to get a sense of what other utilities have experienced with their small business programs? Quentin answered that the other programs were based on total use line or geographic line. His goal is to find a way to make the current program available to all commercial customers and become more involved with trade allies.

- Since all programs have qualifications and restrictions it might be helpful if Idaho Power spoke with other utilities that have direct install programs.

- Most agricultural people do not understand how a regulator works. More effort is needed to educate the irrigators in order to expand the irrigation programs.

- Is the Flex Peak tracking system a new feature? It seems like it would be a great tool to use for all of the programs. Quentin stated that it is new to Flex Peak but it has been used for other programs.

- It was suggested that these Customer Reps should be trained on the details of Flex Peak to help overcome objections to participation.

11:20am-2015 Residential Program Performance—Roger Lawless

Roger highlighted energy savings and participation by program for 2014-2015 and also provided program updates.

Key points presented:

- Slide 3 compared energy savings for the residential programs from 2013, 2014 and preliminary savings for 2015. The Home Improvement program shows a decline in savings from 2014. In 2014 a tax credit was expected to expire so there was a sense of urgency for customers to take advantage of that and do upgrades before the tax credit expired. The tax credit was extended so the contractors were not encouraging customers with the same sense of urgency in 2015.

- In February of 2015 the incentive was removed for the See ya later, Refrigerator® program (SYLR) and then on November 23rd JACO, the third party administrator, went into receivership so the program had to be suspended. Idaho Power would like feedback from EEAG on whether this program should continue and if so, for how long, or be cancelled completely.

- Starting March 1st, 2016 the Home Energy Audit will be made available to customers with gas heated homes.

- In January the Drying Rack Project kicked off with customers picking up766 racks in Boise and Nampa. This project will be offered in the eastern region in the future. At a prior EEAG meeting it was suggested that a post survey be sent out to participants. Idaho Power implemented that feedback and will be sending out surveys in six months to find out what types of behavior changes were made by participants.

- The Multi Family Direct Install project will be taking place at the end of February and the first part of March 2016. A 76 unit apartment complex in Pocatello will be participating. Measures that will be installed are: LED light bulbs, faucet aerators, high efficiency showerheads, and insulated water heater pipe wrap. Idaho Power would like feedback from EEAG on ideas for other measures that should be included.

Discussion for SYLR program:

- If SYLR is cancelled, there is still a lot of marketing material that references this program. How will that be handled? Idaho Power stated that if the program gets cancelled then they would need to update the current material with new information. New marketing material that references that program is currently on hold until a decision is made.

- Prior to 2015, was there steady participation or was it seasonal? Pete answered that there were about 3000 units per year recycled but that was when the program offered an incentive. In 2015 there were about 1600 units recycled.

- If SYLR continues, will the 2 LED bulbs still be offered? Roger answered that the bulbs would still be offered to customers.

- There are other utilities that are cancelling their refrigerator recycling programs because they cannot make them cost effective with the third party providers. Part of that could be because of having to travel to rural areas. If Idaho Power focused on urban instead of rural it might make it cost effective.

- Idaho Power could hold "neighborhood blitzes" where customers are made aware of a specific date for refrigerator pickup in their neighborhood. That could help cut costs.

- In rural areas customers are usually charged to dispose of appliances so if there is a "last chance" to recycle, they might participate.

Discussion for Drying Rack Project:

- For the Drying Rack Project, how will the savings be quantified? Roger answered that it will be from the surveys.

- There could be numerous marketing opportunities with all of the social media pictures. The company could encourage customers to send in pictures of them using these drying racks, and it would be a way for them to self report.

Discussion for Multi Family Direct Install:

- What kind of investment is the facility owner making and what is the value? Roger stated that it is at no cost for the owners and the kits value is between $30 and $40.

- Is this a one-time project or will it be ongoing? Roger answered that right now it will be a one-time project, but it could be duplicated once the first one has been completed.

- Ideas on what else to include in the kits are: furnace filter, sealing around doors and window, power strip, program a thermostat for customers, pipe wrap for both hot and cold pipes, water heater settings, duct sealing and attic insulation, thermostatic shower valves.

12:00 Lunch

1:00 Meeting Reconvened

1:00pm-Demand Response Program Evaluation—Nick Bengston-Clearesult

Nick presented the results of the Demand Response Program Evaluation. The programs evaluated were Irrigation Peak Rewards, A/C Cool Credit program, and Flex Peak. This was an impact evaluation that was completed in 2015.

Key points presented for Irrigation Peak Rewards:

- The counterfactual realization rate is what the demand reduction would have been on any day during the curtailment period.

- The AMI data drives much of the analysis. There was data for about 80% of the pumps.

- On slide 11, the Avg. Load Remaining Rate used to be called device failure.

There were questions and discussion about:

- Regarding device failure, is there a way to know if the 3% rate is normal in the industry? Nick answered that it is actually very low. A lot of these pumps are remote so 3% is a reasonable number.

- Are these percentages driven by just one or two customers not nominating consistently? Nick stated that they are not consistently the same pumps over and over again.

Key points presented for A/C Cool Credit:

- A predictive calculator was created in 2012 to aid in program management.

- In this program there can be snapback in energy use. This can happen after an event when customers will typically run their air conditioning more after an event due to heat accumulation in the home.

There were questions and discussion about:

- What types of homes were evaluated? Nick stated that home type was not part of the scope of this evaluation.

- Is there snapback in irrigation? Quentin answered that only a small percentage of irrigation pumps are turned on automatically. Since most pumps are manually switched on after an event, it takes longer for them to come back online thus avoiding snapback.

- The takeaway from snapback is that the program should be run for a longer period of time during an event. Quentin stated that there is a customer satisfaction issue with extending event times later into the evening. The Program Specialist added that balancing customer impact is important. If the customer feels negatively impacted by participating in the program, they may stop participating. .

Key points presented for Flex peak:

- 2015 was the first year of the program being administered internally. Most of the load comes from HVAC with some from production and lighting.

- The first two events had good realization rates. The third event had a lower rate due to one customer not participating.

- Even more important than a realization rate in this program is predictability so that Idaho Power has a general idea of what to expect in load reduction.

1:52-Energy Efficiency Marketing Overview —Bill Shawver, Roberta Rene, and Tracey Burtch

Key Points Presented:

- From a marketing perspective, Idaho Power continues to increase its efforts when it's cost effective and prudent.

- A complete redesign of the website will take place in 2016. It will be adaptive and responsive to all devices; desktop and mobile. This means that regardless of the device a customer uses the website will adapt to the size of the screen.

- The goal of marketing campaigns is to promote energy efficiency programs as whole, not just an individual program.

- Direct mail is done to get customers engaged and aware that there is a program available to meet their needs.

- Results from the Energy Saving Improvements survey were presented. This survey took place in the online Empowered Community.

- The Pledge/Challenge marketing tactic was presented to the group with Tracey asking the group for feedback on using the word "Pledge" vs. "Challenge" and ideas for promoting it.

There were questions and discussion about:

- On the marketing campaigns, how did the company invest in different types of media and were the results what was expected? Roberta answered that the company worked within the budget to get the best possible buy for the different media types. Television is the most expensive but since people learn visually they will remember the ads.

- Could the same system the company uses for tracking interactions for the Flex Peak Program be used for a more targeted approach for direct mailings? Roberta answered that those conversations have started internally.

- In order for direct mail to be effective there needs to be at least three pieces sent out. Roberta stated that Idaho Power customers do respond well to direct mail. Bill added that receptiveness is important and bill inserts will continue to be mailed.

- How do outreach events fit into these activities? Roberta stated that the first priority is to achieve the consistent look and feel for all of the programs and then begin doing outreach in 2017.

- Are children marketed to directly with any of these mediums? Bill answered that there are yearly art contests through the schools and Idaho Power has Community Education Reps that give classroom presentations.

- How is marketing rolled into cost effectiveness? Pete answered that if marketing is directly related to a program, then it is included in that programs' cost effectiveness analysis.

- Slide 9 indicated two responses to the question. Were those the only two options available to choose from? Peoples' revealed preferences are usually not the same as their motivators. Tracey answered that depending on how the question was answered, it would take the participant down a different track.

- The company should look at what other industries are doing in terms of marketing, not just the utility industry. Motivators can be different at different stages of life; it should not be a "one size fits all" approach.

- The word "challenge" triggers a competitive spirit that a customer would be likely to meet and may go beyond the commitment made vs. a "pledge" where they might do the minimal amount to achieve the goal. This is a good vehicle to commit to a behavioral change.

- Some of the national entities have both, maybe combine the two. Try not to reward something that didn't happen. If someone says they are going to participate and they don't end up following through, a reward isn't going to change behavior.

- When you invoke a behavioral change and the results of that change are known to the person making the change, it is more impactful.

- Use Facebook and Nextdoor to promote this. Have people share pictures and stories with their friends and on Idaho Power's page. A "community" could be created where ideas and pictures are shared.

- A follow-up survey should be done to see if people fulfilled the pledge and if they are continuing with the changes. Have other changes been made as a result of the pledge?

3:02-Program Planning —Quentin Nesbitt

Quentin presented updates on the Energy Savings Kits and Smart Thermostats.

Key points presented:

- The Energy Savings Kits will be available at no cost. The goal is to have 7500 kits distributed. The delivery details have not been finalized. The company is hoping to have a first quarter launch but it should be April at the latest.

- The initial run will be a direct mailer to a selected community; they will be able to enroll online, via telephone, or through a business reply card. Idaho Power is expecting about a 20% uptake.

- The Smart Thermostat launch date is March 31st 2016. This will be contractor install with a $75 incentive.

3:10 pm-Open Discussion

- In Darrel Anderson's opening comments he talked about what's the next new thing out in the energy efficiency world. Idaho Power has good programs and good measures but the widget stuff is pretty much done. The company needs to get beyond widget based efficiency. How can a behavior based programs be designed to drive energy savings?

- There was discussion around myAccount, Idaho Power's online portal that a customer can register for to pay their bill, start, stop, or transfer service and access their energy usage. The many features of myAccount were explained. A suggestion was made that at the next EEAG meeting, members could bring their laptops or mobile devices and log into their accounts for a tour of myAccount.

- There will always be a segment of the population that does not have a computer or know how to use it properly so providing access to their information for those customers is important.

- There was discussion about the company using text notifications or push notices to alert customers about their energy usage. Theresa informed the group that Idaho Power is looking into implementing alerts and notifications. Customers have indicated through surveys they are interested in receiving these notifications from the company.

- If there was a dollar amount on those alerts it might make more of an impact for customers.

- On May 9-13 the Energy Out West event will be held in Spokane Washington. Idaho Power is a current sponsor of this event. Program Specialist, Cheryl Paoli will be presenting a tutorial on working with CAP Agencies and will also be receiving an award for her work with the Weatherization Programs.

Wrap-Up:

Parting comments from members were:

- The meeting went well. The agenda wasn't too full. A follow-up discussion on the Rider balance would be a good topic for the next meeting.

- The progress made since Rosemary came aboard is immense and has allowed for more productive discussions.

- It seems that more time is being spent discussing financial information so we could allocate more time for discussion during that presentation.

- It was a good meeting and has become more succinct on what we are trying to accomplish.

- Thank you for having Darrel Anderson speak with us. It seems that the importance of energy efficiency has worked its way up to the executive level. At the next meeting the Rider balance should be addressed and revisit the discussion of the small business direct install issue.

- Appreciate the participation of Darrel Anderson and it showed that the company does value energy efficiency. The low hanging fruit has been reached and the remaining will be expensive and more difficult to achieve. The work of this group will need to be strategic and thoughtful about how to obtain it.

- The direction of the marketing is good. Thank you for the cookbook.

- Even though the savings are preliminary, it is up and that is a good thing. A lot of hard work went into achieving those numbers.

- Would like to continue the behavioral discussion.

- Thank you to Rosemary and to Idaho Power for having an Energy Efficiency Advisory Group to have these types of discussions.

Quentin thanked everyone for their time, comments and recognition. He reminded everyone to bring laptops or mobile devices for the myAccount demonstration at the next meeting.

3:50 Meeting Adjourned

Energy Efficiency Advisory Group (EEAG)
Meeting Notes
May 5, 2016

Present:

Catherine Chertudi–City of Boise, Public Works Dept.
Tina Jayaweera-Northwest Power & Conservation Council
Tami White–Idaho Power
Stacey Donohue–Idaho Public Utilities Commission
Diego Rivas–Northwest Energy Coalition (on phone)
Jean-Pierre (JP) Batmale–Public Utility Commission of Oregon
Don Strickler–Simplot
Ben Otto-Idaho Conservation League
Lynn Tominaga–Idaho Irrigation Pumpers Association
John Chatburn–Office of Energy Resources
Quentin Nesbitt*–Idaho Power
Kent Hanway-CSHQA

Not Present:

Ken Robinette–South Central Comm. Action Partnership
Sid Erwin–Idaho Irrigation Pumpers Association
Lynn Young–AARP

Guests and Presenters*:

Pete Pengilly*–Idaho Power
Roger Lawless*–Idaho Power
Shelley Martin–Idaho Power
Bill Shawver–Idaho Power
Pete Richardson–ICIP
Mary Hacking–Idaho Power
Lee Garrett–Idaho Power
Cory Read-Idaho Power
Roberta Rene*-Idaho Power
Susan Klein-Idaho Power
Zeke VanHooser-Idaho Power
Sheree Willhite-Idaho Power
Chris Pollow-Idaho Power
Mindi Shodeen-Idaho Power
Denise Humphreys-Idaho Power
Cory Read–Idaho Power
Theresa Drake–Idaho Power
Andrea Simmonsen–Idaho Power
Jennifer Pope–Office of Energy Resources
Don Reading–ICIP
Tracey Burtch*–Idaho Power
Donn English–Idaho Public Utilities Commission
Todd Schultz*-Idaho Power
Jim Jauregui-Idaho Power
Anne Alenskis-Idaho Power
Melissa Thom-Idaho Power
Randy Thorn-Idaho Power
Becky Arte-Howell-Idaho Power
Cheryl Paoli-Idaho Power
Shirley Lindstrom-Northwest Power & Conservation Council

Meeting Facilitator:

Rosemary Curtin-(RBCI)

Note Takers:

Shawn Lovewell (Idaho Power) with Kathy Yi (Idaho Power)

Meeting Convened at 9:35am

Rosemary started the meeting with introductions of EEAG members and guests. The February meeting notes were reviewed and there were no questions or comments.

Tami provided a brief update regarding two recent filings Idaho Power submitted to the Idaho Public Utilities Commission (IPUC); 1) the annual DSM Prudence filing (IPC-E-16-03) and; 2) the annual FCA filing (IPC-E-16-02).

9:41 am-Mini Home Assessment/myAccount Walk through— Roger Lawless & Todd Schultz

Roger passed out the mini home assessment to the group and asked them to take a few minutes to fill it out.

Key points presented:

Roger asked the group if anything stood out from a behavioral stand point after filing out the assessment and if they wanted to share.

There were questions and discussion about:

- This is a nice list of behaviors that use energy, but this assessment alone is not a behavioral change. However, when I was finished I was comparing my score to the person next to me and we wanted to see who scored higher. What I do with the information afterward could lead to a change in behavior. Roger stated that this assessment will be a marketing piece included in the Energy Saving Kits. It is an informational and educational piece that will be used to get people thinking about their behaviors.

- The information on the company's website is useful and the information is informative. However, I don't want people to confuse this assessment tool as a behavioral program. Quentin stated that the assessment is a complementary tool to myAccount and what customers can do with it.

- I like how simple and straight forward the mini home assessment is. I can share these things with my young daughter.

- I agree that this by itself is not a behavior change, but it is a step in the right direction.

10:00am- myAccount Walk through — Todd Schultz

Todd provided an overview of myAccount.

Key points presented:

Todd gave the group a brief synopsis of his early employment history with Idaho Power and described the tools that were available to help customers understand their usage, and how the tools we have now are incredible. There were four customer focus groups that took place last November. Customers were invited to provide feedback on what was and wasn't valuable to them on the website. They liked icon based navigation, larger fonts, and graphs. The new myAccount landing page on the company's website was just released. It has a new look and feel based on the feedback from the focus groups.

There were questions and discussions about:

- There is a lot of good information provided here and it is nice that you can compare your usage from month to month. What is missing though is the ability to compare your usage to others. Todd stated that in the focus groups, people really liked the ability to compare their usage from one month to the next or from the current month to the same month last year. Seeing that in a graph can give them a sense of what is coming and what they can do to change it. This is where that behavior change will happen.

- How far back can we go on the bill comparison? Todd answered that monthly usage information can go back a couple years.

- Todd asked the group if any of those that had set up their profile in myAccount have gone in and loaded their homes characteristics to get a more detailed look at their homes energy usage. A few people raised their hands.

- How is the end-use data calculated? Todd stated that a third party provides the analytics.

- Does Idaho Power have data on what pages customers are visiting and the level of detail that is being looked at? Todd answered that roughly 95% of the customer hits are "pay bill" and "view bill" and usage. Of the pages that are accessed on a monthly basis, the other tools on myAccount are about 4% of those accessed. Only a small percentage of customers are drilling down for more detail. Based upon customer focus group feedback, the company designed a new look with an icon based navigation. The hope is that this new look and feel will make it easier for customers to explore more detailed tools available in myAccount.

- Going back to the end user calculation, is it an algorithm that is used for everyone or is it specific to each customer? Todd stated that it is based on appliance use and the age of the home.

- There was discussion around how the customer inputs their home's data into myAccount and how it compares to other customers. If a customer doesn't complete this information, then there will be no comparison.

- Does the company have a plan to get as many customers to go into myAccount and fill out their information so they can start saving more energy? Bill Shawver answered that the company will continue to market myAccount. The goal is to move customers toward the deeper level of detail. Todd stated that it is important to provide customers with information that is important to them, giving them the tools that they need and want.

- It is great that Idaho Power is using this data to empower its customers. This information is necessary for a behavioral change and to drive customers, but it is not enough.

- Do other utilities in Oregon have this type of information on their websites? JP didn't know the answer, but committed to find out and let the group know.

- Would like to see this type of irrigation customer usage information provided to irrigation districts. It could be a very useful tool. Quentin stated that irrigation customers can look at their own individual accounts, but Idaho Power cannot provide information about customers to other customers.

- From myAccount, can a customer have an Energy Savings Kit delivered to them? Roger stated that option will be available in the future along with other ways to register for the kits.

- The energy use comparison bar belongs on the front page and in bold. Having language that says "if you are using more energy, click here" or "click here to see how you can use less energy." Having that front and center could help drive customers deeper into the tools.

Todd thanked the group for their feedback and comments and asked members of the EEAG to go into myAccount and set up their own profile, then share with their co-workers and neighbors about what is available on the website. Be an advocate for myAccount and the tools that are available.

10:55am Break

11:10am-Marketing presentation— Bill Shawver, Roberta Rene, & Tracey Burtch

At the February EEAG meeting, Bill asked how many of the EEAG members follow Idaho Power on social media and a few said that they do. Two people started following the company since the last meeting. Bill emphasized that the EEAG is valuable in helping the company shape how it markets to customers. The presentation today will highlight the success of the most recent marketing campaigns.

Key points presented:

- Idaho Power received Silver and a Citation Rockie Award from the Idaho Advertising Federation for the recent Energy Efficiency Awareness Campaigns.

- The marketing collateral binder was passed around so that members could see marketing pieces that have been sent to customers since the last meeting in February.

- Because customers still respond well to direct marketing, the company is working on putting all of the energy efficiency program information into one marketing piece to help increase customer participation in EE programs. The group was asked for suggestions and ideas on how to accomplish this.

- At the February EEAG meeting the group discussed the idea of an Energy Savings Pledge and Idaho Power will be moving forward this fall with the Pledge. The company will be asking customers to pledge to make one or more energy saving behavioral changes to be entered into a drawing to win an Energy Star® clothes washer/dryer combo. There will be a webpage where customers can make their pledge. The October bill insert will be the primary way customers will learn about it. The behavioral change options were discussed with the group and feedback was requested.

- The various social media site statistics were reviewed with the group.

There were questions and discussion about:

- At the Idaho Conservation League, they initiate a lot of direct mailings and get very little response. Segmenting Idaho Power customers to send letters might be a better use of resources instead of sending out a blanket letter to all customers.

- The City of Boise has used bookmarks in the past for the Household Hazardous Waste program. Having bullet points or smaller bites of information listed is less overwhelming to people and they are more likely to read it.

- The Energy Savings Pledge is the beginnings of a behavioral program. This motivates behavior changes. However, it may be more effective if the commitment is public rather than private.

- In order to help people engage, the company could have a bar chart showing how many people have taken the pledge.

- Give people prompts and reminders throughout the pledge period to remind them of the commitment they made.

- When a customer logs onto the website or myAccount, have the pledge sign up information right there.

- Ideas for pledges could be: doing full loads of dishes or laundry; changing out the five most used lights in the home to something more efficient; buying an Energy Star® appliance; having a specific time where all electronics are turned off or unplugged.

12:00 Lunch

1:00pm Meeting Reconvened

1:00pm-2016 Commercial Program Performance YTD—Quentin Nesbitt

Quentin highlighted savings, participation, and updates for the commercial, industrial, and irrigation programs.

Key points presented:

- Building Efficiency, Easy Upgrades, and Custom Efficiency have been combined into one program and will now be named Commercial & Industrial Energy Efficiency Program. Some additional prescriptive measures have been added.

- The current Building Efficiency program savings numbers for 2016 year to date have exceeded 2015 savings numbers for the same time period. The new 2016 pre application will be simpler and will require less information from customers to avoid delays in submitting it to Idaho Power.

- The Easy Upgrades program has also experienced an increase in projects and savings in 2016 vs. 2015 year to date. Trade ally workshops will be held in Idaho Power's service area to review program changes and new measure additions. This year lighting vendors have been invited to the workshops to share information with trade allies about the products they offer.

- Savings for the Custom Efficiency program has increased for 2016 vs. 2015 year to date. There have been three training sessions so far this year with an additional four training sessions scheduled for 2016.

- The first year report has been finalized for the Wastewater Cohort. The 2.56 MWh savings does include behavioral type changes that occur through the education and training in the cohort.

- There are 80 sites currently signed up for the Flex Peak program. In 2015, 72 sites were enrolled.

There were questions and discussion about:

- If Idaho Power is exceeding its savings goals, is the company paying more than needed to achieve cost effective conservation? Pete answered that it isn't how cost effective something is, but rather if it is or is not cost effective. The volume usually helps cost effectiveness. Quentin added that an example would be the cost of LED bulbs have decreased, so Idaho Power doesn't have to pay as much of an incentive to get customers to change out their lights.

- For the Custom Efficiency program, why are the savings for 2016 so much better than 2015? What is the difference, could it be the economy? Quentin answered that it could be that the economy is improving so businesses are more likely to spend money on upgrades.

- Does Idaho Power know the savings range of projects for the Wastewater Cohort? Quentin answered that the range is 0-22%.

- Does the company plan on opening the Wastewater Cohort to the industry in general rather than a targeted approach? Quentin answered that it was offered to anyone that had water or wastewater systems.

- The sites that have re-enrolled in Flex Peak for this year, are they nominating the same amounts as last year? The Program Specialist answered that a couple sites have nominated a lower amount but most sites are the same or higher.

1:49pm-2016 Residential Program Performance YTD—Roger Lawless

Roger highlighted energy savings and participation for the residential programs along with updates.

Key points presented:

- Residential lighting savings have increased in 2016 vs. 2015. Consumers have more options and the prices are coming down for the LED technology.

- Roger passed around a copy of the direct mail piece for the Energy Saving Kits. The goal is to have 7,500 customers sign up to receive a kit by the end of 2016. These kits will be provided to customers at no charge.

- The refrigerator and freezer recycling program will be reinstated. Customers will be notified via a bill insert in May and June that this program will be offered through the end of 2016.

- During the Fort Hall Drying Rack event, the company was able to co-market the Weatherization Solutions program. Following feedback provided by the EEAG, Idaho Power will be sending out prompts and pre and post surveys to customers to gauge their usage of the drying racks.

- The Home Energy Audit has had close to 200 participants. Since adding all fuel sources, the program has seen an increase in participation.

There were questions and discussion about:

- Are the Energy Saving Kits customizable based on customer preference? Roger answered that the kits are based on whether the customer has an electrically heated water heater or non-electric water heater.

- What is the kWh savings for each kit? The non-electric kits are 96 kWh per year and the electric kits are 601 kWh per year.

- Since the Regional Technical Forum (RTF) doesn't have savings for faucet aerators, what numbers is the company using? The savings from the last potential study that Applied Energy Group provided.

- What is the estimated pre-evaluation savings of the drying racks? The savings is estimated to be about 90 kWh per year, per rack.

- For the Home Energy Audits, what audit software is being used? The CAKE Audit program is being used.

- How did the company market the Home Energy Audits to non-electrically heated homes? The company created an on-line infographic which walked customers through the audit process. The Company also utilized bill inserts and Facebook posts.

- For the Home Energy Audit program, where are the savings coming from and how is the company tracking them? The savings come from the direct install pieces which are LED bulbs and pipe wrap. Participants are being tracked because the primary goal of the Home Energy Audit is to guide people toward the Company's other EE programs.

- What is the status of the smart thermostats? Roger answered that these were launched on March 31st so there isn't much information available yet. He stated he will provide an update to the group at the August meeting.

2:25pm-Program Planning Update/Discussion—Quentin Nesbitt

Quentin presented an update on the Multi-Family Direct Install Project. The EEAG was asked for feedback on adding a multi-family ductless heat pump measure and a ground source heat pump option.

Key points presented:

- An apartment complex in Pocatello was the participating customer for the Multi-Family Direct Install Project. Following EEAG feedback, the company utilized the facility owner's maintenance personnel to manage the project. Implementing the project in this way was the most cost effective method.

- Quentin asked the group if they had any advice for continuing with this approach as part of the Home Improvement program.

- In the last two years in the Treasure Valley, there have been 14 multi-family projects that have used electric forced air with central air conditioning. By working with builders and developers on a project before construction starts, Idaho Power would research the cost effectiveness of the project and potentially be able to offer an incentive for using ductless heat pumps. Idaho Power is looking for feedback on pursuing a ductless heat pump measure for multi-family structures.

- Idaho Power currently does not offer an incentive on ground source heat pumps in its Heating & Cooling Efficiency program. There are some customers that are confused by this because the company does offer an incentive on air source and open loop water source heat pumps. There are higher install costs with the ground source heat pumps because of excavation and space needed for the loop field. The company requested feedback from the EEAG on the idea of adding this measure.

There were questions and discussion about:

- The cost effectiveness of the Multi-Family Direct Install Project. The general consensus of the group was that the company should continue pursuing the approach of using the facility maintenance personnel to do the installs.

- In reference to the ductless heat pumps for multi-family units, has the company considered the cost savings, in its cost effectiveness analysis, from not having these units ducted? It was answered that part of the survey was to determine what the cost savings is for a non-ducted structure.

- Idaho Power should definitely be involved in multi-family projects that are in development. It goes back to that idea of going way up stream to affect change.

- The Office of Energy Resources (OER) doesn't offer loans on the open loop due to the water use concerns. Incenting on anything that isn't a "pump and dump" is a better way to go. Quentin answered that he has seen other utilities offer some sort of incentive on these measures. Maybe on a custom basis an incentive could be offered.

- It will be a challenge to get uptake on ground source heat pumps in this market. Building space is limited due to lot sizes. Quentin stated that it would probably be more appealing to the rural customer where space isn't as big of an issue.

2:53pm-Financials/Rider Balance History—Pete Pengilly

Pete presented Appendix 1: Idaho Rider and Oregon Rider (Jan-Mar 2016), 2016 DSM Actual Expenses and Preliminary Energy Savings by Program (Jan-Mar 2016). Pete also presented an energy efficiency funding chronology for the Idaho and Oregon Rider.

Key points presented:

- The Idaho Rider had a $10.1 million collected balance on March 31st 2016. The last increase to the Rider was in 2009 when it was increased from 2.5% to 4.75%. The increase was primarily due to the fact that, at that time, demand response incentives were paid out of the Rider. In 2011, the demand response incentive payments from the Rider were moved to base rates (with differences tracked through the PCA) and the Rider percentage was decreased by 0.75%.

- The self directed option allows customers taking service under Schedule 19 to track their contributions to the Rider and utilize them at a later date. Under this option, they are able to have direct use of 100% of those funds for cost-effective DSM projects.

- The Oregon Rider had a $4.8 million under collected balance as of March 31st, 2016. In Oregon, Idaho Power is currently spending about what it collects in the Rider. Demand Response incentives are paid out of the Rider in Oregon.

- The presentation provided an overview of activity for the Idaho and Oregon Riders since their inception.

There was questions and discussion about:

- If the Schedule 19 customers do not use the money in the self-directed option, what happens to the funds? Quentin answered that the funds are returned to the Rider. There is a fixed three year cycle during which these funds can be used.

- Based on the information in the presentation, it looks like Idaho Power does its best when the Rider is in a deficit. Quentin commented that the Rider balance has no impact on the company's pursuit of cost effective energy efficiency.

- Instead of over collecting by 1 million every month, maybe decrease it so the company only over collects by $500,000, maybe there should be an adjustment to the percentage collected. Until the company provides some different scenarios for collection and spending, it is hard for us as a group to make recommendations.

- The percentage collected in the Rider should stay where it is instead of fluctuating up and down. Energy use could go down which would decrease the amount collected.

- Other utilities adjust their DSM rider every two years. That might be too often, but at least we wouldn't be having this type of conversation every year.

- We should be looking to achieve reasonable balances in the Rider. The company shouldn't take the balance down to a bare minimum, but rather find a middle ground to keep balances healthy.

- There is value in stability. Maybe the company should look at a 2-3 year rolling look that could address any lumpiness.

- From an industrial standpoint, if we don't collect as much there won't be as much to spend in the future even though there are still opportunities for cost effective energy efficiency.

3:38pm-Wrap Up/Open Discussion

- When the company does a cost effectiveness analysis for a program, how is that program's energy savings valued? Pete answered that a value is assigned to energy efficiency in the Integrated Resource Plan (IRP). The IRP process produces hourly avoided costs which are put in time blocks with both on peak and off peak values recognized. For example, summer on peak includes both an energy and capacity benefit.

- The August EEAG meeting date will need to be changed due to scheduling conflicts. Shawn will send out some alternate dates for members to vote on.

3:45pm-Meeting Adjourned

Idaho Power Company
Energy Efficiency Advisory Group (EEAG)
Meeting Notes dated August 30, 2016

Present:

Catherine Chertudi–City of Boise, Public Works Dept.
Ben Otto-Idaho Conservation League
Stacey Donohue–Idaho Public Utilities Commission
Diego Rivas–Northwest Energy Coalition
Tami White–Idaho Power
Tina Jayaweera-Northwest Power & Conservation Council
Don Strickler–Simplot
John Chatburn–Office of Energy Resources
Jennifer Pope–Office of Energy Resources
Sid Erwin–Idaho Irrigation Pumpers Association
Kent Hanway-CSHQA
Quentin Nesbitt*–Idaho Power

Not Present:

Ken Robinette–South Central Comm. Action Partnership
Jean-Pierre (JP) Batmale–Public Utility Commission of Oregon

Guests and Presenters*:

Pete Pengilly–Idaho Power
Roger Lawless*–Idaho Power
Mindi Shodeen–Idaho Power
Pete Richardson-Industrial Customers of Idaho Power
Donn English-Idaho Public Utilities Commission
Dave Angell-Idaho Power
Braden Jensen-Idaho Farm Bureau
Tracey Burtch*-Idaho Power
Zeke VanHooser-Idaho Power
Chris Pollow-Idaho Power
Sheree Willhite-Idaho Power
Jon Alban-Idaho Power
Denise Humphreys-Idaho Power
Cheryl Paoli-Idaho Power
Travis McMillen-Idaho Power
Cory Read–Idaho Power
Theresa Drake*–Idaho Power
Andrea Simmonsen–Idaho Power
Don Reading-Industrial Customers of Idaho Power
Ken Miller-Snake River Alliance
Jared Hansen-Idaho Power
Mike Heckler-Sierra Club
Bill Shawver*-Idaho Power
Tonja Dyke-Idaho Power
Randy Thorn-Idaho Power
Chellie Jensen-Idaho Power
Todd Greenwell-Idaho Power
Becky Arte-Howell-Idaho Power
Shirley Lindstrom-Northwest Power & Conservation Council
Jill Simpson – Idaho Power

Meeting Facilitator: Rosemary Curtin-RBCI

Note Takers:

Shawn Lovewell (Idaho Power) with Kathy Yi (Idaho Power)

Meeting Convened at 9:31 am

This meeting was hosted by EEAG member Kent Hanway of CSHQA at their office on Broad Street in Boise. Rosemary started the meeting with introductions of EEAG members and guests. Kent Hanway of CSHQA informed the group of the fire exits and where to gather outside the building in the event of an emergency, along with other general housekeeping items. The May meeting notes were reviewed and there were no questions or comments.

Tami spoke to the group about the Weatherization Assistance for Qualified Customers (WAQC) report that Idaho Power is required to file annually with the Idaho Public Utilities Commission (IPUC). Much of the same information in this report is presented in the DSM Annual Report. The company is considering filing a request with the IPUC for authority to consolidate the information provided in the annual WAQC report into the DSM Annual report instead of filing each separately. The company solicited feedback from the EEAG on this idea. The general consensus of the EEAG was that the company should combine the WAQC report into the DSM Annual report.

9:38am-2016 Residential Program Performance YTD—Roger Lawless

Roger highlighted the Energy Saving Kits (ESK), Smart Thermostats, Fridge & Freezer Recycling, Shade Tree project, drying racks, multifamily and A/C Cool Credit summer performance and presented the following key points:

- The original goal for the ESK's was to have 3,000 enrollments by August. By July 31st there were approximately 9,700 enrollments. After a social media post on August 2nd enrollments grew to 12,000 in just 10 days. Because of the large number of enrollments, fulfillment of those kits would now take 5-6 weeks instead of the usual 3-4 weeks. Customers were notified of the delay via postcard that due to recent demand kits would take a couple weeks longer to arrive. The kit vendor covered the cost of the postcards because they could not meet the 3 week turnaround time.

- Smart Thermostats were added to the Heating & Cooling Efficiency program on March 31st. There are over 80 models on the qualified products list. From April-August 2016 there were 21 applications submitted for incentives. The marketing tactics for this program were discussed.

- The Fridge & Freezer Recycling program timeline was discussed. The company would like to continue this program in 2017 however the program may face cost effectiveness challenges due to updated DSM alternative costs and the Regional Technical Forum (RTF) updating their savings numbers.

There were questions and discussion about whether or not the company can collect customer email addresses, when an evaluation will be done for the ESK's and the marketing of the kits, smart thermostats and the challenges of marketing and educating customers about them.

10:35am-Break. The remainder of the Residential Program Performance presentation took place after lunch.

10:45am-2016 Commercial Program Performance YTD—Quentin Nesbitt

Quentin provided program updates for Commercial & Industrial, Irrigation Efficiency, Irrigation Peak Rewards, and Flex Peak and presented the following key points:

- The savings numbers for all programs are through July of 2016.

- Examples of the tools used by participants of the Water Supply Cohort were shown along with examples of the types of changes being implemented in different facilities.

- There were 138 sites enrolled for the Flex Peak program in 2016 vs. 72 sites in 2015. The target was to achieve above 35 MW and the program achieved 41 MW

There were questions and discussion about creating a more structured approach in educating customers and trade allies on the commercial/industrial programs in order to raise participation levels and providing more detailed information to customers who participate in the Flex Peak program.

11:16am-Transmission & Distribution Benefits Analysis—Dave Angell

Dave Angell presented the results of an analysis conducted by Idaho Power to quantify the value of energy efficiency's deferral of transmission & distribution investments and presented the following key points:

- The company identified 36 growth-driven projects scattered around the Idaho Power's service area. These projects included: distribution circuits, substations, and transmission lines.

- Energy Efficiency projections were applied evenly across the service area based on peak demand by rate class. The assumption was made that energy efficiency projection for system peak aligns with feeder and transformer load peaks.

- The estimated value of energy efficiency on T&D deferral is $3.76/kW-year average.

There were questions and discussion about other identified projects and what those were comprised of, how the company projects peak impacts from energy efficiency, the value of right-of-ways and permitting.

12:00pm-Lunch

12:45pm- Meeting Reconvened

12:50pm-CSHQA Building Tour

Kent Hanway and Steve Isbell gave a short presentation about the energy efficient measures implemented in the CSHQA building. A few years ago their lease was up at the CW Moore building. Renovating this building was an opportunity to give back to the community in making the space better. It demonstrated their commitment to sustainable design.

Steve Burgos of the City of Boise gave a short presentation on the LIV District. The LIV acronym is Lasting environments, Innovative enterprises, and Vibrant communities.

The presentations were followed by a tour of the CSHQA facility.

1:34pm-Program Marketing—Tracey Burtch & Bill Shawver

Tracey presented the results of the Residential Energy Efficiency Campaign survey. The Smart-Saver Pledge and the plans for marketing in 2017 were highlighted and she presented the following key points:

- In 2015 the Empowered Community was surveyed regarding the residential energy efficiency ad campaign. The same survey was conducted in 2016 with those that did not participate in 2015. The recall rate of the ads was higher in 2016.

- The Smart-Saver Pledge will run from October 1-November 21. Customers who participate will be entered to win an Energy Star® electric appliance. The winner can choose from a variety of different options. Tracey thanked the EEAG for their pledge idea suggestions.

- In 2017 the company will be exploring new ways to refresh the current ad concepts and develop a consistent look and feel for the residential programs.

There were questions and discussion about the company providing more detail on the respondents of the survey, survey results and the comparison of energy efficiency surveys vs. other topics the company conducts, and a discussion about a past Connections article. There was further discussion regarding the Smart-Saver pledge and the ability of a participant to make their pledge public on a social media platform.

2:19pm-2016 Residential Program Performance YTD (continued)—Roger Lawless

Roger continued with the residential program performance updates from earlier this morning and presented the following key points:

- There are four events scheduled in October for the Shade Tree Project in the Treasure Valley. The company is investigating holding one offering outside of the Treasure Valley starting in 2017. There is a 98% customer satisfaction rate with this project.

- Surveys will go out to customers who participated in the drying rack promotion six months from when they received them. The goal is have customers reduce 25% of their drying load.

- A Boise location for the Multi-family direct install has been secured. The installations are scheduled for the first part of September at the Green Briar complex.

- There were three events for the A/C Cool Credit program all at a 55% curtailment rate. The preliminary estimate of demand reduction is 31MW.

There were questions and discussion about the Shade Tree project being a good example of an interesting and creative efficiency program, finding a way to use the current construction boom to leverage this project, and how many multi-family projects are being targeted for 2017.

2:30pm- 2017 Preliminary Cost Effectiveness– Kathy Yi

Pete stated prior to the presentation that this information is preliminary. The main point is how alternative costs have been decreasing year after year and are affecting programs cost-effectiveness.

Kathy presented the following key points:

- This information is preliminary and a full analysis of this information won't be completed until November.

- Program cost-effectiveness assumptions for 2016 and 2017 were reviewed. Version 1.7 of the Technical Reference Manual will be used for 2017.

- The different cost-effectiveness tests were reviewed. A preliminary cost-effectiveness summary of all programs was presented along with how the anticipated changes may impact program cost effectiveness for 2017.

There were questions and discussion about how kW impact from energy efficiency programs is valued vs. the kWh savings from programs and how the EEAG should be discussing plans for 2017 before the end of the year.

2:50pm-Break

3:04pm-Program Planning– Roger Lawless/Theresa Drake/Quentin Nesbitt

The group was updated on a new residential idea, the multifamily ductless heat pump project, and a new commercial idea. The following key points were presented:

- Enervee provides a branded online marketplace for customers to research and compare energy efficient products, read customer reviews and receive incentives. Some utilities use Enervee to offer incentives and some use this tool strictly for education. This is still a new concept and there are only a handful of utilities currently working with Enervee.

- The Treasure Valley has a seen a big boom of multifamily expansion with the majority having electric forced air furnace w/ air conditioning or ducted heat pumps. Idaho Power is working on ways to facilitate market transformation to ductless heat pumps for multifamily buildings. The company will keep the group updated on progress.

- Based on previous EEAG comments regarding customer alerts and home energy reports, Theresa provided an update on what the company is currently working on. A team has been formed to research the type of information customers would like to receive from Idaho Power and if our internal systems can handle this. The company plans to issue an outage alert to test the texting server in the 4th quarter of 2016. The next type of alert will be in regards to bill usage and the roll out of that is anticipated to occur in the 2nd quarter of 2017.

- The vendor that Idaho Power uses for myAccount will be migrating clients to new cloud based software at the end of 2017. They have agreed to let the company use the existing software to build its Home Energy Reports before the migration so that it won't be delayed.

- Idaho Power is looking at implementing a new cohort approach that would target school districts. Schools would be assessed on their energy use and a plan for reducing energy consumption would be implemented. Coaching, training and knowledge share would be provided in workshops.

There were questions and discussion about the Enervee tool and the potential benefits it could provide to customers for research and education along with the analytic data generated for the company. The company should continue to have discussions with the Office of Energy Resources and CSHQA for the development of the School Cohort. .

3:59pm-Roundtable

- This was one of the best meetings. There has been good critiquing of programs and appreciate the willingness of the company to listen.

- Appreciate the steps that Idaho Power takes to get input from the group on programs.

- Was nice to have the meeting at a different location.

- We talked a lot about 2016 plans, but it would be nice to discuss things before they happen.

- Thank you to Kent and CSHQA for hosting this meeting.

- Liked the broad overview of all the programs.

- Need to find a way to limit the size of the agenda again. There is too much content scheduled and not enough time for discussion.

4:05pm Meeting Adjourned

Energy Efficiency Advisory Group (EEAG)
Notes dated November 3, 2016

Present:

Catherine Chertudi–City of Boise, Public Works Dept.
Quentin Nesbitt*–Idaho Power
Tami White–Idaho Power
Diego Rivas–Northwest Energy Coalition
Stacey Donohue-Idaho Public Utilities Commission
Don Strickler–Simplot
Ben Otto-Idaho Conservation League
Jennifer Pope-Office of Energy Resources
Sid Erwin–Idaho Irrigation Pumpers Association
Tina Jayaweera-Northwest Power & Conservation Council (via phone)

Not Present:

Jean-Pierre (JP) Batmale–Public Utility Commission of Oregon
Kent Hanway-CSHQA
Ken Robinette–South Central Comm. Action Partnership
John Chatburn-Office of Energy Resources

Guests and Presenters*:

Pete Pengilly–Idaho Power
Roger Lawless*–Idaho Power
Shelley Martin–Idaho Power
Theresa Drake–Idaho Power
Dave Falcone–Division of Building Safety
Michael Alvarado–Bonocore Technology Partners
Donn English–Idaho Public Utilities Commission
Peter Richardson-Industrial Customers of Idaho Power
Nadine Hanhan-Public Utility Commission of Oregon (via phone)
Denise Humphreys-Idaho Power
Jerry Peterson-Division of Building Safety
Phil DeVol-Idaho Power
Sheree Willhite-Idaho Power
Becky Andersohn-Idaho Power
Cory Read–Idaho Power
Mindi Shodeen–Idaho Power
Andrea Simmonsen–Idaho Power
Don Reading–Industrial Customers of Idaho Power
Tracey Burtch*–Idaho Power
Annie Meyer*–Idaho Power
Jill Simpson–Idaho Power
Bill Shawver*-Idaho Power
Becky Arte-Howell-Idaho Power
Cheryl Paoli-Idaho Power
Todd Greenwell-Idaho Power
Zeke VanHooser-Idaho Power
Chellie Jensen-Idaho Power
Tonja Dyke-Idaho Power
Ken Miller-Snake River Alliance

Meeting Facilitator:

Rosemary Curtin-RBCI

Note Takers:

Shawn Lovewell (Idaho Power) with Kathy Yi (Idaho Power)

Meeting Convened at 9:32am

Rosemary started the meeting with introductions of EEAG members and guests. There were no comments on the August meeting notes.

Tami provided a brief update that in Idaho Power's 2015 DSM Prudence Request (Case No. IPC-E-16-03 filed March 15, 2016) two of the three parties to the case (IPUC Staff and the Industrial Customers of Idaho Power (ICIP)) expressed concerns that the Idaho Energy Efficiency Rider (Rider) was collecting more than the company was spending on its DSM efforts and that the balance was getting too large. In its reply comments in this case Idaho Power expressed a willingness to work with parties to determine if the Rider percentage needed to be adjusted. In its September order approving Idaho Power's 2015 DSM expenditures as prudently incurred, the Idaho Public Utilities Commission (IPUC) also directed Idaho Power to collaborate with stakeholders and submit a proposal for revising the Rider percentage by no later than December 30, 2016. There will be a workshop held with parties to the case (Staff, ICIP and the Idaho Conservation League) on November 7th and then there will be a conference call with members of EEAG to share the company's recommendation and receive feedback from EEAG before the company files its proposal with the IPUC. Tami also informed the group that the company will file its annual Flex Peak report in Idaho today and in Oregon next week. This is the second year the company has administered this program internally and it saw increased participation and load reduction.

9:40am- 2016 Residential Program Performance —Roger Lawless

Roger highlighted year to date savings comparison for 2016 over 2015 and program cost effectiveness of the Heating & Cooling Efficiency program, Energy House Calls, and Home Improvement. He presented the following key points:

- As of the end of 3rd quarter, the residential programs are at 144% of goal, in large part due to the energy-savings kit. In the Home Products program the company will continue to offer the buy down of CFL's manufactured in 2016, but after this year those buy down incentives will no longer be available. The company anticipates continuing to offer the fridge and freezer recycling in 2017.

- At the August EEAG meeting, there was a cost-effectiveness discussion on some of the programs. Idaho Power made a commitment to bring back its findings and present these to the group.

- Currently the ductless heat pump (DHP) measure is affecting the cost-effectiveness of the Heating & Cooling Efficiency (H&CE) program. The company is recommending that the DHP measure be pulled out of the H&CE program and become a standalone program, increase marketing efforts, and continue developing relationships with the trade allies that drive this program.

- Market transformation is an area where the Northwest Energy Efficiency Alliance (NEEA) can make an impact in the region. The company has expressed interest in NEEA working at the manufacturer level to lower the cost and broaden available products for the DHP's.

- The duct sealing and direct install measures for the Energy House Calls (EHC) program are borderline cost effective. The company would like to make a few modifications to the program to increase cost effectiveness. The recommendation is to keep EHC through 2017 then assess the viability of the program around August of 2017 for the upcoming year.

- The Home Improvement Program, which includes insulation of roof, floor, ceiling and window replacement, is not cost effective. The company will still encourage customers through education to continue to upgrade these measures even though an incentive will no longer be offered. EEAG was asked for ideas on how best to sunset this program.

There was discussion and questions about maintaining consistency in programs, continuing to work with trade allies in the H&CE program, looking at regional perspective and leveraging Idaho Power's investment in NEEA and keeping the timeframe in mind when sun setting a program so that customers have time to react.

10:39-Break

10:55 am-2016 Commercial Program Performance— Quentin Nesbitt

Quentin provided year-to-date savings and participation for the Commercial & Industrial, Irrigation, and Flex Peak programs along with 2017 plans for these programs. The following key points were presented:

- New construction projects are on target to meet the 2016 goal. For 2017 there will be a continued effort to build relationships and educate customers who have not engaged in programs.

- The Retrofit program has seen increased participation due in large part to the increased interest in new LED technology. The student intern is updating new product tech sheets. These are tools that the customer reps use when visiting customers to aid in describing program measures. For 2017 there may be a need to update and or change some incentive levels, provide more specific technical trainings for trade allies to keep them engaged in the program, and continue finding ways to reach small business customers.

- The Custom program is at 72% of kWh savings compared to the 2015 total. There are fewer projects in the pipeline but applications have remained strong. For 2017 the company will continue to work with customers on projects through scoping and detailed audits as well as looking at retro-commissioning ideas.

- The School Cohort timeline and success stories for the Wastewater and Water Supply Cohorts were discussed and the increased participation in the Commercial & Industrial trainings was highlighted.

- Irrigation Efficiency projects and savings are up in comparison to last year and to goal.

- Flex Peak had a 48% higher enrollment rate for 2016. For the 2017 program season, enrollment will focus on retention of current participants. The company requested EEAG input regarding a few possible changes for next year. The company is looking at an automatic re-enrollment vs. annual enrollment, adding a bill credit as a payment option, adding clarifying language regarding summing the event data instead of metering data on aggregated customers, and adding texting as a notification option.

There were questions and discussion about how the company deals with changes to incentive amounts, pay for performance programs that other regional utility's have, marketing ideas for the school cohort. The group supports the proposed changes for Flex Peak and stressed consistency for all customers regarding how the bill credit would be reflected on a customer's bill.

12:01 Lunch

1:00pm- Program Planning—Roger Lawless

Roger presented information on home energy reports, thermostatic shower valve, and gave an update on the online marketplace. The following key points were presented:

- The company is developing a home energy report pilot to be deployed early in 2017. Between 10,000 and 20,000 customers will be in a randomized control group with a treatment group of equal size. Participants would receive five to six reports over a 12 month period. Idaho Power will be working with the same

implementer that worked on myAccount in order to leverage that same information. The company solicited feedback from EEAG on the type of target audience for these reports.

- Roger explained how the thermostatic shower valves work, showed the results of a customer survey, asked members of EEAG to install one on their own showers and provide feedback around the first of December. The company solicited feedback from EEAG on how the shower valve could be offered as part of the residential portfolio.

- At the August EEAG meeting there was discussion about the online marketplace and the vendor that the company was researching. Roger highlighted an additional vendor and asked EEAG for feedback on the two options presented today.

There were questions and discussion about how to target a specific audience for the home energy reports, suggestions on providing frequent prompts to help customers implement changes, and discussion around how this information will be used in conjunction with myAccount data. There was discussion on how the thermostatic shower valve could be offered as an incentive for customers to create a myAccount profile - it could be used to drive people towards the home energy reports, and it could be an additional piece to the existing energy saving kits. The general consensus for the online marketplace discussion was that most members liked the idea of being able to guide customers toward the more energy efficient appliances even if there was not an incentive available. There was some concern about vendor one not being able to offer a way for the customer to purchase energy efficient products directly from their on-line marketplace.

1:49-Program Marketing—Bill Shawver, Tracey Burtch & Annie Meyer

Bill introduced a new employee, Annie Meyer, and spoke of other organizational changes within the department. Tracey presented the Empowered Community survey results for 2015 and 2016, gave an update on the Smart-saver Pledge, the fall awareness campaign, and various social media ads. The following key points were presented:

- A copy of the Smart-saver pledge was passed around to members of EEAG and they were invited to participate. There have been 937 pledges turned in and a follow up survey will be sent out in early December. The company has received positive feedback and notes from customers.

- The company will be evaluating changes to the 2017 Awareness campaign, it will have a similar look and feel but some components will change to keep customers engaged.

- The company is working on a new ad campaign targeting the commercial & industrial customer. These ads will feature actual customers and use recognizable landscapes. They will be done through print ads, success story videos online and social media. The first ad will feature a comparison of Don Strickler of Simplot and Kent Hanway of CSHQA.

- Idaho Power was the recipient of an E-Source Utility Ad award for its residential energy efficiency marketing campaign. They received the second place award for Best Ad Campaign for an Investor Owned Utility.

There were questions and discussion around survey participation, target marketing using geo-fencing, and if the company has seen an uptick in program participation due to the increased marketing efforts. Members of EEAG were complimentary of current marketing efforts and the new ideas for future marketing.

3:32 pm-Roundtable

Shawn will send out a doodle poll for 2017 EEAG dates in the next few weeks.

- I think it would be appropriate for Idaho Power to spend some of its advertising dollars around reliability and how well it does keeping our lights on during bad weather conditions.

- This was a good meeting. It is nice to see things discussed at these meetings being implemented.

- At the end of our last meeting the group said they would like to hear about programs for 2017 and I appreciate that we discussed that today.

- This was a great meeting. I am impressed with the adaptations being made for Flex Peak. The company is getting the word out on the Custom Efficiency, the school cohort, online marketplace and home energy reports. The marketing is a whole new world from two years ago and I want to recognize the strides the company has made in this area.

2:38pm Meeting adjourned

NEEA MARKET EFFECTS EVALUATIONS

Table 1. 2016 NEEA Market Effects Evaluations

Report Title	Sector	Analysis Performed by	Study Manager	Study/Evaluation Type
2015-2016 Northwest Residential Lighting Long-Term Market Tracking Study	Residential	DNV-GL	NEEA	Market
Assessment of NEEA Influence on 2010 Small Electric Motors Standard	Commercial	Cadmus	NEEA	Assessment
Building Operator Certificate Program Dataset Analysis	Commercial	Research Into Action	NEEA	Analysis
Building Operator Certificate Renewal Rate Assumptions Memorandum	Commercial	Research Into Action	NEEA	Analysis
Characterization of the Super-Efficient Dryer Market	Residential	Evergreen Economics	NEEA	Market
Commercial Code Evaluation Pilot Study	Commercial	Ecotope, Inc.	NEEA	Code
Commercial Real Estate Market Partners Program Savings Persistence Analysis	Commercial	Cadmus	NEEA	Analysis
Commissioning Long-Term Monitoring and Tracking—2015 Square Footage Update	Commercial	Cadmus	NEEA	Market
Evaluation of Key ACE Model Assumptions for Motor Rewinds	Industrial	Cadmus	NEEA	Analysis
Luminaire Level Lighting Controls Market Characterization and Baseline Report	Commercial	Research Into Action	NEEA	Market
NEEA Fluorescent Lamp Ballast Standard Evaluation: Final Report	Commercial	TRC	NEEA	Assessment
NEEA Funder and Board Member Satisfaction Survey Results	Funder/Member	Cadmus	NEEA	Satisfaction
Next Step Homes Phase 1: Savings Validation	Residential	Energy 350	NEEA	Assessment
Northwest Ductless Heat Pump Initiative: Market Progress Evaluation Report #5	Residential	ILLUME Advising	NEEA	Market
Northwest Heat Pump Water Heater Initiative Market Progress Evaluation Report #2	Residential	Evergreen Economics	NEEA	Market
Reduced Wattage Lamp Replacement Initiative Market Progress Evaluation Report #1	Commercial	Navigant	NEEA	Market
Retail Products Portfolio Pilot Evaluation Final Report	Commercial	Research Into Action	NEEA	Assessment

For NEEA reports, see the CD included at the back of this supplement.

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INTEGRATED DESIGN LAB

Table 2. 2016 Integrated Design Lab

Report Title	Sector	Analysis Performed by	Study Manager	Type
2016 Task 1: Foundational Services	Commercial	IDL	Idaho Power	Summary
2016 Task 1.7: Heat Pump Calculator	Commercial	IDL	Idaho Power	Summary
2016 Task 2: Lunch and Learn	Commercial	IDL	Idaho Power	Summary
2016 Task 3: BSUG	Commercial	IDL	Idaho Power	Summary
2016 Task 5: Building Efficiency Verifications	Commercial	IDL	Idaho Power	Summary
2016 Task 5: Tool Loan Library	Commercial	IDL	Idaho Power	Summary
2016 Task 6: Building Metrics Labeling	Commercial	IDL	Idaho Power	Summary
2016 Task 8: Daylighting Training	Commercial	IDL	Idaho Power	Summary
CRE Progress Report on Energy Savings for 2015—Summary	Commercial	GreenSteps	Idaho Power	Summary

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2016 TASK 1: FOUNDATIONAL SERVICES

SUMMARY OF PROJECTS

IDAHO POWER COMPANY EXTERNAL YEAR-END REPORT

December 31, 2016

Prepared for:
Idaho Power Company

Author:
Elizabeth Cooper

Report Number: 1601_001-01

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Prepared for:
Idaho Power Company

Contract Number:
5277

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DISCLAIMER

While the recommendations in this report have been reviewed for technical accuracy and are believed to be reasonably accurate, the findings are estimates and actual results may vary. All energy savings and cost estimates included in the report are for informational purposes only and are not to be construed as design documents or as guarantees of energy or cost savings. The user of this report, or any information contained in this report, should independently evaluate any information, advice, or direction provided in this report.

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Table of Contents

Acronyms and Abbreviations

AIA	American Institute of Architects
ASHRAE	American Society of Heating, Refrigeration, and Air-conditioning Engineers
BEQ	Building Energy Quotient
BOMA	Building Owners and Managers Association
EMS	Energy Management System
HID	High Intensity Discharge
IDL	Integrated Design Lab
IPC	Idaho Power Company
LED	Light Emitting Diode
LEED	Leadership in Energy and Environmental Design
Op-Ed	Opinion Editorial
TI	Tenant Improvement
UI	University of Idaho

1. INTRODUCTION

The University of Idaho Integrated Design Lab (UI-IDL) provided technical assistance in 2016 for energy efficiency building projects through the Foundational Services task. This program, supported by Idaho Power Company (IPC), offered three phases of assistance for customers to choose from. A marketing flyer outlining the three phases is shown below. Phase I includes projects with budgets less than $2,000, Phase II is limited to projects from $2,000 to $4,000, and Phase III is any project with a budget greater than $4,000.

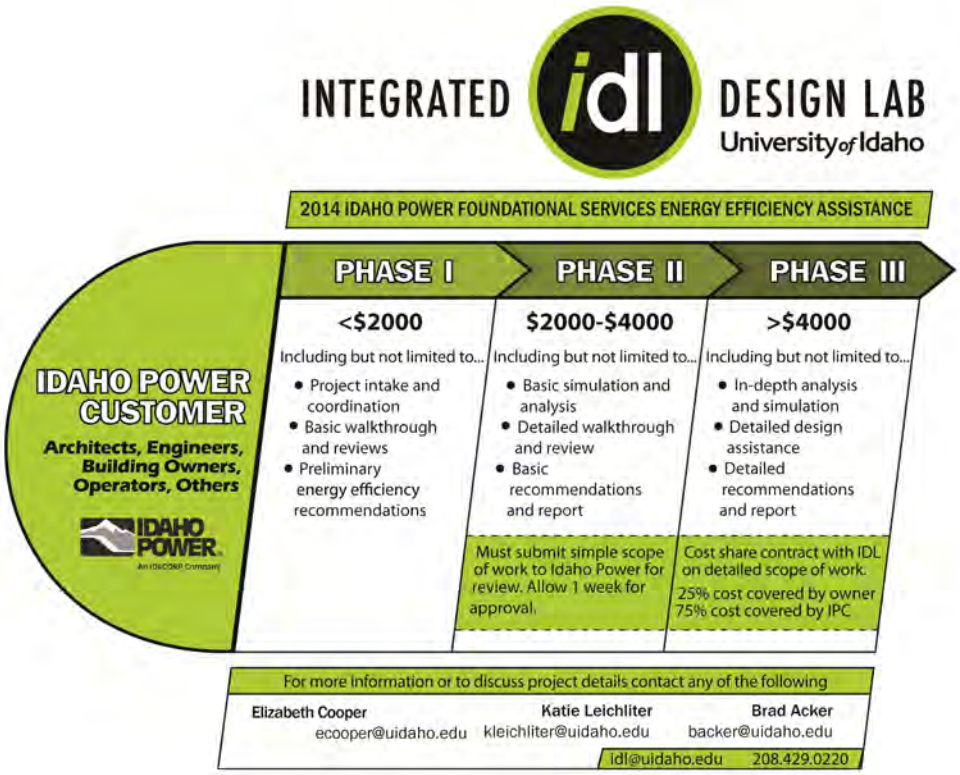

Figure 1: Foundational Services Flyer Outlining Phases

The Foundational Services program was marketed at numerous events and to multiple organizations in 2016, which included all IDL Lunch and Learn series presentations and BSUG presentations to local architecture and engineering firms, ASHRAE, AIA, and local government.

2. Project Summary

Forty-one projects received technical assistance through the Foundational Services program in 2016. Projects ranged from short phone call consultations to detailed building simulations. Building owners, property managers, building operators, architects, design engineers, utility customer representatives, government staff, energy management staff, program administrators, and contractors contacted the IDL. In total, there were thirty-two Phase I projects, five Phase II projects and one Phase III project. The full list of projects is shown in the appendix below. Details on Phase 2 and Phase 3 projects are included in the individual project reports submitted to IPC. Three projects are in early stages and the full scope of work has yet to be determined. Fifteen of the projects were for work to be completed in existing buildings, and seventeen were for new construction projects. The remaining projects are not building specific, or the scope has yet to be defined.

Table 1: 2016 Foundational Services Project Summary

Project	Phase	Approx. Area (ft2)	New or Existing	Location
Higher education technical design assistance	1	N/A	New	Boise
Healthcare technical design assistance	1	N/A	New	Meridian

Church daylight and system optimization design assistance	1	N/A	New	Meridian
Specialty facility energy analysis	1	N/A	Existing	Boise
Education facility technical assistance	1	N/A	Existing	Boise
EEM communications	1	--	--	--
Specialty facility energy and daylighting analysis	1	>100,000	Existing	Boise
Lighting research	1	--		Boise
Non Energy Benefit Lit Review	1	--	--	--
Healthcare technical design assistance	1	N/A	New	Boise
EEM communications	1	--	--	--
Energy Conference Planning	1	--	--	--
Specialty facility lighting design assistance	1	N/A	Existing	Idaho Falls
Municipal facility energy management assistance	1	N/A	existing	Boise
Municipal facility energy management assistance	1	N/A	existing	Boise
Hotel energy and daylighting analysis	1	140,750	existing	Boise
School building energy efficiency support	1	N/A	Existing	Boise
Office building energy efficiency inquiry	1	N/A	new	Nampa
Church energy efficiency inquiry	1	N/A	Existing	Nampa
Hotel technical design assistance	1	N/A	new	Boise
Specialty facility daylight analysis	1	N/A	Existing	Mt. Home
Municipal facility energy and daylight modeling	1	11,200	New	Boise
Municipal facility energy and daylight modeling	1	5,000	New	Boise
Presentation to building operators	1	N/A	--	--
Hotel technical design inquiry	1	N/A	new	Twin Falls
School building daylight modeling	1	>50,000	New	Kimberly
Higher education technical design assistance	1	N/A	new	Boise
Data center chiller assistance	1	42,000	new	Boise
Higher education technical design inquiry	1	N/A	new	Nampa
Specialty facility technical design inquiry	1	N/A	new	Boise
Office building technical design assistance	1	N/A	Existing	Boise
Office building energy modeling assistance	2	N/A	Existing	Boise
Healthcare technical design assistance	2	N/A	New	Boise
Municipal building technical design assistance	2	N/A	New	Ketchum
New daylighting technology analysis	2	N/A	--	--
School building energy efficiency support	3	25,000	existing	Boise
Library energy efficiency support	TBD	N/A	existing	Homedale

School building technical design inquiry	TBD	N/A	Existing	Boise
Medical Office Building technical design inquiry	TBD	N/A	New	Boise

2016 TASK 1.7: HEAT PUMP CALCULATOR

SUMMARY OF PROGRESS

IDAHO POWER COMPANY EXTERNAL YEAR-END REPORT

December 31, 2016

Prepared for:

Idaho Power Company

Authors:

Elizabeth Cooper

Report Number: 1601_010-07

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IDL Director:
Elizabeth Cooper

Authors:
Elizabeth Cooper

Prepared for:
Idaho Power Company

Contract Number:
5277

Please cite this report as follows: Cooper, E. (2016). *TASK 7: Climate Design Tools - Summary of Progress* (1601_010-07). University of Idaho Integrated Design Lab, Boise, ID.

DISCLAIMER

While the recommendations in this report have been reviewed for technical accuracy and are believed to be reasonably accurate, the findings are estimates and actual results may vary. All energy savings and cost estimates included in the report are for informational purposes only and are not to be construed as design documents or as guarantees of energy or cost savings. The user of this report, or any information contained in this report, should independently evaluate any information, advice, or direction provided in this report.

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Acronyms and Abbreviations

GSHP	Ground-Source Heat Pump
HP	Heat Pump
IDL	Integrated Design Lab
IPC	Idaho Power Company
UI	University of Idaho
VRF	Variable Refrigerant Flow
WSHP	Water-Source Heat Pump

1. Introduction

The 2016 Heat Pump (HP) Calculator task was a continuation of work done by the University of Idaho Integrated Design Lab (UI-IDL) for Idaho Power Company (IPC) that was begun in 2013 and continued through 2014 and 2015. A Heat Pump Energy Savings Calculator (HePESC) spreadsheet was developed in 2013, which was capable of hourly load calculations, energy consumption estimates using regression curves from simulation, and simple cost calculations. Details on 2013 effort, progress, and methods can be found in the IDL technical report number 1301_010-01, "*2013 Heat Pump Calculator – Development and Methodology*." The scope in 2014 focused on improving the tool by means of verification and user feedback. The 2015 work included further revisions, outreach, the completion of adding a residential space-type, and the incorporation of several climate design tools. The work in 2016 included the unification of additional climate design tools to the calculator and the addition of seven unique weather files for sites around Idaho. Details of this and the tool improvements are outlined in this report.

2. Climate Design Tools

The IDL developed several different climate design tools that existed as separate spreadsheets in the past. These tools included; passive cooling with thermal mass and natural ventilation, cross ventilation, stack ventilation, and night flush strategies. These tools were compiled within the HP Calculator tool under the "Advanced Design" tab in 2015. In 2016 the two remaining design

tools, earth tube and passive solar, were incorporated into the Advanced Design portion of the HP Calculator. These features are shown in Appendix A: Climate Design Tools.

3. Feedback and Next Steps

The earth tube design tool still needs to be optimized to run correctly. The tool currently has multiple sheets and the calculators do not reference weather files. There are very few shared functions between earth tube and any of the other design tools. It may make more sense to pull earth tube from the calculator to facilitate ease of use and calculation speeds, and let it remain a stand-alone tool. The passive solar calculator is functioning properly, but the graphic output needs improving. It was also determined that the night flush tool was not referencing the correct cells. It is recommended that a thorough evaluation of all of the tools be implemented in the future to confirm that the appropriate weather files are referenced, especially with the additional locations. Further development of the tool could be to include other building types, such as multifamily, etc. Additionally, the calculator has become large and slow. Revising the calculator to employ macros is still an option to improve run times. The ability to input custom equipment is still limited, and the functionality may be limited by the user's understanding of the required inputs. Further development of this capability should be included in future work.

4. REFERENCES

ASHRAE. (2013). Chapter 18: Nonresidential cooling and heating load calculations. In Ashrae handbook: Fundamentals. Atlanta, GA: ASHRAE.

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Mendon, V., & Taylor, T. (2014). Development of Residential Prototype Building Models and Analysis System for Large-Scale Energy Efficiency Studies Using EnergyPlus. *Building Simulation Conference* (pp. 457-464). Atlanta: ASHRAE/IBPSA-USA

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2016 TASK 2: LUNCH AND LEARN

SUMMARY OF EFFORT AND OUTCOMES

IDAHO POWER COMPANY EXTERNAL YEAR-END REPORT

December 31, 2016

Prepared for:

Idaho Power Company

Authors:

Dylan Agnes

Elizabeth Cooper

Report Number: 1601_002-01

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IDL Director:
Elizabeth Cooper

Authors:
Dylan Agnes
Elizabeth Cooper

Prepared for:
Idaho Power Company

Contract Number:
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ACRONYMS AND ABBREVIATIONS

AIA	American Institute of Architects
Arch	Architect(ure)
ASHRAE	American Society of Heating, Refrigeration, and Air-Conditioning Engineers
BCGCC	Boise Green Building Code
BESF	Building Energy Simulation Forum (Energy Trust of Oregon)
Bldg.	Building
BOMA	Building Owners and Managers Association
CSI	Construction Specifications Institute
Cx	Customer Experience
DOE	Department of Energy
Elec.	Electrical
EUI	Energy Use Intensity
GSHP	Ground Source Heat Pump
HVAC	Heating, Ventilation, and Air Conditioning
IBOA	Intermountain Building Operators Association
IBPSA	International Building Performance Simulation Association
IDL	Integrated Design Lab
IECC	International Energy Conservation Code
IES	Illuminating Engineering Society
IPC	Idaho Power Company
LEED	Leadership in Energy & Environmental Design
LED	Light Emitting Diode
M&V	Measurement and Verification
Mech.	Mechanical
Mgmt.	Management
NCARB	National Council of Architectural Registration Boards
TBD	To Be Determined

UI	University of Idaho
USGBC	U.S. Green Building Council
WBS	WELL Building Standard

1. 2016 Summary and Cumulative Analysis

Table 1: 2016 Lunch and Learn Summary

	Date	Title	Presenter	Group / Location	Attendees
1	03/15	New Design Recommendations for Exterior Lighting	IES	Open to all	5
2	03/16	Passive House Standards for Multifamily Projects	Energy Trust of Oregon	Open to all	2
3	05/26	Life Sciences Building Path to High-Performance Design and Concepts	Energy Trust of Oregon	Open to all	5
4	08/04	Daylight in Buildings: Getting the Details Right	Elizabeth Cooper	Architectural Organization 1	14
5	08/10	Benchmarking and Energy Goal Setting	Elizabeth Cooper	Engineering Firm 1	8
6	08/11	Integrated Design Case Studies	Elizabeth Cooper	Architecture Firm 2	12
7	08/30	Daylight in Buildings: Getting the Details Right	Elizabeth Cooper	Architecture Firm 3	11
8	08/31	Daylight in Buildings: Getting the Details Right	Elizabeth Cooper	Architecture Firm 2	10
9	09/07	Radiant Heating and Cooling Design	Damon Woods	Architecture Firm 1	8
10	09/08	Hybrid Ground Source Heat Pump System	Damon Woods	Architectural Organization 1	8
11	09/20	Daylight in Buildings: Schematic Design Methods	Elizabeth Cooper	Architecture Firm 3	11
12	09/20	Cold Feet - Managing Controls and Condensation when Simulating Radiant Slab Cooling	Damon Woods	Architecture Firm 4	9
13	09/20	The Classroom of the Future: A DOE project	IES	Open to all	5
14	09/23	Daylight in Buildings: Getting the Details Right	Elizabeth Cooper	Architecture Firm 5	12
15	10/13	Case Study: Daimler Truck North America	Energy Trust of Oregon	Open to all	6
16	10/17	Daylight in Buildings: Getting the Details Right	Elizabeth Cooper	Architecture Firm 6	10
17	10/20	Hybrid Ground Source Heat Pump	Damon Woods	Architecture Firm 4	9
18	10/28	Daylight Performance Metrics for Human Health, Productivity, and Satisfaction	Elizabeth Cooper	Architecture Firm 5	8
19	12/06	Integrated Design Principles	Elizabeth Cooper	Architecture Firm 7	4
20	12/13	Daylight Performance Metrics for Human Health, Productivity, and Satisfaction	Elizabeth Cooper	Architecture Firm 7	4
					161

Table 1 above summarizes all Lunch and Learn presentations given in 2016. Eighteen presentations were slated to specific organizations or companies during the project planning phase of the task. Two additional sessions were left open to be filled by Energy Trust Oregon. Twenty sessions were held in 2016. Three sessions were filled by Energy Trust of Oregon and two by Illuminating Engineering Society. The statistics in this section are cumulative for the 20 presentations. At each presentation participants were asked to sign in and fill out an evaluation form. Presentations were judged on a scale of 1 to 5, please see table 2, however, participants were given the opportunity to provide hand written responses.

Table 2: Evaluation Form Scale

Evaluation	1	2	3	4	5
In general, today's presentation was:	Not Useful		Somewhat Useful		Very Useful
The content of the presentation was:	Too Basic		About Right		Too Advanced
Please rate the following parts of the presentation: Organization, Clarity, Opportunity for Questions, Instructor's Knowledge of Subject Matter, and Delivery of Presentation	Needs Improvement		Good		Excellent

Table 3: Overall Attendance Breakdown

Architect:	136	Electrician:	
Engineer:	8	Contractor:	
Mech. Engineer:	3	Other:	6
Elec. Engineer:		None Specified:	6
Total (In-Person):	**161**		

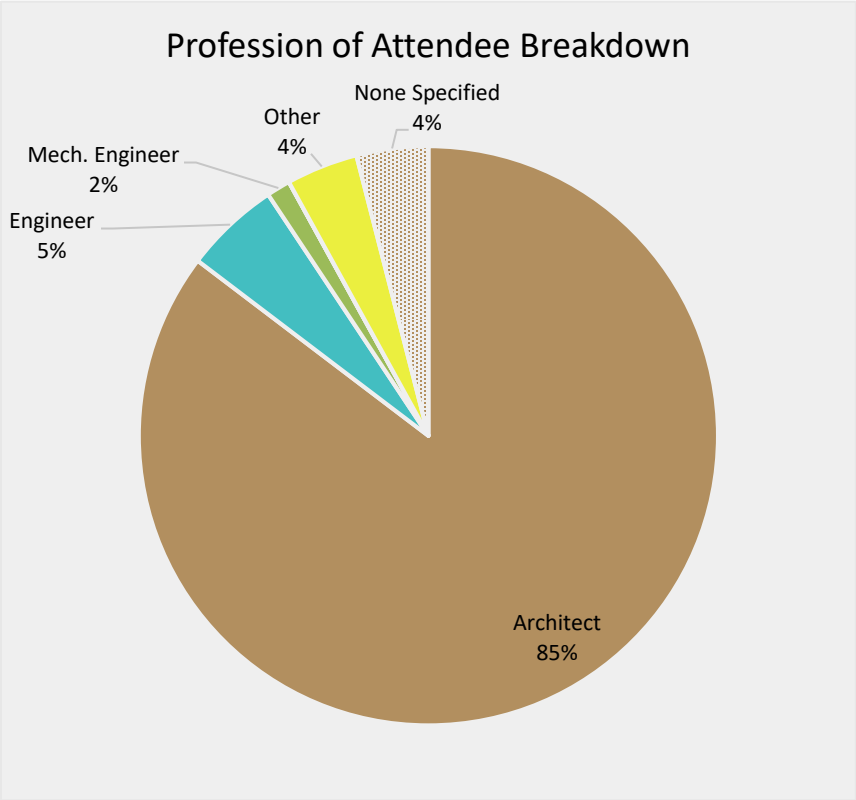

Figure 1: Attendee Profession

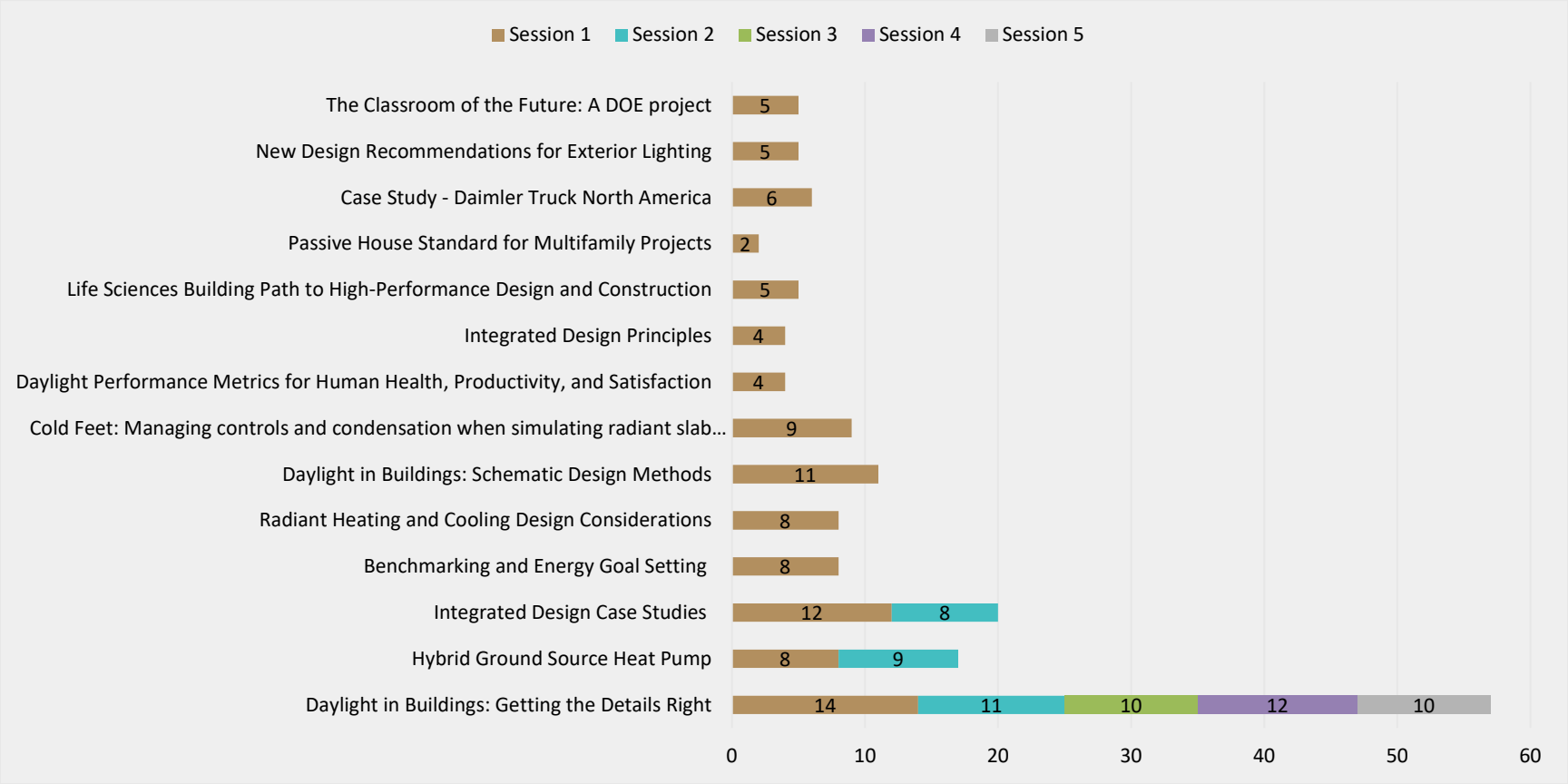

Figure 2: Attendee Count by Title and Number of Session

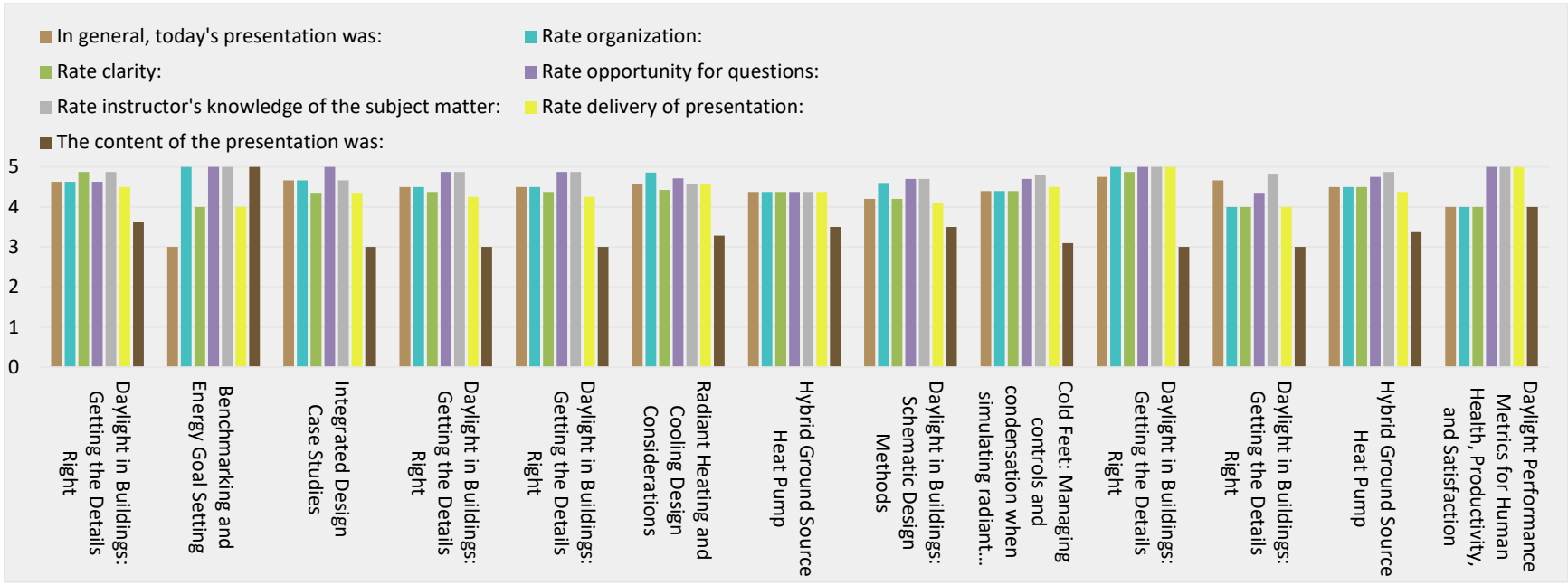

Figure 3: Average Evaluations by Session Title

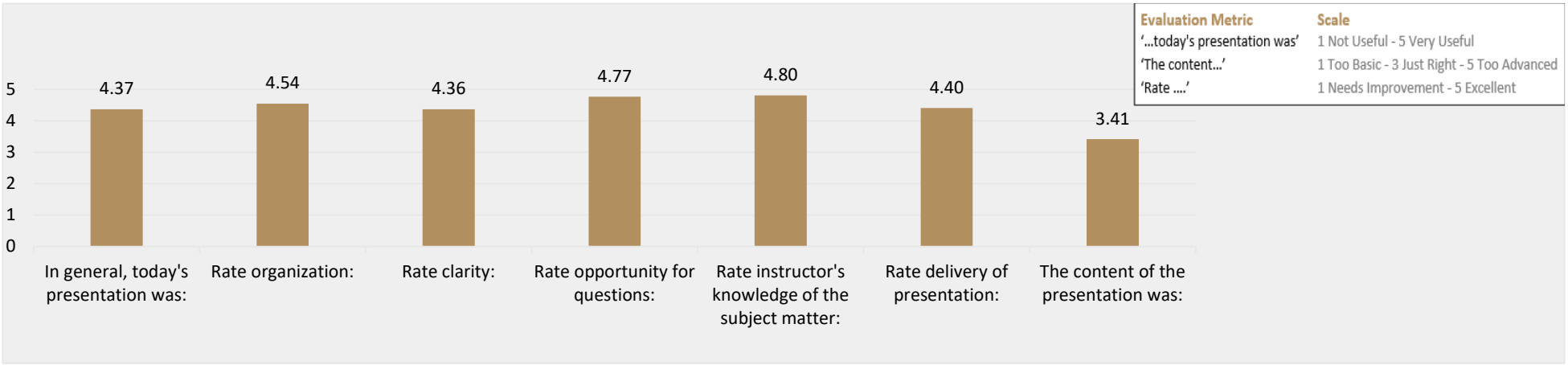

Figure 4: Overall Averages of Evaluations for all Sessions

2. SESSION SUMMARIES

At the conclusion of each lunch and learn session, an evaluation form was requested from each participant. The feedback was used to improve future sessions. The feedback received from participants is generally constructive criticism used to keep sessions updated but also to propose other potential topics and questions to the Integrated Design Lab.

2.1 Session 1: New Design Recommendations for Exterior Lighting (3/15/16)

Title: New Design Recommendations for Exterior Lighting

Description: We will cover key elements of IES RP-33 Lighting for Exterior Environments. The recommended practice aims to provide guidance in finding a balance between using the nighttime environment, and constraints created by ordinances and bylaws, as well as other factors such as environmental and health concerns. IES RP-33 Lighting for Exterior Environments is a key document for practicing designers, as it links various other documents that provide design guidelines for specific outdoor lighting applications, including IES RP-20 Lighting for Parking Facilities, and IES RP-8 Roadway Lighting.

Shirley is President of Cree's Canadian business unit. She has worked for several international lighting companies during her 30 years in the lighting industry. Lighting Certified since 2000, Shirley is an active member of the Illuminating Engineering Society (IES), a Past President of the Toronto Section, a past IES District Chair, and after four years on the IESNA Board of Directors, Shirley is now Vice-President (Incoming President), and will become President starting in July of 2016. She is a member of several IES committees including Roadway Lighting, Outdoor Environmental Lighting, and Street & Area Lighting. Shirley is also a committee member for several CSA standards committees on lighting including Roadway and Solid State Lighting.

Presentation Info:

Date:	03/15/16
Location:	Engineering Organization 1 – Webinar Boise
Presenter:	Shirley Coyle – Cree, Inc.

Attendance:

Architect:		Electrician:	
Engineer:		Contractor:	
Mech. Engineer:	4	Other:	
Elec. Engineer:	1	None Specified:	
Total (In-Person):	**5**		

2.2 Session 2: Passive House Standard for Multifamily Projects (3/16/16)

Title: Passive House Standard for Multifamily Projects

Description: This course will cover how the owner, developer, design teams, and general contractor worked together to meet rigorous Passive House standards, including their approach to design, modeling, envelope, mechanical systems, and construction. It will also include findings on incremental and associated financing costs, as well as information on actual energy use compared to modeled energy use for the first six months of occupancy.

- Demonstrate design approaches and solutions to meet Passive House Standards
- Communicate key differences between traditional construction and Passive House methods for building envelope, heating, ventilation, and cooling
- Review constructability of the Passive House details including the air barrier strategy
- Illustrate the challenges of sourcing materials to meet Passive House Standard, including impacts to project schedule
- Foster an understanding of Passive House whole building air tightness testing and use of Passive House Planning Package as a design tool

Presentation Info:

Date:	3/16/2016
Location:	Open to all - Webinar Boise
Presenter:	Mike Steffen, Walsh Construction Co. Dylan Lamar, Green Hammer Craig Kelley, Housing Development Center Jeff Becksfort, PAE

Ben Sturtz, REACH Community Development
Michael Bonn, Ankrom Moisan Architects

Attendance:

Architect:		Electrician:	
Engineer:		Contractor:	
Mech. Engineer:	2	Other*:	
Elec. Engineer:		None Specified:	
Total (In-Person):	**2**		

2.3 Session 3: Life Sciences Building Path to High-Performance Design and Construction (05/26/16)

Title: Life Sciences Building Path to High-Performance Design and Construction

Description: The facility also embodies high-performance through the energy systems, program spaces and the collaborative work relationship between the owner and design team. It is the second largest project in the country to achieve LEED® Platinum certification, and some of its energy-efficient features include ultra-efficient lighting and HVAC systems as well as advanced control strategies. Come and learn about this state-of-the-art building and how collaboration is key in elevating performance.

- Explore the importance of synergy between institutional partners and learn how three major Oregon Universities came together to create a unique learning environment
- Understand the early design decisions and strategies that influenced the energy performance of this building
- Learn what choices accomplished the building's mission and set the project up for success
- Understand how data-driven design helped mechanical and electrical systems achieve energy performance goals, and explore a comparison between the systems' modeled and actual performance
- Learn the importance of collaboration throughout this project and discover how the team worked together to overcome challenges during design and construction

Presentation Info:

Date: 5/26/2016

Location:	Open to all - Webinar Boise
Presenter:	John McMichael, Interface Engineering Michael Custer, JE Dunn Construction George Hager, SERA Architects Mark Williams, OHSU

Attendance:

Architect:		Electrician:	
Engineer:		Contractor:	
Mech. Engineer:		Other*:	
Elec. Engineer:		None Specified:	6
Total (In-Person):	**6**		

2.4 Session 4: Daylight in Buildings: Getting the Details Right (08/04/16)

Title: Daylight in Buildings Getting the Details Right

Description: The second talk in a sequence intended to instruct on the process of creating high quality and comfortable daylit spaces focuses on getting the details right. After the schematic design is formed to appropriately deliver daylight to the important surfaces within a space, there are several details that can make or break the overall success of the project. This presentation discussed several details ranging from interior surface colors and reflectance, to interior space layouts, furniture design, window details including glazing specifications and shading strategies. The presentation introduces concepts of lighting control systems to ensure that energy is saved from the inclusion of daylight.

Presentation Info:

Date:	08/04/2016
Location:	Architectural Organization 1 – Ketchum, ID
Presenter:	Elizabeth Cooper

Attendance:

Architect:	13	Electrician:	
Engineer:		Contractor:	
Mech. Engineer:		Other*:	1
Elec. Engineer:		None Specified:	
Total (In-Person):	**14**		

2.5 Session 5: Benchmarking and Energy Goal Setting (08/10/16)

Title: Benchmarking and Energy Goal Setting

Description: Learning the language and tools of the energy engineering field is critical to reaching real energy reductions in buildings. This presentation discusses several methods for establishing energy goals and targets in the pre-design phase and what the implications are for generating ideas to approach serious reductions in usage. Local examples will be highlighted. Measuring the performance of existing and new projects is critical to long term success because, you can't improve what you don't measure.

Presentation Info:

Date:	08/10/2016
Location:	Engineering Firm 1 - Boise
Presenter:	Elizabeth Cooper

Attendance:

Architect:	3	Electrician:	
Engineer:		Contractor:	
Mech. Engineer:		Other*:	
Elec. Engineer:		None Specified:	5
Total (In-Person):	**8**		

2.6 Session 6: Integrated Design Case Studies (08/11/16)

Title: Integrated Design Case Studies

Description: In this session, integrated design process will be reviewed and several case study examples presented. The case studies highlight both the successes and challenges of executing the integrated design process to create buildings that save significant energy compared to code baseline. Each project will be placed in the context of the 2030 Challenge, with the goal of establishing both the viability and the difficulty of reaching the milestones of the challenge. Most of these projects are regionally and climatically significant to Idaho and the Northwest.

Presentation Info:

Date:	8/11/2016
Location:	Architecture Firm 2- Boise
Presenter:	Elizabeth Cooper

Attendance:

Architect:	12	Electrician:	
Engineer:		Contractor:	
Mech. Engineer:		Other:	
Elec. Engineer:		None Specified:	
Total (In-Person):	**12**		

2.7 Session 7: Daylight in Buildings Getting the Details Right (08/30/16)

Title: Daylight in Buildings Getting the Details Right

Description: The second talk in a sequence intended to instruct on the process of creating high quality and comfortable daylit spaces focuses on getting the details right. After the schematic design is formed to appropriately deliver daylight to the important surfaces within a space, there are several details that can make or break the overall success of the project. This presentation discussed several details ranging from interior surface colors and reflectance, to interior space layouts, furniture design, window details including glazing specifications and shading strategies. The presentation introduces concepts of lighting control systems to ensure that energy is saved from the inclusion of daylight.

Presentation Info:

Date:	8/30/2016
Location:	Architecture Firm 3 - Boise
Presenter:	Elizabeth Cooper

Attendance:

Architect:	11	Electrician:	
Engineer:		Contractor:	
Mech. Engineer:		Other:	
Elec. Engineer:		None Specified:	
Total (In-Person):	**11**		

2.8 Session 8: Daylight in Buildings Getting the Details Right (08/31/16)

Title: Daylight in Buildings Getting the Details Right

Description: The second talk in a sequence intended to instruct on the process of creating high quality and comfortable daylit spaces focuses on getting the details right. After the schematic design is formed to appropriately deliver daylight to the important surfaces within a space, there are several details that can make or break the overall success of the project. This presentation discussed several details ranging from interior surface colors and reflectance, to interior space layouts, furniture design, window details including glazing specifications and shading strategies. The presentation introduces concepts of lighting control systems to ensure that energy is saved from the inclusion of daylight.

Presentation Info:

Date:	8/31/2016
Location:	Architecture Firm 1 – Boise
Presenter:	Elizabeth Cooper

Attendance:

Architect:	10	Electrician:	
Engineer:		Contractor:	
Mech. Engineer:		Other:	
Elec. Engineer:		None Specified:	
Total (In-Person):	**10**		

2.9 Session 9: Radiant Heating and Cooling Design (09/07/16)

Title: Radiant Heating and Cooling Design

Description: Designing for radiant systems and thermally active surfaces represents a key opportunity for integrated design and high performance buildings. While radiant systems can be inherently more energy efficient than air-based systems, their success requires close collaboration between architects and engineers to ensure that the building facade reduces loads to levels achievable by radiant systems. This integration between the disciplines has a direct relationship to the performance of the system and comfort of the building, which is not always so closely related in more typical forced-air systems. Key design decisions must be made early in the design process to ensure the feasibility and performance of radiant systems down the road. A wide spectrum of configurations and types of radiant systems are available for designers, with each having different strengths, capacities, and complexities according to their setup. This presentation will cover some general rules of thumb to consider for radiant systems, as well as provide an overview of the key architectural and engineering design decisions associated with each system configuration.

Presentation Info:

Date:	9/7/2016
Location:	Engineering Firm 1 – Boise, ID
Presenter:	Elizabeth Cooper

Attendance:

Architect:	8	Electrician:	
Engineer:		Contractor:	
Mech. Engineer:		Other:	
Elec. Engineer:		None Specified:	
Total (In-Person):	**8**		

2.10 Session 10: Hybrid Ground Source Heat Pump (09/08/16)

Title: Hybrid Ground Source Heat Pump

Description: The initial cost of ground-source heat pump systems can be substantially higher than conventional systems, limiting it as a design option. This presentation will highlight how, with a hybrid GSHP system, it is possible to optimize the overall system life-cycle cost by reducing the initial cost, while still maintaining the low operating cost of a GSHP system. It will discuss how, to reduce initial costs, peak loads should be carefully calculated and minimized during the design phase, the GSHP system should be sized based on coincidental building loads with the use of simulation software, and the system components, including the ground heat exchanger and additional central plant equipment, should be sized to optimize life-cycle costs using appropriate economic assumptions.

Presentation Info:

Date:	9/8/2016
Location:	Architectural Organization 1 – Ketchum, ID
Presenter:	Damon Woods

Attendance:

Architect:	8	Electrician:	
Engineer:		Contractor:	
Mech. Engineer:		Other:	
Elec. Engineer:		None Specified:	
Total (In-Person):	**8**		

2.11 Session 11: Daylight in Buildings: Schematic Design Methods (09/20/16)

Title: Daylight in Buildings: Schematic Design Methods

Description: High quality daylighting design is a lost art. Several generations of designers and engineers have been trained to rely on electrically illuminated spaces in order to meet minimum lighting criteria for functional environments occupied by humans. This presentation is the first in a sequence intended to revive the lost art of daylighting design. It teaches concepts of designing in the overcast sky as well as under sunny skies. The concept of providing useable work plane illumination is delivered while the importance of creating visually comfortable and balanced daylit spaces is stressed. This presentation highlights the architectural form generators as well concepts of interior surface brightness to produce high quality and comfortable daylit spaces.

Presentation Info:

Date:	9/20/2016

Location:	Architecture Firm 3 – Boise, ID
Presenter:	Elizabeth Cooper

Attendance:

Architect:	10	Electrician:	
Engineer:		Contractor:	
Mech. Engineer:		Other:	
Elec. Engineer:		None Specified:	1
Total (In-Person):	**11**		

2.12 Session 12: Cold Feet: Managing Controls and condensation when simulating radiant slab cooling (09/20/16)

Title: Cold Feet: Managing Controls and condensation when simulation radiant slab cooling

Description: Daylighting alone does not necessarily save energy. While a good daylighting design will optimize the envelope to minimize unnecessary heat gain and heat loss, the bulk of the energy savings from spaces with the significant inclusion of daylight comes from dimming or switching off electric lighting systems. There have been several examples of successful daylighting-sensing lighting controls systems and even more tough lessons learned from systems that did not perform adequately. The general concepts of various daylight harvesting strategies will be presented. Then, the seven most common challenges to creating functional daylight-sensing lighting control systems will be reviewed in detail. Finally, several successful examples will be highlighted to promote more successful applications in future projects.

Presentation Info:

Date:	9/20/2016
Location:	Engineering Organization 1 – Boise Webinar
Presenter:	Damon Woods

Attendance:

Architect:	5	Electrician:	
Engineer:		Contractor:	
Mech. Engineer:		Other*:	
Elec. Engineer:		None Specified:	

Total (In-Person):	**5**
*Other included:	

2.13 Session 13: The Classroom of the Future: A DOE project (09/20/16)

Title: The Classroom of the Future: A DOE project

Description: The Department of Energy has initiated a research project to develop and test novel SSL luminaire designs for the classroom of the future. This presentation will present key findings from this research effort. Topics covered will include how major drivers, such as new trends in lighting and controls, new trends in learning, new requirements for the classroom, and a new understanding of human centric lighting, change the way we need to light classrooms. The presentation will cover the DOE-proscribed goals for energy efficiency, teacher control over lighting intensity and CCT, lumen maintenance and color stability, luminaire performance, and lighting levels on classroom desks and walls. After the presentation, the attendee will understand how to meet or exceed the DOE goals.

Ron Scott is with Finelite, Inc.He joined Finelite in 2014 and is responsible for the sale and promotion of Finelite products throughout Canada and the Western U.S. With a background in Mechanical Engineering, Ron began his lighting career in product design for Philips Ledalite. Over the course of the next 20 years, he was the product manager for a workspace specific lighting product with on-board motion and daylighting controls, a technical specialist managing the business sector for controls, and the regional sales manager for the Central US. In this last role, Ron trained agency staff and gave AIA- and NCQLP-registered presentations to clients throughout the region. Now, after more than 25 years in the lighting industry, Ron is a popular presenter of courses for regional IES chapters, architectural and lighting design practices throughout North America.

Presentation Info:

Date:	9/20/2016
Location:	Open to All – Boise Webinar
Presenter:	Ron Scott

Attendance:

Architect:		Electrician:	
Engineer:	3	Contractor:	
Mech. Engineer:	1	Other:	
Elec. Engineer:	1	None Specified:	

Total (In-Person):	**5**

2.14 Session 14: Daylight in Buildings: Getting the Details Right (09/23/16)

Title: Daylight in Buildings: Getting the Details Right

Description: The second talk in a sequence intended to instruct on the process of creating high quality and comfortable day-lit spaces focuses on getting the details right. After the schematic design is formed to appropriately deliver daylight to the important surfaces within a space, there are several details that can make or break the overall success of the project. This presentation discussed several details, ranging from interior surface colors and reflectance, to interior space layouts, furniture design, window details (including glazing specifications), and shading strategies. The presentation introduces concepts of lighting control systems to ensure that energy is saved from the inclusion of daylight.

Presentation Info:

Date:	9/23/2016
Location:	Architecture Firm 5 – Boise, ID
Presenter:	Elizabeth

Attendance:

Architect:	9	Electrician:	
Engineer:		Contractor:	
Mech. Engineer:		Other:	3
Elec. Engineer:		None Specified:	
Total (In-Person):	**12**		

2.15 Sessions 15: Case Study: Daimler Truck North America (10/13/16)

Title: Case Study: Daimler Truck North America

Description: At the October AFE event, presenters from the project design team and Daimler's sustainability engineer team will talk about their successful collaboration on the project, as well as the technical and design challenges they faced developing a high-performance office building on an industrial brown field site. A guided tour of the building will follow.

- Understand how the collaborative process with the design team and building owner led to effective decision-making strategies and a successful project.
- Learn how early energy analysis impacted the orientation, site placement and occupant health of the building.
- Learn how the design team created synergies between building systems to meet the RFP requirements. The course will cover how parametric analysis of envelope systems, HVAC energy consumption, thermal comfort, indoor air quality, and onsite renewable energy were utilized together.
- See how the design team and owners evaluated the building's performance during the post-occupancy measurement and verification period.
- Learn important tips for designing around dedicated outside air systems with radiant comfort systems in the occupied space.

Presentation Info:

Date:	10/13/2016
Location:	Open to All – Boise Webinar
Presenter:	Matthew Markstaller, Real Estate Manager, Daimler Trucks North America Mitchell Dec, Associate Principal, Glumac Michael Great, Managing Principal, Ankrom Moisan Architects Connie Hotovec, Associate, Ankrom Moisan Architects

Attendance:

Architect:		Electrician:	
Engineer:		Contractor:	
Mech. Engineer:		Other:	
Elec. Engineer:		None Specified:	
Total (In-Person):	**6**		

2.16 Session 16: Daylight in Buildings: Getting the Details Right (10/17/16)

Title: Daylight in Buildings: Getting the Details Right

Description: The second talk in a sequence intended to instruct on the process of creating high quality and comfortable day-lit spaces focuses on getting the details right. After the schematic design is formed to appropriately deliver daylight to the important surfaces within a space, there are several details that can make or break the overall success of the project. This presentation discussed several details, ranging from interior surface colors and reflectance, to interior space layouts, furniture design, window details (including glazing specifications), and shading strategies. The presentation introduces concepts of lighting control systems to ensure that energy is saved from the inclusion of daylight.

Presentation Info:

Date:	10/17/2016
Location:	Architecture Firm 6 – Meridian, ID
Presenter:	Elizabeth Cooper

Attendance:

Architect:	9	Electrician:	
Engineer:		Contractor:	
Mech. Engineer:		Other*:	1
Elec. Engineer:		None Specified:	
Total (In-Person):	**10**		
*Other included:	Drafter		

2.17 Session 17: Hybrid Ground Source Heat Pump (10/20/16)

Title: Hybrid Ground Source Heat Pump

Description: The initial cost of ground-source heat pump systems can be substantially higher than conventional systems, limiting it as a design option. This presentation will highlight how, with a hybrid GSHP system, it is possible to optimize the overall system life-cycle cost by reducing the initial cost, while still maintaining the low operating cost of a GSHP system. It will discuss how, to reduce initial costs, peak loads should be carefully calculated and minimized during the design phase, the GSHP system should be sized based on coincidental building loads with the use of simulation software, and the system components, including the ground heat exchanger and additional central plant equipment, should be sized to optimize life-cycle costs using appropriate economic assumptions.

Presentation Info:

Date:	10/20/2016
Location:	Architecture Firm 4 – Boise, ID

Presenter:	Damon Woods

Attendance:

Architect:	9	Electrician:	
Engineer:		Contractor:	
Mech. Engineer:		Other*:	
Elec. Engineer:		None Specified:	
Total (In-Person):	**9**		

2.18 Session 18: Daylight Performance Metrics for Human Health, Productivity, and Satisfaction (10/28/16)

Title: Daylight Performance Metrics for Human Health, and Productivity, and Satisfaction

Description: Daylight can breathe light and life into our buildings. Daylight can also make our buildings healthier and more energy efficient. However, designing effective, comfortable, and daylit buildings remains outside the capabilities of most designers. This session will discuss the impacts of daylight on humans in the built environment, the metrics associated with effective daylighting, and the tools available for designing daylight spaces with these metrics. It will highlight both the physical and psychological effects of daylight on the human visual and biological system and what can be feasibly achieved in terms of positive impacts upon worker productivity and improved user satisfaction through high quality daylighting design. It will explain the basis for daylighting metrics and how to utilize them in daylight and lighting design as well as capabilities of simulation tools to generate them, the effect of assumptions about blinds operation, implications for daylight performance and visual comfort, and the limitations of the metrics. Examples from real spaces present us with actionable knowledge about synthesizing the light of place with the specific needs of human activity as well as inform an intuitive understanding of the metrics and corresponding criteria.

Presentation Info:

Date:	10/28/2016
Location:	Architecture Firm 5 – Boise, ID
Presenter:	Elizabeth Cooper

Attendance:

Architect:	7	Electrician:	
Engineer:		Contractor:	

Mech. Engineer:		Other*:	1
Elec. Engineer:		None Specified:	
Total (In-Person):	**8**		

2.19 Session 19: Integrated Design Principles (12/06/16)

Title: Integrated Design Principles

Description: The discussion will include a brief overview of the 2030 challenge, the status of current building stock, and its relationship to code. Most of the discussion will be centered on the process of design and the associated inputs of climate, building use, and site design, and building design. The creation of loads by the necessary inputs will be addressed as an element to be reduced in order to mitigate system size and energy use. The aim is to provide an example of what can happen when we reduce energy loads through climate and use responsive design. Additionally, the presentation will cover some of the tools and techniques used to help guide decisions in the integrated design process.

Presentation Info:

Date:	12/06/2016
Location:	Architecture Firm 7 – Boise, ID
Presenter:	Elizabeth Cooper

Attendance:

Architect:	4	Electrician:	
Engineer:		Contractor:	
Mech. Engineer:		Other*:	
Elec. Engineer:		None Specified:	
Total (In-Person):	**4**		

2.20 Session 20: Daylight Performance Metrics for Human Health, Productivity, and Satisfaction (12/13/16)

Title: Daylight Performance Metrics for Human Health, Productivity, and Satisfaction

Description: Daylight can breathe light and life into our buildings. Daylight can also make our buildings healthier and more energy efficient. However, designing effective, comfortable, and daylit buildings remains outside the capabilities of most designers. This session will discuss the

impacts of daylight on humans in the built environment, the metrics associated with effective daylighting, and the tools available for designing daylight spaces with these metrics. It will highlight both the physical and psychological effects of daylight on the human visual and biological system and what can be feasibly achieved in terms of positive impacts upon worker productivity and improved user satisfaction through high quality daylighting design. It will explain the basis for daylighting metrics and how to utilize them in daylight and lighting design as well as capabilities of simulation tools to generate them, the effect of assumptions about blinds operation, implications for daylight performance and visual comfort, and the limitations of the metrics. Examples from real spaces present us with actionable knowledge about synthesizing the light of place with the specific needs of human activity as well as inform an intuitive understanding of the metrics and corresponding criteria.

Presentation Info:

Date:	12/13/2016
Location:	Architecture Firm – Boise, ID
Presenter:	Elizabeth Cooper

Attendance:

Architect:	4	Electrician:	
Engineer:		Contractor:	
Mech. Engineer:		Other*:	
Elec. Engineer:		None Specified:	
Total (In-Person):	**4**		

3. FUTURE WORK

Feedback was gathered from the 99 Lunch and Learn evaluations received throughout 2016. The comments from these were valuable in defining possible future Lunch and Learn topics and informed the list of suggestions below.

Potential Future Topics:

- Mechanical systems
  - Building HVAC System
  - HVAC controls and programming
  - Passive heating/cooling/ventilation
- Codes
  - Advances in insulation systems
  - Energy Efficient Envelopes
- Lighting/Daylighting
  - Digital Lighting Controls
  - Human Comfort
  - Glare Issues
  - Residential Design Guide

With the Lunch and Learn task, attendance at each session is determined mainly by the size of the firm or organization that is hosting. However, there may still be opportunities for increasing attendance. One suggestion would be to encourage the hosting entity to invite others who would find the information relevant such as, consultants or owners they work with.

2016 TASK 3: BSUG

SUMMARY OF EFFORT AND OUTCOMES

IDAHO POWER COMPANY EXTERNAL YEAR-END REPORT

December 31, 2016

Prepared for:

Idaho Power Company

Authors:

Dylan Agnes

Elizabeth Cooper

Report Number: 1601_003-01

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Prepared by:
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IDL Director:
Elizabeth Cooper

Authors:
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Elizabeth Cooper

Prepared for:
Idaho Power Company

Contract Number:
5277

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DISCLAIMER

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1. Acronyms and Abbreviations

AIA	American Institute of Architects
App	Application
ARUP	London based multi-discipline firm
ASHRAE	American Society of Heating, Refrigeration, and Air-Conditioning Engineers
BCVTP	Building Controls Virtual Test-Bed
BEMP	Building Energy Modeling Professional
BESF	Building Energy Simulation Forum (Energy Trust of Oregon)
BIM	Building Information Modeling
BOMA	Building Owners and Managers Association
BSME	Bachelor of Science in Mechanical Engineering
BSUG	Building Simulation Users' Group
CBECS	Commercial Building Energy Consumption Survey
Comm	Commercial
Elec.	Electrical
eQUEST	Quick Energy Simulation Tool
GBXML	Green Building Extensible Markup Language
HePESC	Heat Pump Energy Savings Calculator
HVAC	Heating, Ventilation, and Air Conditioning
IBPSA	International Building Performance Simulation Association
IDL	Integrated Design Lab
IPC	Idaho Power Company
LBNL	Lawrence Berkeley National Laboratory
LEED	Leadership in Energy & Environmental Design
M. Arch	Masters of Architecture
ME	Mechanical Engineer(ing)
Mech.	Mechanical
MEP	Mechanical, Electrical, and Plumbing
MS Arch	Masters of Science Architecture
NCARB	National Council of Architectural Registration Boards
RDA	Revit Daylighting Analysis
TMY	Typical Meteorological Year
THERM	
UDC	Urban Design Center
UI	University of Idaho
USGBC	U.S. Green Building Council

2. Introduction

The 2016 Idaho Power scope of work for the Building Simulation Users' Group (BSUG) task included planning, organization and hosting of six meetings, recording attendance and evaluations, archiving video of the presentations, and maintaining the BSUG 2.0 website.

3. 2016 Summary and Cumulative Analysis

In 2016, six sessions were coordinated and hosted. Sessions are summarized below with details in the following sections.

Table 1: Overall Summary of Sessions

Date	Title	Presenter	Presenter Company	RSVPs		Attendees	
				In-person	Online	In-person	Online
5/25	Cold Feet: Managing Controls and Condensation when Simulating Radiant Slab Cooling	Damon Woods	IDL	11	0	13	0
6/22	Energy Modeling Mindset: Making Informed Design Decisions with Building Energy Models	Tim Johnson	CTA	10	40	11	22
7/27	Expanding the Role of Lighting in Architecture	Kera Lagios	Integral Light Studio	1	21	5	12
8/17	eHarmony for Energy Modeling – Hits and Misses in Matching Energy Modeling Tools and Energy Modeling Projects	David Bradley	TESS	11	24	11	13
10/19	Climate Data – The Highs and Lows in Data Availability and Confidence	Mel Kunkel	IPC	5	2	4	1
11/18	Using Energy Models for Commission Controls	Dennis Knight	Whole Building Systems	30	0	29	0
			Total:	**70**	**67**	**73**	**48**
				137		**121**	

3.1 2016 Attendance

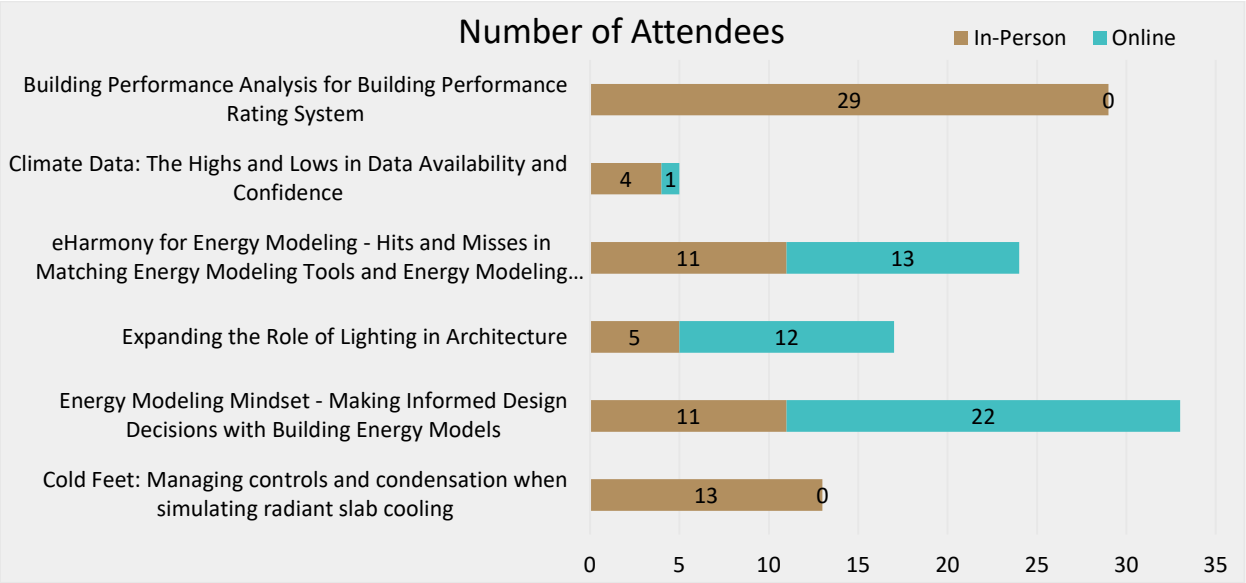

Figure 1: Attendee Count by Session and Type

Table 2: Overall Attendance Breakdown

Architect:	18	Electrician:	
Engineer:	22	Contractor:	
Mech. Engineer:	6	Other:	7
Elec. Engineer:		None Specified:	68
Total (In-Person):	**73**		
Total (Online):	**48**		
Total (Combined):	**121**		

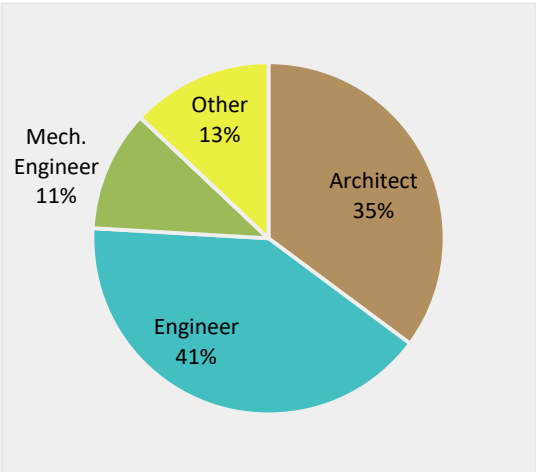

Figure 2: Attendee Profession Breakdown

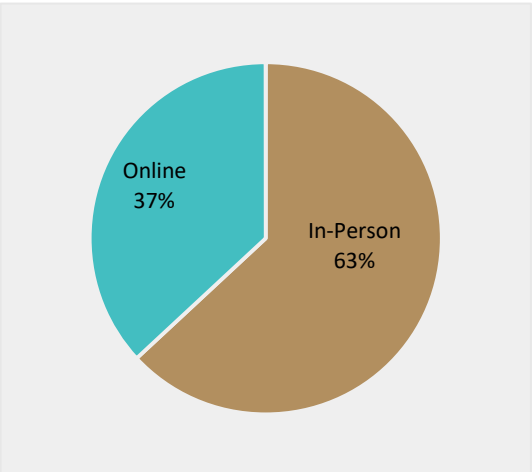

Figure 3: Attendee Type Breakdown

3.2 2016 Evaluations

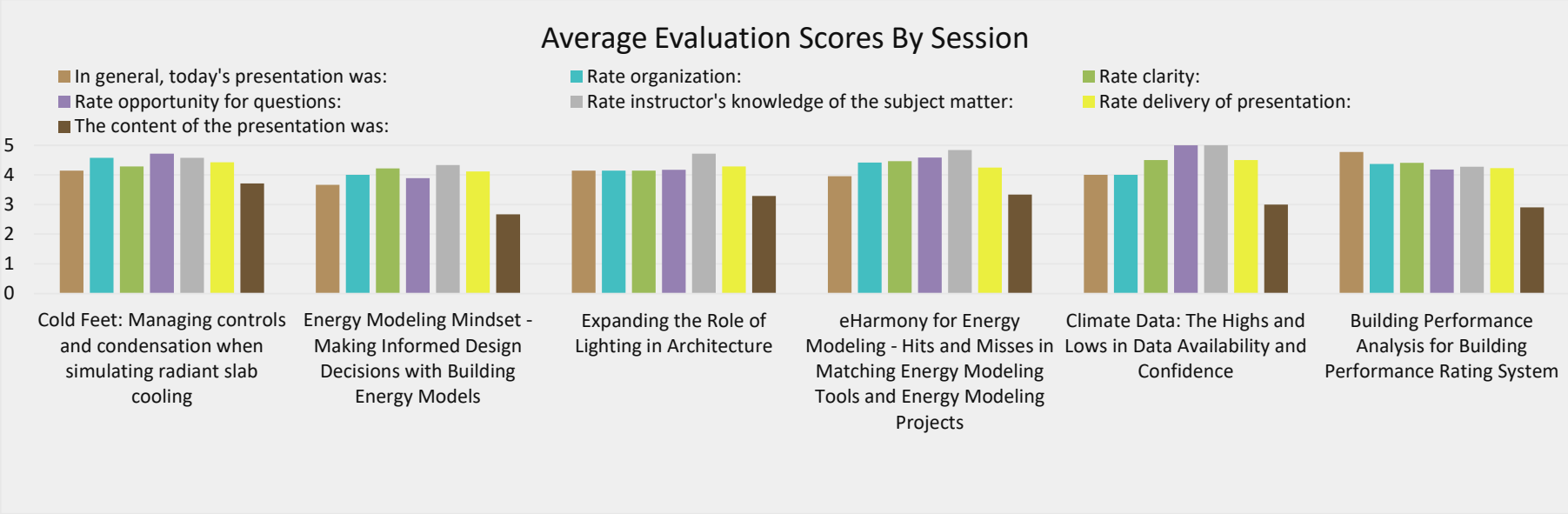

Figure 4: Average Evaluations by Session

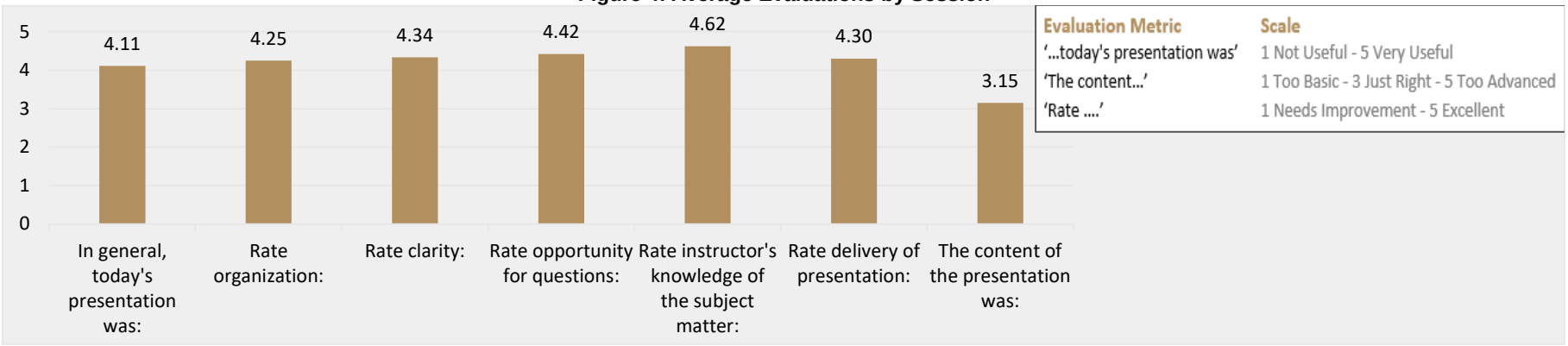

Figure 5: Average Evaluation Scores for All Sessions

4. SESSION SUMMARIES

4.1 Session 1: Cold Feet – Managing Controls and Condensation when Simulating Radiant Slab Cooling (5/25/16)

Title: Cold Feet – Managing Controls and Condensation when Simulating Radiant Slab Cooling

Date: 05/25/16

Description: Radiant slab systems have the potential to use significantly less energy than conventional all-air HVAC systems. In a 2012 survey by the New Buildings Institute, roughly 50% of net-zero buildings chose to pursue radiant designs for their HVAC systems. However, if not controlled properly, radiant slabs can lead to higher energy use and issues of simultaneous heating and cooling in both energy models and real buildings. This BSUG will cover current design guidelines for radiant slab systems, particularly when used for cooling. The lecture will also include a discussion of operational best practices, capacity calculations, and condensation management based on the current literature. One of the OpenStudio models developed by the Integrated Design Lab will be shown as a case-study including lessons learned during the project. Damon Woods will present some of the latest research on radiant systems, their unique load profiles, and control requirements to show that there's no need to have cold feet about modeling radiant slabs systems.

Presenter: Damon Woods is a PhD candidate at the University of Idaho in mechanical engineering. His research focus is on model predictive control and demand-side management of radiant systems. He received his bachelor's degree in mechanical engineering from Montana State University and a master's in the same subject from Boise State University. Damon has been working as a research assistant at U of I's Integrated Design Lab for the last three years while pursuing his doctorate.

Attendance:

Architect:	3	Electrician:	
Engineer:	5	Contractor:	
Mech. Engineer:		Other*:	3
Elec. Engineer:		None Specified:	2
Total (In-Person):	**13**		
Total (Online):	**0**		
*If 'Other' was noted:	Not specified		

Evaluation Highlights (What attendees found most valuable):

- Interesting topic presented in a way that is easy to understand
- Good overview. Not too basic or advanced.

4.2 Session 2: Energy Modeling Mindset – Making Informed Design Decisions with Building Energy Models (6/22/16)

Title: Energy Modeling Mindset – Making Informed Design Decisions with Building Energy Models

Date: 06/22/16

Description: Once considered a costly exercise reserved only for high performance or "green" buildings, energy models are now becoming standard practice. Timely building performance models can reduce construction costs, operational costs, and lessen a project's environmental impact. This session will provide a guide to navigating the treacherous "rapids" of building energy modeling for design optimization

Presenters: Working out of the Energy Services group at CTA Architects Engineers' downtown Boise office, Tim Johnson is a veteran professional mechanical engineer and ASHRAE building energy modeling professional. He specializes in building performance analysis and has provided design and energy services for more than 100 projects – including Pahranagat National Wildlife Refuge, a zero net energy (ZNE) facility in southern Nevada, and several joint efforts with the National Renewable Energy Lab (NREL).

Attendance:

Architect:	1	Contractor:	
Mech. Engineer:	2	Other*:	2
Elec. Engineer:		None Specified:	6
Total (In-Person):	**11**		
Total (Online):	**22**		
*If 'Other' was noted:	IPC Programs (2)		

Evaluation Highlights (What attendees found most valuable):

- Zoolander? More like boolander!
- The final case study

4.3 Session 3: Expanding the Role of Lighting in Architecture (7/27/16)

Title: Expanding the Role of Lighting in Architecture

Date: 7/27/16

Description: For decades, electric lighting has been relegated to a relatively small role in the architectural project, often treated as an afterthought or an applied element. Recent concurrent developments, however, have shifted this relationship and made electric lighting a much more central

part of the design discussion. For instance, emerging biological research has highlighted the importance of lighting to the health of building occupants, while the evolution of lighting manufacturing has opened new avenues for the way light can be delivered. Further developments in simulations tools have also made it easier and more accessible for architects, engineers and designers to incorporate electric lighting modeling into their design workflows. During this lecture, I will share some of the tools that we use for both electric (and daylighting) concepts as well as basic techniques and good practices for incorporating electric lighting workflows into your own practice.

Presenter: Kera is an Associate Principal and co-leader of the Integral Light Studio at Integral Group, a deep green engineering firm in Oakland, CA. Prior to her time at Integral, she was a daylighting and lighting designer at Lam Partners, where she worked on dozens of projects ranging from institutional and commercial buildings to the lighting of facades and sculptures. Kera also co-founded Solemma, LLC and was one of the original developers of the DIVA-for-Rhino daylighting and energy plug-in. She holds a Masters of Architecture from Harvard University's Graduate School of Design, and a BA Summa Cum Laude in the History of Art from The University of Michigan, Ann Arbor.

Attendance:

Architect:	2	Electrician:	
Engineer:	1	Contractor:	
Mech. Engineer:		Other*:	
Elec. Engineer:		None Specified:	2
Total (In-Person):	**5**		
Total (Online):	**12**		
*If 'Other' was noted:			

Evaluation Highlights (What attendees found most valuable):

- Overview and contextualization of a number of different software packages by an industry professional
- Very informative

4.4 Session 4: eHarmony for Energy Modeling – Hits and Misses in Matching Energy Modeling Tools and Energy Modeling Projects (8/17/16)

Title: eHarmony for Energy Modeling – Hits and Misses in Matching Energy Modeling Tools and Energy Modeling Projects

Date: 8/17/2016

Description: The goal of the talk is put into practice the perhaps self-evident but easy to ignore notion that the success of an energy simulation project often hinges on the choice of analysis tool. To that end we will look with a critical eye at the details of some modeling projects that TESS has carried out using one such tool called TRNSYS. The talk will also provide a brief overview of other tools in an effort to place TRNSYS within the wider energy system analysis landscape.

Presenter: David holds a Bachelor of Science in Engineering from Swarthmore College and a Master of Science in Mechanical Engineering from the University of Wisconsin – Madison. His work efforts are divided between energy simulation consulting practice and energy modeling software development, support, and teaching. He has been a guest researcher at the University of Wisconsin – Madison and at the Centre Scientifique et Technique du Bâtiment in Nice, France and has been a partner at Thermal Energy System Specialists in Madison, Wisconsin since 2004.

Attendance:

Architect:	5	Electrician:	
Engineer:	3	Contractor:	
Mech. Engineer:	1	Other*:	2
Elec. Engineer:		None Specified:	13
Total (In-Person):	**11**		
Total (Online):	**13**		
*If 'Other' was noted:	Energy Specialist II		

Evaluation Highlights (What attendees found most valuable):

- Having a general topic regarding implementation was great
- Big picture philosophy
- Software and the future of modeling. Good to learn that we are more to scripts/text
- Introduction modeling tool I was not familiar with
- Examples
- I appreciated the examples of projects, as well as the way it was tied to the larger point of the presentation

4.5 Session 5: Climate Data – The Highs and Lows in Data Availability and Confidence (10/19/16)

Title: Climate Data – The Highs and Lows in Data Availability and Confidence

Date: 10/19/16

Description: The goal of the talk is to present an overview of climate and weather data, it's availability and sources and a short discussion on the uncertainty associated with future projections.

Presenter: Mel holds an Associates in Applied Science in Meteorology from the Community College of the Air Force, Bachelor of Science in Applied Meteorology from Embry Riddle Aeronautical University, Bachelor of Science in Geosciences: Hydrology emphasis from Boise State University and is currently working to finish his Ph.D. in Geosciences at Boise State University.

He currently works at Idaho Power Company as a Hydrometeorologist as part of the Resource Planning and Operations Group. His focus at Idaho Power and in his dissertation work is the examination of the

climatic drivers of Southern Idaho's Weather and developing forecast models for operational use with renewable resources and load generation requirements.

Attendance:

Architect:	1	Electrician:	
Engineer:	1	Contractor:	
Mech. Engineer:	2	Other*:	
Elec. Engineer:		None Specified:	1
Total (In-Person):	**4**		
Total (Online):	**1**		

*If 'Other' was noted:

Evaluation Highlights (What attendees found most valuable):

- Lots of good sources
- Good diversity in sites and options
- The final case study

4.6 Session 6: Building Performance Analysis for Building Performance Rating System

Title: Building Performance Analysis for Building Performance Rating System

Date: 11/09/16

Description: This presentation focuses on building performance rating systems and their requirements for energy use reduction and whole building optimization. The program provides an overview of how to use computer assisted building performance analysis building performance analysis systems and ASHRAE 90.1 Appendix G to maximize the design team's ability to achieve the greatest number of credits when seeking project certification under a building performed rating system.

Presenters: Dennis Knight

Attendance:

Architect:	1	Electrician:	
Engineer:	2	Contractor:	
Mech. Engineer:	2	Other*:	
Elec. Engineer:		None Specified:	24
Total (In-Person):	**29**		
Total (Online):	**0**		

*If 'Other' was noted:

Evaluation Highlights (What attendees found most valuable):

- No comments were made.

5. Website Maintenance and Statistics

The Google site "BSUG 2.0" was maintained and updated monthly. Each month, details about the upcoming presentation were posted to the 'UPCOMING EVENTS' page. These pages also included links to both webinar and in-person registration. Monthly emails linked to these pages as well as directly to the registration sites. If the monthly session included a webinar recording, the video was edited and posted to the YouTube channel with a link from the BSUG 2.0 website.

Between January 1, 2016 and November 13, 2016, total page views summed to 994 with unique page views at 823 for 914 total sessions at the site. Of the 914 sessions, 234 (26%) of the sessions were by users in Idaho. Below are charts showing a summary of website activity for the most popular pages, as well as for the site as a whole.

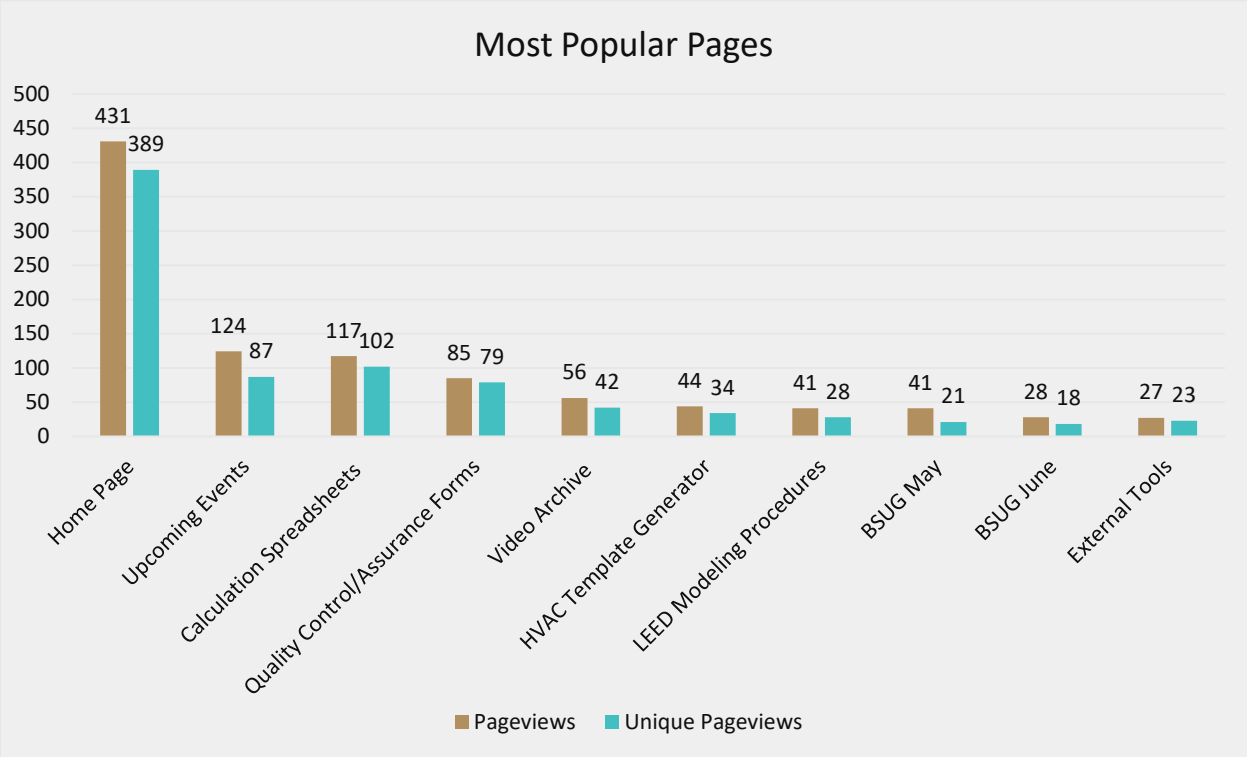

Figure 6: Number of Page Views for the Ten Most Popular Pages in 2016

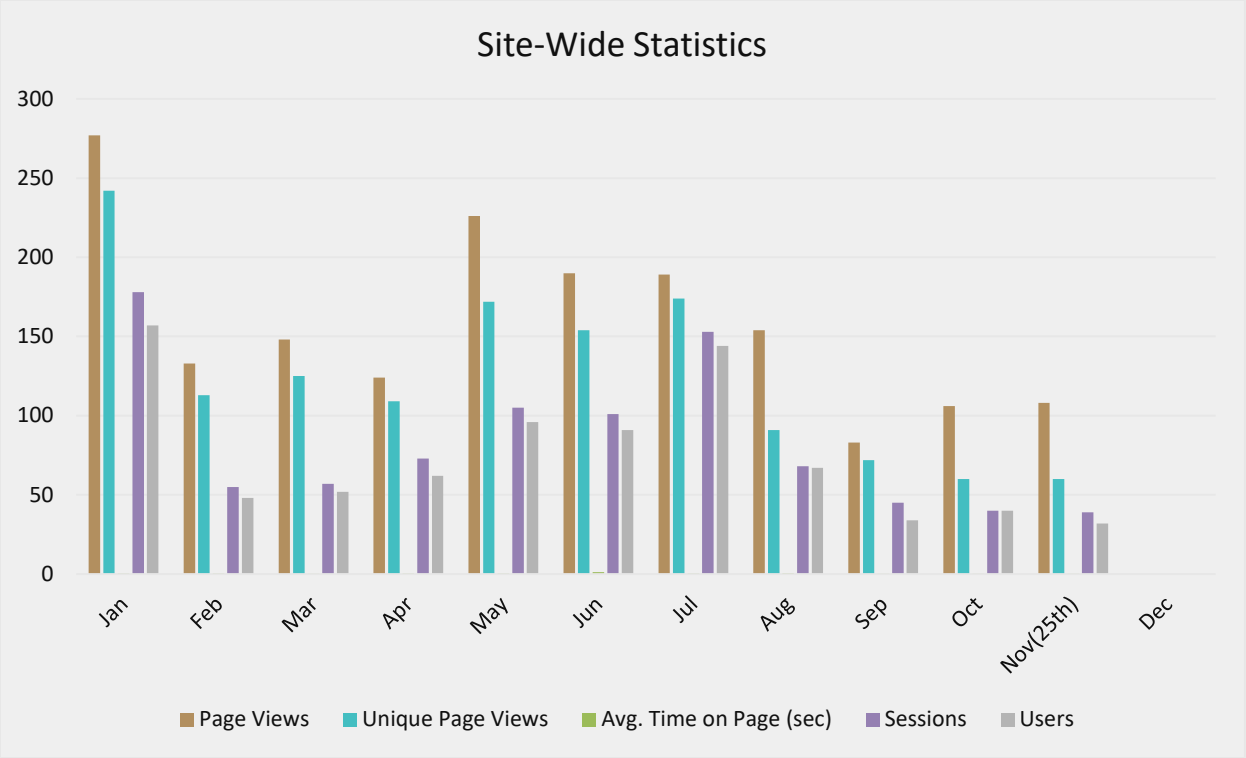

Figure 7: Monthly Site-Wide Statistics

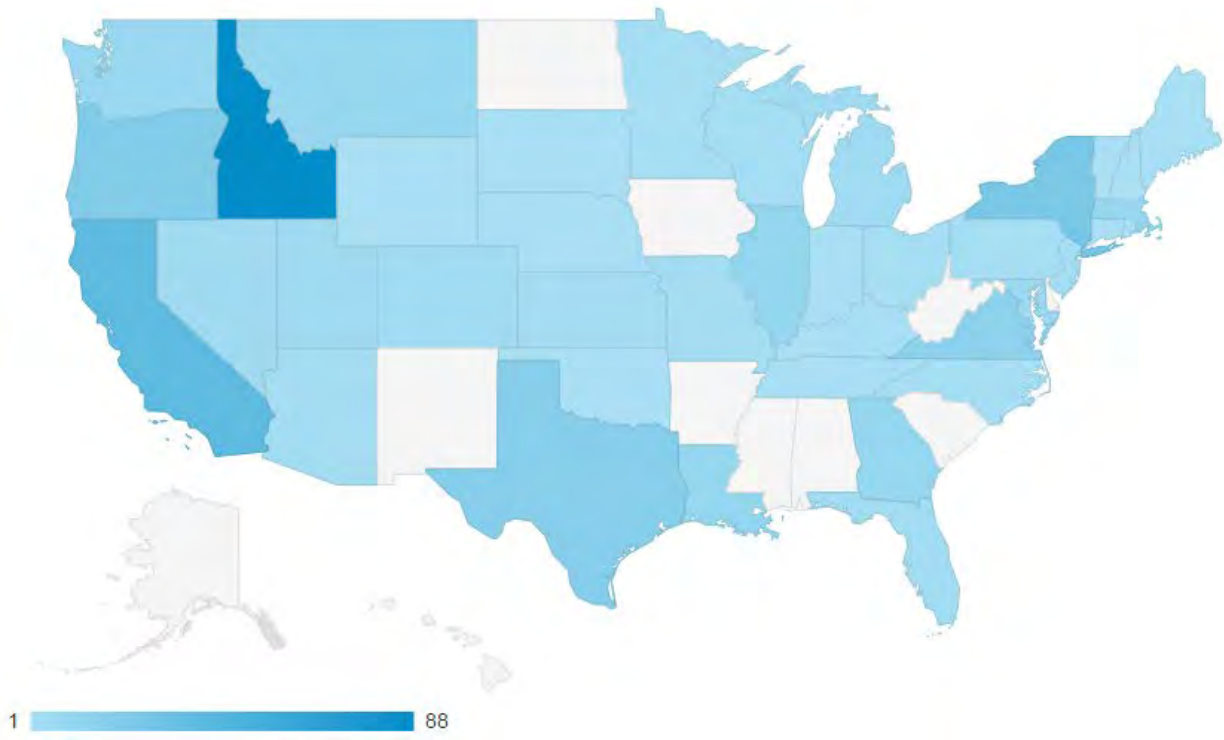

Figure 8: Heat Map of All U.S. Sessions in 2016

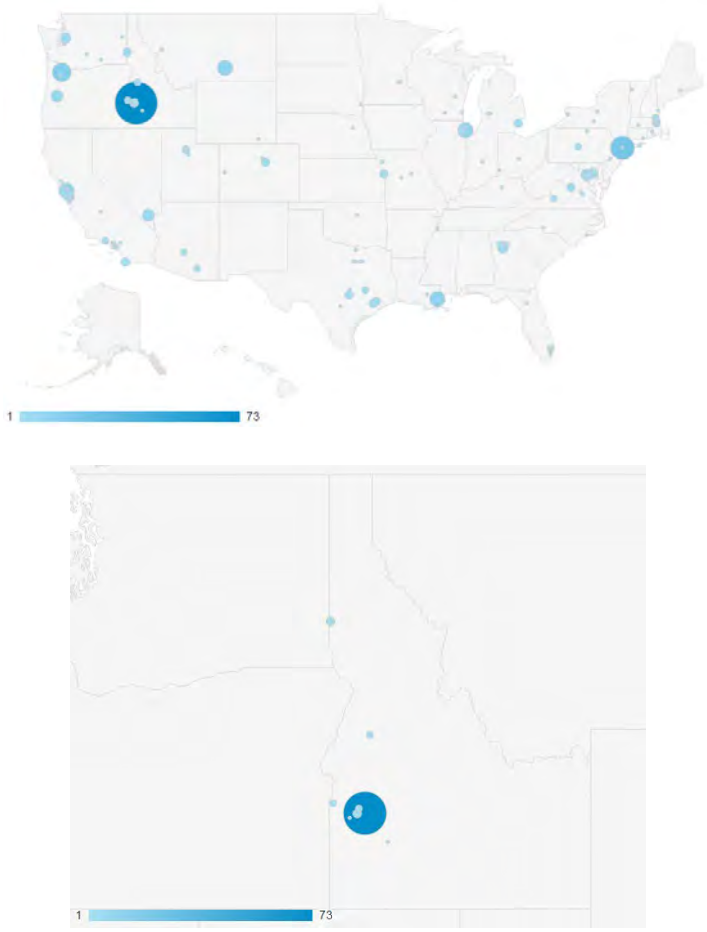

Figure 9: Bubble Maps of All Sessions and Idaho in 2016

6. Other Activities and Suggestions for Future Improvements

We saw a decrease in average attendance for each session this year but we only lost two in-person for overall attendance. Furthermore, online attendance is about a fourth of what it was last year and the decrease in online attendance can be identified with two of the six session not being able to host a webinar, May and November. Despite the slight decrease in attendance this year was successful for the BSUG task with 6 sessions completed and 130 total attendees – 73 in-person and 48 online. Feedback was provided by attendees via the

evaluation forms, 63 of which were collected. These offered a starting point for determining future improvements to the program.

2016 TASK 5: BUILDING EFFICIENCY VERIFICATIONS

SUMMARY OF PROJECTS

IDAHO POWER COMPANY INTERNAL YEAR-END REPORT

December 31, 2016 (Revised 2/6/17)

Prepared for:
Idaho Power Company

Authors:
Robert Galarza
Elizabeth Cooper

Report Number: 1601_005-01

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Prepared by:
University of Idaho Integrated Design Lab | Boise
306 S 6th St. Boise, ID 83702 USA
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IDL Director:
Elizabeth Cooper

Authors:
Robert Galarza

Prepared for:
Idaho Power Company

Contract Number:
3094

Please cite this report as follows: Galarza, R. (2016). *2016 TASK 5: Building Efficiency Verifications – Summary of Projects* (1601_005-01). University of Idaho Integrated Design Lab, Boise, ID.

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Acronyms and Abbreviations

AC	Air Conditioning
BEV	Building Efficiency Verification
HVAC	Heating, Ventilation, and Air Conditioning
IDL	Integrated Design Lab
IPC	Idaho Power Company
UI	University of Idaho
VRF	Variable Refrigerant Flow

1. Introduction

The University of Idaho Integrated Design Lab (UI-IDL) had two roles for the Building Efficiency Verification (BEV) task in 2016. The primary role was to conduct on-site verification reports for approximately 10%, typically seven to eight, of projects that participated in Idaho Power Company's (IPC) New Construction Program. The verified projects were randomly selected from the entire pool of projects, and at least four projects were required to be outside the Boise area. The secondary role was to review the photo controls design and function for every project whose application included incentive L3: Daylight Photo Controls within the New Construction Program. Once each review was concluded, a letter of support for the incentive was submitted to Idaho Power. This review and letter were to ensure energy savings and quality of design through the inclusion of additional design and commissioning recommendations.

2. 2016 Building Efficiency Verification Projects

The UI-IDL completed twelve New Construction projects as part of the 2016 scope of work. A detailed report for each project was submitted to IPC, including claimed and actual installation for each specific incentive the project applied for. All of the projects reviewed in 2016 were completed under the Building Efficiency 2014 Program. The specific incentives for this program are outlined in Table 1.

Table 2 summarizes the twelve projects and respective qualified incentive measures which were verified by UI-IDL. For the projects listed, 50% were conducted outside the Boise area.

Table 1: 2014 Build Efficiency Program Specific Incentives

Lighting	L1	Interior Light Load Reduction
	L2	Exterior Light Load Reduction
	L3	Daylight Photo Controls
	L4	Occupancy Sensors
	L5	High Efficiency Exit Signs
Air Conditioning	A1	Efficient Air-Cooled AC & Heat Pump Units
	A2	Efficient VRF Units
	A3	Efficient Chillers
	A4	Air Side Economizers
	A5	Direct Evaporative Coolers
Building Shell	B1	Reflective Roof Treatment
Controls	C1	Energy Management Control System
	C2	Guest Room Energy Management System
	C3	HVAC Variable Speed Drives
Appliances with Electric Water Heating	W1	Efficient Laundry Machines
	D1	EnergyStar Undercounter Dishwashers
	D2	EnergyStar Commercial Dishwasher
Refrigeration	R1	Head Pressure Controls
	R2	Floating Suction Controls
	R3	Efficient Condensers

Table 2: BEV Project Summary

IPC Project #	Facility Description	Location	Incentive Measures	UI-IDL Site-Visit Date
14-151	Retail (Non-Food)	Boise, ID	L1, L4, L5, A1, B1	12/08/16
14-182	Other – Cattle Resting Barn	Marsing, ID	L2	12/05/16
14-198	Medical (Non-Hospital)	Ontario, OR	L1, L4, L5, A1, A4, B1, D1	11/11/16
14-203	Other – Apartment Complex	Boise, ID	A1, C1	12/08/16
14-221	Office Building	American Falls, ID	L1	07/14/16
14-226	Retail (Non-Food)	Jerome, ID	L1, L4, L5	07/14/16
14-246	Office Building / Warehouse	Meridian, ID	L1, L3, L4, L5	11/30/16
14-251	Warehouse	Pocatello, ID	L1, L4	07/14/16
14-274	Office Building	Boise, ID	L1, L4	12/08/16
14-277	Other – Agricultural Workshop	Weiser, ID	L1	11/11/16

14-146	Office - Professional	Meridian, ID	L1, L2, L3, L4, L5, A2, B1, D1	1/24/17
14-035	School	Meridian, ID	L1, L2, L3, L4, L5, A1, A4, B1, C1, C3, W1, D1, D2	1/25/17

3. 2016 Photo Controls Review Projects

In 2016, the UI-IDL received at least eighteen inquiries regarding the New Construction photo controls incentive review. Documentation was received and final letters of support were submitted to IPC for photo controls incentive applications for eleven of these projects including a warehouse, a government facility, offices, and a manufacturing facility, a school, and greenhouses. Reviews were not completed for two government facilities and a university library since the requested necessary documentation was not received by the UI-IDL. Follow-up may be necessary on these projects.

INTEGRATED DESIGN LAB
University of Idaho

2016 TASK 5: TOOL LOAN LIBRARY

SUMMARY OF EFFORT AND OUTCOMES

IDAHO POWER COMPANY EXTERNAL YEAR-END REPORT

December 31, 2016

Prepared for:
Idaho Power Company

Authors:
Dylan Agnes
Elizabeth Cooper

Report Number: 1601_005-05

IDAHO POWER
An IDACORP Company

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www.uidaho.edu/idl

IDL Director:
Elizabeth Cooper

Authors:
Dylan Agnes
Elizabeth Cooper

Prepared for:
Idaho Power Company

Contract Number:
5277

Please cite this report as follows: *Agnes, D.* (2016). *2016 TASK 5: Tool Loan Library – Summary of Effort and Outcomes* (1601_005-05). University of Idaho Integrated Design Lab, Boise, ID.

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ACRONYMS AND ABBREVIATIONS

AC	Air Conditioning
AIA	American Institute of Architects
AHU	Air Handling Unit
Amp	Ampere
ASHRAE	American Society of Heating, Refrigeration, and Air-Conditioning Engineers
BOMA	Building Owners and Managers Association
BSU	Boise State University
CO2	Carbon Dioxide
CT	Current Transducer
Cx	Commissioning
DCV	Demand Control Ventilation
EE	Energy Efficiency
EEM(s)	Energy Efficiency Measure(s)
fc	Foot-Candle
HVAC	Heating, Ventilation, and Air Conditioning
IAC	Industrial Assessment Center
IBOA	Intermountain Building Operators Association
IDL	Integrated Design Lab
Int.	International
IPC	Idaho Power Company
kW	Kilowatt
kWh	Kilowatt-Hour
M&V	Measurement and Verification
OSA	Outside Air
PG&E	Pacific Gas and Electric Company

PPM	Parts Per Million
RPM	Rotations Per Minute
RTU	Rooftop Unit
TLL	Tool Loan Library
TPS	Third Party Service
UI	University of Idaho
USGBC	U.S. Green Building Council
Verif.	Verification
VOC	Volatile Organic Compound
3P	Third Party

1. INTRODUCTION

The Tool Loan Library (TLL) is a resource supported by Idaho Power Company (IPC) and managed by the University of Idaho Integrated Design Lab (UI-IDL). The TLL at the UI-IDL is modeled after the Lending Library at the Pacific Energy Center, which is supported by Pacific Gas and Electric (PG&E). In the past years interest in these types of libraries has grown. Recently, the Smart Building Center which is a project of the Northwest Energy Efficiency Council has started a lending library and they cite other lending libraries spanning a large range of tools, including non-energy efficiency related tools.

The primary goal of the TLL is to help customers with energy efficiency (EE) needs, through the use of sensors and loggers deployed in buildings of various types. Loans are provided to individuals or businesses at no charge to the customer. Over 900 individual pieces of equipment are available for loan through the TLL. The equipment is focused on measuring parameters to quantify key factors related to building and equipment energy use, and factors which can affect worker productivity.

The loan process is started when a customer fills out the tool loan proposal form, which is found on the TLL webpage (www.idlboise.com/tool-loan-library). When completing a tool loan proposal, the customer includes basic background information, project and data measurement requirements, and goals. When a proposal is submitted, UI-IDL staff members are alerted of a pending proposal via email. The customer and a staff member communicate to verify and finalize equipment needs. Tools are picked up at the UI-IDL or shipped at the customer's expense.

2. MARKETING

Marketing for the TLL was done at various UI-IDL and IPC activities throughout 2016, as well as on the UI-IDL website. One hundred tool loan flyers were printed in June of 2016 for distribution by IPC and UI-IDL staff. The flyer layout was unchanged from 2013: it is in Figure 1 and Figure 2 below. The TLL was promoted in presentations given by the UI-IDL staff, including the Lunch and Learn series and lectures to professional organizations such as the American Institute of Architects (AIA), ASHRAE, City of Boise, and the Idaho Green Energy and Building Conference.

The TLL flyer and program slides direct potential users to the TLL website for more information about the library. The main UI-IDL website hosts the TLL portal where customers can submit proposals and request tools, all online. In 2016, the TLL home page had 4,790 visitors. Changes and progress for the TLL homepage can be found in Appendix D.

INTEGRATED idl DESIGN LAB
University of Idaho

TOOL LOAN LIBRARY

The Tool Loan Library is a free resource managed by the University of Idaho-Integrated Design Lab (UI IDL) available to Idaho Power Company customers to support energy efficiency, demand response, or demand reduction projects. Loans are free of charge for people working on projects in the Idaho Power Company service territory.

The Library has a large variety of tools to capture many parameters for both data logging and on-site spot readings.

TOOL TYPES / PARAMETERS

Power (kW)	Temperature
Energy (kWh)	Relative Humidity
Power Factor	State Logging-Light
Voltage	State Logging-Magnetic
Solar flux (W/m^2)	Air Velocity
Plug loads (120V)	Air Pressure
RPM	Sound Level
Current	Gas-VOC
Flow-liquids	Light Level (lux,fc,ca)
Gas-(CO_2 ppm)	Thermal Imaging Camera
Flow-Natural Gas	Air Balance Equipment
Ultrasonic Leak Detection	

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www.idahopower.com

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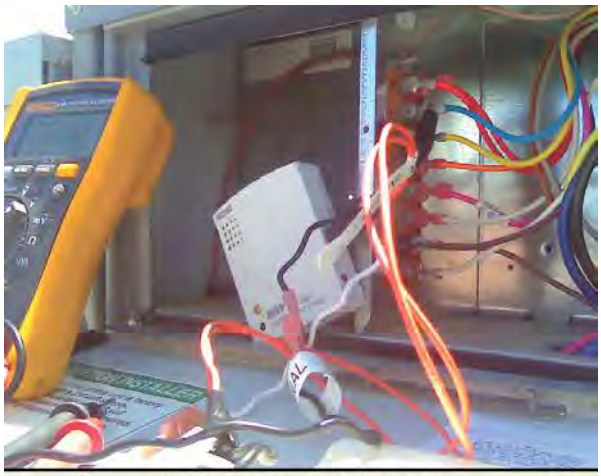
Figure 1: TLL Flyer Front



TOOL LOAN PROCESS

You will need to have a registered user account to access the tool request form. Creating an account is easy and free. An available tool inventory can be viewed online with information on how specific tools are used.

STEP 1: Access the UI-IDL website at (idlboise.com)
STEP 2: Select the Tool Loan Library tab
STEP 3: Log in, if you don't have an account click the register button on the top right of the IDL website, or follow the prompts to register from the Tool Request Form link.
STEP 4: Select the Tool Request Form link and complete the form.
STEP 5: The form will be sent to staff at the UI-IDL who will determine which tools are best for your application, and will contact you and provide the best equipment available to fulfill your request.

www.idlboise.com/tool-loan-library

Figure 2: TLL Flyer Back

3. New Tools & Tool Calibration Plan

In 2016, new tools were added to the TLL, and manuals and guidelines were made available for lending. The two new tools that were purchased were thermal imaging processors for use with smartphones. These tools, called Flir ONE, attach directly to the user's phone port, are small and easy to use. One is available to be used with iPhones and the other for Android operating systems. In addition to these new tools, several books and manuals were purchased for use in the TLL. Additionally, manuals already owned by the IDL will be added to the available reference material. The following is a list of the new material:

- ASHRAE Standard 62.1-2016- Ventilation for Acceptable Indoor Air Quality
- ASHRAE Active and Passive Beam Application Design Guide
- ASHRAE Fundamentals of HVAC Control Systems
- ASHRAE Best Practices for Datacom Facility Energy Efficiency
- ASHRAE Green Tips for Data Centers
- ASHRAE Server Efficiency
- ASHRAE Geothermal Heating and Cooling: Design of Ground-source Heat Pump Systems
- ASHRAE Procedures for Commercial Building Energy Audits
- Illuminating Engineering Society, The Lighting Handbook, Ed. 10

Equipment items included in the tool loan program are typically distributed with a manufacturer guaranteed calibration period between 1 and 3 years. While many items may remain within recommended tolerances for years after the guaranteed calibration period ends,

verifying the item is properly calibrated after initial and subsequent periods is recommended. Calibration services are available on most tools, sometimes from the manufacturer, and from various certified calibration services nationwide.

Third party (3P), certified tool calibration is ideal, but an extensive 3P calibration program would be expensive. Based on research and pricing from quotes, formal calibration would be cost prohibitive for much of the library tools. In several cases, cost of calibration can well exceed 30% of the item cost. As a certified calibration is typically only valid for 1-2 years, an alternative measurement and verification plan for most sensors and loggers is recommended. This will be possible with most of the tool loan inventory. A few exceptions to this must be made on a case by case basis to allow for factory calibration of items that cannot be compared or tested in any other way. An example of one item in this category would be the Shortridge Digital Manometer and Air-Data Multimeter which would have to be recalibrated by the manufacturer.

The IDL will perform the following to ensure items are within specified calibration tolerances:

1. Equipment will be cross-checked against new equipment of the same type for accuracy in a test situation where data is logged. The IDL plan would cross-check older items against multiple newer items at the end of each calibration period (i.e. every two years) to ensure readings are within specified tolerances.
2. Those items found to be out of tolerance will be assessed for factory re-calibration or replacement.

Calibration tracking columns have been added to an inventory spreadsheet which will allow the IDL to determine which items are due for calibration testing. Updates to calibration and references to testing data will be maintained in the inventory spreadsheet and has been expanded to include tool use, quotes, and budget estimates, please see Appendix C for more details. In December of 2016 twenty-five HOBO U12-012 loggers are being calibrated by third party, Transcat.

4. 2016 Summary Of Loans

In 2016, loan requests totaled 49 with 46 loans completed, 3 Loans were canceled by the customer or were rejected and 2 loans on-going. The third quarter had the highest volume of loans at 17 total. Loans were made to 12 different locations and 30 unique users. A wide range of tools were borrowed, as listed in Figure 8. The majority of tools were borrowed for principle investigations or audits, although loans were also made for determining baselines before EEMs were implemented. Tools were borrowed to verify these EEMs as well.

Table 1 and the following figures outline the usage analysis for TLL in 2016.

Table 1: Project and Loan Summary

	Request Date	Location		Project	Type of Loan	# of Tools Loaned
1	1/8/2016	Boise	ID	Server1	Audit	2
2	2/19/2016	Boise	ID	Home1	Verification of EEMs	1
3	2/23/2016	Boise	ID	BPL1	Audit	1
4	3/1/2016	Weiser	ID	WWTP1	Verification of EEMs	15
5	3/15/2016	Boise	ID	Home2	Verification of EEMs	1
6	3/4/2016	Boise	ID	Thesis1	Audit	1
7	3/9/2016	Kimberly	ID	WTP1	Audit	1
8	3/15/2016	Boise	ID	BPL2	Audit	4
9	3/30/2016	Boise	ID	BPLV	Audit	3
10	5/3/2016	Garden Valley	ID	VW1	Audit	27
11	5/4/2016	Boise	ID	YRTU1	Audit	1
12	5/9/2016	Boise	ID	BPLV2	Audit	3
13	5/11/2016	Boise	ID	OHW	Verification of EEMs	1
14	5/24/2016	Boise	ID	ESTU1	Audit	24
15	5/17/2016	Mountain Home	ID	MHEA	Audit	11
16	5/19/2016	Boise	ID	WTH	Audit	1

17	6/1/2016	Boise	ID	STLR	Audit	1
18	6/7/2016	Boise	ID	SEED	Audit	1
19	6/7/2016	Boise	ID	WTTH	Audit	1
20	6/28/2016	Boise	ID	OSGS	Audit	1
21	6/28/2016	Boise	ID	IAEC	Verification of EEMs	1
22	6/29/2016	Boise	ID	KHW	Audit	12
23	7/12/2016	Meridian	ID	IFHL	Verification of EEMs	1
24	7/15/2016	Boise	ID	PP	Audit	1
25	7/29/2016	Boise	ID	OSGS	Verification of EEMs	13
26	8/5/2016	Nampa	ID	EBC	Verification of EEMs	8
27	8/9/2016	Boise	ID	TMSF	Verification of EEMs	4
28	8/12/2016	Twin Falls	ID	School1	Verification of EEMs	2
29	8/16/2016	Moscow	ID	CNRATM	Audit	6
30	8/26/2016	Twin Falls	ID	CACS	Verification of EEMs	3
31	8/22/2016	Boise	ID	OGCS	Audit	4
32	8/23/2016	Boise	ID	PP	Audit	1
33	9/19/2016	Boise	ID	Class1	Audit	1
34	9/23/2016	Burley	ID	GM	Audit	4
35	9/27/2016	Boise	ID	FITH	Audit	1
36	9/28/2016	Boise	ID	GTT	Audit	8
37	9/29/2016	Boise	ID	FLR	Verification of EEMs	1
38	10/3/2016	Boise	ID	LCC	Audit	1
39	9/29/2016	Burley	ID	MCFC	Verification of EEMs	4
40	11/28/2016	Burley	ID	MCFP	Verification of EEMs	2
41	12/21/2016	Boise	ID	WLM	Verification of EEMs	6
42	11/29/2016	Wheatland	CA	LJWF	Verification of EEMs	1
43	11/30/2016	Gooding	ID	GFGPA	Verification of EEMs	17
44	12/1/2016	Boise	ID	Class2	Audit	1
45	12/9/2016	Boise	ID	Class3	Audit	1
46	12/16/2016	Boise	ID	Home3	Audit	1

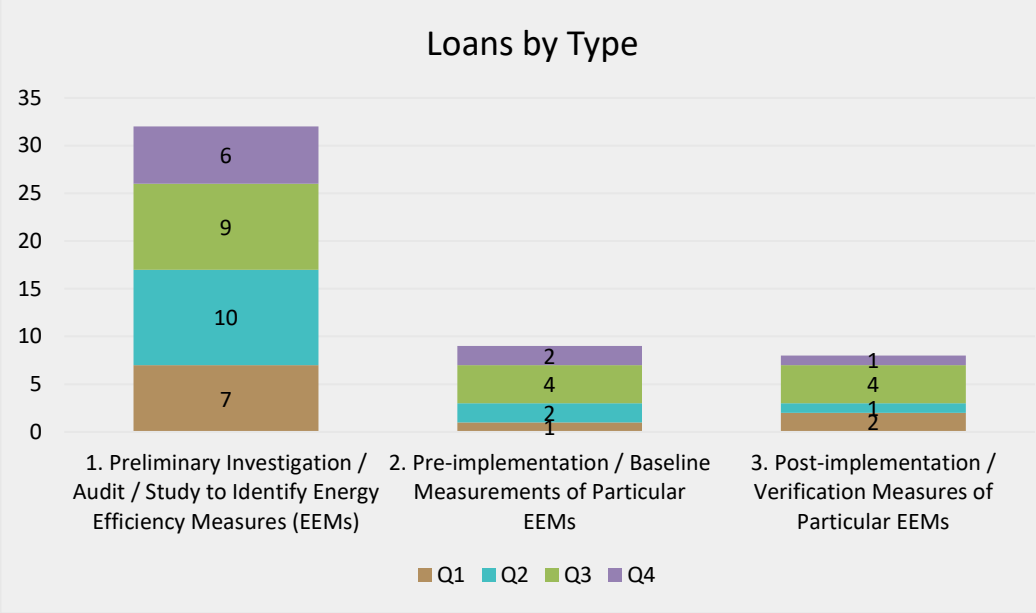


Figure 3: Loans by Type

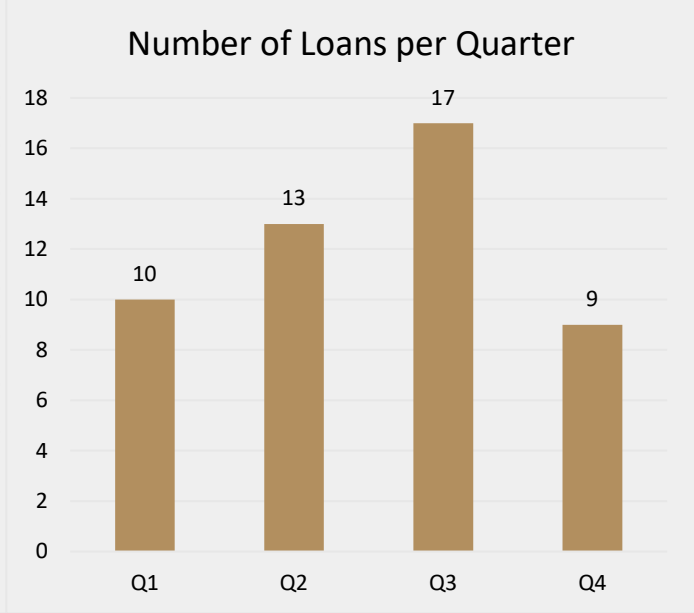


Figure 4: Number of Loans per Quarter

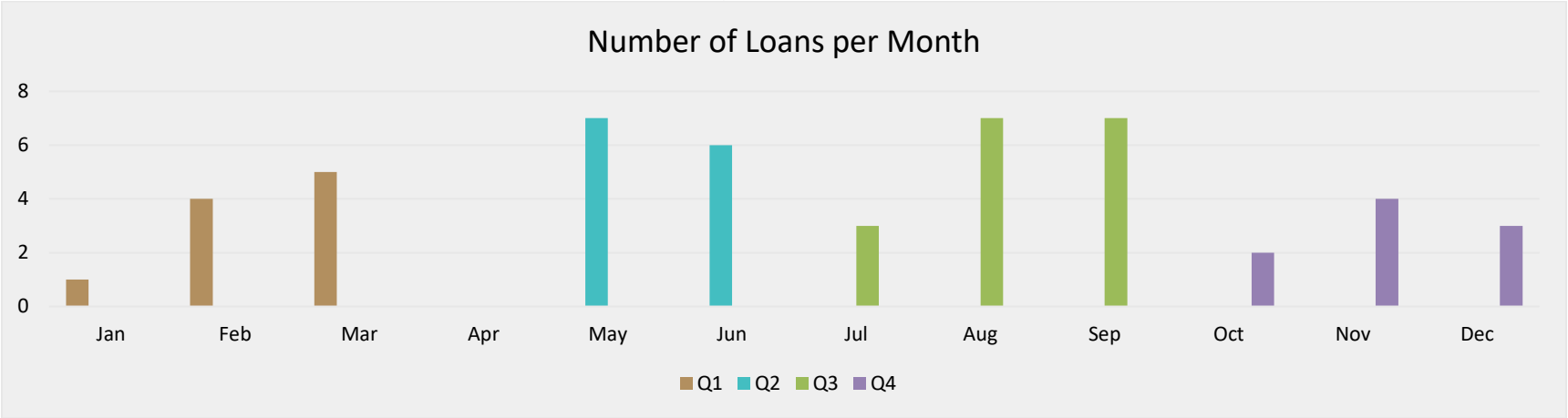


Figure 5: Number of Loans per Month

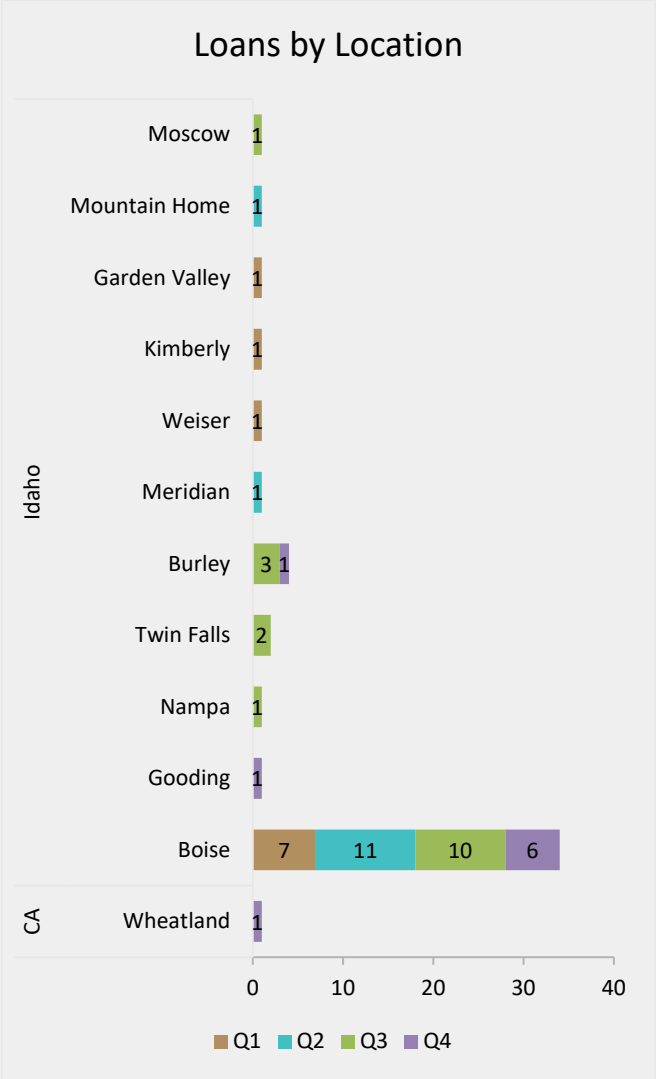


Figure 6: Number of Loans by Location

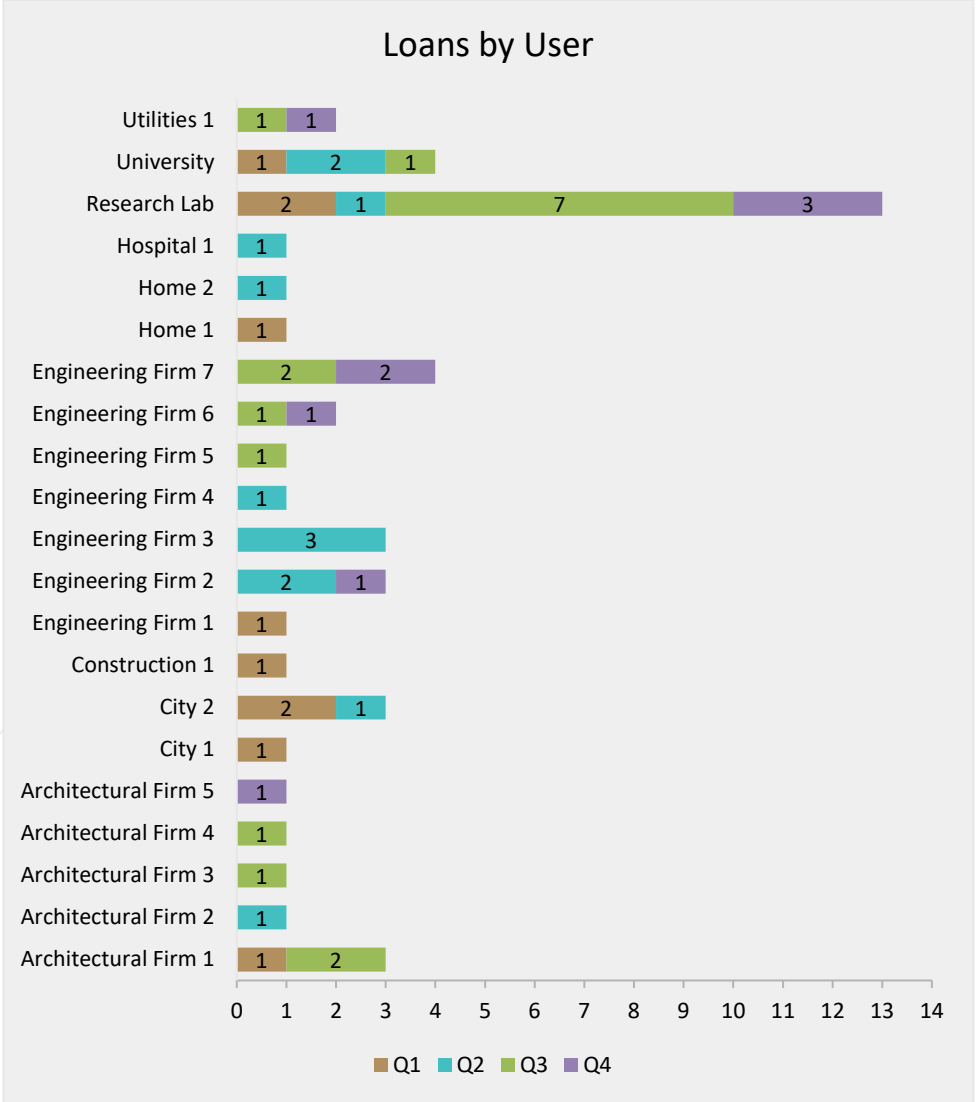


Figure 7: Number of Loans by User

TOTAL TOOLS LOANED: **212**	Q1=57	Q2=55	Q3=63	Q4=37

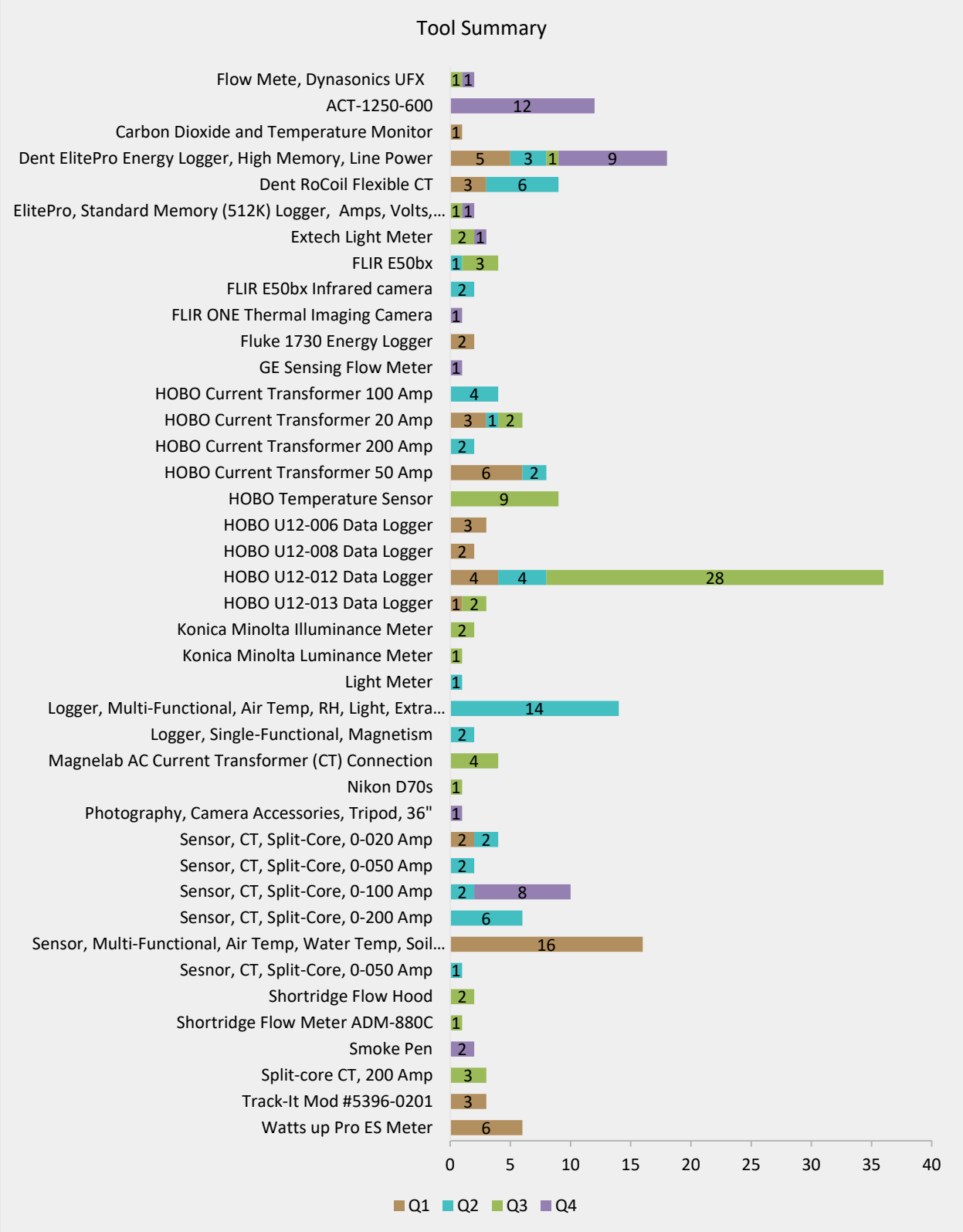


Figure 8: Summary of Tools Loaned

INTEGRATED DESIGN LAB
University of Idaho

2016 TASK 6: BUILDING METRICS LABELING

SUMMARY OF EFFORT AND OUTCOMES

IDAHO POWER COMPANY EXTERNAL YEAR-END REPORT

December 31, 2016

Prepared for:
Idaho Power Company

Author:
Elizabeth Cooper

Report Number: 1601_006-01

IDAHO POWER
An IDACORP Company

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Author:
Elizabeth Cooper

Prepared for:
Idaho Power Company

Contract Number:
5277

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Acronyms and Abbreviations

App	Application
BOMA	Building Owners and Operators Association
BSUG	Building Simulation Users' Group
CREW	Commercial Real Estate Women (Network)
EUI	Energy Use Intensity
IDL	Integrated Design Lab
IMG	Intermountain Gas
IPC	Idaho Power Company
KWCD	Kilowatt Crackdown
UI	University of Idaho
USGBC	United States Green Building Council

1. Introduction

The Building Metrics Labeling (BML) task was a continuation of work done by the University of Idaho Integrated Design Lab (UI-IDL) for Idaho Power Company (IPC) beginning in 2012. A stand-alone energy specific label was developed in 2012 and a web-portal was created in 2013 so the label could be automatically generated once information was submitted by users. In 2015 the work focused on providing user support, general promotion of the tool, and tool debugging with minor functionality improvements. The task in 2016 was a continuation of the support, and promotion of the tool that was started in 2014.

2. Summary of Progress

2.1 Website Progress

The majority of the progress made in 2016 was maintenance and support. No additional content was added.

2.2 Marketing

Once the initial online tool was published to the website, marketing brochures were created. The UI-IDL created a two-sided flyer that was used as the main method for marketing in 2014. Images of the flyer can be found in previous year-end reports.

During 2016, the tool was discussed and/or the flyer was distributed at multiple events, listed below.

- 20 Lunch and Learn presentations to architecture or engineering firms and organizations (flyers and a slide before the main presentation)
- Multiple Central Addition planning meetings hosted by USGBC

- Six BSUG events
- Calls and/or visits to five building owners within the Central Addition (LIV District)

One-on-one marketing and support was also available if requested. No requests were made in 2016.

3. Next Steps

Despite significant attempts to bring the tool to market for building owners and managers, very little progress has been made toward widespread adoption. As part of the scope of work for 2016, a step-by-step slide tutorial was to be developed. This tutorial will be completed in early 2017. No specific new efforts are planned for 2017, but the IDL will keep the website active, and continue to provide support when requested. In the future, if interest grows, a smartphone based application could be developed that might assist in greater adoption of the tool.

INTEGRATED DESIGN LAB
University of Idaho

2016 TASK 8: DAYLIGHTING TRAINING

SUMMARY OF EFFORTS AND PROGRESS

IDAHO POWER COMPANY EXTERNAL YEAR-END REPORT

December 31, 2016

Prepared for:
Idaho Power Company

Authors:
Elizabeth Cooper
Leyla Sanati
Nick Hansen

Report Number: 1601_001-08

IDAHO POWER
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Nick Hansen

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Acronyms and Abbreviations

AIA	American Institute of Architects
ASHRAE	American Society of Heating, Refrigeration, and Air-conditioning Engineers
BEQ	Building Energy Quotient
BOMA	Building Owners and Managers Association
EMS	Energy Management System
HID	High Intensity Discharge
IDL	Integrated Design Lab
IPC	Idaho Power Company
LED	Light Emitting Diode
LEED	Leadership in Energy and Environmental Design
Op-Ed	Opinion Editorial
TI	Tenant Improvement
UI	University of Idaho

1. Introduction

Idaho Power, in partnership with the University of Idaho's Integrated Design Lab, will provide daylight training sessions for local professionals. This training enhances knowledge of, and appreciation for, daylight, and keeps professionals informed of the latest advances in daylighting technologies. The sessions will discuss the fundamentals of daylighting design and its implications on visual comfort, thermal comfort, building energy performance and electric lighting control systems.

2. Project Summary

The objective of this task is to continue education and training sessions surrounding the daylighting control systems installed at the IDL and other approved partner sites to electrical contractors and design professionals on an alternating year basis, as market needs warrant. In 2016, the existing lighting controls in the lab were recommissioned. Lighting controls that were not properly functioning were fixed. In the classroom it was found that the lighting control panel had no wall switch and the occupancy sensor wasn't compatible with the panel. These were remedied with the installation of a new wall switch and a new occupancy sensor. In the classroom the wireless lighting control system was found to be outdated. A new wireless system was donated from the wireless manufacturer and was installed to replace the outdated system. All of the new lighting control equipment was commissioned for proper functionality. Manuals for all of the installed lighting control equipment were gathered and all of the installed systems were documented. A protocol was written for demonstrating the functionality of all of the installed lighting control systems. A review of new lighting control technologies was

performed. It was determined that there were no new technologies that at this time would benefit the lab's lighting control systems or be feasible to demonstrate with the lab's current configuration. A market needs assessment was performed in Q3 to determine the need for a daylighting class as well as to help develop the curriculum for the class. This survey was posted on the IDL website and sent out to the lab's mailing lists. The survey was also sent around at BSUG and Lunch and Learn sessions. The survey was sent to a total of 210 individuals of which we received 18 responses. A detailed marketing plan was developed and in accordance with the marketing plan marketing materials were produced. Initial marketing began in November with the Idaho Energy and Green Building Conference and a joint ASHRAE and BSUG meeting. Marketing for the 2017 classes will continue in January 2017. The daylighting training will be offered as two one-day workshops. The sessions are scheduled for March 21-22, April 18-19, and May 9-10. This scope includes education and training for existing technology and any additional installed or updated systems or technologies.

3. Next Steps

The course curriculum is currently being modified to address the need for training that will earn CEUs for electrical contractors. Due to the lack of initial survey responses and needing to seek feedback from electrical contractors a list of Treasure Valley electrical contractors has been put together. Each electrical contractor will be contacted directly and given the opportunity to participate in a survey to seek feedback on our proposed course curriculum. The program in will be updated after the course curriculum

is finalized. The marketing flyer will be updated to reflect these changes as will the google doc for online registration. After finalizing the course material an application will be submitted to the DBS for course approval and marketing will begin in earnest.

CRE Progress Report on Energy Savings for 2015 – Summary

By Sharon Grant and Suzie Hall
Managing Members, GreenSteps

March 15, 2016

This contract began in May, 2015, as a "graduate program" to continue momentum built in the Kilowatt Crackdown (KWCD) competition. We identified the participants with high motivation and coached them to develop more strategic approaches to saving energy. We worked with 26 buildings in Boise and Ketchum, and six property management firms. ***The overall energy savings across 20 buildings was 5.5%*** based on the percent change from their baseline (Jan – Dec, 2014) vs. current (Jan – Dec, 2015) EUI. (note that six buildings were not included due to data discrepancies, high vacancy or limited history).

With firm #1, we built a strong foundation for Strategic Energy Management during the KWCD as well as through focused NEEA CRE work on two of their buildings, in which they are conducting an ongoing lighting retrofit, and participated in a 75/25 split with Idaho Power to have a detailed energy model built by IDL to enable them to make smart capital improvements. New HVAC equipment was delivered in February, 2016. They are pursuing incentives from Idaho Power for lighting and HVAC projects. A more detailed energy audit of another building revealed a major mechanical mistake that should have been caught in commissioning, but has gone on for years. Through this repair and other initiatives, ***this building has shown the second highest reduction of energy use of 33%!*** They are in the process of applying for ENERGY STAR. One of their building operators attended IBOA training. They also took over two buildings in January, 2016, and IDL conducted energy audits of each of these.

With Firm #2, we worked with them to benchmark this building in Portfolio Manager, and scheduled an energy audit through Idaho Power in September 2015. IDL conducted a follow-up audit in February, 2016, to evaluate the building in more detail. We worked together to develop new TI Guidelines, and IDL developed a plan for utilizing natural ventilation.

Firm #3 became involved when a property manager from the KWCD moved to a new firm. We worked with them to pursue incentives for an emergency HVAC replacement, and have IDL review the bid. In a second building, we saw an opportunity to retrofit lighting, and replaced all screw-in bulbs with LED bulbs in January, 2016, and coordinated incentives through Idaho Power. We introduced the owner to Portfolio Manager and worked together to establish a building for ongoing benchmarking.

We continued working with Firm #4 on their portfolio of benchmarked properties. The focus of our work over the past year has been to further develop their Strategic Energy Management Plan for their buildings. ***One building showed the highest savings of 38% due to optimizing efficiencies during vacancy, and their portfolio showed an average of 2.5% savings overall.***

Firm #5 has been a highly engaged participant, showed energy savings in all buildings and ***earned an ENERGY STAR certification***. They worked diligently to resolve indoor air quality (IAQ) issues to achieve this, and we are engaged with the marketing department at Idaho Power to promote this project. In addition, we made substantial progress in developing their Strategic Energy Management Plan. An opportunity to improve the energy efficiency and appearance of exterior lighting in all four buildings was

identified, and we facilitated a plan for a side-by-side lighting mockups for evaluation. ***The average energy savings across their four buildings is 8.85%.***

Firm #6 focused on resolving previously reported unacceptable IAQ levels. In February 2016, a new study was performed, and much better results were noted. ENERGY STAR certification seems highly possible at this time. We also proposed new ceiling and lighting elements for the main lobby, converting several existing fluorescents to LED's.

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RESEARCH/SURVEYS

Table 3. 2016 Research/Surveys

Report Title	Program or Sector	Analysis Performed by	Study Manager	Study/Evaluation Type
2016 Idaho Power Energy-Saving Kit Program Summary Report	Residential	Resource Action Programs®	Idaho Power	Summary
2016 Residential End-Use Survey	Residential	Market Strategies	Idaho Power	Survey
A/C Efficiency Survey Results	Residential	Idaho Power	Idaho Power	Survey
CAPAI Survey Report 2016	Residential	Idaho Power	Idaho Power	Survey
Drying Rack Pre-Survey Results	Residential	Idaho Power	Idaho Power	Survey
Energy Efficiency Campaign Awareness Survey Results	Residential	Idaho Power	Idaho Power	Survey
Energy-Savings Improvements Survey Results	Residential	Idaho Power	Idaho Power	Survey
Energy Wise® Program Summary Report	Residential	Resource Action Programs®	Idaho Power	Summary
Flex Peak 2016 Survey Results	Commercial/Industrial	Idaho Power	Idaho Power	Survey
HEAP 2016 Survey Results	Residential	Idaho Power	Idaho Power	Survey
Holiday Lighting Study	Residential	Idaho Power	Idaho Power	Survey
Lighting Study	Residential	Idaho Power	Idaho Power	Survey
Shade Tree 2016 Survey Results	Residential	Idaho Power	Idaho Power	Survey
Smart Saver Pledge 2016 Survey Results	Residential	Idaho Power	Idaho Power	Survey
Thanksgiving Cooking Efficiency Study	Residential	Idaho Power	Idaho Power	Survey
Thermostatic Shut-off Valve Study	Residential	Idaho Power	Idaho Power	Survey
WAQC 2016 Survey Results	Residential	Idaho Power	Idaho Power	Survey
Weatherization Solutions 2016 Survey Results	Residential	Idaho Power	Idaho Power	Survey

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ENERGY-SAVING KIT PROGRAM SUMMARY REPORT

2016

SUBMITTED BY:
RESOURCE ACTION PROGRAMS®

Idaho Power Energy-Saving Kit Program Summary Report 2016

Sponsored by:

Submitted by:

February 2017

"Thank you for the tips and the kit. All of my co-workers and friends are going to order them too. The materials were easy to read, colorful, and informative."

– Idaho Power Energy-Saving Kit Program Participant

Table of Contents

"I used everything that was sent and I love it. Thank you so much for this awesome program."

– Idaho Power Energy-Saving Kit Program Participant

Executive Summary

The Idaho Power Energy-Saving Kit Program was designed and implemented to provide Idaho Power's residential households with energy-efficiency education, measures to reduce their energy costs, and help them develop energy-efficient behaviors consistent with Idaho Power. This report summarizes the 2016 Energy-Saving Kit program, which was implemented by thirty-three thousand, six-hundred eighty-two (33,682) Idaho households and eight hundred sixty-four (864) Oregon households. Funding was provided by Idaho Power.

The program achieved or exceeded expectations and the results are listed below.

PROGRAM ACHIEVEMENTS

1. Provided residential energy-saving measures and energy-efficiency education to 33,682 Idaho and 864 Oregon households.

   - Affected all five regions of the Idaho Power service territory
   - Affected 113 cities & towns in Idaho
   - Affected 18 cities & towns in Oregon

Regions	Households	Electric Kit	Non-Electric Kit
Canyon	6,260	3,313	2,893
Capital	14,532	6,378	8,154
Eastern	3,330	2,123	1,207
Southern	5,949	4,285	1,664
Western	4,529	3,616	913
Total	**34,546**	**19,715**	**14,831**
		34,546	

2. Generated residential energy and water savings. Projected annual savings:

   - 229,392,781 gallons of water saved
   - 17,151,399 kWh of electricity saved
   - 109,128 therms of gas saved

(continued)

3. Supported Idaho Power with their diverse outreach and distribution methods.
   - Idaho Power website
   - Idaho Power employee
   - Information in bills
   - Social Media
   - Family & friends
   - News
   - Direct mailing
4. Designed and provided complementary educational materials and incentives to maximize installation of targeted efficiency measures (Installation rates ranged from 57–93 percent).
5. Maintained data collection and management services to collect and process audit ready data from participating households.
6. Maintained tracking and reporting to summarize the Program participation.

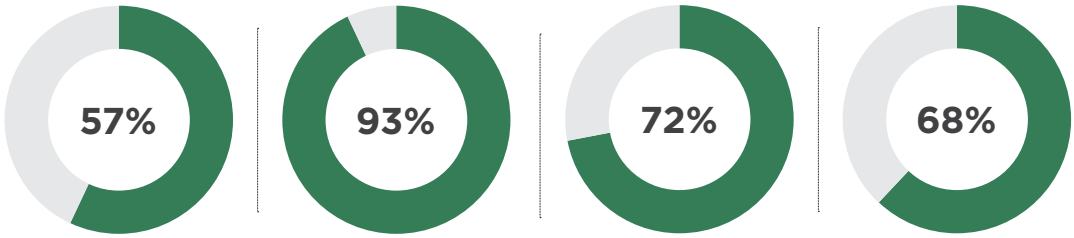
OPTING-IN METHODS	HOUSEHOLDS	%
Website	28,869	83.5%
Phone	2,401	7.0%
Postcards	3,276	9.5%

Program design and customization initiated in late 2015 resulted in the full implementation starting in May 2016. The first batch of 14,354 direct mailers sent out to start the outreach process resulted in immediate positive response from Idaho Power customers. Program content on the Idaho Power website and enclosed information in the customer bills combined with local news features generated a tremendous surge in demand for this energy-saving kits. The initial plan to assist 7,500 Idaho Power households was increased six times to total 34,546 households in both Idaho and Oregon.

The Program provided customized Direct-to-Customer Program modules, which included educational materials and energy-saving products. A participant survey was included with the program materials. The purpose of the survey was to increase educational retention and impact while serving as a data collection tool.

Survey responses indicated high participant satisfaction and participation in product retrofits and adoption of new energy saving behaviors. Total 5,378 households returned completed surveys and the responses were overwhelmingly positive. Highlights include:

A summary of responses can be found in Appendix B.



Reported households with ALL 9 LED light bulbs installed.

Reported households with the LED Night Light installed.*

Reported households with the High-Efficiency Showerhead installed.*

Reported households who used the Shower Timer.*

**Installation rates assume 50% of households who responded "Not yet, but will" actually completed the installation.*

Projected Resource Savings

A list of assumptions and formulas used for these calculations can be found in Appendix A.

Projected energy savings from this program are significant. Based on the reported actions, annual and lifetime resource savings are as follows:

PROJECTED ANNUAL SAVINGS	
229,392,781	gallons of water saved
17,151,399	kWh of electricity saved
109,128	therms of gas saved

PROJECTED LIFETIME SAVINGS	
1,977,545,345	gallons of water saved
154,450,405	kWh of electricity saved
218,256	therms of gas saved

PROJECTED ANNUAL SAVINGS PER HOME	
11,635	gallons of water saved
496	kWh of electricity saved
3	therms of gas saved

PROJECTED LIFETIME SAVINGS PER HOME	
100,307	gallons of water saved
4,471	kWh of electricity saved
6	therms of gas saved

"Thank you for offering the energy efficiency products. I have told friends and family so they are ordering them also. I appreciate you helping us save money and helping with the environment!!!"

– Idaho Power Energy-Saving Kit Program Participant

RAP Direct-to-Customer Programs

For more than 24 years, Resource Action Programs® (RAP) has designed and implemented resource efficiency and education programs, changing household energy and water use while delivering significant, measurable resource savings for program sponsors. All RAP programs feature a proven blend of innovative education and comprehensive implementation services.

RAP Programs serve more than 400,000 households each year through school and adult delivered Measure Based Education Programs. Our forty-person staff manages the implementation process and program oversight for nearly 300 individual programs annually. Recognized nationally as a leader in energy and water efficiency education and program design, RAP has a strong reputation for providing the highest level of service to program sponsors as part of a wide range of conservation and resource efficiency solutions for municipalities, utilities, states, community agencies, and corporations.

All aspects of program design and implementation are completed at the Program Center in Sparks, Nevada. These include: graphic and web design, print production, procurement, warehousing, logistics, module production, marketing, program tracking, data tabulation and reporting.

The Direct-to-Customer Program represents the leading edge of community energy efficiency education program design and implementation. The Program uses a client-directed Measure Based Education model to generate lasting residential energy savings from both retrofits and new behaviors. Initially, participants choose their personal savings target. Then they select retrofits using provided measures and energy-saving behaviors to reach their goal. The Direct-to-Customer Program is tremendously versatile, and can easily be introduced and distributed via a wide range of delivery channels, including Opt-in Direct Mail, CBO/CAA distribution, workshops, community events, affinity groups (volunteers, CAAs, CBOs, churches) or public events.

Cost-effective energy savings from the measure installations will justify program investments on their own, but the Program delivers several other important benefits as well. The educational component is designed to include each household member in order to manage household energy use. Measures, immediate savings actions and additional savings ideas for all areas of residential energy use are grouped by areas of the home and provided to participants as options to help them reach their personal savings targets. Additional rebates and program opportunities can be introduced through the Program or offered as incentives for program performance.

Participation in the Direct-to-Customer Program provides a strong, personalized pathway for participants to realize both initial and ongoing savings from new products and behavior choices in their homes.

"I love my new light bulbs. They are so bright. What a great gift. I'll buy more of them. Thank you."

– Idaho Power Energy-Saving Kit Program Participant

Idaho Power Energy-Saving Kit Program Overview

The overarching goal of this measure based program was to assist Idaho Power in providing their residential households with energy-efficiency education and reduced energy costs as well as developing energy efficiency behaviors consistent with Idaho Power's energy efficiency objectives. The energy-savings Kits empowered the Idaho and Oregon households to save energy and money.

The program created and distributed a custom educational savings module consisting of efficiency measures, educational materials, and household surveys. Educational materials included a Quick Start Guide, Survey, Installation Instructions, Mini-Home Assessment (Idaho Power provided) and other tools such as stickers and magnets as reminders for new energy-efficient conservation behaviors. All elements were customized to meet Idaho Power priorities, regional conditions and regulatory requirements.

The program was offered to eligible Idaho Power residential households as defined by Idaho Power. Those in participating households cited the categories shown in the table (at right) when asked how they heard of the program.

HEARD ABOUT PROGRAM	HOUSEHOLDS	%
Social Media	15,007	43.5%
Other: Family & Friends	7,214	20.9%
Direct Mail	3,721	10.8%
Idaho Power website	2,504	7.2%
Other: News	1,707	4.9%
Idaho Power employee	1,158	3.3%
Info in bill	928	2.7%
Other: Ft Hall Event	127	0.4%
Other	2,020	5.8%
Blank	160	0.5%

Those in eligible households opting-in to receive the energy-saving kit utilized one of three primary methods:

OPTING-IN METHODS	HOUSEHOLDS	%
Website	28,869	83.5%
Phone	2,401	7.0%
Postcards	3,276	9.5%

1) RAP developed and maintained a program website to process energy-saving kit orders as well as to provide program information, including product installation videos and instructions. 2) RAP maintained a toll-free phone number to process the called-in kit orders and address any inquiries and issues. 3) Custom-designed direct mailers were sent to households with program information and instructions on ordering a kit.

Follow-up installation surveys were received from 5,378 participated households, representing a response rate of 15.6% of the 34,546 energy-saving kits distributed. A monthly drawing for a $100 gift card provided an incentive for returning the household installation surveys.


QUICK START GUIDE
Español en el otro lado
IDAHO POWER
An IDACORP Company
START SAVING NOW!
1 Install the energy-efficient products in your kit.
2 Follow the energy-saving tips provided in this Quick Start Guide.
3 For additional ways to save, visit idahopower.com/save2day.
QUICK STEP 4
Water Heater
Heating water can account for 14 to 25 percent of the energy consumed in your home. Many people think placing a water heater on the hottest setting heats the water more quickly but it doesn't. It just uses more energy. Use the digital thermometer from your kit to check the water temperature. If it's over 120°F, you may be overheating your water and wasting energy!
APPLIANCE
Fill a cup with the hottest water from the faucet farthest from the water heater. Place the digital thermometer in the cup for two minutes.
If your hot water is over 120°F, lower the temperature setting on your water heater. Refer to your owner's manual to adjust the settings.
TIP: If your water heater is in a garage or unheated basement, use a water heater blanket to save an additional 4 to 9 percent on your water heating costs. Water heater blankets can be found at your local hardware store.
QUICK STEP 1
LED Lighting
LED light bulbs use up to 80 percent less energy than traditional bulbs and last up to 25 times longer. For the most savings, use the LED bulbs from your kit to replace incandescent bulbs in high-use areas. Then install the LED night light in an area that lights a path and lets you avoid turning on other lights.
LIGHTING
Replace your most-used 45-watt bulbs with the 7.5-watt LED bulbs from your kit.
Replace your most-used 60-watt bulbs with the 9-watt LED bulbs from your kit.
Install the new LED night light from your kit.
TIP: For the most savings, place LED bulbs in fixtures that are on for at least 2-3 hours a day.
QUICK STEP 5
Refrigerator/Freezer
Almost 8 percent of your electricity use goes to your refrigerator and 2 percent to your freezer. If they're even 10°F colder than necessary, the energy they use could go up by 25 percent.
APPLIANCE
Use your digital thermometer to check the temperature. Refrigerators should be set between 38° and 40°F and the freezer should be set at 0°F.
Adjust temperature, if necessary.
TIP: Make sure the door is sealed tightly. Check the (rubber seal) for cracks and dried-on food.
QUICK STEP 2
Water Efficiency
When taking a shower, you use two resources—water and energy to heat the water. There's also the energy it takes to pump, move and treat the water to consider. Install the 3-way high-efficiency showerhead and faucet aerators from your kit. You'll find that these items provide good pressure and a satisfying result.
WATER AND ENERGY
Install the new high-efficiency showerhead from your kit.
Install the new kitchen faucet aerator from your kit.
Install the new bathroom faucet aerators from your kit.
TIP: You can compare the water flow rate of your old showerhead with the new one by following the six steps on the flow-rate test bag included in the bottom of your kit.
Want to Save More?
Idaho Power offers energy efficiency incentives to reduce the cost of energy efficient products and/or services. Check out the programs and tips at idahopower.com/save to find more ways to use energy wisely and avoid unnecessary waste.
QUICK STEP 3
Shower Timer
Running your shower for five minutes can use as much energy as leaving a 60-watt light bulb on for 14 hours. A shower timer reminds you to save energy and water while showering. The shower timer, set to five (5) minutes, encourages the wise use of water. It requires no assembly or maintenance. Simply rotate the shower timer half a turn when you begin your shower; then try to finish before the sand runs out.
WATER AND ENERGY
Install the new shower timer from your kit.
TIP: The average shower is 8.2 - 10.4 minutes in length. A five-minute shower reduces energy used to pump and heat water, saves fresh water and reduces wastewater.
QUICK STEP 5
Water Flow-Rate Test Bag
If your showerhead uses more than 2.5 gallons of water per minute (gpm) or your faucets use more than 1.5 gpm, you could save by installing a high-efficiency showerhead and faucet aerators. These devices save water and energy while delivering good pressure.
WATER
With a stopwatch and a helper, follow the six steps on the flow-rate test bag to measure the water use of your current showerhead.
Now measure the output of your kitchen faucet and bathroom faucets.
TIP: Idaho Power offers incentives for efficient showerheads by working with manufacturers and participating retailers. Go to idahopower.com/showerheads for promotion details.
SIMPLE SMART
Installation Questions?
See the INSTALLATION INSTRUCTION BOOKLET in the bottom of your kit.
Visit idahopower.com/save2day to view installation videos.
Don't forget!
Return your survey for a chance to win a $100 gift card.
Developed in partnership:
RESOURCEACTION PROGRAMMERS
113719

Idaho Power Energy-Saving Kit Program Materials

Each participating household received an energy-saving kit containing efficiency measures for their homes and a Quick Start Guide with energy efficiency information and behavioral tips. The materials were customized for Idaho Power. Households with electric water heating received an electric kit (including water-saving measures). Households with other water heating options received a non-electric kit (not including water-saving measures).

Included Educational Materials

Quick Start Guide

Survey

Survey Envelope (postage prepaid)

Sticker and Magnet Reminder

Mini-Home Assessment (Idaho Power provided)

Installation Instructions

Included Efficiency Measures

Six 9-Watt LEDs (800 Lumens)

Three 7.5-Watt LEDs (480 Lumens)

IPC branded LED Night Light

High Efficiency Showerhead

Kitchen and Bathroom Faucet Aerators

Shower Timer

Digital Thermometer

*** An Electric Kit**

INSTALLATION SURVEY

(Español en el otro lado)

113729

Complete this survey for a chance to win a $100* Gift Card

All you have to do is...

1. Install the energy-efficient products in your kit.
2. Follow the energy-saving tips quick start guide.
3. Return this survey for a ch gift card! (Postage-paid envelope included

Fill in each bubble comp

Use a black pen to fill in next to the correct answ

*For contest details visit Idahopower.com/sa

15038 A0065 Idaho Power DTC 0000000

1. What type of home do you live in?
   - Single family home - Detached
   - Apartment, Condo, Townhouse, or Multi-family with 2-3 units
   - Apartment, Condo, Townhouse, or Multi-family with 4 or more units
   - Mobile/Manufactured home
2. How many people live in your home?
   - 5 or more
   - 4
   - 3
   - 2
   - 1
3. How many of the LEDs did you install?
   - All of them
   - 7-8
   - 5-6
   - 3-4
   - 1-2
   - None
4. If you did not install all of the LEDs, what did you do with the remainder?
   - Plan to install, just haven't yet
   - Stored for later use
   - Gave them to someone else
   - Other_____

	Yes	Not yet, but will	No, won't use
Have you installed the			
5. High-Efficienc Showerhead?			
6. Kitchen Faucet Aerator?			
7. Bathroom Faucet Aerator #1?			
8. Bathroom Faucet Aerator #2?			
Have you used the			
9. LED Night Light?			
10. Shower Timer?			
11. Flow-Rate Test Bag to test the flo rate of your shower or faucets?			

12. If you used the Digital Thermometer to check the temperature of your water, what was the temperature?
    - > 140° F
    - 131° F to 140° F
    - 120° F to 130° F
    - < 120° F
    - Did not check water temperature

Did you adjust the temperature of your

	Yes I lowered it	Yes I raised it	No I did not adjust
13. Electric water heater?			
14. Refrigerator?			
15. Freezer?			

16. How satisfie were you with the kit ordering process?
    - Very satisfied
    - Somewhat satisfie
    - Somewhat dissatisfie
    - Very dissatisfie
17. Did you receive your kit within 3 weeks?
    - Yes
    - No
18. How likely would you be to tell a friend or family member to order a kit?
    - Very likely
    - Somewhat likely
    - Somewhat unlikely
    - Very unlikely
19. Prior to hearing about the Energy-Saving Kits, were you aware Idaho Power had energy efficienc programs and incentives?
    - Yes
    - No
20. Have you ever gone to Idaho Power's website to look for information about energy efficienc programs or to fin ways to save?
    - Yes
    - No
21. How likely are you to participate in another energy efficienc program?
    - Very likely
    - Somewhat likely
    - Somewhat unlikely
    - Very unlikely
22. If you did not install some of the kit items, please tell us why.

Return this survey in the postage-paid envelope included in your kit.
You will be entered into our monthly drawing for a chance to win a $100 gift card.

Idaho Power Energy-Saving Kit Program Implementation

An introductory marketing direct mailer, supported by the information on the Idaho Power website, merited positive results. Many shared their positive program experience with their family and friends though social media, word of mouth, and emails. Additional exposure through local news features and community events (e.g. Fort Hall energy visit) resulted in a tremendous surge of demand for the program.

Participation was processed and tracked at the RAP Program Center, which has the capacity to handle in excess of 100,000 requests per month. The program website, a toll-free phone number, and the business reply postcards provided convenient methods for interested households to order a kit and participate in the program.

Orders were tracked and managed daily from all outreach and enrollment sources. Program materials and products were packaged and addressed for individual home delivery. All Program modules received a unique ID number to improve the accuracy of data tracking and reduce the amount of information required from respondents.

All enrollments, shipping, and survey data were managed by RAP's proprietary Program Database. In addition, all returned surveys were tabulated and included in the program database. This procedure allows for reporting, which is an important element for tracking the measurements and goals of this program.

"Love this kit. It is great. I've told many friends to check out your website."

– Idaho Power Energy-Saving Kit Program Participant

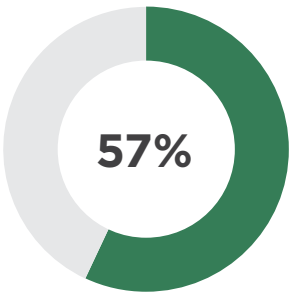
Idaho Power Energy-Saving Kit Program Impact

The program impacted 115 cities and towns throughout Idaho and 18 cities and towns in Oregon. As illustrated below, the program successfully educated those in participating households about energy and water efficiency while generating resource savings through the installation of efficiency measures in their homes. Home survey and installation information was collected to track savings and gather household consumption and demographic data. The three program elements, described on the next few pages, were used to collect this data.

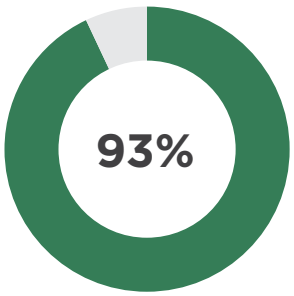
A. Home Survey and Retrofit Data

Upon completion of the program, participating households were asked to complete a home survey to assess their resource use, verify product installation, provide demographic information, and measure participation rates. Sample questions appear below and a complete summary of all responses is included in Appendix B.

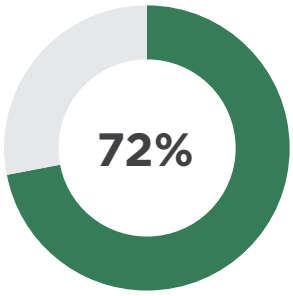
Did you install ALL 9 LED Light Bulbs?	**Yes - 57%**
Did you install the LED Night Light?	**Yes - 93%**
Did you install the High-Efficiency Showerhead?	**Yes - 72%**
Did you use the Shower Timer?	**Yes - 68%**



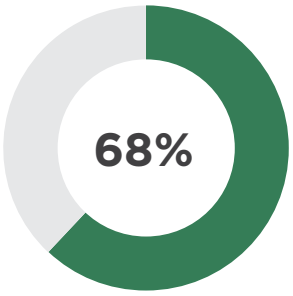
Reported households with ALL 9 LED Light Bulbs installed.



Reported households with the LED Night Light installed.*



Reported households with the High-Efficiency Showerhead installed.*



Reported households who used the Shower Timer.*

B. Water and Energy Savings Summary

As part of the program, participants installed retrofit efficiency measures in their homes. Using the family habits collected from the home survey as the basis for this calculation, 34,546 households are expected to save the following resource totals. Savings from these actions and new behaviors will continue for many years to come.

Projected Resource Savings

A list of assumptions and formulas used for these calculations can be found in Appendix A.

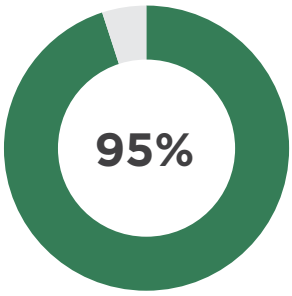
	Annual	Lifetime	
Total Number of Participants:	**34,546**		
Number of Electric Only Participants:	**19,715**		
Number of Non-Electric Participants:	**14,831**		
Projected reduction from Showerhead retrofit:	**109,655,053**	**1,096,550,530**	gallons
Measure Life: **10 years**	**3,686,705**	**36,867,050**	kWh
Projected reduction from Shower Timer installation:	**39,547,809**	**79,095,617**	gallons
Product Life: **2 years**	**2,962,052**	**5,924,104**	kWh
	109,128	**218,256**	therms
Projected reduction from Kitchen Faucet Aerator retrofit:	**46,622,046**	**466,220,464**	gallons
Measure Life: **10 years**	**2,089,790**	**20,897,900**	kWh
Projected reduction from Bathroom Faucet Aerator retrofit:	**33,567,873**	**335,678,734**	gallons
Measure Life: **10 years**	**4,179,580**	**41,795,800**	kWh
Projected reduction from **9**-watt LED Light Bulbs:	**2,280,036**	**27,360,432**	kWh
Measure Life: **12 years**			
Projected reduction from **7.5**-watt LED Light Bulbs:	**1,036,380**	**12,436,560**	kWh
Measure Life: **12 years**			
Projected reduction from LED Night Light:	**916,856**	**9,168,559**	kWh
Measure Life: **10 years**			
TOTAL PROJECTED PROGRAM SAVINGS:	**229,392,781**	**1,977,545,345**	gallons
	17,151,399	**154,450,405**	kWh
	109,128	**218,256**	therms
TOTAL PROJECTED PROGRAM SAVINGS PER HOUSEHOLD:	**11,635.44**	**100,306.64**	gallons
	496	**4,471**	kWh
	3	**6**	therms

C. Participant Response

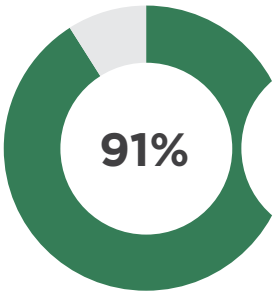
Participant response to Idaho Power's various outreach methods combined with social media and interpersonal communication resulted in an overwhelming demand for the program. Idaho Power increased the budget and the kit availability for this program in order to fulfill all residential customer orders. The participants utilized the Quick Start Guide to choose which measures and actions to take. Installation videos and text instructions made retrofit projects easy to complete. The installation rate data and the participant satisfaction data presented in this report were provided by kit surveys.

SURVEY TYPE	KITS SHIPPED	SURVEYS RECEIVED	SURVEY %
Electric	19,715	2,790	14.2%
Non-electric	14,831	2,588	17.4%
TOTAL	**34,546**	**5,378**	**15.6%**

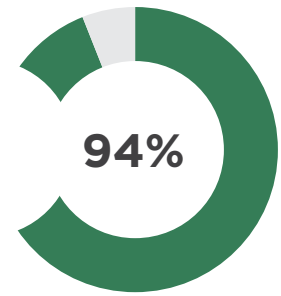
How satisfied were you with the kit ordering process? **Very Satisfied - 95%**
Did you receive your kit within 3 weeks? **Yes - 91%**
How likely would you be to tell a friend or family member to order a kit? **Very Likely - 94%**
How likely are you to participate in another energy efficiency program? **Very Likely - 86%**



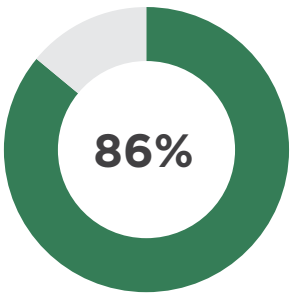
Reported households that were very satisfied with the ordering process.



Reported households that received their kits within 3 weeks.



Reported households that were very likely to tell a friend or family member to order a kit.



Reported households that were very likely to participate in another energy efficiency program.

Participant Responses

Thank you for the tips and the kit. All of my co-workers and friends are going to order them too. The materials were easy to read, colorful, and informative.

We are very grateful Idaho Power has put out this kit, it is so good of you to do this for everyone and give us a chance to really save some money. In this day and age, we do need to watch what we spend. We are low income seniors who are very grateful for anything we can get. Thank you very much easy savings center. We are very grateful.

Thank you for offering the energy efficiency products. I have told friends and family so they are ordering them also. I appreciate you helping us save money and helping with the environment!!!

Loved all the items and felt it was important to use all of them. Thank you very much. Will be getting more LED's for my home soon. I told my oldest daughter about your program.

Love this kit. It is great. I've told many friends to check out your website.

I installed all of the kit items right away. Thank you for this offer. It was very helpful.

I love this kit! Telling everyone I know about it!

I used everything, love the kit. Changed out my windows and all my appliances. Want to learn more and become more efficient.

I have previously replaced most of the light bulbs in the house with LED bulbs. Due to the cost of the bulbs I was waiting until they burned out but when I got this kit I HAPPILY replaced the remaining non-LED bulbs. Thank you!

I installed all. Thank you. I like all of them!

I love my new light bulbs. They are so bright. What a great gift. I'll buy more of them. Thank you.

Very nice way to help us conserve on our energy cost and usage. Thanks

All installed – 2 thumbs up

I installed all of them, love the light bulbs and shower timer.

Excellent ideas!

I used everything. Thank you !! :)

Participant Responses *(continued)*

Very helpful stuff – really like the LED lights and dimmable lights.

Thank you for a great value! I appreciate everything in the kit!

All items installed! Thank you for the energy saving help!

I used everything that was sent and I love it. Thank you so much for this awesome program.

I used them all – I love the night light. Thank you for the kit.

All items are helpful and informative! We need to pay more attention to these details. Thanks for your efforts.

I installed everything just wanted to say thank you!

All were installed – Thank you very much!

I am 82 years old. My son will do the rest. I like all of them. The showerhead was excellent. Will use all.

I installed all the items. Thank you.

* An Electric Kit

Appendices

Appendix A

Appendix B

Appendix C

Appendix D

Projected Savings from 9-Watt LED Retrofit

9-watt LED Light Bulb retrofit inputs and assumptions:

Lamps per participant:	**6**	
Number of participants:	**34,546**	
Deemed savings per lamp (kWh):	**11**	kWh[1]
Measure life:	**12**	years[1]

Projected Electricity Savings:

The LED retrofit projects an **annual** reduction of:	**2,280,036**	kWh[2]
The LED retrofit projects a **lifetime** reduction of:	**27,360,432**	kWh[3]

1 Regional Technical Forum. ResLightingCFLandLEDLamps_v3_3.xslm. Mail by request. LED general purpose and Dimmable. 665 to 1439 lumens.

2 LED kWh savings formula (Deemed savings per lamp x Number of participants x Lamps per participant).

3 LED kWh lifetime savings formula (Annual savings x Measure Life).

Projected Savings from 7.5-Watt LED Retrofit

7.5-watt LED Light Bulb retrofit inputs and assumptions:

Lamps per participant:	**3**	
Number of participants:	**34,546**	
Deemed savings per lamp (kWh):	**10**	kWh[1]
Measure life:	**12**	years[1]

Projected Electricity Savings:

The LED retrofit projects an **annual** reduction of:	**1,036,380**	kWh[2]
The LED retrofit projects a **lifetime** reduction of:	**12,436,560**	kWh[3]

1 Regional Technical Forum. ResLightingCFLandLEDLamps_v3_3.xslm. Mail by request. LED general purpose and Dimmable. 250 to 664 lumens.

2 LED kWh savings formula (Deemed savings per lamp x Number of participants x Lamps per participant).

3 LED kWh lifetime savings formula (Annual savings x Measure Life).

Projected Savings from Showerhead Retrofit

Showerhead retrofit inputs and assumptions:

Showerheads per electric DHW kit:	**1**	
Number of electric DHW participants:	**19,715**	
Domestic electric hot water reported:	**100%**	[1]
Number of people per household:	**2.59**	[1]
Deemed Savings:	**187**	[2]
Length of average shower:	**7.84**	minutes[3]
Showerhead (baseline):	**2.50**	gpm[3]
Showerhead new (retrofit):	**1.75**	gpm
Measure life:	**10.00**	years[2]

Projected Water Savings:

Showerhead retrofit projects an **annual** reduction of:	**109,655,053**	gallons[4]
Showerhead retrofit projects a **lifetime** reduction of:	**1,096,550,530**	gallons[4]

Projected Electricity Savings:

Showerhead retrofit projects an **annual** reduction of:	**3,686,705**	kWh[5]
Showerhead retrofit projects a **lifetime** reduction of:	**36,867,050**	kWh[5]

1 *Data Reported by Program Participants.*

2 *Regional Technical Forum - ResShowerheads_v2_1 xlsm. Mail by request. 1.75 gpm Any shower Electric water heating.*

3 *(March 20, 2014). Blessing Memo for LivingWise Kits for 2014, Paul Sklar, E.I., Planning Engineer Energy Trust of Oregon.*

4 *Showerhead Gallons Formula (Number of participants x (Showerhead baseline - Showerhead new) x Length of average shower x Days per year x People per household).*

5 *Showerhead kWh formula (Number of Participants x Deemed Savings).*

Projected Savings from Kitchen Faucet Aerator Retrofit

Kitchen Faucet Aerator retrofit inputs and assumptions:		
Kitchen Faucet Aerator per electric DHW kit:	**1**	
Number of electric DHW participants:	**19,715**	
Domestic electric hot water reported:	**100%**	[1]
Number of people per household:	**2.59**	[1]
Savings:	**106.00**	kWh[2]
Average daily use:	**2.50**	minutes [3]
Kitchen Faucet Aerator (baseline):	**2.50**	gpm[3]
Kitchen Faucet Aerator (retrofit):	**1.50**	gpm
Measure life:	**10.00**	years[3]

Projected Water Savings:		
Kitchen Faucet Aerator retrofit projects an **annual** reduction of:	**46,622,046**	gallons[4]
Kitchen Faucet Aerator retrofit projects a **lifetime** reduction of:	**466,220,464**	gallons[4]

Projected Electricity Savings:		
Kitchen Faucet Aerator retrofit projects an **annual** reduction of:	**2,089,790**	kWh[5]
Kitchen Faucet Aerator retrofit projects a **lifetime** reduction of:	**20,897,900**	kWh[6]

1 Data Reported by Program Participants.

2 Applied Energy Group. Idaho Power Energy Efficiency Potential Study, 2012.

3 (March 20, 2014). Blessing Memo for LivingWise Kits for 2014, Paul Sklar, E.I., Planning Engineer Energy Trust of Oregon.

4 Kitchen Aerators gallons formula (Number of Participants x (Kitchen aerator baseline - Kitchen aerator retrofit) x Average Daily Use x Days per year x People per household).

5 Kitchen Aerators kWh formula (Number of Participants x Savings).

6 Kitchen Faucet Aerator kWh lifetime savings formula (Annual savings x Measure life).

Projected Savings from Bathroom Faucet Aerator Retrofit

Bathroom Faucet Aerator retrofit inputs and assumptions:

Bathroom Faucet Aerator per electric DHW kit:	**2**	
Number of electric DHW participants:	**19,715**	
Domestic electric hot water reported:	**100%**	[1]
Number of people per household:	**2.59**	[1]
Savings:	**106**	kWh[2]
Average daily use:	**1.50**	minutes [3]
Bathroom Faucet Aerator (baseline):	**2.20**	gpm[3]
Bathroom Faucet Aerator (retrofit):	**1.00**	gpm
Measure life:	**10.00**	years[3]

Projected Water Savings:

Bathroom Faucet Aerator retrofit projects an **annual** reduction of:	**33,567,873**	gallons[4]
Bathroom Faucet Aerator retrofit projects a **lifetime** reduction of:	**335,678,734**	gallons[4]

Projected Electricity Savings:

Bathroom Faucet Aerator retrofit projects an **annual** reduction of:	**4,179,580**	kWh[5]
Bathroom Faucet Aerator retrofit projects a **lifetime** reduction of:	**41,795,800**	kWh[6]

1 Data Reported by Program Participants.

2 Applied Energy Group. Idaho Power Energy Efficiency Potential Study, 2012.

3 (March 20, 2014). Blessing Memo for LivingWise Kits for 2014, Paul Sklar, E.I., Planning Engineer Energy Trust of Oregon.

4 Bathroom Faucet Aerator gallons formula ((People per Household x Average daily use) x (Bathroom faucet baseline - Bathroom faucet retrofit) x Days per year x Number of Participants).

5 Bathroom Faucet Aerator kWh formula (Number of participants x savings x Bathroom Faucet Aerators per electric DHW kit).

6 Bathroom Faucet Aerator kWh lifetime savings formula (Annual savings x Measure life).

Projected Savings from LED Night Light Installation

Energy Efficient Night Light Retrofit Inputs and Assumptions:

Average length of use:	**4,380**	hours per year[1]
Average night light uses:	**7**	watts
Retrofit night light uses:	**0.5**	watts
Measure life:	**10**	years[2]
Energy saved per year:	**28**	kWh per year
Energy saved over life expectancy:	**285**	kWh
Installation / participation rate of:	**93.22%**	[3]
Number of participants:	**34,546**	[3]

Projected Electricity Savings:

The Energy Efficient Night Light retrofit projects an **annual** reduction of:	**916,856**	kWh[4]
The Energy Efficient Night Light retrofit projects a **lifetime** reduction of:	**9,168,559**	kWh[5]

1 Assumption (12 hours per day)

2 Product life provided by manufacturer

3 Data reported by program participants

4 Energy Efficient Night Light kWh savings formula (Energy saved per year x Number of participants x Installation rate)

5 Energy Efficient Night Light kWh lifetime savings formula (Energy saved over life expectancy x Number of participants x Installation rate)

Projected Savings from Shower Timer Installation

Shower TImer inputs and assumptions:

% of water heated by gas:	**42.00%**	[1]
% of water heated by electricity:	**57.00%**	[1]
Installation / participation rate of Shower Timer:	**68.84%**	[1]
Average showerhead has a flow rate of:	**2.50**	gallons per minute[1]
Retrofit showerhead has flow rate of:	**1.75**	gallons per minute[1]
Number of participants:	**34,546**	[1]
Average of baseline and retrofit showerhead flow rate:	**2.13**	gallons per minute[2]
Shower duration:	**8.20**	minutes per day[3]
Shower Timer duration:	**5.00**	minutes per day[4]
Showers per capita per day (SPCD):	**0.67**	showers per day[3]
Percent of water that is hot water:	**73%**	[5]
Days per year:	**365.00**	days
Product life:	**2.00**	years[5]

Projected Water Savings:

Shower Timer installation projects an **annual** reduction of:	**39,547,809**	gallons[6]
Shower Timer installation projects a **lifetime** reduction of:	**79,095,617**	gallons[7]

Projected Electricity Savings:

Shower Timer installation projects an **annual** reduction of:	**2,962,052**	kWh[8]
Shower Timer installation projects a **lifetime** reduction of:	**5,924,104**	kWh[9]

Projected Natural Gas Savings:

Shower Timer installation projects an **annual** reduction of:	**109,128**	therms[10]
Shower Timer installation projects a **lifetime** reduction of:	**218,256**	therms[11]

1 Data Reported by Program Participants.

2 Average of the baseline GPM and the retrofit GPM

3 (March 4, 2010). EPA WaterSense® Specification for Showerheads Supporting Statement. Retrieved from http://www.epa.gov/WaterSense/docs/showerheads_finalsuppstat508.pdf

4 Provided by manufacturer.

5 Navigant EM&V Report for Super Savers Program in Illinois PY7

6 Annual water savings = Water Flow (Average of baseline and retrofit flow) × (Baseline Shower duration - Shower Timer duration) × Participants × Days per year × SPCD × Installation Rate of Shower Timer

7 Projected Annual Water Savings x Product Life

8 Projected Annual Water Savings x Percent of Water that is Hot Water x 0.18 kWh/gal x % of Water Heated by Electricity x Participants

9 Projected Annual Water Savings x Percent of Water that is Hot Water x 0.18 kWh/gal x % of Water Heated by Electricity x Product Life x Participants

10 Projected Annual Water Savings x Percent of Water that is Hot Water x 0.009 Therms/gal x % of Water Heated by Natural Gas x Participants

11 Projected Annual Water Savings x Percent of Water that is Hot Water x 0.009 Therms/gal x % of Water Heated by Natural Gas x Product Life x Participants

Enrollment Survey Response Summary

1 How is the water heated in your home?	
Electricity	57%
Gas	42%
Other	1%
2 Do you own or rent your home?	
Own	78%
Rent	22%
3 What is the primary method of heating your home?	
Gas forced air	53%
Heat pump	7%
Electric forced air	24%
Baseboard or ceiling cable	7%
Other	8%
4 What is the primary method of cooling your home?	
Central A/C	66%
Window A/C	18%
Heat pump	6%
None	6%
Other	4%
5 What, if any, energy-saving improvements are you planning to make in the next two years?	
Windows	25%
Furnace or A/C	12%
Insulation	9%
Appliances	17%
Smart thermostat	8%
Other	30%
6 How did you hear about this kit offering?	
Direct mail	11%
Info in bill	3%
Social media	43%
Idaho Power website	7%
Idaho Power employee	3%
Other	33%

Due to rounding of numbers, percentages may not add up to 100%

Kit Survey Response Summary

1 What type of home do you live in?	
Single family home - detached	83%
Apartment, Condo, Townhouses, or Multi-family with 2-3 units	5%
Apartment, Condo, Townhouses, or Multi-family with 4 or more units	5%
Mobile/Manufactured home	7%
2 How many people live in your home?	
5 or more	11%
4	15%
3	15%
2	43%
1	17%
3 How many of the LEDs did you install?	
All of them	57%
7-8	5%
5-6	14%
3-4	14%
1-2	7%
None	4%
4 If you did not install all of the LEDs, what did you do with the remainer?	
Plan to install, just haven't yet	30%
Stored for later use	60%
Gave them to someone else	1%
Other _____	8%
5 Have you installed the High-Efficiency Showerhead?	
Yes	54%
Not yet, but will	36%
No, won't use	9%
6 Have you installed the Kitchen Faucet Aerator?	
Yes	53%
Not yet, but will	28%
No, won't use	19%
7 Have you installed the Bathroom Faucet Aerator #1?	
Yes	55%
Not yet, but will	32%
No, won't use	13%
8 Have you installed the Bathroom Faucet Aerator #2?	
Yes	38%
Not yet, but will	36%
No, won't use	27%

Due to rounding of numbers, percentages may not add up to 100%

Kit Survey Response Summary *(continued)*

9 Have you used the LED Night Light?	
Yes	88%
Not yet, but will	11%
No, won't use	1%
10 Have you used the Shower Timer?	
Yes	53%
Not yet, but will	31%
No, won't use	15%
11 Have you used the Flow-Rate Test Bag to test the flow rate of your shower or faucets?	
Yes	26%
Not yet, but will	56%
No, won't use	18%
12 If you used the Digital Thermometer to check the temperature of your water, what was the temperature?	
> 140 F	3%
131 F to 140 F	9%
121 F - 130 F	25%
< 120 F	28%
Did not check water temperature	36%
13 Did you adjust the temperature of your electric water heater?	
Yes, I lowered it	19%
Yes, I raised it	2%
No, I did not adjust	79%
14 Did you adjust the temperature of your refrigerator?	
Yes, I lowered it	24%
Yes, I raised it	12%
No, I did not adjust	64%
15 Did you adjust the temperature of your freezer?	
Yes, I lowered it	20%
Yes, I raised it	10%
No, I did not adjust	70%
16 How satisfied were you with the kit ordering process?	
Very satisfied	95%
Somewhat satisfied	4%
Somewhat dissatisfied	0%
Very dissatisfied	1%
17 Did you receive your kit within 3 weeks?	
Yes	91%
No	9%

Due to rounding of numbers, percentages may not add up to 100%

Kit Survey Response Summary *(continued)*

18 How likely would you be to tell a friend or family member to order a kit?

Very likely	94%
Somewhat likely	6%
Somewhat unlikely	0%
Very unlikely	1%

19 Prior to hearing about the Energy-Saving Kits, were you aware Idaho Power had energy efficiency programs and incentives?

Yes	46%
No	54%

20 Have you ever gone to Idaho Power's website to look for information about energy efficiency programs and incentives?

Yes	39%
No	61%

21 How likely are you to participate in another energy efficiency program?

Very likely	86%
Somewhat likely	13%
Somewhat unlikely	1%
Very unlikely	0%

22 If you did not install some of the kit items, please tell us why.

Due to rounding of numbers, percentages may not add up to 100%

Program Marketing

Idaho Power's initial target audience was centered around rural communities with a higher propensity for electric water-heating. Direct mailers were distributed by county as follows.

IDAHO COUNTIES	IDAHO CITIES & TOWNS	DIRECT MAILERS
Adams County	Cambridge, Council, Fruitvale, Indian Valley, McCall, Mesa, New Meadows, Riggins	718
Gooding County	Buhl, Gooding, Hagerman, Jerome, Wendell	3,084
Twin Falls County	Buhl, Castleford, Filer, Hagerman, Hansen, Hollister, Kimberly, Murtaugh, Rogerson	5,998
Valley County	Cascade, Donnelly, Lake Fork, McCall, Yellow Pine	3,349
Washington County	Cambridge, Midvale, Payette, Weiser	1,205
	TOTAL	14,354

Household response to the direct mailing resulted in the following.

IDAHO ZIP CODES	IDAHO CITIES & TOWNS	DIRECT MAILERS	PARTICIPANTS	%
83201 - 83299	Pocatello, Americal Falls, Blackfoot	12	4	33.3%
83301 - 83399	Buhl, Gooding, Grangeville, Hagerman, Jerome, Kimberly, Murtaugh, Twin Falls, Wendell	9,072	2,240	24.7%
83401 - 83499	Ammon, Idaho Falls	6	0	0.0%
83501 - 83599	Grangeville, Lewiston, Orofino	67	4	6.0%
83601 - 83699	Caldwell, Cambridge, Cascade, Council, Donnelly, Eagle, McCall, Meridian, Mesa, Midvale, Mountain Home, Nampa, New Meadows, New Plymouth, Payette, Star, Weiser	4,065	1,018	25.0%
83701 - 83799	Boise, Garden City	1,097	265	24.2%
83801 - 83899	Coeur D'Alene, Moscow, Post Falls	35	2	5.7%

Idaho households who responded to Direct Mailing:	14,354	3,533	24.6%
Idaho households who participated in the program:		3,533	

Idaho Cities & Towns Affected

IDAHO CITIES & TOWNS AFFECTED		
ABERDEEN	GREENLEAF	NEW MEADOWS
AMERICAN FALLS	HAGERMAN	NEW PLYMOUTH
ARBON	HAILEY	NORTH FORK
BANKS	HAMMETT	NOTUS
BELLEVUE	HANSEN	OAKLEY
BLACKFOOT	HAZELTON	OLA
BLISS	HEYBURN	OREANA
BOISE	HILL CITY	PARMA
BRUNEAU	HOLLISTER	PAUL
BUHL	HOMEDALE	PAYETTE
BURLEY	HORSESHOE BEND	PICABO
CALDWELL	IDAHO CITY	PINE
CAMBRIDGE	INDIAN VALLEY	PINGREE
CAREY	INKOM	PLACERVILLE
CARMEN	JACKSON	POCATELLO
CASCADE	JEROME	POLLOCK
CASTLEFORD	KETCHUM	PRAIRIE
CENTERVILLE	KIMBERLY	RICHFIELD
CHUBBUCK	KING HILL	RIGGINS
CORRAL	KUNA	ROBIE CREEK
COUNCIL	LAKE FORK	ROCKLAND
DIETRICH	LEADORE	ROGERSON
DONNELLY	LEMHI	RUPERT
EAGLE	LETHA	SALMON
EDEN	LOWMAN	SHOSHONE
EMMETT	MALTA	SPRINGFIELD
FAIRFIELD	MARSING	STAR
FEATHERVILLE	MCCALL	STERLING
FILER	MELBA	SUN VALLEY
FORT HALL	MERIDIAN	SWEET
FRUITLAND	MESA	TENDOY
FRUITVALE	MIDDLETON	TWIN FALLS
GARDEN CITY	MIDVALE	WEISER
GARDEN VALLEY	MONTOUR	WENDELL
GIBBONSVILLE	MOUNTAIN HOME	WEST MAGIC
GLENNS FERRY	MURPHY	WILDER
GOODING	MURTAUGH	YELLOW PINE
GRAND VIEW	NAMPA	
TOTAL NUMBER OF CITIES & TOWNS AFFECTED:		**113**
TOTAL NUMBER OF HOUSEHOLDS AFFECTED:		**33,682**

Oregon Cities & Towns Affected

OREGON CITIES & TOWNS AFFECTED		
ADRIAN	HUNTINGTON	RICHLAND
BROGAN	IRONSIDE	UNITY
DREWSEY	JAMIESON	VALE
DURKEE	JORDAN VALLEY	WESTFALL
HALFWAY	NYSSA	
HARPER	ONTARIO	
HEREFORD	OXBOW	

TOTAL NUMBER OF CITIES & TOWNS AFFECTED:	**18**
TOTAL NUMBER OF HOUSEHOLDS AFFECTED:	**864**

Idaho Power Regions Affected

REGIONS (IDAHO)	ELECTRIC	NON-ELECTRIC
CANYON	3,308	2,893
CAPITAL	6,378	8,154
EASTERN	2,123	1,207
SOUTHERN	4,285	1,664
WESTERN	2,865	805
NUMBER OF HOUSEHOLDS IMPACTED:	**18,959**	**14,723**
TOTAL NUMBER OF HOUSEHOLDS IMPACTED:	**33,682**	

REGIONS (OREGON)	ELECTRIC	NON-ELECTRIC
CANYON	5	0
WESTERN	751	108
NUMBER OF HOUSEHOLDS IMPACTED:	**756**	**108**
TOTAL NUMBER OF HOUSEHOLDS IMPACTED:	**864**	

REGIONS (IDAHO POWER)	ELECTRIC	NON-ELECTRIC
NUMBER OF HOUSEHOLDS IMPACTED:	**19,715**	**14,831**
TOTAL NUMBER OF HOUSEHOLDS IMPACTED:	**34,546**	

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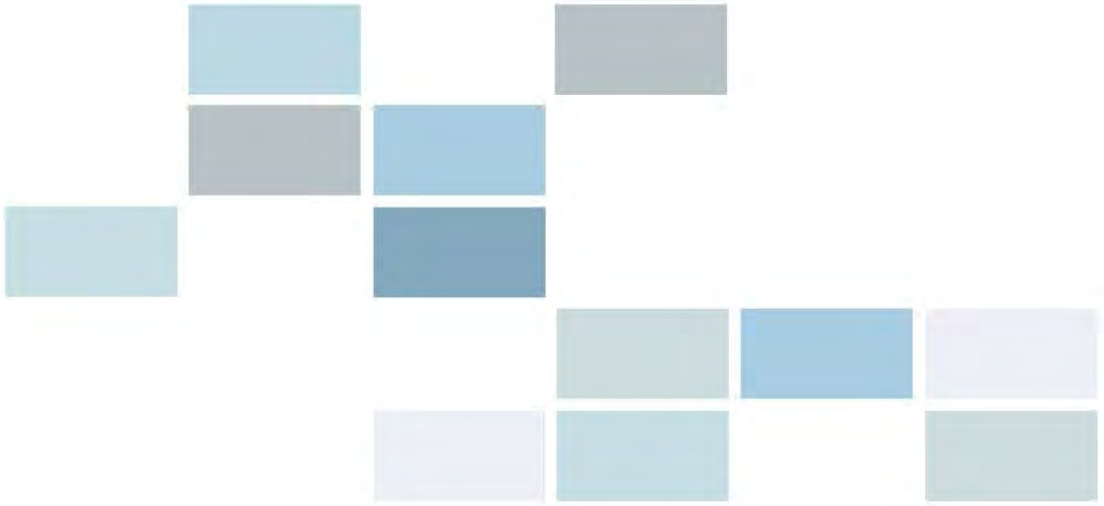
Idaho Power
2016 Residential End-Use Survey

January 2016



MARKETSTRATEGIES
INTERNATIONAL

Table of Contents

Research Background

- The Residential End-Use Survey is a periodic market research study conducted by Idaho Power Company. In December 2016, Idaho Power worked with Market Strategies International to update the 2010 End Use Research study.
- The 2016 study will be used to forecast residential energy needs and allow for the development, enhancement and targeting of energy conservation programs to Idaho Power's residential customers. Residential profiles to be assessed are as follows:
  - Housing characteristics
  - Home demographics
  - Fuel sources
  - Home heating and cooling
  - Saturation of appliance and consumer electronics

Research Methodology

- The targeted population of this study is Idaho Power's base of residential customers across their entire service territory. A single sample list consisting of residential customer names and addresses were provided by Idaho Power to be used in the overall analysis.
- A six-page survey was mailed to these customers and was the single source of survey responses. The survey was mailed to a total of 6,150 customers for them to fill out and return over a one and a half month time frame (November thru December).
- Approximately one week after the initial mailing, a follow-up postcard was sent to all customers who received the first mailing reminding them about completing the survey. About two weeks after the postcard was delivered a second survey package was sent to those who had not yet completed the survey.
- A total of 2,296 survey responses were returned from the mailings which resulted in a total response rate* of 38%.
  - During the data cleaning process, 24 cases were removed due to poor or incomplete data from the final sample leaving us with 2,272 cases to be analyzed.

	Mailings				Returns		Cleaning	Final Sample
	1st Mailing (11-16-16)	Reminder Postcard (11-23-16)	2nd Mailing (12-9-16)	Total Survey Mail Outs	Survey Returns	Response Rate*	Cases lost due to incomplete responses	Final cases analyzed
2016 Main Sample	6,150	6,150	5,416	11,566	2,296	38%	24	2,272

*Response Rate = 2,296 Survey Returns / (6,150 Sample Size – 52 Undeliverable Mailings)

Research Methodology

- Idaho Power provided a single list containing customer name and address:
  - Main sample: A random sample of residential customers to be used for the overall analysis. The list included five operating regions (Canyon, Capital, Eastern, Western, Southern), in addition to customers in Oregon.
- Sample was pulled proportionally to the distribution by region and state.
- This report presents the results from the main sample consisting of Idaho and Oregon sample.
- The sampling error* associated with a total of 2,272 interviews is ± 2.1% at a 95% confidence level.
- The data are weighted* by region to accurately reflect the actual Idaho Power customer population.

Weighting and Sampling Error

	Number of Surveys	Sampling Error	Unweighted Distribution	Weighted Distribution
Region				
Canyon	407	±5%	17.9%	17.8%
Capital	435	±5%	19.1%	43.1%
Eastern	481	±4%	21.2%	11.5%
Western	489	±4%	21.5%	12.2%
Southern	460	±5%	20.2%	15.5%
Total	**2272**			
Jurisdiction				
Idaho	2145	±2%		
Oregon	127	±9%		

*Definitions

Sampling error: The degree to which the results from the sample deviate from those that would be obtained from the entire population because of random error in the selection of respondent and the corresponding reduction in reliability (e.g., the sampling error associated with Canyon (n=407) is +/-5%. Therefore, the Canyon sample estimate would range from 45% to 55% in 95 out of 100 samples for a true population proportion of 50%).

Weighting: A data weight is a multiplier that makes the contribution from a given case (survey) larger or smaller . In this case, a data weight adjustment was applied to the System results to bring the region proportions in line with the overall population distribution.

Executive Summary with Customer Profile Snapshots by Region and Jurisdiction

Executive Summary

Housing Characteristics

- 78% live in a single-family home (consistent with 75% in 2010). (p. 14)
- 68% have one or two people living in the residence, consistent with 67% in 2010. (p. 15)
- 87% are home owners (compared to 84% in 2010). (p. 15)
- 29% live in a home built since 2010 (up from 24% in 2010). (p. 16)
- 53% of residences are under 1800 square feet (consistent with 56% in 2010). (p. 16)
- 78% have double pane windows and 58% have vinyl window frames, both up from 2010 (74% and 53%, respectively). (p. 17)

Heating & Cooling

- 69% have natural gas available at their residence. (p. 26)
- 58% say natural gas is their primary heating fuel, while 30% use electricity. (p. 27)
- 73% use a central furnace as their primary heating source. (p. 28)
- 36% use an additional heating system, down from 47% in 2010. Among these residences, 44% use a stove, fireplace, or fireplace insert. (p. 30, 32)
- Among homes with air conditioning (82%), 75% use a central air conditioner and 12% have window units. (p.36-37)
- One-half (50%) of homes have a programmable thermostat and 43% have manually adjusted thermostats (down from 50% in 2010). (p. 40)
- Among homes with a water heater (98%), 49% have an electric water heater and 48% use natural gas. Nearly all (97%) of water heaters are conventional in style. (p. 41-43)

Executive Summary, cont.

Appliances & Electronics

- Natural gas stove use is 21% and natural gas oven use is 14%. (p. 46-47)
- The majority of households have one or more of the following – mid/full-size refrigerator (99%), electric dishwasher (82%), and stand-alone freezer (59%). (p. 47-51))
- Nearly all homes have a clothes washer (95%) and dryer (94%) for private use. (p. 53-56)
    - 95% of dryers are electric and 5% use natural gas.
- Just 46% of households have a standard TV, compared to 78% that have an LCD/LED TV or 23% that have a Plasma TV. (p. 58)
- More homes have a laptop computer (71%) than have a desktop computer (62%). (p. 61)

Lighting & Energy Efficiency

- The incidence of CFL and LED bulbs are consistent with each other – 25% of households have installed more than 10 CFLs and 25% of households have installed more than 10 LED bulbs. Slightly more homes – 30% - have more than 10 incandescent bulbs installed. (p. 65)
- Within the past three years, 28% have installed or replaced their clothes washer, 28% have installed or replaced their refrigerator, and 27% have installed or replaced their dishwasher. Likewise, 27% of households have replaced or installed their thermostat in the past 3 years. (p. 70)
- One-fourth of respondents (24%) have participated in an Idaho Power energy efficiency rebate program. (p. 72)

*Caution: small base size. Base is among customers answering the question (i.e., "missing" responses are not included in the "not aware" response category).

Profile Snapshots – By Region

Canyon

- 70% have natural gas available to their home.
- 61% say natural gas is their primary heating fuel while 31% use electricity.
- 79% use a central furnace as their primary heating source.
- 29% use an additional heating system.
- Among those with air conditioning (93%), 83% use a central air conditioner.
- **53% use natural gas water heaters** and another 45% use electric gas water heaters.
- 54% of households have programmable thermostats and 41% have manually adjusted thermostats.
- 27% have participated in Idaho Power's energy efficiency programs.
- In terms of demographic and household characteristics of respondents:
  - 40% are under 55, 45% are 55-74, and 19% are 75 or older
  - 31% have a high school education or less, while 28% graduated from college
  - 79% live in a single-family home, and 40% live in a newer home (built after 1999)

Capital

- 85% have natural gas available to their home.
- 72% say natural gas is their primary heating fuel, while 23% use electricity.
- 83% use a central furnace as their primary heating source.
- 29% use an additional heating system.
- Among those with air conditioning (94%), 87% use a central air conditioner.
- 66% use a natural gas water heater.
- 61% of households have programmable thermostats and 31% have manually adjusted thermostats.
- 28% have participated in Idaho Power's energy efficiency programs.
- In terms of demographic and household characteristics of respondents:
  - **40% are under 55**, 45% are 55-74, and 16% are 75 or older
  - 18% have a high school education or less, while 48% graduated from college
  - 81% live in a single-family home, and 33% live in a newer home (built after 1999)

Note: **Green** and **Red** bolded text indicates a difference of 10 percentage points than in 2010

Profile Snapshots – By Region (cont'd)

Eastern

- 62% have natural gas available to their home.
- 53% say natural gas is their primary heating fuel while 30% use electricity.
- 67% use a central furnace as their primary heating source.
- **45% use an additional heating system.**
- Among those with air conditioning (61%), 61% use a central air conditioner.
- 63% use electric water heaters and another 35% use natural gas water heaters.
- 38% of households have programmable thermostats and 57% have manually adjusted thermostats.
- 18% have participated in Idaho Power's energy efficiency programs.
- In terms of demographic and household characteristics of respondents:
  - 32% are under 55, 49% are 55-74, and 19% are 75 or older
  - 26% have a high school education or less, while 32% graduated from college
  - 75% live in a single-family home, and 88% live in an older home (built before 1999)

Western

- 32% have natural gas available to their home.
- 22% say natural gas is their primary heating fuel while 46% use electricity.
- 50% use a central furnace as their primary heating source.
- **53% use an additional heating system.**
- Among those with air conditioning (67%), 55% use a central air conditioner. 26% use an individual/window unit and another 22% use a heat pump.
- 79% use electric water heaters.
- 37% of households have programmable thermostats and 53% have manually adjusted thermostats.
- 20% have participated in Idaho Power's energy efficiency programs.
- In terms of demographic and household characteristics of respondents:
  - 22% are under 55, 58% are 55-74, and 20% are 75 or older
  - 31% have a high school education or less, while 34% graduated from college
  - 19% live in a manufactured or mobile homes, while 72% live in a SFH. 75% say their house was built before 1999

Southern

- 56% have natural gas available to their home.
- 46% say natural gas is their primary heating fuel while 39% use electricity.
- 59% use a central furnace as their primary heating source.
- **43% use an additional heating system.**
- Among those with air conditioning (64%), 64% use a central air conditioner. 17%-18% use heat pumps or an individual/window unit.
- 64% use electric water heaters while another 33% use natural gas water heaters.
- 37% of households have programmable thermostats and 56% have manually adjusted thermostats.
- 18% have participated in Idaho Power's energy efficiency programs.
- In terms of demographic and household characteristics of respondents:
  - 31% are under 55, 49% are 55-74, and 20% are 75 or older
  - 27% have a high school education or less, while 35% graduated from college
  - 72% live in a single-family home, and 77% live in an older home (built before 1999)

Note: **Green** and **Red** bolded text indicates a difference of 10 percentage points than in 2010

Profile Snapshots – By Jurisdiction

Idaho

- 70% have natural gas available to their home.
- 59% say natural gas is their primary heating fuel while 30% use natural gas.
- 73% use a central furnace as their primary heating source.
- **36% use an additional heating system.**
- Among those with air conditioning (82%), 78% use a central air conditioner.
- Just under half (48%) use electric water heaters and another 49% use natural gas water heaters.
- 51% of households have programmable thermostats and 42% have manually adjusted thermostats.
- 25% have participated in Idaho Power's energy efficiency programs.
- Idaho respondents tend to be younger (36% under the age of 55, 47% are 55-74, and 18% are 75 or older). They also tend to have a higher percentage with college degrees (39%), live in a single-family home (78%), and live in an newer home (30% built after 1999) compared to households in Oregon.

Oregon

- 47% have natural gas available to their home.
- 36% say electricity is their primary heating fuel while 34% use natural gas.
- Six in ten customers (59%) use a central furnace as their primary heating source.
- **48% use an additional heating system.**
- Among those with air conditioning (83%), 58% use a central air conditioner and 29% use individual/window unites.
- 78% use electric water heaters while another 17% use natural gas water heaters.
- 30% of households have programmable thermostats and 60% have manually adjusted thermostats.
- 19% have participated in Idaho Power's energy efficiency programs.
- Oregon respondents tend to be older (23% are under the age of 55, 55% are 55-74, and 23% are 75 or older). They also tend to have a lower percentage with college degrees (26%), include more manufactured or mobile homes (21%), and live in an older home (88% built before 1999) compared to households in Idaho.

Note: **Green** and **Red** bolded text indicates a difference of 10 percentage points than in 2010

2016 Household Characteristics

2016 Household Characteristics

Identical to 2010, the 2016 survey included several questions about household characteristics. Questions include:

- Type of residence
- Occupancy (primary residence occupied all or most of the year vs. seasonal/vacation home)
- Number of people living in the residence
- Own vs. rent
- Year built
- Approximate overall square footage
- Type of windows
- Type of window frames

Household Characteristics

	2010 A	2016 B		Canyon C	Capital D	Eastern E	Western F	Southern G		Idaho H	Oregon I
Residence Type											
Single Family Home	75%	78%		79% FG	81% EFG	75%	72%	72%		78% I	70%
Manufactured home	6%	7%		8% D	4%	7%	13% CDE	10% D		7%	11%
Apartment, condo, townhouse – 2-3 units	8% B	6%		5%	7% F	7% F	3%	9% CF		6%	4%
Apartment, condo, townhouse – 4 or more units	5%	5%		3%	5%	4%	4%	6% C		5%	2%
Mobile home	5%	4%		5% D	2%	6% DG	6% DG	3%		3%	11% H
Other	1%	1%		1%	1%	1%	2% G	0%		1%	2%
Base (unweighted)	*1696*	*2192*		*396*	*425*	*467*	*462*	*442*		*2069*	*123*
Base (weighted)	*1697*	*2202*		--	--	--	--	--		*2131*	--
Use of Home											
All or most of year	94%	95%		99% EFG	98% FG	97% FG	83%	88% F		95%	96%
Seasonal home/vacation home	5%	4%		0%	1% C	2% C	15% CDE	11% CDE		4%	3%
Other	1% B	1%		0%	1%	1%	1%	0%		1%	1%
Base (unweighted)	*1699*	*2232*		*398*	*427*	*474*	*481*	*452*		*2107*	*125*
Base (weighted)	*1700*	*2231*		--	--	--	--	--		*2159*	--

An upper-case letter indicates a significant difference in proportions at the 95% confidence level between the current column and the column indicated by the letter.
A1: Which of the following best describes this residence?
A2: Is this residence occupied year-round or for only part of the year?

Household Characteristics

	2010 A	2016 B		Canyon C	Capital D	Eastern E	Western F	Southern G		Idaho H	Oregon I
Number in Residence											
1-2	67%	68%		60%	69% C	70% C	76% CDG	68% C		68%	77% H
3-5	29%	28%		34% EF	28% F	24%	21%	29% F		28%	22%
6 or more	4%	4%		7% DF	3%	6% F	3%	4%		4%	2%
Base (unweighted)	*1560*	*2054*		*396*	*414*	*455*	*400*	*389*		*1935*	*119*
Base (weighted)	*1574*	*2095*		--	--	--	--	--		*2026*	--
Own vs. Rent											
Own	84%	87% A		84%	86%	91% CD	89% C	88%		87%	85%
Rent	17% B	13%		16% EF	15% E	9%	11%	12%		13%	15%
Base (unweighted)	*1704*	*2217*		*396*	*427*	*470*	*476*	*443*		*2093*	*119*
Base (weighted)	*1704*	*2217*		--	--	--	--	--		*2148*	--

An upper-case letter indicates a significant difference in proportions at the 95% confidence level between the current column and the column indicated by the letter.
A3: If this is your primary residence, how many people live here?
A4: Do you own or rent this residence?

Household Characteristics

	2010 A	2016 B		Canyon C	Capital D	Eastern E	Western F	Southern G		Idaho H	Oregon I
Year Built											
Before 1960	20%	18%		14%	12%	33% CDFG	24% CD	26% CD		17%	38% H
1960-1979	26%	26%		18%	25% C	36% CDFG	27% C	28% C		26%	31%
1980-1989	11%	10%		11%	10%	11%	9%	9%		10%	8%
1990-1999	20% B	17%		18% E	20% EG	9%	16% E	14% E		17%	11%
2000-2009*	24%	22%		31% EFG	25% EG	8%	21% E	18% E		23% I	10%
2010-2016*	0%	7% A		9% EF	8% EF	4%	5%	6%		7% I	2%
Base (unweighted)	*1551*	*2065*		*376*	*402*	*436*	*438*	*413*		*1956*	*109*
Base (weighted)	*1553*	*2078*		--	--	--	--	--		*2015*	*63*
Square Footage											
Less than 1,000 sq ft	13%	12%		11%	11%	13%	14%	12%		12%	13%
1,000-1,799 sq ft	43%	41%		47% DE	40%	34%	42% E	42% E		41%	47%
1,800-2,499 sq ft	24%	27%		25%	29%	27%	26%	26%		27%	21%
2,500-3,499 sq ft	14%	15%		13%	16%	17%	15%	13%		15%	16%
3,500-4,499 sq ft	4%	4%		3%	4%	5%	3%	5%		4%	3%
4,500 sq ft or more	2%	2%		2%	1%	3%	1%	3%		2%	1%
Base (unweighted)	*1623*	*2118*		*384*	*413*	*448*	*450*	*423*		*2009*	*109*
Base (weighted)	*1627*	*2131*		--	--	--	--	--		*2199*	*63*

An upper-case letter indicates a significant difference in proportions at the 95% confidence level between the current column and the column indicated by the letter.
A5: When was this residence originally built? (Select when the building was originally constructed, not when it was remodeled, added to, or converted.)
A6: What is the approximate overall square footage of this residence? Include basement or garage ONLY if it is regularly heated or cooled by your heating and cooling system.

**Year categories changed between the 2010 and 2016 studies, interpret 2010 data with caution.*

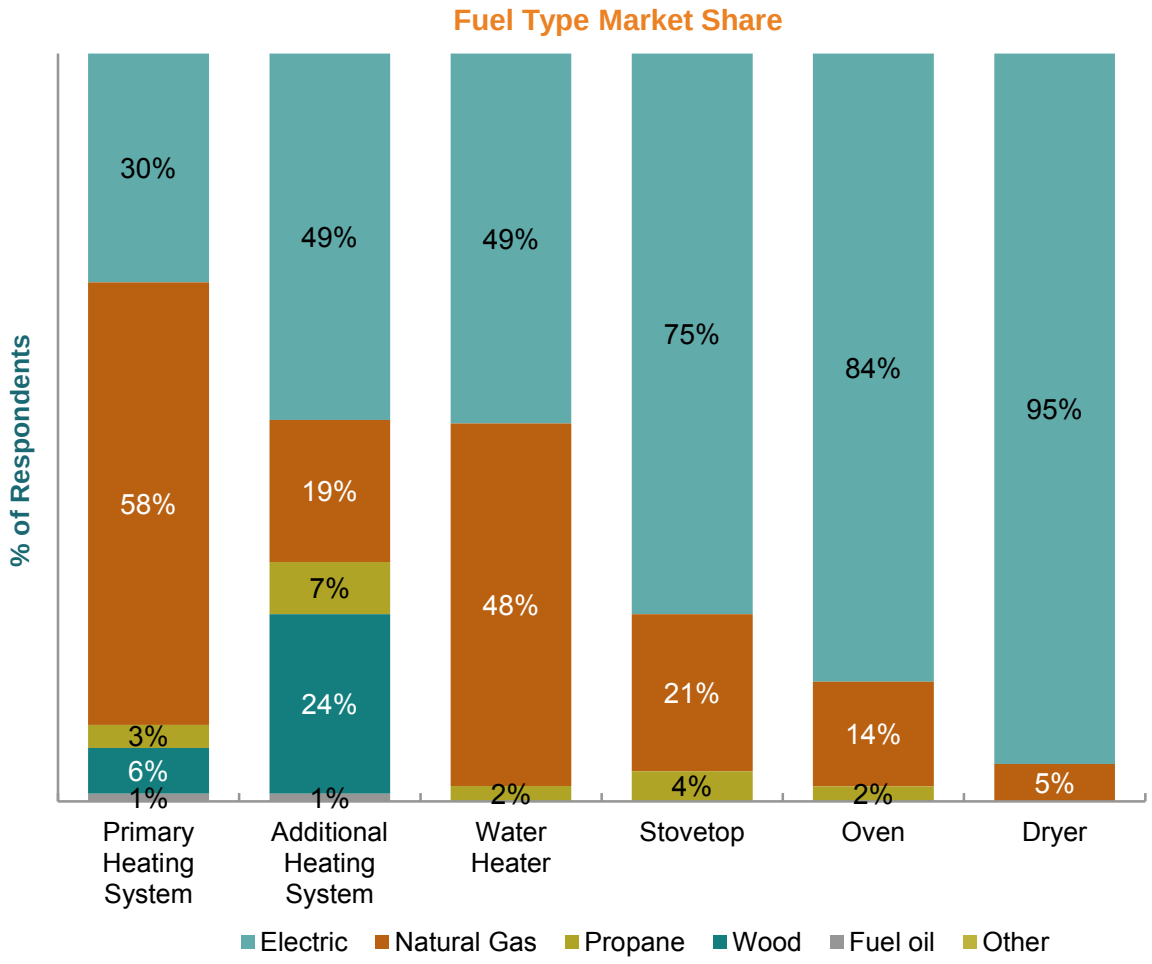
Household Characteristics

	2010 A	2016 B		Canyon C	Capital D	Eastern E	Western F	Southern G		Idaho H	Oregon I
Type of Windows											
All or most are single pane	16% B	12%		17% DF	9%	14% DF	10%	17% DF		13%	11%
All or most are double pane	74%	78% A		77% G	84% CEG	71%	79% EG	69%		78%	71%
Mixture of both	10%	10%		7%	7%	15% CD	11% C	14% CD		9%	18% H
Base (unweighted)	*1608*	*2138*		*376*	*405*	*454*	*468*	*435*		*2017*	*121*
Base (weighted)	*1607*	*2128*		--	--	--	--	--		*2059*	--
Type of Window Frames											
All or most have vinyl frame	53%	58% A		61% EG	61% EG	53%	57% G	49%		58%	56%
All or most have wood frame	15% B	13%		11%	10%	14%	14%	20% CDEF		13%	12%
All or most have metal frame	21% B	16%		18%	16%	16%	17%	16%		16%	18%
Mixture of all	10%	13% A		11%	13%	17% CF	12%	15%		13%	14%
Base (unweighted)	*1603*	*2108*		*369*	*391*	*453*	*463*	*427*		*1988*	*115*
Base (weighted)	*1602*	*2080*		--	--	--	--	--		*2014*	--

An upper-case letter indicates a significant difference in proportions at the 95% confidence level between the current column and the column indicated by the letter.
A7: Choose the statement that best describes the type of windows at this residence.
A8: Choose the statement that best describes the type of window frames at this residence.

Fuel Type Market Share

Fuel Type Market Share

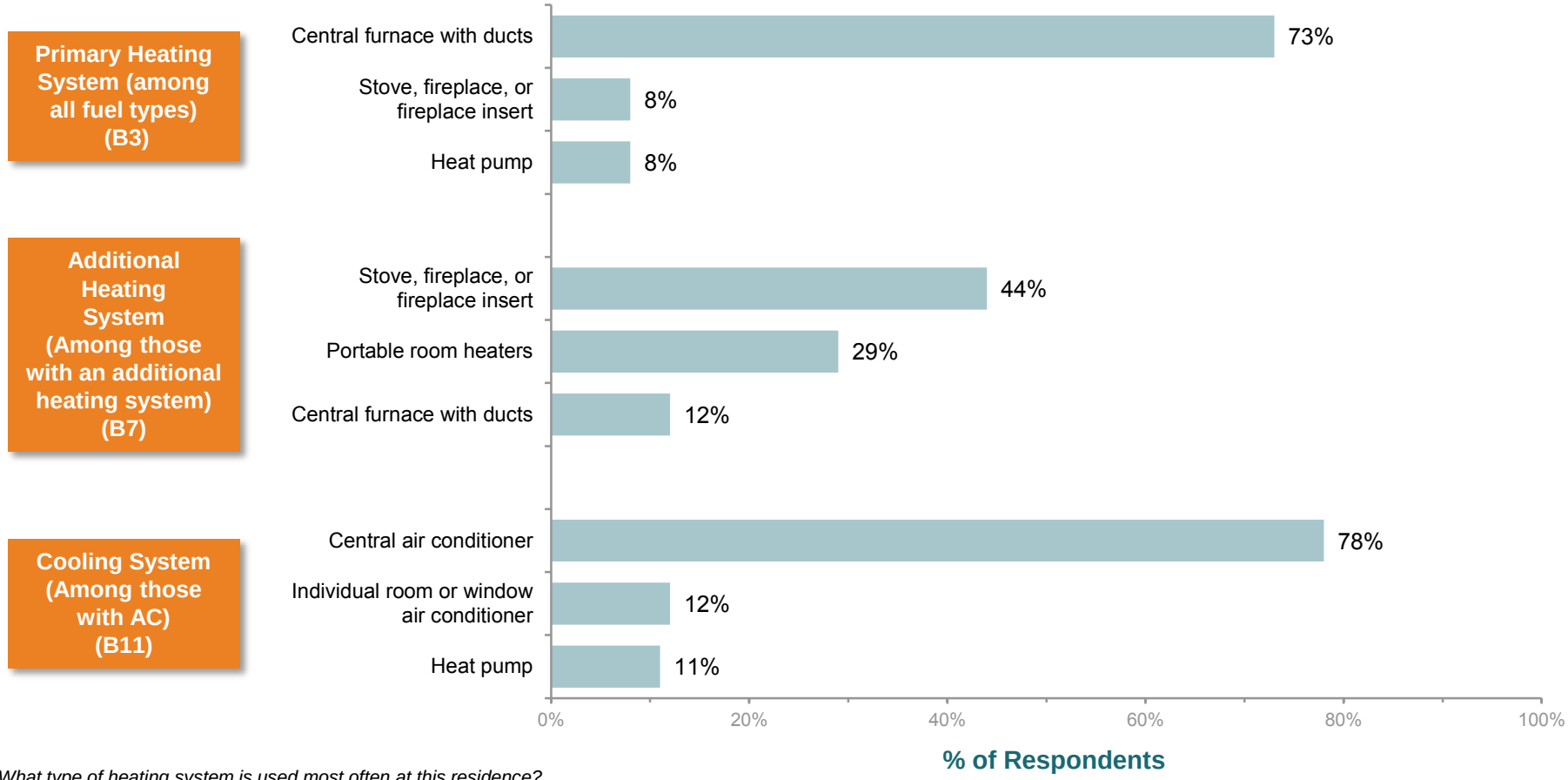


B2, B6, C2, C4, C5, C14. What one fuel is most often used….?
Bases: Primary Heating: 2148, Additional Heating: 877, Water Heater: 2148, Stovetop: 2247, Oven: 2246, Dryer: 2089

Market Saturation

Market Saturation

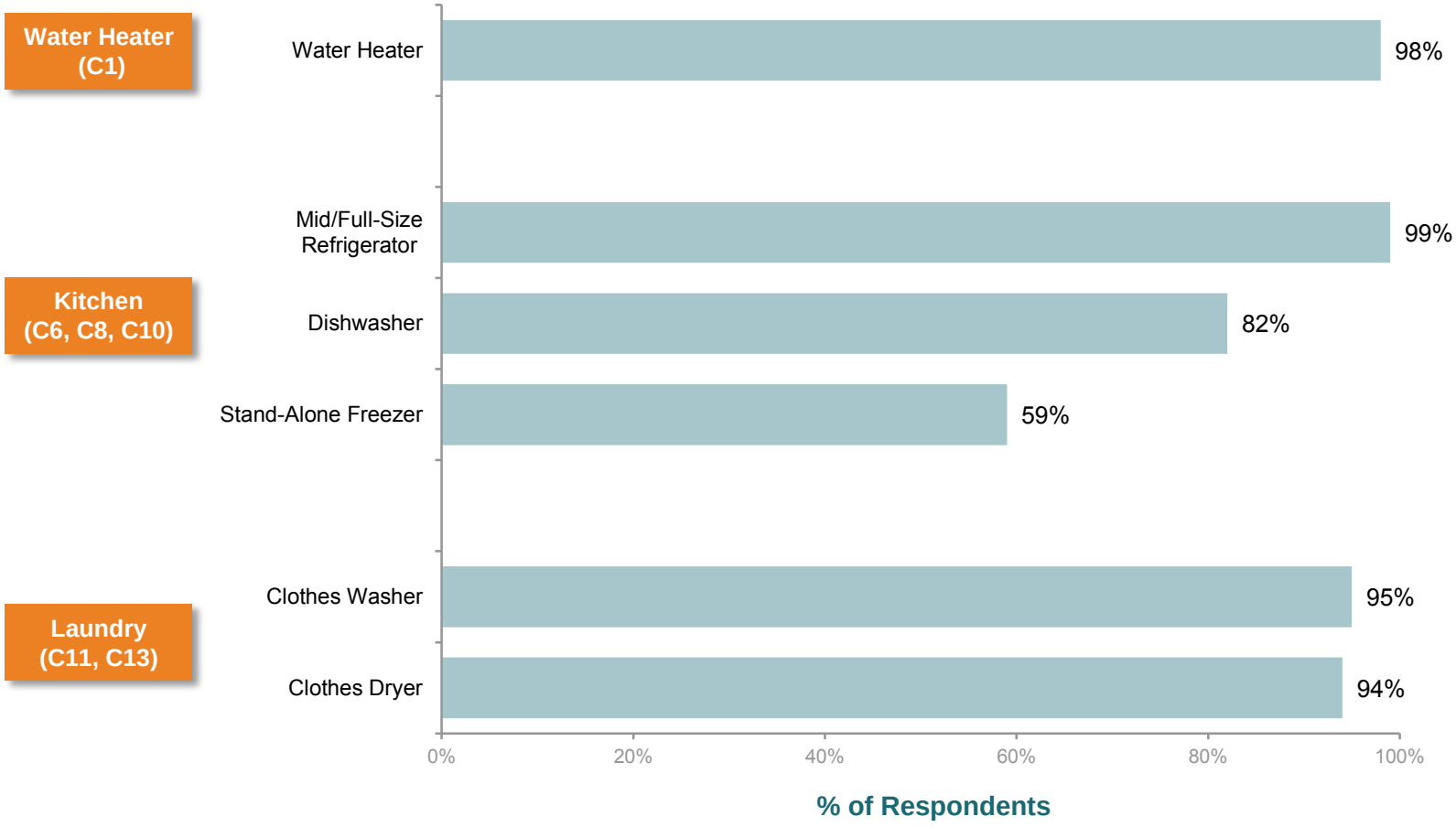
Most Frequently Mentioned Responses



B3. What type of heating system is used most often at this residence?
B7. What type of additional heating system is used at this residence?
B11. What type of air conditioning system is used at this residence?

Base: Primary heating: 2147, Additional Heating: 861, Cooling: 1672

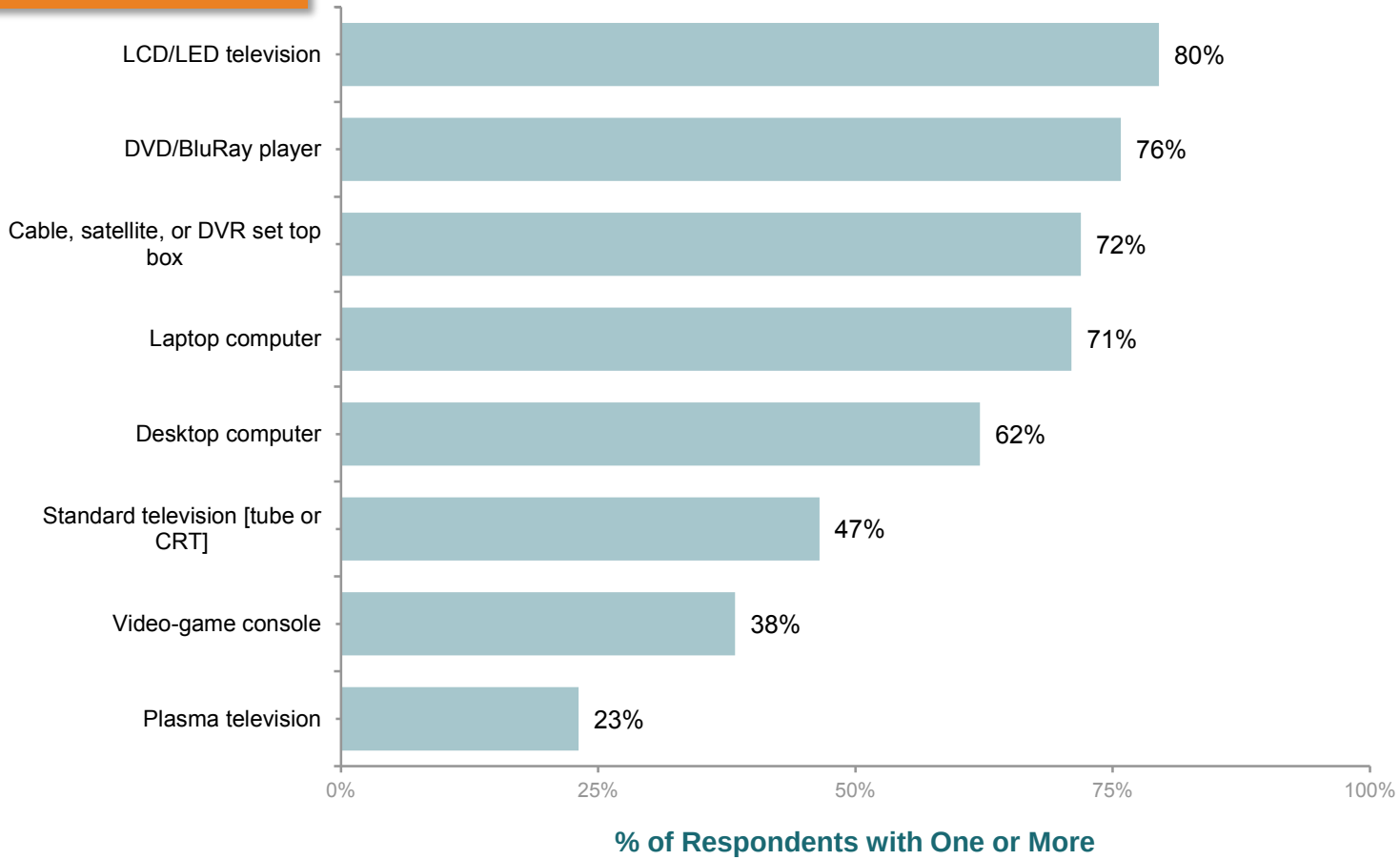
Market Saturation (cont'd)



C1, C6, C8, C10, C11, C13: % saying yes/have at least one in use at residence
Base: Water Heater: 2250, Mid-Full-Size Refrigerator: 2236, Stand-Alone Freezer: 2231, Dishwasher: 2259, Clothes Washer: 2256, Clothes Dryer: 2254.

Market Saturation (cont'd)

E1A-E1H: Consumer Electronics



E1A-E1H. % saying yes/have at least one in use at residence

Base: LCD/LED TV: 1867, DVD/BluRay Player: 1846, Cable/Satellite/DVR: 1948, Laptop Computer: 1933, Desktop Computer: 1868, Standard TV: 1758, Video-Game Console: 1677, Plasma TV: 1489.

Market Saturation (cont'd)

The following table lists electric appliance saturation rates for the 1994, 2004, 2010, and 2016 studies.

Although the survey instruments have changed somewhat from year to year, the saturation rates shown the following table were calculated similarly across studies.

- For example, in 2004, the question "How many evaporate swamp coolers do you have?" was asked of everyone. In 2010, the question was asked only among customers who indicated in a preceding question that they have air conditioning at their residence. Therefore, the 2010 saturation rate for swamp coolers is based on the total number of customers answering the question "Do you have air conditioning?" rather than only among those customers who have air conditioning. A table describing how each saturation rate was calculated is included in the Appendix.

	1994	2004	2010	2016
	%	%	%	%
Heat Source - Elect.	37.3	34.8	31.1	30.4
Resistance	28.1	27.3	23.6	20.5
Electric Heat Pump	8.6	9.8	5.5	6.2
Portable Heaters[1]	na	36.9	29.7	30.7
Central A/C	33.8	59.5	69.0	72.8
Evaporative Swamp Coolers[2]	10.3	9.2	4.0	1.9
Room A/C Units[1]	24.4	31.5	20.9	20.2
Water Heater	72.3	56.1	49.3	46.7
Range	91.4	82.9	83.3	75.2
Refrigerators[1]	122.0	125.0	133.1	134.9
Freezer (% with 1+)	56.4	53.2	56.1	59.3
Dishwasher	62.1	77.3	81.7	82.1
Clothes Washer	89.3	92.4	94.7	94.7
Clothes Dryer	85.2	86.6	88.1	88.4

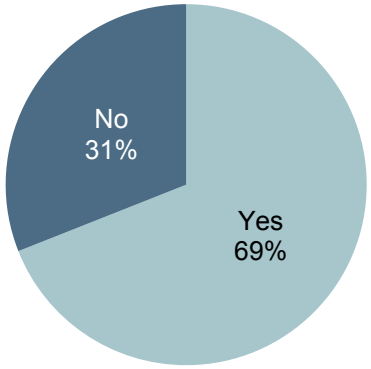
[1] Average number of units per 100 residences.

[2] Saturation rate calculation changed in 2016 due to survey changes.

Home Heating

Availability of Natural Gas

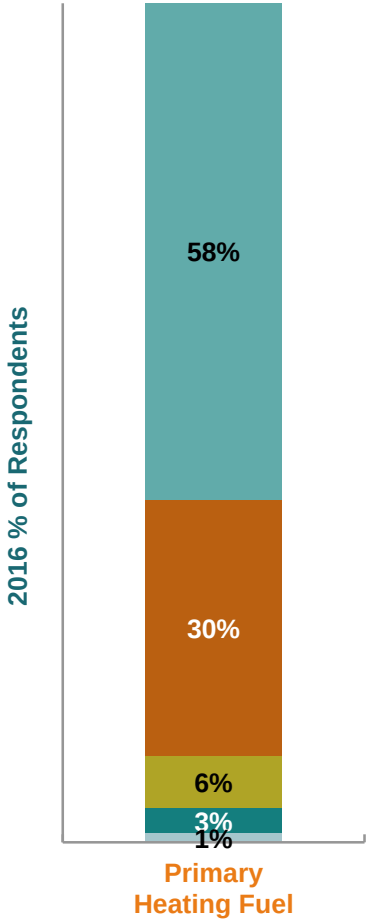
Natural Gas Available At Residence



	2010 A	2016 B		Canyon C	Capital D	Eastern E	Western F	Southern G		Idaho H	Oregon I
Natural Gas Available At Residence											
Yes	68%	69%		70% EFG	85% CEFG	62% F	32%	56% F		70% I	47%
No	32%	31%		30% D	15%	38% CD	68% CDEG	44% CD		31%	53% H
Base (unweighted)	*1627*	*2188*		*394*	*418*	*468*	*465*	*443*		*2067*	*121*
Base (weighted)	*1629*	*2187*		--	--	--	--	--		*2118*	--

Among customers answering the question.
An upper-case letter indicates a significant difference in proportions at the 95% confidence level between the current column and the column indicated by the letter.
B1. Is natural gas available at this residence?

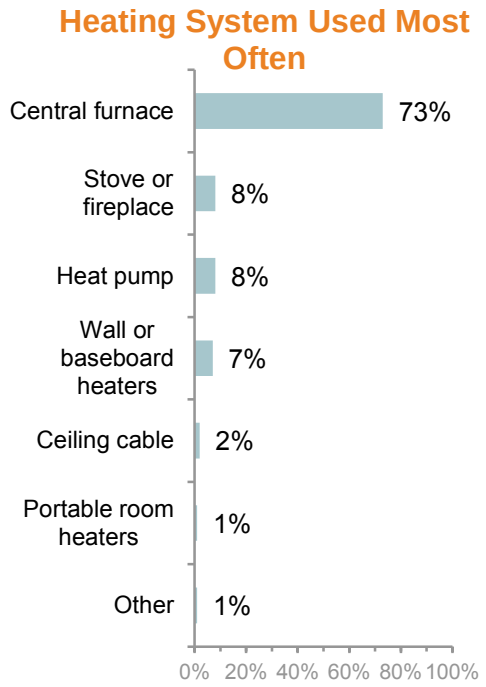
Primary Heating Fuel



	2010 A	2016 B		Canyon C	Capital D	Eastern E	Western F	Southern G		Idaho H	Oregon I
Primary Heating Fuel											
Natural Gas	56%	58%		61% EFG	72% CEFG	53% FG	22%	46% F		59% I	36%
Electric	31%	30%		31% D	23%	30% D	46% CDEG	39% CDE		30%	34%
Wood	6%	6%		5%	4%	6%	18% CDEG	7% D		6%	20% H
Propane	4%	3%		3% D	0%	8% CDG	11% CDG	4% D		3%	10% H
Fuel Oil	2%	1%		1% D	—	2% D	2% D	4% CDF		1%	—
Other	1%	0%		0%	1%	1%	0%	0%		0%	1%
Base (unweighted)	*1673*	*2148*		*392*	*424*	*456*	*451*	*425*		*2032*	*116*
Base (weighted)	*1676*	*2170*		--	--	--	--	--		*2104*	--

Among customers answering the question.
An upper-case letter indicates a significant difference in proportions at the 95% confidence level between the current column and the column indicated by the letter.
B2. What one fuel is most often used to heat this residence?

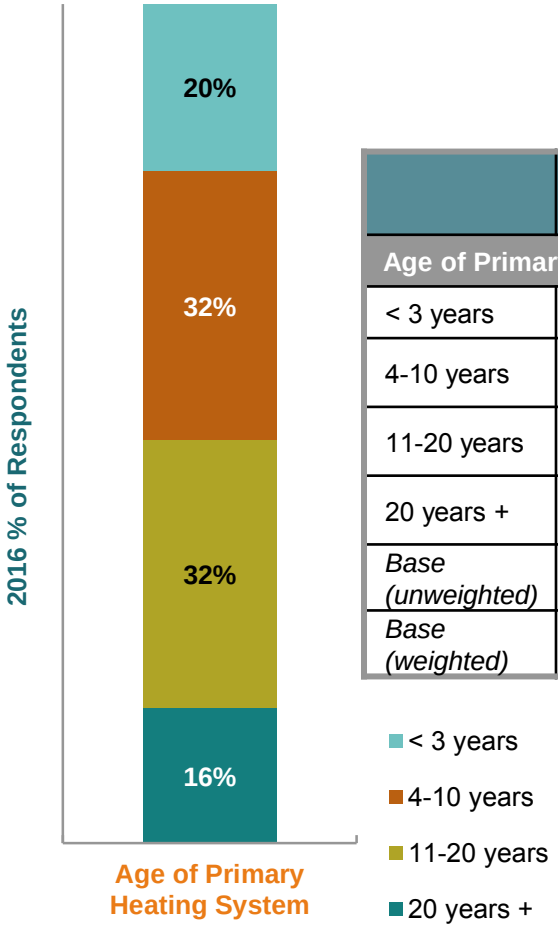
Heating System Used Most Often



	2010 A	2016 B		Canyon C	Capital D	Eastern E	Western F	Southern G		Idaho H	Oregon I
Heating System Used Most Often											
Central furnace	73%	73%		79% EFG	83% EFG	67% FG	50%	59% F		73% I	59%
Stove or fireplace	8%	8%		5%	4%	11% CD	21% CDE G	9% CD		7%	22% H
Heat pump	7%	8%		9% E	6%	4%	11% DE	10% DE		8%	7%
Wall or baseboard heaters	8%	7%		3%	4%	10% CD	12% CD	14% CDE		7%	9%
Ceiling cable	2%	2%		2%	1%	5% CDG	3% D	2%		2%	2%
Portable room heaters	1%	1%		1%	1%	1%	2%	2%		1%	2%
Other	1%	1%		1%	1%	1%	1%	1%		1%	1%
Base (unwgt)	*1658*	*2147*		*392*	*412*	*452*	*457*	*434*		*2029*	*118*
Base (wgt)	*1661*	*2152*		--	--	--	--	--		*2084*	--

Among customers answering the question.
An upper-case letter indicates a significant difference in proportions at the 95% confidence level between the current column and the column indicated by the letter.
B3. What type of heating system is used most often at this residence?

Age of Primary Heating System

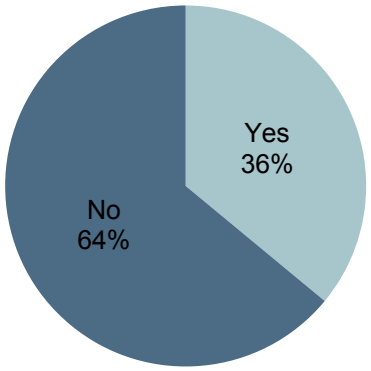


	2010 A	2016 B		Canyon C	Capital D	Eastern E	Western F	Southern G		Idaho H	Oregon I
Age of Primary Heating System											
< 3 years	19%	20%		23% EFG	23% EFG	15%	16%	14%		20%	17%
4-10 years	38% B	32%		33% E	34% E	26%	32%	29%		32%	29%
11-20 years	27%	32% A		33%	31%	30%	31%	33%		32%	27%
20 years +	17%	16%		11%	11%	29% CDF	22% CD	23% CD		16%	27% H
Base (unweighted)	*1500*	*1952*		*354*	*382*	*409*	*426*	*381*		*1845*	*107*
Base (weighted)	*1501*	*1965*		--	--	--	--	--		1903	--

Among customers answering the question.
An upper-case letter indicates a significant difference in proportions at the 95% confidence level between the current column and the column indicated by the letter.
B4. Approximately what is the age of the primary heating system at this residence?

Additional Heating System

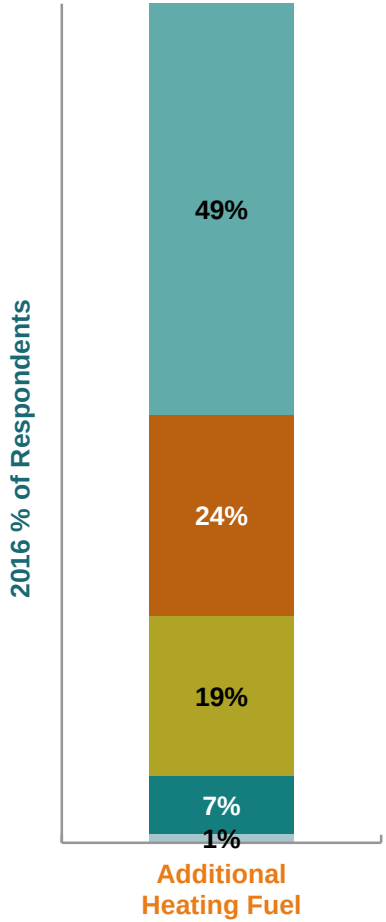
Use Additional Heating System



	2010 A	2016 B		Canyon C	Capital D	Eastern E	Western F	Southern G		Idaho H	Oregon I
Use Additional Heating System											
Yes	47% B	36%		29%	29%	45% CD	53% CDEG	43% CD		36%	48% H
No	54%	64% A		71% EFG	71% EFG	55% F	47%	57% F		64% I	52%
Base (unweighted)	*1686*	*2145*		*388*	*408*	*456*	*460*	*433*		*2030*	*115*
Base (weighted)	*1685*	*2142*		--	--	--	--	--		2076	--

Among customers answering the question.
An upper-case letter indicates a significant difference in proportions at the 95% confidence level between the current column and the column indicated by the letter.
B5. Do you use an additional heating system or equipment at this residence?

Additional Heating System Fuel (among customers with an additional heating system)



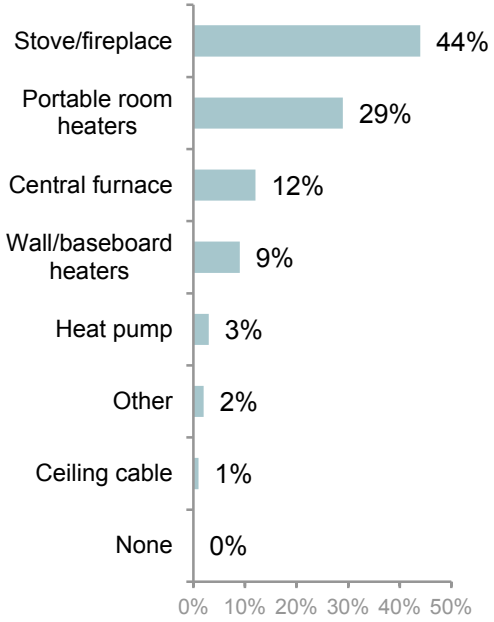
	2010 A	2016 B		Canyon C	Capital D	Eastern E	Western F	Southern G		Idaho H	Oregon I
Additional Heating Fuel											
Electric	45%	49%		55%	45%	45%	53%	50%		48%	66% H
Wood	26%	24%		23%	24%	20%	30% E	23%		24%	21%
Natural Gas	19%	19%		16% F	28% CFG	22% F	4%	17% F		19% I	8%
Propane	8%	7%		5%	3%	11% D	12% CD	8%		8%	3%
Fuel Oil	2%	1%		1%	—	1%	0%	2%		1%	2%
Other	0%	0%		—	—	1%	0%	—		0%	—
Base (unweighted)[1]	*701*	*877*		*107*	*119*	*212*	*249*	*190*		*816*	*61*
Base (weighted)	*684*	*775*		--	--	--	--	--		*740*	--

[1]Caution: small base size.

Among customers answering the question.
An upper-case letter indicates a significant difference in proportions at the 95% confidence level between the current column and the column indicated by the letter.
B6. What one fuel is used in the additional heating system?

Additional Heating System Used (among customers with an additional heating system)

Additional Heating System Used

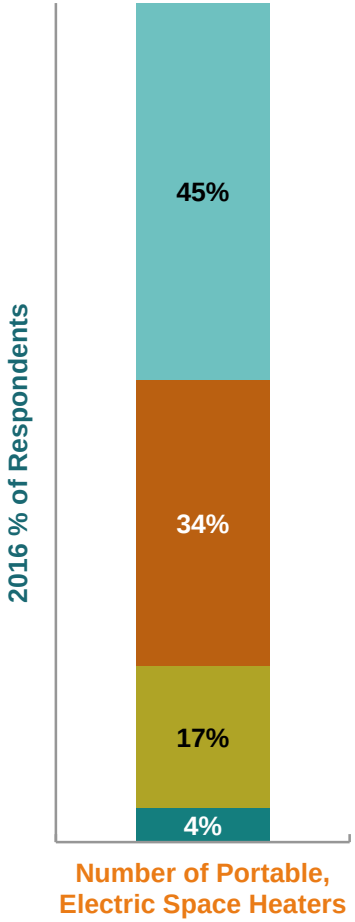


	2010 A	2016 B	Canyon C	Capital D	Eastern E	Western F	Southern G	Idaho H	Oregon I
Additional Heating System Used									
Stove or fireplace	43%	44%	38%	48%	49%	40%	42%	45% I	30%
Portable room heaters	27%	29%	37% EF	28%	25%	25%	34%	30%	28%
Central furnace	13%	12%	13%	15% E	7%	15% EG	9%	12%	15%
Wall or baseboard heaters	9%	9%	5%	6%	13% CD	13% C	9%	8%	20% H
Heat Pump	2%	3%	6%	2%	2%	3%	4%	3%	3%
Other	3%	2%	1%	2%	1%	2%	2%	2%	2%
Ceiling Cable	2% B	1%	—	—	3%	1%	1%	1%	2%
None	2% B	0%	—	—	—	—	1%	0%	—
Base (unwgt)[1]	*700*	*861*	*107*	*115*	*212*	*240*	*187*	*801*	*60*
Base (wgt)	*684*	*759*	--	--	--	--	--	*724*	--

[1]Caution: small base size.

Among customers answering the question.
An upper-case letter indicates a significant difference in proportions at the 95% confidence level between the current column and the column indicated by the letter.
B7. What type of additional heating system is used at this residence?

Number of Portable Electric Space Heaters (among customers with an additional heating system)



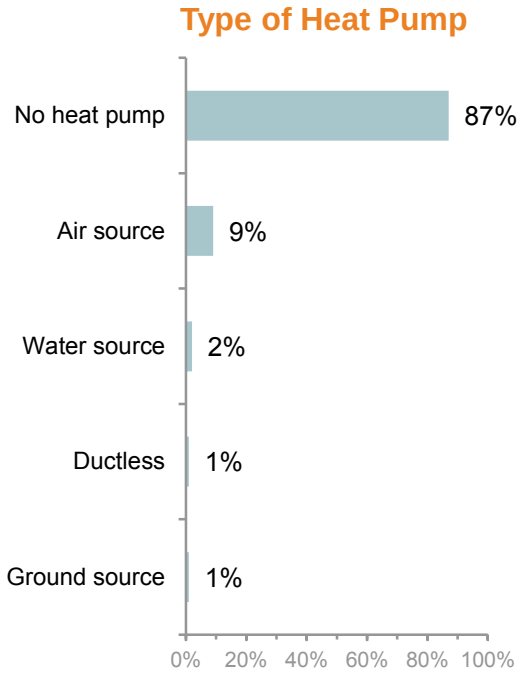
	2010 A	2016 B		Canyon C	Capital D	Eastern E	Western F	Southern G		Idaho H	Oregon I
Number of Portable, Electric Space Heaters											
None	55% B	45%		35%	47%	49% C	46%	46%		45%	43%
One	30%	34%		40% EF	37%	30%	29%	31%		34%	33%
Two	11%	17% A		21%	14%	17%	17%	19%		17%	20%
Three+	4%	4%		4%	2%	5%	9% D	4%		4%	5%
Base (unweighted)[1]	*780*	*921*		*117*	*126*	*220*	*255*	*203*		*860*	*61*
Base (weighted)	*761*	*819*		--	--	--	--	--		*784*	--

[1]Caution: small base size.

None
One
Two
Three +

Among customers answering the question.
An upper-case letter indicates a significant difference in proportions at the 95% confidence level between the current column and the column indicated by the letter.
B8. How many portable, electric space heaters do you use at this residence?

Type of Heat Pump



	2010 A	2016 B		Canyon C	Capital D	Eastern E	Western F	Southern G		Idaho H	Oregon I
Type of Heat Pump											
No heat pump	86%	87%		84%	90% CFG	91% CFG	81%	84%		87%	84%
Air source	12%	9%		11% E	9%	5%	12% E	11% E		9%	12%
Water source	2%	2%		3% D	1%	3% D	4% D	3% D		2%	2%
Ductless	0%	1%		1%	0%	2%	1%	1%		1%	—
Ground source	1%	1%		1%	1%	—	2% E	1%		1%	1%
Base (unwgt)[1]	*1020*	*1675*		*298*	*331*	*370*	*361*	*315*		*1582*	*93*
Base (wgt)	*1012*	*1686*		--	--	--	--	--		*1633*	--

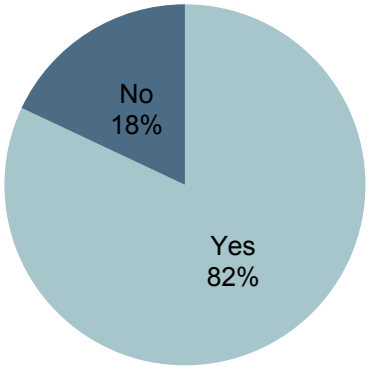
[1]Caution: small base size.

Among customers answering the question.
An upper-case letter indicates a significant difference in proportions at the 95% confidence level between the current column and the column indicated by the letter.
B9. If this residence has a heat pump, what kind of heat pump is it?

Home Cooling

Air Conditioning Availability

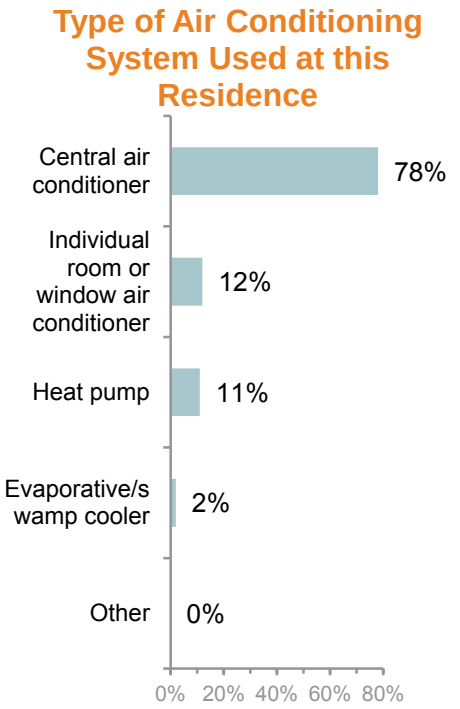
Air Conditioning Available at Residence



	2010 A	2016 B		Canyon C	Capital D	Eastern E	Western F	Southern G		Idaho H	Oregon I
Air Conditioning Available at Residence											
Yes	85%	82%		93% EFG	94% EFG	61%	67%	64%		82%	83%
No	15%	18%		7%	6%	39% CD	33% CD	36% CD		18%	17%
Base (unweighted)	*1708*	*2236*		*403*	*431*	*469*	*482*	*451*		*2111*	*125*
Base (weighted)	*1708*	*2242*		*--*	*--*	*--*	*--*	*--*		*2170*	*--*

Among customers answering the question.
An upper-case letter indicates a significant difference in proportions at the 95% confidence level between the current column and the column indicated by the letter.
B10. Does this residence have air conditioning?

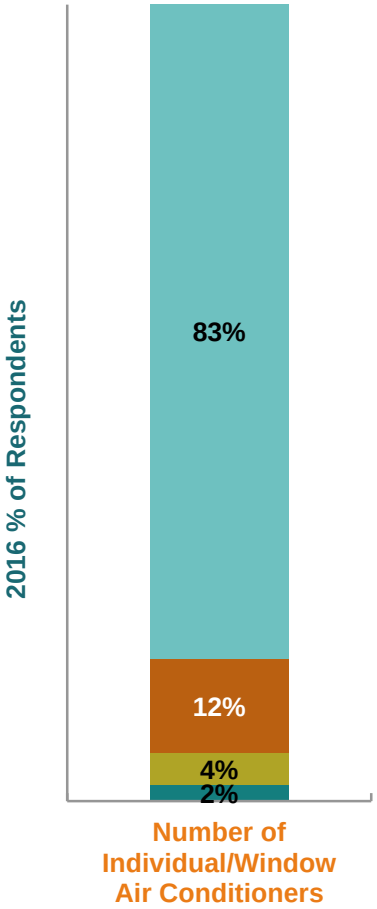
Type of Air Conditioning System (among customers with air conditioning)



	2010 A	2016 B		Canyon C	Capital D	Eastern E	Western F	Southern G		Idaho H	Oregon I
Type of Air Conditioning System Used at this Residence											
Central air conditioner	75%	78% A		83% EFG	87% EFG	61%	55%	64% F		78% I	58%
Individual room or window air conditioner	14%	12%		7%	7%	23% CD	26% CDG	17% CD		11%	29% H
Heat pump	10%	11%		13% D	7%	10%	22% CDE	18% DE		11%	16%
Evaporative/ swamp cooler	4%	2%		1%	1%	8% CDF	4% CD	6% CD		2%	2%
Other	1%	0%		1%	0%	1%	0%	0%		0%	1%
Base (unwgt)	*1364*	*1672*		*374*	*401*	*291*	*318*	*288*		*1569*	*103*
Base (wgt)	*1391*	*1831*		--	--	--	--	--		*1722*	--

Among customers answering the question.
An upper-case letter indicates a significant difference in proportions at the 95% confidence level between the current column and the column indicated by the letter.
B11. What type of air conditioning system is used at this residence?

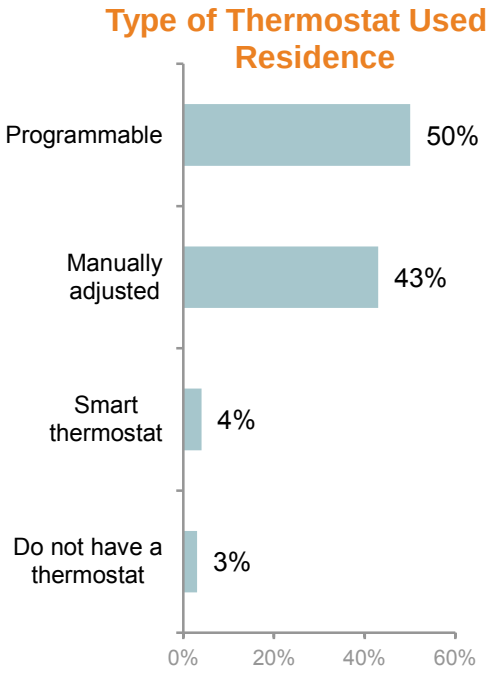
Number of Individual/Window Air Conditioners (among customers with air conditioning)



	2010 A	2016 B		Canyon C	Capital D	Eastern E	Western F	Southern G		Idaho H	Oregon I
Number of Individual/Window Air Conditioners											
None	78%	83% A		87% EFG	87% EFG	70%	69%	76%		83% I	66%
One	16% B	12%		8%	9%	18% CD	20% CD	17% CD		12%	23% H
Two	5%	4%		4%	3%	7% CD	7% CD	5%		4%	4%
Three+	2%	2%		1%	1%	4% CD	4% CD	2%		2%	7% H
Base (unweighted)	*1182*	*1671*		*371*	*400*	*288*	*322*	*290*		*1567*	*104*
Base (weighted)	*1195*	*1828*		--	--	--	--	--		*1769*	--

Among customers answering the question.
An upper-case letter indicates a significant difference in proportions at the 95% confidence level between the current column and the column indicated by the letter.
B12. How many individual electric room or window air conditioners do you use at this residence? (Do not count evaporative/swamp coolers).

Type of Thermostat Used

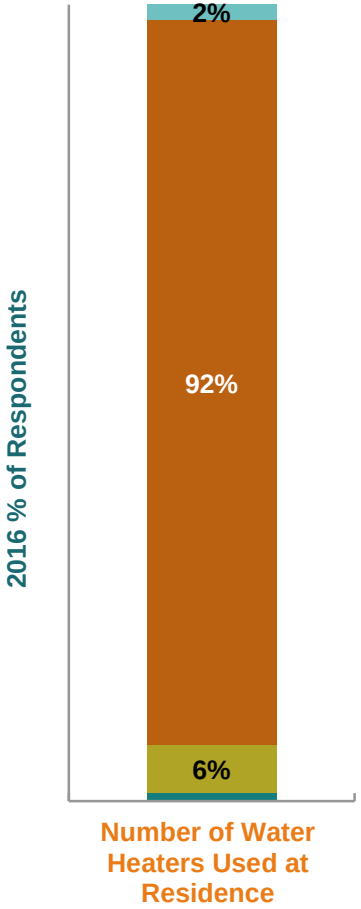


	2010 A	2016 B		Canyon C	Capital D	Eastern E	Western F	Southern G		Idaho H	Oregon I
Type of Thermostat Used at Residence											
Programmable	47%	50%		54% EFG	61% CEFG	38%	37%	37%		51% I	30%
Manually adjusted	50% B	43%		41% D	31%	57% CD	53% CD	56% CD		42%	60% H
Smart thermostat	3%	4%		4% E	5% E	1%	3% E	3%		4% I	—
Do not have a thermostat	—	3% A		2%	3%	4%	7% CDE	4% C		3%	10% H
Base (unwgt)	*1659*	*2192*		*389*	*421*	*469*	*477*	*436*		*2071*	*121*
Base (wgt)	*1661*	*2191*		--	--	--	--	--		*2121*	--

Among customers answering the question.
An upper-case letter indicates a significant difference in proportions at the 95% confidence level between the current column and the column indicated by the letter.
B13. What best describes the heating and cooling thermostat at this residence?

Water Heater

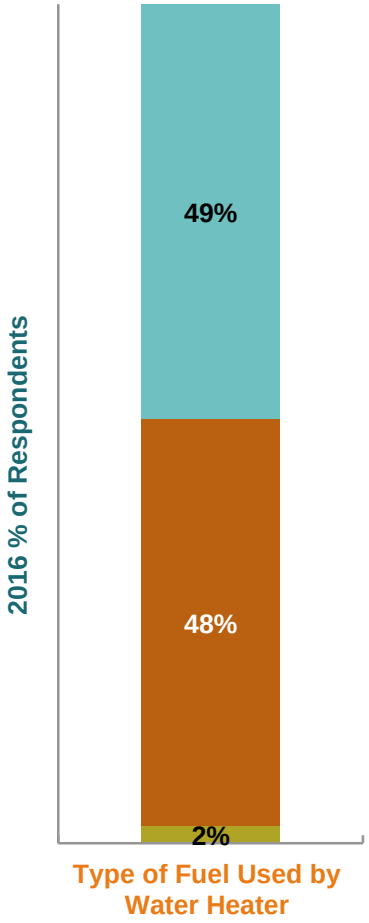
Number of Water Heaters Used



	2010 A	2016 B		Canyon C	Capital D	Eastern E	Western F	Southern G		Idaho H	Oregon I
Number of Water Heaters Used at Residence											
None	1%	2%		2%	2%	0%	1%	3% E		2%	2%
One	92%	92%		93% G	94% FG	93% G	90%	86%		92%	89%
Two	7%	6%		5%	4%	6%	8% CD	10% CDE		6%	8%
Three+	0%	1%		1%	1%	1%	1%	0%		1%	2%
Base (unweighted)	*1699*	*2250*		*402*	*433*	*479*	*482*	*454*		*2125*	*125*
Base (weighted)	*1699*	*2253*		--	--	--	--	--		*2181*	--

Among customers answering the question.
An upper-case letter indicates a significant difference in proportions at the 95% confidence level between the current column and the column indicated by the letter.
C1. How many water heaters are used at this residence?

Type of Water Heater Fuel (among customers with a water heater)



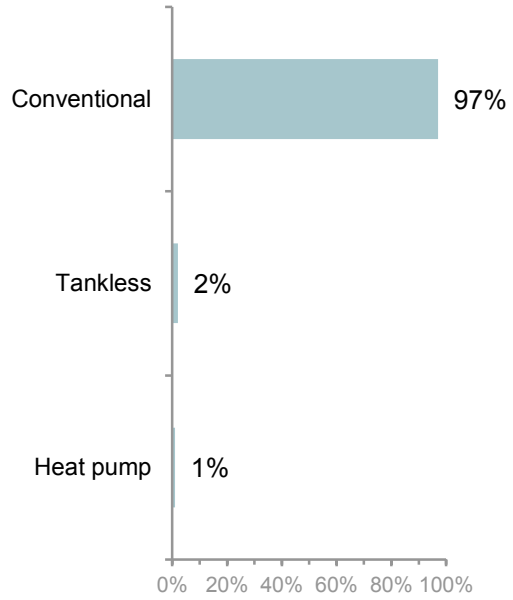
	2010 A	2016 B	Canyon C	Capital D	Eastern E	Western F	Southern G	Idaho H	Oregon I
Type of Fuel Used by Water Heater									
Electric	52%	49%	45% D	33%	63% CD	79% CDEG	64% CD	48%	78% H
Natural Gas	45%	48%	53% EFG	66% CEFG	35% F	12%	33% F	49% I	17%
Propane	3%	2%	2% D	1%	2% D	9% CDEG	3% D	2%	5%
Other	0%	0%	—	—	—	0%	1%	0%	—
Base (unweighted)	*1607*	*2148*	*383*	*411*	*466*	*468*	*420*	*2027*	*121*
Base (weighted)	*1607*	*2144*	--	--	--	--	--	*2074*	--

Electric
Natural Gas
Propane

Among customers answering the question.
An upper-case letter indicates a significant difference in proportions at the 95% confidence level between the current column and the column indicated by the letter.
C2. What type of fuel does the primary water heater at this residence use?

Type of Water Heater Used (among customers with a water heater)

Type of Water Heater Used at this Residence

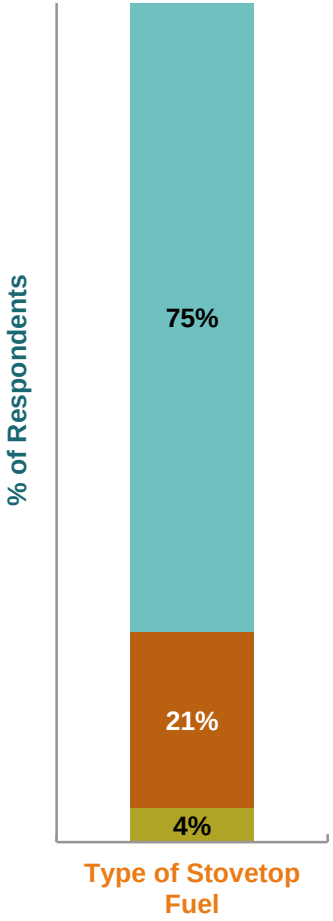


	2010 A	2016 B		Canyon C	Capital D	Eastern E	Western F	Southern G		Idaho H	Oregon I
Type of Water Heater Used at this Residence											
Conventional	98%	97%		98%	98%	97%	96%	97%		97%	96%
Tankless	1%	2% A		1%	2%	2%	4%	2%		2%	4%
Heat pump	1%	1%		1%	0%	0%	0%	1%		1%	—
Base (unwgt)	*1501*	*2054*		*359*	*392*	*451*	*447*	*405*		*1942*	*112*
Base (wgt)	*1500*	*2046*		--	--	--	--	--		*1981*	--

Among customers answering the question.
An upper-case letter indicates a significant difference in proportions at the 95% confidence level between the current column and the column indicated by the letter.
C3. Which of the following best describes the primary water heater used at this residence?

Kitchen Appliances

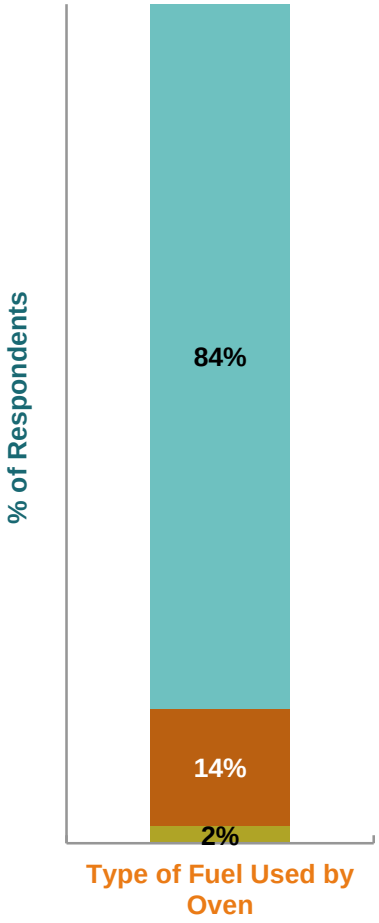
Stovetop Fuel Type



	2010 A	2016 B		Canyon C	Capital D	Eastern E	Western F	Southern G		Idaho H	Oregon I
Type of Fuel Used by Stovetop											
Electric	83% B	75%		80% DG	69%	86% CDFG	81% DG	74%		75%	86% H
Natural Gas	16%	21% A		16% EF	30% CEFG	11% F	6%	21% EF		22% I	6%
Propane	1%	4% A		3% D	1%	3% D	12% CDEG	5% D		3%	6%
Base (unweighted)	*1638*	*2247*		*402*	*433*	*477*	*483*	*452*		*2122*	*125*
Base (weighted)	*1645*	*2251*		--	--	--	--	--		*2179*	--

Among customers answering the question.
An upper-case letter indicates a significant difference in proportions at the 95% confidence level between the current column and the column indicated by the letter.
C4. What type of fuel does the kitchen stovetop at this residence use?

Oven Fuel Type

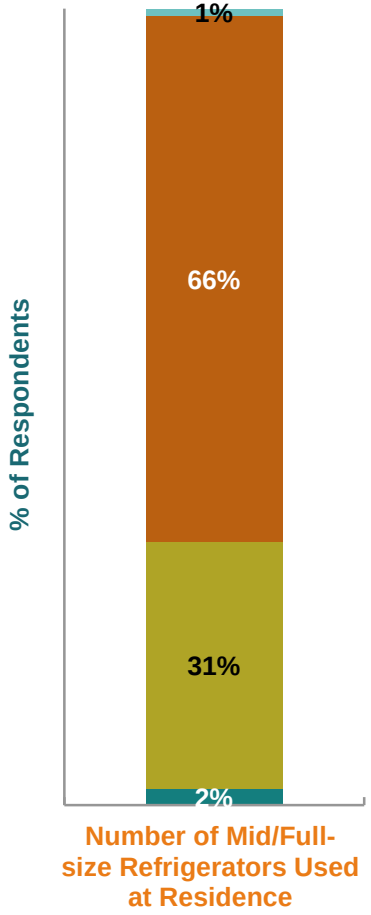


	2010 A	2016 B		Canyon C	Capital D	Eastern E	Western F	Southern G		Idaho H	Oregon I
Type of Fuel Used by Oven											
Electric	89% B	84%		86% D	81%	89% DG	85%	83%		84%	89%
Natural Gas	10%	14% A		12% F	18% CEFG	9%	6%	14% EF		14% I	6%
Propane	1%	2% A		2%	1%	2%	9% CDEG	2% D		2%	6% H
Base (unweighted)	*1655*	*2246*		*403*	*430*	*477*	*485*	*451*		*2121*	*125*
Base (weighted)	*1660*	*2245*		--	--	--	--	--		*2174*	--

Electric
Natural Gas
Propane

Among customers answering the question.
An upper-case letter indicates a significant difference in proportions at the 95% confidence level between the current column and the column indicated by the letter.
C5. What type of fuel does the kitchen oven at this residence use? (Do not include the microwave oven)

Number of Mid/Full-size Refrigerators Used



	2010 A	2016 B		Canyon C	Capital D	Eastern E	Western F	Southern G		Idaho H	Oregon I
Number of Mid/Full-size Refrigerators Used at Residence											
None	1%	1%		1%	1%	0%	1%	2% E		1%	1%
One	69% B	66%		61%	65%	70% C	67%	71% C		66%	65%
Two	27%	31% A		34% EG	33% EG	27%	29%	26%		31%	29%
Three+	3%	2%		4% DG	1%	3% G	3% G	1%		2%	5%
Base (unweighted)	*1705*	*2236*		*402*	*427*	*476*	*480*	*451*		*2112*	*124*
Base (weighted)	*1705*	*2234*		--	--	--	--	--		*2163*	--

Among customers answering the question.
An upper-case letter indicates a significant difference in proportions at the 95% confidence level between the current column and the column indicated by the letter.
C6. How many mid- and/or full-size refrigerators do you use at this residence?

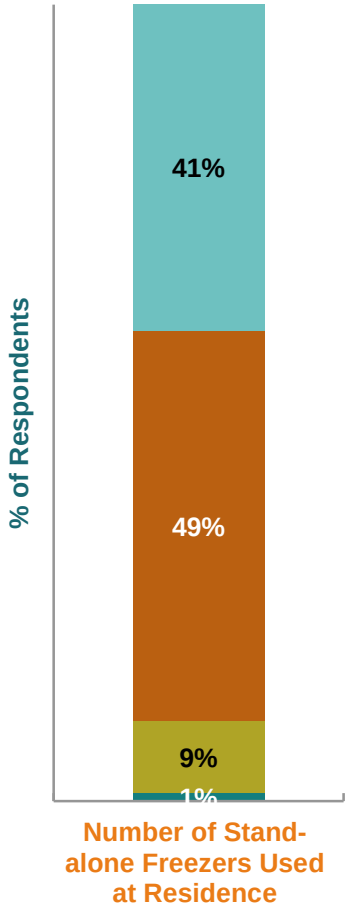
Age of Refrigerator(s) (among customers with one or more mid/full-size refrigerators)

	2010 A	2016 B		Canyon C	Capital D	Eastern E	Western F	Southern G		Idaho H	Oregon I
Age of Refrigerator (#1)											
< 3 years	23%	24%		28%	24%	24%	22%	25%		25%	21%
4-10 years	50% B	47%		48%	48%	43%	45%	46%		47%	45%
11-20 years	22%	25%		19%	25% C	30% C	26% C	25%		24%	30%
20 years +	4%	5%		6%	4%	4%	7% D	5%		5%	5%
Base (unweighted)	*1560*	*2030*		*362*	*400*	*430*	*434*	*404*		*1925*	*105*
Base (weighted)	*1561*	*2047*		--	--	--	--	--		*1986*	--
Age of Refrigerator (#2)											
< 3 years	12% B	8%		13% D	3%	12% D	13% D	10% D		8%	8%
4-10 years	36%	37%		39% F	37%	43% F	27%	42% F		37%	30%
11-20 years	38%	41%		38%	46% E	33%	40%	37%		41%	35%
20 years +	14%	14%		11%	14%	13%	21% C	12%		13%	28% H
Base (unweighted)[1]	*480*	*694*		*140*	*148*	*135*	*151*	*120*		*654*	*40*
Base (weighted)	*481*	*722*		--	--	--	--	--		*700*	--
Age of Refrigerator (#3)											
< 3 years	5%	17%		29%	17%	—	22%	—		16%	29%
4-10 years	32%	29%		36%	17%	33%	28%	50%		31%	14%
11-20 years	31%	34%		29%	50%	33%	17%	50%		37%	—
20 years +	32%	19%		7%	17%	33%	33%	—		16%	57%
Base (unweighted)[1]	*44*	*57*		*14*	*6*	*15*	*18*	*4*		*50*	*7*
Base (weighted)	*45*	*49*		--	--	--	--	--		*45*	--

[1]Caution: small base size.

Among customers answering the question.
An upper-case letter indicates a significant difference in proportions at the 95% confidence level between the current column and the column indicated by the letter.
C7. How old is each mid- or full-size refrigerator at this residence?

Number of Stand-alone Freezers Used



	2010 A	2016 B		Canyon C	Capital D	Eastern E	Western F	Southern G		Idaho H	Oregon I
Number of Stand-alone Freezers Used at Residence											
None	44%	41%		36% E	48% CEFG	30%	34%	39% E		41% I	25%
One	45%	49% A		54% D	45%	57% DFG	48%	48%		49%	53%
Two	10%	9%		8%	6%	11% D	16% CDEG	11% D		9%	20% H
Three+	2%	1%		2%	1%	2%	2% D	2% D		1%	2%
Base (unweighted)	*1694*	*2231*		*401*	*432*	*470*	*478*	*450*		*2106*	*125*
Base (weighted)	*1694*	*2239*		--	--	--	--	--		*2168*	--

Among customers answering the question.
An upper-case letter indicates a significant difference in proportions at the 95% confidence level between the current column and the column indicated by the letter.
C8. How many stand-alone freezers (either chest or upright) do you use at this residence?

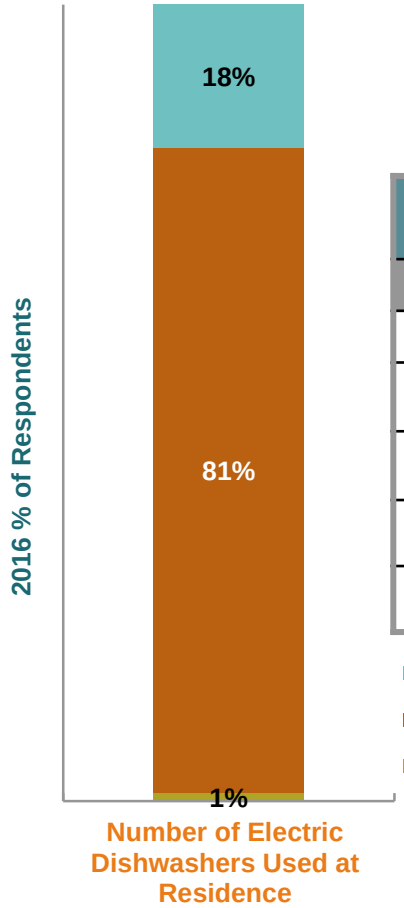
Age of Freezer(s) (among customers with one or more stand-alone freezers)

	2010 A	2016 B		Canyon C	Capital D	Eastern E	Western F	Southern G		Idaho H	Oregon I
Age of Freezer (#1)											
< 3 years	17%	17%		18%	17%	13%	17%	17%		17%	22%
4-10 years	36%	41% A		40%	44%	36%	38%	41%		41%	38%
11-20 years	29%	27%		27%	26%	30%	29%	24%		27%	28%
20 years +	18%	15%		16%	13%	21% D	15%	18%		16%	12%
Base (unweighted)[1]	*911*	*1344*		*245*	*214*	*319*	*307*	*259*		*1254*	*90*
Base (weighted)	*902*	*1270*		--	--	--	--	--		*1218*	--
Age of Freezer (#2)											
< 3 years	18%	13%		23% F	9%	15%	7%	15%		13%	11%
4-10 years	32%	41%		28%	44%	41%	40%	46%		40%	43%
11-20 years	28%	28%		31%	25%	30%	32%	26%		29%	21%
20 years +	23%	18%		18%	22%	15%	21%	13%		18%	25%
Base (unweighted)[1]	*181*	*273*		*39*	*32*	*61*	*87*	*54*		*245*	*28*
Base (weighted)	*174*	*234*		--	--	--	--	--		*219*	--
Age of Freezer (#3)											
< 3 years	15%	6%		—	—	11%	20%	—		4%	33%
4-10 years	41%	33%		57%	—	33%	20%	57%		35%	—
11-20 years	36%	46%		43%	100%	44%	30%	—		49%	—
20 years +	8%	15%		—	—	11%	30%	43%		12%	67%
Base (unweighted)[1]	*21*	*36*		*7*	*3*	*9*	*10*	*7*		*33*	*3*
Base (weighted)	*20*	*30*		--	--	--	--	--		*28*	--

[1]Caution: small base size.

Among customers answering the question.
An upper-case letter indicates a significant difference in proportions at the 95% confidence level between the current column and the column indicated by the letter.
C9. How old is each stand-alone freezer at this residence?

Number of Electric Dishwashers Used



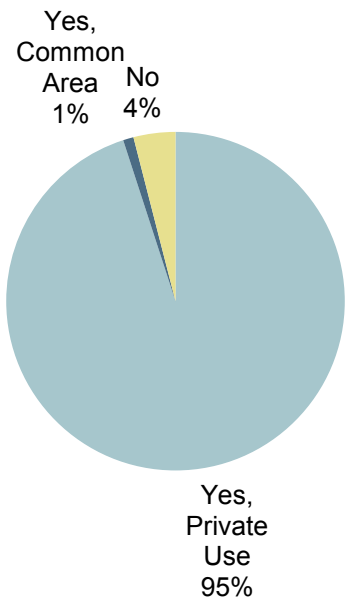
	2010 A	2016 B		Canyon C	Capital D	Eastern E	Western F	Southern G		Idaho H	Oregon I
Number of Electric Dishwashers Used at Residence											
None	18%	18%		15%	11%	33% CDFG	26% CD	24% CD		17%	37% H
One	81%	81%		84% EFG	89% EFG	66%	73% E	75% E		82% I	63%
Two +	1%	1%		1%	1%	1%	1%	1%		1%	—
Base (unweighted)	*1691*	*2259*		*406*	*434*	*476*	*488*	*455*		*2132*	*127*
Base (weighted)	*1692*	*2262*		--	--	--	--	--		*2189*	--

Among customers answering the question.
An upper-case letter indicates a significant difference in proportions at the 95% confidence level between the current column and the column indicated by the letter.
C10. How many electric dishwashers do you use at this residence?

Laundry Appliances

Clothes Washer Used

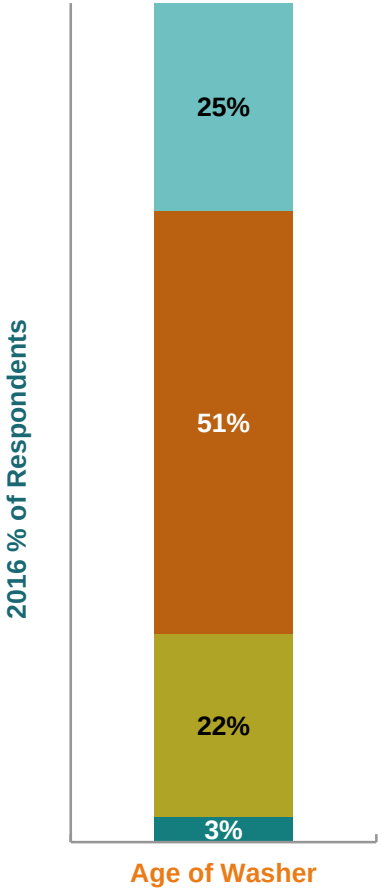
Clothes Washer Used at Residence



	2010 A	2016 B		Canyon C	Capital D	Eastern E	Western F	Southern G		Idaho H	Oregon I
Clothes Washer Used at Residence											
Yes, in residence for private use	95%	95%		95% F	96% F	95% F	91%	94% F		95%	92%
Yes, in a common area for use by more than one household	1%	1%		1%	1%	1%	1%	1%		1%	2%
No	4%	4%		4%	3%	4%	8% CDE	5%		4%	6%
Base (unweighted)	*1703*	*2256*		*406*	*434*	*477*	*485*	*454*		*2130*	*126*
Base (weighted)	*1703*	*2260*		--	--	--	--	--		*2187*	--

Among customers answering the question.
An upper-case letter indicates a significant difference in proportions at the 95% confidence level between the current column and the column indicated by the letter.
C11. Do you have a clothes washer that is used at this residence?

Age of Clothes Washer (Among Those With Washer For Personal Use)



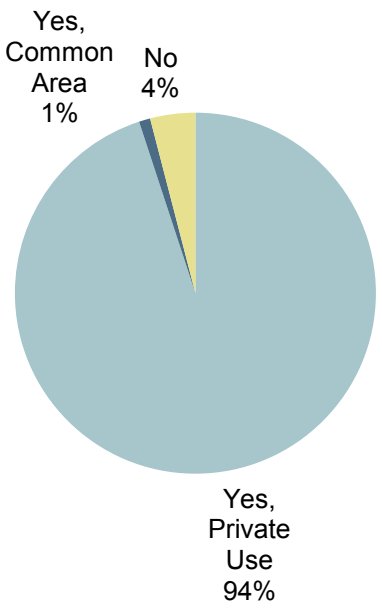
	2010 A	2016 B		Canyon C	Capital D	Eastern E	Western F	Southern G		Idaho H	Oregon I
Age of Washer											
< 3 years	28% B	25%		26%	25%	23%	24%	27%		25%	24%
4-10 years	50%	51%		48%	54% F	52% F	46%	49%		51%	54%
11-20 years	17%	22% A		25%	21%	20%	27% DEG	19%		22%	18%
20 years +	4% B	3%		2%	2%	5% CD	4%	5% CD		3%	4%
Base (unweighted)	*1536*	*2025*		*371*	*396*	*439*	*420*	*399*		*1916*	*109*
Base (weighted)	*1538*	*2040*		--	--	--	--	--		*1977*	--

< 3 years
4-10 years
11-20 years
20 years +

Among customers answering the question.
An upper-case letter indicates a significant difference in proportions at the 95% confidence level between the current column and the column indicated by the letter.
C12. Approximately how old is the clothes washer used at this residence?

Clothes Dryer Used

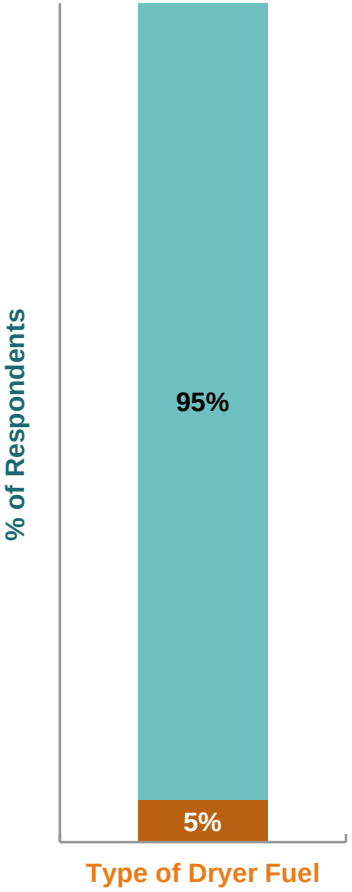
Clothes Dryer Used at Residence



	2010 A	2016 B		Canyon C	Capital D	Eastern E	Western F	Southern G		Idaho H	Oregon I
Clothes Dryer Used at Residence											
Yes, in residence for private use	95%	94%		94% F	96% F	95% F	90%	93%		94%	90%
Yes, in a common area for use by more than one household	1%	1%		1%	2%	1%	1%	2%		1%	2%
No	5%	4%		5%	3%	4%	9% DE	5%		4%	7%
Base (unweighted)	*1496*	*2254*		*405*	*435*	*476*	*484*	*454*		*2129*	*125*
Base (weighted)	*1498*	*2260*		--	--	--	--	--		*2188*	--

Among customers answering the question.
An upper-case letter indicates a significant difference in proportions at the 95% confidence level between the current column and the column indicated by the letter.
C13. Do you have a clothes dryer that is used at this residence?

Clothes Dryer Fuel (Among Those With Dryer For Personal Use)



	2010 A	2016 B		Canyon C	Capital D	Eastern E	Western F	Southern G		Idaho H	Oregon I
Type of Fuel Used by Dryer											
Electric	95%	95%		96%	93%	97% D	97% D	95%		95%	99% H
Natural Gas	5%	5%		5% F	7% EF	3%	1%	5% F		5% I	1%
Propane	1%	0%		—	—	0%	1% CD	1%		0%	—
Base (unweighted)	*1392*	*2089*		*377*	*412*	*449*	*435*	*416*		*1976*	*113*
Base (weighted)	*1396*	*2109*		--	--	--	--	--		*2044*	--

Electric

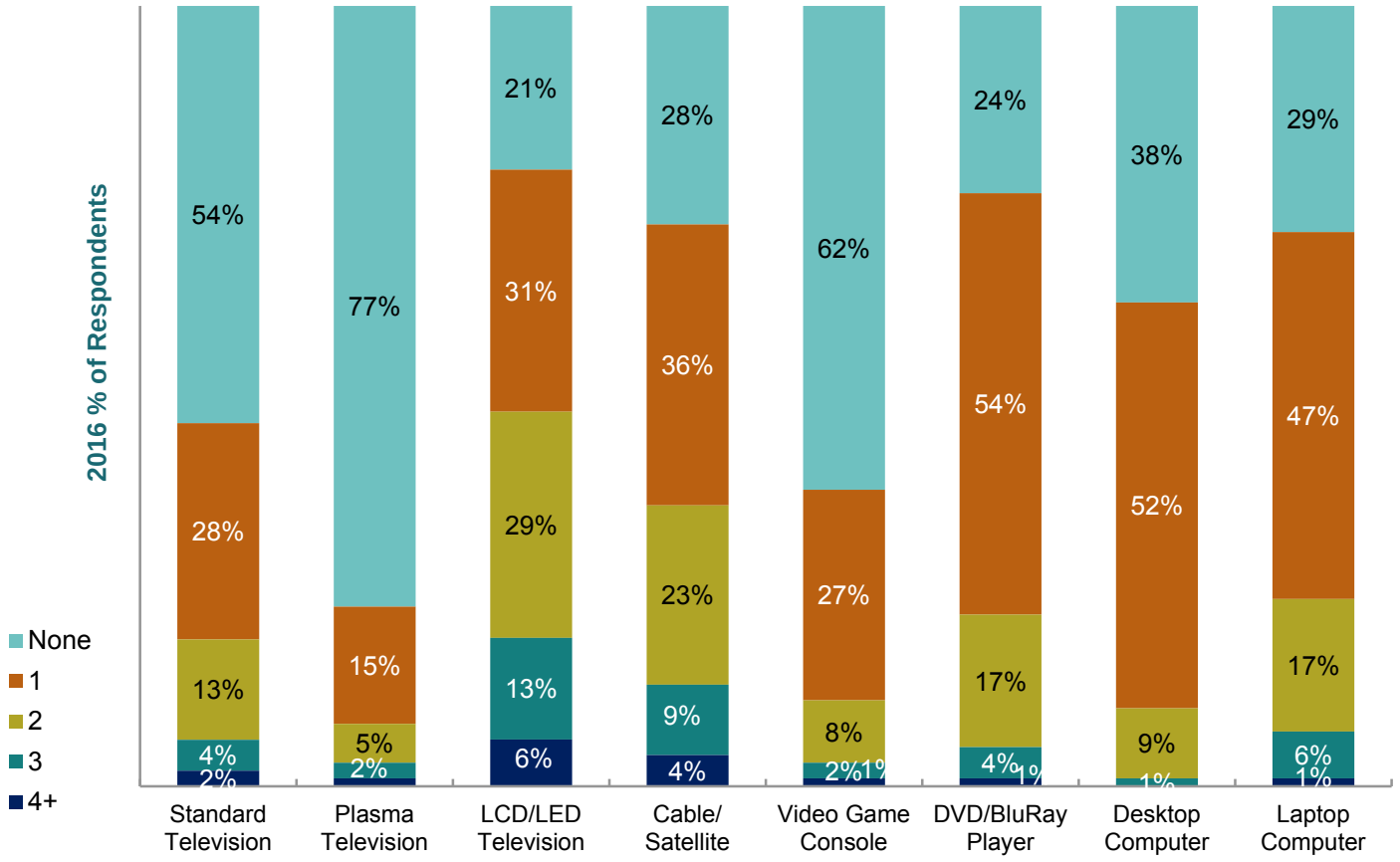
Natural Gas

Propane

Among customers answering the question.
An upper-case letter indicates a significant difference in proportions at the 95% confidence level between the current column and the column indicated by the letter.
C14. What type of fuel does the clothes dryer at this residence use?

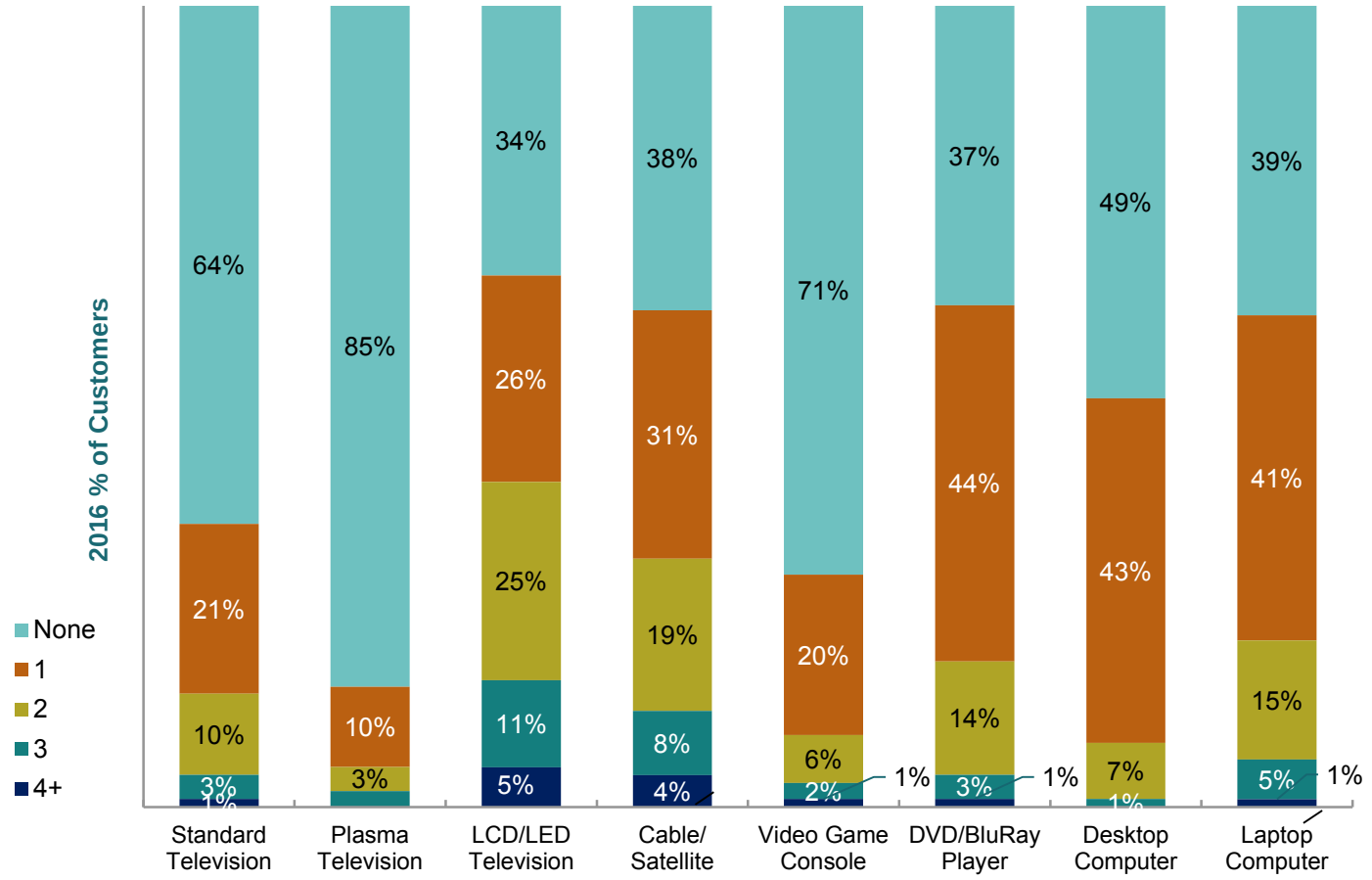
Consumer Electronics

Consumer Electronics



Among customers answering the question.
E1A-H: For each of the following types of electronic equipment listed, indicate the number used at this residence.
Base: Standard Television: 1758, Plasma Television: 1489, LCD/LED Television: 1867, Cable/Satellite: 1948, Video Game Console: 1677, DVD/BluRay Player: 1846, Desktop Computer: 1868, Laptop Computer: 1933

Consumer Electronics (among all customers)*



* "Missing" responses are recoded to "none."

E1A-H: For each of the following types of electronic equipment listed, indicate the number used at this residence.
Base: 2272

Consumer Electronics: Total Number of TVs and Computers (among all customers)*

	TVs – Percent Customers		Computers – Percent of Customers	
	2010 A	2016 B	2010 C	2016 D
Number of TVs / Computers				
None	6%	7%	25%D	20%
1	29%	29%	37%	36%
2	31%	35%A	25%	28%C
3	20%B	17%	9%	11%
4	11%	11%	3%	4%C
5	2%B	1%	1%	1%
6+	1%	2%A	0%	1%
Base	*1721*	*2272*	*1721*	*2272*

* "Missing" responses are recoded to "none."

E1A-E1H: For each of the following types of electronic equipment listed, indicate the number used at this residence.

Consumer Electronics

	2010 A	2016 B		Canyon C	Capital D	Eastern E	Western F	Southern G		Idaho H	Oregon I
Standard Television											
None	15%	54% A		59% EF	56% EF	46%	48%	51%		54%	50%
1	42% B	28%		20%	26% C	34% CD	35% CD	30% C		27%	33%
2	27% B	13%		14%	13%	13%	13%	12%		13%	11%
3	11% B	4%		4%	4%	6%	4%	5%		5%	4%
4+	5% B	2%		4% DFG	1%	2%	1%	1%		2%	2%
Base (unweighted)	*1525*	*1758*		*310*	*327*	*394*	*373*	*354*		*1653*	*105*
Base (weighted)	*1528*	*1739*		--	--	--	--	--		*1678*	--
Plasma Television											
None	76%	77%		75%	78%	77%	80%	74%		77%	78%
1	18%	15%		16%	16%	14%	12%	19% F		16%	15%
2	5%	5%		5%	4%	7%	7%	5%		5%	6%
3	1%	2% A		2%	3%	2%	2%	3%		2%	1%
4+	—	1% A		3% DEFG	—	0%	—	—		1%	—
Base (unweighted)[1]	*1022*	*1489*		*278*	*290*	*322*	*292*	*307*		*1408*	*81*
Base (weighted)	*1030*	*1503*		--	--	--	--	--		*1456*	--
LCD/LED Television*											
None	NA	21%		22% D	15%	26% D	25% D	28% D		20%	25%
1		31%		29%	32%	30%	35% G	27%		31%	36%
2		29%		27%	32%	26%	28%	27%		30%	28%
3		13%		15% F	13% F	14% F	8%	12%		13%	7%
4+		6%		7%	8% EF	4%	4%	5%		6%	5%
Base (unweighted)[1]	--	*1867*		*344*	*372*	*394*	*387*	*370*		*1766*	*101*
Base (weighted)	--	*1894*		--	--	--	--	--		*1836*	--

**The LCD/LED Television category was asked in a different manner in 2010, comparisons are not available.*

Among customers answering the question.

An upper-case letter indicates a significant difference in proportions at the 95% confidence level between the current column and the column indicated by the letter.

E1A-C: For each of the following types of electronic equipment listed, indicate the number used at this residence.

[1]Caution: small base size.

Consumer Electronics

	2010 A	2016 B	Canyon C	Capital D	Eastern E	Western F	Southern G	Idaho H	Oregon I
Cable, Satellite, or DVR Set Top Box*									
None	NA	28%	33%	27%	30%	26%	27%	28%	28%
1		36%	34%	34%	34%	40%	41%	36%	41%
2		23%	18%	24%	23%	25% C	23%	23%	20%
3		9%	10%	11% F	10% F	6%	7%	9%	7%
4+		4%	6% F	5%	3%	2%	3%	4%	4%
Base (unweighted)	--	*1948*	*357*	*373*	*409*	*416*	*393*	*1835*	*113*
Base (weighted)	--	*1951*	--	--	--	--	--	*1886*	--
Video-Game Console*									
None	NA	62%	55%	60%	59%	75% CDEG	68% CDE	61%	79% H
1		27%	30% F	28% F	30% FG	17%	23% F	27% I	16%
2		8%	12% FG	9%	7%	5%	7%	9% I	2%
3		2%	3%	3%	3%	2%	1%	2%	3%
4+		1%	2%	1%	1%	1%	1%	1%	—
Base (unweighted)[1]	--	*1677*	*319*	*327*	*358*	*334*	*339*	*1587*	*90*
Base (weighted)	--	*1695*	--	--	--	--	--	*1643*	--
DVD/BluRay Player*									
None	NA	24%	26%	21%	24%	28% D	30% D	24%	28%
1		54%	48%	57% C	52%	53%	51%	53%	59%
2		17%	20%	17%	19%	15%	15%	17%	11%
3		4%	5%	4%	4%	2%	3%	4%	1%
4+		1%	2%	1%	1%	1%	1%	1%	1%
Base (unweighted)	--	*1846*	*343*	*370*	*389*	*371*	*373*	*1745*	*101*
Base (weighted)	--	*1879*	--	--	--	--	--	*1821*	--

**New items added in 2016*

Among customers answering the question.

An upper-case letter indicates a significant difference in proportions at the 95% confidence level between the current column and the column indicated by the letter.

E1D-F: For each of the following types of electronic equipment listed, indicate the number used at this residence.

[1]Caution: small base size.

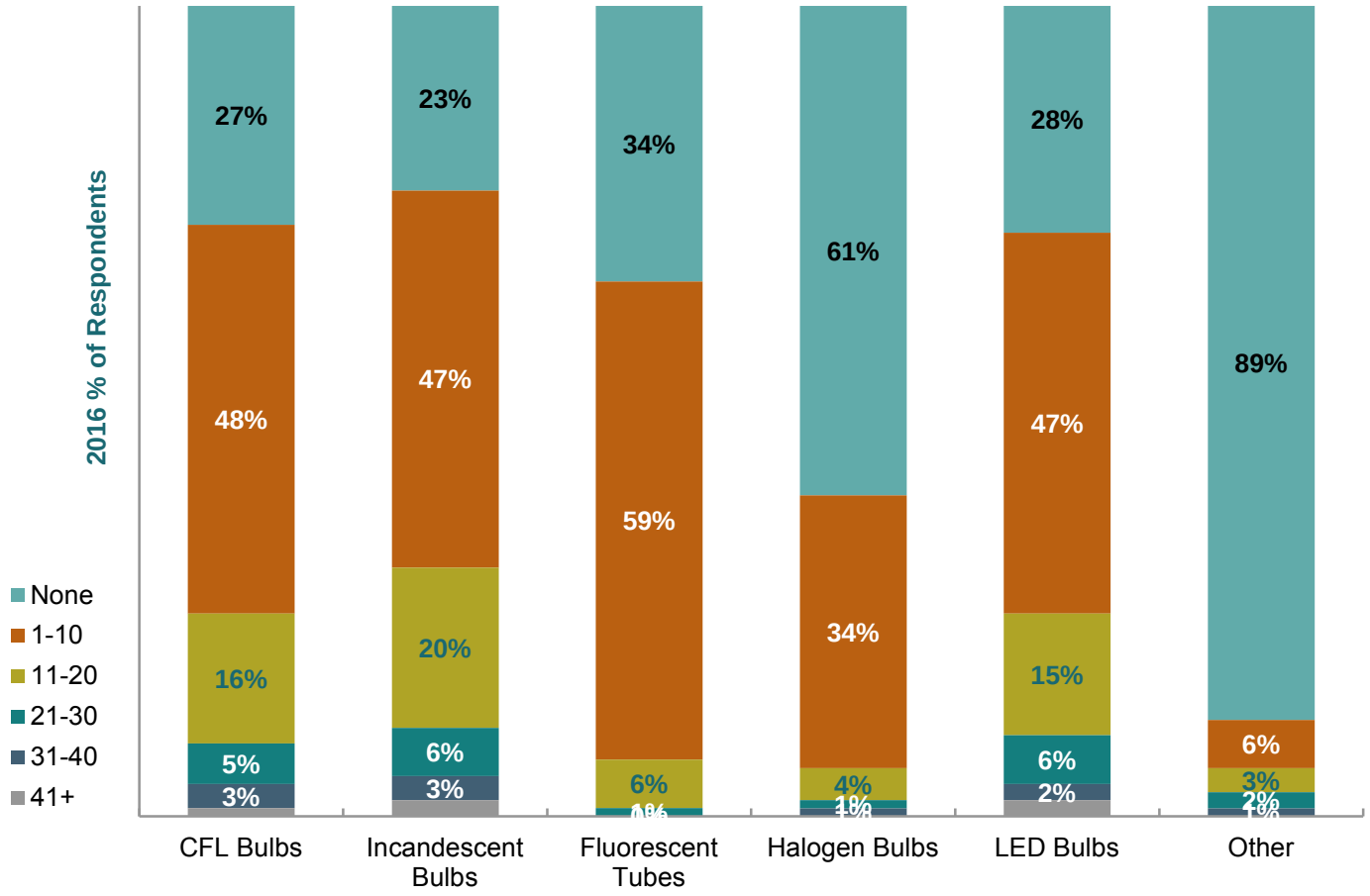
Consumer Electronics

	2010 A	2016 B		Canyon C	Capital D	Eastern E	Western F	Southern G		Idaho H	Oregon I
Desktop Computer											
None	28%	38% A		39%	33%	39%	44% D	44% D		38%	45%
1	60% B	52%		51%	55%	51%	48%	50%		52%	49%
2	9%	9%		8%	11% FG	8%	6%	6%		9%	5%
3	2%	1%		2%	1%	2%	1%	1%		1%	2%
4+	1%	0%		1% DG	—	1%	0%	—		0%	—
Base (unweighted)	*1347*	*1868*		*347*	*359*	*397*	*385*	*380*		*1761*	*107*
Base (weighted)	*1355*	*1876*		--	--	--	--	--		*1814*	--
Laptop Computer											
None	35% B	29%		34% D	23%	31% D	34% D	36% D		29%	37%
1	47%	47%		45%	50%	48%	47%	44%		48%	41%
2	14%	17% A		16%	18%	16%	15%	17%		17%	17%
3	4%	6% A		5%	8% EFG	4%	3%	2%		6%	3%
4+	1%	1%		1%	1%	1%	2%	2%		1%	3%
Base (unweighted)	*1247*	*1933*		*348*	*382*	*406*	*397*	*400*		*1825*	*108*
Base (weighted)	*1254*	*1956*		--	--	--	--	--		*1893*	--

Among customers answering the question.
An upper-case letter indicates a significant difference in proportions at the 95% confidence level between the current column and the column indicated by the letter.
E1G-H: For each of the following types of electronic equipment listed, indicate the number used at this residence

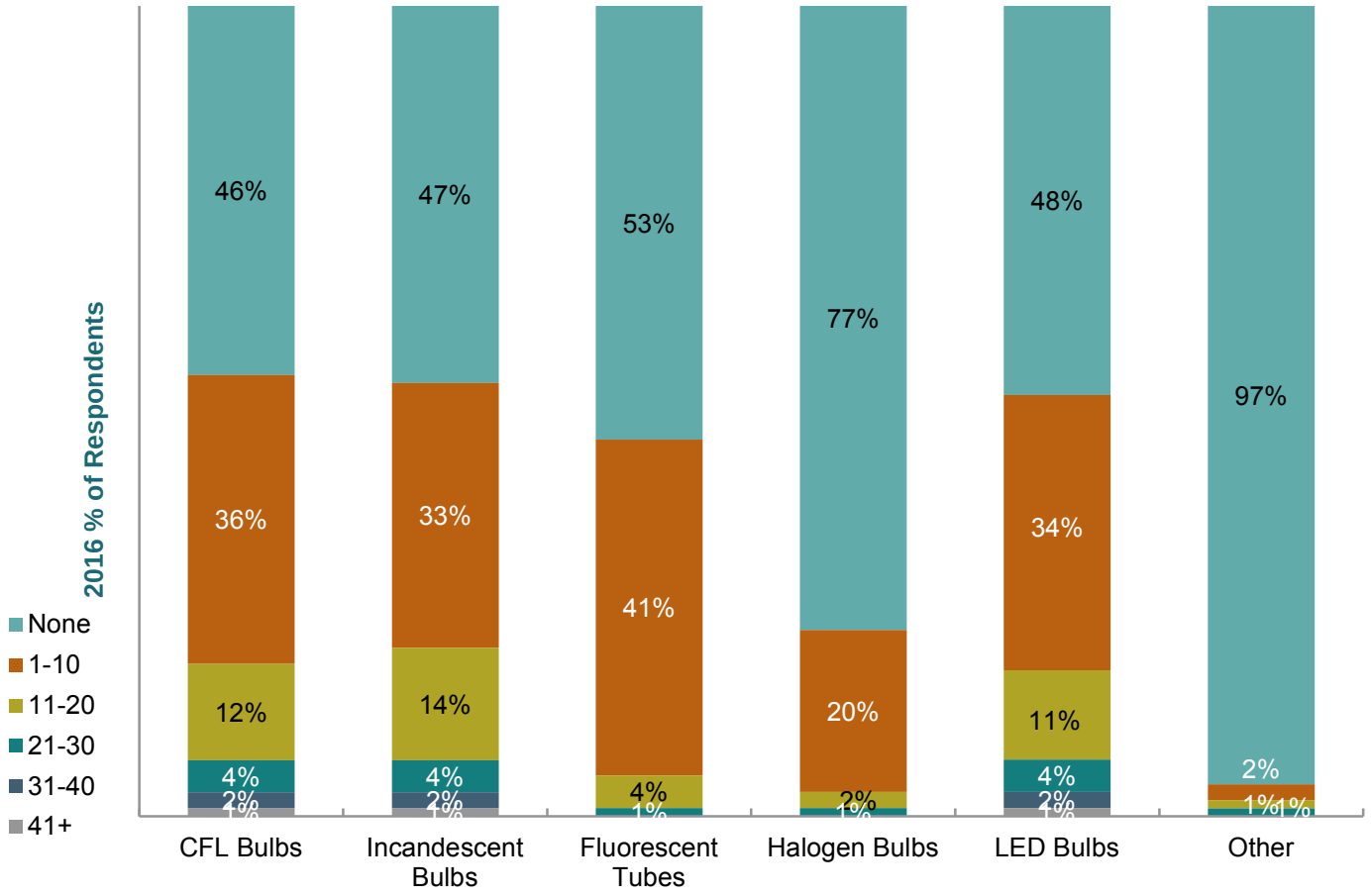
Lighting

Lighting



Among customers answering the question.
F1A-F: Approximately how many of the following types of light bulbs are used in fixtures (including lamps) at this residence?
Base: CFL Bulbs: 1653, Incandescent Bulbs: 1575, Fluorescent Tubes: 1593, Halogen Bulbs: 1329, LED Bulbs:1621, Other: 608

Lighting (among all customers)*



* "Missing" responses are recoded to "none."

F1A-F: Approximately how many of the following types of light bulbs are used in fixtures (including lamps) at this residence?
Base: 2272

Lighting

	2010 A	2016 B		Canyon C	Capital D	Eastern E	Western F	Southern G		Idaho H	Oregon I
CFL Bulbs											
None	16%	27% A		35% DEF	23%	28%	25%	32% DF		28%	23%
1-10	52%	48%		40%	53% CG	47%	51% C	45%		48%	56%
11-20	20% B	16%		16%	15%	19%	15%	16%		16%	14%
21-30	7% B	5%		4%	5%	4%	6% G	3%		5%	6%
31-40	3%	3%		3%	3%	1%	2%	3%		3%	1%
41+	2%	1%		3%	1%	1%	1%	2%		1%	—
Base (unweighted)[1]	*1346*	*1653*		*297*	*337*	*349*	*351*	*319*		*1563*	*90*
Base (weighted)	*1351*	*1685*		--	--	--	--	--		*1633*	--
Incandescent Bulbs											
None	14%	23% A		29% DF	18%	26% D	22%	31% DF		23%	27%
1-10	45%	47%		40%	52% CG	46% G	52% CG	37%		47%	48%
11-20	23%	20%		20%	20%	19%	17%	22%		20%	18%
21-30	10% B	6%		8%	6%	6%	7%	5%		6%	4%
31-40	5% B	3%		1%	3%	2%	2%	3%		3%	2%
41+	4% B	2%		2%	1%	1%	1%	3%		2%	1%
Base (unweighted)[1]	*1301*	*1575*		*283*	*308*	*338*	*339*	*307*		*1490*	*85*
Base (weighted)	*1307*	*1584*		--	--	--	--	--		*1535*	--

[1]Caution: small base size.

Among customers answering the question.
An upper-case letter indicates a significant difference in proportions at the 95% confidence level between the current column and the column indicated by the letter.
F1A-B: Approximately how many of the following types of light bulbs are used in fixtures (including lamps) at this residence?

Lighting

	2010 A	2016 B		Canyon C	Capital D	Eastern E	Western F	Southern G		Idaho H	Oregon I
Fluorescent Bulbs											
None	28%	34% A		36%	33%	31%	32%	35%		34%	32%
1-10	64% B	59%		55%	61%	59%	61%	56%		59%	57%
11-20	6%	6%		7%	5%	8%	5%	6%		6%	8%
21-30	2%	1%		1%	1%	2%	2%	2%		1%	3%
31-40	0%	0%		1%	—	0%	0%	0%		0%	—
41+	0%	0%		0%	—	—	—	—		0%	—
Base (unweighted)[1]	*1191*	*1593*		*290*	*305*	*351*	*336*	*311*		*1503*	*90*
Base (weighted)	*1196*	*1592*		--	--	--	--	--		*1541*	--
Halogen Bulbs											
None	58%	61%		62%	59%	63%	66%	59%		61%	74% H
1-10	37%	34%		32%	36%	32%	29%	34%		34%	24%
11-20	4%	4%		3%	5%	3%	4%	5%		4%	3%
21-30	1%	1%		2% DF	—	2% D	0%	1%		1%	—
31-40	1%	1%		1%	0%	—	0%	1%		1%	—
41+	0%	0%		—	—	0%	0%	—		0%	—
Base (unweighted)[1]	*1000*	*1329*		*251*	*264*	*276*	*280*	*258*		*1257*	*72*
Base (weighted)	*1010*	*1348*		--	--	--	--	--		*1307*	--
LED Bulbs*											
None	NA	28%		30%	24%	30%	36% D	30%		28%	35%
1-10		47%		46%	48%	45%	46%	48%		47%	49%
11-20		15%		14%	17%	16%	12%	15%		15%	10%
21-30		6%		6%	6%	6%	3%	5%		6%	4%
31-40		2%		2%	3%	1%	2%	2%		2%	2%
41+		2%		2%	2%	1%	1%	1%		2%	—
Base (unweighted)[1]	--	*1621*		*303*	*320*	*347*	*323*	*328*		*1538*	*83*
Base (weighted)	--	*1642*		--	--	--	--	--		*1595*	--

[1]Caution: small base size.

**New item added in 2016*

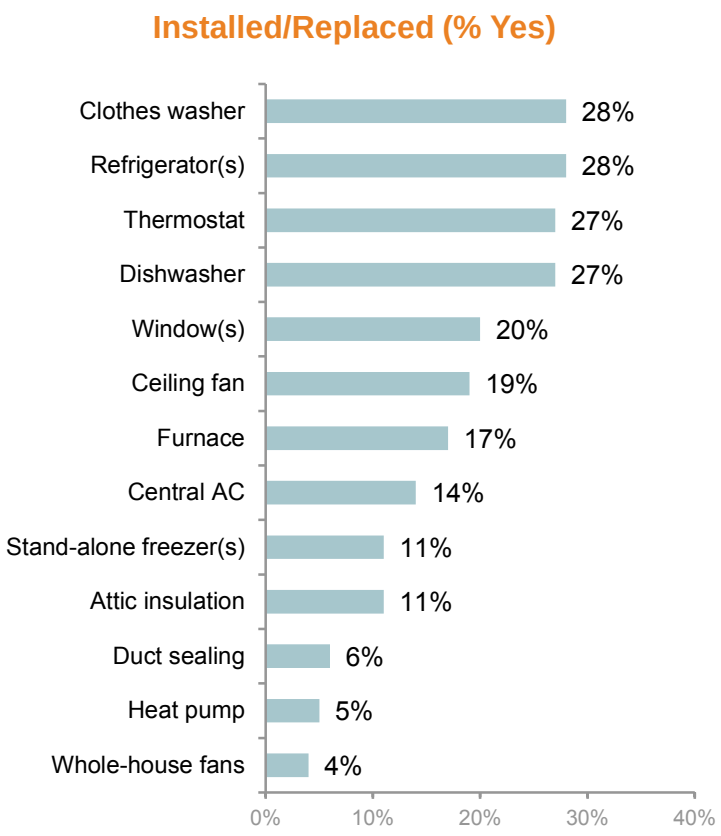
Among customers answering the question.

An upper-case letter indicates a significant difference in proportions at the 95% confidence level between the current column and the column indicated by the letter.

F1C-E: Approximately how many of the following types of light bulbs are used in fixtures (including lamps) at this residence?

Energy Efficiency

Appliances Installed/Replaced



	2010 A	2016 B	*2016 Base (weighted)*	*2016 Base (unweighted)*
Installed/Replaced (% Yes)				
Clothes washer	29%	28%	*1900*	*1901*
Refrigerator(s)	23%	28% A	*1890*	*1904*
Thermostat*	—	27%	*1842*	*1846*
Dishwasher	20%	27% A	*1856*	*1858*
Window(s)	19%	20%	*1869*	*1877*
Ceiling fan*	—	19%	*1810*	*1823*
Furnace	14%	17%	*1834*	*1832*
Central AC	12%	14% A	*1810*	*1807*
Stand-alone freezer(s)	11%	11%	*1777*	*1789*
Attic insulation	10%	11%	*1820*	*1829*
Duct sealing	7% B	6%	*1726*	*1747*
Heat pump	6%	5%	*1670*	*1699*
Whole-house fans*	—	4%	*1718*	*1729*

**Items added in 2016*
Among customers answering the question.
An upper-case letter indicates a significant difference in proportions at the 95% confidence level between the current column and the column indicated by the letter.
D1A-M: In the past three years, have you installed or replaced any of the following at this residence?

Appliances Installed/Replaced

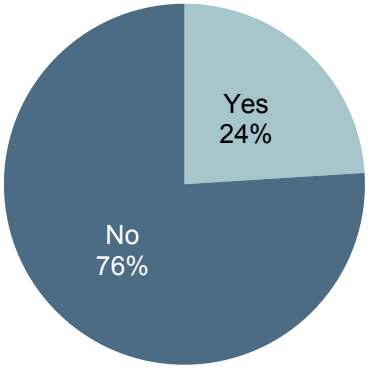
	Canyon C		Capital D		Eastern E		Western F		Southern G		Idaho H			Oregon I		
	%	Base unwtd	%	Base unwtd	%	Base unwtd	%	Base unwtd	%	Base unwtd	%	Base wtd	Base unwtd	%	Base wtd	Base unwtd[1]
Installed/Replaced (% Yes)																
Clothes washer	29%	*345*	29%	*362*	28%	*396*	25%	*414*	29%	*384*	28%	*1834*	*1787*	31%	--	*114*
Refrigerator(s)	29%	*340*	28%	*357*	27%	*400*	26%	*426*	26%	*381*	28%	*1827*	*1794*	26%	--	*110*
Thermostat	29% G	*328*	30% FG	*354*	24%	*394*	23%	*414*	22%	*356*	27%	*1781*	*1740*	23%	--	*106*
Dishwasher	30% EFG	*335*	30% EFG	*355*	22%	*392*	19%	*407*	21%	*369*	27% I	*1794*	*1750*	15%	--	*108*
Window(s)	17%	*336*	21%	*355*	20%	*397*	16%	*413*	21%	*376*	20%	*1808*	*1772*	16%	--	*105*
Ceiling fan	19% F	*326*	20% F	*342*	18%	*392*	13%	*400*	19% F	*363*	19%	*1750*	*1720*	12%	--	*103*
Furnace	20% EFG	*338*	21% EFG	*351*	12%	*386*	10%	*401*	10%	*356*	17%	*1774*	*1728*	14%	--	*104*
Central AC	18% EFG	*333*	18% EFG	*347*	7%	*376*	10%	*400*	7%	*351*	14%	*1749*	*1701*	15%	--	*106*
Stand-alone freezer(s)	12%	*319*	10%	*337*	12%	*379*	13%	*401*	13%	*353*	11%	*1715*	*1681*	19% H	--	*108*
Attic insulation	7%	*330*	11%	*346*	14% C	*392*	10%	*404*	10%	*357*	11%	*1759*	*1723*	9%	--	*106*
Duct sealing	6%	*319*	5%	*321*	6%	*372*	4%	*388*	6%	*347*	6%	*1667*	*1645*	6%	--	*102*
Heat pump	8% E	*305*	5%	*309*	4%	*362*	7%	*386*	5%	*337*	5%	*1613*	*1600*	5%	--	*99*
Whole-house fans	4%	*310*	4%	*325*	4%	*365*	4%	*383*	5%	*346*	4%	*1661*	*1630*	3%	--	*99*

[1]Caution: small base size.

Among customers answering the question.
An upper-case letter indicates a significant difference in proportions at the 95% confidence level between the current column and the column indicated by the letter.
D1A-M: In the past three years, have you installed or replaced any of the following at this residence?

Participation in Idaho Power Energy Efficiency Programs

Idaho Power Offers Rebates on Energy Efficient Products



	2010* A	2016 B		Canyon C	Capital D	Eastern E	Western F	Southern G		Idaho H	Oregon I
Idaho Power Offers Rebates on Energy Efficient Products											
Yes	NA	24%		27% EFG	28% EFG	18%	20%	18%		25%	19%
No		76%		73%	72%	82% CD	80% CD	82% CD		76%	81%
Base (unweighted)	--	*1923*		*345*	*373*	*391*	*426*	*388*		*1811*	*112*
Base (weighted)	--	*1931*		--	--	--	--	--		*1867*	--

**Question added in 2016*
Among customers answering the question.
An upper-case letter indicates a significant difference in proportions at the 95% confidence level between the current column and the column indicated by the letter.
D2: Have you participated in any Idaho Power energy efficiency program?

Demographics

Demographics

	2010 A	2016 B		Canyon C	Capital D	Eastern E	Western F	Southern G		Idaho H	Oregon I
Gender											
Male	44%	44%		42%	42%	45%	51% CDG	44%		44%	48%
Female	56%	56%		59% F	58% F	55%	49%	56% F		57%	53%
Base (unweighted)	*1627*	*2131*		*383*	*413*	*452*	*460*	*426*		*2013*	*118*
Base (weighted)	*1629*	*2138*		--	--	--	--	--		*2070*	--
Age											
Under 35	13% B	8%		10% F	8% F	8% F	3%	7% F		8%	4%
35-54	30%	28%		30% EFG	32% EFG	24% F	18%	24% F		28% I	19%
55-74	41%	47% A		41%	45%	49% C	58% CDEG	49% C		47%	55%
75+	16%	18%		19%	16%	19%	20%	20%		18%	23%
Base (unweighted)	*1670*	*2201*		*393*	*419*	*471*	*475*	*443*		*2077*	*124*
Base (weighted)	*1670*	*2196*		--	--	--	--	--		*2124*	--
Education											
High school grad or less	27%	24%		31% D	18%	26% D	31% D	27% D		24%	38% H
Trade/Tech/Some College	38%	37%		41% F	35%	42% DF	34%	38%		37%	36%
College Grad+	36%	39% A		28%	48% CEFG	32%	34% C	35% C		39% I	26%
Base (unweighted)	*1658*	*2181*		*388*	*420*	*469*	*465*	*439*		*2061*	*120*
Base (weighted)	*1659*	*2183*		--	--	--	--	--		*2114*	--

Among customers answering the question.
An upper-case letter indicates a significant difference in proportions at the 95% confidence level between the current column and the column indicated by the letter.
G1: Are you…?
G2: Which of the following categories best describes your age?
G3: What is the highest level of education you completed?

Appendix A: End-Use Survey Methods “Cookbook”

Research Methodology

- Idaho Power and Market Strategies collaborated on the survey design. The survey includes a total of 70 questions. The questions were organized around 7 categories:
  - Section A: Residence Characteristics (8 questions)
  - Section B: Heating & Cooling Equipment (13 questions)
  - Section C: Appliances (18 questions)
  - Section D: Home Improvements (15 questions)
  - Section E: Consumer Electronics (8 questions)
  - Section F: Lighting (6 questions)
  - Section G: Demographics (3 questions)
- The survey materials are shown on the following six pages.

Survey

IDAHO POWER
An IDACORP Company

2016 Home Energy Survey

Please complete this survey for the residence at the service location address listed on the last page of this survey.

Section A: Your Residence

A1. Which of the following best describes this residence?

- ○ Mobile home
- ○ Manufactured home
- ○ Single-family home—detached
- ○ Apartment, condo, townhouse, or multi-family with 2–3 units
- ○ Apartment, condo, townhouse, or multi-family with 4 or more units
- ○ Other—please specify: _____

A2. Is this residence occupied year-round, or for only part of the year?

- ○ All of the year, or most of the year
- ○ As a seasonal home or vacation home **SKIP TO A4**
- ○ Other—please specify: _____

A3. If this is your primary residence, how many people live here?

- ○ 1
- ○ 2
- ○ 3
- ○ 4
- ○ 5
- ○ 6 or more

A4. Do you own or rent this residence?

- ○ Own
- ○ Rent

A5. When was this residence originally built?
(Please select when the building was originally constructed, not when it was remodeled, added to, or converted.)

- ○ Before 1960
- ○ 1960–1979
- ○ 1980–1989
- ○ 1990–1999
- ○ 2000–2009
- ○ 2010–2016
- ○ Don't know

A6. What is the approximate overall square footage of this residence?
(Include basement or garage ONLY if it is regularly heated or cooled by your heating and cooling system.)

- ○ Less than 1,000 square feet (ft²)
- ○ 1,000–1,799 ft²
- ○ 1,800–2,499 ft²
- ○ 2,500–3,499 ft²
- ○ 3,500–4,499 ft²
- ○ 4,500 ft² or more
- ○ If you know the exact square footage, write it here: _____

A7. Choose the statement that best describes the type of windows at this residence.

- ○ All or most are single pane
- ○ All or most are double pane
- ○ Mixture of single and double pane
- ○ Don't know

A8. Choose the statement that best describes the type of window frames at this residence.

- ○ All or most have vinyl frame
- ○ All or most have wood frame
- ○ All or most have metal frame
- ○ Mixture of vinyl, wood, and metal frames
- ○ Don't know

Section B: Heating and Cooling Equipment

Heating

B1. Is natural gas service available at this residence?

- ○ Yes
- ○ No
- ○ Don't know

B2. What one fuel is used most often to heat this residence? *Mark one.*

- ○ Electricity
- ○ Natural gas
- ○ Propane
- ○ Fuel oil
- ○ Wood
- ○ Other—please specify: _____

B3. What type of heating system is used most often at this residence? *Mark one.*

- ○ Central furnace with ducts
- ○ Heat pump
- ○ Ceiling cable
- ○ Built-in wall or baseboard heaters with no ducts
- ○ Portable room heaters
- ○ Stove, fireplace, or fireplace insert
- ○ Other—please specify: _____

B4. Approximately what is the age of the primary heating system at this residence?

- ○ 3 years or less
- ○ 4–10 years
- ○ 11–20 years
- ○ More than 20 years
- ○ Don't know

B5. Do you use an additional heating system/equipment at this residence?

- ○ Yes
- ○ No **SKIP TO B9**
- ○ Don't know **SKIP TO B9**

B6. What one fuel is used in this additional heating system? *Mark one.*

- ○ Electricity
- ○ Natural gas
- ○ Propane
- ○ Fuel oil
- ○ Wood
- ○ Other—please specify: _____

B7. What type of additional heating system is used at this residence? *Mark one.*

- ○ Central furnace with ducts
- ○ Heat pump
- ○ Ceiling cable
- ○ Built-in wall or baseboard heaters with no ducts
- ○ Portable room heaters
- ○ Stove, fireplace, or fireplace insert
- ○ Other—please specify: _____

B8. How many portable electric space heaters do you use at this residence?

- ○ None
- ○ One
- ○ Two
- ○ Three or more

Survey

B9. If this residence has a heat pump, what kind of heat pump is it?

- ○ No heat pump
- ○ Water source
- ○ Ductless
- ○ Air source
- ○ Ground source
- ○ Don't know
- ○ Other—please specify: _____

Cooling

B10. Does this residence have air conditioning?

- ○ Yes
- ○ No **SKIP TO B13**
- ○ Don't know **SKIP TO B13**

B11. What type of air conditioning system is used at this residence? *Mark all that apply.*

- ○ A central air conditioner
- ○ A heat pump
- ○ Individual room or window air conditioner
- ○ An evaporative/swamp cooler
- ○ Other—please specify: _____

B12. How many individual electric room or window air conditioners do you use at this residence?
Do not count evaporative/swamp coolers.

- ○ None
- ○ One
- ○ Two
- ○ Three or more

B13. What best describes the heating and cooling thermostat at this residence?

- ○ Manually adjusted
- ○ Programmable
- ○ Smart thermostat (wi-fi enabled)
- ○ Do not have a thermostat
- ○ Don't know

Section C: Appliances

Water Heater

C1. How many water heaters are used at this residence?

- ○ None **SKIP TO C4**
- ○ One
- ○ Two
- ○ Three or more

C2. What type of fuel does the primary water heater at this residence use?

- ○ Electricity
- ○ Natural gas
- ○ Propane
- ○ Don't know
- ○ Other—please specify: _____

C3. Which of the following best describes the primary water heater used at this residence?

- ○ Conventional storage tank
- ○ Tankless
- ○ Heat pump
- ○ Don't know
- ○ Other—please specify: _____

Kitchen Appliances

C4. What type of fuel does the kitchen stovetop at this residence use?

- ○ Electricity
- ○ Natural gas
- ○ Propane
- ○ Do not have a stovetop
- ○ Don't know
- ○ Other—please specify: _____

C5. What type of fuel does the kitchen oven at this residence use?
Do not include the microwave oven.

- ○ Electricity
- ○ Natural gas
- ○ Propane
- ○ Do not have an oven
- ○ Don't know
- ○ Other—please specify: _____

C6. How many mid- and/or full-size refrigerator(s) do you use at this residence?

- ○ None **SKIP TO C8**
- ○ One
- ○ Two
- ○ Three or more

C7. How old is each mid- or full-size refrigerator at this residence?

	3 years or less	4–10 years	11–20 years	More than 20 years	Don't know
First refrigerator	○	○	○	○	○
Second refrigerator	○	○	○	○	○
Third refrigerator	○	○	○	○	○

C8. How many stand-alone freezers (either chest or upright) do you use at this residence?

- ○ None **SKIP TO C10**
- ○ One
- ○ Two
- ○ Three or more

C9. How old is each stand-alone freezer at this residence?

	3 years or less	4–10 years	11–20 years	More than 20 years	Don't know
First freezer	○	○	○	○	○
Second freezer	○	○	○	○	○
Third freezer	○	○	○	○	○

C10. How many electric dishwashers do you have at this residence?

- ○ No diswasher
- ○ One
- ○ Two or more

Laundry Appliances

C11. Do you have a clothes washer at this residence?

- ○ Yes, in residence for **private** use
- ○ Yes, in a common area for use by more than one household **SKIP TO C13**
- ○ No **SKIP TO C13**

C12. Approximately how old is the clothes washer used at this residence?

- ○ 3 years or less
- ○ 4–10 years
- ○ 11–20 years
- ○ More than 20 years
- ○ Don't know

C13. Do you have a clothes dryer at this residence?

- ○ Yes, in residence for **private** use
- ○ Yes, in a common area for use by more than one household **SKIP TO D1**
- ○ No **SKIP TO D1**

C14. What type of fuel does the clothes dryer at this residence use?

- ○ Electricity
- ○ Natural gas
- ○ Propane
- ○ Do not have a clothes dryer
- ○ Don't know
- ○ Other—please specify: _____

Survey

Section D: Home Improvements

D1. In the past three years, have you installed or replaced any of the following at this residence?
Check all that apply.

	Yes	No	Don't know
Attic insulation	O	O	O
Duct sealing	O	O	O
Window(s)	O	O	O
Furnace	O	O	O
Heat pump	O	O	O
Central air conditioning system	O	O	O
Whole-house fans	O	O	O
Ceiling fan	O	O	O
Thermostat	O	O	O
Refrigerator(s)	O	O	O
Stand-alone freezer(s)	O	O	O
Dishwasher	O	O	O
Clothes washer	O	O	O

D2. Have you participated in any Idaho Power energy efficiency program?

O Yes O No O Don't know

Section E: Consumer Electronics

E1. For each of the electronic equipment listed below, please indicate the number used at this residence.

	None	One	Two	Three	Four or more
Standard television (tube or CRT)	O	O	O	O	O
Plasma television	O	O	O	O	O
LCD/LED television	O	O	O	O	O
Cable, satellite, or DVR set top box	O	O	O	O	O
Video-game console	O	O	O	O	O
DVD/BluRay player	O	O	O	O	O
Desktop computer	O	O	O	O	O
Laptop computer	O	O	O	O	O

Section F: Lighting

F1. Approximately how many of the following types of light bulbs are used in fixtures, including lamps, at this residence?

	None	1–10	11–20	21–30	31–40	More than 40
Compact fluorescent (CFL) bulbs	O	O	O	O	O	O
Incandescent bulbs	O	O	O	O	O	O
Fluorescent tubes	O	O	O	O	O	O
Halogen bulbs	O	O	O	O	O	O
LED bulbs	O	O	O	O	O	O
Other—please specify: _____	O	O	O	O	O	O

Section G: About your household

G1. Are you . . .?

O Male O Female

G2. Which of the following best describes your age?

O Under 25 O 35–44 O 55–64 O 75 or over
O 25–34 O 45–54 O 65–74

G3. What is the highest level of education you have completed?

O Did not attend high school
O Some high school
O High-school graduate/GED
O Some college
O 2-year associate degree or trade/technical school
O 4-year college degree
O Some graduate courses
O Advanced degree

Comments

Is there anything else you would like to tell us about this survey or Idaho Power? If so, please use this space for your comments.

Thank you for your time and assistance. Your participation is greatly appreciated and will be used in determining how to meet future electricity needs of our customers. To find more information about Idaho Power, please visit idahopower.com.

Cover Letter: 1st and 2nd Mailing

[Insert Date]

[Name1]
[Address1] [Address2]
[mail_City], [mail_State] [mail_Zip]

[servicelocation]
[physical_address]
[physical_city], [physical_state]
[physical_zip]

Dear [first_name_letter]:

At Idaho Power, we like hearing from our customers, and we'd like you to complete a survey about your energy usage so we can learn more about how our customers use electricity.

An important part of our business involves listening to customers to gain a better understanding of how you use energy. The input you provide helps us plan for the future and develop services and programs to meet your energy needs.

Participating in this survey is easy. Simply complete the enclosed mail survey and use the pre-paid postage envelope to return it to us.

This survey is concerning [physical_address], [physical_city], [physical_state] [physical_zip] and how you and your household use electricity at that location. All survey results are confidential and are only used to help Idaho Power make planning decisions around programs and services in the future. If you have any questions, please give us a call at 1-208-388-2323 in the Treasure Valley calling area or 1-800-488-6151 outside of the Treasure Valley calling area.

We appreciate the opportunity to serve you, and thank you for taking the time to complete this survey.

Sincerely,

Lisa A. Grow
Senior Vice President of Operations

Enclosure

[Insert Date]

[Name1]
[Address1] [Address2]
[mail_City], [mail_State] [mail_Zip]

[servicelocation]
[physical_address]
[physical_city], [physical_state]
[physical_zip]

Dear Idaho Power Customer:

A couple of weeks ago, Idaho Power mailed out the 2016 Home Energy Survey to some of our residential customers. If you have already completed it, thank you and please ignore this letter. We know your time is valuable, and if you have not had a chance to complete the survey, we would still like to hear from you about your energy usage. If you would like to have your responses included in our study, please mail your completed survey by Tuesday, December 27, 2016.

Participating in this survey is easy. Simply complete the enclosed mail survey and use the pre-paid postage envelope to return it to us.

This survey is concerning [physical_address], [physical_city], [physical_state] [physical_zip] and how you and your household use electricity at that location. All survey results are confidential and are only used to help Idaho Power make planning decisions around programs and services in the future. If you have any questions, please give us a call at 1-208-388-2323 in the Treasure Valley calling area or 1-800-488-6151 outside of the Treasure Valley calling area.

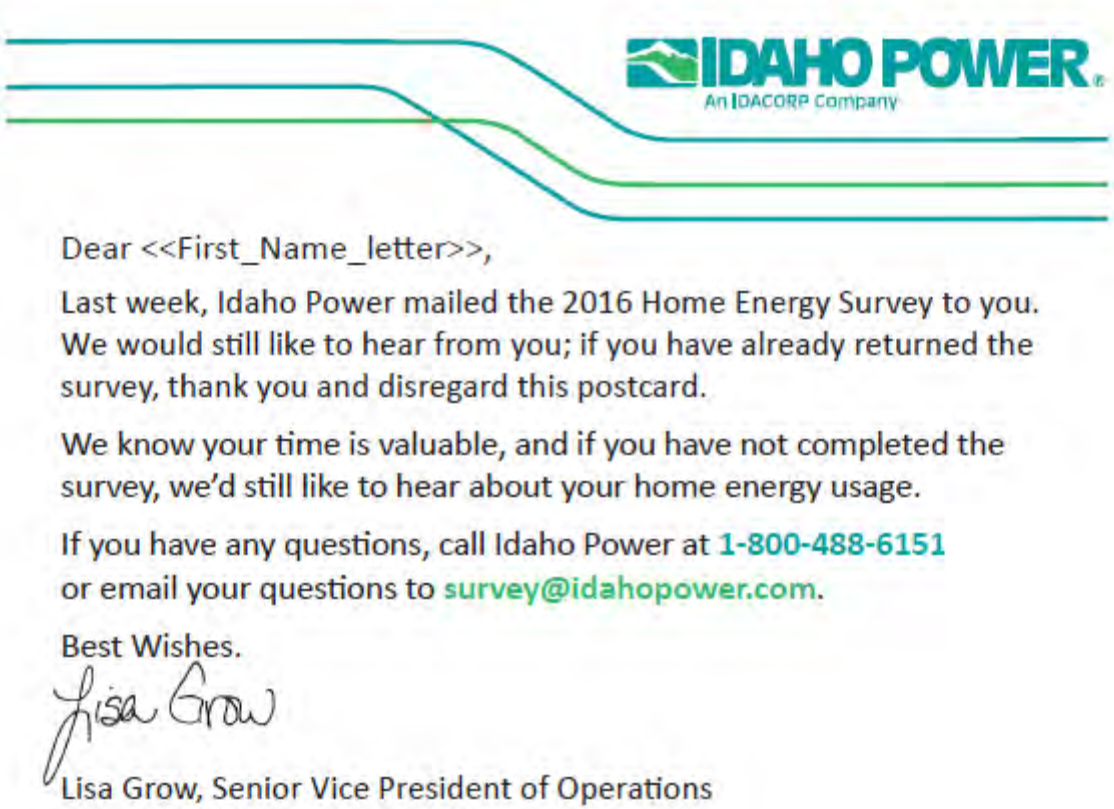
We appreciate the opportunity to serve you, and thank you for taking the time to complete this survey.

Sincerely,

Lisa A. Grow
Senior Vice President of Operations

Enclosure

Reminder Postcard



Sample Design

- As noted in the methodology section of this report, the targeted population of this study is Idaho Power's base of residential customers across the entire service territory.
- Idaho Power provided a single list containing customer name and address:
  - Main sample: A random sample of residential customers to be used for the overall analysis. The list included five operating regions (Canyon, Capital, Eastern, Western, Southern), in addition to customers in Oregon.
- Sample was pulled proportionally to the distribution by region and state.
- Sample cleaning involved identifying duplicates and working with Idaho Power to review on a case-by-case basis which records to leave in the valid mailing sample.
- Sample record addresses were cleaned and updated prior based on USPS information to the first survey mail out.

Sample Variables
Region
ID
County
State
Phys_Address
City
ZIP
First_Name_Letter
First_Name
Mid_Name
Last_Name
Name1
Name2
Address1
Address2
Address3
Installn_Type_Cd

Changes in Study Design: 2010 vs. 2016

2010

- Mail and web, administered by Market Strategies
  - Survey mailed to 5,407 customers across the five regions, an oversample of Oregon customers, and Load Research customers
  - Of the 5,407 surveys, 1943 were returned.
- Design included an initial survey mailing, a follow up postcard, and a second survey mailing.
- Sample was stratified by region
- Data weighted by region
  - Distribution by region provided by Idaho Power

2016

- Mail only, administered by Market Strategies
  - Survey mailed to 6,150 customers across the five regions
  - No oversample of Oregon or Load Research customers
  - Of the 6,150 surveys, 2,296 were returned
- Mailing schedule methodology unchanged from 2010
- Sample design unchanged from 2010
- Data weighting unchanged from 2010
  - Weighted by region with the region distribution provided by Idaho Power

Survey Differences: 2010 vs. 2016

2010

The following list of questions were either asked in 2010 but not in 2016 or were worded differently compared to the 2016 survey

Residence
- No changes made

Heating
- No changes made

Cooling
- One question removed regarding evaporative/swamp coolers (number owned)

Appliances
- Question removed regarding microwave ovens (number owned)
- Question removed regarding mini-fridges/beverage coolers (number owned)

Electronics
- Individual questions regarding LCD and LED TVs combined in 2016

Lighting
- No changes made

Energy Efficiency
- Entire section removed regarding Energy Star qualified equipment
- Question regarding awareness of Idaho Power offering energy efficiency rebates

Home Improvement
- No changes made

Demographics
- No changes made

2016

The following list of questions were either new in 2016 or worded differently compared to the 2010 survey

Residence
- No changes made

Heating
- No changes made

Cooling
- No changes made

Appliances
- No changes made

Electronics
- Combined LCD/LED TV categories
- Question added regarding number of cable, satellite, or DVR set top boxes

Lighting
- Question added regarding number of LED bulbs

Home Improvement
- Added questions for having installed or replaced whole-house fans, ceiling fans, and thermostats
- Added question on participating in Idaho Power's energy efficiency program

Demographics
- No changes made

Project Task Responsibilities

- Idaho Power provided a final survey instrument and handled the graphic design of the survey.
- Idaho Power was responsible for drafting the cover letter, reminder postcard, and follow-up letter. Idaho Power also provided the outbound envelopes (window #10) for both mail outs.
- Market Strategies was responsible for printing the surveys, cover letters, and reminder postcards and provided return envelopes with postage.
  - An outside vendor (Allegra Print & Imaging) was selected by Market Strategies to provide printing and mailing services.
- Survey returns were sent directly to Market Strategies. The PIN for each survey was logged the day it arrived in the mail. Completed surveys were then sent to an outside vendor (Data Direction) for data entry.
- Undeliverable surveys were returned to Idaho Power.
- Idaho Power completed a spreadsheet as to which surveys were undeliverable and Market Strategies logged the pins numbers in an internal case tracking system to aid in calculating an accurate response rate.

Data Cleaning

- Data cleaning included the following steps:
  - A “no response” code (-9) was added to all questions where a respondent was qualified to answer the question but did not (i.e, the question blank was left blank).
  - Applied data cleaning on filtered questions A3, B6, B7, B8, B11, B12, C2, C3, C7, C9, C12, and C14 based on questionnaire skip patterns.
    - For example using A2, in the questionnaire the filter is: IF A2=”all or most of the year” or “other”, go to A3. Anyone who answers “a seasonal home” skips to A4. Therefore, in the mail data, if A2 is “a seasonal home” but there are responses in A3, A3 is set to missing (as if the respondent had followed the skip pattern correctly).

Saturation Rate Calculation Definitions

	1994	2004	2010	2016
Heat Source - Elect.	% using electricity as primary heat source	% using electricity as primary heat source (pg. 35)	% using electricity as primary heat source (B2)	% using electricity as primary heat source (B2)
Resistance	elec forced air, wall, baseboard, ceiling (does not include portable electric heaters or heat pumps)	Primary electric: central furnace, baseboards, ceiling cables, wall heaters (p 39)	Electric central furnace, baseboard, ceiling cables, wall heaters, radiant heat, other (B2/B3)	Electric central furnace, baseboard, ceiling cables, wall heaters, radiant heat, other (B2/B3)
Heat Pump	% using an electric heat pump (primary heating)	% with electric heat pump (Question reads: do you have an electric heat pump) (pg. 46)	% with a heat pump / % electric heat pump	% with a heat pump / % electric heat pump
Portable Heaters	na	Average number of portable electric heaters (pg. 28)	Average number of portable electric heaters (B8)	Average number of portable electric heaters (B8)
Central A/C	% with central air or heat pump	% with central air or heat pump (pg. 52)	% with central air or heat pump (B10/B11)	% with central air or heat pump (B10/B11)
Evaporative Swamp Coolers	% with one or more swamp coolers	% with one or more swamp coolers (pg. 54)	% with one or more swamp coolers (B10/B13)	% with swamp coolers (B11)
Room A/C Units	Avg number of room A/C units	Avg number of room A/C units (pg. 54)	Avg number of room A/C units (B10/B12)	Avg number of room A/C units (B12)
Water Heater	% with electric water heater	% with electric water heater (pg 56)	% with electric water heater (C1/C2)	% with electric water heater (C2)
Range	% with electric range	% with electric range	% with electric range (C4)	% with electric range (C4)
Refrigerators	Avg number of refrig.	Avg number of refrig.	Avg number of refrig. (C7)	Avg number of refrig. (C6)
Freezer	% with one or more freezers	% with one or more freezers	% with one or more freezers (C10)	% with one or more freezers (C8)
Dishwasher	% with one or more	% with one or more	% with one or more (C12)	% with one or more (C10)
Clothes Washer	% with one	% with one	% with one (C13)	% with one (C11)
Clothes Dryer	% with electric dryer	% with electric dryer	% with electric dryer (C15/C16)	% with electric dryer (C13)

empowered community

A/C Efficiency Survey Results

July/August 2016

Survey was sent to 1037 em**powered** community members
Participation rate was 67%
Survey was sent to all em**powered** community members regardless of heat source

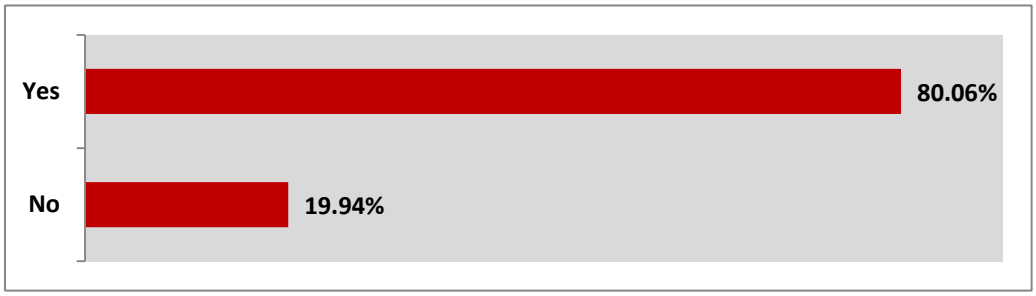
Respondent data

- 84% homeowners / 10% renters
- 49% male / 51% female
- 23% from CanyonWest region / 54% from Capital region / 23% from SouthEast region
- 26% from electrically heated homes / 66% from natural gas heated homes / 7% from homes heated by other fuel sources

Do you have central air conditioning in your home?

QUESTION TOTAL:	692
DID NOT ANSWER:	0

	OPTIONS	TOTAL	PERCENT
O1	Yes	554	80.06%
O2	No	138	19.94%



EE tips:

Even if you don't have central air conditioning, here are a few tips that can help keep your home cooler in summer:

Keep draperies drawn and windows closed. This will prevent cool air from escaping and warm air from seeping in through glass areas. Weather-strip and seal around all doors and windows.

Try to limit the afternoon use of heat-producing appliances in the kitchen and laundry areas.

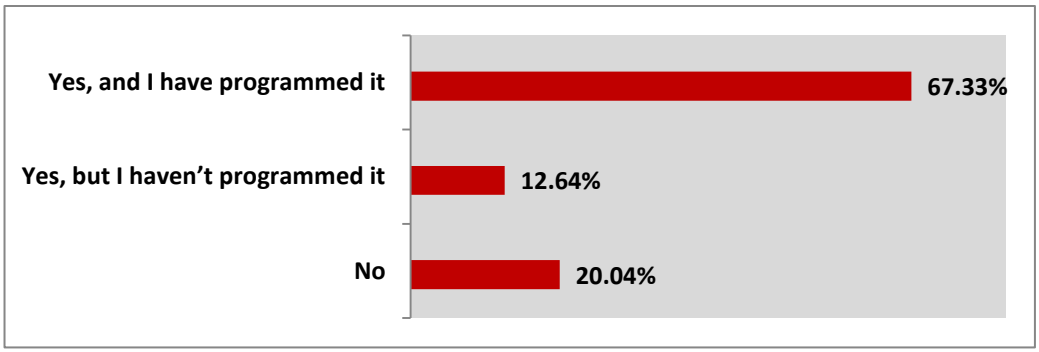
Insulate your home. Wall, ceiling, floor and attic insulation will keep the heat out during the summer and the warmth in during the winter.

asked only of customers with central air

Do you have a programmable thermostat in your home?

QUESTION TOTAL:	554
DID NOT ANSWER:	0

	OPTIONS	TOTAL	PERCENT
O1	Yes, and I have programmed it	373	67.33%
O2	Yes, but I haven't programmed it	70	12.64%
O3	No	111	20.04%



EE tips:

~ Nearly half of US homes have a programmable thermostat, but many have not actually programmed it. And, it needs to be set appropriately for the season. Keeping your thermostat at the same temperature all year long, regardless of time of day or year, can impact your electricity bill.

~ If you have a programmable thermostat and haven't programmed it, dig out that owner's manual and learn how to use yours to maximize the efficiency of your heating and cooling systems. Program your thermostat to turn itself down or off when you're sleeping or are at work or school. And change the setting for summer so that the temperature increases during the day when you are away from home and cools down just before you return in the evening.

~ If you haven't installed a programmable thermostat, it is a great way to keep comfortable and save energy.

~ Additional home cooling tips include:

Never turn your thermostat way up or way down to speed up the cooling or heating process. This will force your unit to, stay on longer and use more energy.

Don't fiddle with thermostats. Set your thermostat at 78° F or higher for cooling – every degree above 78 can save you on your energy bill. For additional savings, modify the temperature setting further when you leave home or go to bed.

Check the reliability of your thermostat. Place a thermometer next to the thermostat and check the degree readings of each. If they vary more than a couple of degrees, replace the thermostat.

Keep draperies drawn and windows closed. This will prevent cool air from escaping and warm air from seeping in through glass areas. Weather-strip and seal around all doors and windows.

Help your air conditioner work more efficiently. During the summer, try to limit the afternoon use of heat-producing appliances in the kitchen and laundry areas.

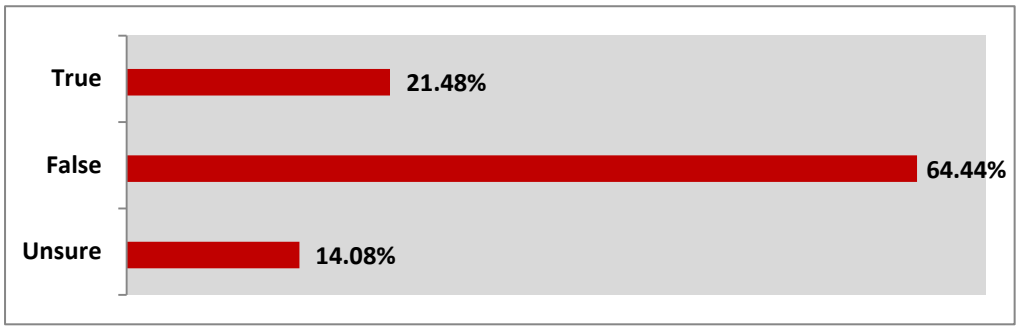
Insulate your home. Wall, ceiling, floor and attic insulation will keep the heat out during the summer and the warmth in during the winter.

asked only of customers with central air

Shutting off air supply vents going into a room is a good way to save energy.

QUESTION TOTAL:	554
DID NOT ANSWER:	0

	OPTIONS	TOTAL	PERCENT
O1	True	119	21.48%
O2	False	357	64.44%
O3	Unsure	78	14.08%



EE tip:

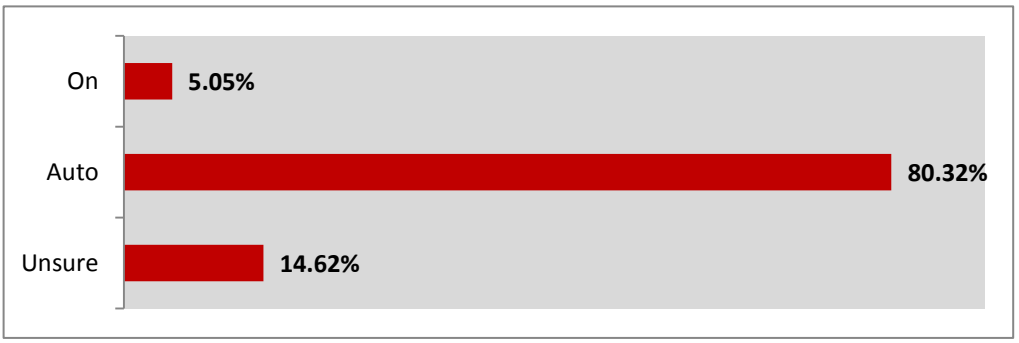
This statement is false. *Never shut off a supply vent going into a room – this will actually decrease the amount of air circulating throughout the home.*

asked only of customers with central air

Which Air Conditioner fan setting is best: 'On' or 'Auto'?

QUESTION TOTAL:	554
DID NOT ANSWER:	0

	OPTIONS	TOTAL	PERCENT
O1	On	81	14.62%
O2	Auto	445	80.32%
O3	Unsure	28	5.05%



EE tip:

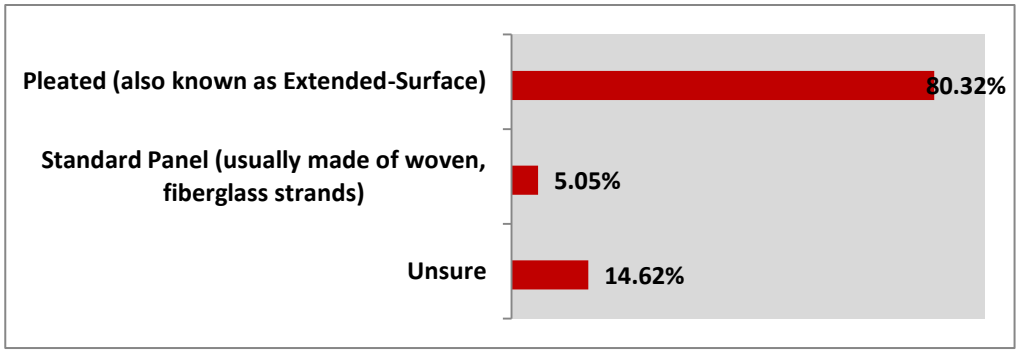
Always keep the Air Conditioner fan on "Auto". *Placing the fan in the "On" position will use more energy and put more wear and tear on the fan.*

asked only of customers with central air

Which of the following is the better type of filter for your Air Conditioner?

QUESTION TOTAL:	554
DID NOT ANSWER:	0

	OPTIONS	TOTAL	PERCENT
O1	Pleated (also known as Extended-Surface)	445	80.32%
O2	Standard Panel (usually made of woven, fiberglass	28	5.05%
O3	Unsure	81	14.62%



EE tip:

Pleated filters *are your best bet, removing 35% to 40% of harmful particles in the air. Standard filters are only capable of removing 10% of airborne pollutants.*

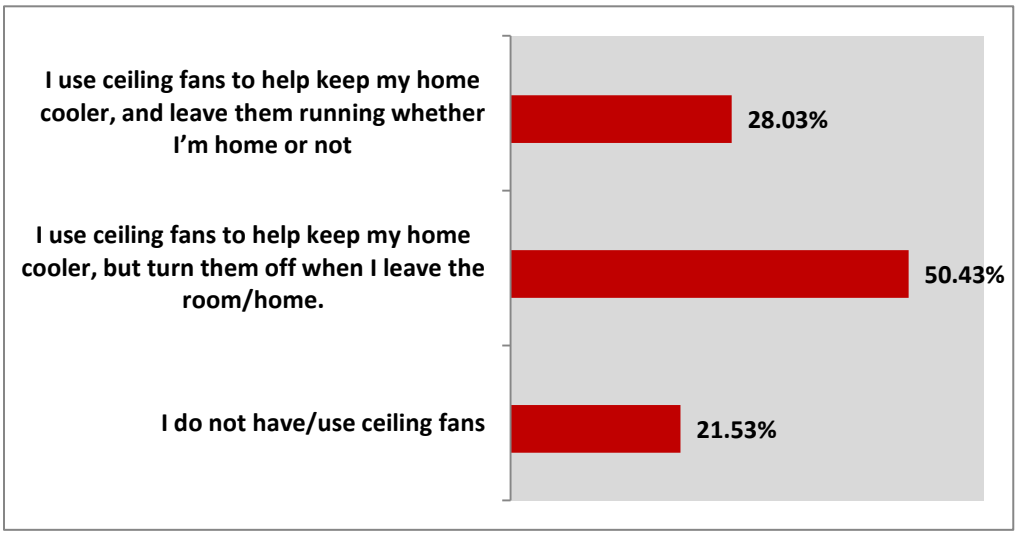
Dirt and neglect are the top causes of heating and cooling system inefficiency and failure. Clean or replace the Air Conditioner filter regularly to help your unit run more efficiently and trim cooling costs.

asked of all respondents

Which of the following describes your usage of ceiling fans?

QUESTION TOTAL:	692
DID NOT ANSWER:	0

	OPTIONS	TOTAL	PERCENT
O1	I use ceiling fans to help keep my home cooler,	194	28.03%
O2	I use ceiling fans to help keep my home cooler, but	349	50.43%
O3	I do not have/use ceiling fans	149	21.53%



EE tip:

Ceiling fans are a great way to keep your home cooler in warmer months – they make a room 4-6 degrees cooler. They can also keep your home warmer in winter months (when in winter mode).

Be sure to turn off your ceiling fan when you leave the room to save energy.

Question

1. How much would you like to save?

$22 - Install the LED light bulbs, LED night light, and the Kitchen faucet aerator

$138 - Install the above items, unplug an unused refrigerator or freezer, and install the indoor clothes line

$240 - Complete all the Easy Savings® Quick Start Guide Steps

2. Have you lowered your heat during the day?

Yes, I lowered it

Yes, I plan to lower it

No

3. Have you lowered your heat at night?

Yes, I lowered it

Yes, I plan to lower it

No

4. Did you place the Thermostat Temperature Sticker near your thermostat?

Yes, I placed it

Yes, I plan to place it

No

5. Did you install the first 9-watt Light-Emitting Diode (LED)?

Yes, I installed it

Yes, I plan to install it

No

6. Did you install the second 9-watt Light-Emitting Diode (LED)?

Yes, I installed it

Yes, I plan to install it

No

7. Did you install the third 9-watt Light-Emitting Diode (LED)?

Yes, I installed it

Yes, I plan to install it

No

8. Did you install the LED Night Light?

Yes, I installed it
Yes, I plan to install it
No

9. Did you install the Draft Stoppers?

Yes, I installed them
Yes, I plan to install them
No

10. Do you turn off lights in empty rooms more often now?

Yes
No

11. Did you install the Kitchen Faucet Aerator?

Yes, I installed it
Yes, I plan to install them
No, it does not fit pipes
No

12. Do you use cold water when you do your laundry?

Yes, always
Yes, sometimes
Never

13. Did you place the Wash in Cold Water Magnet on your washing machine?

Yes, I placed it
Yes, I plan to place it
Don't have a washing machine
No

14. Did you use the Digital Thermometer to check the temperature of your water?

Yes
Yes, I plan to use it
No

15. Did you change the temperature setting of your water heater?

Yes, I raised it (warmer)

Yes, I lowered it (cooler)
No

16. Did you check the temperature of your refrigerator(s) and freezer(s)?

Yes
Yes, I plan to check it
No

17. Did you adjust the temperature of your refrigerator(s) and freezer(s)?

Yes, turned up (warmer)
Yes, turned down (colder)
No

18. Did you unplug your old or unused refrigerator(s) and freezer(s)?

Yes, I unplugged 1 unit
Yes, I plan to unplug 1 unit
Yes, I unplugged 2 units
Yes, I plan to unplug 2 units
Not applicable
No

19. Did you install the Indoor Clothes Line?

Yes
Yes, I plan to install it
No

20. Did you place the Turn Your Computer Off Sticker on your computer?

Yes
I don't have a computer
No

21. How many items from your Easy Savings® Kit did you install?

All
4 or more
3
2
1
None

22. How effective was the Easy Savings® Quick Start Guide in helping you become more energy efficient?

Very effective
Somewhat effective
Not effective at all
Didn't use

23. Now that you have completed the Easy Savings® Quick Start Guide, how much have you learned about

I learned a lot
I learned a little
Nothing

Survey Response Summary

Dated: 6/30/2016

% Answered	Qty Answered	Total Answered
		206
18%	38	
9%	19	
72%	149	
100%	206	
		212
85%	180	
7%	15	
8%	17	
100%	212	
		212
81%	172	
9%	19	
10%	21	
100%	212	
		206
68%	140	
19%	39	
13%	27	
100%	206	
		211
85%	179	
12%	25	
3%	7	
100%	211	
		209
75%	157	
19%	39	
6%	13	
100%	209	
		209
68%	142	
23%	49	
9%	18	

100%	209	
		212
88%	186	
9%	20	
3%	6	
100%	212	
		205
54%	111	
37%	76	
9%	18	
100%	205	
		209
99%	207	
1%	2	
100%	209	
		210
54%	114	
18%	38	
23%	49	
4%	9	
100%	210	
		210
69%	145	
28%	59	
3%	6	
100%	210	
		208
61%	126	
9%	19	
15%	31	
15%	32	
	208	
		206
60%	123	
26%	54	
14%	29	
100%	206	
		206
6%	13	

42%	86
52%	107
100%	206

	210
76%	160
19%	40
5%	10
100%	210

	209
30%	63
27%	56
43%	90
100%	209

	207
9%	19
0%	1
7%	14
1%	2
77%	159
6%	12
100%	207

	204
38%	77
30%	62
32%	65
100%	204

	209
43%	90
42%	87
15%	32
	209

	211
39%	82
48%	101
9%	19
2%	5
1%	2
1%	2
100%	211

205

68%	140
31%	64
0%	1
0%	0
100%	205

212

77%	164
23%	48
0%	0
100%	212

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FILL IN EACH BUBBLE COMPLETELY

Using a black pen or pencil, fill in the bubble completely.
Please do not copy or fold forms.

SAVINGS TARGET

1. How much would you like to save?

- O $22 – Install the LED light bulbs, LED night light, and the Kitchen Faucet Aerator.
- O $138 – Install the above items, unplug an unused refrigerator or freezer, and install the indoor clothes line.
- O $320 – Complete all the Easy Savings® Quick Start Guide Steps.

HEATING

2. Have you lowered your heat during the day?

O Yes, I lowered it O Yes, I plan to lower it O No

3. Have you lowered your heat at night?

O Yes, I lowered it O Yes, I plan to lower it O No

4. Did you place the Thermostat Temperature Sticker near your thermostat?

O Yes, I placed it O Yes, I plan to place it O No

As seasons change, adjusting your thermostat just 5 degrees or more could SAVE up to $117 per year!

LIGHTING

5. Did you install the first 9-watt Light-Emitting Diode (LED)?

O Yes, I installed it O Yes, I plan to install it O No

6. Did you install the second 9-watt Light-Emitting Diode (LED)?

O Yes, I installed it O Yes, I plan to install it O No

7. Did you install the third 9-watt Light-Emitting Diode (LED)?

O Yes, I installed it O Yes, I plan to install it O No

8. Did you install the LED Night Light?

O Yes, I placed it O Yes, I plan to place it O No

FOLD - DO NOT PRINT

9. Did you install the Draft Stoppers?

O Yes, I installed them O Yes, I plan to install them O No

10. Do you turn off lights in empty rooms more often now?

O Yes O No

Using LEDs and shutting off unused lights can SAVE up to $13 or more a year!

WATER

11. Did you install the Kitchen Faucet Aerator?

O Yes, I installed it O Yes, I plan to install it

O No, it does not fit pipes O No

By installing a Kitchen Faucet Aerator, you could SAVE up to $9 a year!

12. Do you use cold water when you do your laundry?

O Yes, always O Yes, Sometimes O Never

13. Did you place the Wash In Cold Water Magnet on your washing machine?

O Yes, I placed it O Don't have a washing machine

O Yes, I plan to place it O No

By washing your laundry in cold water, you could SAVE up to $37 per year!

14. Did you use the Digital Thermometer to check the temperature of your water?

O Yes O Yes, I plan to use it O No

15. Did you change the temperature setting of your water heater?

O Yes, I raised it (warmer) O Yes, I lowered it (cooler) O No

Lowering the temperature on your water heater can SAVE up to $10 a year!

APPLIANCES

16. Did you check the temperature of your refrigerator(s) and freezer(s)?

O Yes O Yes, I plan to check it O No

17. Did you adjust the temperature of your refrigerator(s) and freezer(s)?

O Yes, turned up (warmer) O Yes, turned down (cooler) O No

Adjusting the setting of your refrigerator can SAVE up to $5 a year!

FOLD - DO NOT PRINT

18. Did you unplug your old or unused refrigerator(s) and freezers(s)?

O Yes, I unplugged 1 unit O Yes, I unplugged 2 units O Not applicable

O Yes, I plan to unplug 1 unit O Yes, I plan to unplug 2 units O No

19. Did you install the Indoor Clothes Line?

O Yes O Yes, I plan to install it O No

Unplugging old refrigerators and freezers and using the Indoor Clothes Line can SAVE up to $116 a year!

20. Did you place the Turn Your Computer Off Sticker on your computer?

O Yes O I don't have a computer O No

Turning your computer and monitor off when unused can SAVE $12 a year!

EASY SAVINGS® QUICK START GUIDE

21. How many items from your Easy Savings® Kit did you install?

O All O 3 O 1

O 4 or more O 2 O None

22. How effective was the Easy Savings Quick Start Guide in helping you become more energy efficient?

O Very effective O Somewhat effective O Not effective at all O Didn't use

23. Now that you have completed the Easy Savings® Quick Start Guide, how much have you learned about saving energy and money in your home?

O I learned a lot O I learned a little O Nothing

RETURN THIS COMPLETED SURVEY IN THE POSTAGE-PAID ENVELOPE FOUND INSIDE THE KIT OR VISIT WWW.GETWISE.ORG/SURVEY/IP-CAPAI AND RESPOND ONLINE FOR A CHANCE TO WIN $100!

IDAHO POWER.
An IDACORP Company

IDAHO POWER-CAPAI
EASY SAVINGS SURVEY
Español en el otro lado

COMPLETE AND RETURN THIS SURVEY FOR A CHANCE TO WIN

$100

ALL YOU HAVE TO DO IS...

1. **INSTALL THE ENERGY-EFFICIENCY PRODUCTS** in your Easy Savings kit at your home.

2. **IMPLEMENT THE QUICK STEPS** outlined in the Quick Start Guide and try the energy saving tips.

3. **COMPLETE AND RETURN THIS SURVEY** for a chance to win a $100!* *(Postage paid envelope included.)*
   OR COMPLETE IT ONLINE.
   Visit www.getwise.org/survey/IP-CAPAI

EASY $AVINGS

* For $100 drawing contest information, contact CAPAI at 208-375-7383.
** All savings estimates are based on typical electrically heated Idaho households implementing all suggested changes. Your personal savings may vary.

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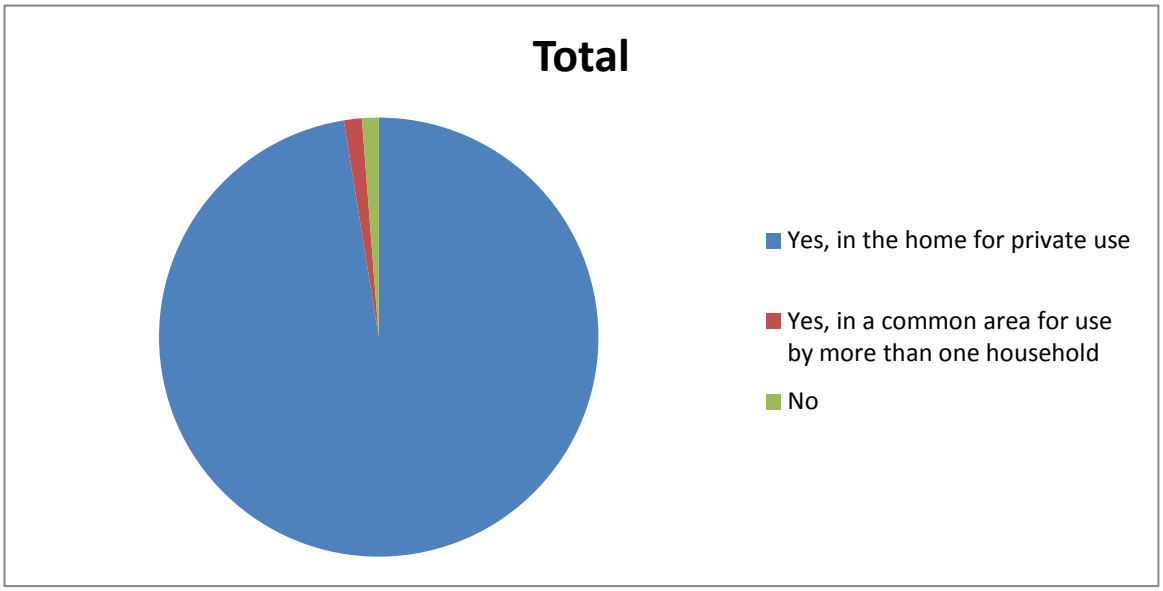
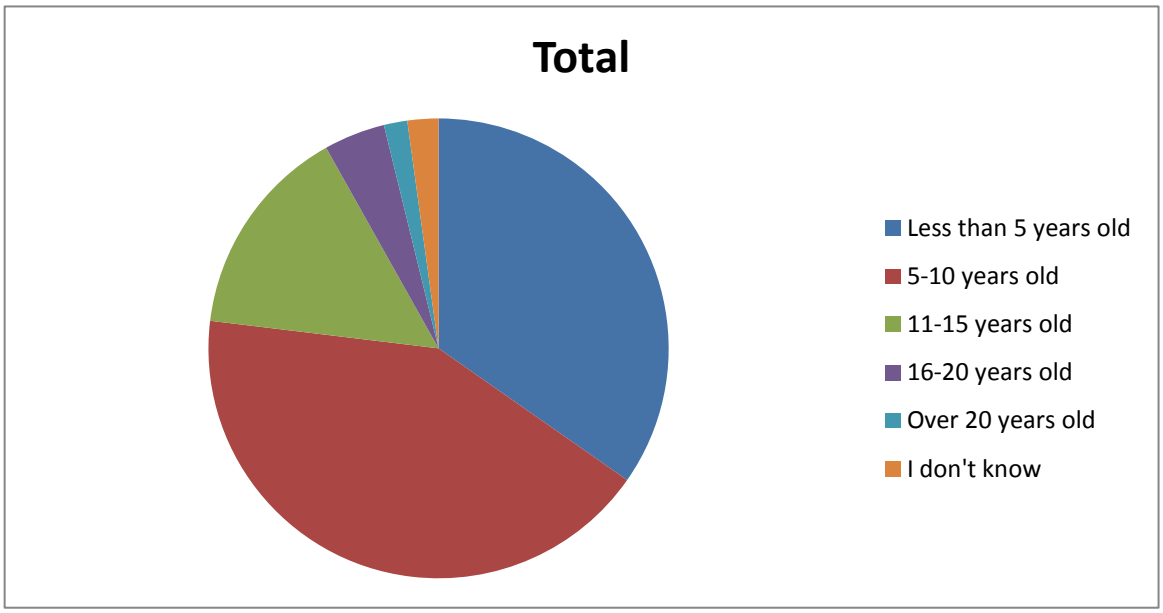
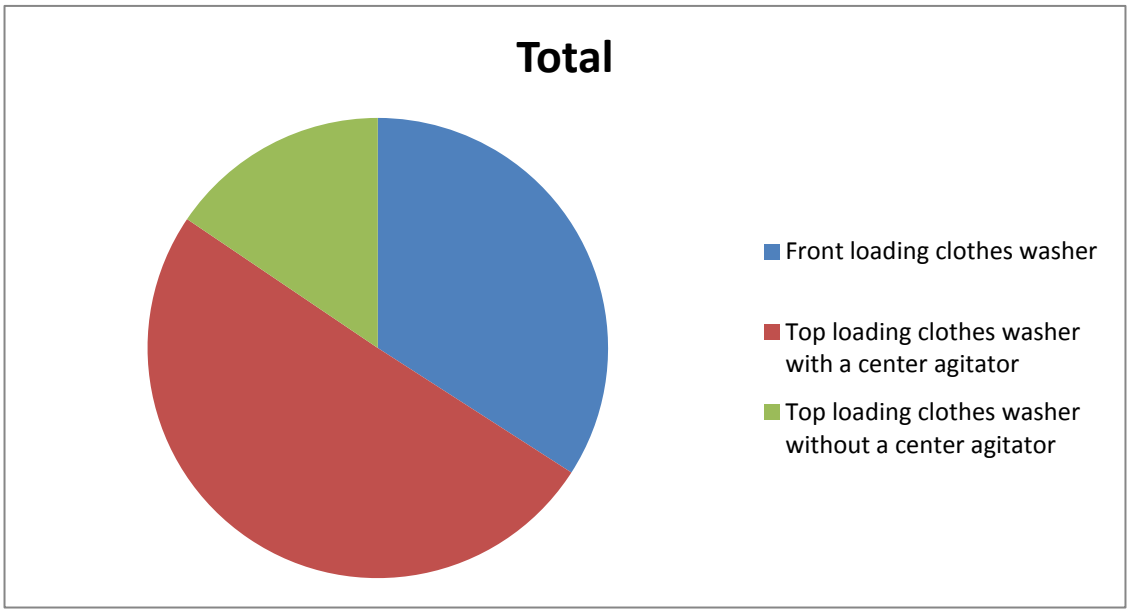
Do you use a clothes washer at your home?	Total	Percentage
Yes, in the home for private use	2,066	97.45%
Yes, in a common area for use by more than one household	28	1.32%
No	26	1.23%
Grand Total	**2,120**	**100.00%**



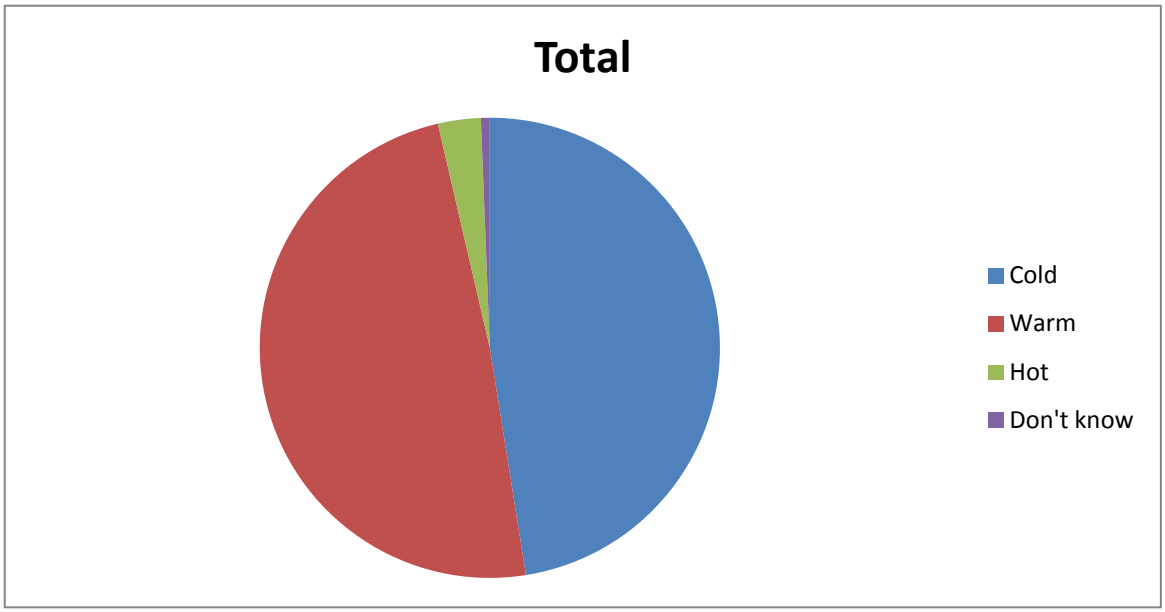
Approximately how old is the clothes washer used at your home?	Total	Percentage
Less than 5 years old	717	34.70%
5-10 years old	872	42.21%
11-15 years old	309	14.96%
16-20 years old	89	4.31%
Over 20 years old	34	1.65%
I don't know	45	2.18%
Grand Total	**2,066**	**100.00%**



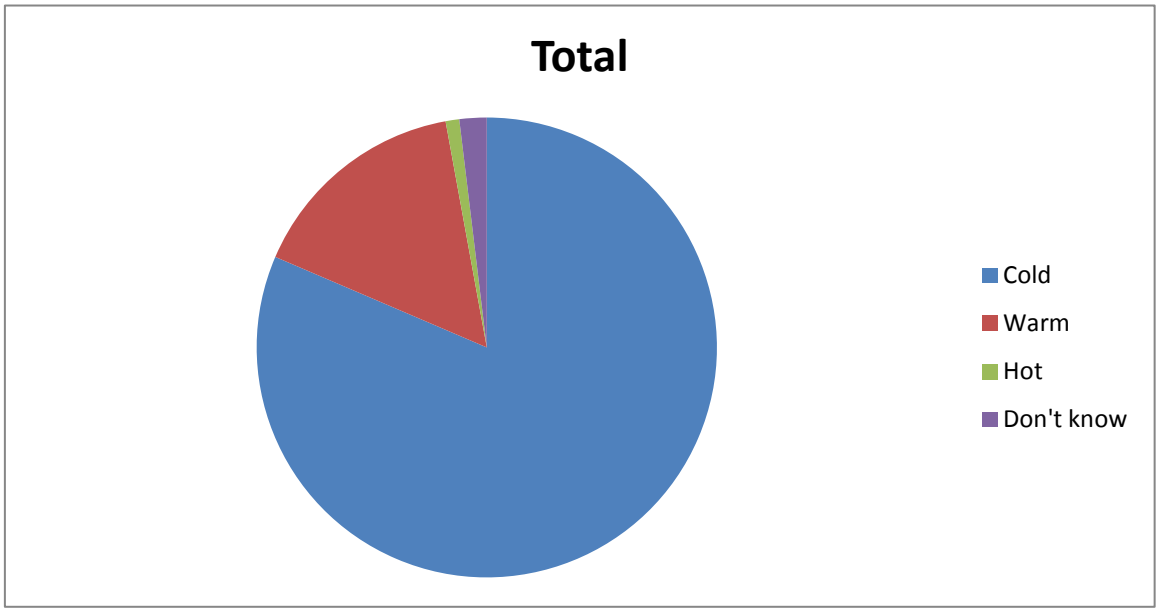
Which of the following best describes the clothes washer you use at your home?	Total	Percentage
Front loading clothes washer	713	34.10%
Top loading clothes washer with a center agitator	1,053	50.36%
Top loading clothes washer without a center agitator	325	15.54%
Grand Total	**2,091**	**100.00%**



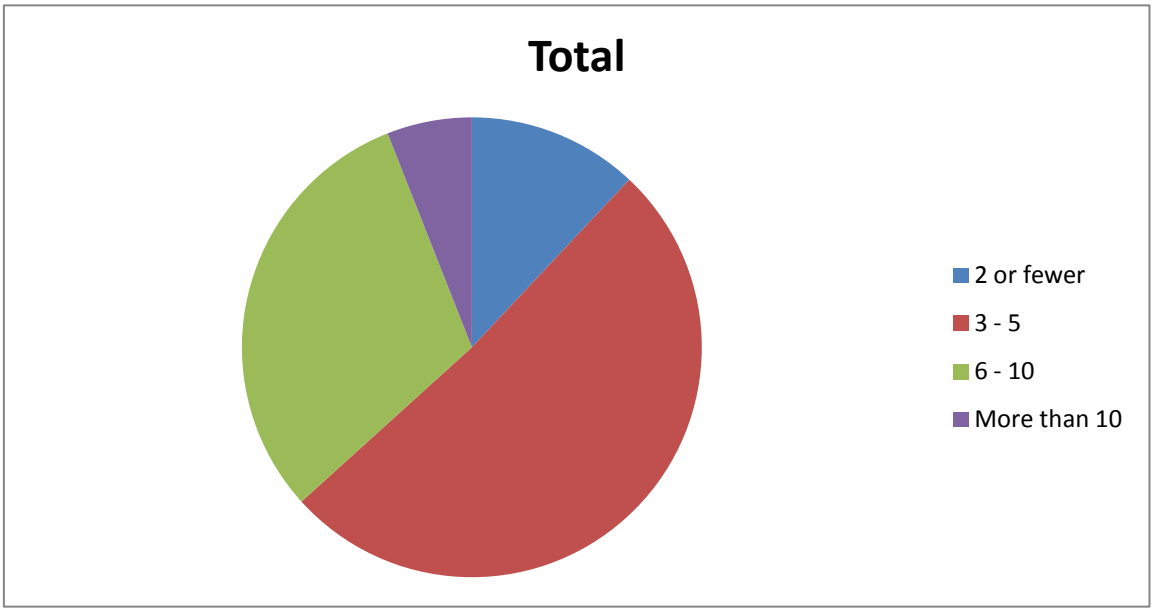
What water temperature do you use most often to wash your laundry?	Total	Percentage
Cold	994	47.49%
Warm	1,023	48.88%
Hot	63	3.01%
Don't know	13	0.62%
Grand Total	**2,093**	**100.00%**



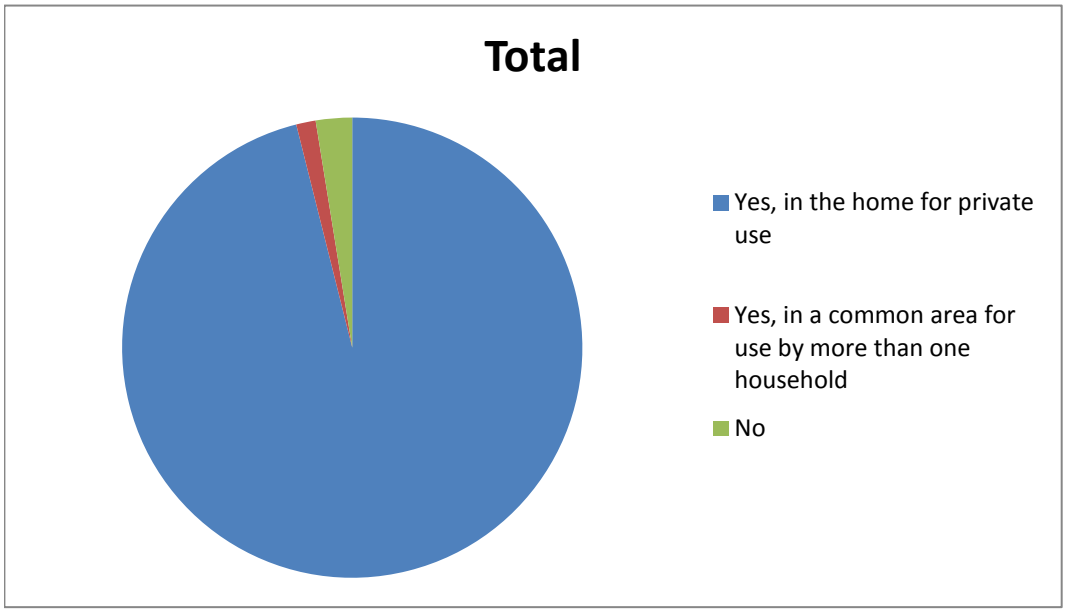
What water temperature do you use most often to rinse your laundry?	Total	Percentage
Cold	1,702	81.44%
Warm	328	15.69%
Hot	20	0.96%
Don't know	40	1.91%
Grand Total	**2,090**	**100.00%**



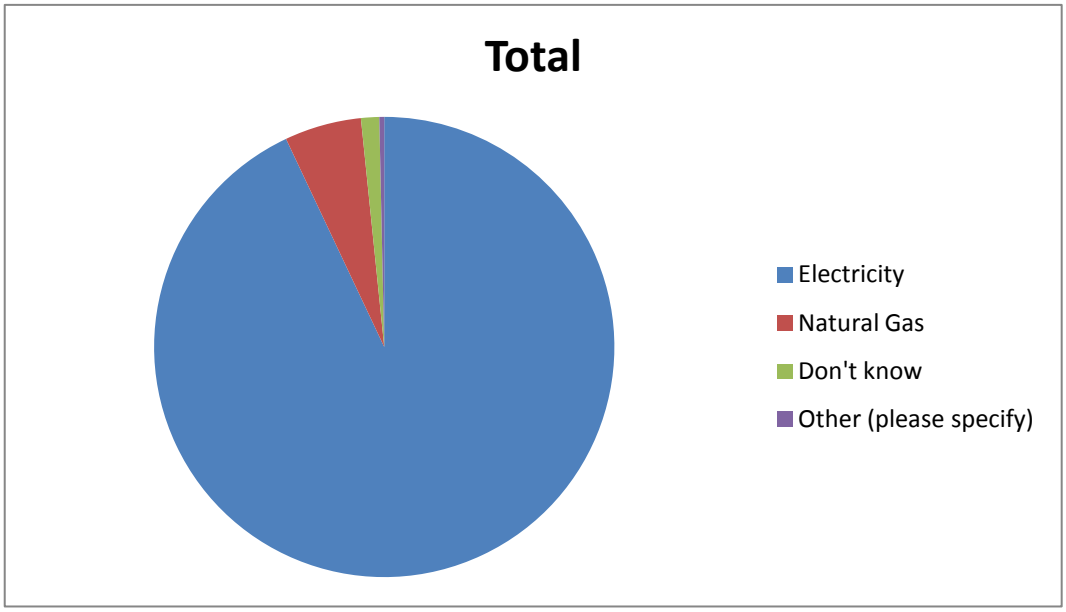
On average, how many washer loads of laundry do you do per week?	Total	Percentage
2 or fewer	251	12.00%
3 - 5	1,073	51.29%
6 - 10	643	30.74%
More than 10	125	5.98%
Grand Total	**2,092**	**100.00%**



Do you use a clothes dryer at your home?	Total	Percentage
Yes, in the home for private use	2,037	96.08%
Yes, in a common area for use by more than one household	29	1.37%
No	54	2.55%
Grand Total	**2,120**	**100.00%**

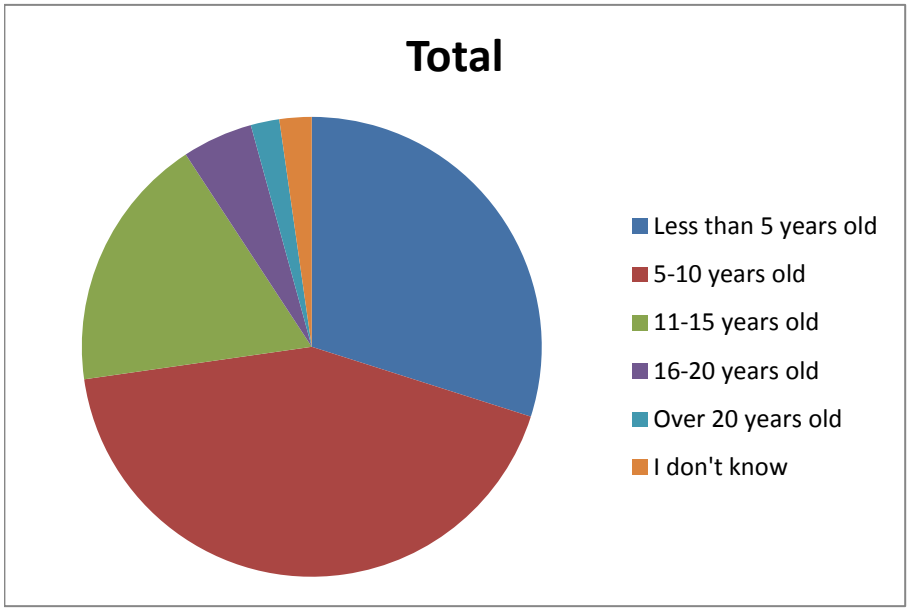


What type of fuel does your clothes dryer at your home use?	Total	Percentage
Electricity	1,894	92.98%
Natural Gas	110	5.40%
Don't know	26	1.28%
Other (please specify)	7	0.34%
Grand Total	**2,037**	**100.00%**

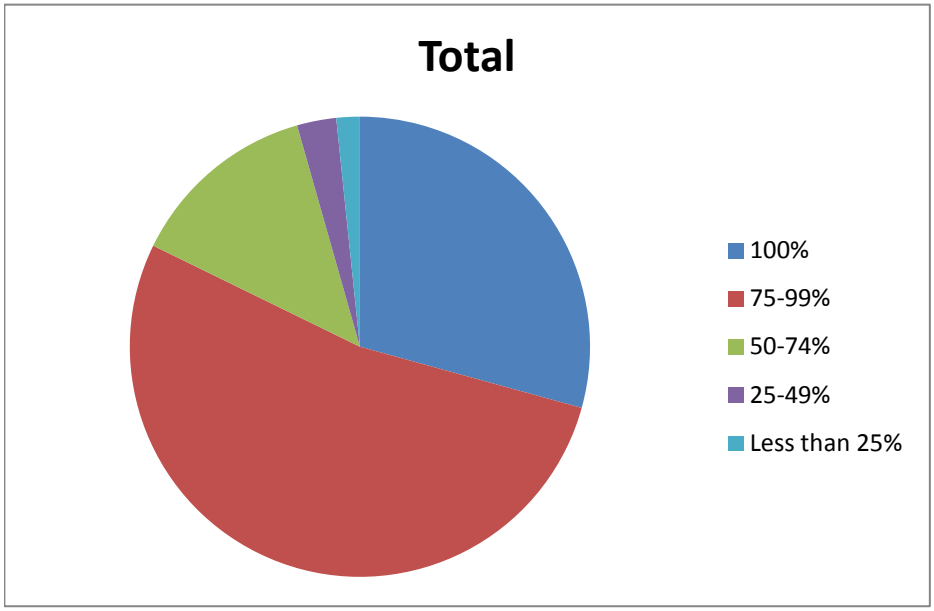


Other (please specify)
Propane
Propane
Propane
Propane
Propane
I haven't plugged it in
Cabin is electric and resident is natural gas.

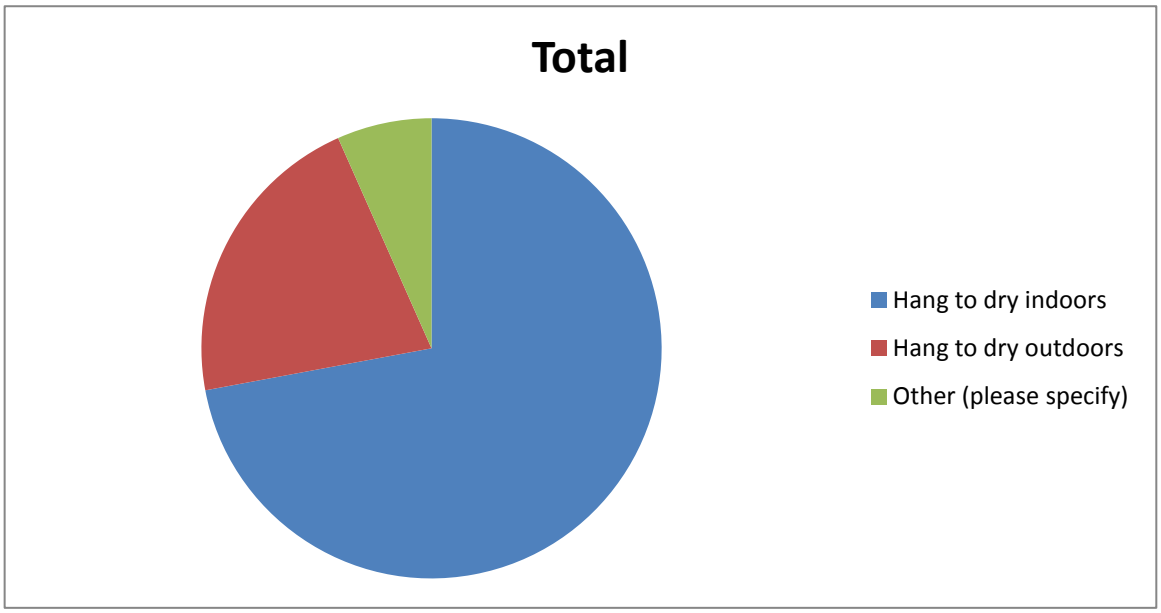
Approximately how old is the clothes dryer used at your home?	Total	Percentage
Less than 5 years old	609	29.91%
5-10 years old	872	42.83%
11-15 years old	367	18.03%
16-20 years old	101	4.96%
Over 20 years old	41	2.01%
I don't know	46	2.26%
Grand Total	**2,036**	**100.00%**



What percent of your laundry do you currently dry in a dryer?	Total	Percentage
100%	605	29.28%
75-99%	1,094	52.95%
50-74%	276	13.36%
25-49%	57	2.76%
Less than 25%	34	1.65%
Grand Total	**2,066**	**100.00%**



How do you currently dry the laundry that is not dried in a dryer?	Total	Percentage
Hang to dry indoors	1,257	72.08%
Hang to dry outdoors	371	21.27%
Other (please specify)	116	6.65%
Grand Total	**1,744**	**100.00%**



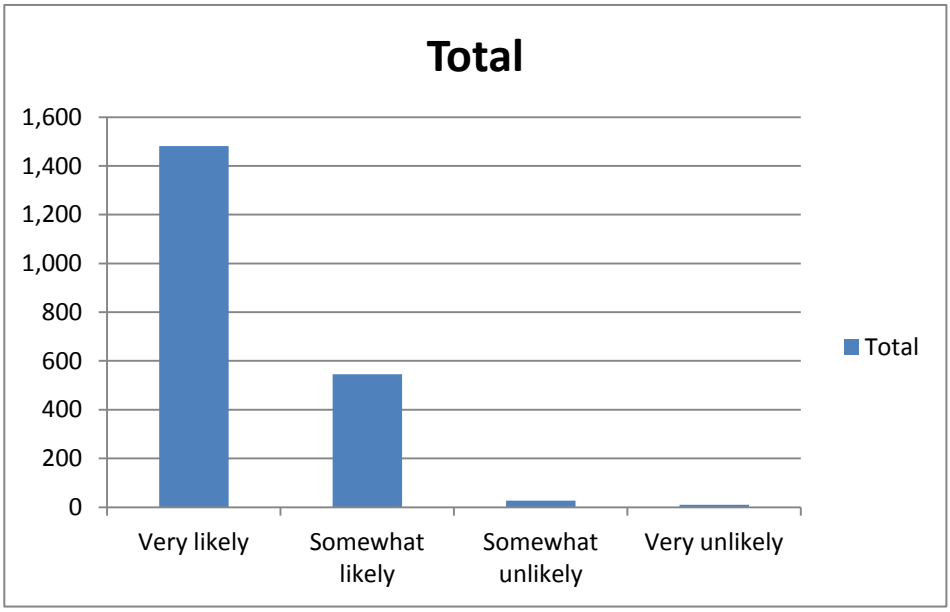
Other (please specify)
Doors and chairs
lay flat or over furniture
in the garage
When weather allows outside
On the back of chairs
Indoors in winter and totally outdoors in spring and summer and fall
IN winter indoors and summer outdoors
Depends on the season. If warm might take out there
Drape over furniture overnight.
Lay flat to dry
Depends on weather.
Or lay flat
Lay flat on bed.
Hang or lay flat delicates.
Hang both indoors and outdoors with weather permitting
Lay on drying rack
depends on the time of the year. Winter I use hangers, and a bar for light clothes. Summer, I have a small clothes line I use for heavy items like rugs
depends on the time of the year. If it is warm, we try to hang heavy things outside, and delicate
indoors in winter, outdoors in summer
Hang both inside and out

Hang to dry indoors in winter but outdoors in warm spring, summer and fall days
Hang indoors to dry but only a few fragile items...thus 99%
Lay out sweaters to dry
Summer outdoors winter indoors
I hang my clothes outside all summer.
Both
Winter: dry some on line inside. Summer: dry heavy items on line outside
Drying rack
On my shower curtain or doors
Both indoor & outdoor
Lay flat on sweater rack on the countertop.
Sweaters laid flat
Hang on shower curtain rod, over doors, etc.
indoor in winter and outdoor in summer
In the warm weather I dry outside on a line; in the cold weather I dry fewer items on a drying rack in the laundry room
If weather permits, hang out to dry outside, otherwise inside.
When the weather cooperates, I hang clothes outside. So, in winter I use dryer more than other times of the year.
On hangers
both indoors and outdoors
Indoors in winter; outdoors when the weather gets warm enough to dry clothes efficiently.
I hang both indoors & outdoors.
Lay out indoors
I mostly hang inside until summer sun is out.
Lay flat
Though, this is not on a typical clothesline, I have a very unstable small drying rack and I hang stuff on patio chairs!
In the summer I try to dry the clothes on a clothes line outside.
When the weather is warm enough to do so.
weather permitting outdoors
Hang to dry indoors during cool months; Hang to dry outdoors in warmer months.
When it's summertime, I try to dry my laundry on the line, but because I live in an apartment, there's no real good solution to do that when there's bad weather.
Only in the summer.
Lay on towels on the beds
Outdoors if it is warm, indoor during the winter.
Depends on weather and season
In door in winter outdoor in summer
in the summer, we have an outdoor rack...in the winter, some small stuff gets hung on hangars in the bathroom.
Both
I would do outdoor but we havent got a good place for a line yet :)
Would prefer to dry outdoors but don't have a clothesline at this time

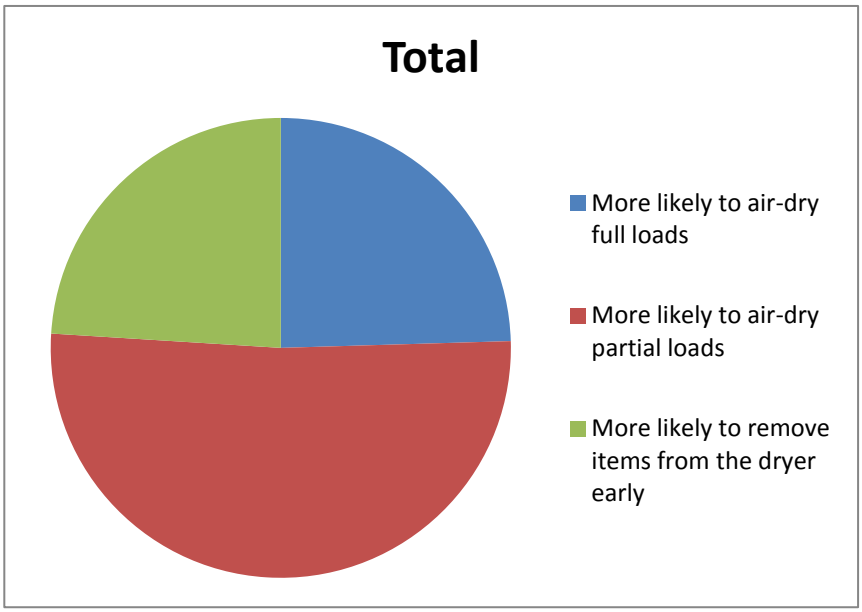
Outside in the summer
It depends on the season, when its warm, mostly outside besides special delicates, which I always air dry inside.
Lay out on table inside. Or table outside when weather is nice
Lay flat on tables indoors
Outdoors during warm months
Outdoors only in the summer.
Both
Lay flat on a clean surface.
Some clothing (blankets, delicates etc) I use the Sun in the summer on our patio table
Lay flat
I dry inside when it's winter and outside when it's summer
Lay flat to dry
Both depending on weather
Hang both indoor and outdoor depending on season
Lay flat to dry
Both, depending on the season.
When it's warmer I do both inside and outside.
Indoors in winter. Outside in summer.
When weather permits, I hang clothes outdoors.
It depends on the weather and what I wash
Outdoors in warm weather
Hang outside in summer and inside in wintee
lay flat
Some is dried flat on a drying rack that is coming apart--it's old!
We attempt to dry more in summer time. More challenging in winter - takes longer to dry.
Sweaters on a towel on the kitchen table
Use tiny drying rack outside if 32*F or higher, inside if colder.
sit on top of dryer
Or lay flat to dry for delicates
Or lay on rails, or flat
sometimes just lay them flat on bed to dry
Partially dry in the dryer then hang in doors.
Hang blankets and sheets over doors to dry...then throw in dryer for 15 min to fluff w fabric softener sheet.
Over kitchen table chairs
Spread out on top of washer & dryer; hang items from any avail. rod.
Lay flat indoors
put outside draped across chairs
and in the garage
Lay flat to dry
Both indoor and outdoor, depending on the weather.
lay out - sweaters
lay on flat surface
Depends on the season. Outdoors June-Sept. Indoors Oct-May

Drape over washer, dryer...
have an old clothes rack
lay on a towel
U
Outside in the summer, inside in the winter
lay sweaters on kitchen counter to dry
Lay flat to dry
Hang indoors and outdoors, depending on item and weather.
Lay it across chairs or back of couch.
Indoors and outdoors - weather permitting
In winter, I dry indoors. In summer I dry outdoors.
Indoors and some outdoors in summer
Lay on top of the washer and dryer
drape over chairs, hang on doorknobs.

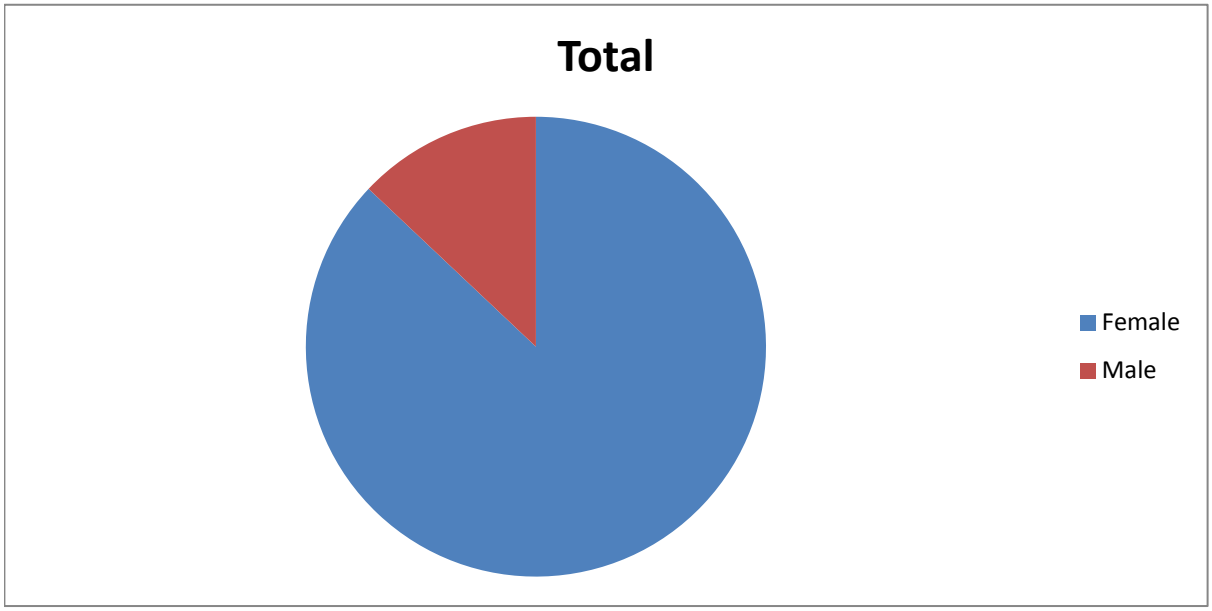
You indicated that you dry [Q10] of your laundry in a dryer. How likely is it you'll shift an additional 25% or more of your drying to the drying rack?	Total	Percentage
Very likely	1,481	71.75%
Somewhat likely	546	26.45%
Somewhat unlikely	27	1.31%
Very unlikely	10	0.48%
Grand Total	**2,064**	**100.00%**



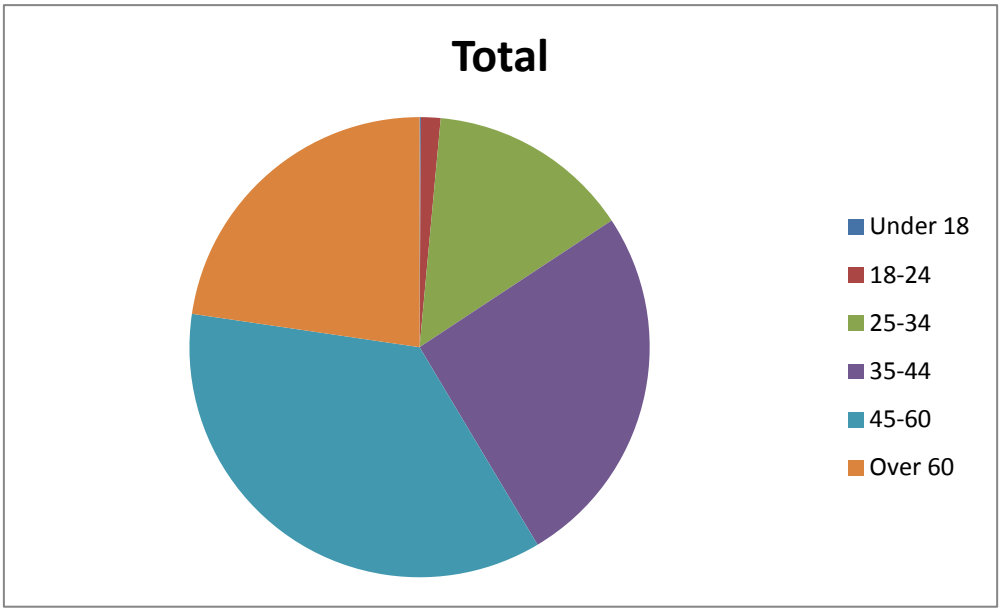
As you think about using the drying rack in your home, what are you more likely to do?(Check all that apply)	Total	Percentage
More likely to air-dry full loads	655	24.53%
More likely to air-dry partial loads	1,374	51.46%
More likely to remove items from the dryer early	641	24.01%
Grand Total	**2,670**	**100.00%**



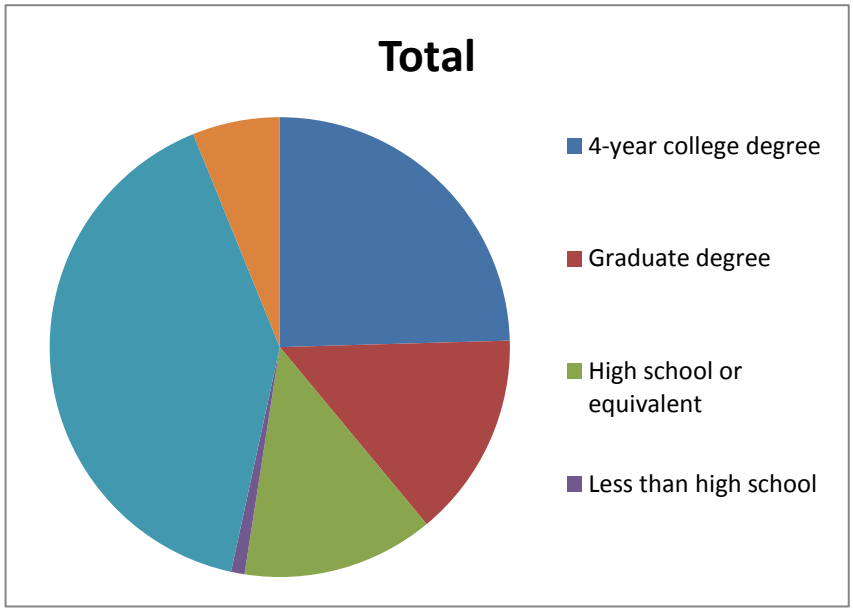
What is your gender?	Total	Percentage
Female	1,833	87.04%
Male	273	12.96%
Grand Total	**2,106**	**100.00%**



Which of the following best describes your age?	Total	Percentage
Under 18	2	0.09%
18-24	29	1.37%
25-34	301	14.25%
35-44	543	25.71%
45-60	758	35.89%
Over 60	479	22.68%
Grand Total	**2,112**	**100.00%**



What is the highest level of education you have completed?	Total	Percentage
4-year college degree	519.00	24.55%
Graduate degree	305.00	14.43%
High school or equivalent	285.00	13.48%
Less than high school	20.00	0.95%
Some college/technical school	855.00	40.44%
Some graduate courses	130.00	6.15%
Grand Total	**2,114.00**	**100.00%**



empowered community

Energy Efficiency Campaign Awareness Survey Results

2015 Study Results vs. 2016 Study Results

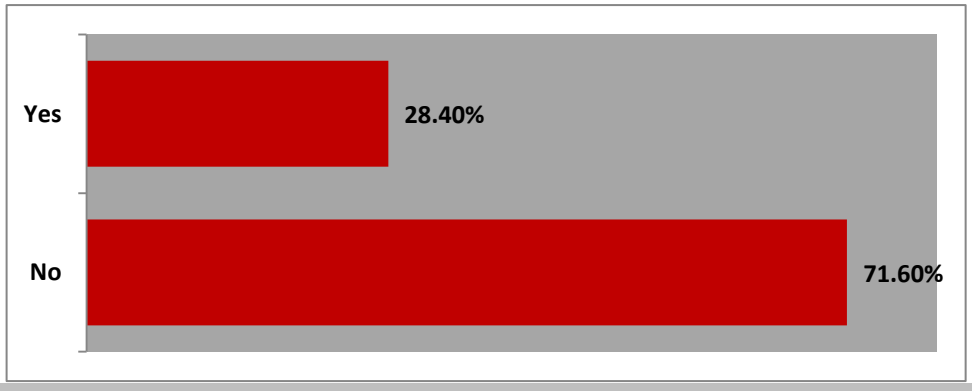
July 2016

2015 Study

Do you remember seeing or hearing one or more of these ads?

QUESTION TOTAL:	588
NO RESPONSE:	0

	OPTIONS	TOTAL	PERCENT
O1	Yes	167	28.40%
O2	No	421	71.60%

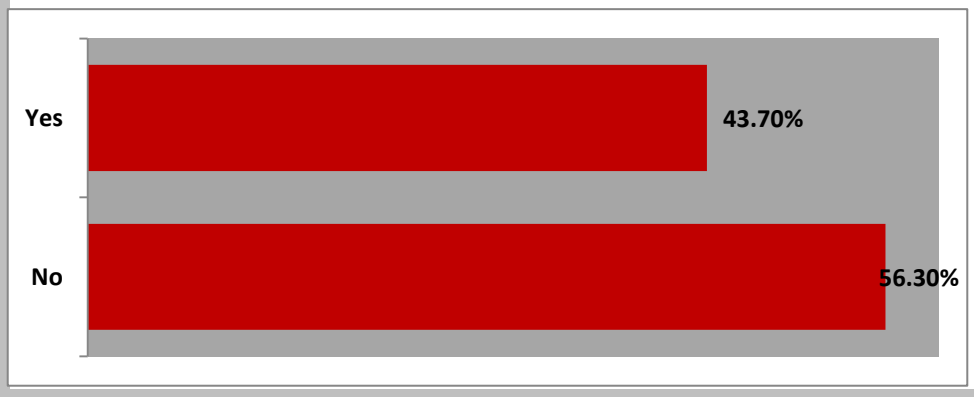


2016 Study

Do you remember seeing or hearing one or more of these ads?

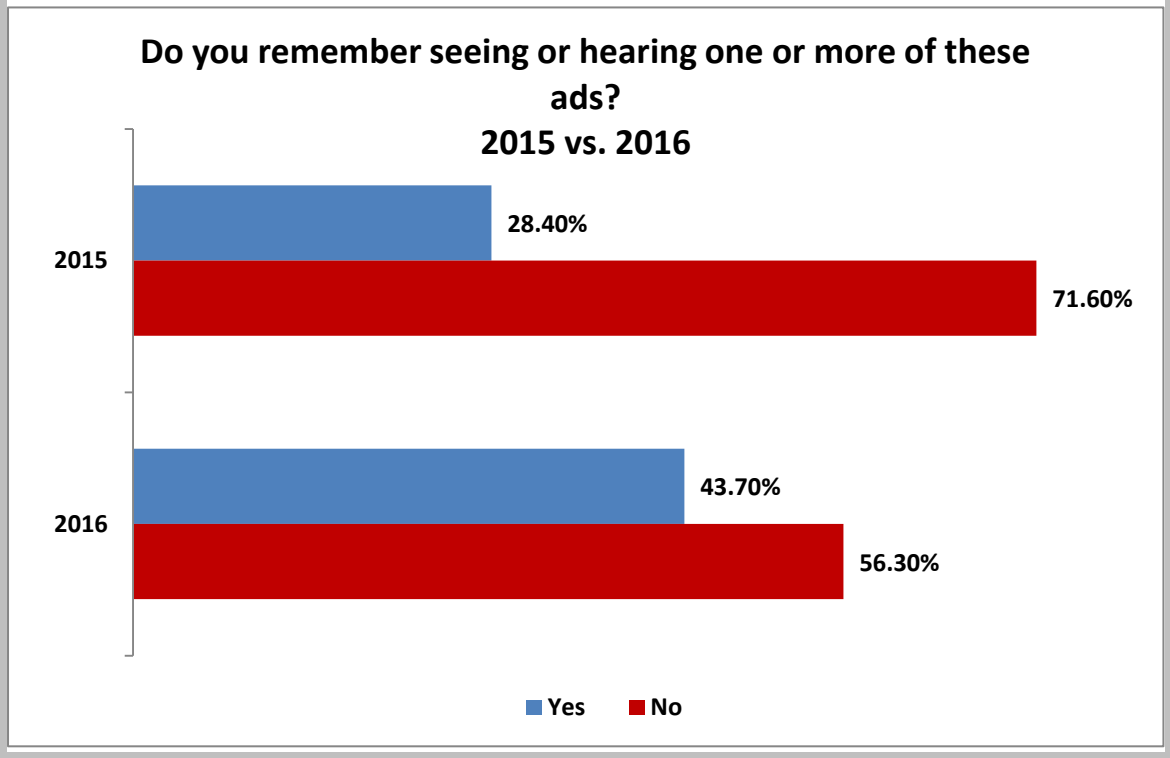
QUESTION TOTAL:	254
NO RESPONSE:	0

	OPTIONS	TOTAL	PERCENT
O1	Yes	111	43.70%
O2	No	143	56.30%



Do you remember seeing or hearing one or more of these ads?

	2015	2016
Yes	28.40%	43.70%
No	71.60%	56.30%



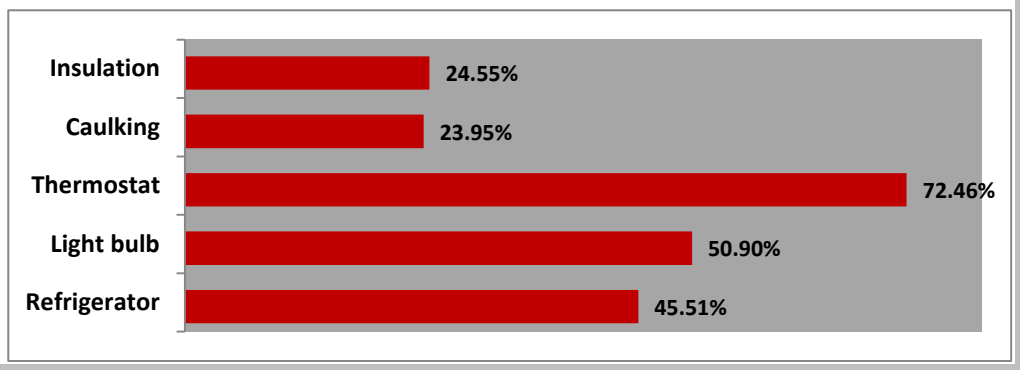
2015 Study

Which of the following ad themes do you recall seeing or hearing before taking this survey?

(asked only of respondents who said they recalled seeing the ads before taking the survey)

QUESTION TOTAL: 167
NO RESPONSE: 0

	OPTIONS	TOTAL	PERCENT
O1	Insulation	41	24.55%
O2	Caulking	40	23.95%
O3	Thermostat	121	72.46%
O4	Light bulb	85	50.90%
O5	Refrigerator	76	45.51%



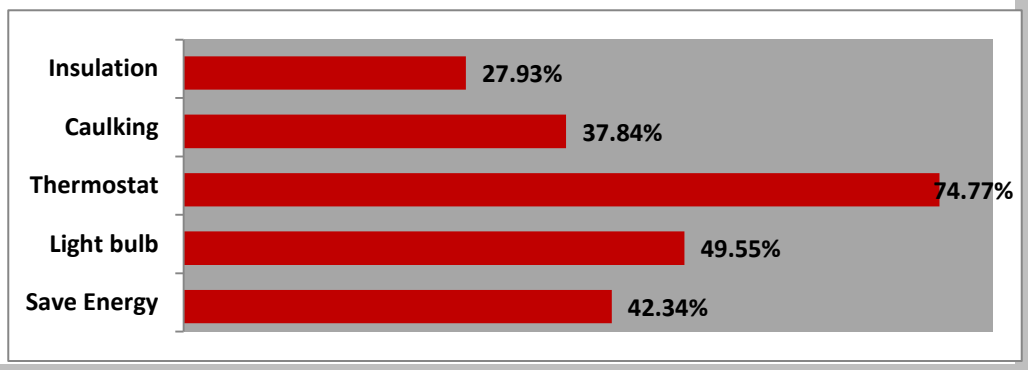
2016 Study

Which of the following ad themes do you recall seeing or hearing before taking this survey?

(asked only of respondents who said they recalled seeing the ads before taking the survey)

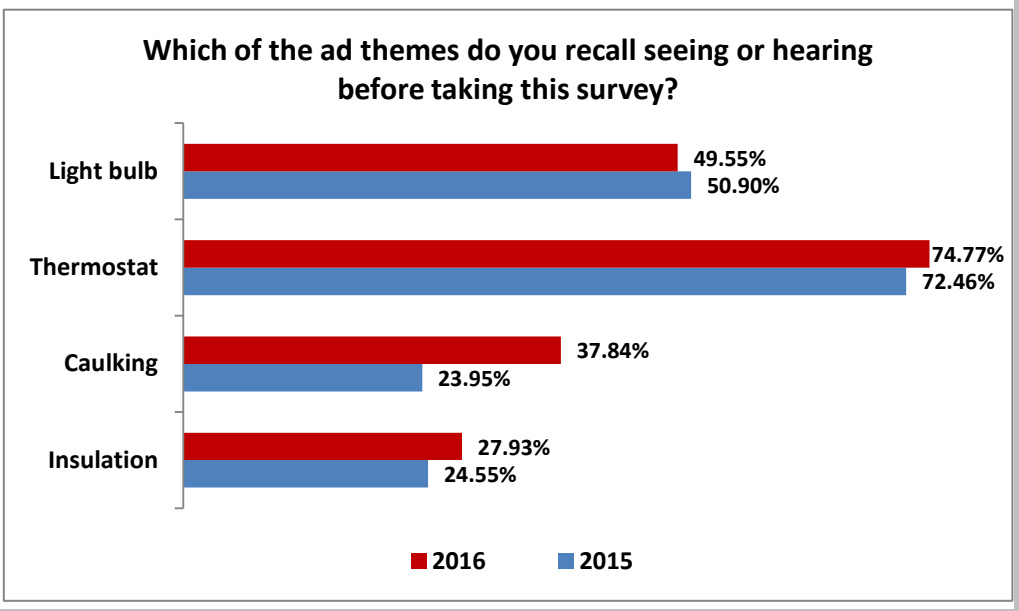
QUESTION TOTAL: 111
NO RESPONSE: 0

	OPTIONS	TOTAL	PERCENT
O1	Insulation	31	27.93%
O2	Caulking	42	37.84%
O3	Thermostat	83	74.77%
O4	Light bulb	55	49.55%
O5	Save Energy	47	42.34%



Which of the following ad themes do you recall seeing or hearing before taking this survey?

	2015	2016
Insulation	24.55%	27.93%
Caulking	23.95%	37.84%
Thermostat	72.46%	74.77%
Light bulb	50.90%	49.55%



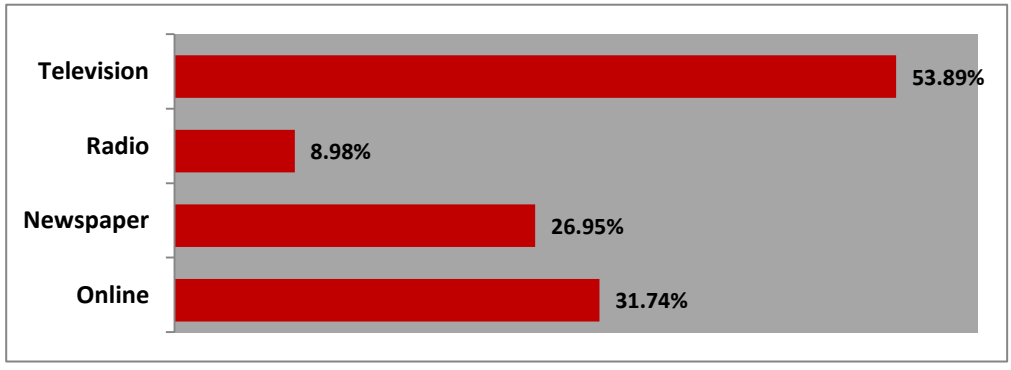
2015 Study

Where did you see, or hear, the ad(s) before taking this survey?

(asked only of respondents who said they recalled seeing the ads before taking the survey)

QUESTION TOTAL: 167
NO RESPONSE: 0

	OPTIONS	TOTAL	PERCENT
O1	Television	90	53.89%
O2	Radio	15	8.98%
O3	Newspaper	45	26.95%
O4	Online	53	31.74%



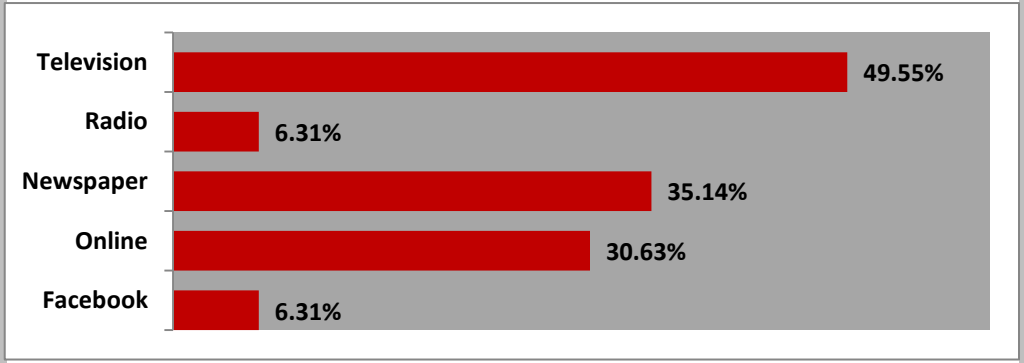
2016 Study

Where did you see, or hear, the ad(s) before taking this survey?

(asked only of respondents who said they recalled seeing the ads before taking the survey)

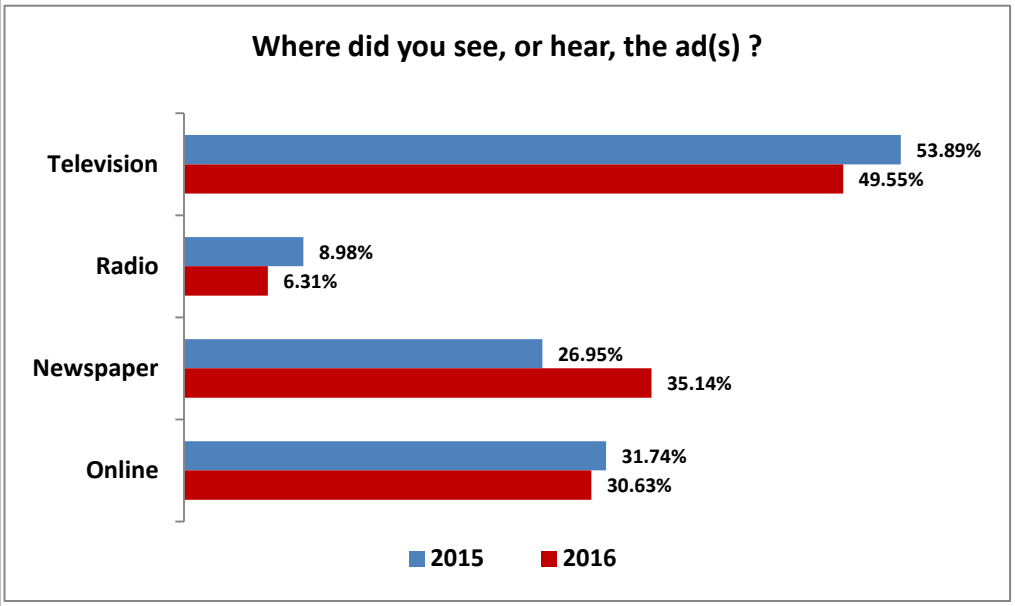
QUESTION TOTAL:	111
NO RESPONSE:	0

	OPTIONS	TOTAL	PERCENT
O1	Television	55	49.55%
O2	Radio	7	6.31%
O3	Newspaper	39	35.14%
O4	Online	34	30.63%
O5	Facebook	7	6.31%



Where did you see, or hear, the ad(s) before taking this survey?

	2015	2016
Television	53.89%	49.55%
Radio	8.98%	6.31%
Newspaper	26.95%	35.14%
Online	31.74%	30.63%



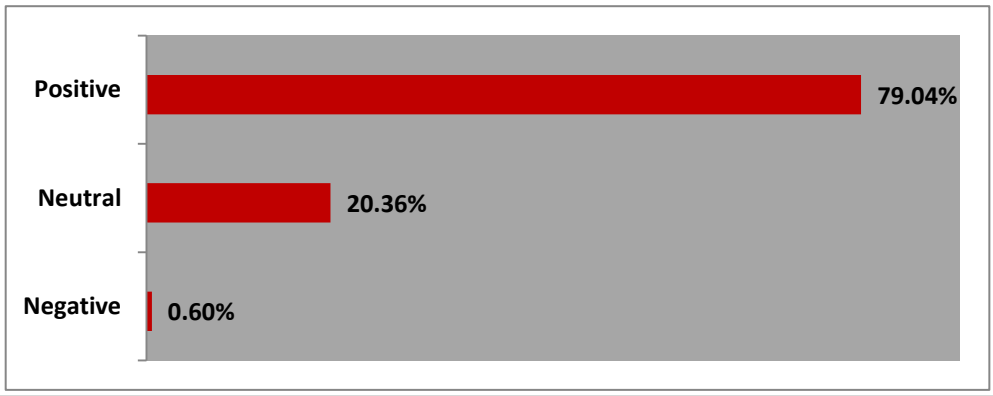
2015 Study

Overall, how did you feel about the ad(s) you saw or heard?

(asked only of respondents who said they recalled seeing the ads before taking the survey)

QUESTION TOTAL: 167
NO RESPONSE: 0

	OPTIONS	TOTAL	PERCENT
O1	Positive	132	79.04%
O2	Neutral	34	20.36%
O3	Negative	1	0.60%



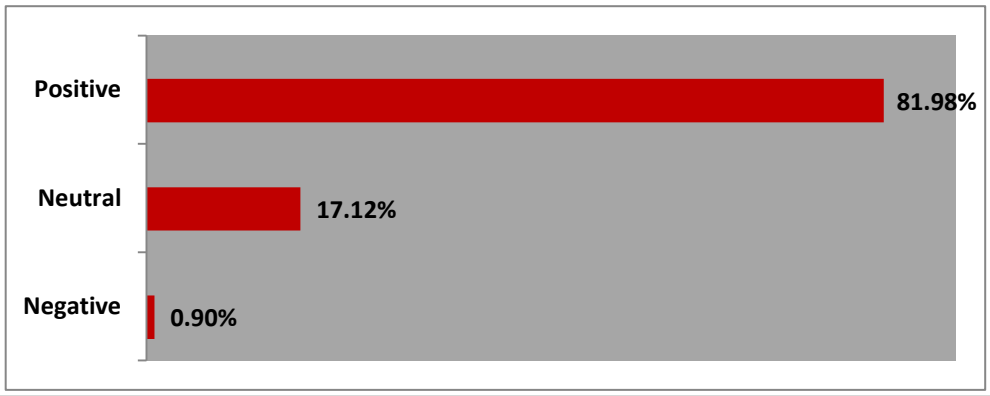
2016 Study

Overall, how did you feel about the ad(s) you saw or heard?

(asked only of respondents who said they recalled seeing the ads before taking the survey)

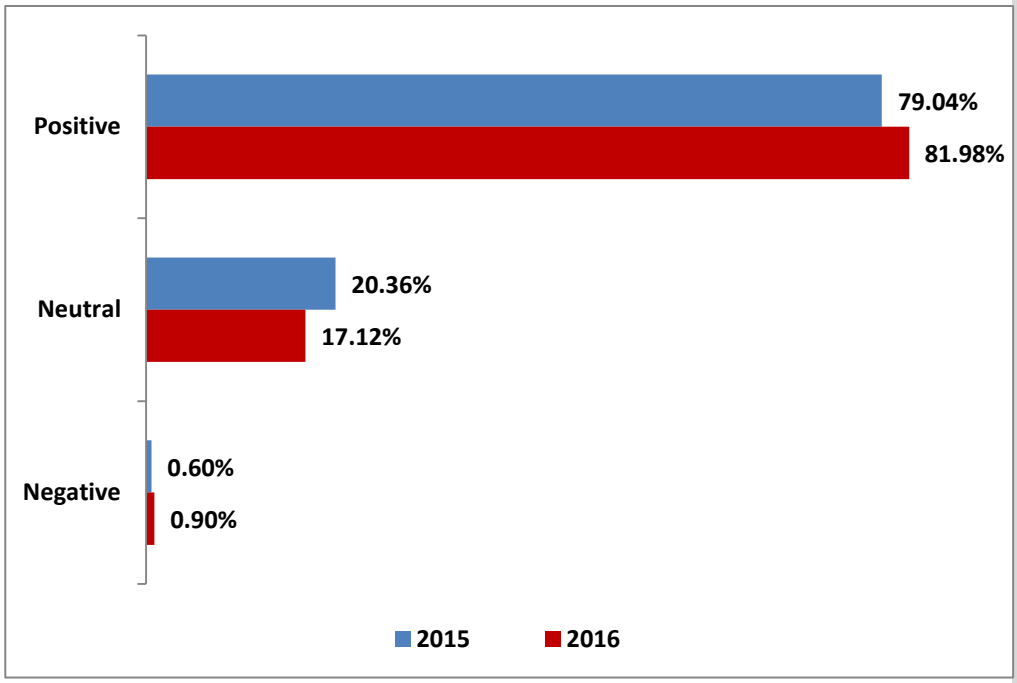
QUESTION TOTAL:	111
NO RESPONSE:	0

	OPTIONS	TOTAL	PERCENT
O1	Positive	91	81.98%
O2	Neutral	19	17.12%
O3	Negative	1	0.90%



Overall, how did you feel about the ad(s) you saw or heard?

OPTIONS	2015	2016
Positive	79.04%	81.98%
Neutral	20.36%	17.12%
Negative	0.60%	0.90%



(asked only of respondents who said they had a positive feeling about the ad(s) they recalled)

What is it about the ad(s) that gave you a positive feeling?

2015 Verbatim Responses
Simple and to the point
$$ Savings per degree warmer thermostat
a company that was showing us how to save energy in a laid back easy format
A demonstration on saving energy that is easy to do.
A good plan for most people.
Always want to save on energy bills.
An understanding of what you could save by cleaning the coils on your fridge
Because the message resonates with me.
clear consise to the point colorful eye catching
Common sense reminder
Conservation is necessary and helps keep the cost of power down
Conservation of energy and saving money.
contemporary use of illustration style, simplr/direct message
cut my bills, conserver
Cute drawings
cutting power usage
Direct to the point. Self explanatory.
don't know
Easy concept to get & easy to do!
Easy fix.
Easy to read and the graphics correlated with the written message.

(asked only of respondents who said they had a positive feeling about the ad(s) they recalled)

What is it about the ad(s) that gave you a positive feeling?

2016 Verbatim Responses
a good reminder to remember you dont need your A/C set super low. I think people tend to go oh its hot, i better make sure house is cold.
bright, clear colors. strong lines. not too detailed.
cartoony character makes it less preachy
caulking windows
Clever, to the point, whimsical
colorful
colorful photos...drawings appealing to the eye
CONSERVE
Cool graphics
Correct information.
Direct message. Illustrations are simple.
Easy changes to save energy and money
Encourage people to look into conservation.
Eye catching.
Following the advice given could save energy and money for the individual.
Gave an exact number for your thermostat so I would know what to set it at.
Getting people's attention to how easy it is to save powere.
Good content first of all.. but I also really liked the graphics/color scheme. If something is visually interesting, it causes me to look closer
Good ideas to help save money
Good information.
Good reminder of how to save energy and money.

What is it about the ad(s) that gave you a positive feeling?	What is it about the ad(s) that gave you a positive feeling?
2015 Verbatim Responses	2016 Verbatim Responses
easy to understand and direct and to the point	graphics caught attention; potential to save $ was appealing
Encouraged me to follow some if not all of the suggestions.	Great advice. I've been afraid of LED because of the fires, but if you're promoting, I guess that's a concern of the past.
encouragement of saving energy and money	I enjoyed the simple and fun cartoons! I think those adds can reach young and old and I believe that's important because the old dogs need to learn new tricks and the young puppies can get trained early!
Encouragement to save energy, and help cut costs.	I like that you are encouraging people to be aware of and conserve energy.
Encourages all to try to save.	I like the fact that Idaho Power is promoting energy efficiency and conservation
Engaging art work and provides a quick, easy, and free way to act.	I think being reminded to turn down the thermostat or change to energy efficient light bulbs to save money is great
felt it was a good reminder on ways to reduce energy costs.	I thought it was good advice, and it made me more aware of how to set my thermostat.
felt like I understood the message and appreciated it too.	I was encouraged to know that even something as simple as regulating my A/C by one degree or two can effect my energy bill so much.
For the most part, all the messages are showing that anyone can save money, and help the environment.	I'm all for ways to reduce our energy use!
Fun graphics, simple concise message heading even if I didn't read the entire text.	In a friendly way, explained how a person can save energy and money!!
glad you are informing the public so energy can be saved for the good of the environment	IPCO interest in energy conservation, rather than generating more expensive "green" energy.
good advise	It gave me good tips for my own home.
Good color	It isn't hard to save energy if you just think about it
Good for saving energy and good for environment.	It reminded me to take measures to save some energy
good information	It was good ideas to help with power consumption
Good information. Easy to understand. Like the nostalgic look of the photos.	It was nice of you to make people aware of how to save on electrical energy costs.
good message	It was straightforward a dick made logical sense.

What is it about the ad(s) that gave you a positive feeling?	What is it about the ad(s) that gave you a positive feeling?
2015 Verbatim Responses	2016 Verbatim Responses
good program	It was the common senes. You should not have to be told to do these things to save money.
got the point across easily. liked the color	It wasn't just a statement, but it suggests a way to save energy and money.
got your attention	Just a reminder that the new light bulbs help save
Great reminders to pay attention.	Just that a message was going out, reminding what can be done.
Happy to see public education about energy conservation.	Just the fact that Idaho Power is sending information to it's customers.
I enjoyed the color and whimsical design.	Keeping your house cool in the summer but not cold and saving money at the same time
I feel the best way to answer this is by saying I am conscience of saving power , but to so many they just don't care.	Knowing it is I P we can trust the content
I felt like I really wanted to participate in being better about conserving energy in my home. I was inspired to buy light bulbs. I'm also going to contact Idaho Power to see what I qualify for in terms of a home energy audit.	Knowing that Idaho Power continues to do positive things for their customers.
I felt reassured that I am doing what I can to save energy	Like the design and the message.
I keep my thermostat at that already so it reenforced behavior	Making small changes in things such as lowering your thermostat by a few degrees or changing out your old light bulbs, Such simple changes that can make an overall huge difference.
I like any ads that promote environmental conservation.	N/A
I like our area doing more to stay green & make less pollution.	Not sure. I liked the animation, wasn't in your face, just calm facts I guess.
I never really thought of a second appliance in the house. It made me stop and think, do I really need that appliance.	Proactive conservation
I understood the old refrigerator in the garage ad, but I don't think many people received that message.	Reinforced my prior knowledge.
I was glad that Idaho Power is trying to help their customers conserve energy and save money.	Reminder to check on a household thing to save money
I was wondering what would be the best temp for my ac and this is how i found out.	reminder to set thermostat higher on hot days and switch to led bulbs

What is it about the ad(s) that gave you a positive feeling?	What is it about the ad(s) that gave you a positive feeling?
2015 Verbatim Responses	2016 Verbatim Responses
Idaho Power is working to help consumers be smarter with power use and savings	Saves money.
in that they reflect my knowledge and belief.	Saving enegry
IPC is interested in me	Saving energy
It was a positive message that was implemented a wonderful way.	Savongs
It came from Idaho Power	shows how easy it is to save energy & $
It helped me to remember to adjust my thermostat, not only in cool weather, but also in hot weather	Shows the most important factors in saving energy at a home
It is every ones job to save energy.	Shows you are trying to educate the public
It is something I do already it made me feel like I was making a difference.	simple and to the point
It made sense.	simple easy message
It reminded me to check for leaks around windows and doors.	Simple message plus I have already taken those actions.
It reminds folks that wasting energy carries a price	Simple tasks produce money saving results.
It suggests a practical step to save energy and money.	small things can make large savings
It was a great reminder on where to set the thermostat, I like to get reminders like that	That I have control to decrease my own power bill :)
It was to improve my home...	that i use my thermostat
it will help people understand how to save power	That Idaho Power is helping everyone to save money but putting out this information to everyone.
It's nice that Idaho Power wants to help it's customers use electricity more efficiently	That it save me money
Letting people know that something so simple can make a difference.	That we have ideas about how to conserve energy
Light bulbs fascinate me. So I paid more attention to it.	The ad had hints to save money, the best feeling ever!
Like the colors, thought it was funny when somebody said goodbye to their old refrigerator like it was an old friend.	The ads are good advice on how to save energy and keep my power bill lower. I have done a several of these suggestions.
Made me realize how I can save energy.	The ads help to remind me ofsome ways to dial down the costs of my electricity bill.
made you think and question if you have done any of those suggestions, and make you want to mark calendar and get those changed out or done.	the artwork was catching and the words were common sense and easy to follow.
maybe lowering power bill with temp contol	The cat throwing out the refrigerator is confusing.

What is it about the ad(s) that gave you a positive feeling?	What is it about the ad(s) that gave you a positive feeling?
2015 Verbatim Responses	2016 Verbatim Responses
NIce to built on what I already know and to affirm that it actually does make a difference. LIghtbulbs are expensive.	The importance of saving energy to not only the consumer but for Idaho power as well.
picture large heading	They are from a neutral source, giving good information.
Positive message, easy to accomplish energy savings, message completely delivered in graphic.	They are simple and effective
POssible and easy to save energy and save money.	They catch your eye, so you see what it's telling you.
Promotion of conservation and mindfulness. Information to educate self and others	They caught my eye and the message about saving money was positive.
Recycling message, money for old fridge	They depicted ideas that are energy saving steps The ads were clean colorful easy to glance at & understand the messages intended. (I saw the ads because they were tucked in my energy usage statement.)
Reminder that LED bulbs are out there	They were creative but simple.
Saving energy is always a good idea!	They were doable.
Saving energy is always good!	They were focused, interesting and easily understood. The cartoon art was well done and communicated the message clearly.
Saving energy is important.	to lower my bills
saving money	Very informative in a short and friendly way. Did not offend my intelligence.
savings	Very simple and clear in message, colorful and eye catching.
Seeing the number on the thermostat gave me the idea to do better and set mine at 76....	Visually attractive. Short, direct message.
short, to the point, upbeat, easy to understand the message	We bought new light bulbs and we're saving for a new refrigerator :)
Showed a simple idea to save energy. Simple to do and relatively pain free.	you are helping people get rid of big heavy inefficient old machines.
Showed the ease of how to achieve the best for your home.	
Showed ways to conserve energy	
Simple	
simple and easy to understand not too preachy	
Simple and straight forward. Nice art work.	
Simple easy to understand message	

What is it about the ad(s) that gave you a positive feeling?	What is it about the ad(s) that gave you a positive feeling?
2015 Verbatim Responses	2016 Verbatim Responses
Simple graphics with a simple message, but one that we all need to be reminded of every once in a while!	
Simple message with eye-catching simple graphics	
Simple positive message.	
Simple to understand and clear.	
simple, less "noise", direct	
That following the ads would help to keep my electric bill down.	
that saving energy doesn't have to be expensive or complicated. that anyone can do their part	
The ad gave specific information on how to conserve energy	
The ads confirmed for us that we're doing our best to save energy.	
The ads were very specific and easy to follow. I got the point. Not too complicated.	
The amount you can save by adjusting your thermostat.	
the graphics were nice and casual, and I felt like we are not the only home with insulation issues, everyone can do well to look at energy saving solutions.	
The message to conserve energy.	
The rhyme in the refrigerator ad is catchy and memorable; the lightbulb ad just makes sense, changing to energy efficient bulbs. The visuals are cute ad clever.	
the theme	
The theme and the message.	
There is something to be done that will save energy and have little effect on me	
There were small things that I could do.	
They all let me know what I can do to help.	
They are all simple things that can be done to save energy!	
They are clear, concise and get the point across! Plus the ideas they are conveying are easy to achieve.	
They are simple ways to save energy	
They make sense and are easy to understand.	
they tell it like it is == good thinking	

What is it about the ad(s) that gave you a positive feeling?	What is it about the ad(s) that gave you a positive feeling?
2015 Verbatim Responses	2016 Verbatim Responses
They were easy to understand with a clear message.	
They were helpful and clear.	
They were written in language that was understandable to most people.	
Turning down your thermostat saves energy.	
Very much needed with our energy situation.	
We all can save energy	
We are comfortable at 78-80 degrees. We're saving money!!	
We need to conserve energy, it is good to get a reminder.	
Would reduce expenses	
You would have to know me to completely understand, but I could almost write a book in answer to this question. But simply put, in my opinion, these simple ads should wake up simple minds to the need of conserving energy. and show them some simple ways to do it. But how do you get a landlord like mine to fix or replace both outside doors that light shows through most of the way around, and cold and hot laugh at their feeble attempt to stop them from going through? Yet it is me who pays the price while he gets off scott free.	

(asked only of respondents who said they had a negative feeling about the ad(s) they recalled)

What is it about the ad(s) that gave you a negative feeling?

2015 Verbatim Responses
I can't stand to be too warm, especially when I'm pregnant. So the idea of turning up the thermostat to save money will not work for me. It annoys me when I hear it suggested. If the thermostat is at 74, my upstairs (where my bedroom is) will be 80.

(asked only of respondents who said they had a negative feeling about the ad(s) they recalled)

What is it about the ad(s) that gave you a negative feeling?

2016 Verbatim Responses
everyone gets a bill. Information can be provided through the bill. On line or hard copy. Idaho Power does not need to advertise or spend money on these sorts of things. Just give me power at the least expensive cost you can. Does the word monopoly mean anything? These advertising costs can reduce overhead thereby reducing consumer costs.

2015 Study

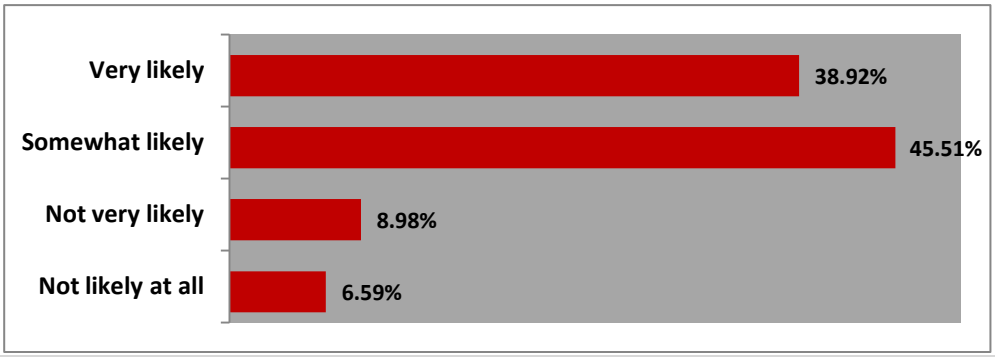
(asked only of respondents who said they recalled seeing the ads before taking the survey)

How likely are you to make any energy saving changes in your home after seeing or hearing these ads?

QUESTION TOTAL: 167

NO RESPONSE: 0

	OPTIONS	TOTAL	PERCENT
O1	Very likely	65	38.92%
O2	Somewhat likely	76	45.51%
O3	Not very likely	15	8.98%
O4	Not likely at all	11	6.59%



2016 Study

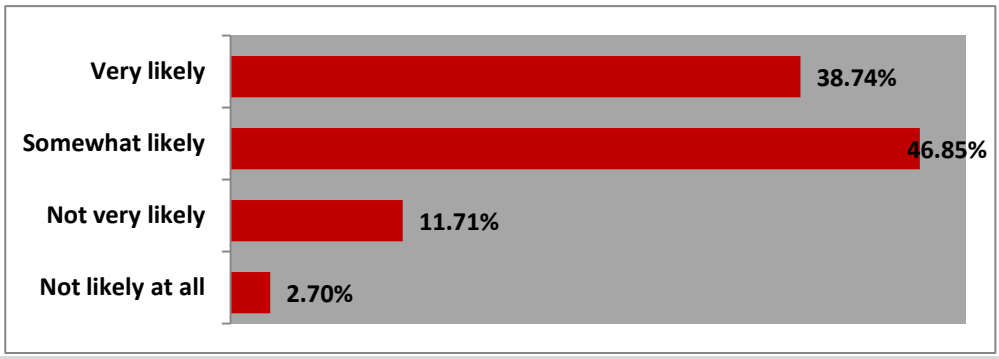
(asked only of respondents who said they recalled seeing the ads before taking the survey)

How likely are you to make any energy saving changes in your home after seeing or hearing these ads?

QUESTION TOTAL: 111

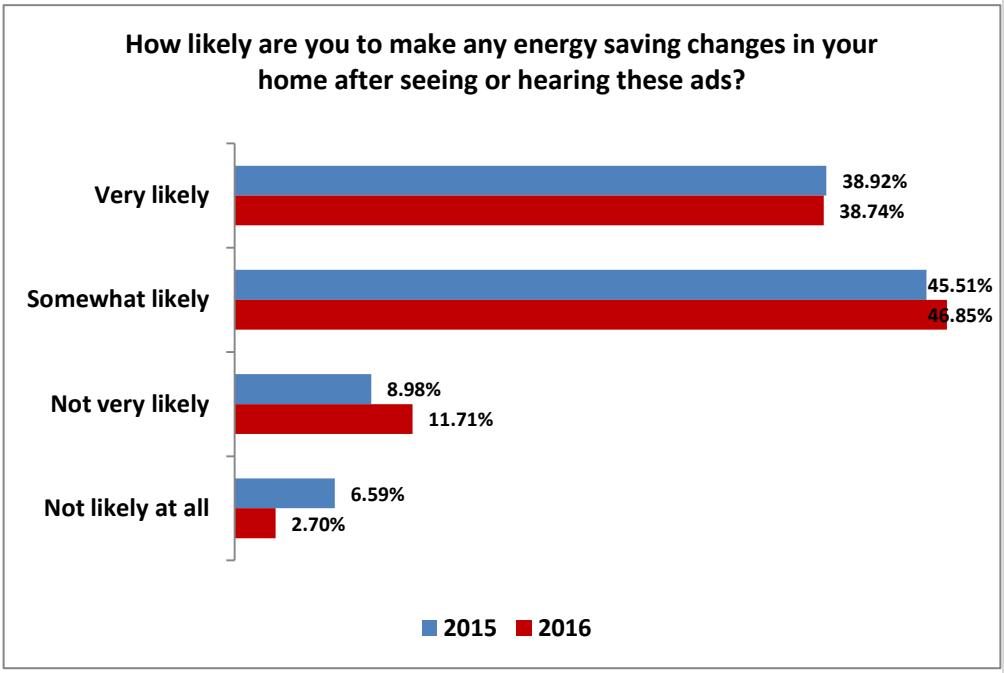
NO RESPONSE: 0

	OPTIONS	TOTAL	PERCENT
O1	Very likely	43	38.74%
O2	Somewhat likely	52	46.85%
O3	Not very likely	13	11.71%
O4	Not likely at all	3	2.70%



How likely are you to make any energy saving changes in your home after seeing or hearing these ads?

	2015	2016
Very likely	38.92%	38.74%
Somewhat likely	45.51%	46.85%
Not very likely	8.98%	11.71%
Not likely at all	6.59%	2.70%



2015 Study

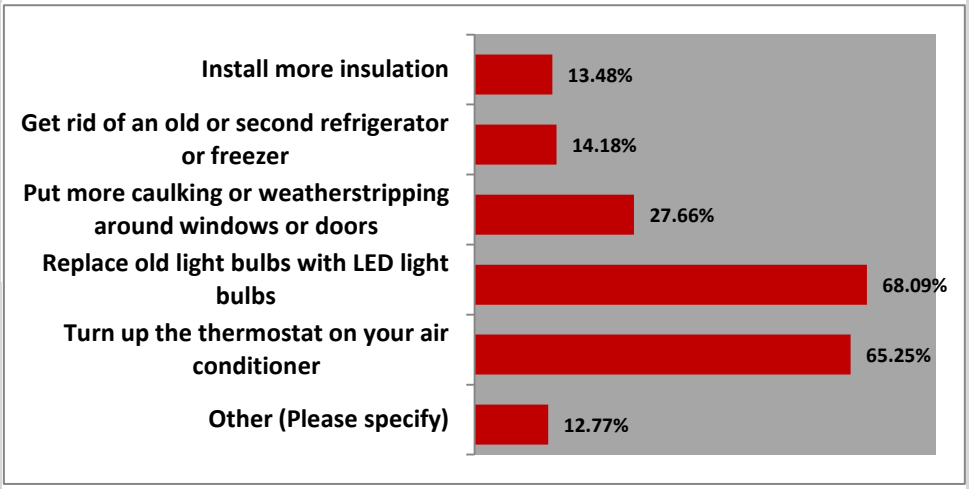
(asked only of respondents who said they recalled seeing the ads before taking the survey and said they are likely to make energy saving changes)

What energy saving changes are you most likely to make after seeing or hearing these ads?

QUESTION TOTAL: 141

NO RESPONSE: 0

	OPTIONS	TOTAL	PERCENT
O1	Install more insulation	19	13.48%
O2	Get rid of an old or second refrigerator or freezer	20	14.18%
O3	Put more caulking or weatherstripping around	39	27.66%
O4	Replace old light bulbs with LED light bulbs	96	68.09%
O5	Turn up the thermostat on your air conditioner	92	65.25%
O6	Other (Please specify)	18	12.77%



2016 Study

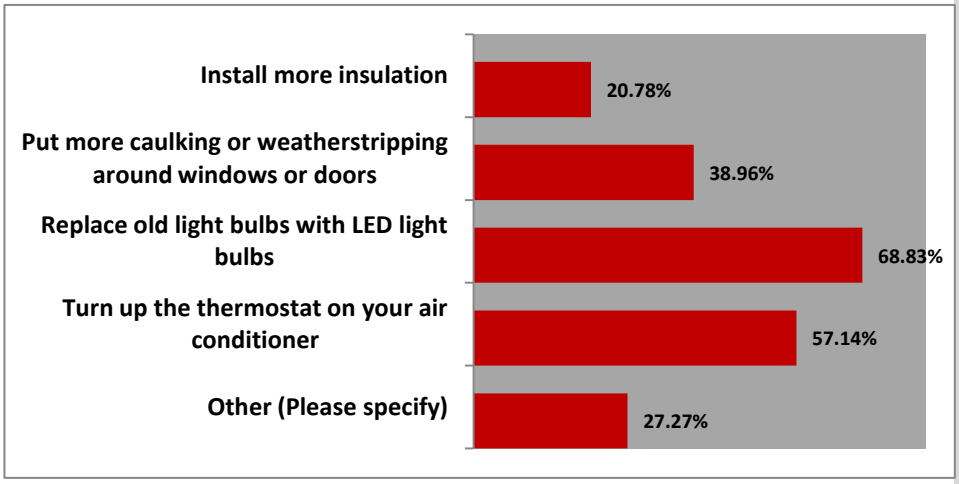
(asked only of respondents who said they recalled seeing the ads before taking the survey and said they are likely to make energy saving changes)

What energy saving changes are you most likely to make after seeing or hearing these ads?

QUESTION TOTAL: 111

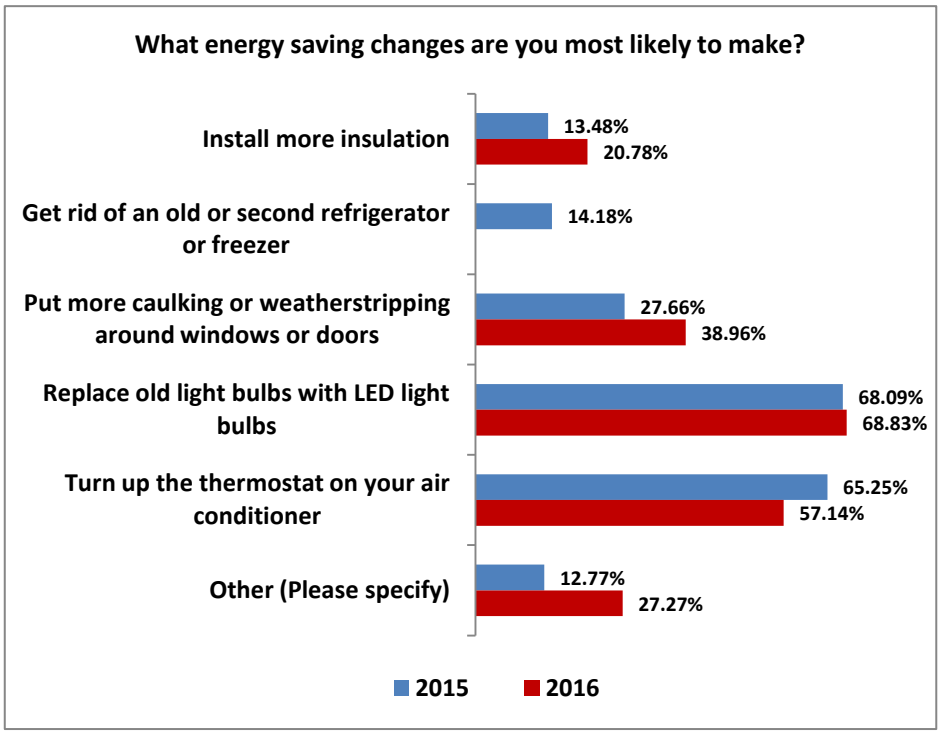
NO RESPONSE: 0

	OPTIONS	TOTAL	PERCENT
O1	Install more insulation	19	20.78%
O2	Put more caulking or weatherstripping around	36	38.96%
O2	Replace old light bulbs with LED light bulbs	59	68.83%
O2	Turn up the thermostat on your air conditioner	54	57.14%
O5	Other (Please specify)	23	27.27%



What energy saving changes are you most likely to make after seeing or hearing these ads?

	2015	2016
Install more insulation	13.48%	20.78%
Get rid of an old or second refrigerator or freezer	14.18%	
Put more caulking or weatherstripping around windows or	27.66%	38.96%
Replace old light bulbs with LED light bulbs	68.09%	68.83%
Turn up the thermostat on your air conditioner	65.25%	57.14%
Other (Please specify)	12.77%	27.27%



Other (Please Specify) Responses
adjust shades as sun moves
allowed Idaho Power to install switch on my AC
Better window coverings are easy and effective
have an energy audit done
I already do positive energy-saving practices. I have an all-electric house. See my very
I already turn up the thermostat, but I'm thinking about switching furnaces from gas to electric and
I did all of above in my own home. Including replaced windows.
I would love to participate in your energy programs
install energy star windows and doors
insulated draperies
Lowr the shades durring the day when I am not
New windows
Not much change. We have been implementing
Open up crawlspace, shutting blinds during day,
put electronic adapters on a switch
Repalce windows
replaced old doors for a better seal.
Turn donw the heat settings when not needed
We had implamented moste of the
We have already installed, replaced, added,
We have done all of these

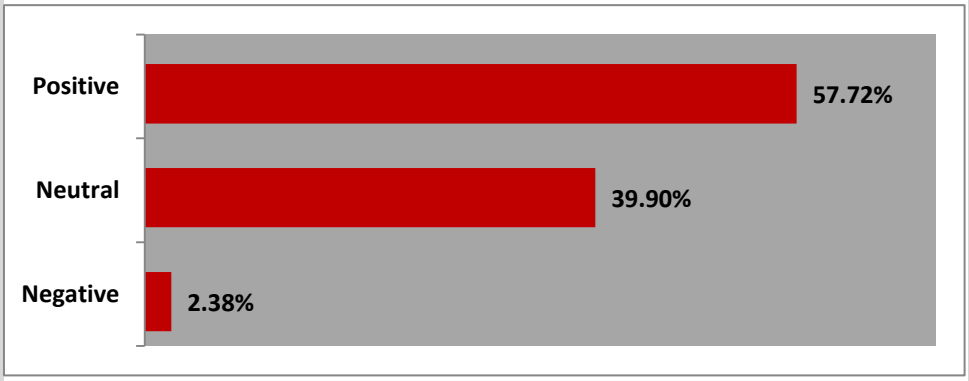
2015 Study

(asked only of respondents who said they did not recall seeing the ads before taking the survey)

Now that you have seen them, overall, how did you feel about these ad(s) ?

QUESTION TOTAL: 421
NO RESPONSE: 0

	OPTIONS	TOTAL	PERCENT
O1	Positive	243	57.72%
O2	Neutral	168	39.90%
O3	Negative	10	2.38%



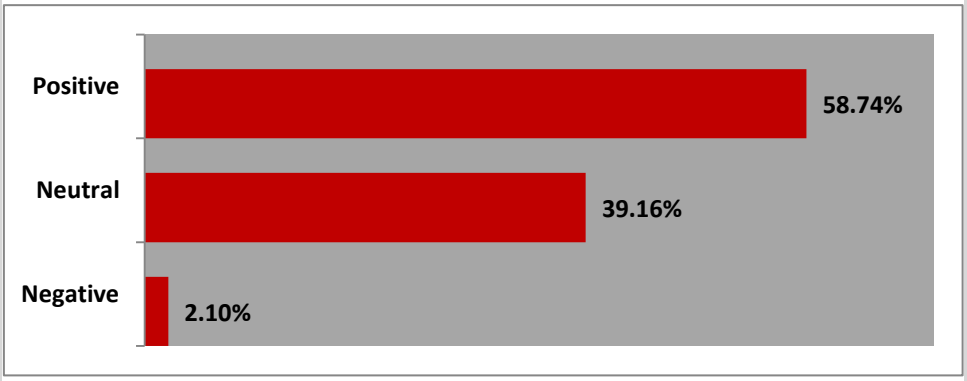
2016 Study

(asked only of respondents who said they did not recall seeing the ads before taking the survey)

Now that you have seen them, overall, how did you feel about these ad(s) ?

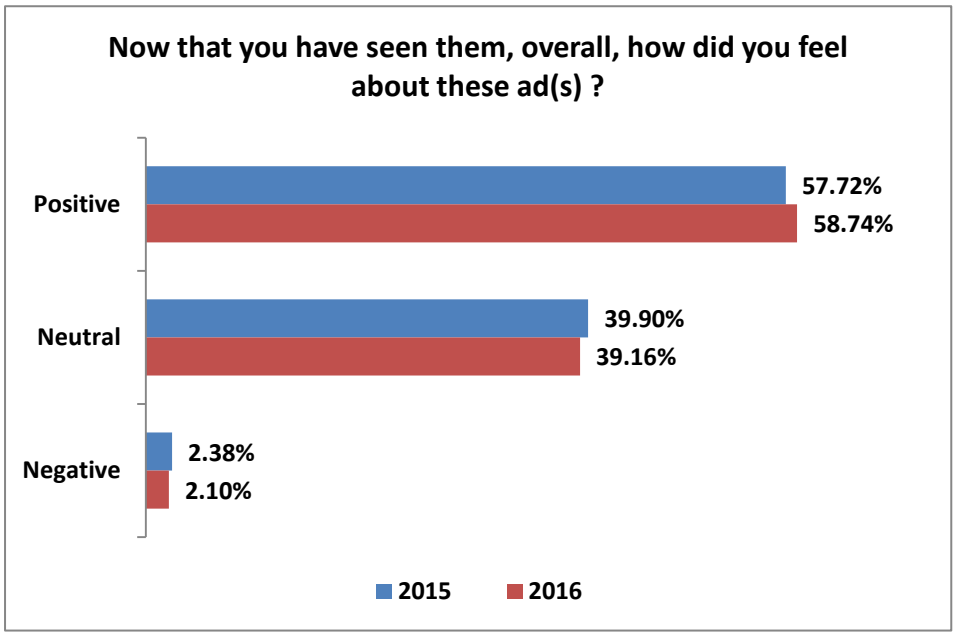
QUESTION TOTAL: 143
NO RESPONSE: 0

	OPTIONS	TOTAL	PERCENT
O1	Positive	84	58.74%
O2	Neutral	56	39.16%
O3	Negative	3	2.10%



Now that you have seen them, overall, how did you feel about these ad(s) ?

	2015	2016
Positive	57.72%	58.74%
Neutral	39.90%	39.16%
Negative	2.38%	2.10%



(asked only of respondents who said they did not recall seeing the ads before taking the survey but had a positive feeling towards the ads after seeing them)

What is it about the ad(s) that gave you a positive feeling?

2015 Verbatim Responses
Colorful
saving money
A good way to remind people of saving money and resources if they can follow suggestions
Any attempt to spread the word about conservation is good. :)
artistic, easy to read, and positive messages about energy savings
attractive, put positive spin on RE
Bright and colorful, short concise captions
bright colors and simple graphics. concise message.
Bright colors, fun, contemporary graphic elements
Bright colors, simple illustrations of the point, positive, not pushing guilt.
Bright colors, simple message
Bright, sounded friendly, focused on both conservation and helping people lower power bills
Cartoonie light. Specific suggestions provided. Dialing it in was not clear.
catchy colors. hip. etc.
Catchy, quick to the message. Graphics tie in w the message.
Changing a light bulb is easy and saves energy. Giving up a fridge is probably not easy for a lot of people.
Changing a lightbulb and dial it in r the only good memorable ones
Clean, informative and attractive.
Clever sayings. Suggested actions are all easy to implement.
Color choice. Short statment. Picture makes it easy to understand.
color, graphics and catchy phrases
colorful and good ideas

(asked only of respondents who said they did not recall seeing the ads before taking the survey but had a positive feeling towards the ads after seeing them)

What is it about the ad(s) that gave you a positive feeling?

2016 Verbatim Responses
Attractive
Bright colors and clear messages.
By making simple changes that I can be more comfortable in my home.
Care about costs and the environment.
cartoon character gave a casual feel, not pushy, but the message was clear and easy to
Cartoon character s
Catching
Cheery graphics and positive, brief messages
color and simplicity
Colorful and clearly stated.
colorful, clever and short to-the-point message
Colorful, noninvasive personally, informative
Colorful. I was out of the country so I missed the ads
Colors and cartoons are eye-catching. The tone
Colors, designs.
Colors, graphics,and succinct message with specific things to do.
Conserving resources.
Creative, specific, and practical suggestions.
Cute and fun and no pressure/judgement
Each ad shows examples of how to reduce energy loss instead of just words..the pictures
easy to read. fun to look at
easy to understand

What is it about the ad(s) that gave you a positive feeling?	What is it about the ad(s) that gave you a positive feeling?
2015 Verbatim Responses	2016 Verbatim Responses
Colorful!!	Encouragement to save energy.
colorful, noticeable, short, to the point, common sense-able, easy to incorporate	Eye-catching, simple understandable message.
Colorful, simple	Fun vibe. Informative.
Colors and graphics made me want to read the entire ad.	Good graphics, save energy messaging
colors and they are friendly	Good illustrations, and a positive message to
common sense	Good information. Very colorful.
common sense reminders	good message, colorful graphics
Concrete actions to take. That's always good. Any time a problem is brought up or mentioned, it is great to have attached to it, what YOU can do about it. Thanks.	Great graphics that get the point across easily. I like that they stressed saving money.
Concrete ideas for saving energy and thus saving money (and helping the global warming environment by having less of a carbon footprint.)	have not seen ads
Conservation and efficiency	I feel I want to be helped out with my home.
conserving energy	I feel that the ads keep IPCo visible as a brand
Conveys a simple message, clearly.	I get a positive feeling because the ads are
Cute, colorful, good ideas	I liked the artwork
Cutting energy use	I liked the colors and drawings, they seemed
different ways to save electricity	I liked the relaxed look of the artwork. The
Doing something good about your energy usage	I'm always about saving energy and saving money while doing it.
easy on eyes, colorful, simple thinks to safe.	Inviting colors, not busy, easy to read, cause a person to think!
Easy steps to make a difference	It get's the message out there
Easy tips and information about programs that could be useful.	it seems that Idaho Power will help you save on your bill.
Easy tips, fun hip design	It very simply displays simple ways to save
Easy to read and good graphics - also it makes this tips seem simple and positive to do.	It's easy to save energy
Easy to read and understand the message.	just eye apelling
Easy to read, not cluttered. Not preachy. They don't make me feel guilty.	Kind of whimsical/colorful. Drew my attention to them.
Easy to relate to offering simple fixes that anyone can do.	Nice graphics, simple message.
easy to understand	People likely do not even pay attention to such
Easy to understand and apply to dait life and they also conveyed the impact these changes would make.	positive message: here is something you can do, and it is easy. The graphics are good also.

What is it about the ad(s) that gave you a positive feeling?	What is it about the ad(s) that gave you a positive feeling?
2015 Verbatim Responses	2016 Verbatim Responses
easy to understand what to do and nice graphics	Responsibility, choices, positive power
Easy to understand, familiar catch-phrases	saving
Easy ways to conserve energy. Little things we can all do. I have heard "see you later, refrigerator " but not in this particular ad campaign.	Saving money
Educational in nature.	saving money and helping the economy
Encouraging households to use less energy!	savings on utility bill
Energy conservation ideas is always helpful.	Simple & direct messaging that with art work that appeals to the general public.
Energy saving	simple and direct
Energy saving tips	Simple and easy to understand
Eye catching and informative	Simple and I like how they are demonstrating
eye catching designs with simple, easy to understand messages about saving energy and money	Simple and visual
Friendly graphics, simple message	Simple but effective ideas
Fun, simple, bright.	Simple direct colorful
Gave examples of how to be energy efficient in the summer.	Simple message and simple solution.
Gentle reminders of simple things we can do to save energy.	Simple message presented in a few words & with bright meaningful graphics
Good advice with easy and fast information	Simple message repeated, unique graphics
Good advice.	simple messages
Good ideas to think about on saving energy and money.	Simple, to the point, appealing to the eye.
Good information	simple. straight forward
Good message to conserve energy & money	simplicity
good pictures, simple messages, good color schemes.	Since didn't see in paper or hear on radio, hard to say.
good reminders	The color drew me in. Easy to read and easy
Good reminders, easy to read and understand	The colors of the ads and way they are worded.
Good suggestions and colorful	the conservation aspect as well as the simplicity
Good, simple, messages.	The messages to save u money
graphics	The slogans are cute & catchy. Simple but to
Graphics and messages were catchy and didn't feel "preachy".	They are all about saving money. In very simple ways.
graphics are friendly, and the text emphasizes easy things to do	They are catchy, fun, short lines, while giving a tidebit of information on how to save money and
Happy graphics.	They remind me of the different ways to save

What is it about the ad(s) that gave you a positive feeling?	What is it about the ad(s) that gave you a positive feeling?
2015 Verbatim Responses	2016 Verbatim Responses
helpful information	They remind us that we can help ourselves say
I can be part of the change to save energy into home	they remind us to update older homes for better effiency
I enjoy the conservative illustrations, catchy slogans, and to the point messages...	They seemed slightly juvenile, fun-loving easy messages.
I like saving money. The ads reminded me to check into options I'd saving energy which equals saving money.	They v were bright
I like that customers and Idaho Power are learning about energy efficiency.	They were colorful and the images were relatable.
I like the colors and the font.	Tips on how to conserve energy, it's helpful to
I like the content and the reminder of ways to conserve energy.	Use of color.
I like the design. Ads are straightforward and easy to understand.	Ways I can save money
I like the emphasis on saving energy.	
I like the idea of people not only saving $, but of being environmentally conscious.	
I like the message that saving energy is easy and can make one's life more comfortable.	
I like the one about keep warm air in cold air out or vise versa. Refers to need of insulation	
I like the ones with specific details...like 3% saved on the bill for each degree on thermostat!	
I like the suggestions on ways to help save energy	
I liked the fact that they were cartoons, something original and different from the norm.	
I really like the designs.	
Idaho power is doing something to help the environment and the community	
Ideas for saving money are always a good thing.	
Ideas on how to be more energy efficient. Idaho Power is a willing partner to help homeowners increase their efficiency	
Ideas to save money	
It is easy to make small changes.	

What is it about the ad(s) that gave you a positive feeling?	What is it about the ad(s) that gave you a positive feeling?
2015 Verbatim Responses	2016 Verbatim Responses
It was easy to get the message of the ads because of the simplicity of the colors and drawings. The message was short and straight forward.	
It's an educational step. :)	
Just easy ways to save energy.	
Just the idea of thinking about simple things we can do to save energy and $$$$.	
Like how clear the energy savings were displayed	
Looks of adds draw attention to energy savings which saves money.	
message and artistic delivery was non confrontational	
Most had some sort of assistance offered for all electric homes which I have.	
N/A	
New look, graphic makes the point of the ad.	
Nice graphics, bright and colorful, positive.	
not complicated. The average person should understand them all.	
Options to save energy	
Positive & good information	
positive approach to keep control of my power bill	
positive message about saving energy	
Practical ideas but why not promote solar hot water heating and solar electric to reduce reliance on fossil fuels	
Proactive efforts bring positive results.	
Promoting conservation	
quick message	
Quick short things that can be done to save energy which equates to saving money, which helps the environment.	
relative to the current situation, especially with this upcoming heat wave. Always nice to have specific ideas on how to save energy and stay comfortable.	
reminding me to check lights, filters, windows and doors for leaks	
Retro graphics are great.	
Saving energy always give me a positive feeling	

What is it about the ad(s) that gave you a positive feeling?	What is it about the ad(s) that gave you a positive feeling?
2015 Verbatim Responses	2016 Verbatim Responses
Saving energy by sealing out the hot air	
Saving energy is a no brainer, but I feel most people don't care or just don't know how. This seems to make it easy to do.	
Saving energy IS easy	
Saving energy is good for everyone.	
Saving energy is important. The illustrations were very cute.	
Saving energy is VERY IMPORTANT	
saving energy, education, cute images, nice vivid colors	
Saving energy, money and addressing climate change were doable with some simple steps.	
Saving energy=saving money Nice cartoonish ads	
saving engergy	
saving money and energy	
Saving money and/or energy and it seems easy to do	
saving money.	
Short and informative. Good graphics-modern and illustrative of message.	
Short, quick messaging	
simple actions to take to save energy	
simple and common sense	
Simple and cute.	
Simple and true	
Simple attractive graphics. Conservation message	
Simple bright colors, fun	
Simple ideas	
simple message, colorful graphics	
Simple message, message fits graphic, message is action oriented.	
Simple message. Simple drawings.	
simple statements that hit home	
Simple things anyone can do to conserve energy.	
Simple, actionable steps I can take to reduce energy consumption.	
Simple. Colorful. Easy to understand.	
Simplicity	
simplicity and power savings awareness	

What is it about the ad(s) that gave you a positive feeling?	What is it about the ad(s) that gave you a positive feeling?
2015 Verbatim Responses	2016 Verbatim Responses
Simplicity of message on ways to save.	
Some are not practical (or likely to happen) for the average homeowner... insulation/caulking, but a few are easily doable for the average homeowner. These are the ones that caught my eye. We've already replaced most of our bulbs with LED's (spendy though) and raised the thermostat setting. Also, for many, ditching the garage refer. is not an option. I know we always use ours. Just hope there's not a long term power outage.	
Specific and friendly messages that promote conservation.	
Specific problem to solve. Ad nice and clean.	
Specific ways to save energy and money.	
Straightforward language and simple actions that anyone can do.	
Suggestions that saving energy and money is doable.	
Supportive message. Cute pictures. Fun colors.	
Sustainability	
That Idaho Power is making efforts to educate folks about energy saving.	
That there are ways to save electricity and many aren't too difficult.	
That we could save energy	
That we should do our best to save energy and money and that Idaho Power cares about that.	
The are obviously designed by someone who wants to catch attention. The portray a message quickly.	
The artwork used and the information presented.	
The bright colors caught my eye. The message to save money is motivational.	
The bright, fun colors and fun graphics with easy to read messages.	
The cartoons make it easier and more fun to read.	

What is it about the ad(s) that gave you a positive feeling?	What is it about the ad(s) that gave you a positive feeling?
2015 Verbatim Responses	2016 Verbatim Responses
The catchy phrase and fun picture we good to pull me and and the information on the bottom was simple, easy to understand, and they all seemed like doable ideas.	
the colorful pictures	
The coloring of the ads and the sayings tend to click more. It had a nice simple feeling to it making me feel that I can do simple things to save me some money on my utility bills.	
The colors were bright and eye catching and the captions were encouraging about ways to save power and money.	
the colors.	
The indicate things you can do to cut energy use.	
the layout.	
The look (cartoonish)	
The look and colors. Also the short message	
The message	
The phrases captured my interest and then I was able to read the details.	
The priority of energy conservation	
The simple design, the clear messages, the HOW TO do something to help with costs.	
The style makes it look like it is simple to make the change	
The suggestion that someone might not of thought of. They are bright and catch your eye	
Their simple, and show that saving energy can be pretty simple too.	
There are number of ways to save energy	
These are very mild. They could have a larger impact.	
They all encourage saving energy, reducing dependence of existing generating and delivery infrastructure and saving money.	
They appear happy.	
they are "upbeat" rather thn threatening or warning.	
They are attractive and send a message	
They are colorful, easy to read.	

What is it about the ad(s) that gave you a positive feeling?	What is it about the ad(s) that gave you a positive feeling?
2015 Verbatim Responses	2016 Verbatim Responses
they are cute with the rhyming	
They are encouraging people to be responsible about conserving energy.	
they are just a reminder and we all need reminded once in a while	
They are things that we are already doing.	
they are upbeat, generally light and great content	
They are visually appealing and easy to read.	
They are visually please and have a simple, straight-forward message.	
they are well presented and give me a lot of "food for thought"	
They gave an action that I can choose to do and why its go to do it.	
They gAve examples of steps to take.	
They gave great tips on saving energy	
They give information about specific things people can do to save energy, which is a good thing.	
They give solutions and options to problems.	
They give you something you can do.	
They had a good message. I feel the "cartoon" design made them more fun and worth looking at.	
They identify positive steps that are easy to understand.	
They look good and gave good advise	
They make simple suggestions and explanations on saving electrical energy.	
They might remind some people, who weren't already thinking about it, of some simple ways to conserve energy.	
They present easy, and practical ways to reduce energy use and costs.	
They seem friendly and provide clear suggestions to save energy.	
They urge people to be more proactive when it comes to energy use.	
They were all helpful, non-intrusive tips that could be relevant to various customers.	
They were cheerful and colorful	

What is it about the ad(s) that gave you a positive feeling?	What is it about the ad(s) that gave you a positive feeling?
2015 Verbatim Responses	2016 Verbatim Responses
They were short and simple and applied one positive thing about electrical use.	
They were simple, easy & quick to read, and gave great tips that would benefit me.	
They were simple, easy to get the message	
They were very clear about some easy options I could consider to save energy and money.	
They're all about conserving energy costs.	
They're bright, catchy phrases and good information	
They're colorful	
They're cute and easy to read and understand.	
They're eye catching and have a good and simple message	
To help the environment	
Upbeat	
Very educational and helpful ways to lower your electric bill.	
Very straightforward and simple ways to save energy	
Very young and kid-dish in presentation, cartoon-like = fun.	
visual	
Ways to save electricity as well as money.	
ways to save energy and stay cooler	
We all like saving money on the electric bill.	
We all want to save energy	
We always need reminders even if we are familiar with the messages the ads give. These ads were simple, easy to read, straight to the point, and if followed can save money.	
we are reducing our dependence on burning fossil fuels	
well done, helpful hints and reminders	
You care about us customers saving energy	

(asked only of respondents who said they did not recall seeing the ads before taking the survey but had a negative feeling towards the ads after seeing them)

What is it about the ad(s) that gave you a negative feeling?

2015 Verbatim Responses
Absolute waste of money. If someone wants to save energy, they can look on a web site somewhere or do research. I'd rather the money spent on said ads be given back to customers, thus...saving us actual money!
Cartoons are not interesting. I see enough with my kids.
I don't like that they are cartoons.
Idaho power should be investing more resources in renewable generation rather than investing money in advertising conservation
The cost .
The font of the text is ugly. The graphics are simplistic as is the message. The ads are not specific and don't provide enough information.
They strike me as childish and aimed at someone who wouldn't get the point.
They're ugly. Hate the font.
To childish.
You are spending profit I have to pay for. Where else can I buy power, you put a boat load of PSA in with every bill. Maybe you could lower my monthly annual power adjustment cost if you weren't spending thousands or millions of bucks on ada.

(asked only of respondents who said they did not recall seeing the ads before taking the survey but had a negative feeling towards the ads after seeing them)

What is it about the ad(s) that gave you a negative feeling?

2015 Verbatim Responses
A waist of money....no body reads newspapers and most certainly, nobody reads ads from the power company. You need a better team in your Communications Department!
They are so obvious, seems like a waste of Idaho Power's money and resources to have to tell people this stuff...
Too cartoon like, didn't catch my attention and

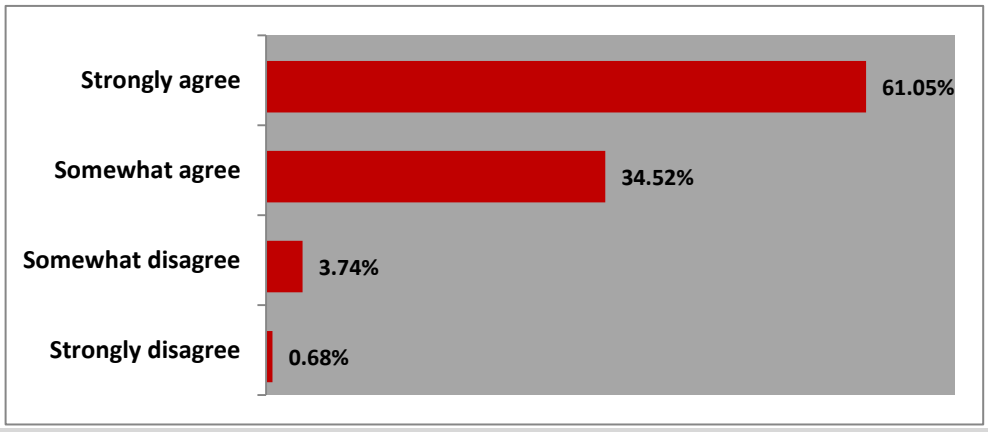
2015 Study

How much would you agree, or disagree, that Idaho Power encourages energy efficiency and saving energy with its customers?

QUESTION TOTAL: 588

NO RESPONSE: 0

	OPTIONS	TOTAL	PERCENT
O1	Strongly agree	359	61.05%
O2	Somewhat agree	203	34.52%
O3	Somewhat disagree	22	3.74%
O4	Strongly disagree	4	0.68%



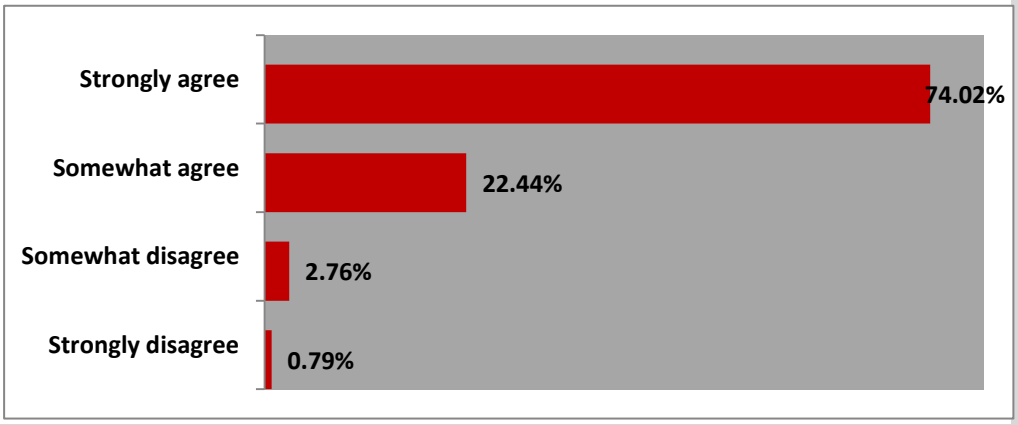
2016 Study

How much would you agree, or disagree, that Idaho Power encourages energy efficiency and saving energy with its customers?

QUESTION TOTAL: 254

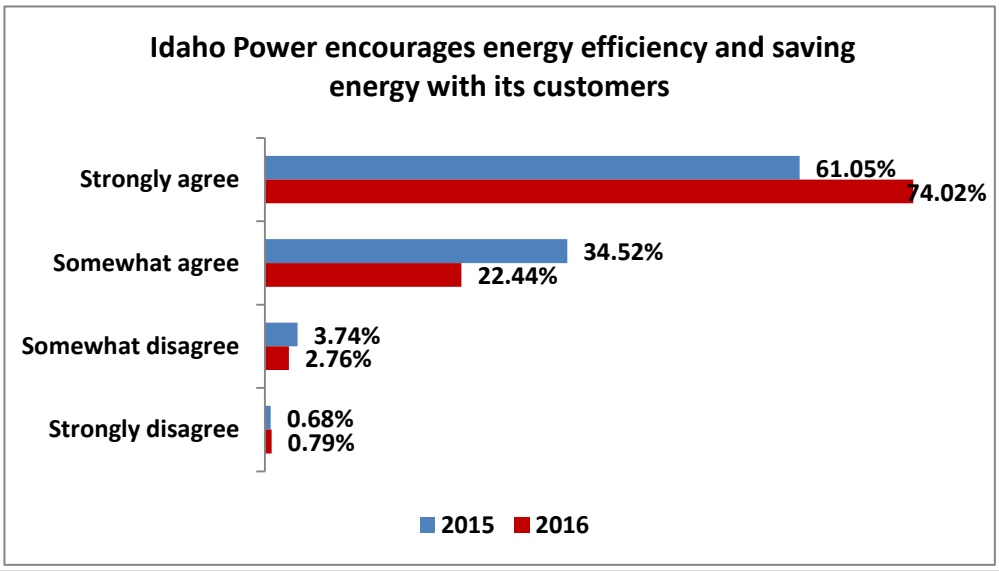
NO RESPONSE: 0

	OPTIONS	TOTAL	PERCENT
O1	Strongly agree	188	74.02%
O2	Somewhat agree	57	22.44%
O3	Somewhat disagree	7	2.76%
O4	Strongly disagree	2	0.79%



How much would you agree, or disagree, that Idaho Power encourages energy efficiency and saving energy with its customers?

	2015	2016
Strongly agree	61.05%	74.02%
Somewhat agree	34.52%	22.44%
Somewhat disagree	3.74%	2.76%
Strongly disagree	0.68%	0.79%



(asked only of respondents who said they somewhat or strongly disagreed that Idaho power encourages energy efficiency) What could Idaho Power do differently to encourage customers to be more energy efficient or to save energy?	(asked only of respondents who said they somewhat or strongly disagreed that Idaho power encourages energy efficiency) What could Idaho Power do differently to encourage customers to be more energy efficient or to save energy?
2015 Verbatim Responses	2016 Verbatim Responses
Coupons, free inspections done by Idaho Power, other types of incentives.	- Variable pricing based on peak demand or energy availability should be used. Lower price when surplus energy is available. HIgher price when peak demand. - Better incentives for LED lights - Collection stations in stores for used flourescent lights.
Don't have any good ideas. The apathy of the consuming public is the reason for many of the world's problems.	Advertising that features the CEO advocating for energy efficiency. He is a central part of the "don't text and drive" campaign, but is not a part of any EE advertising.
Encourage renewables, stop coal generated purchases, encourage solar at both a personal and commercial level.	Give options.
Encourage the use of renewables. Encourage the construction of renewable sources by retaining the 20 year contract provision.	i don't know.
Evolve from fossil fuels or become part of the problem	Not sure
Fully embrace the AC Cool Credit and repeal the rollback. Incentives/penalties for utilizing power at peak times. Reward instead of discouraging roof top solar and other distributed generation.	nothing
Get more wind and solar energy moving in Idaho and use sustainable and renewable sources NOW!	Offer rebates for those who have natural gas heating and electric cooling and cooking ovens.
Have a time of day program, help with low cost loans for windows, doors and insulation and not just for needy families but for houses that use alot of energy.	Provide an incentive for those that use gas heat. Or maybe partner with Intermountain gas.
Help customers convert from electric heating to gas heating. Help customers install solar panels or other green power.	the more you use the more you pay

What could Idaho Power do differently to encourage customers to be more energy efficient or to save energy?
I don't see active programs anymore for doing energy audits and home retrofitting. Idaho Power also appears to be fighting alternate energy methods that it does not benefit from.
I saw no ads. Most effective advertising now is on the internet, and they certainly weren't there.
I think that you have to go out and actively recruit customers. Also the incentives/help need to not be pathetic.
I would focus more on the actual approximate monetary savings. 3% doesn't sound worth the trouble.
Improve targeting and marketing to customers
Incorporate the extent to which Idaho Power believes that more energy efficiency reduces the need for dirty generation. People want e-e, no question, but getting rid of fossil fuels is a motivator.
it's all about money, show examples of savings
Monetary incentives
More of the energy saving education. With statistics, it's compelling
More promos with a dedicated separate websites for upgrading appliances, insulation and simple upgrades like LED bulbs and smart power strips.
Most energy use at this point is realistically fixed. You're not going to cook less, or lower the heat below what's comfortable, or bother to run climate control at all unless it makes you ...comfortable.
Offer incentives and rebates. I recently looked to see if there were any rebates for replacing old air conditioning units or furnaces and there was only a rebate for a heat pump. Our old city used to offer a lot of rebates to get people to upgrade units to more energy efficient models
Offer larger financial incentives for efficiency. Also, actively developing renewable sources of energy rather than putting money into coal and gas plants.
Promote promote promote

What could Idaho Power do differently to encourage customers to be more energy efficient or to save energy?

What could Idaho Power do differently to encourage customers to be more energy efficient or to save energy?
reduce rates for reduced consumption
reward energy efficiency with cash rewards; like washing dishes at 11 pm instead of 6 pm, recommending best times to run appliances, what to do with hot water heaters when going out of town
The best way to encourage efficiency is to increase the price of electricity. The second best way would be to show people their real time energy use with a monitor most likely placed in their kitchen.

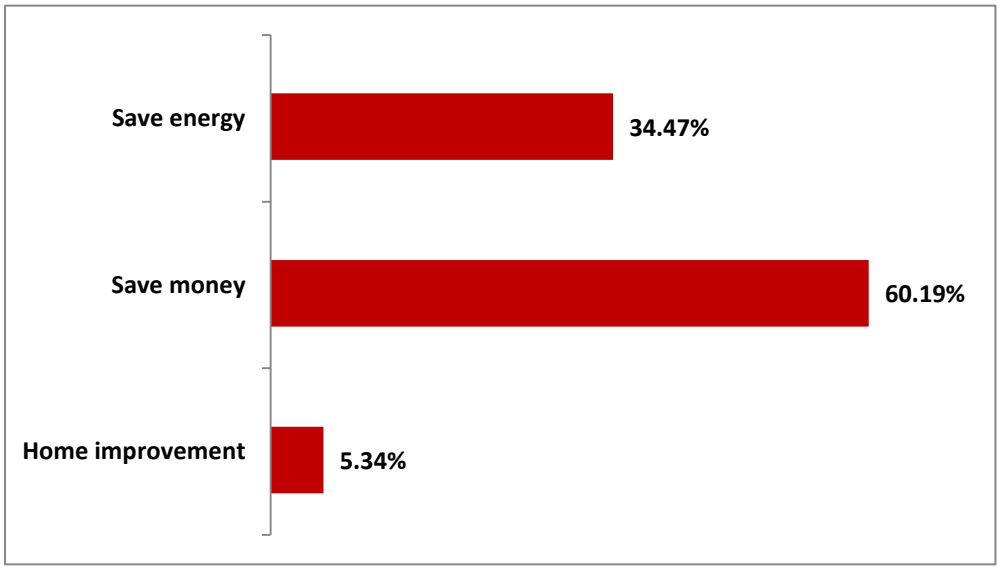
What could Idaho Power do differently to encourage customers to be more energy efficient or to save energy?

2016 Study Only

Considering these advertisements, which of the following topics is most meaningful to you?

QUESTION TOTAL:	206
DID NOT ANSWER:	0

	OPTIONS	TOTAL	PERCENT
O1	Save energy	71	34.47%
O2	Save money	124	60.19%
O3	Home improvement	11	5.34%



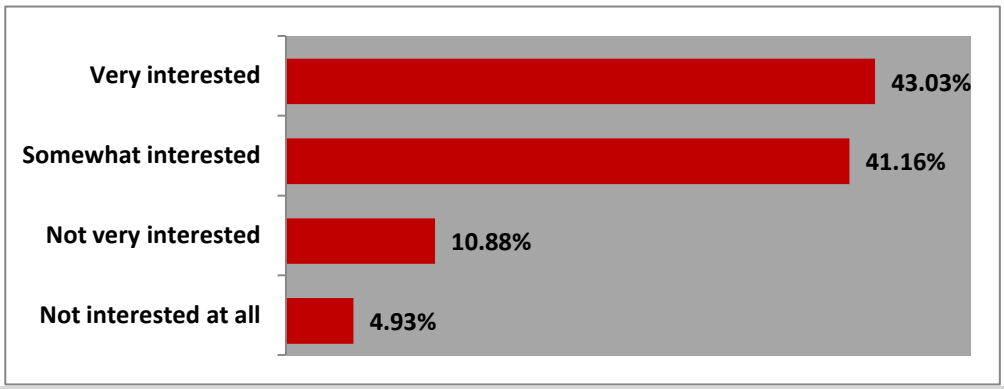
2015 Study

How interested would you be in getting more information from Idaho Power about energy saving programs for your home?

QUESTION TOTAL: 588

NO RESPONSE: 0

	OPTIONS	TOTAL	PERCENT
O1	Very interested	253	43.03%
O2	Somewhat interested	242	41.16%
O3	Not very interested	64	10.88%
O4	Not interested at all	29	4.93%



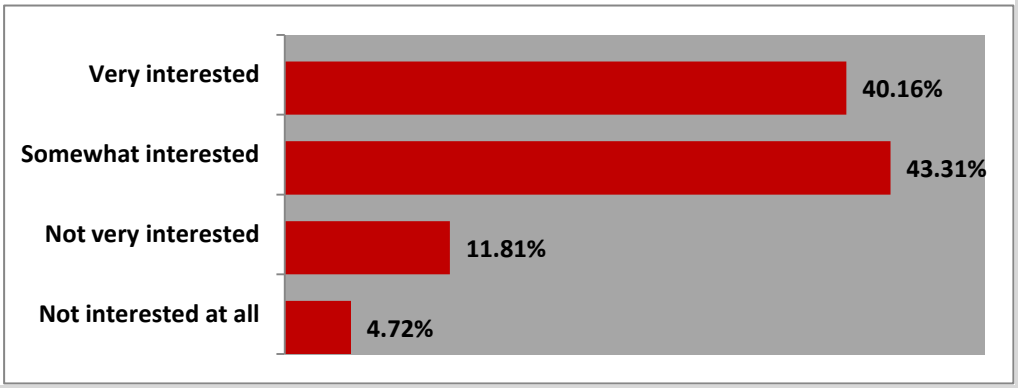
2016 Study

How interested would you be in getting more information from Idaho Power about energy saving programs for your home?

QUESTION TOTAL: 254

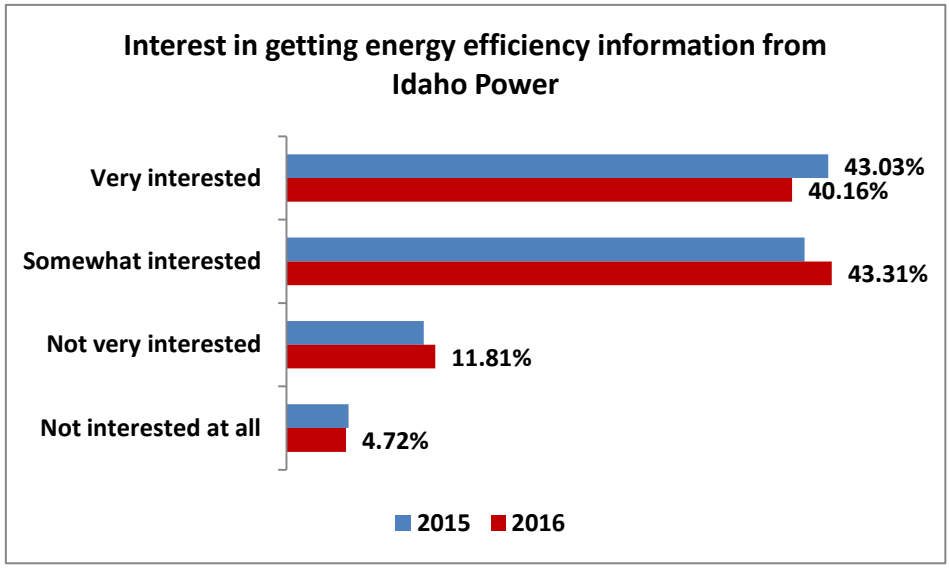
NO RESPONSE: 0

	OPTIONS	TOTAL	PERCENT
O1	Very interested	102	40.16%
O2	Somewhat interested	110	43.31%
O3	Not very interested	30	11.81%
O4	Not interested at all	12	4.72%



How interested would you be in getting more information from Idaho Power about energy saving programs for your home?

	2015	2016
Very interested	43.03%	40.16%
Somewhat interested	41.16%	43.31%
Not very interested	10.88%	11.81%
Not interested at all	4.93%	4.72%



empowered community

Energy-Savings Improvements Survey Results

February 8, 2016

Survey was sent to 822 em**powered** community members
Participation rate was 65%
Survey was sent to all em**powered** community members regardless of heat source

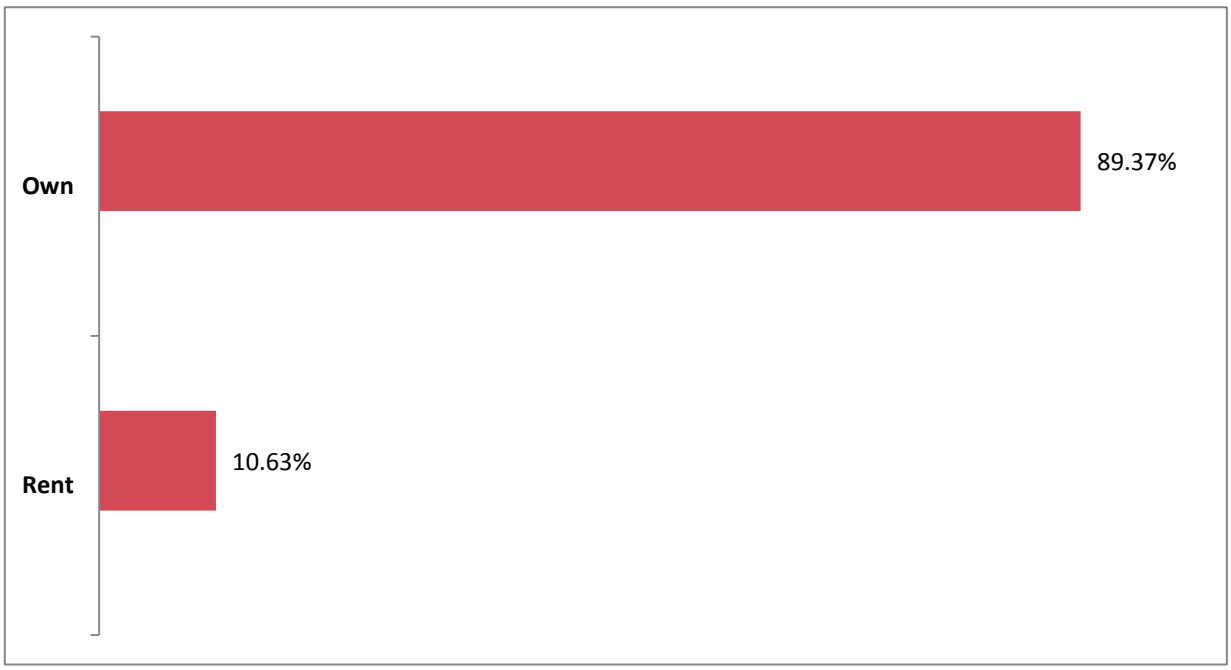
Respondent data

- 49% male / 51% female
- 21% from CanyonWest region / 55% from Capital region / 24% from SouthEast region
- 27% from electrically heated homes / 66% from natural gas heated homes / 7% from homes heated by other fuel sources

Do you rent or own the home you currently live in?

QUESTION TOTAL:	536
NO RESPONSE:	0

	OPTIONS	TOTAL	PERCENT
O1	Rent	57	10.63%
O2	Own	479	89.37%



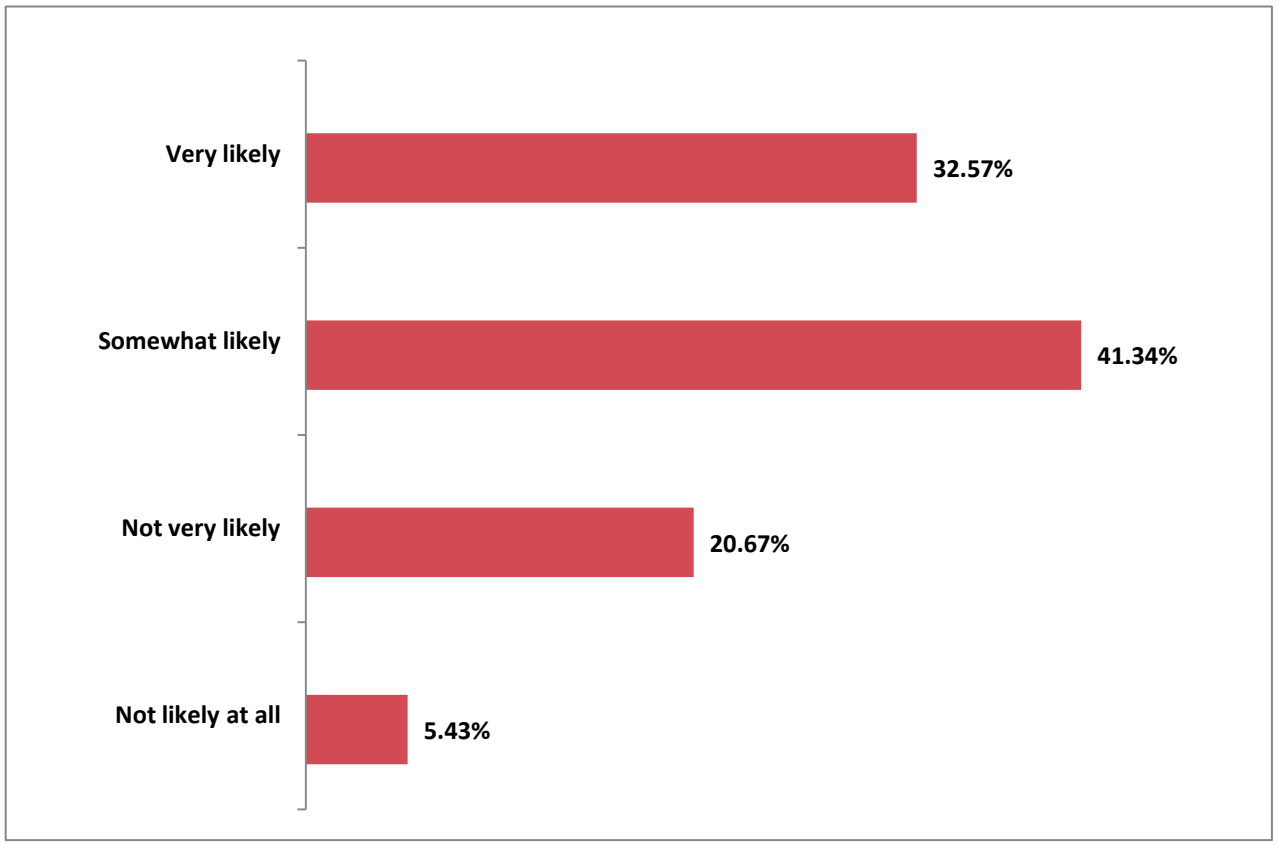
Asked only of homeowners

How likely are you to make energy-saving improvements to your home in the next 2-3 years?

QUESTION TOTAL: 479
NO RESPONSE: 0

	OPTIONS	TOTAL	PERCENT
O1	Very likely	156	32.57%
O2	Somewhat likely	198	41.34%
O3	Not very likely	99	20.67%
O4	Not likely at all	26	5.43%

How likely are you to make energy-saving improvements to your home in the next 2-3 years?



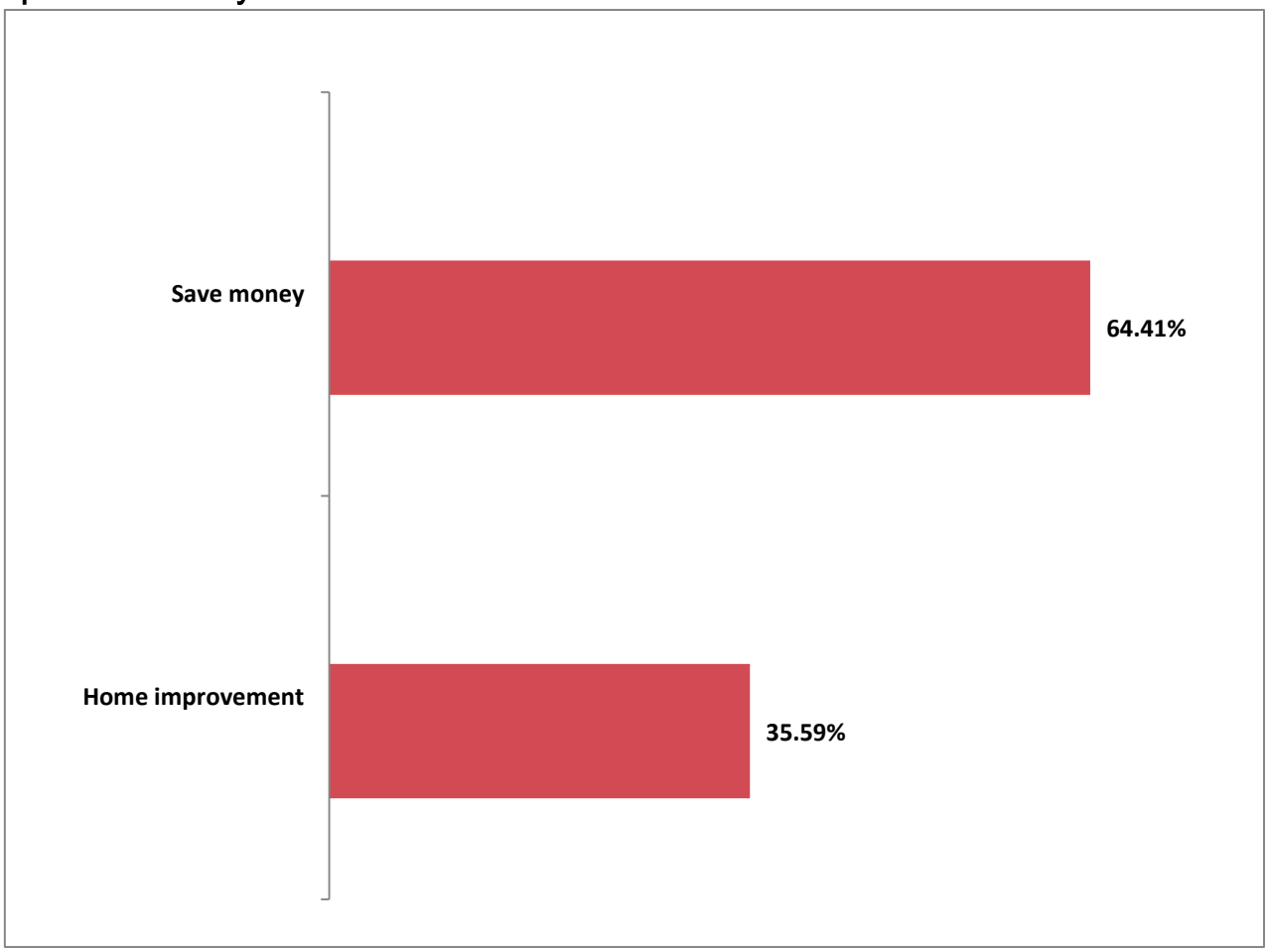
Asked only of those who said they are likely to make energy-saving improvements in the next 2-3 years

What would be the primary motivator for you to make energy-saving improvements to your home?

QUESTION TOTAL: 354
NO RESPONSE: 0

	OPTIONS	TOTAL	PERCENT
O1	Save money	228	64.41%
O2	Home improvement	126	35.59%

What would be the primary motivator for you to make energy-saving improvements to your home?



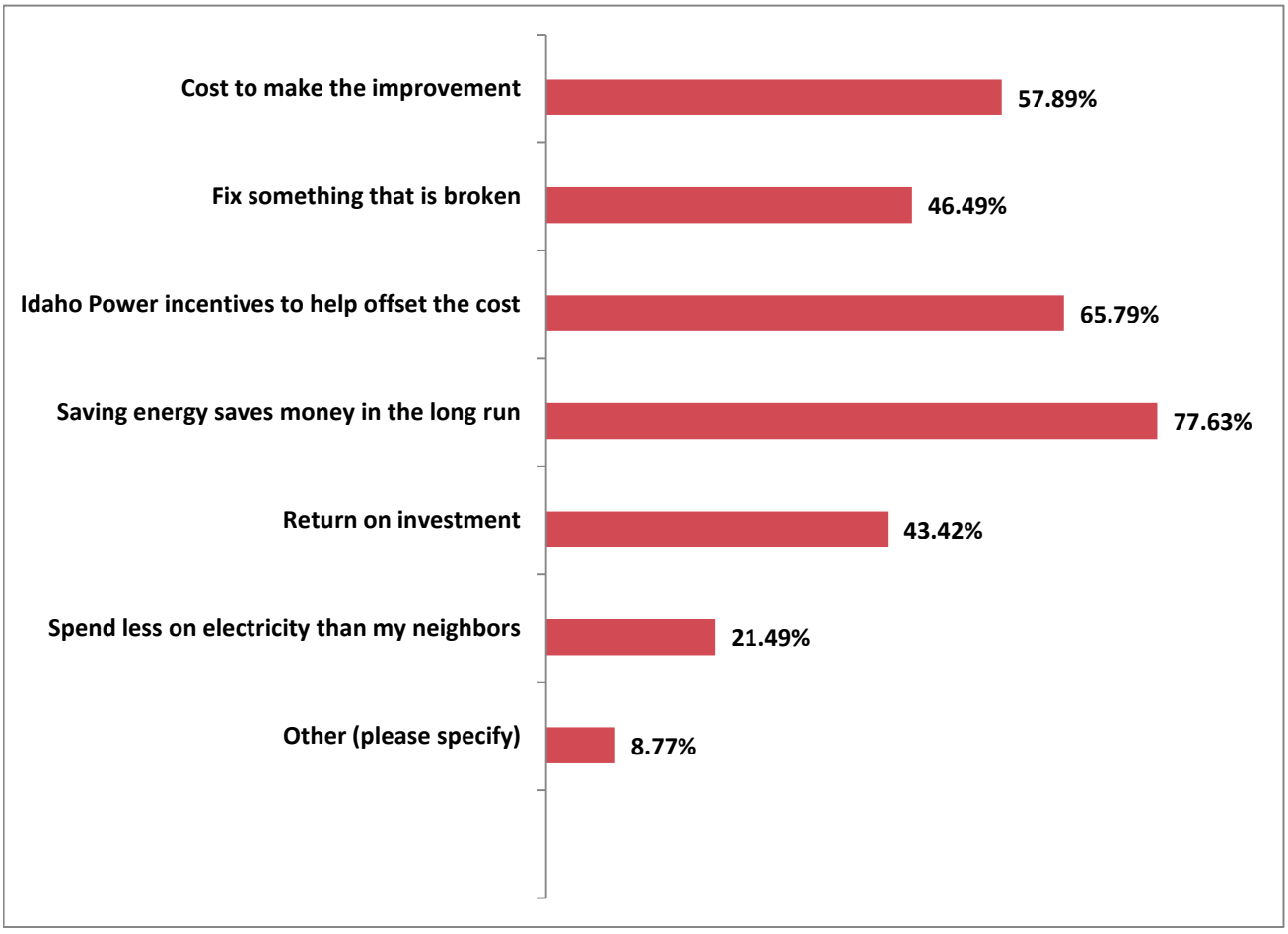
Asked only of those who said saving money would be the primary motivator for making energy-saving improvements

Which of the following would influence you to make energy-saving

QUESTION TOTAL: 228
NO RESPONSE: 0

	OPTIONS	TOTAL	PERCENT
O1	Cost to make the improvement	132	57.89%
O2	Fix something that is broken	106	46.49%
O3	Idaho Power incentives to help offset the cost	150	65.79%
O4	Saving energy saves money in the long run	177	77.63%
O5	Return on investment	99	43.42%
O6	Spend less on electricity than my neighbors	49	21.49%
O7	Other (please specify)	20	8.77%

Which of the following would influence you to make energy-saving improvements to your home to save money?



Which of the following would influence you to make energy-saving improvements to your home to save money? Other (please specify)

Other (please specify) Verbatim Responses
Added temperature Comfort
Collaborate Climate Improvement/Control
Environmental benefits
fix problem & add comfort
good for the earth
Good for the environment
Help reduce my CO2 footprint by reducing fossil fuel usage
helping environment with saving
I don't have to take a loan do make the improvement
If I felt that a given change would be better for the environment.
Improve resale value and appeal of the home at sale
Know what to do to improve
More information about how to fix things or take real action to save electricity
reduce carbon and protect our children's climate
Reduce carbon footprint
Reduce fossil carbon emissions
Reducing my contribution to global warmig.
the environment
trying to go off grid
Using new technology.

Asked only of those who said home improvement would be the primary motivator for making energy-saving improvements

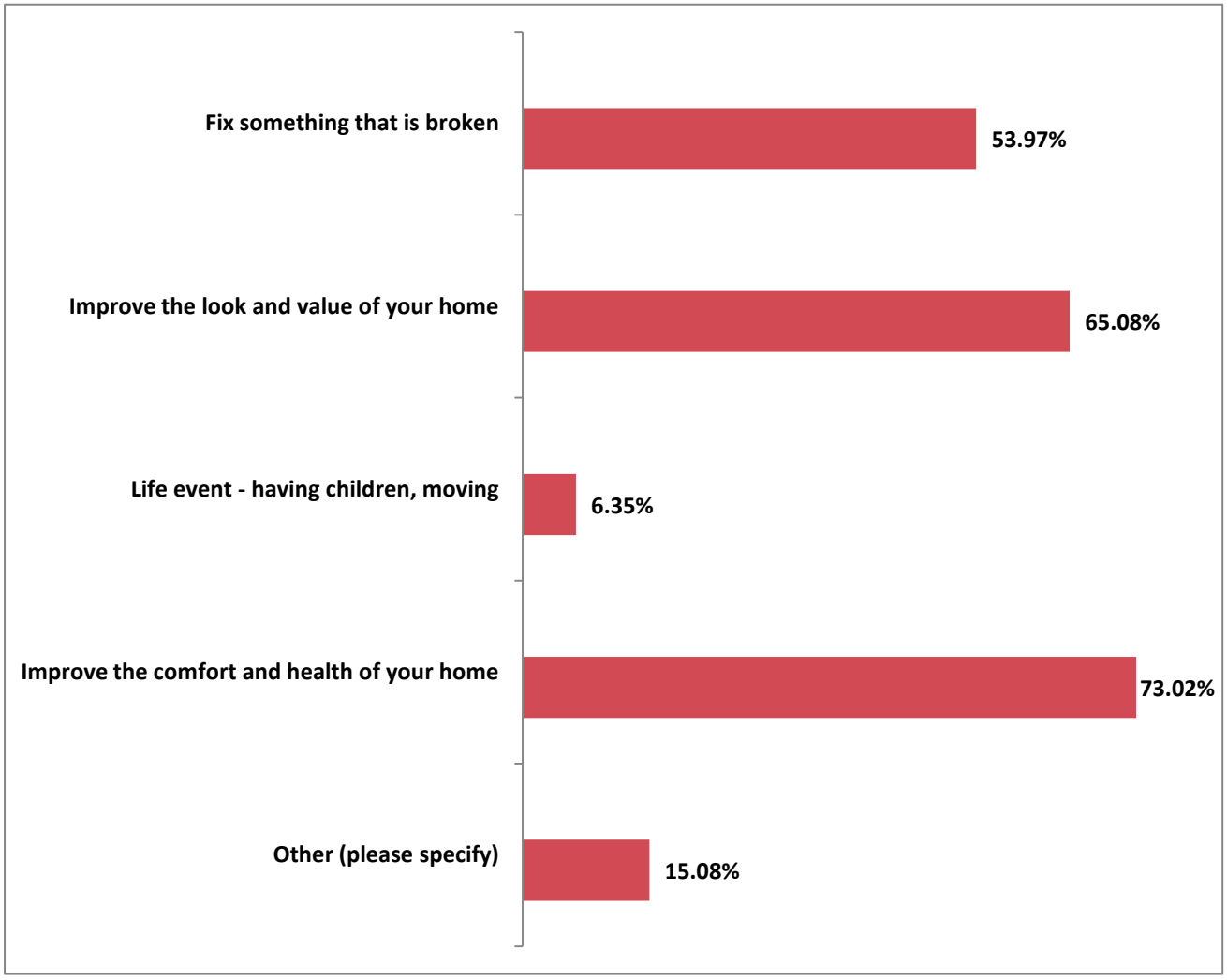
Which of the following would influence you to make energy-saving

QUESTION TOTAL: 126

NO RESPONSE: 0

	OPTIONS	TOTAL	PERCENT
O1	Fix something that is broken	68	53.97%
O2	Improve the look and value of your home	82	65.08%
O3	Life event - having children, moving	8	6.35%
O4	Improve the comfort and health of your home	92	73.02%
O5	Other (please specify)	19	15.08%

Which of the following would influence you to make energy-saving improvements to your home?



Which of the following would influence you to make energy-saving improvements to your home? Other (please specify)

Verbatim Responses	Total
43 year old furnace	1
climate change	1
Climate change mitigation	1
Cost savings over time	1
Deals that might come along	1
Environmental considerations.	1
Finish tasks not completed when building	1
Good for the environment	1
help the environment	1
New roof adding Insulation and a vent area.	1
Rebate	1
Reduce our consumption of fossil fuel generation.	1
replace water heater with energy star and put in dual pane glass	1
Save energy and reduce our carbon footrpint	1
Save energy!	1
slow down the carbon footprint	1
To address a problem with mold in attic from the past	1
to help save the planet from unnecessary use of fossil fuels	1
Use less energy	1

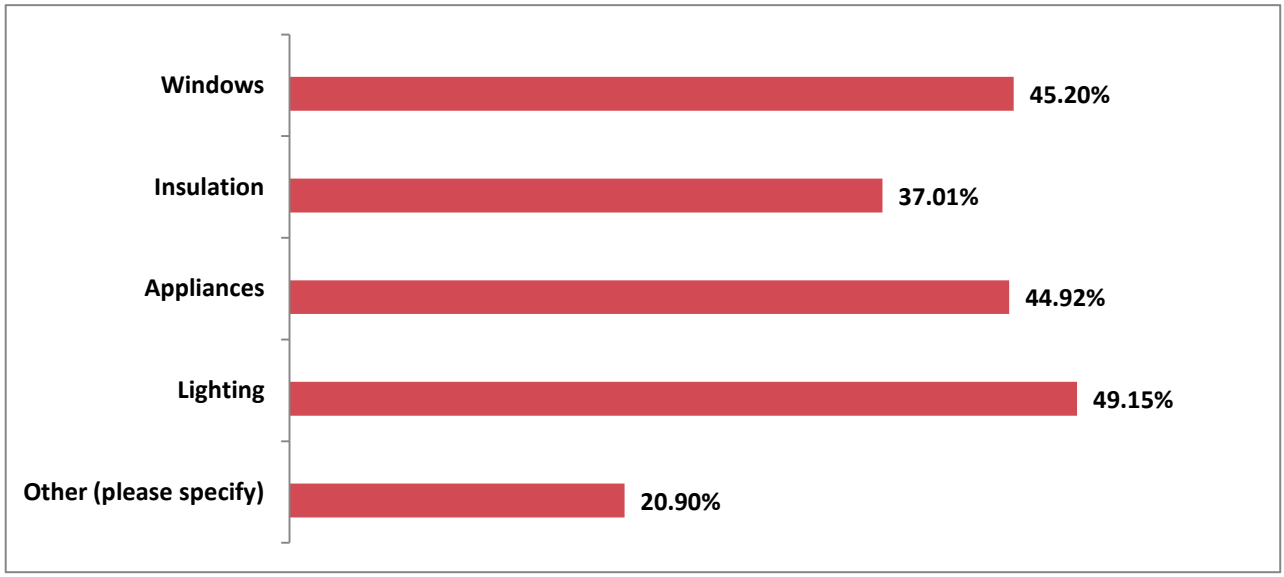
Asked only of those who said they are likely to make energy-saving improvements in the next 2-3 years

Which of the following energy-saving improvements are you likely to make in the next 2-3 years?

QUESTION TOTAL:	354
NO RESPONSE:	0

	OPTIONS	TOTAL	PERCENT
O1	Windows	160	45.20%
O2	Insulation	131	37.01%
O3	Appliances	159	44.92%
O4	Lighting	174	49.15%
O5	Other (please specify)	74	20.90%

Which of the following energy-saving improvements are you likely to make in the next 2-3 years?



Which of the following energy-saving improvements are you likely to make in the next 2-3 years?

Other (please specify) Verbatim Responses	Total
solar panels	7
Solar	4
Furnace	3
siding	2
Tankless water heater	2
A/C	1
AC	1
add pv cells	1
air con	1
air conditioning upgrade to modern	1
air leaks	1
Blinds	1
Carpet & painting	1
caulking windows	1
Central heat and air!	1
Control	1
Door	1
door weather stripping	1
Doors	1
doors, stripes around edges	1
ducts	1
Evaluating solar panels; not really energy saving, I realize.	1
Front door	1
furnace and ac	1
Furnace and air conditioner	1
Have done most of the above	1
heat insert in fireplace	1
heating A/C	1
Heating Source	1
heating system	1
Heating- would like to convert to ductless heat pump	1
hot water heater	1
hot water tank	1
HVAC--heat pump, on-demand water heater, solar panels	1
I would like to be more self sustaing	1
install solar panels	1
insulated window shades	1

lookingtopurchase another home	1
More efficient heating	1
More solar panels for electric phev car purchase this year	1
Natural gas	1
New Door	1
new furnace	1
New Roof	1
None	1
possibly solar	1
Radiant heating	1
Remodel Bathrooms	1
Replace heat pump	1
Replace wood burning old stove with gas and close a room off for	1
roof	1
solar power	1
solar water heating	1
splitpump	1
Storm door	1
trees and landscape	1
Washing in cold water, drying clothes, LED lights, turning off cable	1
water heater, air conditioner	1
water system	1
We added a heat pump to go with our solar panels	1
with 1 exception have made most in last couple yrs, would like to	1

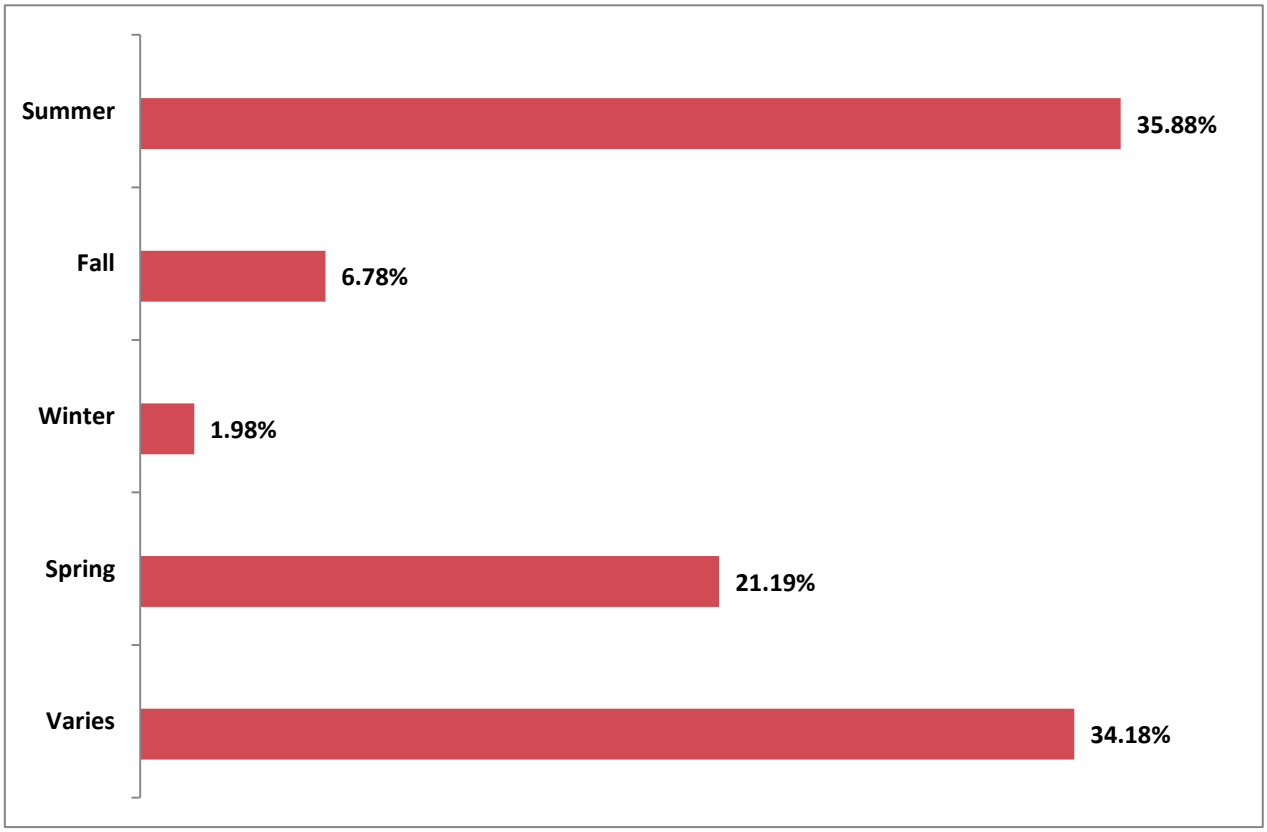
Asked only of those who said they are likely to make energy-saving improvements in the next 2-3 years

What time of year are you most likely to make home improvements in general?

QUESTION TOTAL:	354
NO RESPONSE:	0

	OPTIONS	TOTAL	PERCENT
O1	Summer	127	35.88%
O2	Fall	24	6.78%
O3	Winter	7	1.98%
O4	Spring	75	21.19%
O5	Varies	121	34.18%

What time of year are you most likely to make home improvements in general?



Asked only of those who said they are likely to make energy-saving improvements in the next 2-3 years

How important are the following factors in deciding to make energy-saving home improvements?

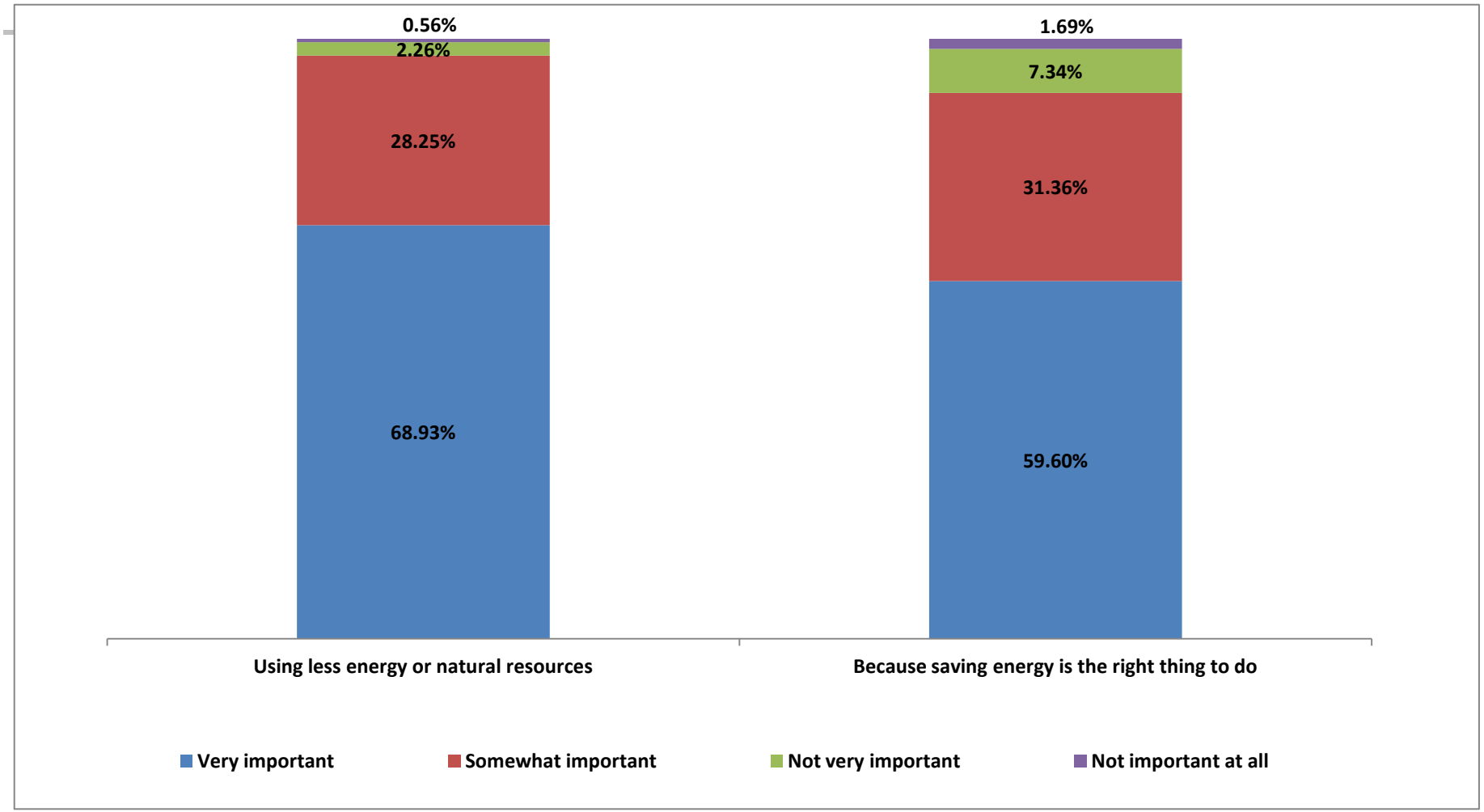
QUESTION TOTAL: 354

NO RESPONSE: 0

		Using less energy or natural resources		Because saving energy is the right thing to do	
	OPTIONS	TOTAL	PERCENT	TOTAL	PERCENT
O1	Very important	244	68.93%	211	59.60%
O2	Somewhat important	100	28.25%	111	31.36%
O3	Not very important	8	2.26%	26	7.34%
O4	Not important at all	2	0.56%	6	1.69%

	Very important	Somewhat important	Not very important	Not important at all
Using less energy or natural resources	68.93%	28.25%	2.26%	0.56%
Because saving energy is the right thing to do	59.60%	31.36%	7.34%	1.69%

How important are the following factors in deciding to make energy-saving home improvements?



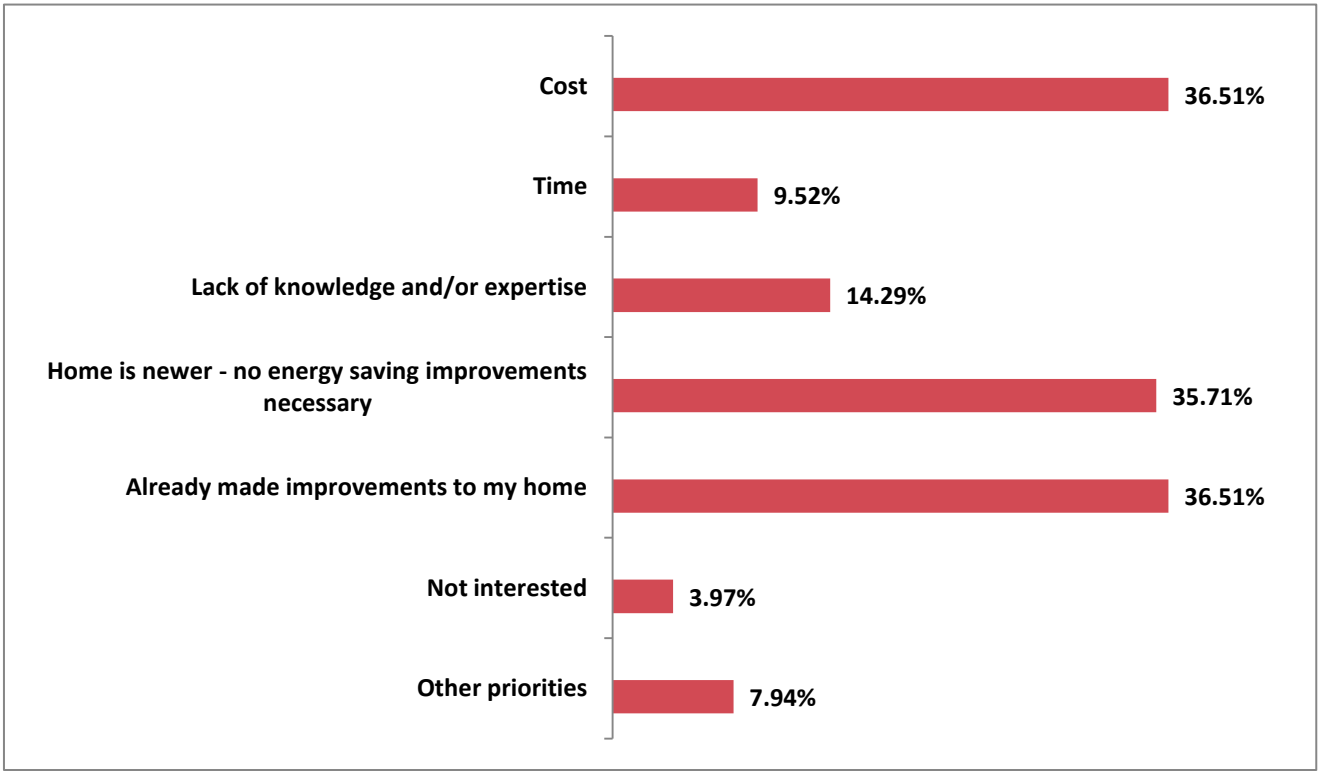
Asked only of those who said they are likely to make energy-saving improvements in the next 2-3 years

What prevents you from making energy-saving improvements to your home?

QUESTION TOTAL:	126
NO RESPONSE:	1

	OPTIONS	TOTAL	PERCENT
O1	Cost	46	36.51%
O2	Time	12	9.52%
O3	Lack of knowledge and/or expertise	18	14.29%
O4	Home is newer - no energy saving improvements	45	35.71%
O5	Already made improvements to my home	46	36.51%
O6	Not interested	5	3.97%
O7	Other priorities	10	7.94%

What prevents you from making energy-saving improvements to your home?



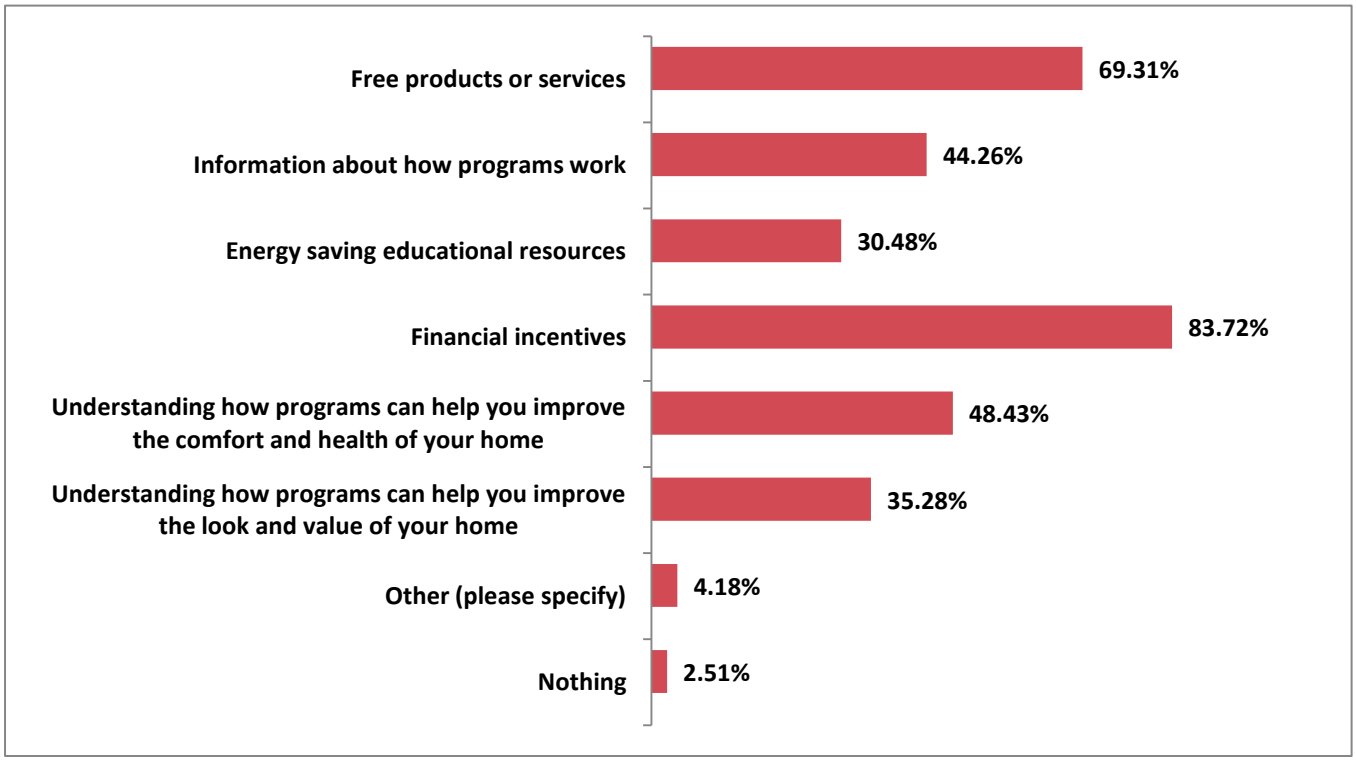
Asked only of homeowners

What would motivate you to participate in an Idaho Power energy-saving program?

QUESTION TOTAL:	479
NO RESPONSE:	0

	OPTIONS	TOTAL	PERCENT
O1	Free products or services	332	69.31%
O2	Information about how	212	44.26%
O3	Energy saving educational	146	30.48%
O4	Financial incentives	401	83.72%
O5	Understanding how programs can help you	232	48.43%
O6	Understanding how	169	35.28%
O7	Other (please specify)	20	4.18%
O8	Nothing	12	2.51%

What would motivate you to participate in an Idaho Power energy-saving program?



What would motivate you to participate in an Idaho Power energy-saving program?

Other (please specify) Verbatim Responses
A home visit assessment so we know what to prioritize
Assurance that Idaho power will support energy savings and will not compromise the return on the homeowners capital investment in energy savings improvements.
bring back the A/C Cool Credit program
But really I do not need to be motivated as I would do it for our planet earth and future generations to reduce global warming
Certified contractor
Environmental impact
have already participated is some & been glad I did
If I were eligible (but I am not because not all electric)
Information about whether gas heating prevents us from participating. Do the programs only apply to houses with electrac pased heating?
Knowing how much energy I would save
linked to good for environment
Meet a real need e.g. longer lasting lights (CFLs don't count as their light is horrible)
motivating my husband to care
payback calculations
some unit dying forever and needing a new one. Always go for the most energy saving replacement
specific help and instructions
State and Federal Tax Incentives
To reduce the amount of power that we use.
we are moving and do not want to invest in it
You already worked with us. Think it was in 2012

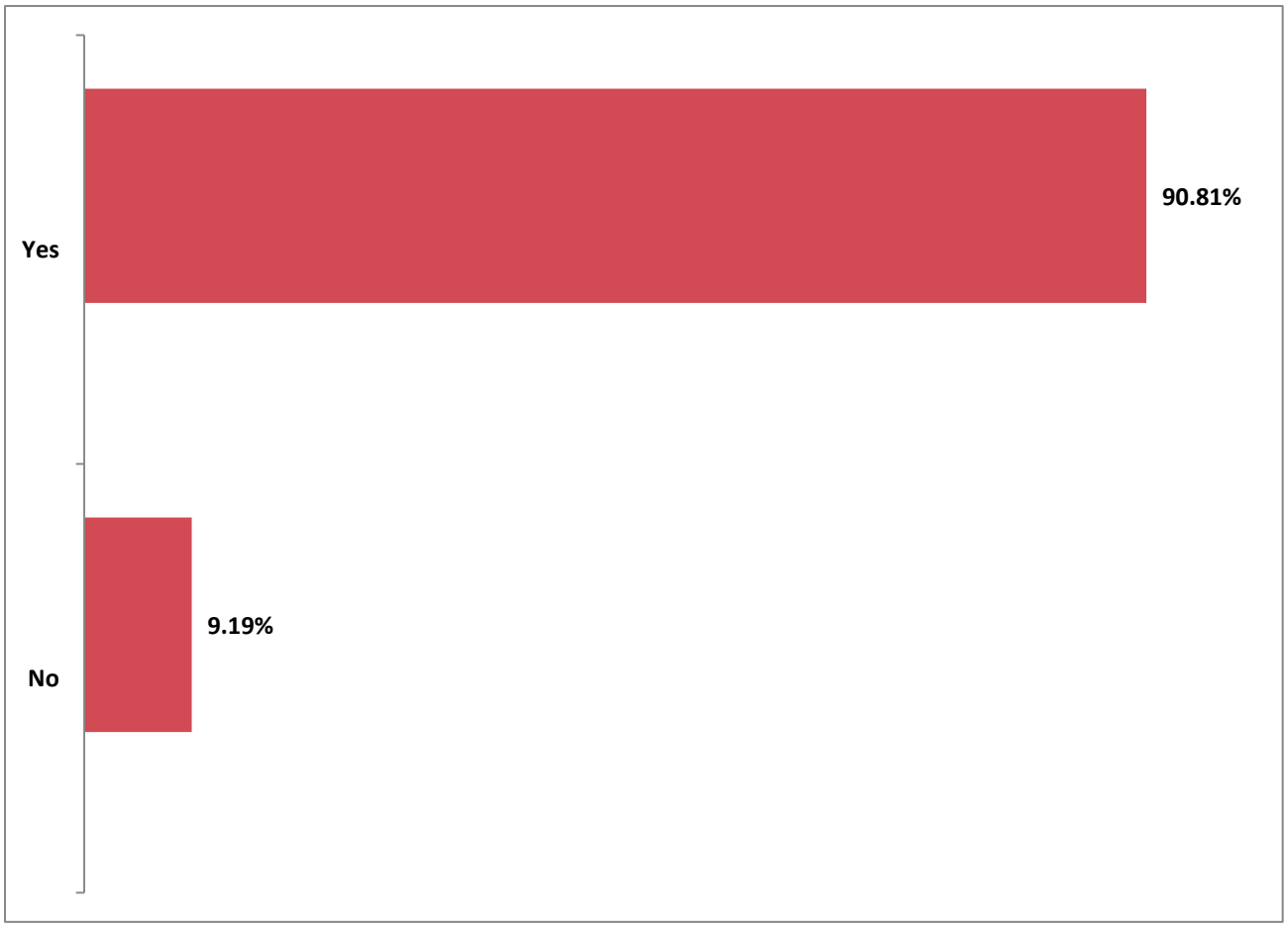
Asked only of homeowners

Would you be interested in receiving energy-saving tips or suggestions through future empowered community newsletters or survey invitations?

QUESTION TOTAL: 479
NO RESPONSE: 0

	OPTIONS	TOTAL	PERCENT
O1	Yes	435	90.81%
O2	No	44	9.19%

Would you be interested in receiving energy-saving tips or suggestions through future empowered community newsletters or survey invitations?



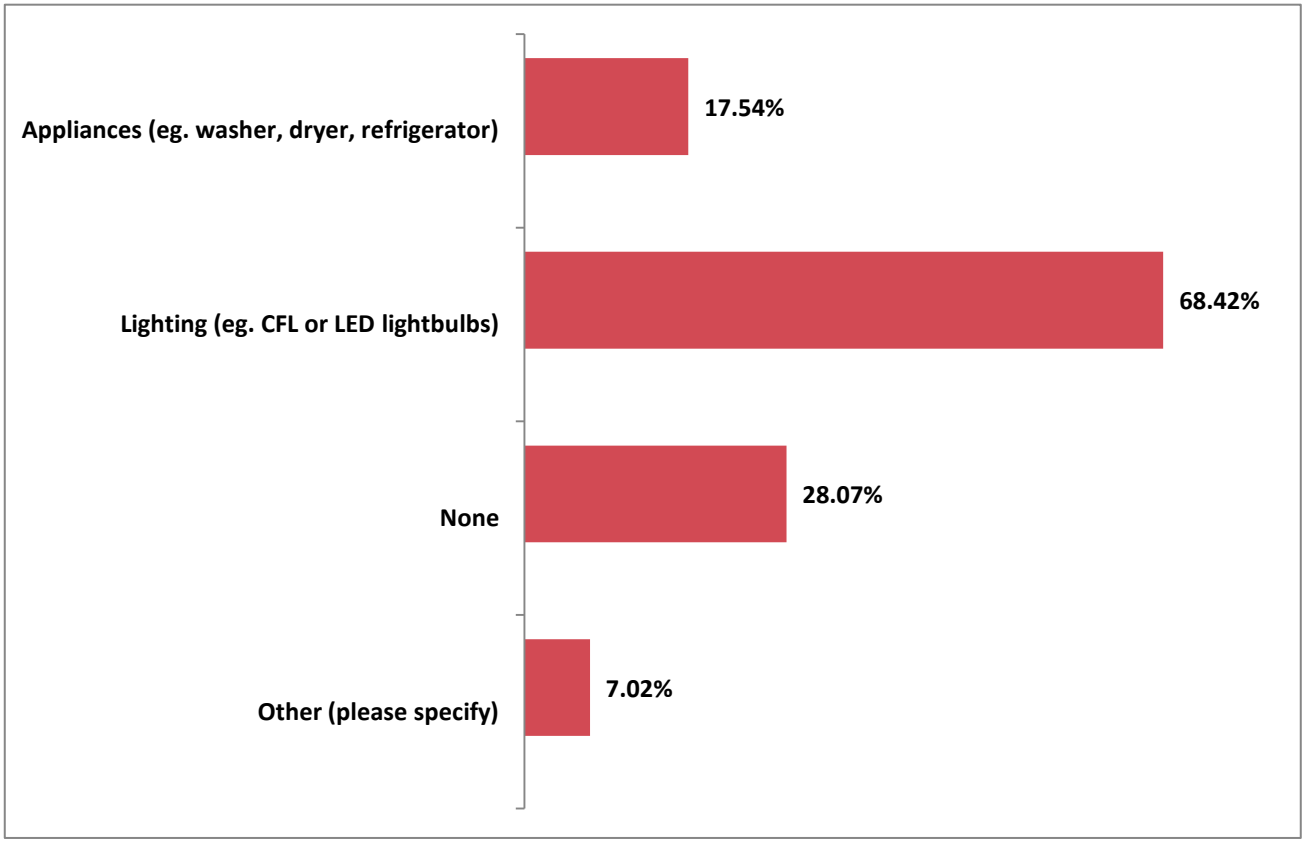
Asked only of renters

Which of the following energy-saving improvements are you likely to make in the next 2-3 years?

QUESTION TOTAL:	57
NO RESPONSE:	0

	OPTIONS	TOTAL	PERCENT
O1	Appliances (eg. washer, dryer,	10	17.54%
O2	Lighting (eg. CFL or LED lightbulbs)	39	68.42%
O3	None	16	28.07%
O4	Other (please specify)	4	7.02%

Which of the following energy-saving improvements are you likely to make in the next 2-3 years?



Which of the following energy-saving improvements are you likely to make in the next 2-3 years?

Other (please specify) Verbatim Responses
Because I rent, i don't intend to upgrade any major appliances.. However----i would if there were incentives to renters/landlords to help with this type of scenario!
just had an energy audit and my landlord may do something
new drapes/curtains
New roof

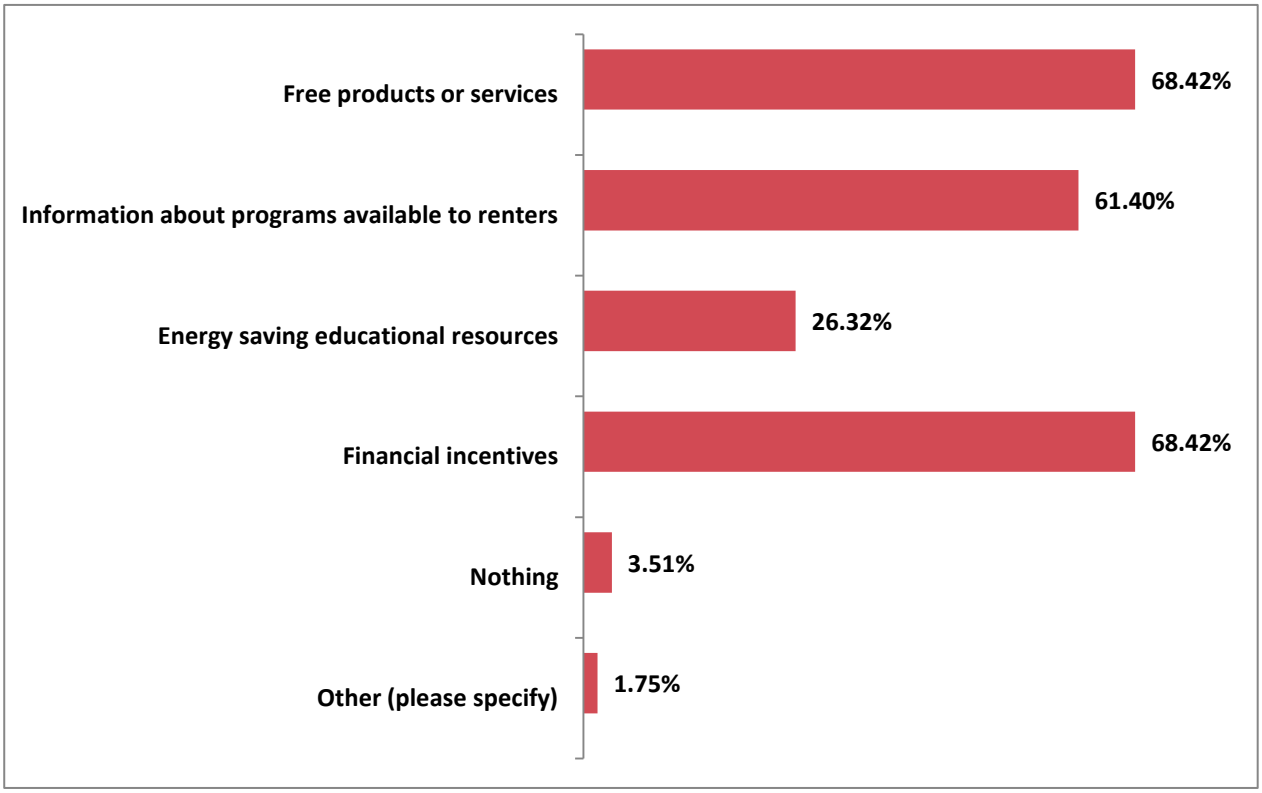
Asked only of renters

What would motivate you to participate in an Idaho Power energy-saving program?

QUESTION TOTAL: 57
NO RESPONSE: 0

	OPTIONS	TOTAL	PERCENT
O1	Free products or services	39	68.42%
O2	Information about programs available to renters	35	61.40%
O3	Energy saving educational resources	15	26.32%
O4	Financial incentives	39	68.42%
O5	Nothing	2	3.51%
O6	Other (please specify)	1	1.75%

What would motivate you to participate in an Idaho Power energy-saving program?



What would motivate you to participate in an Idaho Power energy-saving program?

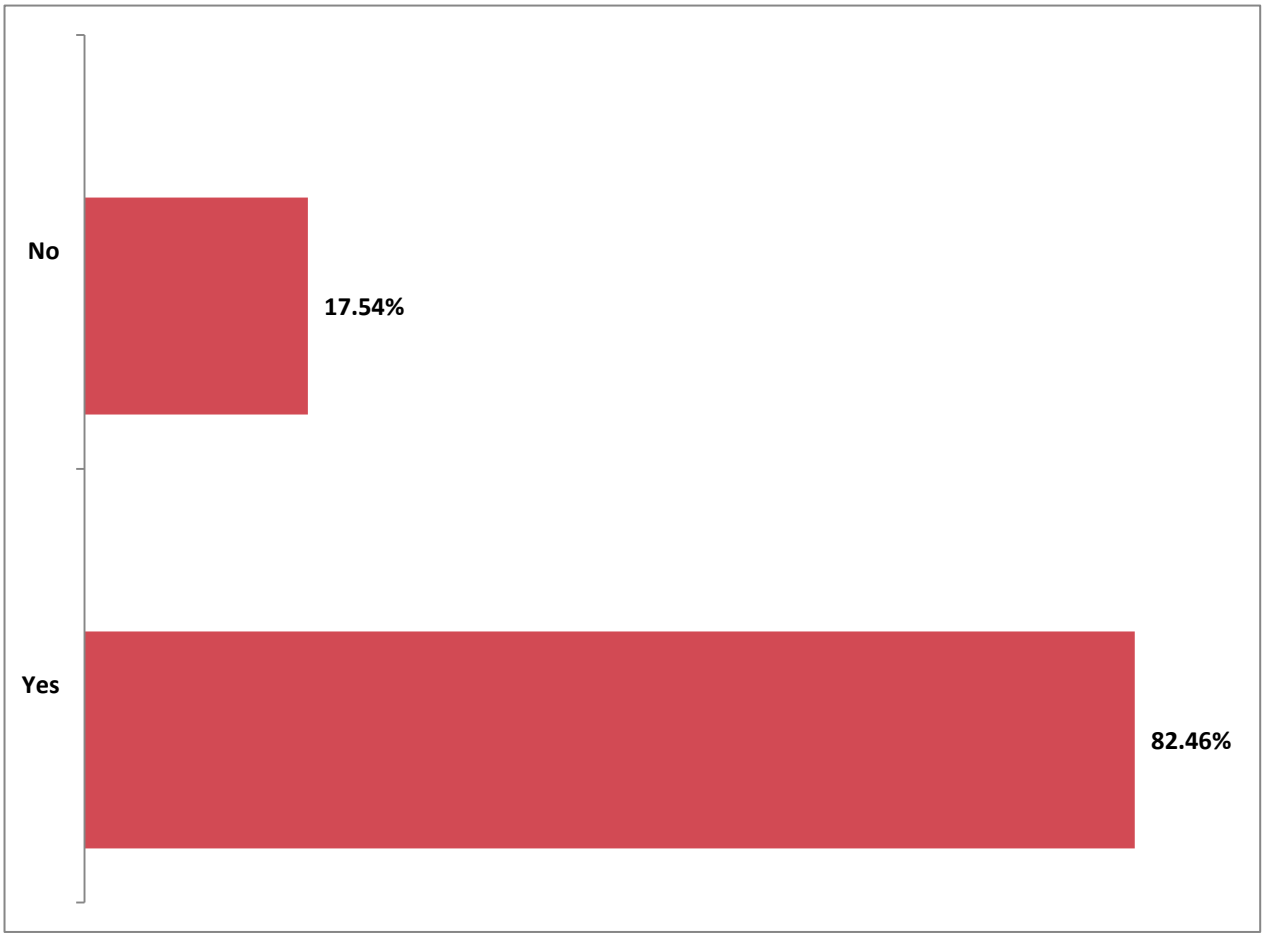
Other (please specify) Verbatim Responses
We would like to own our own home before we do that.

Asked only of renters

Would you be interested in receiving energy-saving tips or suggestions through future empowered community newsletters or survey invitations?

QUESTION TOTAL: 57
NO RESPONSE: 0

	OPTIONS	TOTAL	PERCENT
O1	Yes	47	82.46%
O2	No	10	17.54%



2015-2016

IDAHO POWER
ENERGY WISE® PROGRAM SUMMARY REPORT

SUBMITTED BY:
RESOURCE ACTION PROGRAMS®

RESOURCEACTION
PROGRAMS

Idaho Power Energy Wise®
Program Summary Report
2015-2016

Made possible by:

IDAHO POWER®

An IDACORP Company

Submitted by:

RESOURCEACTION PROGRAMS

July 2016

"My students were able to connect their everyday lives to energy used. For example the peak time which happens to be around the time they are home."

Lisa Godinez, Teacher
Groveland Elementary

Table of Contents

"The program did such an effective job correlating the lessons with the Idaho ISAT Science standards. A big thank you for the detail. It raised the bar for 5th graders."

Vicki Mathews-Burwell, Teacher
New Plymouth Elementary School

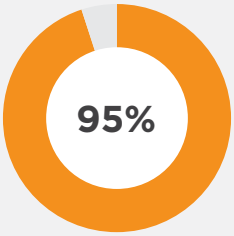
Executive Summary

Resource Action Programs® (RAP) is pleased to present this Program Summary Report to Idaho Power, which summarizes the 2015-2016 Idaho Power Energy Wise® Program. The program was implemented in the Idaho Power service area in the state of Idaho by 6,305 teachers, students, and their families.

The following pages provide an overview of the program and materials, outline of program implementation, introduction to the program team, description of program enhancements, impact of the program, and summary of results from the home activities. In addition to this information, evaluations, letters, and comments are provided for a glimpse into actual participant feedback. Lastly, projected savings from the individual measures found within the Energy Wise Kit are also included.

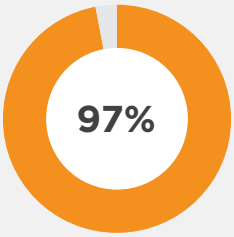
Participant Satisfaction

A successful program excites and engages participants. Students, parents, and teachers are asked to evaluate the program and provide personal comments. A sample of the feedback is given in the margin. ›



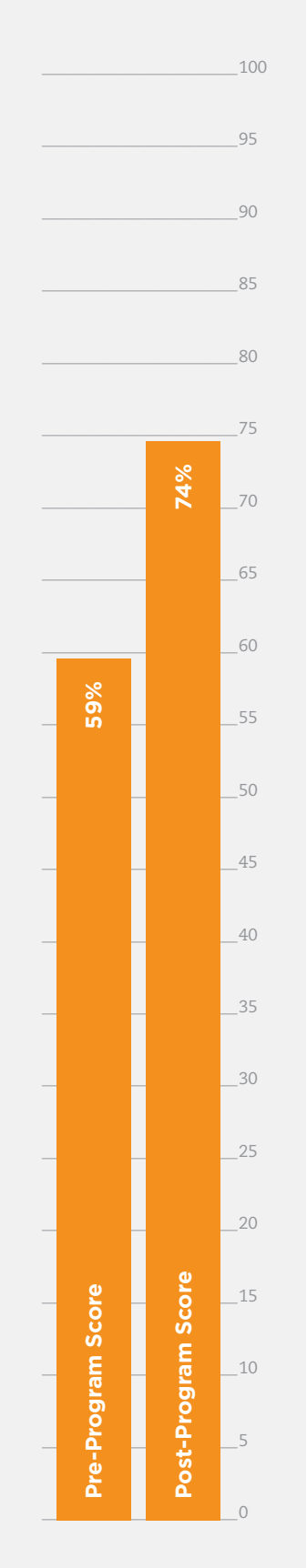
Teachers who indicated parents supported the program.

Teachers who indicated they would recommend this program to other colleagues.



Teachers who indicated they would conduct this program again.

A summary of responses can be found in Appendix D.



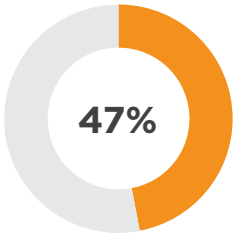
Knowledge Gained

Identical tests were administered to the students prior to the program and again upon program completion to measure knowledge gained. Scores and subject knowledge improved from **59%** to **74%**.

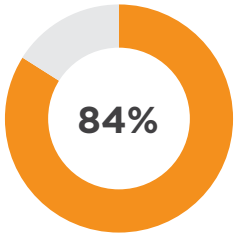
Measures Installed

Students completed take-home activities as part of the program and reported on the kit measures they installed in their homes.

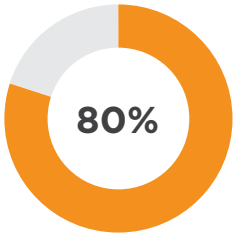
A summary of responses can be found in Appendix B.



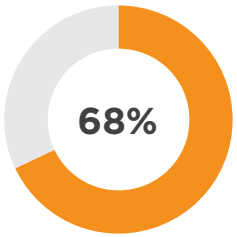
Students who reported they installed the High-Efficiency Showerhead.



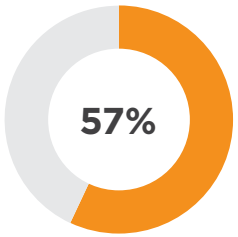
Students who indicated they installed the LED Night Light.



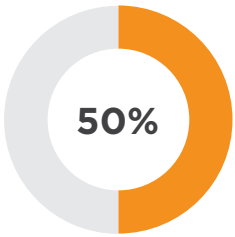
Students who reported they used the Shower Timer.



Students who reported they installed the first 9-watt LED.



Students who reported they installed the second 9-watt LED.



Students who reported they installed the third 9-watt LED.

Student Survey Response by Region

	Total	Capital	Canyon	Eastern	Southern	Western
Total Participants	**6,305**	1,305	2,405	1,234	783	578
Students	**6,086**	1,262	2,319	1,191	753	561
Surveys Received	**4,294**	790	1,784	893	440	387
Percent Response	**71%**	63%	77%	75%	58%	69%

Energy and Water Savings Results

In addition to educating students and their parents, a primary program goal is to generate cost-effective energy and water savings. Student home surveys not only provided the data used in the savings projections, but also reinforced the learning benefits.

Projected Resource Savings

A list of assumptions and formulas used for these calculations can be found in Appendix A.

PROJECTED ANNUAL SAVINGS	
10,882,978	gallons of water saved
1,541,661	kWh of electricity saved
44,377	therms of gas saved
10,882,978	gallons of wastewater saved

PROJECTED LIFETIME SAVINGS	
108,829,784	gallons of water saved
16,557,701	kWh of electricity saved
443,773	therms of gas saved
108,829,784	gallons of wastewater saved

PROJECTED ANNUAL SAVINGS PER HOME	
1,726	gallons of water saved
245	kWh of electricity saved
7	therms of gas saved
1,726	gallons of wastewater saved

PROJECTED LIFETIME SAVINGS PER HOME	
17,261	gallons of water saved
2,626	kWh of electricity saved
70	therms of gas saved
17,261	gallons of wastewater saved

"What I liked best about the program was the conversations that the students and I had about how they can keep conserve by doing things themselves."

Jackie Sodaro, Teacher
Desert Springs Elementary School

Program Overview

The Idaho Power Energy Wise® Program, a school-based energy efficiency education program, is designed to generate immediate and long-term resource savings by bringing interactive, real-world education home to students and their families. The 2015-2016 program was taught in grades 4-6 throughout the Idaho Power service area.

The Idaho Power Community Education Representative program team identifies and enrolls students and teachers within the designated service area. The program physically begins with classroom discussions in a Student Guide that provide the foundations of using energy and water efficiently, followed by hands-on, creative, problem solving activities led by the classroom teacher.

All program materials support state and national academic standards to allow the program to fit easily into a teacher's existing curriculum and requirements. The participating classroom teachers follow the Teacher Book and lesson plan. Information is given to guide lessons throughout the program in order to satisfy each student's individual needs, whether they are visual, auditory, or kinesthetic learners.

The Energy Wise Kit and Student Workbook comprise the take-home portion of the program. Students receive a kit containing high-efficiency measures they use to install within their homes. With the help of their parents/guardians, students install the kit measures and complete a home survey. The act of installing and monitoring new energy efficiency devices in their homes allows students to put their learning into practice. Here, participants and their parents/guardians realize actual water and energy savings within their home, benefitting two generations.

A critical element of RAP program design is the use of new knowledge through reporting. At the end of the program, the Idaho Power program team tabulates all participant responses—including home survey information, teacher responses, student letters, and parent feedback—and generates this Program Summary Report.

"My favorite part of the program was the ease of it! Everything is laid out in easy-to-teach lessons and all supplies are provided."

Lisa Jauregui, Parent
Desert Springs Elementary School

Program Materials

Each participant in the Idaho Power Energy Wise® Program receives classroom materials and energy efficiency kits containing high-efficiency measures to perform the program's take-home activities. Program materials for students, parents/guardians, and teachers are outlined below.

Each Student & Teacher Receives

Student Guide

Student Workbook

Parent/Guardian Program Introduction Letter*

Student Survey Form

Certificate of Achievement

Energy Wise Kit Containing:

- High-Efficiency Showerhead*
- Shower Timer
- LED Night Light
- (3) 9-watt LED Light Bulbs*
- FilterTone® Alarm*
- Digital Thermometer*
- Reminder Stickers and Magnet Pack
- Flow Rate Test Bag
- Natural Resource Fact Chart
- Parent/Guardian Program Evaluation
- Installation DVD

Idaho Power "Get Wise" Wristband

Website Access at:

http://www.idahopower.com/wise

Toll-Free HELP Line

Each Teacher/Classroom Receives

Teacher Book

Idaho Power Custom Introduction Video Flash Drive

Step-by-Step Program Checklist

Lesson Plans

Idaho State and National Academic Standards Chart

Extra Activities

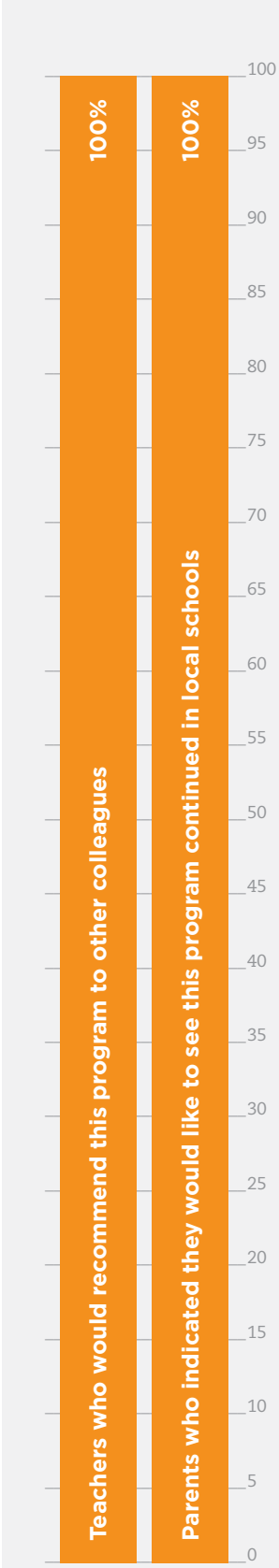
Teacher Program Evaluation

Pre/Post Student Survey Answer Keys

Electricity Poster

Self-Addressed Postage-Paid Envelope

** Materials / Installation Instructions provided in English and Spanish*



Custom Branding

In addition to increasing resource awareness and efficiency, the program has been designed to strengthen bonds between Idaho Power and the community. One of the steps taken to ensure the greatest possible exposure is to feature the Idaho Power logo throughout each Energy Wise Kit. In addition to the kit, the Teacher Program Evaluation, Parent/Guardian Program Introduction Letter, and Idaho Power exclusive Introduction Video (flash drive) also feature Idaho Power branding. Further, a custom Teacher Solicitation Flyer was created for Community Education Representatives' program promotion.

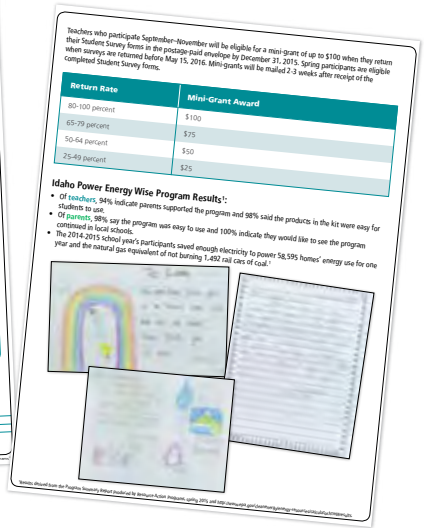

2015-2016 Idaho Power Energy Wise® Program

Participate in Idaho Power's 4th – 6th grade Energy Wise Program

Each Student/Teacher Receives:

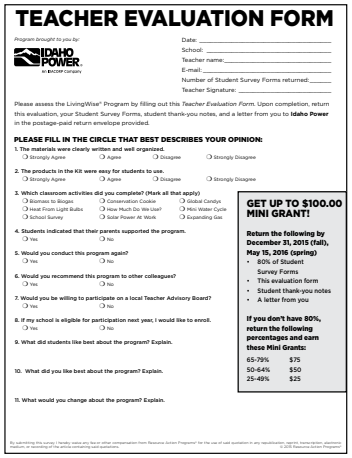
Each Teacher/Classroom Receives:

There is no cost to participate


Idaho Power Energy Wise Program Results[1]:

Return Rate	Mini-Grant Award
80-100 percent	$100
65-79 percent	$75
50-64 percent	$50
25-49 percent	$25

Program Materials


TEACHER EVALUATION FORM

Program brought to you by:

IDAHO POWER. An IDACORP Company

Date: _____
School: _____
Teacher name: _____
E-mail: _____
Number of Student Survey Forms returned: _____
Teacher Signature: _____

Please assess the LivingWise® Program by filling out this *Teacher Evaluation Form*. Upon completion, return this evaluation, your Student Survey Forms, student thank-you notes, and a letter from you to **Idaho Power** in the postage-paid return envelope provided.

PLEASE FILL IN THE CIRCLE THAT BEST DESCRIBES YOUR OPINION:

1. **The materials were clearly written and well organized.**
❍ Strongly Agree ❍ Agree ❍ Disagree ❍ Strongly Disagree

2. **The products in the Kit were easy for students to use.**
❍ Strongly Agree ❍ Agree ❍ Disagree ❍ Strongly Disagree

3. **Which classroom activities did you complete? (Mark all that apply)**
❍ Biomass to Biogas ❍ Conservation Cookie ❍ Global Candyx
❍ Heat From Light Bulbs ❍ How Much Do We Use? ❍ Mini Water Cycle
❍ School Survey ❍ Solar Power At Work ❍ Expanding Gas

4. **Students indicated that their parents supported the program.**
❍ Yes ❍ No

5. **Would you conduct this program again?**
❍ Yes ❍ No

6. **Would you recommend this program to other colleagues?**
❍ Yes ❍ No

7. **Would you be willing to participate on a local Teacher Advisory Board?**
❍ Yes ❍ No

8. **If my school is eligible for participation next year, I would like to enroll.**
❍ Yes ❍ No

9. **What did students like best about the program? Explain.**

10. **What did you like best about the program? Explain.**

11. **What would you change about the program? Explain.**

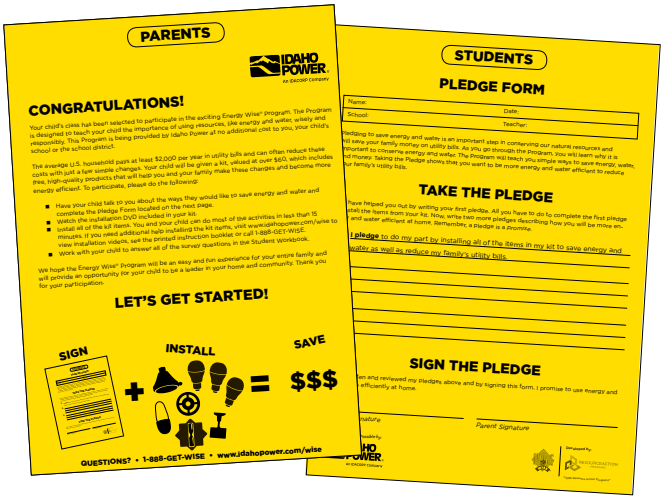
GET UP TO $100.00 MINI GRANT!

Return the following by December 31, 2015 (fall), May 15, 2016 (spring)
- **80% of Student Survey Forms**
- This evaluation form
- Student thank-you notes
- A letter from you

If you don't have 80%, return the following percentages and earn these Mini Grants:

65-79%	$75
50-64%	$50
25-49%	$25

Teacher Evaluation Form


PARENTS

IDAHO POWER. An IDACORP Company

CONGRATULATIONS!

Your child's class has been selected to participate in the exciting Energy Wise® program. The Program is designed to teach your child the importance of using resources, like energy and water, wisely and responsibly. This Program is being provided by Idaho Power at no additional cost to you, your child's school or the school district.

The average U.S. household pays at least $2,000 per year in utility bills and can often reduce these costs with just a few simple changes. Your child will be given a kit, valued at over $60, which includes free, high-quality products that will help you and your family make these changes and become more energy efficient. To participate, please do the following:

- Have your child talk to you about the ways they would like to save energy and water and complete the Pledge Form located on the next page.
- Watch the installation DVD included in your kit.
- Install all of the kit items. You and your child can do most of the activities in less than 15 minutes. If you need additional help installing the kit items, visit www.idahopower.com/wise to view installation videos, see the printed instruction booklet or call 1-888-GET-WISE.
- Work with your child to answer all of the survey questions in the Student Workbook.

We hope the Energy Wise® Program will be an easy and fun experience for your entire family and will provide an opportunity for your child to be a leader in your home and community. Thank you for your participation.

LET'S GET STARTED!

SIGN INSTALL SAVE $$$

QUESTIONS? • 1-888-GET-WISE • www.idahopower.com/wise

STUDENTS

PLEDGE FORM

Name: _____
School: _____ Date: _____
Teacher: _____

Pledging to save energy and water is an important step in conserving our natural resources and will save your family money on utility bills. As you go through the program, you will learn why it is important to conserve energy and water. The Program will teach you simple ways to save energy, water, and money. Taking the Pledge shows that you want to be more energy and water efficient to reduce your family's utility bills.

TAKE THE PLEDGE

You have helped you out by writing your first pledge. Will you have to do to complete the first pledge and will the items from your kit. Now, write two more pledges describing how you will be more energy and water efficient at home. Remember, a pledge is a promise.

I **pledge** to do my part by installing all of the items in my kit to save energy and water as well as reduce my family's utility bills.

_____
_____
_____
_____
_____

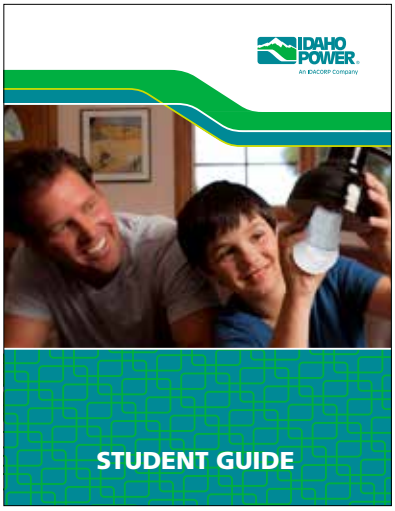
SIGN THE PLEDGE

_____ and reviewed my pledges above and by signing this form, I promise to use energy and water efficiently at home.

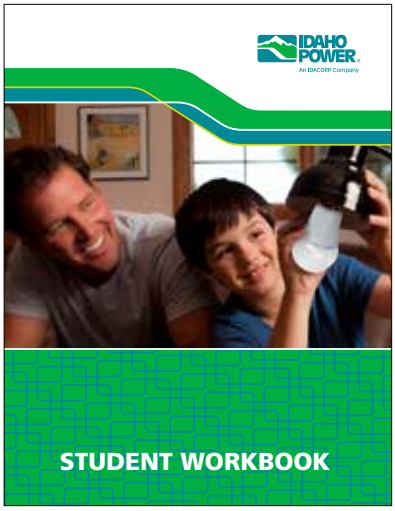
_____ _____
Signature Parent Signature

Developed by RESOURCE ACTION PROGRAMS

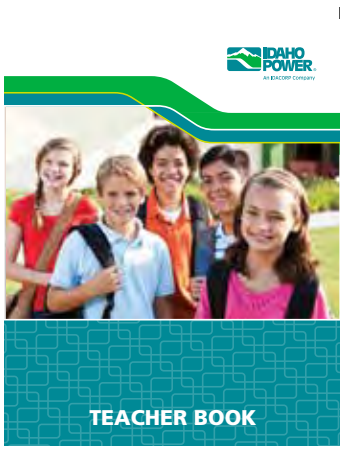
Parent Letter/Pledge Form



Student Guide



Student Workbook



Teacher Book


ENERGY STAR

CERTIFICATE OF ACHIEVEMENT

Awarded to

_____

for making a difference in your community by successfully completing the Energy Wise® program.

_____ ENERGY STAR Energy Wise® is developed by: RESOURCE ACTION PROGRAMS

Diane Sumner, Ed.S., Director of Education

©2016 Resource Action Programs®

Certificate of Achievement

Kit Box

Introduction Video (flash drive) Pen

"They loved the kits. When I gave them the kits they acted as if I gave them the greatest gift ever. Many of them couldn't wait to get started using it."

Michelle Jenkins, Teacher
Roosevelt Elementary

Program Implementation

The 2015-2016 Idaho Power Energy Wise® Program followed this comprehensive implementation schedule:

1. Identification of Idaho state and national academic standards & benchmarks
2. Curriculum development and refinement (completed annually)
3. Curriculum correlation to Idaho state and national academic standards & benchmarks
4. Materials modification to incorporate Idaho Power branding
5. Incentive program development
6. Teacher outreach and program introduction by Idaho Power CERs
7. Teachers enrolled in the program individually by Idaho Power CERs
8. Implementation dates scheduled with teachers by Idaho Power CERs
9. Program material delivered to coincide with desired implementation date
10. Delivery confirmation
11. Periodic contact to ensure implementation and teacher satisfaction
12. Program completion incentive offered
13. Results collection
14. Program completion incentive delivered to qualifying teachers
15. Thank you cards sent to participating teachers
16. Data analysis
17. Program Summary Report generated and distributed

Participating teachers are free to implement the program to coincide with their lesson plans and class schedules. Appendix C provides a comprehensive list of classrooms in grades 4-6 that participated during the 2015-2016 school year.

For more than 23 years, Resource Action Programs (RAP) has designed and implemented Measure-Based Education® programs that inspire change in household energy and water use while delivering significant, measurable resource savings. All RAP programs feature a proven blend of innovative education, comprehensive implementation services, and hands-on activities to put efficiency knowledge to work in students' homes.

RAP has a strong reputation for providing a high level of client service as part of a wide range of energy efficiency education solutions for utilities, municipalities, states, community agencies, corporations, and more. In 2013, RAP was the only conservation services provider honored by the American Council for an Energy-Efficient Economy (ACEEE) and the Alliance for Water Efficiency (AWE) as one of 12 top programs that provides sustained achievement. RAP was honored for market penetration, innovative design, and its ability to achieve substantial/sustained energy and water savings.

ACEEE
American Council for an Energy-Efficient Economy

Alliance for Water Efficiency

Program Team

RAP implements nearly 300 individual programs that serve more than 400,000 households each year. All-inclusive program delivery occurs in its 80,000 square-foot Nevada Program Center where implementation teams and support departments work together to provide:

- 1:1 teacher support
- Curriculum development
- Customized materials
- Data tracking and reporting
- Energy and water efficiency measures
- Graphic and web design
- Kit assembly
- Marketing communications
- Shipping
- Printing
- Program management
- Participant enrollment
- Warehousing

The Implementation Team

For the Idaho Power Energy Wise® Program, RAP assigned a specific implementation team to Idaho Power made up of a PMP®-designated Program Manager, CEM®-designated energy analyst, graphic designer, outreach personnel, educator, and administrative staff. This team immersed themselves into the Idaho Power brand, and handled all program implementation for Idaho Power. Idaho Power also received the benefit of fully staffed support departments, which worked with the implementation team to define success for Idaho Power. These departments include education, marketing, information technology, and warehouse/ logistics.

Continuous Improvement

In addition to successful implementation of the Idaho Power Energy Wise Program, RAP engages in continuous program improvement, as well as enhancements to educational materials, with modifications based on emerging technology, industry trends, and EM&V findings.

As part of this plan, RAP utilizes an extensive network of educators for program feedback. This feedback ensures that educational components meet the changing needs of educators, keep information relevant to students, and, in turn, provide increased water and energy literacy amongst program participants.

"The light bulb consumption was an eye opening exercise. I was unaware of the pros of LED bulbs."

Tyler Hepworth, Parent
Edahow Elementary School

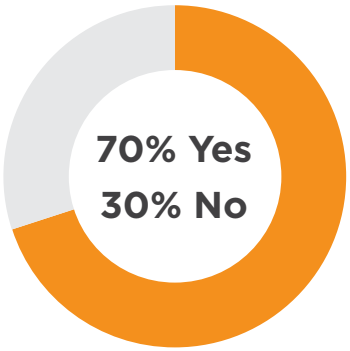
Program Impact

The Idaho Power Energy Wise® Program has had a significant impact within the community. As illustrated below, the program successfully educated participants about energy and water efficiency while generating resource savings through the installation of efficiency measures in homes. Home survey information was collected to track projected savings and provide household consumption and demographic data. Program evaluations and comments were collected from teachers, students, and parents. The following program elements were used to collect this data:

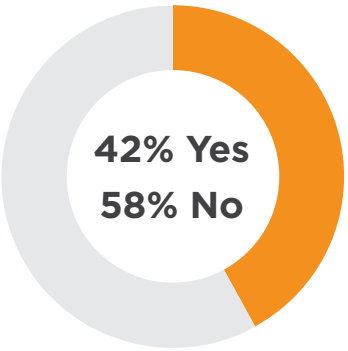
A. Home Survey for Capital Region

Participating teachers were asked to return their students' completed home check-up and home activities results. Of the 43 participating teachers in the Capital region, 32 (74%) returned survey results for the program. Parents and students were asked to install the kit measures and complete the home activities. Of the 1,262 participating children in the Capital region, 790 (63%) returned completed surveys.

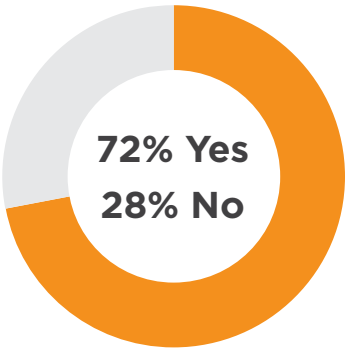
Did your family install the first 9-watt LED Light Bulb?	**Yes - 70%**
Did your family install the new High-Efficiency Showerhead?	**Yes - 42%**
Did your family change the way they use energy?	**Yes - 72%**



Students who indicated they installed the first 9-watt LED Light Bulb.



Students who indicated they installed the High-Efficiency Showerhead.

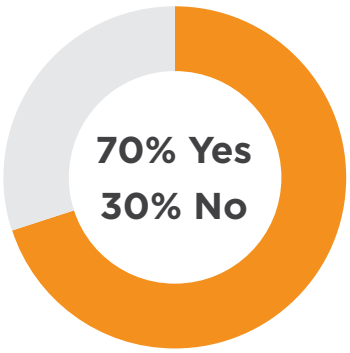


Students who indicated their family changed the way they use energy.

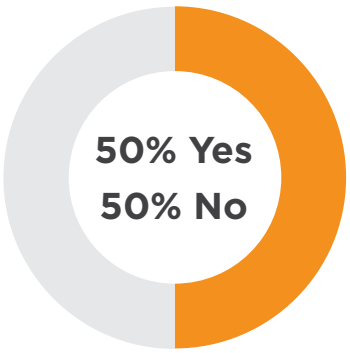
Home Survey for Canyon Region

Participating teachers were asked to return their students' completed home check-up and home activities results. Of the 86 participating teachers in the Canyon region, 73 (85%) returned survey results for the program. Parents and students were asked to install the kit measures and complete the home activities. Of the 2,319 participating children in the Canyon region, 1,784 (77%) returned completed surveys.

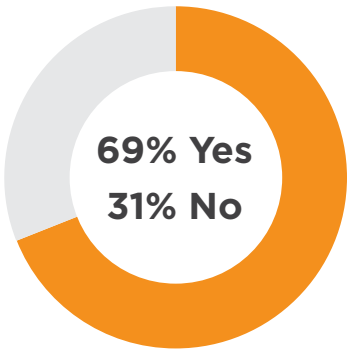
Did your family install the first 9-watt LED Light Bulb?	**Yes - 70%**
Did your family install the new High-Efficiency Showerhead?	**Yes - 50%**
Did your family change the way they use energy?	**Yes - 69%**



Students who indicated they installed the first 9-watt LED Light Bulb.



Students who indicated they installed the High-Efficiency Showerhead.

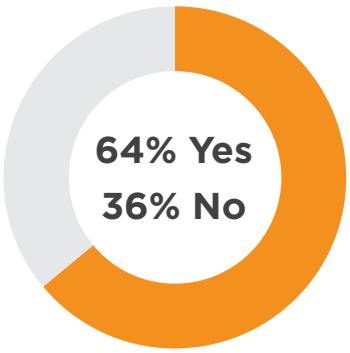


Students who indicated their family changed the way they use energy.

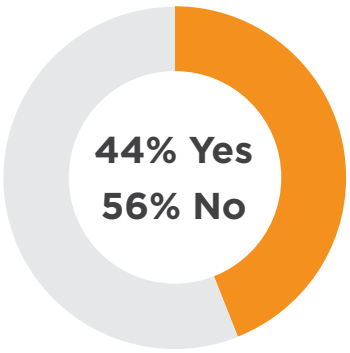
Home Survey for Eastern Region

Participating teachers were asked to return their students' completed home check-up and home activities results. Of the 43 participating teachers in the Eastern region, 37 (86%) returned survey results for the program. Parents and students were asked to install the kit measures and complete the home activities. Of the 1,191 participating children in the Eastern region, 893 (75%) returned completed surveys.

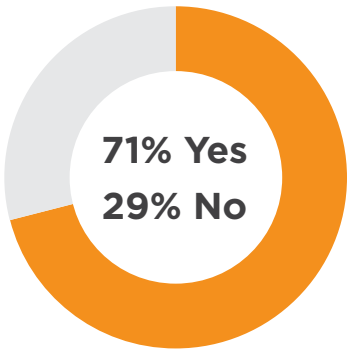
Did your family install the first 9-watt LED Light Bulb?	**Yes - 64%**
Did your family install the new High-Efficiency Showerhead?	**Yes - 44%**
Did your family change the way they use energy?	**Yes - 71%**



Students who indicated they installed the first 9-watt LED Light Bulb.



Students who indicated they installed the High-Efficiency Showerhead.

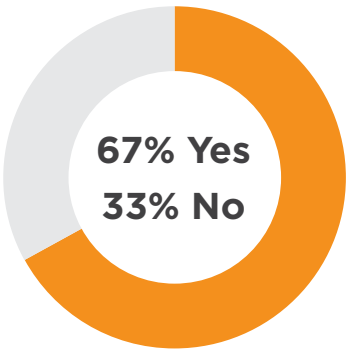


Students who indicated their family changed the way they use energy.

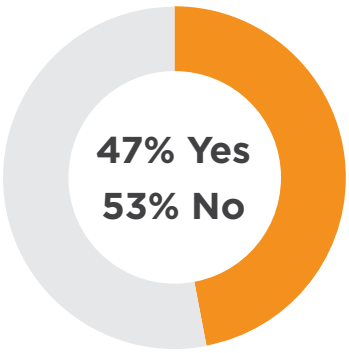
Home Survey for Southern Region

Participating teachers were asked to return their students' completed home check-up and home activities results. Of the 30 participating teachers in the Southern region, 20 (67%) returned survey results for the program. Parents and students were asked to install the kit measures and complete the home activities. Of the 753 participating children in the Southern region, 440 (58%) returned completed surveys.

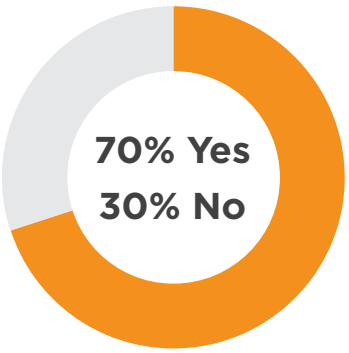
Did your family install the first 9-watt LED Light Bulb?	**Yes - 67%**
Did your family install the new High-Efficiency Showerhead?	**Yes - 47%**
Did your family change the way they use energy?	**Yes - 70%**



Students who indicated they installed the first 9-watt LED Light Bulb.



Students who indicated they installed the High-Efficiency Showerhead.

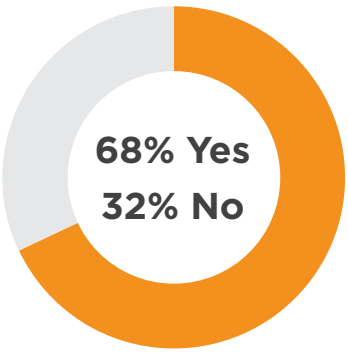


Students who indicated their family changed the way they use energy.

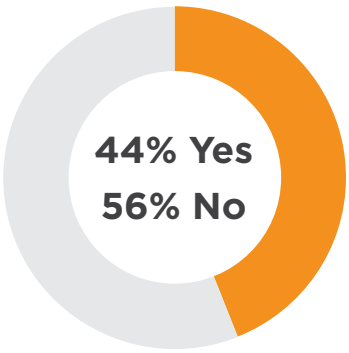
Home Survey for Western Region

Participating teachers were asked to return their students' completed home check-up and home activities results. Of the 17 participating teachers in the Western region, 12 (71%) returned survey results for the program. Parents and students were asked to install the kit measures and complete the home activities. Of the 561 participating children in the Western region, 387 (69%) returned completed surveys.

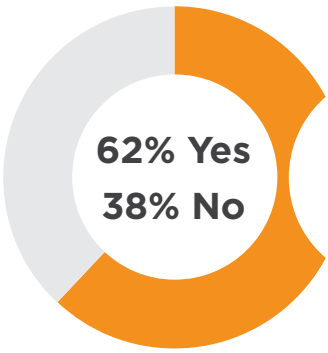
Did your family install the first 9-watt LED Light Bulb?	**Yes - 68%**
Did your family install the new High-Efficiency Showerhead?	**Yes - 44%**
Did your family change the way they use energy?	**Yes - 62%**



Students who indicated they installed the first 9-watt LED Light Bulb.



Students who indicated they installed the High-Efficiency Showerhead.

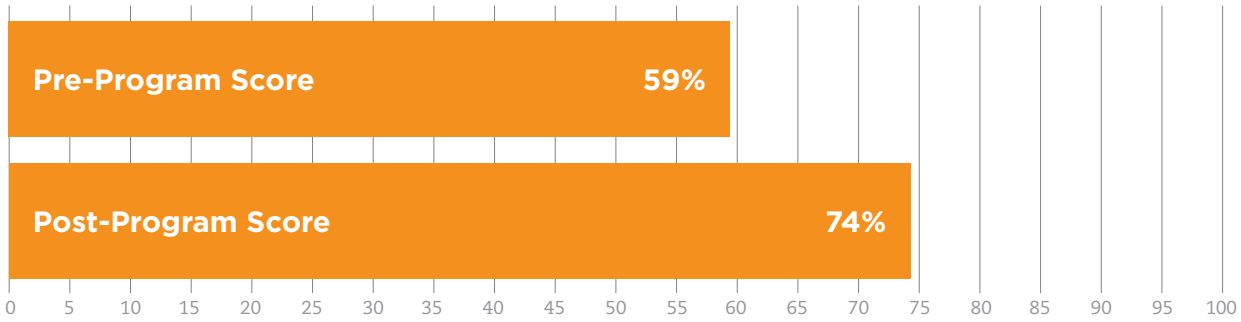


Students who indicated their family changed the way they use energy.

B. Pre-Program and Post-Program Tests

Students were asked to complete a 10-question test before the program was introduced and then again after it was completed to determine the knowledge gained through the program. The average student answered **5.9** questions correctly prior to being involved in the program and then improved to answer **7.4** questions correctly following participation. Of the 6,086 student households participating, 4,294 returned survey responses.

Scores improved from 59% to 74%.



Pre-Program and Post-Program Test Questions

		Pre	Post
1	Which layer of Earth do we live on?		
	Crust	66%	86%
	Mantle	6%	3%
	Inner Core	9%	3%
	Outer Core	18%	7%
2	Non-Potable water is safe to drink.		
	True	25%	15%
	False	75%	85%
3	Which of these is not a renewable resource?		
	Wind	23%	11%
	Plants	5%	3%
	Gold	57%	78%
	Animals	15%	9%
4	Saving water saves energy.		
	True	85%	94%
	False	15%	6%

Pre-Program and Post-Program Test Questions

		Pre	Post
5	Which are fossil fuels?		
	Coal	25%	18%
	Oil	12%	6%
	Natural Gas	14%	8%
	All of the above	49%	68%
6	Which type of energy is created in the process of Photosynthesis?		
	Nuclear Energy	21%	17%
	Thermal Energy	24%	20%
	Chemical Energy	29%	51%
	Electric Energy	26%	13%
7	Which Kit item will save the most natural resources?		
	Compact Fluorescent Lamp	17%	13%
	High-Efficiency Showerhead	36%	59%
	FilterTone® Alarm	17%	9%
	LED Night Light	30%	19%
8	Which major appliance uses the most energy?		
	Dishwasher	20%	15%
	Refrigerator	61%	68%
	Dryer	19%	17%
9	An LED (light emiting Diode) light bulb uses more energy than an incandescent bulb.		
	True	42%	30%
	False	57%	70%
10	On-peak time is the best time to play video games.		
	True	30%	17%
	False	70%	83%

C. Home Activities—Summary

As part of the program, parents and students installed resource efficiency measures in their homes. They also measured the pre-existing devices to calculate savings that they generated. Using the family habits collected from the home survey as the basis for this calculation, 6,305 households are expected to save the following resource totals. Savings from these actions and new behaviors will continue for many years to come. Of the 6,086 student households participating, 4,294 returned survey responses.

Projected Resource Savings

A list of assumptions and formulas used for these calculations can be found in Appendix A.

Number of Participants:	**6,305**		
	Annual	**Lifetime**	
Projected reduction from Showerhead retrofit:	**10,882,978**	**108,829,784**	gallons
Product Life: **10 years**	**680,262**	**6,802,621**	kWh
	37,481	**374,809**	therms
Projected reduction from first **9**-watt LED Light Bulb:	**222,364**	**2,668,368**	kWh
Product Life: **25,000 hours** (**12** years)			
Projected reduction from second **9**-watt LED Light Bulb:	**186,787**	**2,241,439**	kWh
Product Life: **25,000 hours** (**12** years)			
Projected reduction from third **9**-watt LED Light Bulb:	**161,397**	**1,936,763**	kWh
Product Life: **25,000 hours** (**12** years)			
Projected reduction from LED Night Light retrofit:	**151,662**	**1,516,624**	kWh
Product Life: **10,000 hours**			
Projected reduction from FilterTone® installation:	**139,189**	**1,391,886**	kWh
Product Life: **10 years**	**6,896**	**68,964**	therms
TOTAL PROGRAM SAVINGS:	**10,882,978**	**108,829,784**	gallons
	1,541,661	**16,557,701**	kWh
	44,377	**443,773**	therms
TOTAL PROGRAM SAVINGS PER HOUSEHOLD:	**1,726**	**17,261**	gallons
	245	**2,626**	kWh
	7	**70**	therms

D. Teacher Program Evaluation

Program improvements are based on participant feedback received. One of the types of feedback obtained is from participating teachers via a Teacher Program Evaluation Form. They are asked to evaluate relevant aspects of the program and each response is reviewed for pertinent information. The following is feedback from the Teacher Program Evaluation for the Idaho Power Energy Wise Program. Of the 219 participating teachers, 174 returned teacher program evaluation surveys.

Teacher Response

(A summary of responses and regional data can be found in Appendix D)

97% of participating teachers indicated they would conduct the program again given the opportunity.

100% of participating teachers indicated they would recommend the program to their colleagues.

What did students like best about the program? Explain.

"Working with their family to install kit items."
Sandra Otero, Wilson Elementary School

"Extra class experiments, home kit."
Lori Murphy, Ustick Elementary School

"They told me that they enjoyed using all the products at home. Many said they used everything."
Amy Hirsch, Ustick Elementary School

"The activities."
Rose Marie Warrell, Oakley Elementary School

"Students enjoyed the presentation, the kits, and the experiments I've conducted."
Brenda Fly, Birch Elementary School

"They liked the at home activities."
Juilana Lookhart, Birch Elementary School

What did you like best about the program? Explain.

"The teacher guide made it easy to choose lessons and teach them."
Sandra Otero, Wilson Elementary School

"The interactive pieces... Classroom activities were fun!"
Lori Murphy, Ustick Elementary School

"I really enjoyed the classroom activities. They are very simple, but a powerful teaching tool!"
Amy Hirsch, Ustick Elementary School

"Lesson plans included along with activities."
Rose Marie Warrell, Oakley Elementary School

E. Parent/Guardian Program Evaluation

Parent involvement with program activities and their children is of paramount interest to both Idaho Power and teachers in the program. When parents take an active role in their child's education it helps the schools and strengthens the educational process considerably. When students successfully engage their families in retrofit, installation, and home energy efficiency projects, efficiency messages are powerfully delivered to two generations in the same household. The program is a catalyst for this family interaction, which is demonstrated by feedback from Parent/Guardian Program Evaluations. The following is feedback from the Parent/Guardian Program Evaluations for the Idaho Power Energy Wise Program. Of the 6,305 participating families, 80 parents returned program evaluation surveys.

Parent Response

(A summary of responses and regional data can be found in Appendix E)

100% of participating parents indicated that the program was easy to use.

100% of participating parents indicated they would continue to use the kit items after the completion of the program.

100% of participating parents indicated they would like to see this program continued in local schools.

As a parent, which aspect of the program did you like best?

"*I thought it was a great way for them to understand how to save energy which saves money.*"
Chris Niuer, Alturas Elementary

"*Focus on saving energy.*"
Chris Conant, Amity Elementary School

"*Loved the LED bulbs. The kit explaining all and the workbook was great as well.*"
Victoria Rogers, Amity Elementary School

"*I love that the program is educating kids for their future*"
Virginia Farr, Amity Elementary School

"*The encouragement to be aware of power use.*"
Andrea Gabion, Birch Elementary School

"*Teaching my kids how to save energy and money.*"
Jeni Kikendall, Birch Elementary School

"*The filter alarm and how interested my child was in trying it all out and learning from it.*"
Nikol McKean, Birch Elementary School

"*How it showed my child the importance of conservation with household items.*"
Stephen Muhonen, Claude A. Wilcox Elementary School

F. Teacher Letters

Dear Idaho Power,

Thank you very much for allowing my class to participate in The Energy Wise Program again this year. Once again, it was a fantastic experience, both in the classroom and for families at home.

We were able to apply energy conservation ideas to our environment at school, as well as at home. I believe the students are more aware of their energy consumption, and are working hard to limit use.

As a low-income school, it is always fun to hear how the home kits bless the families. Some families don't even have money to buy lightbulbs, so free items are very special. The look on their faces when they receive the kit is incredible...you are providing more than energy education.

Thanks so much,

Lori Murphy

Lori Murphy
4th grade teacher, Ustick Elementary

Teacher Letters

(continued)

October 21, 2015

Dear Idaho Power,

Thank you very much for letting my class participate in the Idaho Power Energywise Program. This is the fourth year I have had this program in my class and I love having it as part of my science curriculum. My colleagues, Rhonda Wilson, Michael Palmer, Britney Schulz, and I were impressed with this program. Thank you for sponsoring this program. We also greatly appreciate your representative, Andie Root, for introducing this program each year and signing us up for this program.

My students loved this program. They loved the kits the best and were amazed at all that they received in the kit. Every student in my class tried at least 2or more objects from the kit. About half of them told me they used almost everything in the kit. I heard wonderful stories about how they are trying to be more conservative of our natural resources. I also appreciated receiving a kit for myself—which I try to implement almost everything in it.

I felt that this program was well written and well organized. It was easy to follow and read. This is the fourth year for my class to participate in this program. I felt that the student kits were amazing. I was also very grateful to have the student guide to use in class. Our district is really restrictive on copies of assignments to use in our class. Since I had the student guide to use as I taught the lessons, I was able to do so much more and I didn't have to look for activities on my own that didn't require copying something. I especially appreciated that the hidden message was in the back of the student guide this year along with the extra activities. I love doing hidden message activity because it went really well with coordinates and latitude/longitude lessons that we have been discussing in class.

Thank you so much again for all the time, money, and effort that your company puts into this program. It shows how we can all be conservationists by using little steps to get there. Please consider me again for this program next year. I would love to teach this program every year.

Sincerely,
Michelle Jenkins
4th Grade Teacher
Franklin D. Roosevelt Elementary
Nampa School District
Nampa, ID

Teacher Letters

(continued)

October 27, 2015

Dear Idaho Power,

Thank you for the Energy Wise Kits. Students were so excited to receive them! Parent response to the learning materials provided was excellent. Several parents took the time to email me commenting on how thrilled they were to use the items as a tool to teach their children about how they could conserve energy at home. What a great opportunity to get kids excited about learning—and to teach them how to be considerate consumers.

Learning about energy, where it comes from, how it works, how we can protect it for future generations, has been an excellent basis for teaching Common Core State Standards. I appreciate the Student Workbook, Guide Book, and lesson plan book prepared for parents, students, and teachers. The variety of strategies suggested to teach this important concept were engaging and interesting. I look forward to implementing these ideas again in the future, and truly appreciate the $100 grant. This contribution to education allows my students to participate in activities that would otherwise be impossible.

Sincerely,

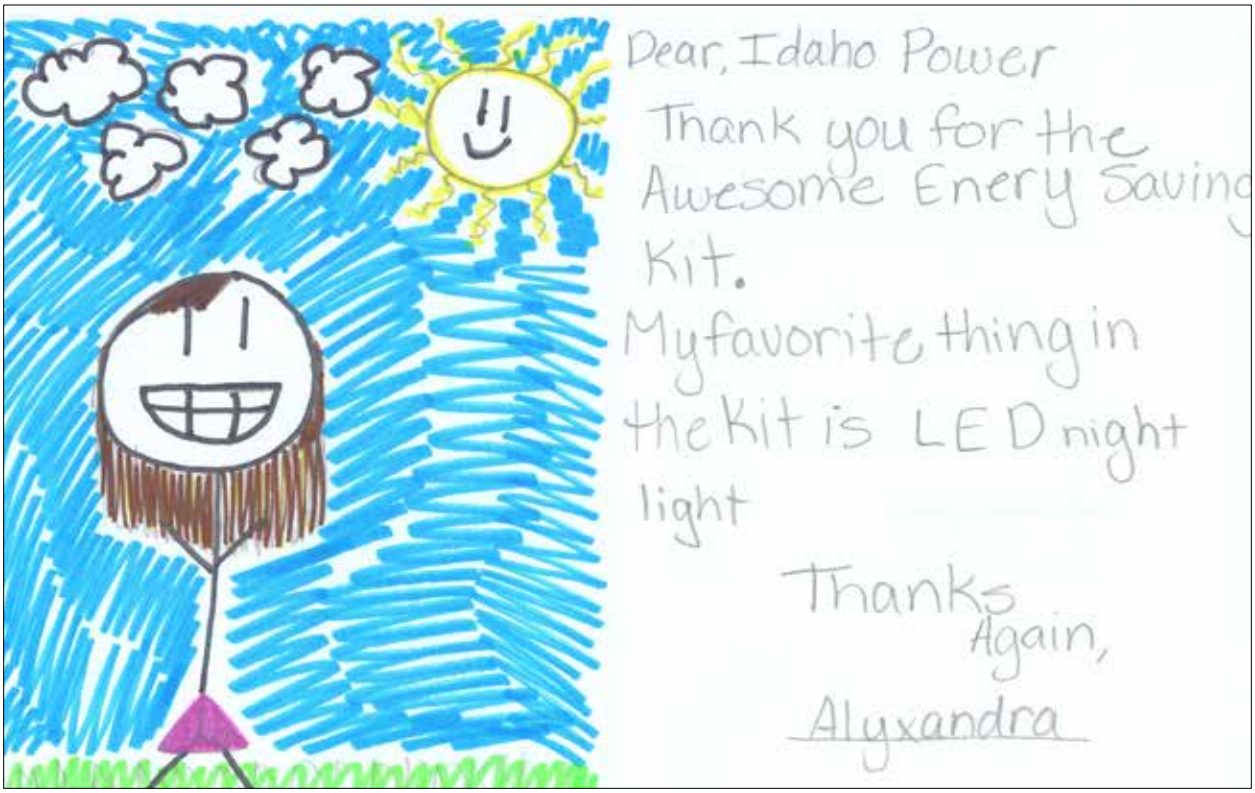
Brenda Fly

Mrs. Brenda Fly

G. Student Letters

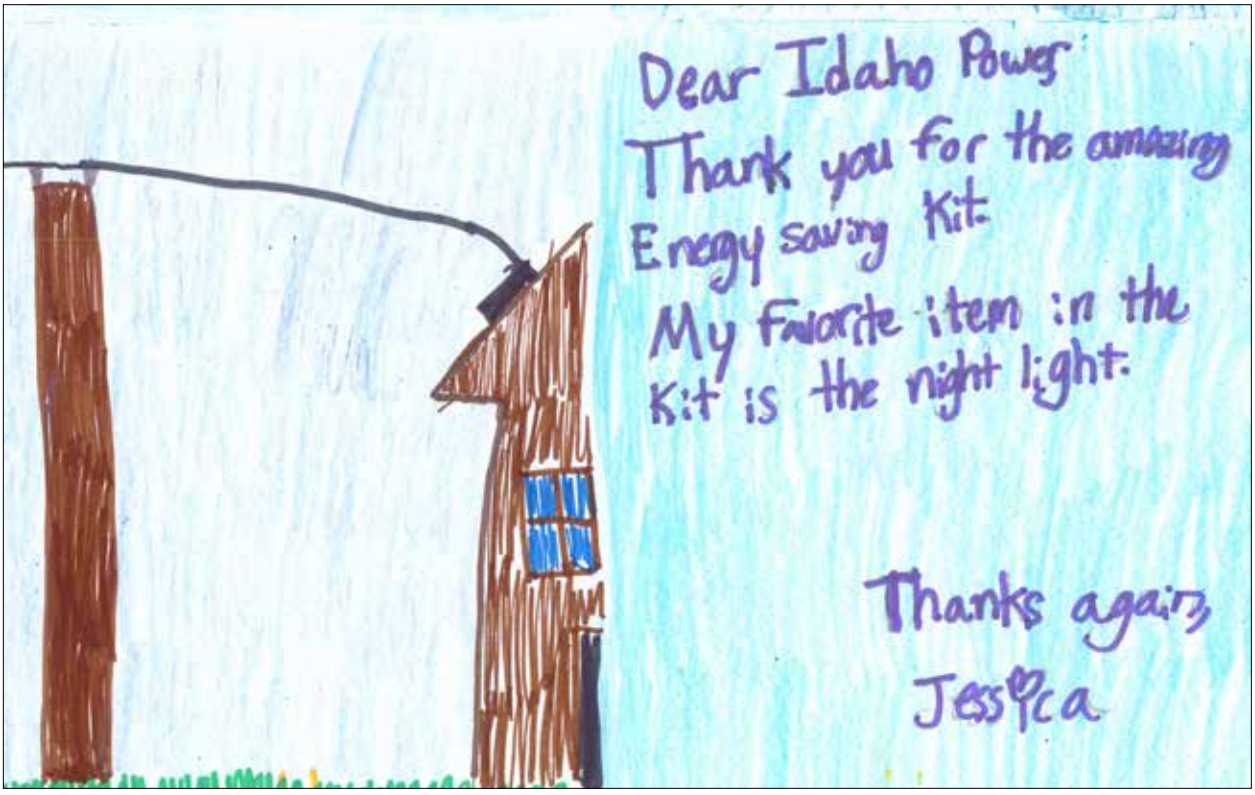
Student Letters

(continued)



Dear, Idaho Power
Thank you for the Awesome Enery Saving Kit.
My favorite thing in the kit is LED night light

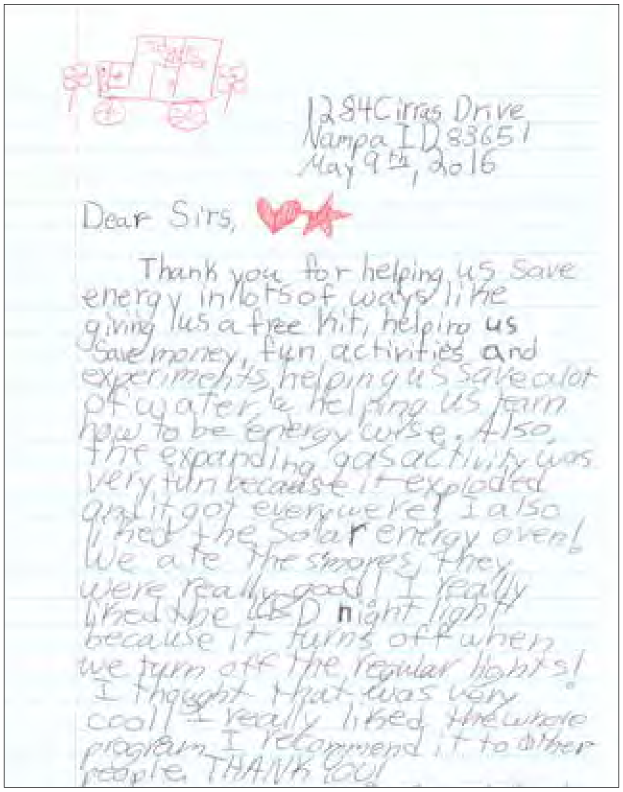
Thanks Again,
Alyxandra



Dear Idaho Power
Thank you for the amazing Energy saving kit.
My Favorite item in the Kit is the night light.

Thanks again,
Jessica

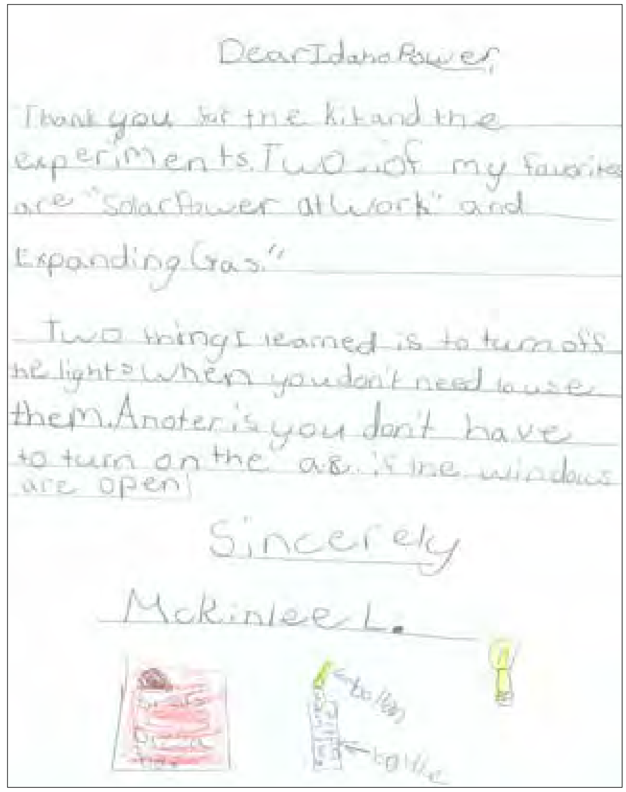
(continued)



1284 Cirrus Drive
Nampa ID 83651
May 9th, 2016

Dear Sirs,

Thank you for helping us save energy in lots of ways like giving us a free kit, helping us save money, fun activities and experiments, helping us save a lot of water & helping us learn how to be energy wise. Also, the expanding gas activity was very fun because it exploded and it got everywhere! I also liked the Solar energy oven! We ate the smores, they were really good! I really liked the LED night light because it turns off when we turn off the regular lights! I thought that was very cool! I really liked the whole program I recommend it to other people THANK YOU!



Dear Idaho Power,

Thank you for the kit and the experiments. Two of my favorites are "Solar Power at work" and Expanding Gas."

Two things I learned is to turn off the lights when you don't need to use them. Anoter is you don't have to turn on the a.c. if the windows are open

Sincerely
McKinlee L.

Dear Idaho Power

Thank you so much for giving us the education [illegible] saving energy. Also for the kits. I love the night light. I [illegible]ved doing the experiments. My favorite was "Solar Power [illegible] Work"

One of the things I learned is that on peek time isn't a very good time to play video games. Also I learned about renewable resources. I loved learning about Idaho Power

Sincerly,
Nuyomie

Dear Idaho Power,

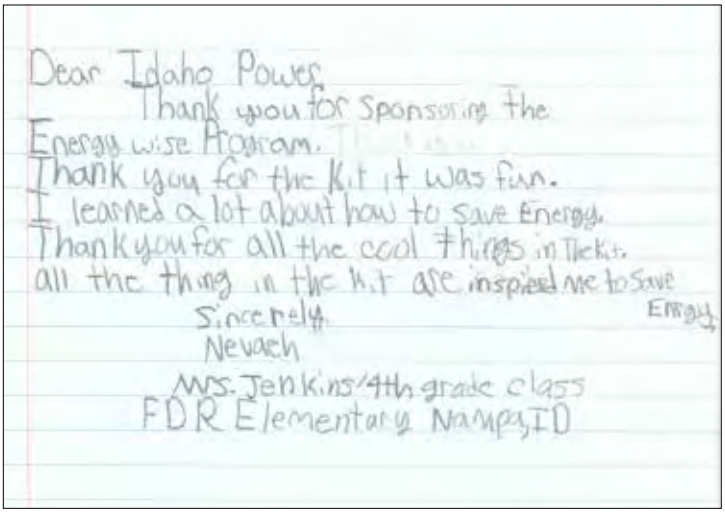
I Learned a lot about saving energy. I liked the [illegible] in my [illegible]. I used the [illegible] [illegible] I used the thermometer [illegible] [illegible] water.

I learned a lot by doing all the experiments. My favorite experiment is "Heat From Light Bulb". It [illegible] different light bulb. Thank you for everything.

Sincerely
[illegible]

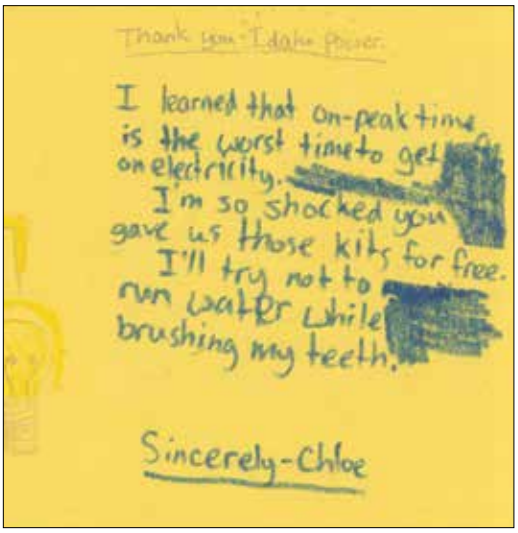
Student Letters

(continued)



Dear Idaho Power,
Thank you for Sponsoring the Energy wise Program.
Thank you for the kit it was fun.
I learned a lot about how to save Energy.
Thank you for all the cool things in the kit.
all the thing in the kit are inspired me to Save Energy.
Sincerely,
Nevaeh
Mrs. Jenkins 4th grade class
FDR Elementary Nampa, ID

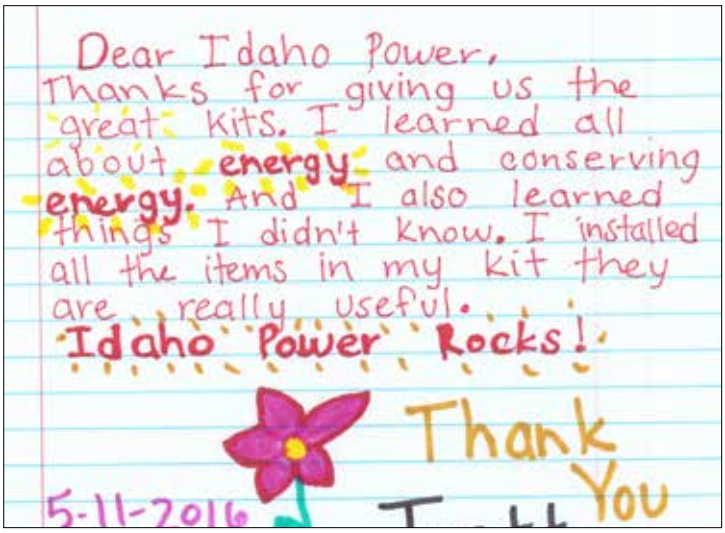
Thank You
Idaho Power



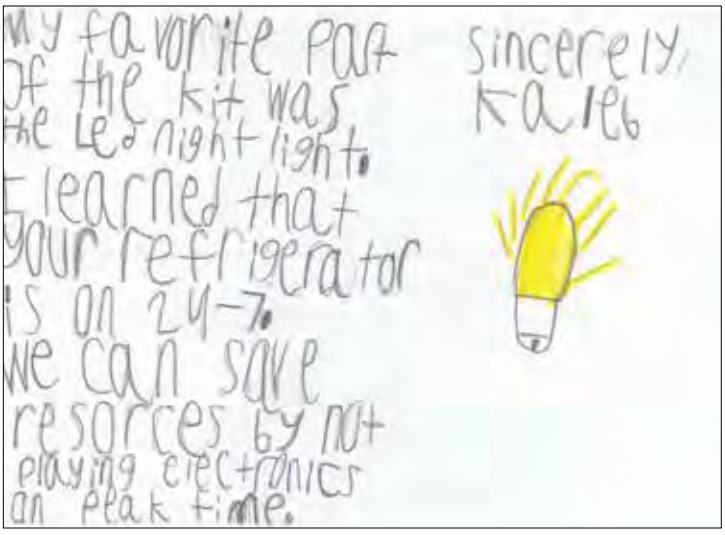
Thank you Idaho Power.

I learned that on-peak time is the worst time to get on electricity.
I'm so shocked you gave us those kits for free.
I'll try not to run water while brushing my teeth.

Sincerely-Chloe



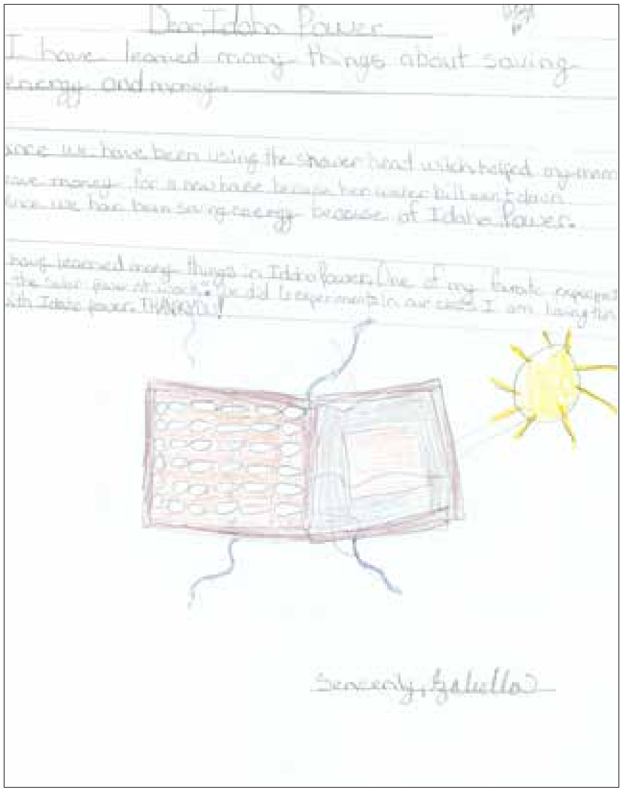
Dear Idaho Power,
Thanks for giving us the great kits. I learned all about energy and conserving energy. And I also learned things I didn't know. I installed all the items in my kit they are really useful.
Idaho Power Rocks!
Thank You
5-11-2016



My favorite part of the kit was the LED night light to
I learned that your refrigerator is on 24-7.
We can save resorces by not playing electronics on peak time.
Sincerely,
Kaleb

I very much appreciate all you have done for us, Idaho Power. My favorite item is the shower timer. This relly helped me under-stand Idaho Power Better.
Thankyou
♡ Jordan

(continued)



Dear Idaho Power

I have learned many things about saving energy and money.

Since we have been using the shower head which helped my mom save money for a new house because her water bill went down. Since we have been saving energy because of Idaho Power.

I have learned many things in Idaho Power. One of my favorite experiments the solar panel at work. We did 6 experiments in our class. I am loving this with Idaho Power. THANKS!!

Sincerely, Izabella

Dear Idaho Power, May 4th

Thank you so much for donating these awesome things. It has been such an expirence. I really liked how the high efficency shower head saved water and it feels great. I love that my family is conserving energy. I love the timer for the shower. It helps us save water. Thank you for everything.

Sincerely, Soon to be a Idaho power worker (aka) Clarissa

May 4, 2016

Dear Idaho power,

Thank you for all the wounderful things you gave us in the kits!! I think that that the Shower timer is helping me save water at my house!! And the shower head helped me save about 75% of our water. Agin thank you very much!!! I love the way it makes me and my family think about energy

Sincerly, McKenna

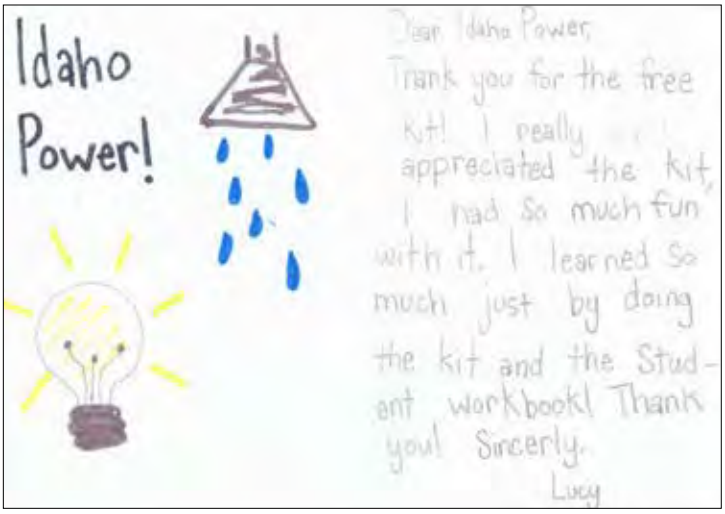
Dear IDaho Power, May, 4, 2016

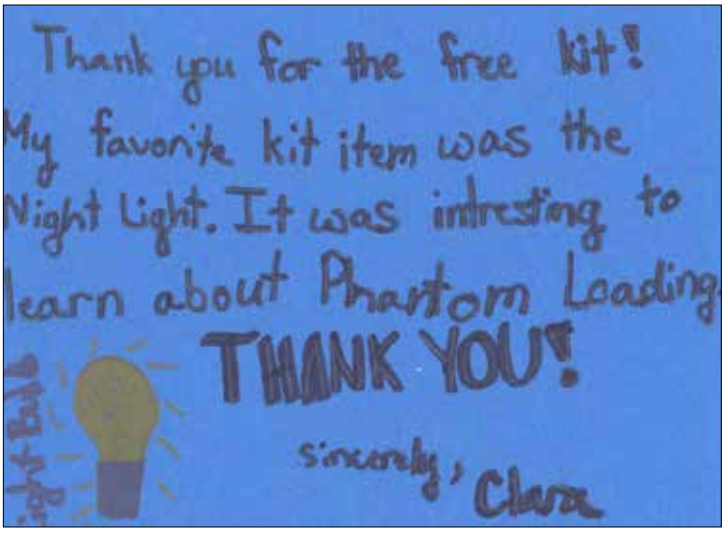
I am really happy that you gave us the kit. The Kit was very useful. I had so much fun. I helped my parents put the L.E.D light bulbs and the shower head. My family learned to not waste electricity and water. Thank you!!

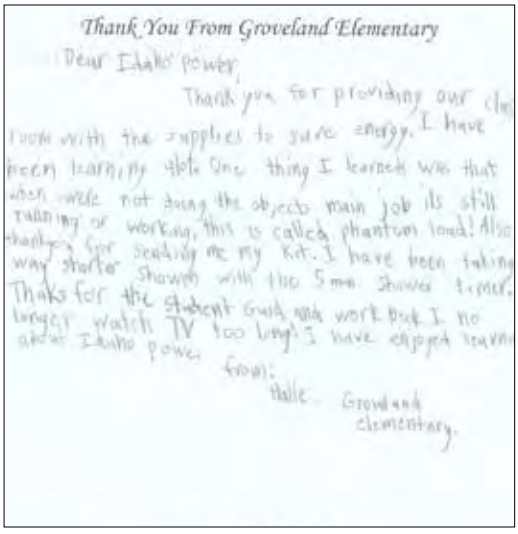
From, Andres

Student Letters

(continued)







Student Letters

(continued)

Dear Idaho power,
Thank you for all the lessons in the book. The book helped me to save energy. If we didn't have power we wouldn't have TV games and computers. I used to use up lots of energy but the lessons helped a lot. I used to watch TV for hours and play video games alot. I also liked the tools in side the Idaho power packet.

Sincerely,
Zander

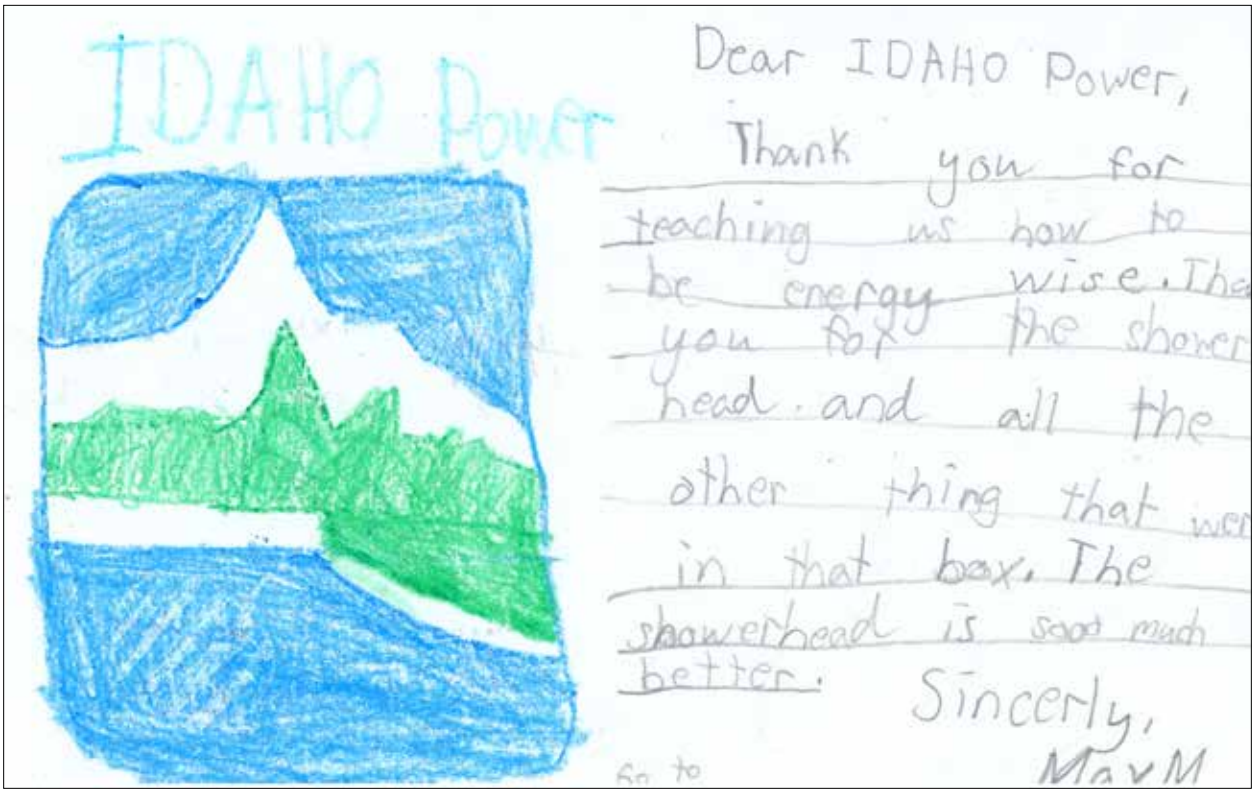
Hestin

Dear Idaho Power,
Thank you for 100 years of power. I would not be able to watch TV or play video games if you guys weren't here to fix the power. I also thank you for sending the boxes filled with the stuff for saving energy and money. Lastly, I thank you for the books that you sent. They gave me a lot of knowledge. All in all thank you for everything.

Sincerely, Hestin

Student Letters

(continued)



December 11, 2015

Idaho Power
750 4th Street
Sparks, NV 89431

To Whom It May Concern:

I would like to thank your company for all that you've done for us. Like the learning and the kit, it is awesome. Thank you for thinking about everybody so we can save money. You are very kind and generous to give us LED light bulbs, the shower head, shower timer and night light (not that I need one) but thank you for thinking of us. We all appreciate it. Thank you.

Sincerely,
Alexis


Dear Idaho Power.
Thank you for the Idaho Power book, it showed me lots of stuff that I didn't know. Also about the box with the shwer head, the timer, 3 lights, Silly tone, the tempelure thing, It was fun doing all that with my parents so thank you. Finally, about power, you give us power so I thank you for that too. If we didn't have power we wouldn't be able to do nothing thank you for power and all the other things. I hope we do something else another day. It was fun it showed me to save energy and electricity. By, Bailey

"The students told me that they enjoyed using all the products at home. Many said they used everything."

Amy Hirsch, Teacher
Ustick Elementary School

Appendices

Appendix A

Appendix B

Appendix C

Appendix D

Appendix E

Projected Savings from Showerhead Retrofit

Showerhead Retrofit Inputs and Assumptions:

Average household size:	**5.12**	people[1]
Average number of full bathrooms per home:	**2.02**	full bathrooms per home[1]
% of water heated by gas:	**52.42%**	[1]
% of water heated by electricity:	**47.57%**	[1]
Installation / participation rate of:	**46.52%**	[1]
Average Showerhead has a flow rate of:	**1.99**	gallons per minute[1]
Retrofit Showerhead has a flow rate of:	**1.26**	gallons per minute[1]
Number of participants:	**6,305**	[1]
Shower duration:	**8.20**	minutes per day[2]
Showers per day per person:	**0.67**	showers per day[2]
Product life:	**10**	years[3]

Projected Water Savings:

Showerhead retrofit projects an **annual** reduction of:	**10,882,978**	gallons[4]
Showerhead retrofit projects a **lifetime** reduction of:	**108,829,784**	gallons[5]

Projected Electricity Savings:

Showerhead retrofit projects an **annual** reduction of:	**680,262**	kWh[2,6]
Showerhead retrofit projects a **lifetime** reduction of:	**6,802,621**	kWh[2,7]

Projected Natural Gas Savings:

Showerhead retrofit projects an **annual** reduction of:	**37,481**	therms[2,8]
Showerhead retrofit projects a **lifetime** reduction of:	**374,809**	therms[2,9]

1 Data Reported by Program Participants.

2 (March 4, 2010). EPA WaterSense® Specification for Showerheads Supporting Statement. Retrieved from http://www.epa.gov/WaterSense/docs/showerheads_finalsuppstat508.pdf

3 Provided by manufacturer.

4 [(Average Household Size x Shower Duration x Showers per Day per Person) ÷ Average Number of Full Bathrooms per Home] x (Average Showerhead Flow Rate - Retrofit Showerhead Flow Rate) x Number of Participants x Installation Rate x 365 days

5 [(Average Household Size x Shower Duration x Showers per Day per Person) ÷ Average Number of Full Bathrooms per Home] x (Average Showerhead Flow Rate - Retrofit Showerhead Flow Rate) x Number of Participants x Installation Rate x 365 days x Product Life

6 Projected Annual Water Savings x Percent of Water that is Hot Water x 0.18 kWh/gal x % of Water Heated by Electricity

7 Projected Annual Water Savings x Percent of Water that is Hot Water x 0.18 kWh/gal x % of Water Heated by Electricity x Product Life

8 Projected Annual Water Savings x Percent of Water that is Hot Water x 0.009 Therms/gal x % of Water Heated by Natural Gas

9 Projected Annual Water Savings x Percent of Water that is Hot Water x 0.009 Therms/gal x % of Water Heated by Natural Gas x Product Life

Projected Savings from FilterTone® Alarm Installation

FilterTone® Installation Inputs and Assumptions:

Annual energy (electricity) use by a central air conditioner:	**4,467**	kWh[1]
Annual energy (natural gas) use by a central space heating or furnace:	**421**	therms[1]
Projected increase in efficiency (electricity):	**1.75%**	[2]
Projected increase in efficiency (natural gas):	**0.92%**	[2]
Product life:	**10**	years[3]
Installation / participation rate of:	**28.24%**	[4]
Number of participants:	**6,305**	[4]

Projected Electricity Savings:

The FilterTone installation projects an **annual** reduction of:	**139,189**	kWh[5]
The FilterTone installation projects a **lifetime** reduction of:	**1,391,886**	kWh[6]

Projected Natural Gas Savings:

The FilterTone installation projects an **annual** reduction of:	**6,896**	therms[7]
The FilterTone installation projects a **lifetime** reduction of:	**68,964**	therms[8]

1 U.S. Department of Energy, Energy Information Administration 2005 Residential Energy Consumption Web site for Mountain West States: http://www.eia.gov/consumption/residential/data/2005/

2 Reichmuth P.E., Howard. (1999). Engineering Review and Savings Estimates for the 'Filtertone' Filter Restriction Alarm.

3 Provided by manufacturer.

4 Data reported by program participants.

5 Annual energy (electricity) use by a central air conditioner, heat pump or furnace x Projected increase in efficiency (electricity) x Installation rate x Number of participants

6 Annual energy (electricity) use by a central air conditioner, heat pump or furnace x Projected increase in efficiency (electricity) x Installation rate x Number of participants x Product life

7 Annual energy (natural gas) use by a central air conditioner, heat pump or furnace x Projected increase in efficiency (natural gas) x Installation rate x Number of participants

8 Annual energy (natural gas) use by a central air conditioner, heat pump or furnace x Projected increase in efficiency (natural gas) x Installation rate x Number of participants x Product life

Projected Savings from First 9-watt LED Light Bulb Retrofit

LED Retrofit Inputs and Assumptions:

Product life:	**25,000**	hours[1]
Watts used by the LED light bulb:	**9**	watts[1]
Hours of operation per day:	**2.81**	hours per day[2]
Watts used by the replaced incandescent light bulb:	**59.46**	watts[3]
Installation / participation rate of:	**68.15%**	[3]
Number of participants:	**6,305**	[3]

Projected Electricity Savings:

The LED retrofit projects an **annual** reduction of:	**222,364**	kWh[2,4]
The LED retrofit projects a **lifetime** reduction of:	**2,668,368**	kWh[2,5]

1 Provided by manufacturer.

2 Frontier Associates. (2011). Oncor's LivingWise Program: Measurement & Verification Update.

3 Data reported by program participants.

4 {[(Wattage of incandescent light bulb replaced - Wattage of LED light bulb) x Hours of operation per day x 365 Days] ÷ 1,000} x Number of participants x Installation rate

5 {[(Wattage of incandescent light bulb replaced - Wattage of LED light bulb) x 12 years] ÷ 1,000} x Number of participants x Installation rate

Projected Savings from Second 9-watt LED Light Bulb Retrofit

LED Retrofit Inputs and Assumptions:

Product life:	**25,000**	hours[1]
Watts used by the LED light bulb:	**9**	watts[1]
Hours of operation per day:	**2.81**	hours per day[2]
Watts used by the replaced incandescent light bulb:	**59.36**	watts[3]
Installation / participation rate of:	**57.36%**	[3]
Number of participants:	**6,305**	[3]

Projected Electricity Savings:

The LED retrofit projects an **annual** reduction of:	**186,787**	kWh[2,4]
The LED retrofit projects a **lifetime** reduction of:	**2,241,439**	kWh[2,5]

1 Provided by manufacturer.

2 Frontier Associates. (2011). Oncor's LivingWise Program: Measurement & Verification Update.

3 Data reported by program participants.

4 {[(Wattage of incandescent light bulb replaced - Wattage of LED light bulb) x Hours of operation per day x 365 Days] ÷ 1,000} x Number of participants x Installation rate

5 {[(Wattage of incandescent light bulb replaced - Wattage of LED light bulb) x 12 years] ÷ 1,000} x Number of participants x Installation rate

Projected Savings from Third 9-watt LED Light Bulb Retrofit

LED Retrofit Inputs and Assumptions:

Product life:	**25,000**	hours[1]
Watts used by the LED light bulb:	**9**	watts[1]
Hours of operation per day:	**2.81**	hours per day[2]
Watts used by the replaced incandescent light bulb:	**58.63**	watts[3]
Installation / participation rate of:	**50.29%**	[3]
Number of participants:	**6,305**	[3]

Projected Electricity Savings:

The LED retrofit projects an **annual** reduction of:	**161,397**	kWh[2,4]
The LED retrofit projects a **lifetime** reduction of:	**1,936,763**	kWh[2,5]

1 Provided by manufacturer.

2 Frontier Associates. (2011). Oncor's LivingWise Program: Measurement & Verification Update.

3 Data reported by program participants.

4 {[(Wattage of incandescent light bulb replaced - Wattage of LED light bulb) x Hours of operation per day x 365 Days] ÷ 1,000} x Number of participants x Installation rate

5 {[(Wattage of incandescent light bulb replaced - Wattage of LED light bulb) x 12 years] ÷ 1,000} x Number of participants x Installation rate

Projected Savings from LED Night Light Retrofit

Energy Efficient Night Light Installation Inputs and Assumptions:

Average length of use:	**4,380**	hours per year[1]
Average night light uses:	**7**	watts
Retrofit night light uses:	**0.5**	watts
Product life:	**10**	years[2]
Energy saved per year:	**28**	kWh per year
Energy saved over life expectancy:	**285**	kWh
Installation / participation rate of:	**84.49%**	[3]
Number of participants:	**6,305**	[3]

Projected Electricity Savings:

The Energy Efficient Night Light installation projects an **annual** reduction of:	**151,662**	kWh
The Energy Efficient Night Light installation projects a **lifetime** reduction of:	**1,516,624**	kWh

1 Assumption (12 hours per day)

2 Product life provided by manufacturer

3 Data reported by program participants

Home Check-Up

	Total	Capital	Canyon	Eastern	Southern	Western
Total Participants	6,305	1,305	2,405	1,234	783	578
Students	6,086	1,262	2,319	1,191	753	561
Surveys Received	4,294	790	1,784	893	440	387
Percent Response	71%	63%	77%	75%	58%	69%

		Total	Capital	Canyon	Eastern	Southern	Western
1	What type of home do you live in?						
	Single Family Home (Mobile)	10%	8%	10%	10%	14%	13%
	Single Family Home (Manufactured)	8%	4%	6%	11%	10%	11%
	Single Family Home (Built)	67%	71%	68%	64%	57%	67%
	Multi-Family (2-4 units)	9%	8%	9%	11%	9%	7%
	Multi-Family (5-20 units)	5%	7%	5%	4%	6%	1%
	Multi-Family (21+ units)	1%	2%	1%	0%	3%	0%
2	Was your home built before 1992?						
	Yes	40%	33%	30%	58%	46%	53%
	No	60%	67%	70%	42%	54%	47%
3	Is your home owned or rented?						
	Owned	71%	78%	70%	71%	64%	70%
	Rented	29%	22%	30%	29%	36%	30%
4	How many kids live in your home (age 0-17)?						
	1	13%	16%	12%	13%	12%	14%
	2	28%	34%	28%	28%	27%	24%
	3	26%	25%	27%	25%	26%	29%
	4	17%	14%	18%	19%	16%	18%
	5+	15%	11%	16%	15%	18%	16%

Due to rounding of numbers, percentages may not add up to 100%

Home Check-Up

(continued)

		Total	Capital	Canyon	Eastern	Southern	Western
5	How many adults live in your home (age 18+)?						
	1	10%	10%	10%	13%	9%	11%
	2	71%	75%	71%	69%	69%	67%
	3	12%	10%	12%	12%	13%	13%
	4	4%	3%	5%	4%	5%	6%
	5+	3%	2%	3%	3%	4%	3%
6	Does your home have a programmable outdoor sprinkler system?						
	Yes	66%	88%	74%	49%	51%	41%
	No	34%	12%	26%	51%	49%	59%
7	Does your home have a programmable thermostat?						
	Yes	74%	86%	78%	65%	63%	65%
	No	26%	14%	22%	35%	37%	35%
8	What is the main source of heating in your home?						
	Natural Gas	47%	68%	51%	43%	27%	19%
	Electric Heater	39%	26%	36%	39%	56%	55%
	Propane	3%	1%	3%	5%	5%	4%
	Heating Oil	1%	0%	1%	1%	2%	2%
	Wood	5%	1%	4%	5%	6%	15%
	Other	5%	4%	5%	6%	4%	6%
9	What type of air conditioning unit do you have?						
	Central Air Conditioner	68%	89%	74%	48%	55%	59%
	Evaporative Cooler	6%	3%	6%	8%	8%	7%
	Room Unit	15%	5%	13%	22%	19%	25%
	Don't Have One	11%	3%	7%	22%	18%	10%
10	Does your home have a Dishwasher?						
	Yes	84%	97%	88%	75%	75%	73%
	No	16%	3%	12%	25%	25%	27%

Due to rounding of numbers, percentages may not add up to 100%

Home Check-Up

(continued)

	Total	Capital	Canyon	Eastern	Southern	Western
11 How many half-bathrooms are in your home?						
0	63%	47%	59%	75%	71%	76%
1	30%	44%	34%	19%	19%	18%
2	5%	5%	5%	3%	8%	3%
3	2%	2%	2%	1%	1%	2%
4+	1%	1%	0%	1%	0%	1%
12 How many full bathrooms are in your home?						
1	23%	12%	19%	31%	32%	33%
2	56%	55%	64%	43%	51%	58%
3	17%	26%	13%	23%	12%	7%
4	3%	5%	3%	3%	3%	2%
5+	1%	1%	1%	0%	1%	0%
13 How many toilets are in your home?						
1	17%	6%	13%	25%	26%	27%
2	43%	27%	45%	45%	52%	56%
3	30%	48%	34%	23%	13%	12%
4	7%	15%	6%	6%	8%	4%
5+	2%	4%	2%	1%	2%	0%
14 How is your water heated?						
Natural Gas	52%	72%	57%	46%	33%	25%
Electricity	48%	28%	43%	54%	67%	75%

Due to rounding of numbers, percentages may not add up to 100%

Home Activities

	Total	Capital	Canyon	Eastern	Southern	Western
Total Participants	**6,305**	1,305	2,405	1,234	783	578
Students	**6,086**	1,262	2,319	1,191	753	561
Surveys Received	**4,294**	790	1,784	893	440	387
Percent Response	**71%**	63%	77%	75%	58%	69%

		Total	Capital	Canyon	Eastern	Southern	Western
1	What is the flow rate of your old showerhead?						
	0 - 1.0 GPM	13%	9%	12%	16%	13%	14%
	1.1 - 1.5 GPM	18%	16%	17%	17%	20%	21%
	1.6 - 2.0 GPM	22%	25%	21%	21%	18%	26%
	2.1 - 2.5 GPM	22%	26%	21%	20%	24%	17%
	2.6 - 3.0 GPM	17%	16%	19%	14%	17%	13%
	3.1+ GPM	10%	8%	10%	12%	9%	10%
2	Did you install the new High-Efficiency Showerhead?						
	Yes	47%	42%	50%	44%	47%	44%
	No	53%	58%	50%	56%	53%	56%
3	If you answered "yes" to question 2, what is the flow rate of your new showerhead?						
	0 - 1.0 GPM	26%	22%	24%	28%	25%	33%
	1.1 - 1.5 GPM	41%	47%	40%	41%	45%	34%
	1.6 - 1.75 GPM	33%	31%	36%	31%	30%	34%
4	Did you use the Shower Timer?						
	Yes	80%	78%	83%	78%	77%	78%
	No	20%	22%	17%	22%	23%	22%
5	Did your family install the first 9-watt LED Light Bulb?						
	Yes	68%	70%	70%	64%	67%	68%
	No	32%	30%	30%	36%	33%	32%

Due to rounding of numbers, percentages may not add up to 100%

Home Activities

(continued)

		Total	Capital	Canyon	Eastern	Southern	Western
6	If you answered "yes" to question 5, what is the wattage of the incandescent bulb you replaced?						
	40-watt	17%	13%	17%	18%	22%	13%
	60-watt	39%	47%	38%	34%	35%	37%
	75-watt	16%	13%	15%	18%	14%	19%
	100-watt	10%	13%	10%	8%	9%	13%
	Other	18%	13%	19%	22%	20%	18%
7	Did your family install the second 9-watt LED Light Bulb?						
	Yes	57%	59%	60%	53%	53%	56%
	No	43%	41%	40%	47%	47%	44%
8	If you answered "yes" to question 7, what is the wattage of the incandescent bulb you replaced?						
	40-watt	17%	14%	15%	19%	22%	17%
	60-watt	37%	42%	40%	34%	31%	30%
	75-watt	17%	16%	17%	17%	18%	24%
	100-watt	10%	13%	9%	6%	10%	11%
	Other	19%	15%	19%	24%	19%	19%
9	Did your family install the third 9-watt LED Light Bulb?						
	Yes	50%	50%	54%	47%	45%	47%
	No	50%	50%	46%	53%	55%	53%
10	If you answered "yes" to question 9, what is the wattage of the incandescent bulb you replaced?						
	40-watt	17%	14%	16%	20%	21%	15%
	60-watt	35%	42%	35%	31%	32%	29%
	75-watt	17%	14%	18%	17%	14%	25%
	100-watt	9%	12%	9%	7%	9%	11%
	Other	22%	18%	22%	26%	23%	20%
11	Did your family install the FilterTone® Alarm?						
	Yes	28%	30%	32%	24%	21%	27%
	No	72%	70%	68%	76%	79%	73%

Due to rounding of numbers, percentages may not add up to 100%

Home Activities

(continued)

		Total	Capital	Canyon	Eastern	Southern	Western
12	How much did your family turn down the thermostat in winter for heating?						
	1 - 2 Degrees	19%	27%	17%	20%	18%	12%
	3 - 4 Degrees	18%	21%	19%	16%	16%	16%
	5+ Degrees	13%	12%	14%	11%	14%	13%
	Didn't Adjust Thermostat	50%	40%	50%	53%	52%	59%
13	How much did your family turn up the thermostat in summer for cooling?						
	1 - 2 Degrees	16%	22%	15%	15%	14%	9%
	3 - 4 Degrees	16%	20%	17%	14%	16%	11%
	5+ Degrees	15%	14%	16%	16%	14%	13%
	Didn't Adjust Thermostat	53%	44%	51%	56%	57%	67%
14	Did you install the LED Night Light?						
	Yes	84%	85%	86%	82%	83%	83%
	No	16%	15%	14%	18%	17%	17%
15	Did your family lower your water heater settings?						
	Yes	26%	29%	29%	22%	24%	22%
	No	74%	71%	71%	78%	76%	78%
16	Did your family raise the temperature on your refrigerator?						
	Yes	17%	16%	20%	15%	18%	14%
	No	83%	84%	80%	85%	82%	86%
17	Did you complete the optional online energy use activity?						
	All of it	8%	5%	9%	8%	7%	8%
	Some of it	16%	13%	16%	13%	21%	21%
	None	77%	82%	76%	79%	72%	71%
18	Did you work with your family on this Program?						
	Yes	69%	73%	68%	69%	69%	63%
	No	31%	27%	32%	31%	31%	37%

Due to rounding of numbers, percentages may not add up to 100%

Home Activities

(continued)

	Total	Capital	Canyon	Eastern	Southern	Western
19 Did your family change the way they use water?						
Yes	62%	65%	62%	61%	69%	56%
No	38%	35%	38%	39%	31%	44%
20 Did your family change the way they use energy?						
Yes	69%	72%	69%	71%	70%	62%
No	31%	28%	31%	29%	30%	38%
21 How would you rate the Idaho Power Energy Wise® Program?						
Great	52%	57%	52%	50%	52%	44%
Pretty Good	31%	28%	32%	31%	30%	32%
Okay	15%	12%	15%	16%	15%	21%
Not So Good	3%	3%	2%	3%	3%	3%

Due to rounding of numbers, percentages may not add up to 100%

Participant List

REGION	SCHOOL	TEACHER	T	S	SURVEYS RETURNED
Southern	Alturas Elementary	[redacted]	1	16	YES
Southern	Alturas Elementary	[redacted]	1	17	YES
Southern	Alturas Elementary	[redacted]	1	16	YES
Southern	Alturas Elementary	[redacted]	1	17	YES
Eastern	American Falls Intermediate School	[redacted]	1	6	NO
Capital	Amity Elementary School	[redacted]	1	30	YES
Capital	Amity Elementary School	[redacted]	1	28	NO
Capital	Amity Elementary School	[redacted]	1	28	YES
Capital	Barbara Morgan STEM Academy	[redacted]	1	25	YES
Capital	Barbara Morgan STEM Academy	[redacted]	1	25	YES
Capital	Barbara Morgan STEM Academy	[redacted]	1	25	NO
Canyon	Birch Elementary School	[redacted]	1	25	YES
Canyon	Birch Elementary School	[redacted]	1	26	YES
Canyon	Birch Elementary School	[redacted]	1	25	YES
Canyon	Birch Elementary School	[redacted]	1	25	YES
Canyon	Central Canyon Elementary School	[redacted]	1	30	NO
Canyon	Central Canyon Elementary School	[redacted]	1	30	YES
Canyon	Central Canyon Elementary School	[redacted]	1	30	YES
Canyon	Central Canyon Elementary School	[redacted]	1	30	YES
Canyon	Central Elementary School	[redacted]	1	33	NO
Canyon	Central Elementary School	[redacted]	1	36	YES
Canyon	Desert Springs Elementary School	[redacted]	1	27	YES
Canyon	Desert Springs Elementary School	[redacted]	1	28	YES

Note: "T" represents number of teachers and "S" represents number of students

Participant List

(continued)

REGION	SCHOOL	TEACHER	T	S	SURVEYS RETURNED
Canyon	Desert Springs Elementary School	[redacted]	1	28	YES
Canyon	Desert Springs Elementary School	[redacted]	1	27	YES
Eastern	Donald D. Stalker Elementary School	[redacted]	1	22	YES
Eastern	Donald D. Stalker Elementary School	[redacted]	1	23	YES
Eastern	Donald D. Stalker Elementary School	[redacted]	1	23	YES
Canyon	East Canyon Elementary	[redacted]	1	26	YES
Canyon	East Canyon Elementary	[redacted]	1	26	NO
Canyon	East Canyon Elementary	[redacted]	1	24	NO
Canyon	East Canyon Elementary	[redacted]	1	27	YES
Canyon	East Canyon Elementary	[redacted]	1	25	YES
Eastern	Edahow Elementary School	[redacted]	1	24	YES
Eastern	Edahow Elementary School	[redacted]	1	24	YES
Southern	Filer Intermediate School	[redacted]	1	26	YES
Southern	Filer Intermediate School	[redacted]	1	26	NO
Southern	Filer Intermediate School	[redacted]	1	25	YES
Southern	Filer Intermediate School	[redacted]	1	25	NO
Southern	Filer Intermediate School	[redacted]	1	26	NO
Southern	Filer Intermediate School	[redacted]	1	25	YES
Southern	Filer Intermediate School	[redacted]	1	25	NO
Eastern	Greenacres Elementary School	[redacted]	1	25	YES
Eastern	Greenacres Elementary School	[redacted]	1	25	YES
Eastern	Groveland Elementary	[redacted]	1	27	YES
Eastern	Groveland Elementary	[redacted]	1	30	YES

Note: "T" represents number of teachers and "S" represents number of students

Participant List

(continued)

REGION	SCHOOL	TEACHER	T	S	SURVEYS RETURNED
Western	Homedale Middle School	[redacted]	1	88	YES
Capital	Hunter Elementary School	[redacted]	1	26	YES
Capital	Hunter Elementary School	[redacted]	1	28	YES
Capital	Hunter Elementary School	[redacted]	1	28	YES
Capital	Hunter Elementary School	[redacted]	1	27	YES
Canyon	Indian Creek & Ross Elementary School	[redacted]	1	22	NO
Canyon	Indian Creek & Ross Elementary School	[redacted]	1	22	YES
Canyon	Indian Creek & Ross Elementary School	[redacted]	1	22	YES
Canyon	Iowa Elementary	[redacted]	1	32	YES
Canyon	Iowa Elementary	[redacted]	1	32	YES
Canyon	Iowa Elementary	[redacted]	1	32	YES
Eastern	Jefferson Elementary	[redacted]	1	23	YES
Eastern	Jefferson Elementary	[redacted]	1	25	YES
Eastern	Jefferson Elementary	[redacted]	1	25	YES
Eastern	Lewis and Clark Elementary	[redacted]	1	30	YES
Eastern	Lewis and Clark Elementary	[redacted]	1	30	YES
Capital	Meridian Elementary	[redacted]	1	36	NO
Capital	Meridian Elementary	[redacted]	1	36	NO
Canyon	Nampa Christian	[redacted]	1	17	YES
Canyon	Nampa Christian	[redacted]	1	16	YES
Western	New Plymouth Elementary School	[redacted]	1	27	YES
Western	New Plymouth Elementary School	[redacted]	1	27	NO

Note: "T" represents number of teachers and "S" represents number of students

Participant List

(continued)

REGION	SCHOOL	TEACHER	T	S	SURVEYS RETURNED
Western	New Plymouth Elementary School	[redacted]	1	27	NO
Western	New Plymouth Elementary School	[redacted]	1	22	YES
Western	New Plymouth Elementary School	[redacted]	1	23	YES
Western	New Plymouth Elementary School	[redacted]	1	23	YES
Southern	Oakley Elementary School	[redacted]	1	16	YES
Southern	Oakley Elementary School	[redacted]	1	16	YES
Southern	Oregon Trail Elementary School	[redacted]	1	27	NO
Southern	Oregon Trail Elementary School	[redacted]	1	28	NO
Southern	Oregon Trail Elementary School	[redacted]	1	26	YES
Southern	Oregon Trail Elementary School	[redacted]	1	28	NO
Western	Park Intermediate	[redacted]	1	23	YES
Western	Park Intermediate	[redacted]	1	23	YES
Western	Park Intermediate	[redacted]	1	25	YES
Capital	Peregrine Elementary School	[redacted]	1	32	NO
Capital	Peregrine Elementary School	[redacted]	1	32	NO
Capital	Prospect Elementary	[redacted]	1	32	YES
Capital	Prospect Elementary	[redacted]	1	32	NO
Capital	Prospect Elementary	[redacted]	1	32	YES
Capital	Prospect Elementary	[redacted]	1	32	YES
Canyon	Purple Sage Elementary School	[redacted]	1	26	YES
Canyon	Purple Sage Elementary School	[redacted]	1	26	YES
Canyon	Purple Sage Elementary School	[redacted]	1	26	YES

Note: "T" represents number of teachers and "S" represents number of students

Participant List

(continued)

REGION	SCHOOL	TEACHER	T	S	SURVEYS RETURNED
Eastern	Ridge Crest Elementary School	[redacted]	1	28	YES
Eastern	Ridge Crest Elementary School	[redacted]	1	25	NO
Eastern	Ridge Crest Elementary School	[redacted]	1	27	YES
Eastern	Rockland Elementary School	[redacted]	1	10	NO
Canyon	Roosevelt Elementary	[redacted]	1	25	YES
Canyon	Roosevelt Elementary	[redacted]	1	24	YES
Canyon	Roosevelt Elementary	[redacted]	1	23	NO
Canyon	Roosevelt Elementary	[redacted]	1	27	NO
Canyon	Sacajawea Elementary School	[redacted]	1	27	YES
Canyon	Sacajawea Elementary School	[redacted]	1	29	YES
Canyon	Sacajawea Elementary School	[redacted]	1	28	YES
Western	Shadow Butte Elementary School	[redacted]	1	32	YES
Canyon	Silver Trail Elementary School	[redacted]	1	25	YES
Canyon	Silver Trail Elementary School	[redacted]	1	29	YES
Canyon	Silver Trail Elementary School	[redacted]	1	25	YES
Canyon	Snake River Elementary	[redacted]	1	31	YES
Canyon	Snake River Elementary	[redacted]	1	32	YES
Canyon	Snake River Elementary	[redacted]	1	30	YES
Eastern	Stoddard Elementary School	[redacted]	1	27	YES
Eastern	Stoddard Elementary School	[redacted]	1	27	YES
Eastern	Stoddard Elementary School	[redacted]	1	27	NO
Southern	Summit Elementary School	[redacted]	1	29	YES

Note: "T" represents number of teachers and "S" represents number of students

Participant List

(continued)

REGION	SCHOOL	TEACHER	T	S	SURVEYS RETURNED
Southern	Summit Elementary School	[redacted]	1	30	YES
Southern	Summit Elementary School	[redacted]	1	30	YES
Southern	Summit Elementary School	[redacted]	1	29	YES
Southern	Summit Elementary School	[redacted]	1	29	YES
Southern	Summit Elementary School	[redacted]	1	29	YES
Southern	Summit Elementary School	[redacted]	1	30	YES
Southern	Summit Elementary School	[redacted]	1	29	NO
Southern	Summit Elementary School	[redacted]	1	28	YES
Southern	Summit Elementary School	[redacted]	1	30	NO
Southern	Summit Elementary School	[redacted]	1	28	NO
Eastern	Tendoy Elementary	[redacted]	1	24	YES
Eastern	Tendoy Elementary	[redacted]	1	24	YES
Eastern	Tyhee Elementary School	[redacted]	1	25	NO
Capital	Ustick Elementary School	[redacted]	1	30	YES
Capital	Ustick Elementary School	[redacted]	1	30	YES
Capital	Ustick Elementary School	[redacted]	1	30	YES
Southern	Valley Elementary	[redacted]	1	23	YES
Southern	Valley Elementary	[redacted]	1	24	YES
Capital	Valley View Elementary School	[redacted]	1	31	YES
Capital	Valley View Elementary School	[redacted]	1	31	NO
Eastern	Wapello Elementary School	[redacted]	1	21	YES
Eastern	Wapello Elementary School	[redacted]	1	21	YES
Canyon	Washington Elementary School	[redacted]	1	21	YES

Note: "T" represents number of teachers and "S" represents number of students

Participant List

(continued)

REGION	SCHOOL	TEACHER	T	S	SURVEYS RETURNED
Canyon	Washington Elementary School	[redacted]	1	21	YES
Canyon	Washington Elementary School	[redacted]	1	25	YES
Canyon	Washington Elementary School	[redacted]	1	26	YES
Canyon	Washington Elementary School	[redacted]	1	27	YES
Canyon	Washington Elementary School	[redacted]	1	26	YES
Capital	Whittier Elementary School	[redacted]	1	21	YES
Capital	Whittier Elementary School	[redacted]	1	32	NO
Capital	Willow Creek Elementary	[redacted]	1	35	YES
Capital	Willow Creek Elementary	[redacted]	1	35	YES
Canyon	Wilson Elementary School	[redacted]	1	26	YES
Canyon	Wilson Elementary School	[redacted]	1	26	NO
Canyon	Wilson Elementary School	[redacted]	1	25	YES
Canyon	Wilson Elementary School	[redacted]	1	16	NO
Capital	Cecil Andrus Elementary	[redacted]	1	31	YES
Capital	Cecil Andrus Elementary	[redacted]	1	31	NO
Capital	Cecil Andrus Elementary	[redacted]	1	29	YES
Capital	Cecil Andrus Elementary	[redacted]	1	14	YES
Capital	Cecil Andrus Elementary	[redacted]	1	14	YES
Eastern	Claude A. Wilcox Elementary School	[redacted]	1	24	YES
Eastern	Claude A. Wilcox Elementary School	[redacted]	1	24	YES
Eastern	Claude A. Wilcox Elementary School	[redacted]	1	24	YES
Eastern	Claude A. Wilcox Elementary School	[redacted]	1	24	YES
Capital	Cynthia Mann Elementary School	[redacted]	1	26	YES

Note: "T" represents number of teachers and "S" represents number of students

Participant List

(continued)

REGION	SCHOOL	TEACHER	T	S	SURVEYS RETURNED
Capital	Cynthia Mann Elementary School	[redacted]	1	30	NO
Capital	Eliza Hart Spalding Elementary School	[redacted]	1	33	YES
Capital	Eliza Hart Spalding Elementary School	[redacted]	1	33	NO
Capital	Eliza Hart Spalding Elementary School	[redacted]	1	32	YES
Capital	Eliza Hart Spalding Elementary School	[redacted]	1	29	YES
Eastern	Ellis Elementary School	[redacted]	1	29	YES
Eastern	Ellis Elementary School	[redacted]	1	29	NO
Eastern	Ellis Elementary School	[redacted]	1	29	YES
Canyon	Endeavor School	[redacted]	1	100	NO
Western	Fruitland Elementary School	[redacted]	1	28	YES
Western	Fruitland Elementary School	[redacted]	1	28	NO
Western	Fruitland Elementary School	[redacted]	1	28	YES
Western	Fruitland Elementary School	[redacted]	1	28	NO
Western	Fruitland Elementary School	[redacted]	1	28	NO
Eastern	Grace Lutheran School	[redacted]	1	40	YES
Eastern	Indian Hills Elementary	[redacted]	1	29	YES
Eastern	Indian Hills Elementary	[redacted]	1	29	YES
Eastern	Indian Hills Elementary	[redacted]	1	29	YES
Eastern	Indian Hills Elementary	[redacted]	1	29	YES
Canyon	Lake Ridge Elementary School	[redacted]	1	27	YES
Canyon	Lake Ridge Elementary School	[redacted]	1	26	YES
Canyon	Lake Ridge Elementary School	[redacted]	1	27	YES
Canyon	Lake Ridge Elementary School	[redacted]	1	27	YES

Note: "T" represents number of teachers and "S" represents number of students

Participant List

(continued)

REGION	SCHOOL	TEACHER	T	S	SURVEYS RETURNED
Canyon	Lakevue Elementary School	[redacted]	1	26	YES
Canyon	Lakevue Elementary School	[redacted]	1	25	YES
Canyon	Lakevue Elementary School	[redacted]	1	23	YES
Canyon	Lakevue Elementary School	[redacted]	1	25	YES
Canyon	Lakevue Elementary School	[redacted]	1	26	YES
Eastern	Lewis and Clark Elementary	[redacted]	1	31	NO
Capital	Longfellow Elementary School	[redacted]	1	31	YES
Capital	Longfellow Elementary School	[redacted]	1	27	YES
Western	Marsing Middle School	[redacted]	1	81	YES
Capital	Mary McPherson Elementary School	[redacted]	1	31	YES
Capital	Mary McPherson Elementary School	[redacted]	1	31	YES
Capital	Mary McPherson Elementary School	[redacted]	1	31	YES
Canyon	Mill Creek Elementary School	[redacted]	1	25	YES
Canyon	Mill Creek Elementary School	[redacted]	1	25	YES
Canyon	Mill Creek Elementary School	[redacted]	1	27	YES
Canyon	Mill Creek Elementary School	[redacted]	1	26	YES
Canyon	Owyhee Elementary	[redacted]	1	19	YES
Canyon	Owyhee Elementary	[redacted]	1	19	YES
Canyon	Owyhee Elementary	[redacted]	1	19	YES
Canyon	Owyhee Elementary	[redacted]	1	18	YES
Canyon	Reed Elementary	[redacted]	1	23	YES
Canyon	Reed Elementary	[redacted]	1	22	YES
Canyon	Reed Elementary	[redacted]	1	29	YES

Note: "T" represents number of teachers and "S" represents number of students

Participant List

(continued)

REGION	SCHOOL	TEACHER	T	S	SURVEYS RETURNED
Canyon	Reed Elementary	[redacted]	1	22	YES
Canyon	Ronald Reagan Elementary School	[redacted]	1	31	YES
Canyon	Ronald Reagan Elementary School	[redacted]	1	31	NO
Canyon	Ronald Reagan Elementary School	[redacted]	1	31	NO
Eastern	Salmon Middle/High School	[redacted]	1	33	NO
Eastern	Salmon Middle/High School	[redacted]	1	32	YES
Canyon	West Canyon Elementary	[redacted]	1	27	YES
Canyon	West Canyon Elementary	[redacted]	1	28	YES
Canyon	West Canyon Elementary	[redacted]	1	28	YES
Canyon	West Canyon Elementary	[redacted]	1	28	YES
Eastern	William Thomas Middle School	[redacted]	1	108	YES
Canyon	Willow Creek Elementary School	[redacted]	1	28	YES
Canyon	Willow Creek Elementary School	[redacted]	1	28	YES
Canyon	Willow Creek Elementary School	[redacted]	1	29	YES
Canyon	Willow Creek Elementary School	[redacted]	1	29	YES
		TOTALS	**219**	**6086**	
		TOTAL PARTICIPANTS	**6305**		

TOTAL PARTICIPATING FALL TEACHERS	**219**	**172**	**79%**	**YES**
		47	**21%**	**NO**
TOTAL STUDENT SURVEYS RETURNED	**4,294**			
TOTAL INCENTIVE PAID OUT	**$16,500**			
FULL YEAR SURVEY RETURN PERCENTAGE	**71%**			

Note: "T" represents number of teachers and "S" represents number of students

Teacher Program Evaluation Data

	Total	Capital	Canyon	Eastern	Southern	Western
Participants	219	43	86	43	30	17
Surveys Received	174	32	73	37	20	12
Percent Response	79%	74%	85%	86%	67%	71%

		Percent	Number
1	The materials were clearly written and well organized.		
	Strongly Agree	67%	100
	Agree	33%	49
	Disagree	0%	0
	Strongly Disagree	0%	0
2	The products in the Kit were easy for students to use.		
	Strongly Agree	56%	84
	Agree	42%	63
	Disagree	1%	2
	Strongly Disagree	0%	0
3	Students indicated that their parents supported the program.		
	Yes	95%	139
	No	5%	8
4	Would you conduct this Program again?		
	Yes	97%	146
	No	3%	4
5	Would you recommend this program to other colleagues?		
	Yes	100%	148
	No	0%	0
6	If my school is eligible for participation next year, I would like to enroll.		
	Yes	97%	143
	No	3%	5

Due to rounding of numbers, percentages may not add up to 100%

Parent/Guardian Program Evaluation Data

	Total	Capital	Canyon	Eastern	Southern	Western
Participants	**6,305**	1,305	2,405	1,234	783	578
Surveys Received	**80**	20	27	16	7	10
Percent Response	**1.3%**	1.5%	1.1%	1.3%	0.9%	1.7%

Total Parent Responses **80**

		Number	Percent
1	Was the Program easy for you and your child to use?		
	Yes	80	100%
	No	0	0%
2	Will you continue to use the Kit items after the completion of the Program?		
	Yes	80	100%
	No	0	0%
3	Would you like to see this Program continued in local schools?		
	Yes	80	100%
	No	0	0%

Due to rounding of numbers, percentages may not add up to 100%

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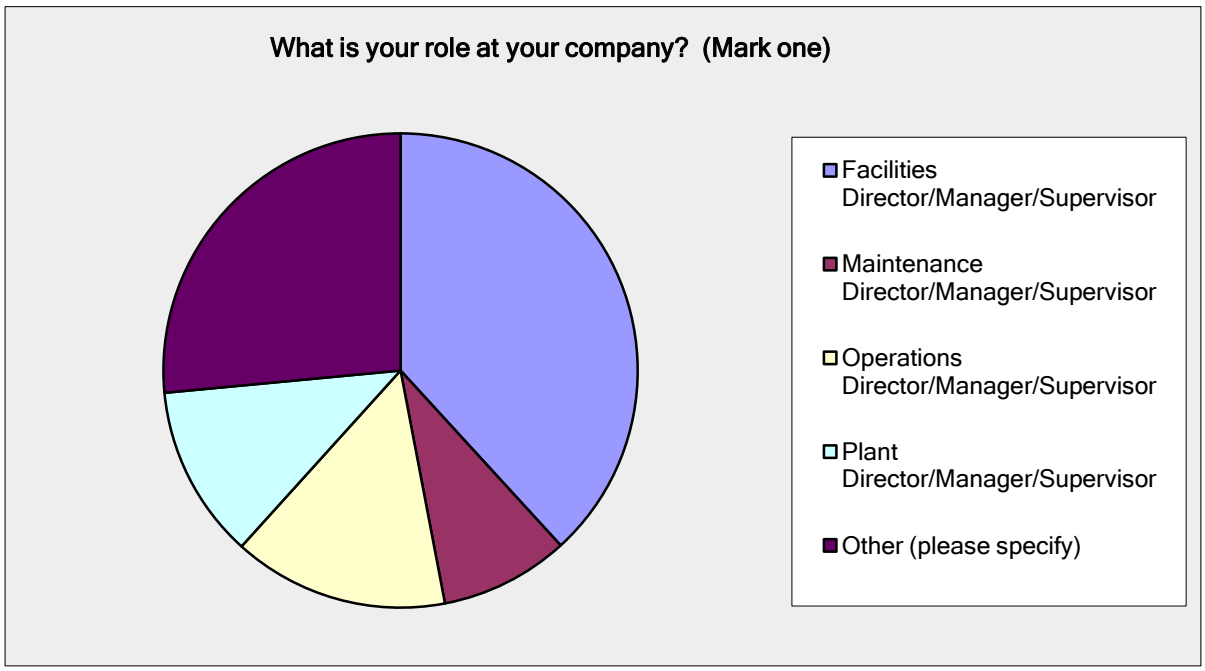
Flex Peak 2016 Survey Results

Flex Peak Program Survey

What is your role at your company? (Mark one)		
Answer Options	**Response Percent**	**Response Count**
Facilities Director/Manager/Supervisor	38.2%	13
Maintenance Director/Manager/Supervisor	8.8%	3
Operations Director/Manager/Supervisor	14.7%	5
Plant Director/Manager/Supervisor	11.8%	4
Other (please specify)	26.5%	9
	answered question	**34**
	skipped question	**0**

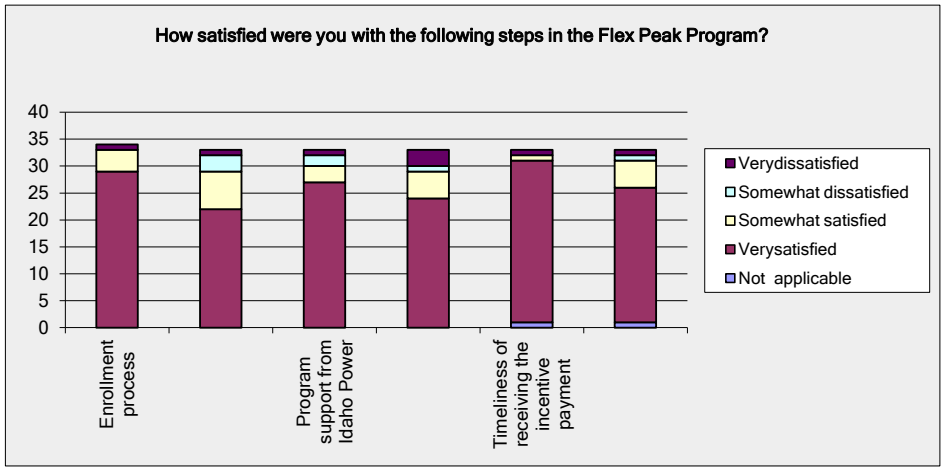


What is your role at your company? (Mark one)
Other (please specify)
Base Energy Manager
Energy Manager
Corporate Energy Manager
Water and Wells Director/Supervisor
Building Systems Controls Specialist
Owner
Envirnonmental Health Safety and Sanitation Manager
Energy Buyer
Energy Engineer

Flex Peak Program Survey

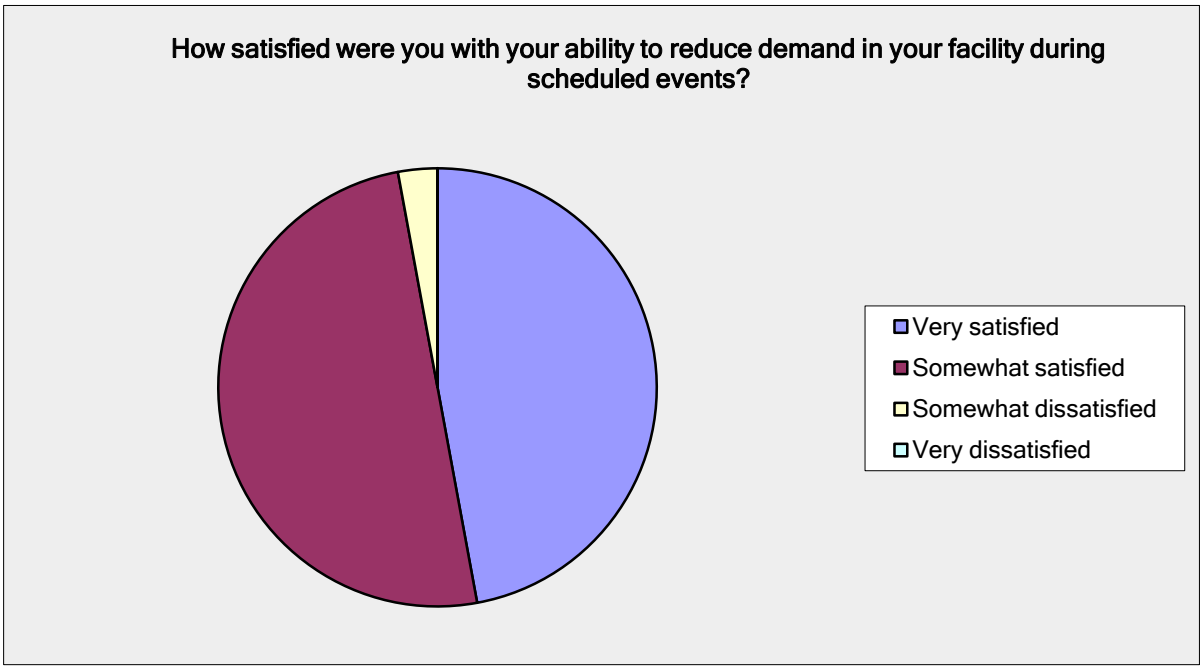
How satisfied were you with the following steps in the Flex Peak Program?

Answer Options	Verydissatisfied	Somewhat dissatisfied	Somewhat satisfied	Verysatisfied	Not applicable	Response Count
Enrollment process	1	0	4	29	0	34
Notification process	1	3	7	22	0	33
Program support from Idaho Power	1	2	3	27	0	33
Post event performance data	3	1	5	24	0	33
Timeliness of receiving the incentive payment	1	0	1	30	1	33
Incentive amount	1	1	5	25	1	33
					answered question	34
					skipped question	0



Flex Peak Program Survey

How satisfied were you with your ability to reduce demand in your facility during scheduled events?		
Answer Options	**Response Percent**	**Response Count**
Very satisfied	47.1%	16
Somewhat satisfied	50.0%	17
Somewhat dissatisfied	2.9%	1
Very dissatisfied	0.0%	0
	answered question	34
	skipped question	0



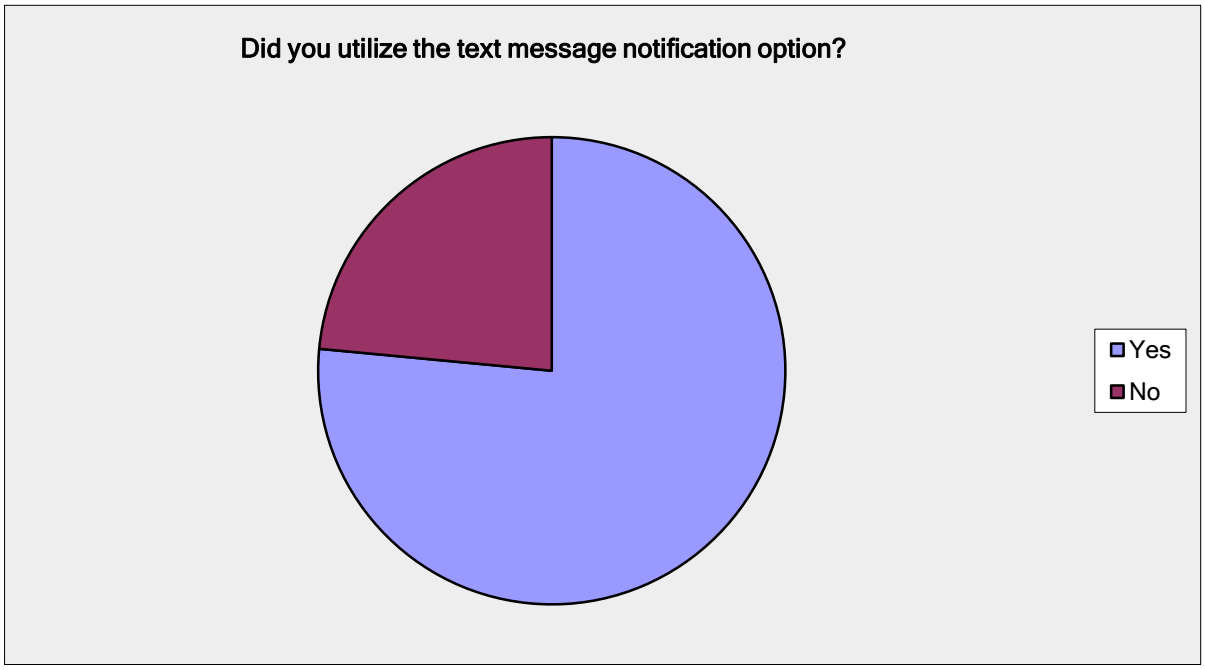
Flex Peak Program Survey

What could Idaho Power do to help increase the ability to reduce demand in your facility for scheduled events?	
Answer Options	Response Count
	1
answered question	1
skipped question	33

What could Idaho Power do to help increase the ability to reduce demand in your facility for scheduled events?
Response Text
Bring back real time metering. I was running blind and did not meet quota for the last two events.

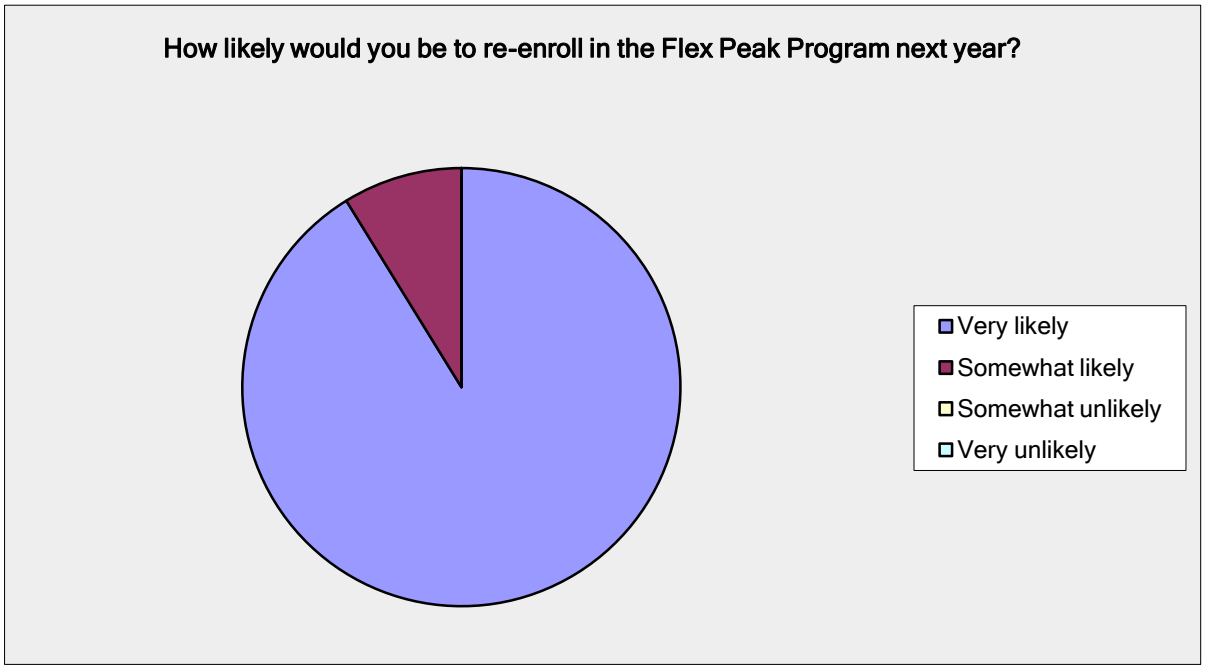
Flex Peak Program Survey

Did you utilize the text message notification option?		
Answer Options	**Response Percent**	**Response Count**
Yes	76.5%	26
No	23.5%	8
	answered question	34
	skipped question	0



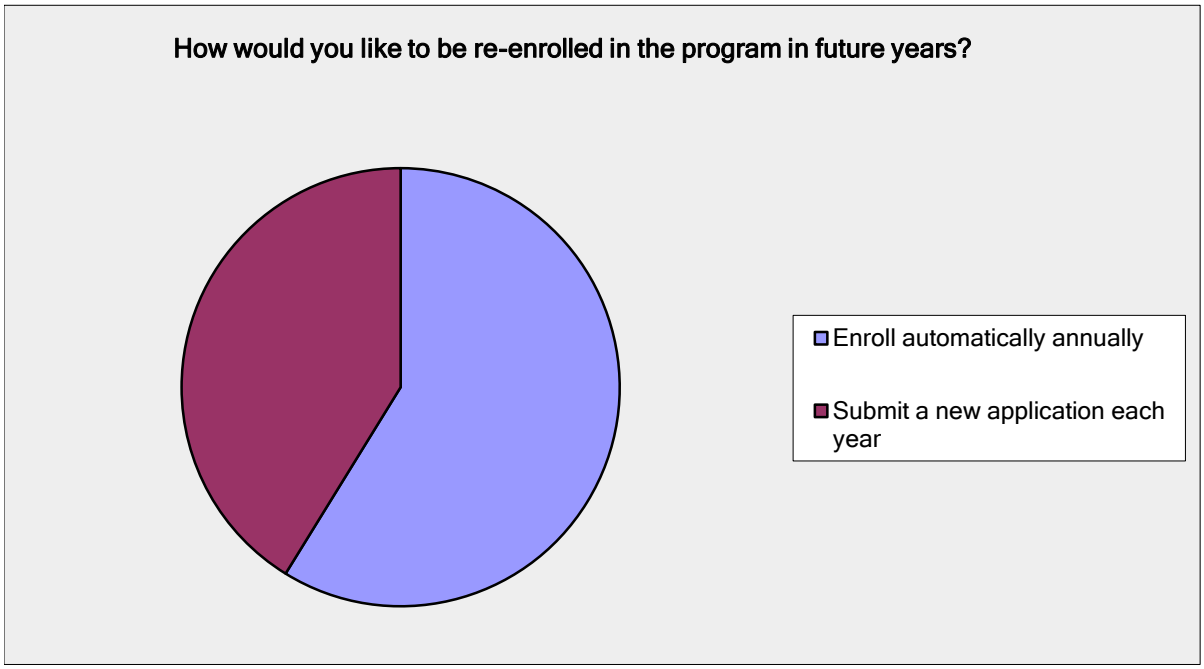
Flex Peak Program Survey

How likely would you be to re-enroll in the Flex Peak Program next year?		
Answer Options	**Response Percent**	**Response Count**
Very likely	91.2%	31
Somewhat likely	8.8%	3
Somewhat unlikely	0.0%	0
Very unlikely	0.0%	0
	answered question	**34**
	skipped question	**0**



Flex Peak Program Survey

How would you like to be re-enrolled in the program in future years?		
Answer Options	**Response Percent**	**Response Count**
Enroll automatically annually	58.8%	20
Submit a new application each year	41.2%	14
	answered question	34
	skipped question	0



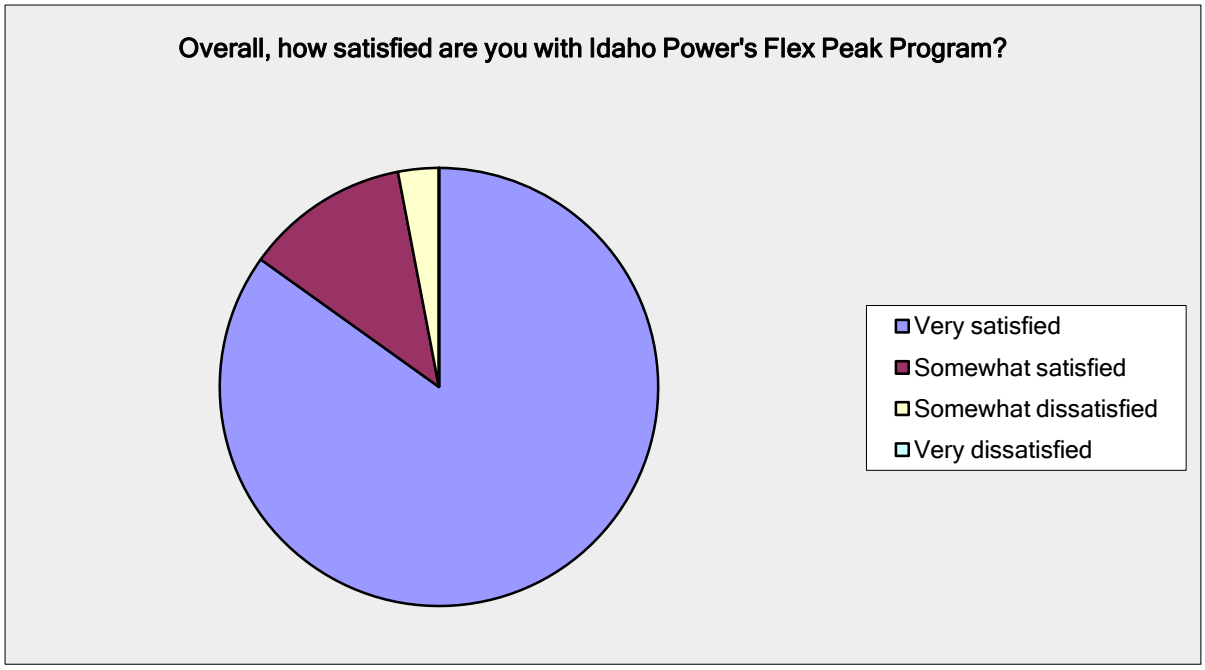
Flex Peak Program Survey

Is there anything Idaho Power could do to improve the program?	
Answer Options	Response Count
	15
answered question	15
skipped question	19

Is there anything Idaho Power could do to improve the program?
Response Text
It would be nice if IPCo representative could help prepare a presentation (review/assist in creating) and be present at the 3x meetings for buy off and implementation. Thanks !!!
Provide individual store breakdown for accounting for customers with multiple locations
I realize this program is weather driven with notification normally occurring hours within the time of shutdown. With more predictable weather models, suggest expanding notification window to allow for more participation. Perhaps earlier in the morning of the event.
There must be new approaches, many new methods of automating the process are becoming more common.
tentative dates schedule. Its hard to be ready with just a few hours notice. Even if the event doesn't happen.
Too many notifications for pending event, actual event, pending event ending, actual event ending, etc.
I am not sure,but I am sure that somebody can think of something.
Nothing at this time.
It would be nice if we'd get a little more grace for issues outside of our control that prevent load shedding or have us already down during an event. Otherwise I think it worked great.
obviously as much lead time prior to events would be great, we realize this is not possible.
No
We still have issues with the uncertainty of the "call", and the short notification timeline. We understand that you do not want people to "game" the system and I'm not sure what to do to prevent that. I just know that, as another public utility that provides a critical service, additional notification would allow us to build additional storage over a longer period in preparation for the Flexpeak events. This additional storage acts like a battery backup and permits us to perform at our peak.
To be an effective program real-time data similar to what ENERNOC had available in the past would be necessary... Remote Data Analysis via a mobile AP. The ability to induce demand response via scheduling would be beneficial as well. If the customers would be able to forecast production around demand response windows I believe the response could be double or triple reductions we contribute today. This would require 72 hour guidance to facilitate...
Provide the ability to see real time data - actual demand, baseline demand, and demand response targets. Provide notification if our nomination exceeds our baseline demand ahead of time. Use an average across the demand response event to determine success, rather than an hourly determination of success.
Give us the tools so we can monitor the Flex peak demand program

Flex Peak Program Survey

Overall, how satisfied are you with Idaho Power's Flex Peak Program?		
Answer Options	**Response Percent**	**Response Count**
Very satisfied	84.8%	28
Somewhat satisfied	12.1%	4
Somewhat dissatisfied	3.0%	1
Very dissatisfied	0.0%	0
	answered question	33
	skipped question	1



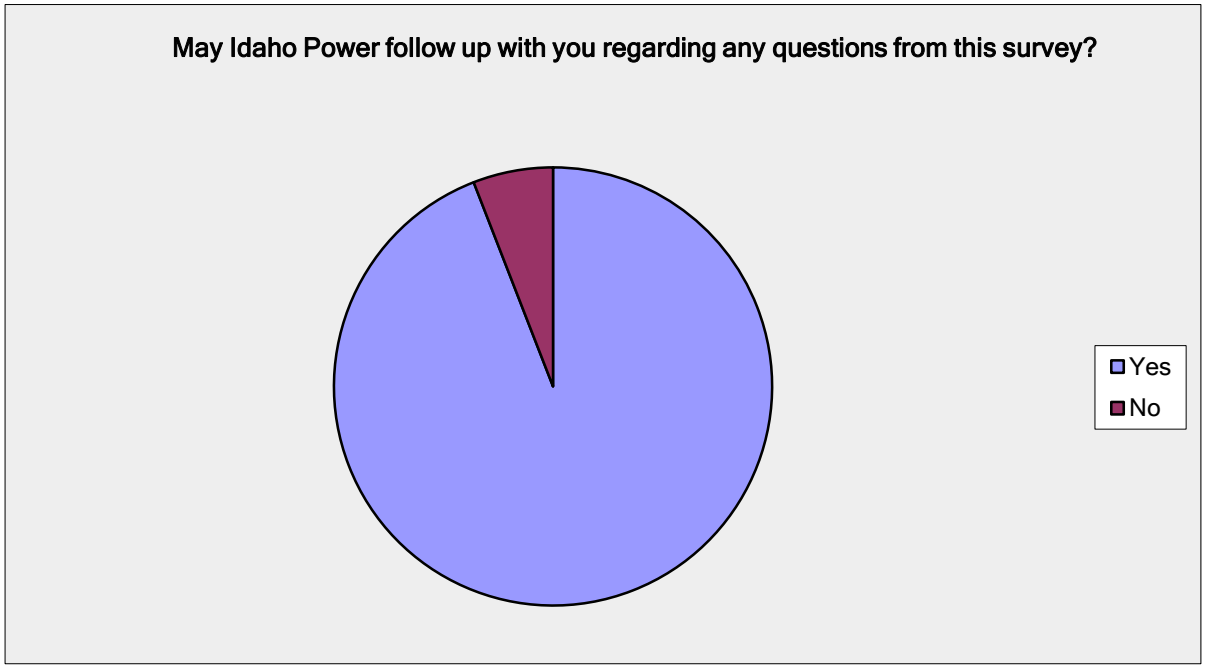
Flex Peak Program Survey

Please provide any additional comments about Idaho Power's Flex Peak Program.	
Answer Options	Response Count
	5
answered question	5
skipped question	29

Please provide any additional comments about Idaho Power's Flex Peak Program.
Response Text
Good program - I'm glad that IPCo is handling the program now!
We are happier working with Idaho Power directly as compared to the Enernoc system.
Would Like To Enroll some other sites next year. Thanks
It is a good program to have, it benefits both parties.
Thank you for the opportunity. With reference to my previous comment on additional notice on Flexpeak events: It seems that the usage history of our facilities to calculate the baseline power usage prevents "gaming" of the Flexpeak events. I think that you might try to test or pilot longer notice times or alerts that an event may happen.

Flex Peak Program Survey

May Idaho Power follow up with you regarding any questions from this survey?		
Answer Options	**Response Percent**	**Response Count**
Yes	94.1%	32
No	5.9%	2
	answered question	**34**
	skipped question	**0**



HEAP 2016 Survey Results

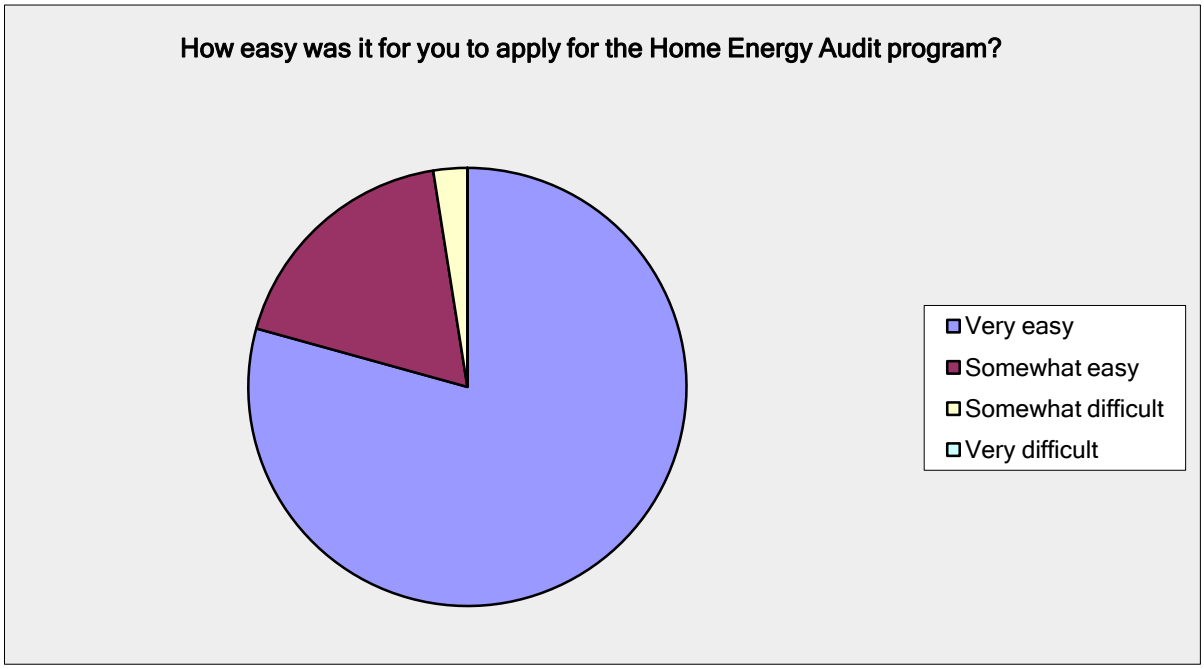
Survey was sent to 482 Home Energy Audit Program participants.

The number of respondents was 208.

Participation rate was 43%.

2016 Home Energy Audit Program Survey

How easy was it for you to apply for the Home Energy Audit program?		
Answer Options	**Response Percent**	**Response Count**
Very easy	79.3%	161
Somewhat easy	18.2%	37
Somewhat difficult	2.5%	5
Very difficult	0.0%	0
	answered question	**203**
	skipped question	**5**



2016 Home Energy Audit Program Survey

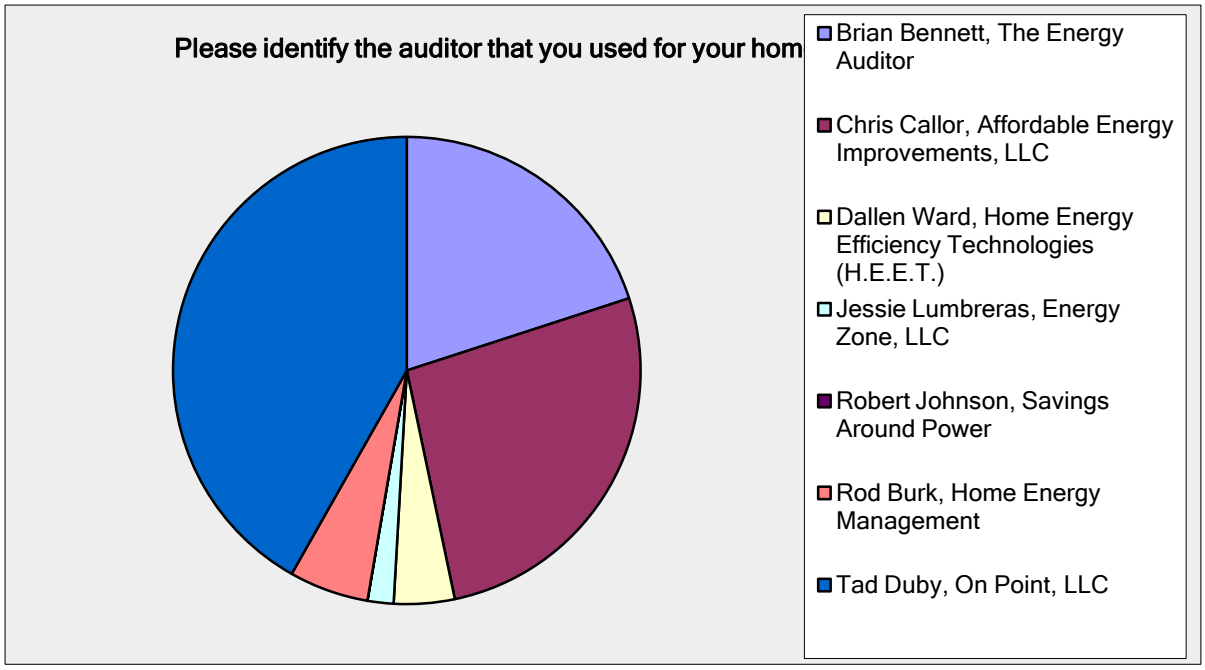
If the application process was difficult what was it about that process	
Answer Options	Response Count
	13
answered question	13
skipped question	195

If the application process was difficult what was it about that process that made it difficult?
Response Text
I 'applied' three times over a period of five months.
Calling the correct person to set up appointment.
I found online application hard to find. Just used your phone number and got a person to schedule me fast and easy.
Ez
It was not difficult, it was easy and most helpful
Nothing
Filled 1st time tried
Nothing, everything was alright
Had to wait for someone to contact me back which took several days at least. It was awhile ago so don't remember exactly.
As I recall, I did not (at first) know who at Idaho Power to contact, people at 388-2323 not sure about program-would call back. No return call. Finally contacted Andrea S. and OK after that.
I tried several times without success to use the internet connection. Finally I made app
I had difficulty with the provider service
Was unable to talk to someone, didn't know if my request even made it to the right people. It took a long time to hear back about my request for an audit.

2016 Home Energy Audit Program Survey

Please identify the auditor that you used for your home audit.

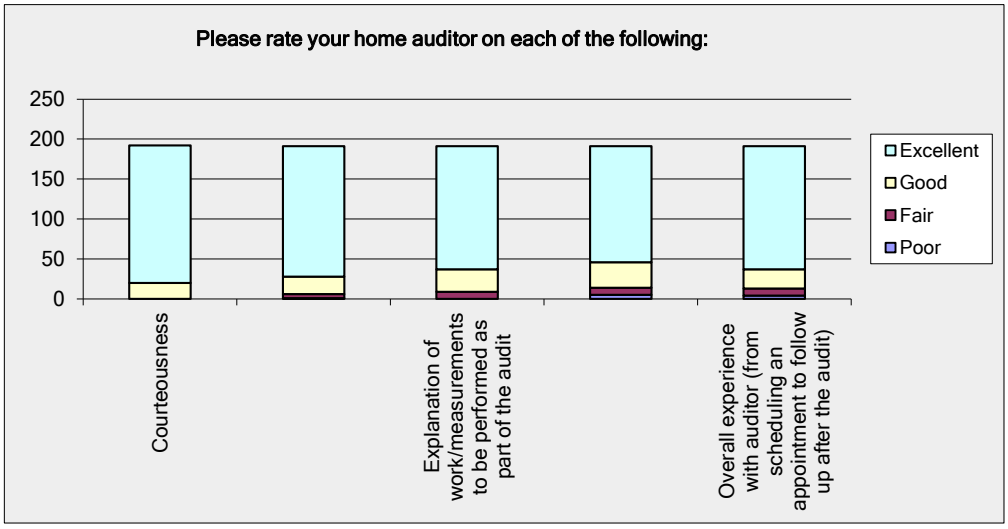
Answer Options	Response Percent	Response Count
Brian Bennett, The Energy Auditor	20.0%	33
Chris Callor, Affordable Energy Improvements, LLC	26.7%	44
Dallen Ward, Home Energy Efficiency Technologies	4.2%	7
Jessie Lumbreras, Energy Zone, LLC	1.8%	3
Robert Johnson, Savings Around Power	0.0%	0
Rod Burk, Home Energy Management	5.5%	9
Tad Duby, On Point, LLC	41.8%	69
answered question		165
skipped question		43



2016 Home Energy Audit Program Survey

Please rate your home auditor on each of the following:

Answer Options	Excellent	Good	Fair	Poor	Response Count
Courteousness	172	20	0	0	192
Professionalism	163	22	5	1	191
Explanation of work/measurements to be performed as	154	28	9	0	191
Explanation of recommendations resulting from audit	145	32	9	5	191
Overall experience with auditor (from scheduling an	154	24	9	4	191
				answered question	192
				skipped question	16



2016 Home Energy Audit Program Survey

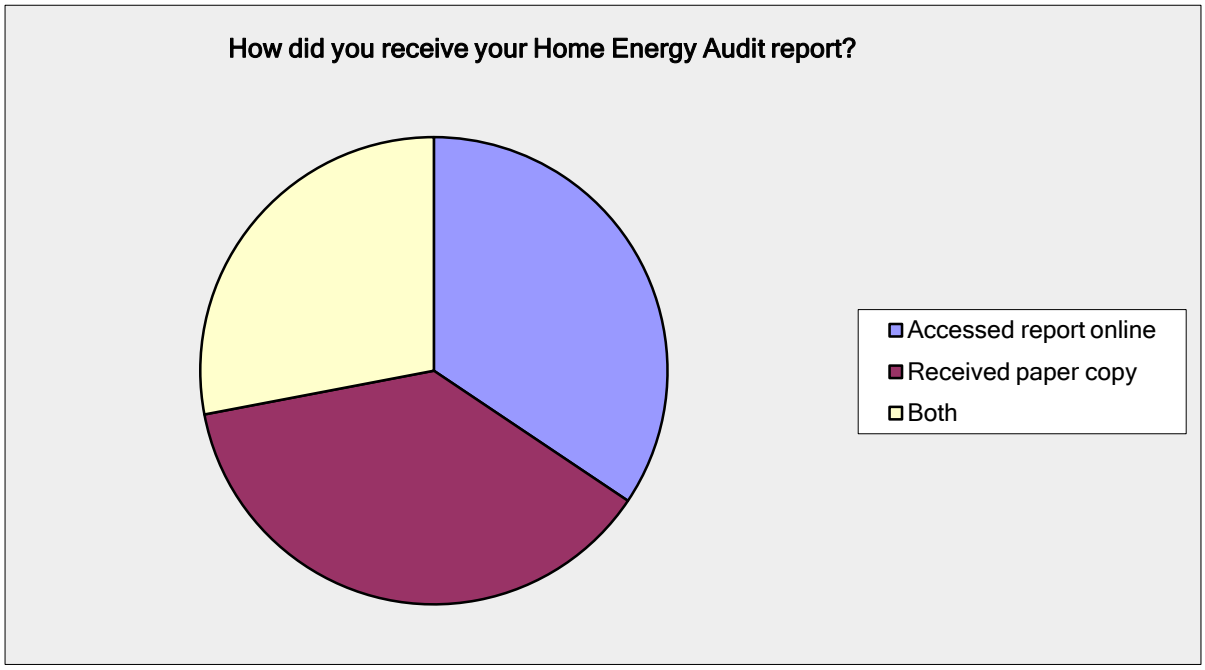
If you have additional comments you would like to offer about your home	
Answer Options	Response Count
	57
answered question	57
skipped question	151

If you have additional comments you would like to offer about your home auditor, please enter them in the space below.
Response Text
He used quite a few CFLs. LED-did not ask what lights we used the most--installed in a guest room we used 2-3 time a year. no exterior lights were replaced. no shower heads were returned initially.
ticked all the boxes for a great customer service rep. of Idaho Power. Very patient with my 1001 questions and answered them on a level I could understand. A++
Friendly, helpful and willing to take time to do a good job!
we had some trouble finding contractors who worked with Idaho Power
works GREAT with the public & very professional.
It would have been more valuable if the home auditor could have done the audit when I could have been present at home in addition to my wife, so I could have heard some of his observations first-hand that weren't explained
Brian was very friendly and helpful, he explained so much to me and my son-in-law that was there for the audit
Very professional. An outstanding individual!
They were very professional and amazing to work with.
He took the time to do the job right!
There was so much information, I would have liked to discuss with the auditor exactly what I needed to do to make my house more energy efficient and whom I would need to contact to complete the job. It was all written in the report, but I still had questions after reading the report.
Perhaps I was expecting more out of the audit. I was a little disappointed with the whole process and felt it was a waste of money. Our house is cold in the winter and I was hoping for some definitive answers. Maybe I was hoping there would be a magic bullet that wouldn't cost me alot of money to fix the problem. It's been a long time now since the audit so it's hard to remember. He seemed like a nice guy, just not real confident and convincing. I think I was expecting a better explanation of his findings.
Identified significant air leaks that we are working to seal. Hope to have him come back and test again once the major leakage is fixed to further identify air leaks.
Forgot to lock the door. Was left unlocked for two days.
He spaced the first appointment and we had to reschedule. Neglected to send the full report until I called him and told him we did not get it.
Tad was a great representative for you!
enjoyed working with him on this very comfortable and explained everything. also called and asked If I had
I had to make 5 call and it took almost two months to get the written results of the audit.
I was clueless about what to do with the air leaks in my house. But Chris showed me what to do-What I could do myself such as using mastic paste on ducts.
Very helpful and very nice guy!
The audit took too much time. I didn't feel the cost was worth the benefit.
Nicely done!
Very thorough and we appreciated that. Explained things so well.
He was excellent in all aspects. We really appreciated his honesty and insight.
Came and charged 99.00 was here maybe 15 minutes and said we had done all we could our improvements.All we could do was a heat pump and would send info about them. Never heard a word about from anyone after
Tad is great, and I would strongly recommend him to others.
Very happy with Chris.
Tad, I appreciate all of your information and enjoyed speaking with you.. Sorry to keep missing your phone calls to check on our report status , I have received the report but have not as yet scheduled any services..Ugh busy lives.. currently looking for insulation service.. and have spoken with my hvac guy to have a deep cleaning and
Tad called twice to ensure that I received my energy audit report, and was available to answer further questions of mine once I received the report.
Very knowledgeable and helpful. He also called weeks afterwards to check if I had any further questions or concerns. Highly recommended!!

Brian was very courteous and was able to explain things at my level of understanding
Auditor brought girlfriend who sat in car - didn't feel that was professional. My report from him was excellent and helpful. He did not do the air test 2nd auditor did perform this test.
He was so thorough. I wish he could do the work that he recommended!!!
Very courteous and professional
Very knowledgable
Don't remember the auditors name
Very efficient.
Don't recall the name of the auditor
I was not present, and cannot remember the name of the auditor. My mother-in-law was present for the audit. I will be requesting another audit when energy-changes are made.
I didn't know he was supposed to come back. I haven't had the insulation done yet!
Brian was very thorough in explaining his recommendations to improve the energy efficiency in our home.We appreciated having a list of items to address to reduce our power bill.
Chris was low key and explained things well. Not pushy when I refused the CFL's.
Very amiable and did not rush through to complete the audit
Very personal and helpful
He was great about delivering the backorder light bulbs after they came in (out of our home audit time.)
ad was AWESOME and very helpful with all of our questions.
I thought I would see a written report with recommendations. I haven't seen that yet
our home is pretty energy efficient to begin with so this just confirmed what we hoped it would/was/is.
(Not sure it was Chris Callor)
I don't remember (my auditor's name).
They were very complimentary on what we had already done
Sorry, I do not remember the gentleman's name. He was fabulous: personable, knowledgeable, and courteous. I
I have never heard back from anyone after the audit was completed
Sorry but this happened so long ago that I do not remember the name of the person that performed the audit
I never received the information from the audit. He came out, did the audit, cashed my check and that was the
we are not real sure of our auditors name we did no know there would be a test
Said we would receive a full printed report, which we did not.

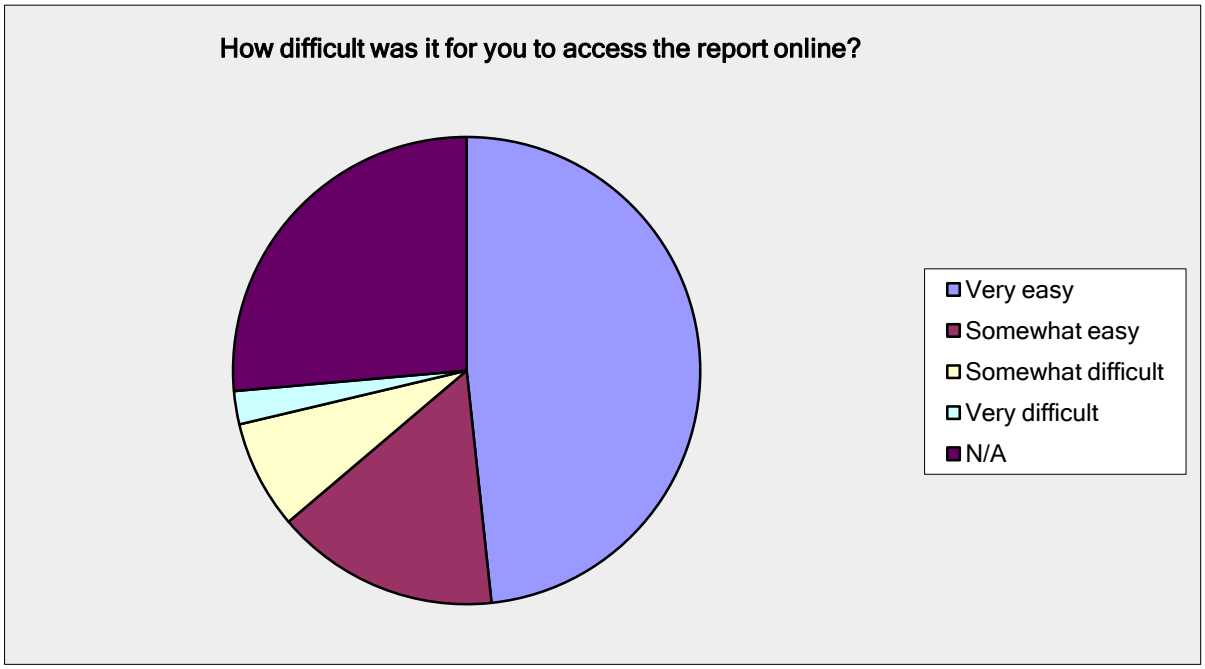
2016 Home Energy Audit Program Survey

How did you receive your Home Energy Audit report?		
Answer Options	**Response Percent**	**Response Count**
Accessed report online	34.4%	64
Received paper copy	37.6%	70
Both	28.0%	52
	answered question	186
	skipped question	22



2016 Home Energy Audit Program Survey

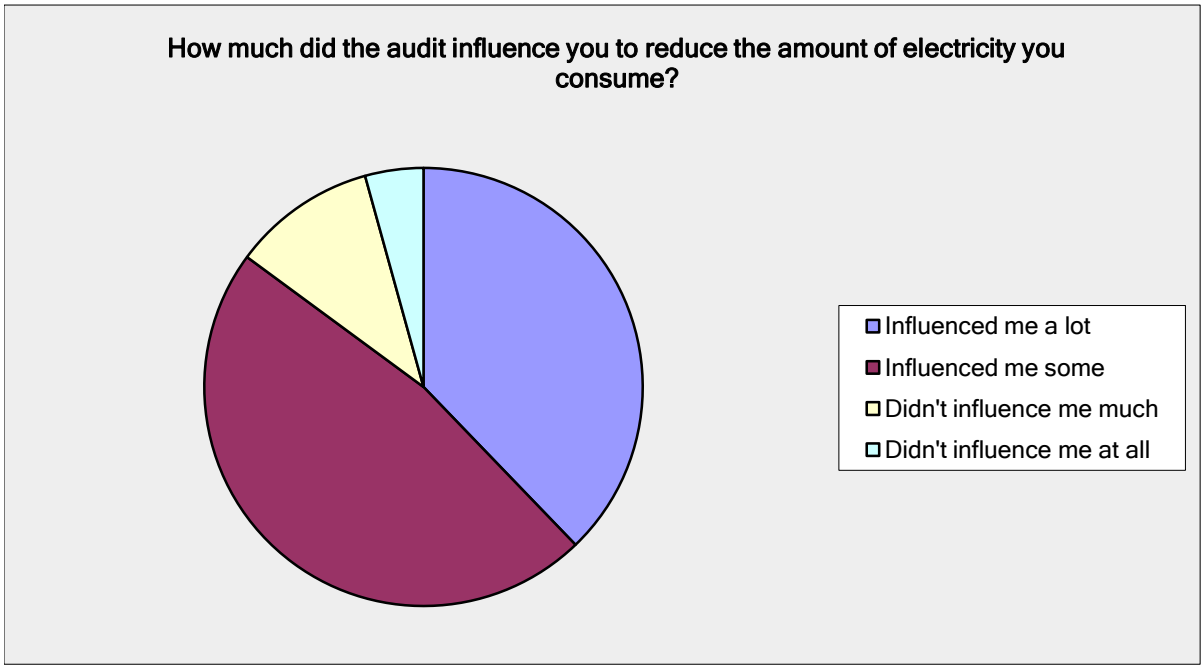
How difficult was it for you to access the report online?		
Answer Options	**Response Percent**	**Response Count**
Very easy	48.3%	84
Somewhat easy	15.5%	27
Somewhat difficult	7.5%	13
Very difficult	2.3%	4
N/A	26.4%	46
	answered question	**174**
	skipped question	**34**



2016 Home Energy Audit Program Survey

How much did the audit influence you to reduce the amount of electricity you consume?

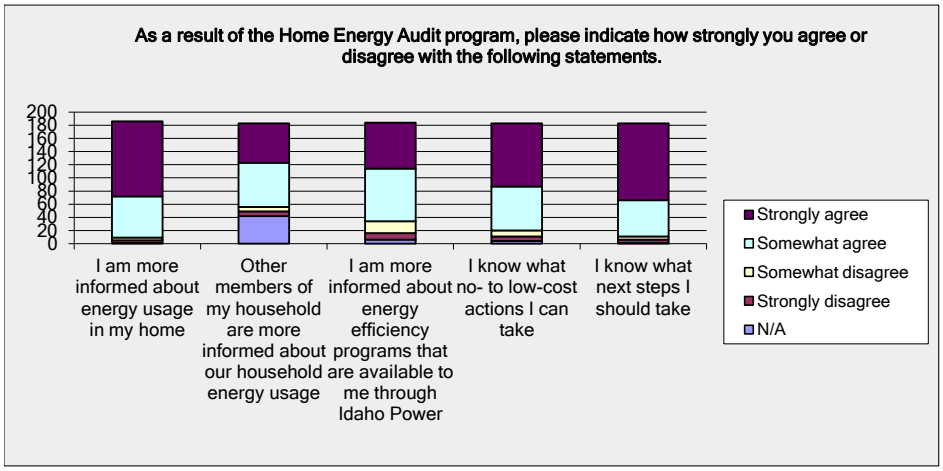
Answer Options	Response Percent	Response Count
Influenced me a lot	37.8%	71
Influenced me some	47.3%	89
Didn't influence me much	10.6%	20
Didn't influence me at all	4.3%	8
answered question		188
skipped question		20



2016 Home Energy Audit Program Survey

As a result of the Home Energy Audit program, please indicate how strongly you agree or disagree with the following statements.

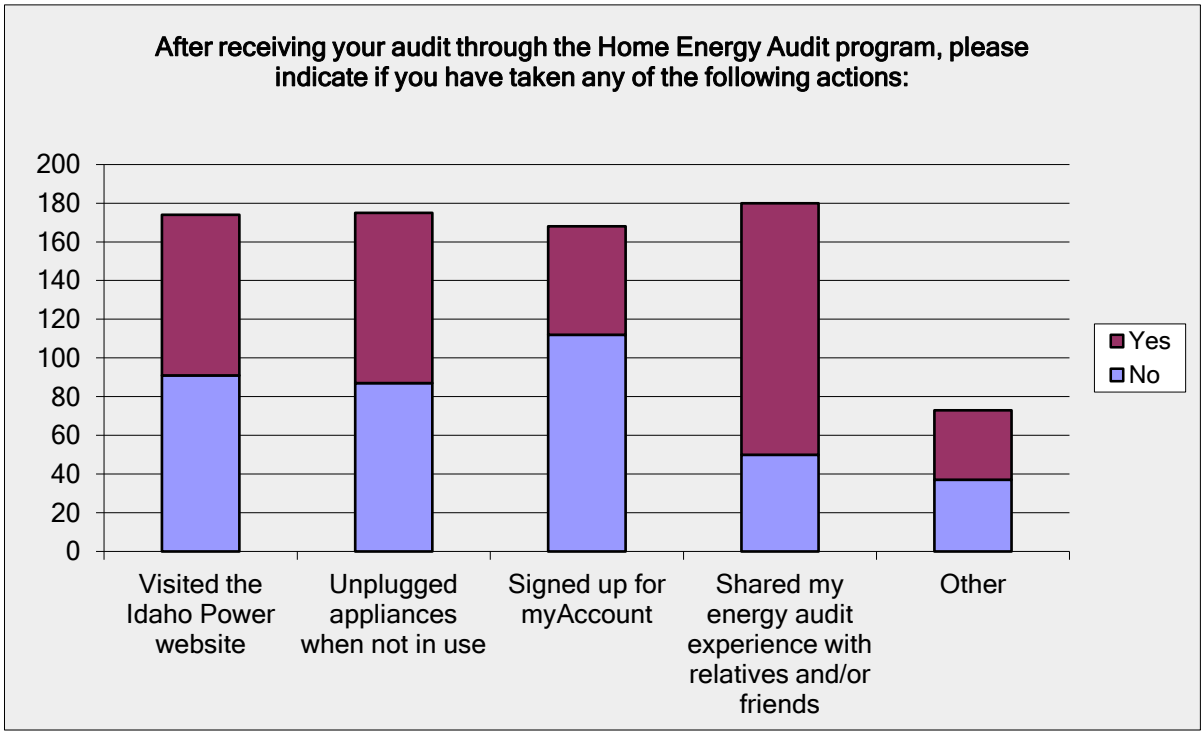
Answer Options	Strongly agree	Somewhat agree	Somewhat disagree	Strongly disagree	N/A	Response Count
I am more informed about energy usage in my home	114	63	4	4	1	186
Other members of my household are more informed	60	67	7	7	42	183
I am more informed about energy efficiency programs that	70	80	18	10	6	184
I know what no- to low-cost actions I can take	96	67	9	7	4	183
I know what next steps I should take	117	55	5	5	1	183
					answered question	186
					skipped question	22



2016 Home Energy Audit Program Survey

After receiving your audit through the Home Energy Audit program, please indicate if you have taken any of the following actions:

Answer Options	Yes	No	Response Count
Visited the Idaho Power website	83	91	174
Unplugged appliances when not in use	88	87	175
Signed up for myAccount	56	112	168
Shared my energy audit experience with relatives and/or friends	130	50	180
Other	36	37	73
If you selected "other", please specify what other actions you have taken:			42
		answered question	181
		skipped question	27



After receiving your audit through the Home Energy Audit program, please indicate if you have taken any of the following actions:

If you selected "other", please specify what other actions you have taken:

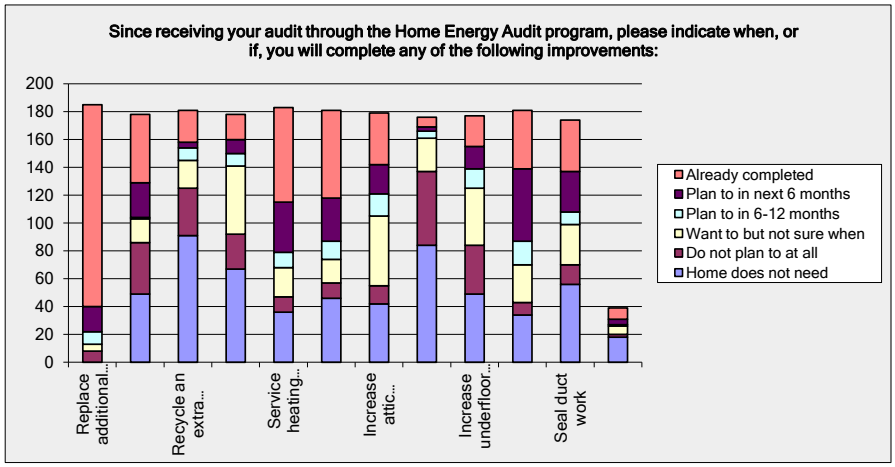
purchased more insulating materials for door gaps
closing off parts I'm not using
I had already signed up for myAccount
replaced furnace/ac. turn off lights more frequently. sealed duct work
I do not leave my appliances plugged in anyway.
hired contractor to correct deficiencies
Sealed air leaks
I have contacted the company that Chris recommended to improve the crawl space situation.
Contacted Western Heating and Air to caulk areas the audior said were causing leakage; exchange returns. Made arrangements to have the electric fireplace removed since it's not being used and leaks cold air into the
Made the energy conservation improvements suggested--insulated the foundation & completed duct repair.
Replaced some more bulbs with LED ones.
We are having our ductwork resealed and cleaned. We are adding insulation.
Had solar panels installed to reduce amount of energy consumed from Idaho Power.
we improved insulation in our attic, considering insulating under floors on first floor
Will have more insulation installed/changed out most light bulbs
bought energy saving lights
Talked to Idaho Power. Put our home up for sale. Made a lot of changes in our home but not the big ones.
Have scheduled a contractor to implement many of the suggestions. I am looking forward to seeing the difference
Led bulbs everywhere
Solicited bids for a mini-heat pump.
I had already signed up for myAccount, not as a result of the Audit. I've installed lower flow aerators in our bathroom faucets. I already had new lower water use shower heads on order from the start-up Nebia.
Installed additional LED lights. Installed new air conditioner. Installed outlet covers.
Added insulation to attic, improved vapor barrier in crawl space, plugged a number of identified air leaks
I have already done many of the above actions, so the audit couldn't change those behaviors.
Made some changes.
Added additional attic insulation
Recognized need to insulate and plug HVAC ducts-- very leaky, which is a major issue. Also aware that replacement of aging A/C system would be beneficial-- alternatives to address hot/cold rooms.
We have sold the home and moved but I did give the report to the new owner.
We have not been home since the audit was done and hope to address some things when we do return home
Scheduling energy "repairs" to lower energy footprint.
Continued to replace old light bulbs with energy efficient bulbs
Put barrier insulation over attic access panel
shared with the landlord and then put in new bulbs-Thanks. Also it motivated me to check into the dryer rack
Added insulation to my attic.
Our contractor and plumber and heating company were noifided.
I HAD INSTALLATION BLOWN IN MY ATTIC AND NEW STORM DOORS AND NEW INSTALLED DOORS INSTALLED BUT DON'T SEE MUCH REDUCTION ON ELECTRIC BILL, IF ANY.
I have insulated my rental that received the energy audit and am also in the process of insulating another rental
our upstairs furnace "died" a few days after the audit so we have replaced it with a more energy efficient unit
Completed some of the suggestions
I wasn't aware I could access the audit online and do not know how
replaced my heat pump, new ceiling and floor insulation, replaced light bulbs, new trim around doors

I have eaten girl scout cookies!!!!

2016 Home Energy Audit Program Survey

Since receiving your audit through the Home Energy Audit program, please indicate when, or if, you will complete any of the following improvements:

Answer Options	Already completed	Plan to in next 6 months	Plan to in 6-12 months	Want to but not sure when	Do not plan to at all	Home does not need	Response Count
Replace additional incandescent light bulbs with more	145	18	9	5	8	0	185
Replace additional showerheads with low-flow models	49	25	1	17	37	49	178
Recycle an extra refrigerator or freezer	23	4	9	20	34	91	181
Replace an older, inefficient appliance with a new	18	10	9	49	25	67	178
Service heating equipment	68	36	11	21	11	36	183
Service cooling equipment	63	31	13	17	11	46	181
Increase attic insulation	37	21	16	50	13	42	179
Increase wall insulation	7	3	5	24	53	84	176
Increase underfloor insulation	22	16	14	41	35	49	177
Seal air leaks	42	52	17	27	9	34	181
Seal duct work	37	29	9	29	14	56	174
Other	8	4	1	6	2	18	39
If you selected "other", please specify what other actions you have taken or plan to take:							24
						answered question	185
						skipped question	23



Since receiving your audit through the Home Energy Audit program, please indicate when, or if, you will complete any of the following improvements: If you selected "other", please specify what other actions you have taken or plan to take:
apparently need an additional vent of some sort
need to replace whole house fan with something that is more efficient
seal openings cold air return areas w master. Seal openings in closets where furnace and hot water heater are located.
attic ventilation, fireplace air leakage, attic door, range, electric outlets and plumbing penetrations, wrapping hot water pipes in crawlspace, install thermoslip on hot water heater, install baffles in attic, adjust doors for tight fit.
plan to replace water heater
Have insulating Styrofoam cut to fit bedroom windows
replacing one of the bathroom ceiling exhaust fans as it is letting a lot of outside air in.
Put plastic on windows, even though they were not reported to leak
Brian replaced most of the light bulbs
replaced 6 ceiling lights with LED's when we bought the home
I plan to have wall insulation installed in the crawl space.
Remove the electrical fireplace.
Replaced old Aluminum windows with vinyl energy star windows.
Will upgrade appliances to Energy Star models as they need replacement.
installed 4 Anderson patio slider doors
dryer vent cleaning
Will consider ductless heat pump system
I would like to install a mini ductless heat pump.
Added shade tree
Some of the recommendations I would like to do but have found they are cost prohibitive at current time. Duct sealing and attic insulation are the 2 items.
I live in a small studio house and made the bedroom into a studio room- place to sit and read and table to sit at and right--easier to heat or cool the smaller space.
I have a brick home so wall installation would be unlikely of a practical thing to do, and underfloor installation is already here. I may invest in window bubble type installation in one or two of the windows I feel that might not be sealed as they should be. I have a large picture window which is an Anderson Window which appears to be an excellent weather proof window. Other windows are storm type windows.
already replaced light bulbs, plan to replace more
unplug second water heater

2016 Home Energy Audit Program Survey

For any improvements you indicated you do not plan to do, please tell us why.

Answer Options	Response Count
	51
answered question	51
skipped question	157

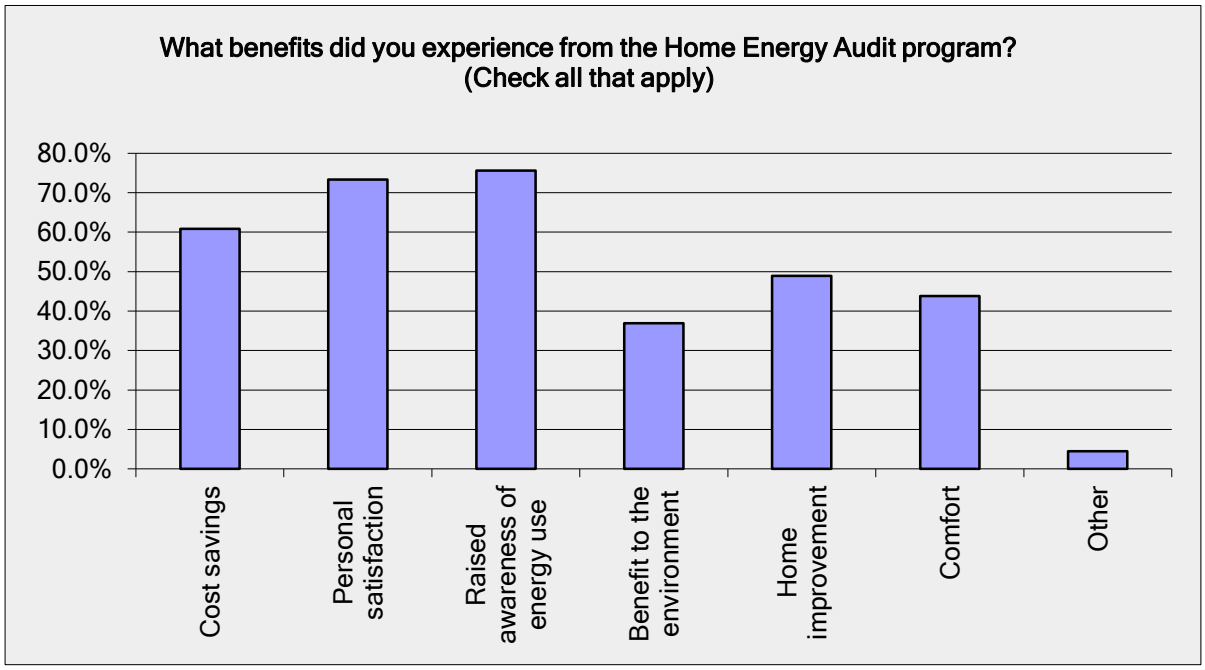
For any improvements you indicated you do not plan to do, please tell us why.

Response Text
$
I don't like low-flow showerheads; wall insulation would be too difficult an experience
House and appliances 4 years old or younger. Was told when shopping for more wall insulation it couldn't be installed in a house that has the walls finished because the pressure would blow the interior walls out or loosen nails.
do not need wall insulation
Have a basement so no floor insulation, would need to replace siding, not ready for large expense.
have top of the line shower head already
I do not like the low flow showerheads I've had and have replaced them
additional wall and attic insulation totally impractical the way our house was built.
My stove, fridge and microwave is new. Just remodeled and bought all new
we only have 1 refrigerator and freezer
okay with current status
Lights ~ most of them were replaced with the audit, but the ones that were not I like that lighting. we use extra freezer and fridg! We think our walls are fine!
I have an old refrigerator in the garage that I plan to give to my daughter. Actually, I have two. I am keeping one of them. He mentioned that I should replace the seal around the front door, but I can't see anything wrong with it. Also got a second opinion from a friend and he couldn't see anything wrong with it either. He suggested that I put my furnace fan on "auto" which I can't stand to do. Can't stand the "stagnate air" in the house and my HVAC guy said the fan doesn't draw nearly the amount of electricity the energy audit guy said it does. I do need to plug the gaps around my attic fan above the garage, but will probably wait until spring to do that as it's not in use during the winter.
I will not replace the regular shower heads with low pressure because I do not like them. I have had tried them in the past and removed them. We have 4"walls and the cost of increasing wall insulation would be cost-prohibitive.
planning on selling home. will let new owners decide what they want to do.
cost
My attic, floor, and wall insulation meet code and at this time in my life increasing them would be too expensive for me to undertake.
Pretty good shape- only needed the new windows
Selling home.
No need, we currently generate electricity far in excess of our usage, and are not compensated.
I plan to replace hot water heater sometime in the next few years, we have no cooling equipment, and we just replaced our baseboard heaters in 2015. No duct work to seal.
The cost doesn't outweigh the benefit or in other cases, would be difficult to do in my home.
Too expensive to increase wall insulation, and my home is only 11 years old.
money
Newer Parade home that is already efficient and doesn't need some of the suggested repairs.

Increase wall insulation is too costly. Walls were constructed with 6 inches of insulation. Recently replaced garage refrigerator.
Contractors indicated - "Not necessary"
See above I chcked other and put explanation there.
Wall insulation: Walls are currently insulated. Additional insulation would be very difficult and expensive, with limited improvement.
Money
MIL stopped the auditor. Low-flow shower heads do not have adequate water pressure. Don't know how/if wall insulation can be increased. Subfloor insulation is already present.
I am moving and selling the house. There was not much that I would be able to do to lower my bill.
Cost vs. benefit
Increasing the wall insulation would require re-building the house
Low flow showerhead in the master bath already. The other bathroom is used almost daily however the shower head existing is a specialty head and I am not wanting to discard it. Wall insulation. I mostly would not do this one because our utility bills are already so reasonable. we are at $1400 annually for electric and gas combined. the R value in the wall is only 4-5 which is very poor however for the effort of adding insulation the payback would take many many years.
Showerhead is a pulsing type. Refrig & freezers are fairly new and work. Too much of a problem to get to space between studs.
Have appliances in compliance
This summer my landlord plans to look into insulation for attic and garage door side.
I use the extra refrigerator.
It's too expensive and we have concerns using wall insulation with lath and plaster walls.
Wall and under floor insulation is not cost effective, Appliance not called out in audit and won't replace until it fails. Shower head replacement not practical. All bulbs than could be replaced had been before the audit.
Not cost effective
Cost/benefit is not sufficient.
The refrigerator is fairly new, so, I don't have plans to replace at this time.
no way to access underfloor insulation
home does not need it
expense to value
too busy right now
Good wall insulation (2x6) not planning to add to, would not be cost effective. Crawl space is insulated all ready, so not planning to insulate floors.
My freezer which is old, but still runs good is worth more to me to pay for electricity rather than spent over $1000 for a new energy star mode.
Don't feel we are loosing a lot of energy through the shower heads

2016 Home Energy Audit Program Survey

What benefits did you experience from the Home Energy Audit program? (Check all that apply)		
Answer Options	**Response Percent**	**Response Count**
Cost savings	60.8%	107
Personal satisfaction	73.3%	129
Raised awareness of energy use	75.6%	133
Benefit to the environment	36.9%	65
Home improvement	48.9%	86
Comfort	43.8%	77
Other	4.5%	8
(please specify)		11
	answered question	176
	skipped question	32



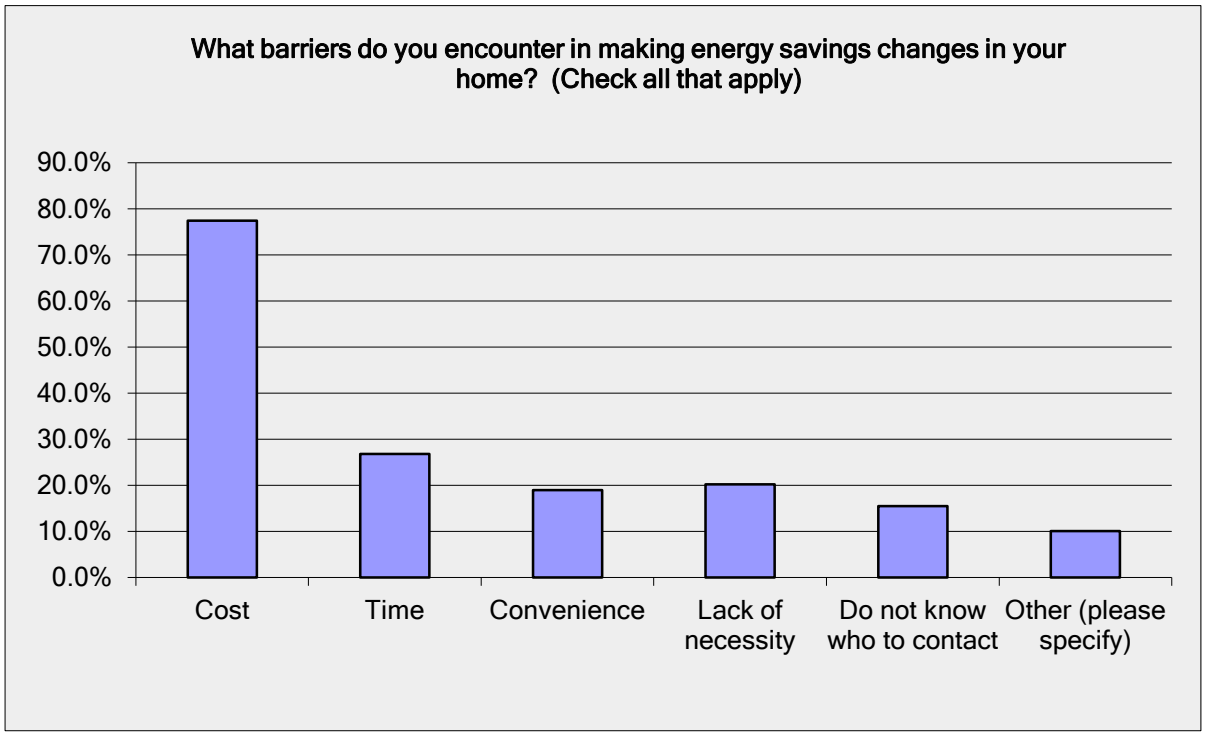
What benefits did you experience from the Home Energy Audit program? (Check all that apply)

(please specify)

peace of mind, less worry
I got some LED lightbulbs. And the satisfaction of knowing that I have adequate insulation in the attic.
I learned there really wasn't much we could go. My husband knew it would be a waste of time. I wanted to know if there was SOMETHING we could do.
None
Learned more about LED felt audit was better for all electric and not so much for gas homes.
Very good to have a 3rd party consultant-- one who provides unbiased improvement suggestions.
The benefit we experienced was additional information about our 1950's home and when we have a bucket of money we now have a road map. definitely a cool peace of mind to have the gas backdraft checked.
it has one a lot more serious and I started reading my meter
none, I never rec4eived a report to know what I could do
none
Not aware of savings - have to go to your web site to see degree differences and usage differences.

2016 Home Energy Audit Program Survey

What barriers do you encounter in making energy savings changes in your home? (Check all that apply)		
Answer Options	**Response Percent**	**Response Count**
Cost	77.4%	130
Time	26.8%	45
Convenience	19.0%	32
Lack of necessity	20.2%	34
Do not know who to contact	15.5%	26
Other (please specify)	10.1%	17
	answered question	168
	skipped question	40



What barriers do you encounter in making energy savings changes in your home? (Check all that apply)

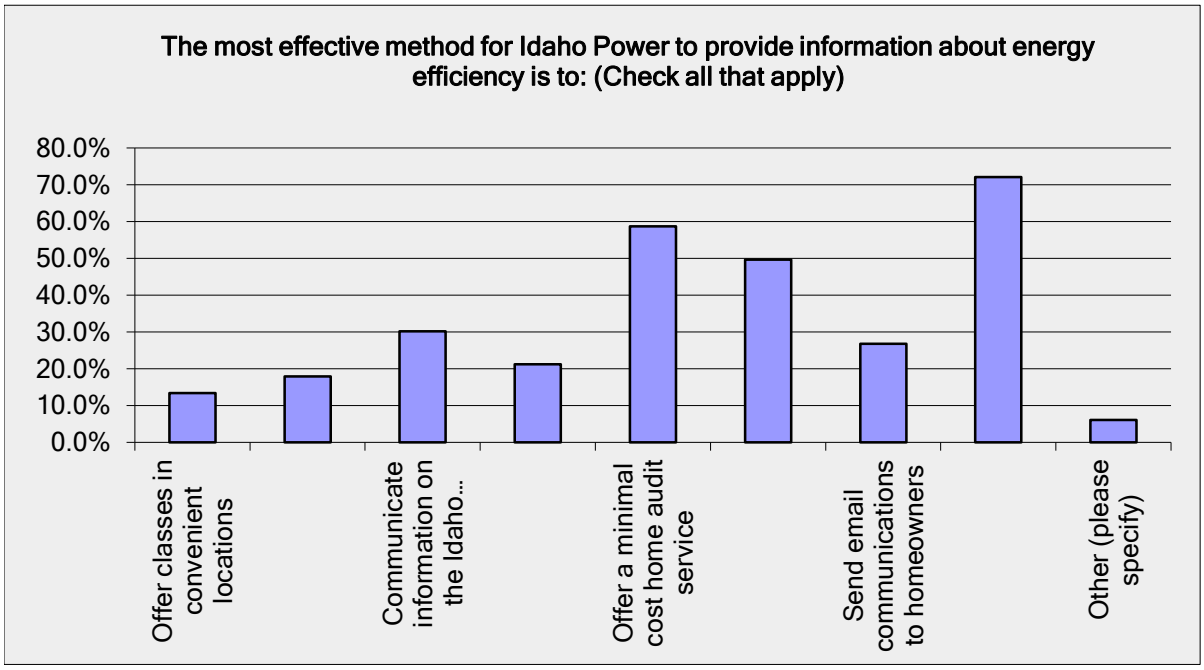
Other (please specify)

scammers that tell me anything and over charge
disability
have called two companies for bid on attic insulation- have not had a reply from them.
retrofit is difficult
too lazy.
Window and insulation installations were delayed one week each for various things
waiting on contractor
been too sick to deal with it
Lack of full family committment
Many contractors do not return phone calls.
Changes would require significant remodeling of the house-- to remedy poor construction practices done at time when building codes were minimal
The man who came out said everything has been updated and there's really not much I can do to lower my bill or
None now.
rent- so most is up to landlord
none
My house is pretty well insulated (supper good sense home). Upgrading heating and washing appliances when they fail or become more cost effective to tackle.
Have newer windows throughout; possible improvement would be a heat pump.

2016 Home Energy Audit Program Survey

The most effective method for Idaho Power to provide information about energy efficiency is to: (Check all that apply)

Answer Options	Response Percent	Response Count
Offer classes in convenient locations	13.4%	24
Communicate information in local newspapers	17.9%	32
Communicate information on the Idaho Power website	30.2%	54
Communicate information on social media	21.2%	38
Offer a minimal cost home audit service	58.7%	105
Send newsletters or information directly to homeowners	49.7%	89
Send email communications to homeowners	26.8%	48
Send information in monthly Idaho Power bill	72.1%	129
Other (please specify)	6.1%	11
answered question		179
skipped question		29



The most effective method for Idaho Power to provide information about energy efficiency is to: (Check all that

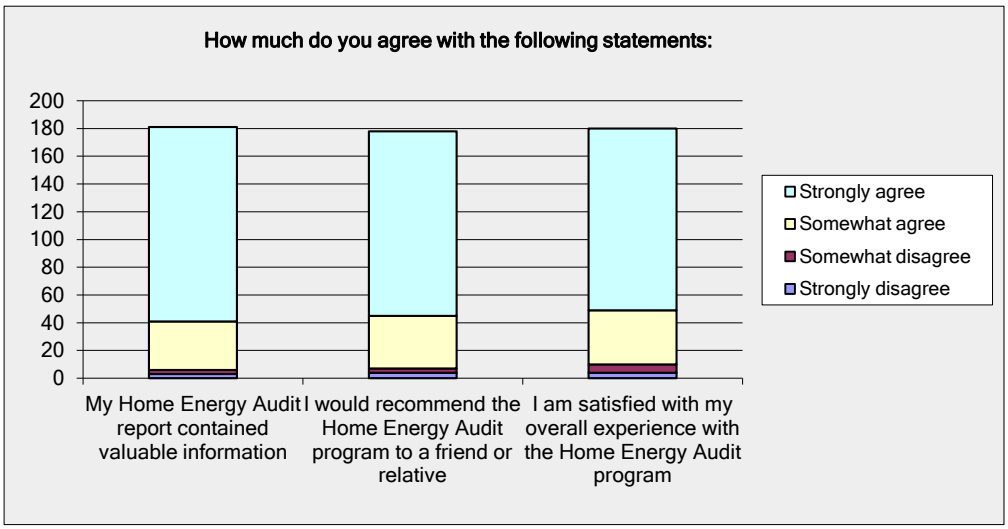
Other (please specify)

I read the monthly Idaho Power bill and receive most of my information from there.
I believe that Idaho Power does a great job providing information about energy efficiency - it is the consumer who needs to see the importance of becoming educated!
Need specific recs to area people who can implement REC actions. (Emily entry comments: REC? Renewable Energy Certificates, I think is what the customer is talking about)
Idaho Power already does many/most of these...and that's how we found out about the audit. :)
I find most people in general do not think applies to them. Running lights when no one is room, TV's left on when no one is watching, Air Conditioning and fans running all day when no one is home. How to communicate this baffles me as no one is listening or reading how important it is.
Do not send anything "Presorted Standard". Most people destroy these 'letters' as soon as they are received
send Idaho Power Rep's into homes to talk about electricity basic's and what uses what?
not having home internet and being a senior, paper mail is best
Not believe there is one way. Doubt may read was it included in monthly bill, I don't. The audit service was a great way of us to become better informed. Classes may be well attended as costs continue to increase. Educational
Not sure why our bill is high when the heater and or air conditioner is not on at all.
Have a free BBQ!!!!!!!

2016 Home Energy Audit Program Survey

How much do you agree with the following statements:

Answer Options	Strongly agree	Somewhat agree	Somewhat disagree	Strongly disagree	Response Count
My Home Energy Audit report contained valuable	140	35	3	3	181
I would recommend the Home Energy Audit program to	133	38	3	4	178
I am satisfied with my overall experience with the Home	131	39	6	4	180
				answered question	183
				skipped question	25



2016 Home Energy Audit Program Survey

If you disagree with any of these statements, please tell us why.

Answer Options	Response Count
	12
answered question	12
skipped question	196

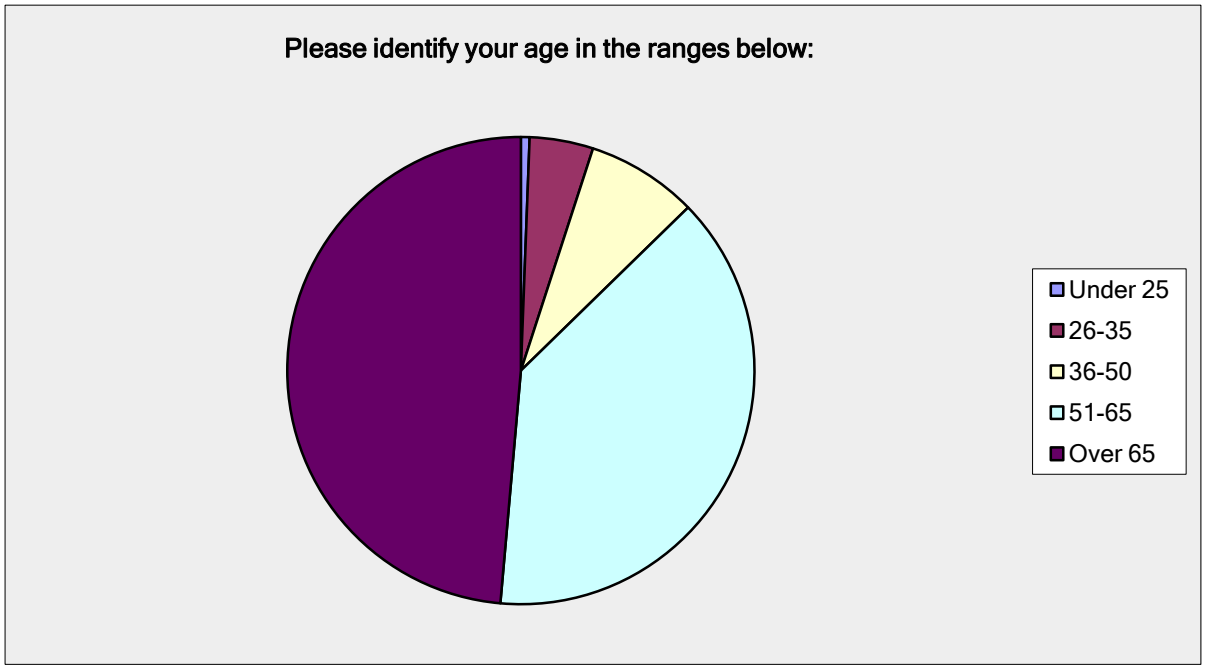
If you disagree with any of these statements, please tell us why.

Response Text

auditor spoke as if I knew what he was trained for, explaining things on a layman's level would have been helpful
I never received a copy of my audit. Tried emailing them for it, never got an answer.
No really sure that it was worth the money.
It just wasn't that helpful to me.
I don't totally trust the auditor we had.
The 36 solar panels that we have were not considered in the audit results.
Nothing done
Recommendations were made to me that I would like to do but are not in my budget at the current time.
I have no idea what my landlord thought but I think it was favorable and especially helping with the high ceiling lightbulbs
I spent $99 for 4 light bulbs-one being an older "energy saving" bulb that needed 10 min to "warm up" in a location that I need light when I turn light on now, (Bathroom Toilet Area) not there long enough to warm up!! Audit was advertised as getting "free" replacement bulbs, No. I paid $99 for these bulbs really.
I never received anything after the audit was completed
Did not receive the report other than verbally when completed. Heat pump was recommended as improvement over current heat; we did put in the recommended insulation but not sure it improved anything; do not plan to remove any windows.

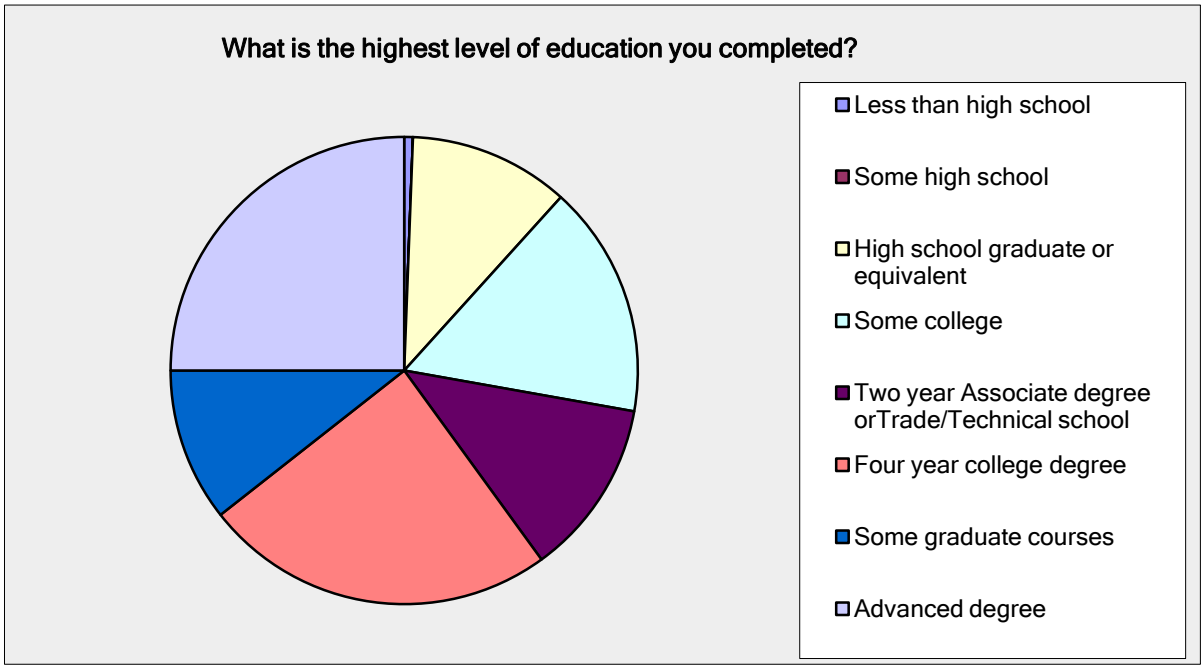
2016 Home Energy Audit Program Survey

Please identify your age in the ranges below:		
Answer Options	**Response Percent**	**Response Count**
Under 25	0.6%	1
26-35	4.4%	8
36-50	7.7%	14
51-65	38.7%	70
Over 65	48.6%	88
	answered question	**181**
	skipped question	**27**



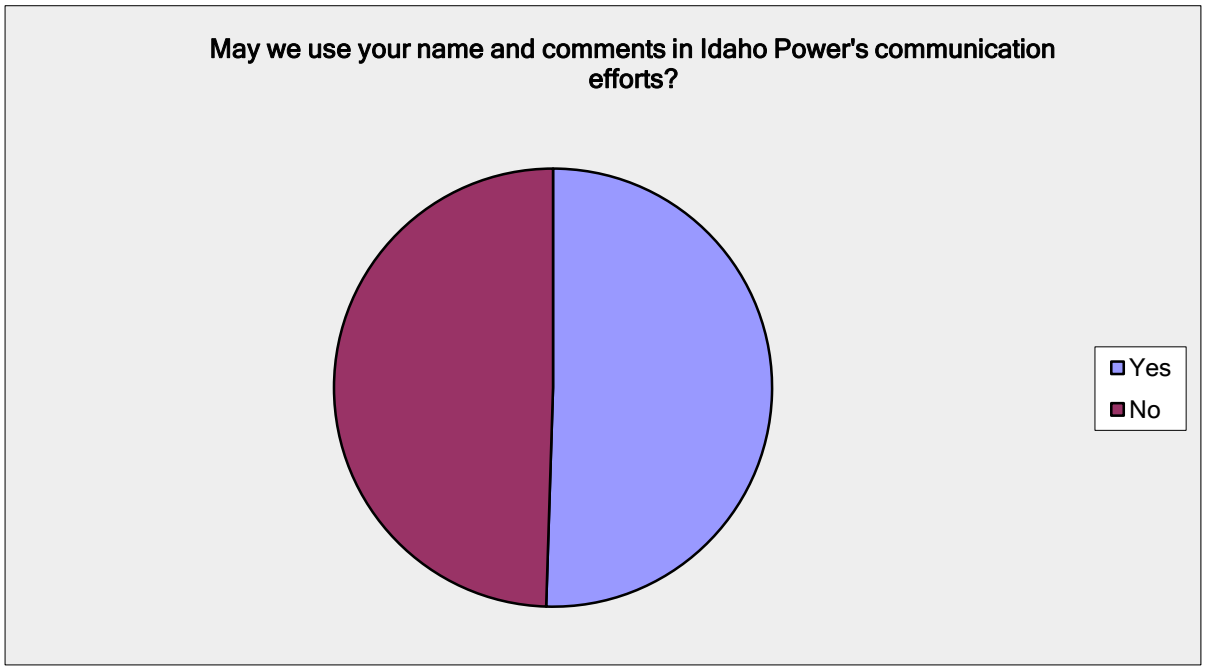
2016 Home Energy Audit Program Survey

What is the highest level of education you completed?		
Answer Options	**Response Percent**	**Response Count**
Less than high school	0.6%	1
Some high school	0.0%	0
High school graduate or equivalent	11.1%	20
Some college	16.1%	29
Two year Associate degree orTrade/Technical school	12.2%	22
Four year college degree	24.4%	44
Some graduate courses	10.6%	19
Advanced degree	25.0%	45
	answered question	**180**
	skipped question	**28**



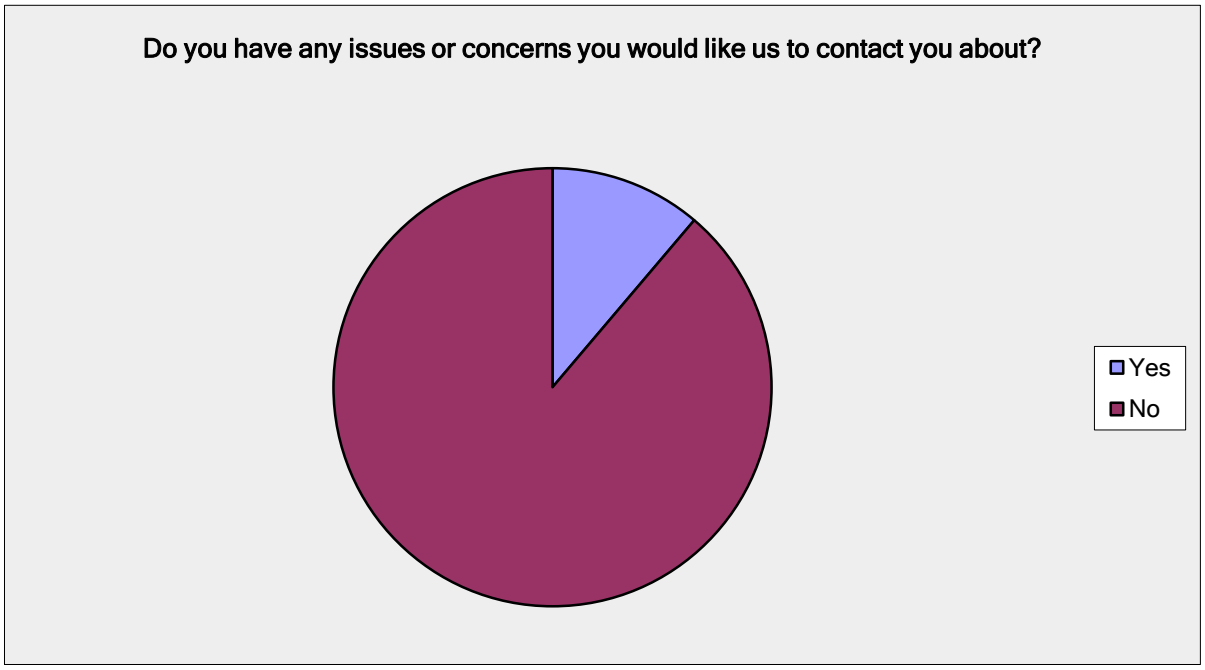
2016 Home Energy Audit Program Survey

May we use your name and comments in Idaho Power's communication efforts?		
Answer Options	**Response Percent**	**Response Count**
Yes	50.5%	92
No	49.5%	90
	answered question	182
	skipped question	26



2016 Home Energy Audit Program Survey

Do you have any issues or concerns you would like us to contact you about?		
Answer Options	**Response Percent**	**Response Count**
Yes	11.2%	20
No	88.8%	159
	answered question	**179**
	skipped question	**29**



2016 Home Energy Audit Program Survey

Thank you for taking the time to participate in this survey. We value your opinions and comments. If you have any additional comments, please	
Answer Options	Response Count
	58
answered question	58
skipped question	150

Thank you for taking the time to participate in this survey. We value your opinions and comments. If you have any additional comments, please share your thoughts in the space below.

Response Text

I need to know more about the extra floor vent he recommended
This response is late, but I do appreciate having had the audit.
I really appreciated the opportunity for this audit and the professional (Tad Duby) you send out as well as the
It kind of left me hanging not knowing if Idaho Power would help on some items, like vents and under floor
I'm glad I had the audit. I was reassured I was doing the best I could do!
I like it that you send information with the bill. Over time, I have learned much that I otherwise not have known.
I believe Home Energy Audits are a very useful tool and a teaching aid for many families, probably more people
I'm sure that I have already completed this form during the summer. A 2nd guy came out to check the 1st guys
My biggest regret is that heat pump/AC unit we put in in August 2014! Thought our power bill was bad before, not looking forward to getting this months bill or next! Glad we will be moving Spring of 2017 & want to go on level
I find asking for education level offensive. I hate to have level of formal education used to measure me in any way. I called the number on the audit for a bid on insulation. We have called twice and have had no reply!
We have already done everything that we can to conserve energy. Our power bill is high in the winter when we
I have let some friends know about the Energy Efficiency tab on the wedsite and they can get a free kit for their
Andrea, I am so grateful for you help to me and my daughter Janet in getting an Energy Home Audit by Brian Bennett and thank you. I showed the audit to rural development when I applied for a grant and loan to make
Auditor Tad Duby provided a courteous and professional audit and explained recommendations that were easy to
Would have appreciated completing this survey online
most if not all home owners would receive considerable benefit from this audit!
At our age it's too expensive to carry out modifications that will benefit us significantly
I forgot to mention that I had new windows installed in the main living area of the house and that has definitely helped with drafts. Thank You for all that you are doing!
Tad Duby was very professional. After the audit I would have preferred to discuss with him in person what changes needed to occur to make my home more energy efficient and suggestions on whom to contact, rather
:-)
I would like to know if it is possible to get another blower test during 2017 after I have finished sealing the air leaks I know about to determine where I may still be getting air leakage and determine how well my repairs are
I would like to take advantage of the next time that you provide outdoor clothes hangers. I like drying clothes
Thanks to Idaho Power, I was given a free furnace in 2015-Ihad been without for two winters. Thank you so very much.
Thanks for the $ on the window rebate.
glad I had it done well worth the price
Heat pump does not work properly in winter when cold out.
Del Dickerson
For a number of years you would only have audits available to all electric homes. Now you have extended it to people like me with gas heat. But I find that public still thinks you cannot audit a home that uses gas.
You all do a great job - keep up the fantastic work!
The issue I'd like to discuss is how do you provide more education with success stories on residential and
who can implement recs
Our income is $2864 per month, family of 2. We would like to have information about no-cost or low cost energy efficiency improvements, especially under floor insulation, who to contact, and what steps to take, what we need
Excellent experience!
Our home is relatively new and we were focused on energy efficiency when we built. It's good to know that much of what we did, and have done since, were the right things. We have just a few items to address now.
Still waiting for info.

This is a great program that perfectly builds upon the MyAccount system. If knowledge is power, this program allows you to better understand the usage patterns you see in My Account and most importantly understand what
I have gas heat. I was glad to see IP extend the Home Energy Audit Program to include me. Additional information about advances in home energy usage (e.g. whole house surge protector, circuit surge protectors,
Thank you for offering the Home Energy Audit Program so i can be better informed of the energy consumption in my older home..Was surprised at the low cost measures i could take to be more energy efficient!
The energy audit was very helpful.
Website is full of good information
We would like to have some duct work done but could only find vendors in the Boise area. Are there any in south
Thank you for making this service available to us!!
Your survey was very beneficial to me and very useful. I was very grateful to find out the information on getting
Please make sure the web site has information on incentive programs to replace windows. I thought the audit wold confirm that our windows need to be replaced but it did not. They let dirt in, so it seems like they would let
I would definitely recommend Chris Callor. It was a good value for $149. I understand the energy savings may
You need to communicate why IPC wants to increase the rate charges and why there is so much variance in the
(INCOMPLETE SURVEY) This is a 420 sq. ft. rental "alley house". The occupant is on a fixed income from ? Due to health issues and pays $300/mo rent plus electricity bill. She kept the heat @ 80Fahrenheit for her comfort and complained about the costs. I had to reroof the front hall of house plus porch over hang earlier and cannot afford any major repairs. There are apparently no low cost programs for these as I was informed by Idaho Power that
I am even more excited about your dryer rack program. I got one and bought one so now most of my laundry can be dried on a rack. I only used my dryer twice since I got the racks! I think summer will give a better idea of how
I had my energy audit in January. It is now the end of May. It seems like an awfully long time between the audit
I expected it to be a drudgery and messy. However, it was swift and Rod was very efficient and thorough and
When we built this house in 2002 (moved in in 2003) we built it to be high energy efficient as was available at that time. It would be valuable to have classes in rural Canyon County on landscaping/xeroscaping to save water and
Good program!
We have an all electric home built into the earth for energy efficiency. Because we are all electric & use a little more we get "bumped" into higher cost brackets. We are considering having natural gas brought into our home as
Kenneth Johnson. 208-376-0819. Please make this service available to all Idaho Power customers!
Thanks for making this available
it would probably have been a good experience if I know what the audit results were.
More information and explanation of there suggestions.
Will see if I can see a difference in usage versus temperature changes online.

empowered community

IDAHO POWER

Holiday Lighting Study

Final Results

December 28, 2016

Survey was sent to 1,014 em**powered** community members
Participation rate was 65%

A similar survey was conducted in 2015 therefore:

1. Community members who completed the 2015 survey were skipped to a question asking if they had added any new LED holiday lights in 2016
2. Community members who joined after 12/17/15, did not respond or did not complete the 2015 study were asked the questions about their use of holiday lighting
3. Community members who indicated in either the 2015 or 2016 study that they use LED holiday lights were asked if they had noticed a reduction in their power bill since converting to LED lights
4. All respondents were asked if they use other holiday decorations that use electricity and how they control their lights and decoration and when they put their lights and decoratioins up

Respondent data

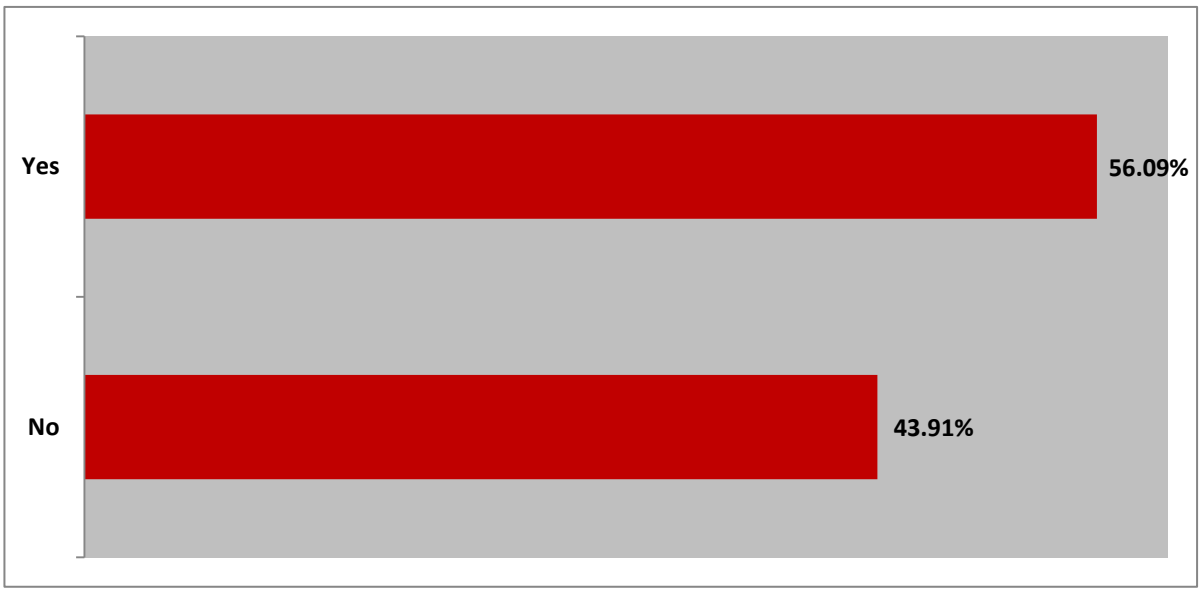
84% homeowners / 11% renters
49% male / 51% female
24% from CanyonWest region / 54% from Capital region / 22% from SouthEast region
19% from electrically heated homes / 65% from natural gas heated homes / 7% from homes heated by other fuel sources

asked only of community members who joined the community after 12/17/15, did not complete the 2015 study, OR indicated they did not use holiday lights in the 2015 study

Do you use strings of holiday lights at your home?

QUESTION TOTAL:	419
DID NOT ANSWER:	0

	OPTIONS	TOTAL	PERCENT
O1	Yes	235	56.09%
O2	No	184	43.91%

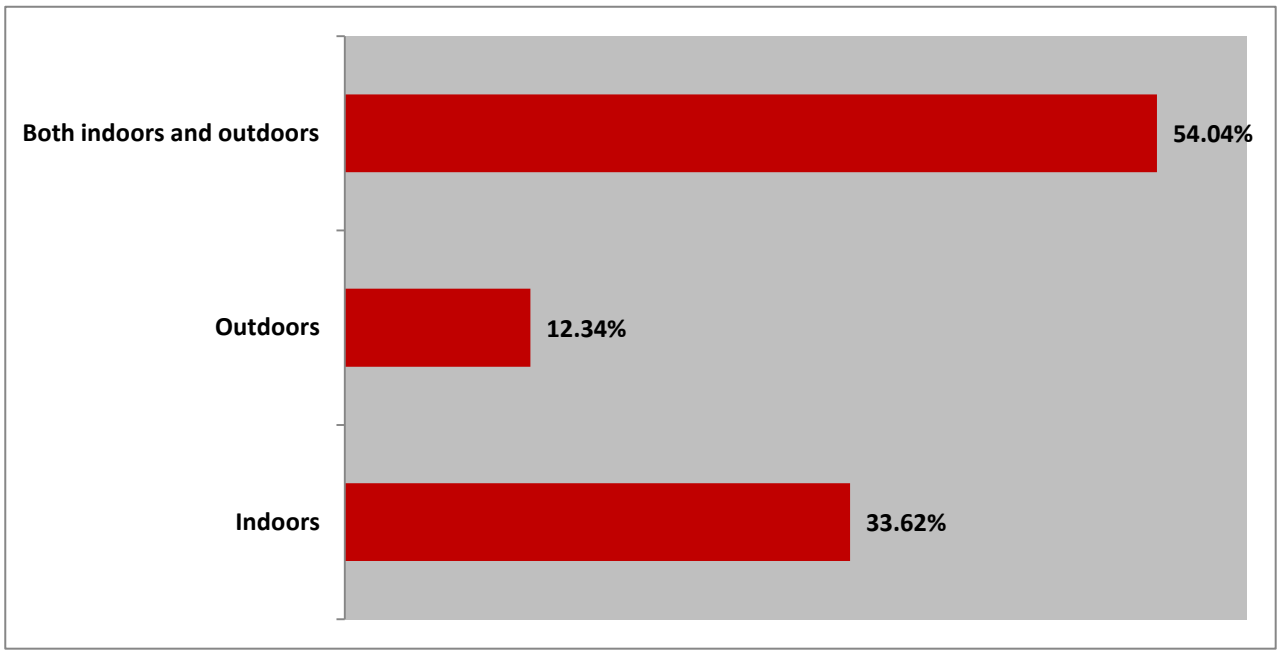


asked only of community members who joined the community after 12/17/15, did not complete the 2015 study, OR indicated they did not use holiday lights in the 2015 study AND said they use holiday lights

Where do you use strings of holiday lighting?

QUESTION TOTAL:	235
DID NOT ANSWER:	0

	OPTIONS	TOTAL	PERCENT
O1	Indoors	79	33.62%
O2	Outdoors	29	12.34%
O3	Both indoors and outdoors	127	54.04%

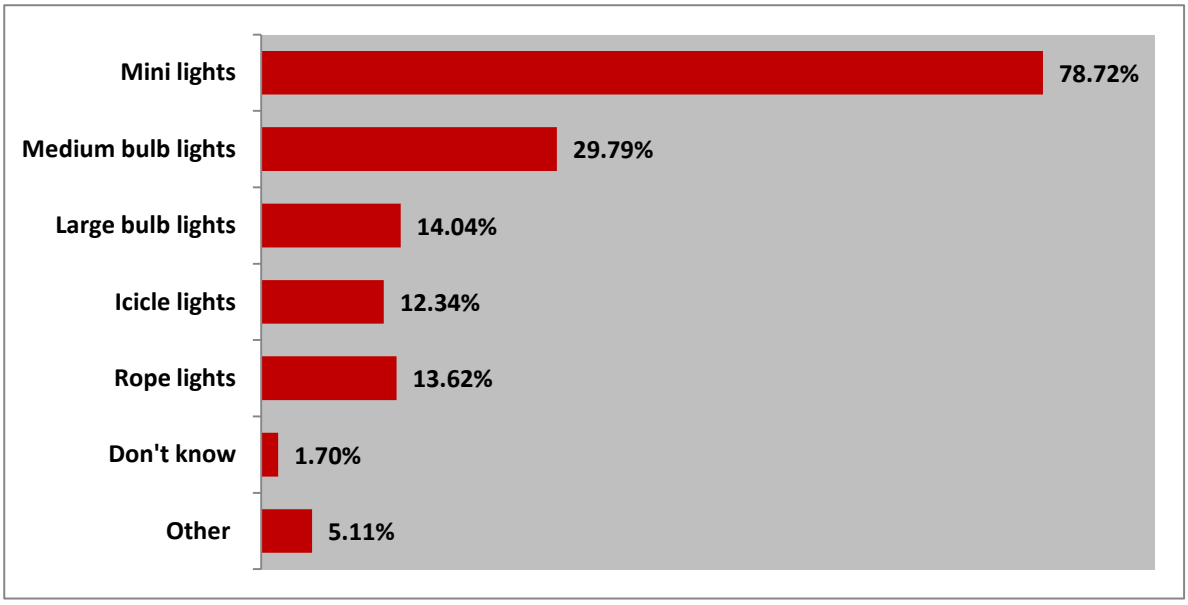


asked only of community members who joined the community after 12/17/15, did not complete the 2015 study, OR indicated they did not use holiday lights in the 2015 study AND said they use holiday lights

What type of holiday light strings do you use?

QUESTION TOTAL:	235
DID NOT ANSWER:	0

	OPTIONS	TOTAL	PERCENT
O1	Mini lights	185	78.72%
O2	Medium bulb lights	70	29.79%
O3	Large bulb lights	33	14.04%
O4	Icicle lights	29	12.34%
O5	Rope lights	32	13.62%
O6	Don't know	4	1.70%
O7	Other	12	5.11%



What type of holiday light strings do you use? Other (please specify)

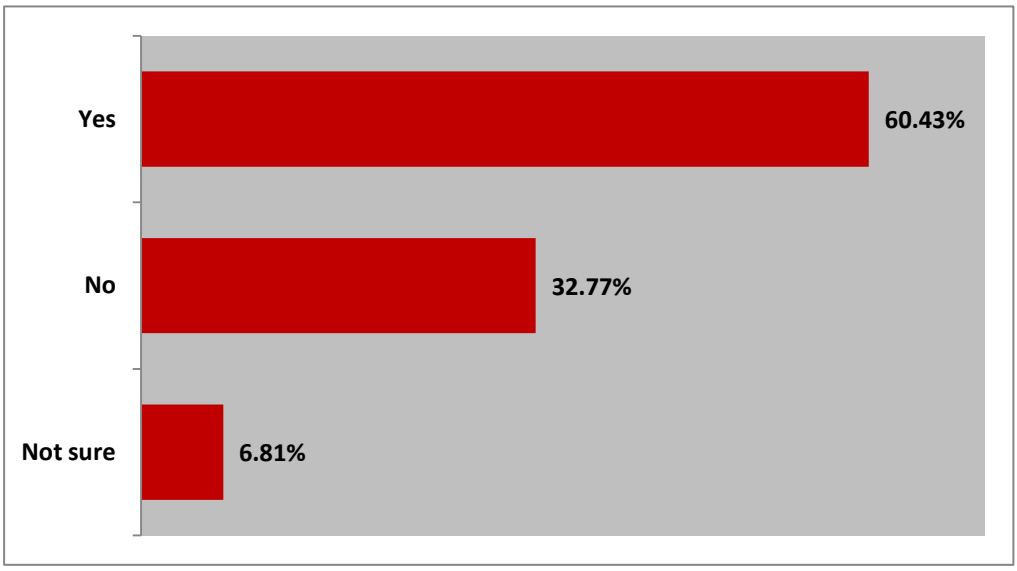
LED
All
bubble
iTwinkle and LED Snowman
led lights outside
LED small bulb lights
LED String lamps
meteor shower lights
sometimes flicker lights
Strobe
variety

asked only of community members who joined the community after 12/17/15, did not complete the 2015 study, OR indicated they did not use holiday lights in the 2015 study AND said they use holiday lights

Are any of your holiday light strings LED lights?

QUESTION TOTAL:	235
DID NOT ANSWER:	0

	OPTIONS	TOTAL	PERCENT
O1	Yes	142	60.43%
O2	No	77	32.77%
O3	Not sure	16	6.81%

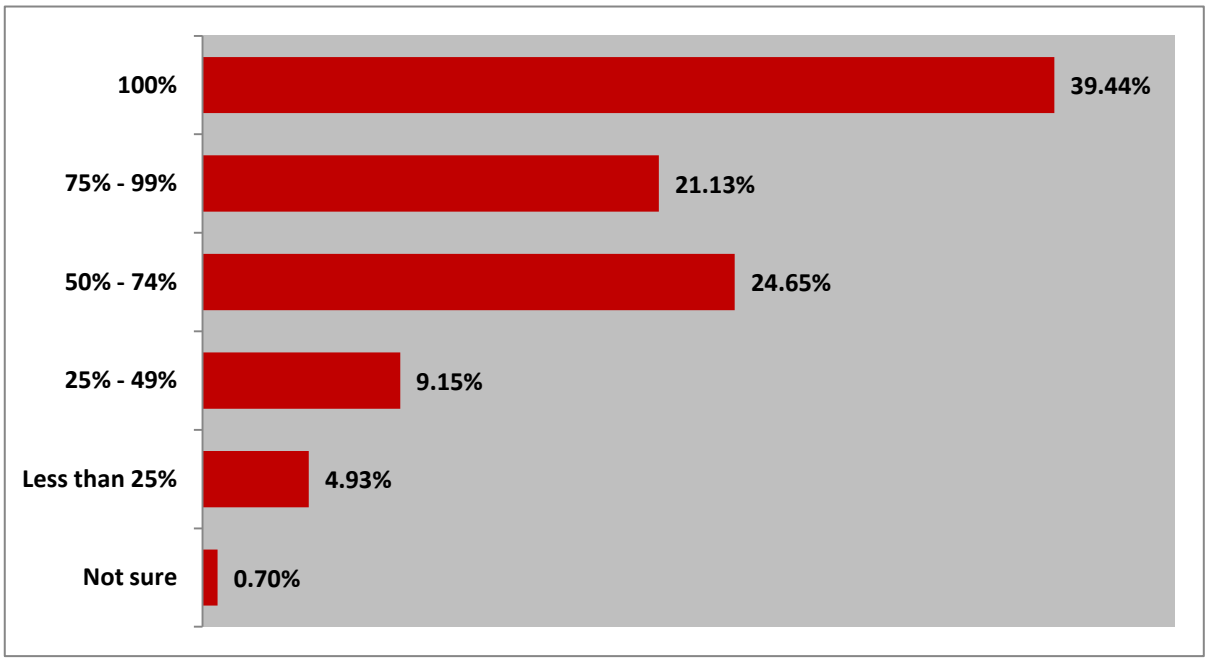


asked only of community members who joined the community after 12/17/15, did not complete the 2015 study, OR indicated they did not use holiday lights in the 2015 study AND said they use LED holiday lights

What proportion of your holiday light strings are LED's?

QUESTION TOTAL:	142
DID NOT ANSWER:	0

	OPTIONS	TOTAL	PERCENT
O1	100%	56	39.44%
O2	75% - 99%	30	21.13%
O3	50% - 74%	35	24.65%
O4	25% - 49%	13	9.15%
O5	Less than 25%	7	4.93%
O6	Not sure	1	0.70%

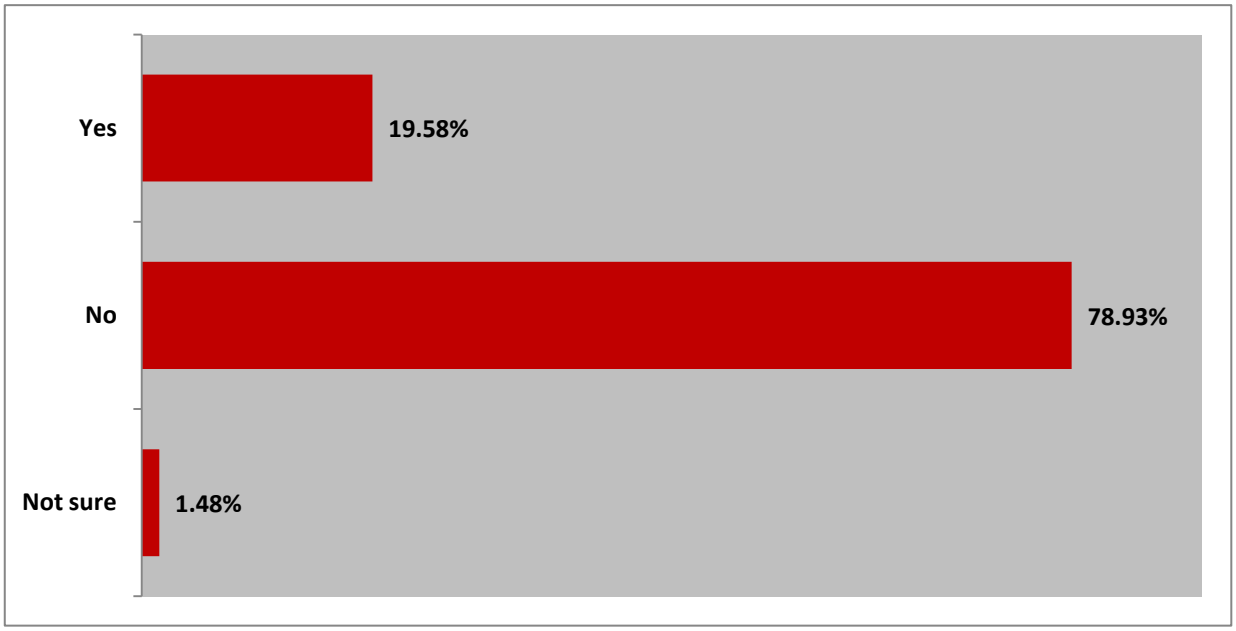


asked only of community members who completed the 2015 Holiday Lighting Survey and said they use LED holiday lights

Last year you told us that some, or all, of your holiday light strings are LED lights. Have you added any new LED holiday light strings this year?

QUESTION TOTAL:	337
DID NOT ANSWER:	0

	OPTIONS	TOTAL	PERCENT
O1	Yes	66	19.58%
O2	No	266	78.93%
O3	Not sure	5	1.48%

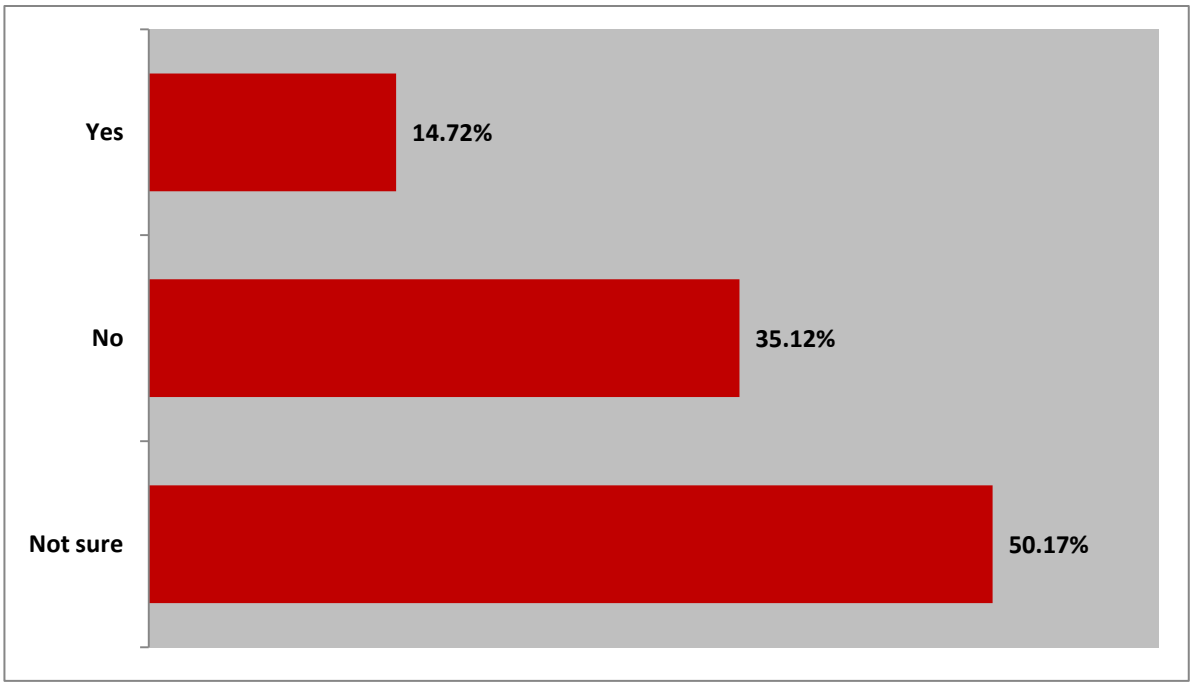


asked only of respondents who said they use LED holiday lights in either the 2015 study or the 2016 study

Have you noticed any reduction in your power bill since switching to LED holiday lights?

QUESTION TOTAL:	299
DID NOT ANSWER:	0

	OPTIONS	TOTAL	PERCENT
O1	Yes	44	14.72%
O2	No	105	35.12%
O3	Not sure	150	50.17%

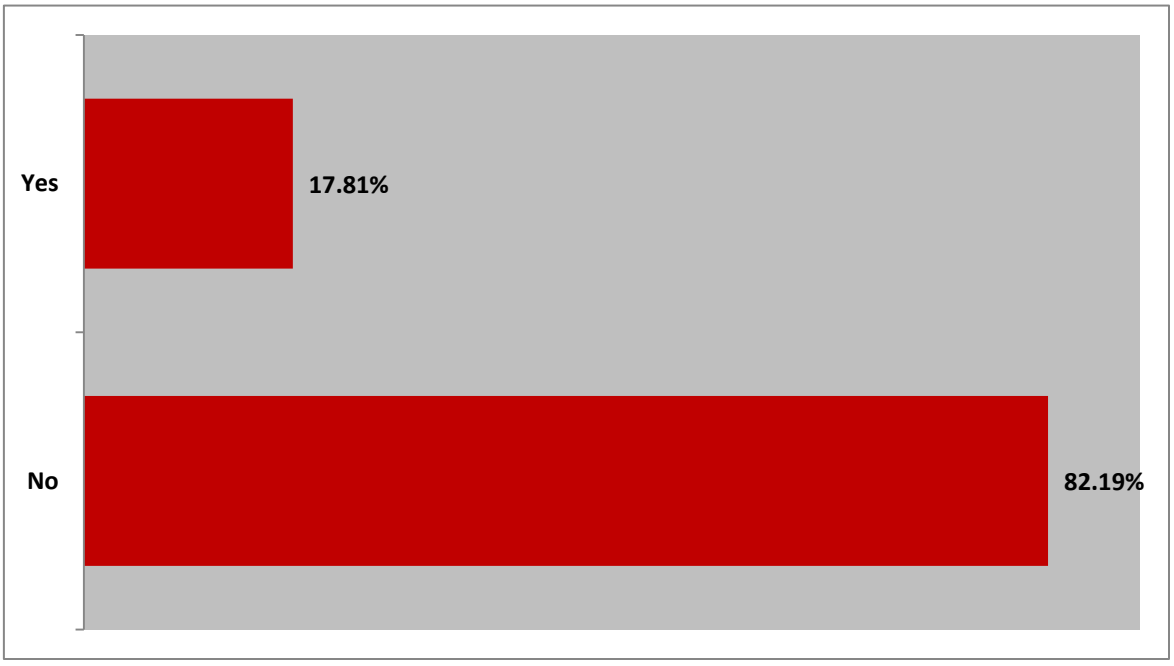


asked of all community members who use holiday lights

Other than strings of lights, do you use any other holiday decorations that use electricity like lawn decorations, light projectors/lasers or inflatables?

QUESTION TOTAL: 657
DID NOT ANSWER: 0

	OPTIONS	TOTAL	PERCENT
O1	Yes	117	17.81%
O2	No	540	82.19%

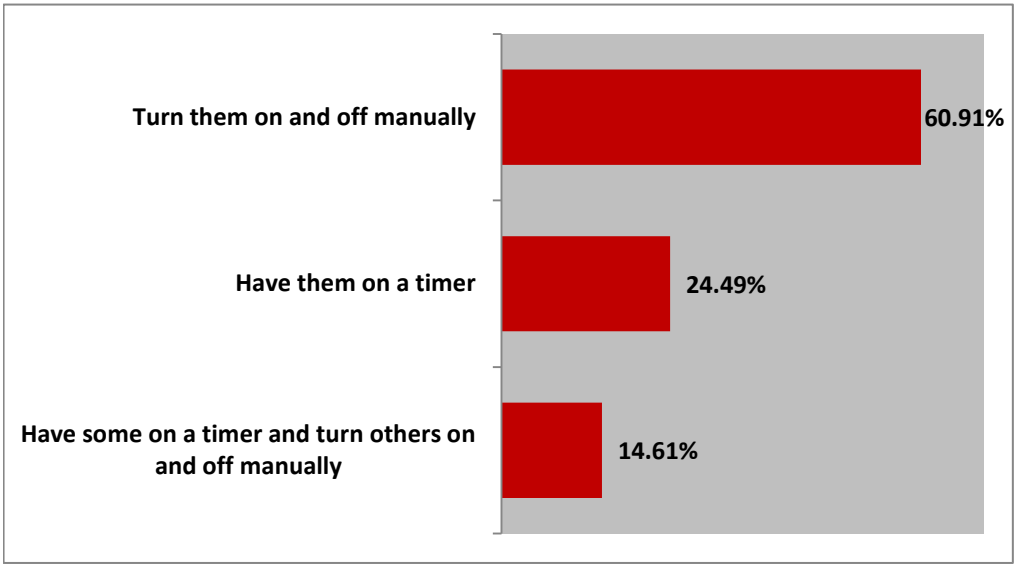


asked of all community members who use holiday lights

How do you turn your holiday lights and/or decorations on and off?

QUESTION TOTAL:	486
DID NOT ANSWER:	0

	OPTIONS	TOTAL	PERCENT
O1	Turn them on and off manually	296	60.91%
O2	Have them on a timer	119	24.49%
O3	Have some on a timer and turn others on	71	14.61%

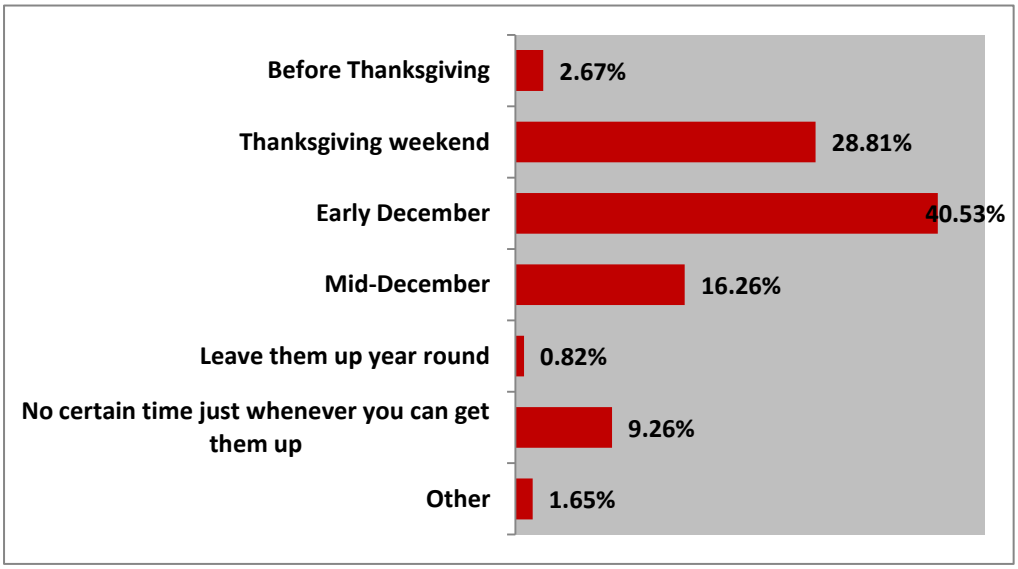


asked of all community members who use holiday lights

When do you typically put up your holiday lights and/or decorations?

QUESTION TOTAL:	486
DID NOT ANSWER:	0

	OPTIONS	TOTAL	PERCENT
O1	Before Thanksgiving	13	2.67%
O2	Thanksgiving weekend	140	28.81%
O3	Early December	197	40.53%
O4	Mid-December	79	16.26%
O5	Leave them up year round	4	0.82%
O6	No certain time just whenever you can	45	9.26%
O7	Other	8	1.65%



When do you typically put up your holiday lights and/or decorations? (please specify). **Other**

As close to Thanksgiving we can assuming the weather is good.
before it gets cold
Didn't put any up this year
EVERY YEAR IS DIFFERENT. DEPENDS ON MOOD AND WHAT IS GOING ON AT THE TIME BUT LIKE TO BEFORE T-DAY
Honestly, no outside lights, can't imagine increasing our already too high power bill
No longer. cutting elect bill.
week before Christmas
While it is still warm out, but don't plug them in until after Thanksgiving

empowered community

IDAHO POWER

Lighting Study

Final Results

July 25, 2016

Survey was sent to 1,023 em**powered** community members
Participation rate was 68%

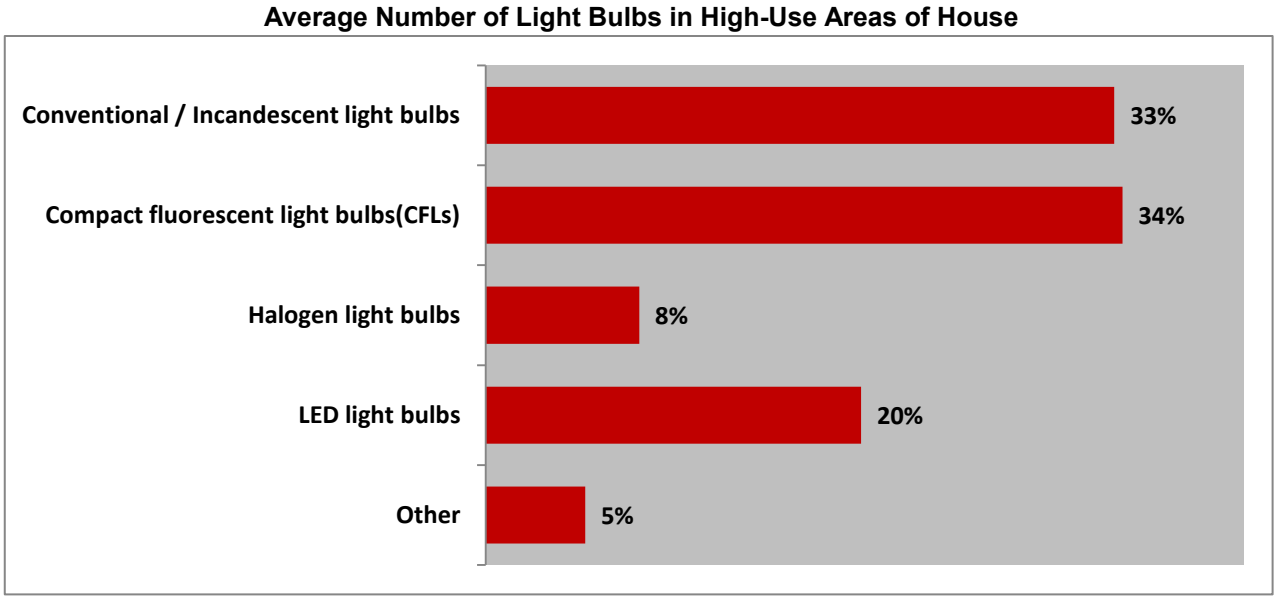
Respondent data

- 82% homeowners / 11% renters
- 48% male / 52% female
- 22% from CanyonWest region / 54% from Capital region / 23% from SouthEast region
- 26% from electrically heated homes / 66% from natural gas heated homes / 8% from homes heated by other fuel sources
- 82% from single-family homes, 4% from apartments/condos/townhouses with 2-3 units, 3% from apartments/condos/townhouses with 4 or more units, 4% from manufactured homes
- Average total number of bulbs in the household was 47

The following question refers ONLY to light bulbs installed in light fixtures or lamps in the following areas of your home: kitchen, living room, family room and/or great room.For each type of bulb shown below, please tell us the overall percentage of each type of bulb you have installed in the kitchen, living room, family room, and/or great room areas of your home.If some of your bulbs are not shown in the pictures, please use the other category. Your total among all the bulb types must equal 100%.

QUESTION TOTAL:	619
DID NOT ANSWER:	0

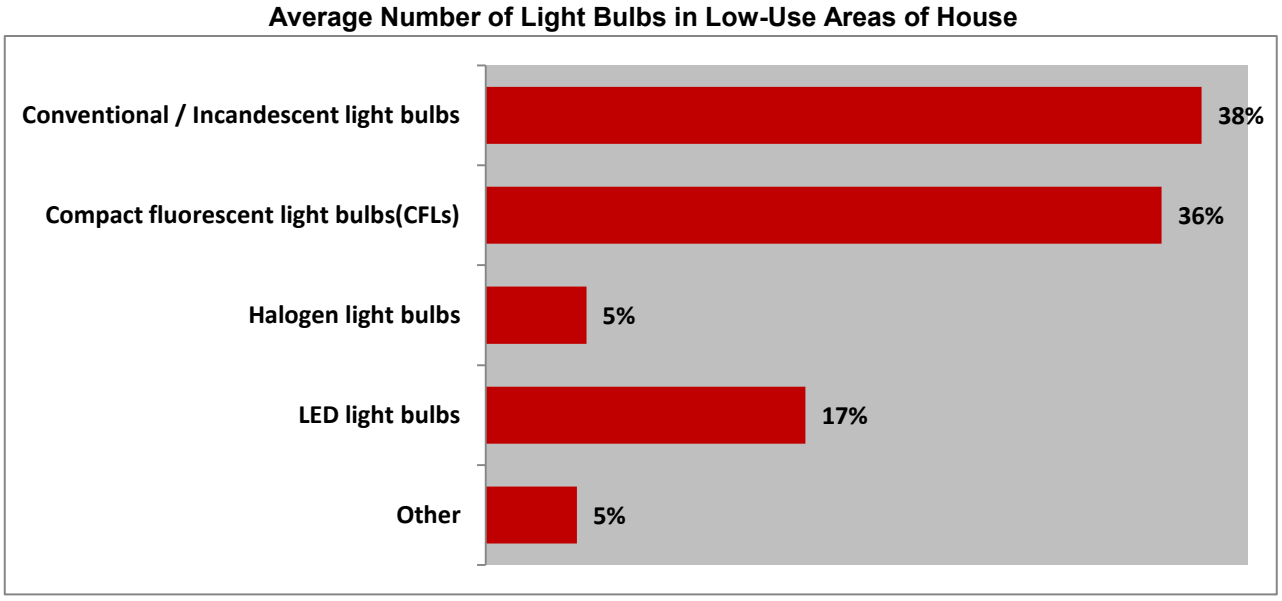
	OPTIONS	PERCENT
Mean	Conventional / Incandescent light bulbs	33%
	Compact fluorescent light bulbs(CFLs)	34%
	Halogen light bulbs	8%
	LED light bulbs	20%
	Other	5%



The following question refers ONLY to light bulbs installed in light fixtures or lamps in other areas of your home like bedrooms, bathrooms, hallways, closets, laundry rooms, basements, garages, etc. For each type of bulb shown below, please tell us the overall percentage of each type of bulb you have installed in the other areas of your home.If some of your bulbs are not shown in the pictures, please use the other category. Your total among all the bulb types must equal 100%.

QUESTION TOTAL:	619
DID NOT ANSWER:	0

	OPTIONS	PERCENT
Mean	Conventional / Incandescent light bulbs	38%
	Compact fluorescent light bulbs(CFLs)	36%
	Halogen light bulbs	5%
	LED light bulbs	17%
	Other	5%

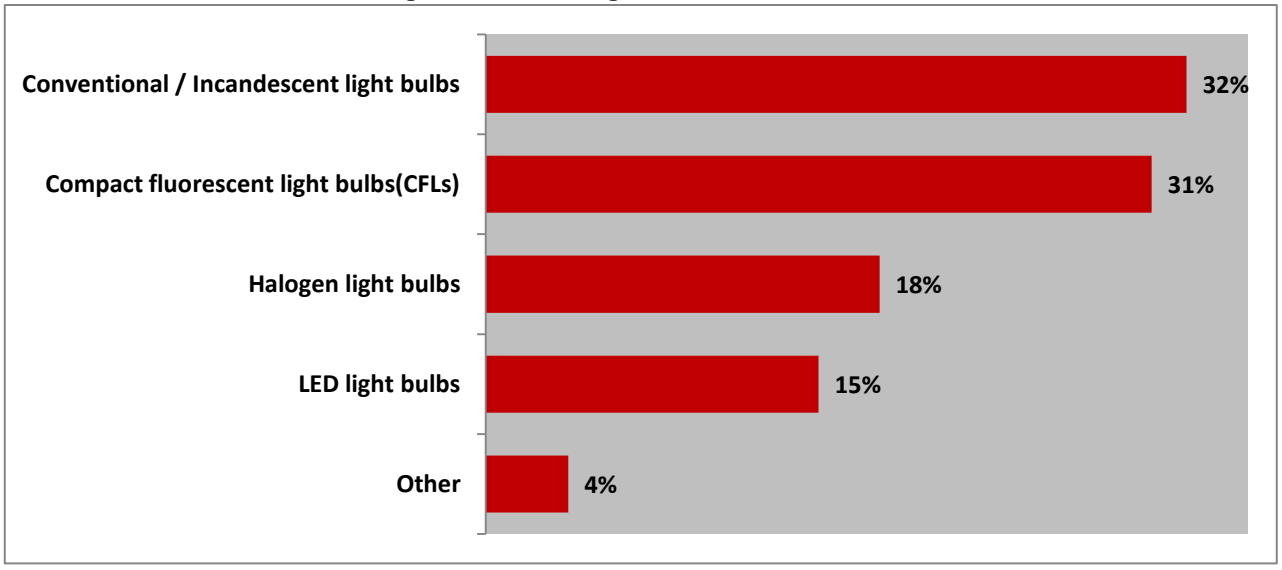


This question refers ONLY to the light bulbs you have on the outside of your house. DO NOT include bulbs in your garage or inside your house. For each type of bulb shown below, please tell us what percentage of all bulbs outside your house are that type of bulb. If some of your bulbs are not shown in the pictures, please use the other category. Your total among all the bulb types must equal 100%.

QUESTION TOTAL:	619
DID NOT ANSWER:	0

	OPTIONS	PERCENT
Mean	Conventional / Incandescent light bulbs	32%
	Compact fluorescent light bulbs(CFLs)	31%
	Halogen light bulbs	18%
	LED light bulbs	15%
	Other	4%

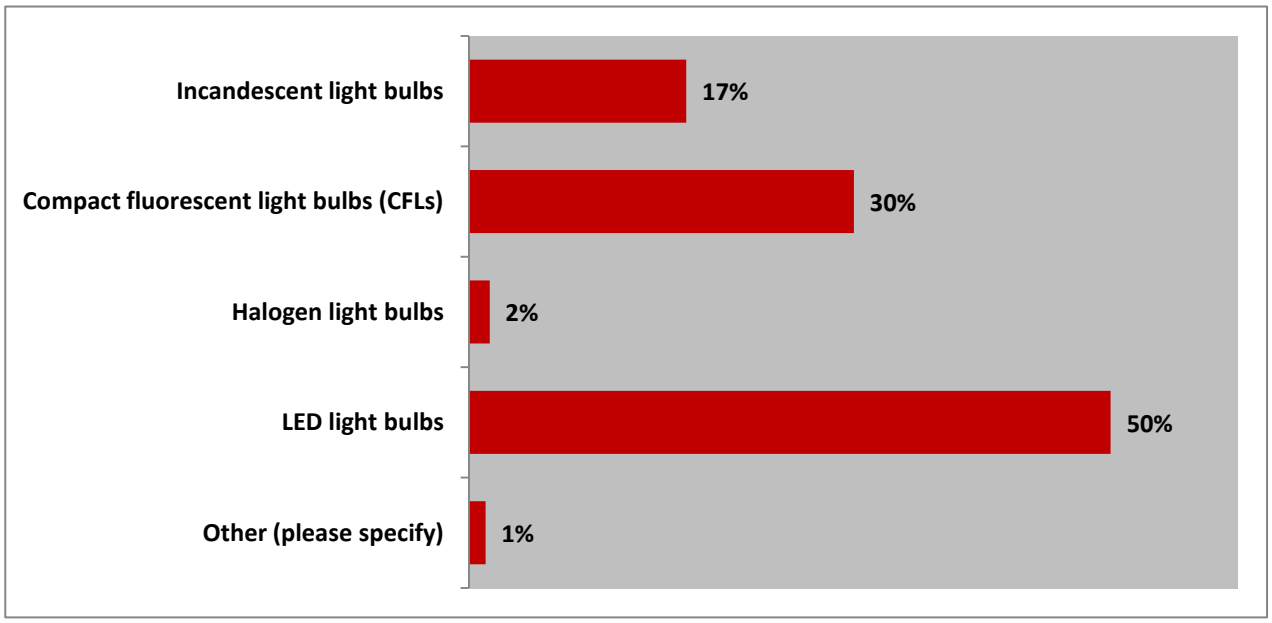
Average Number of Light Bulbs Outside of House



If you needed to buy light bulbs for your home tomorrow, which of the following type of bulbs would you most likely buy?

QUESTION TOTAL:	619
DID NOT ANSWER:	0

	OPTIONS	PERCENT
	Incandescent light bulbs	17%
	Compact fluorescent light bulbs (CFLs)	30%
	Halogen light bulbs	2%
	LED light bulbs	50%
	Other (please specify)	1%

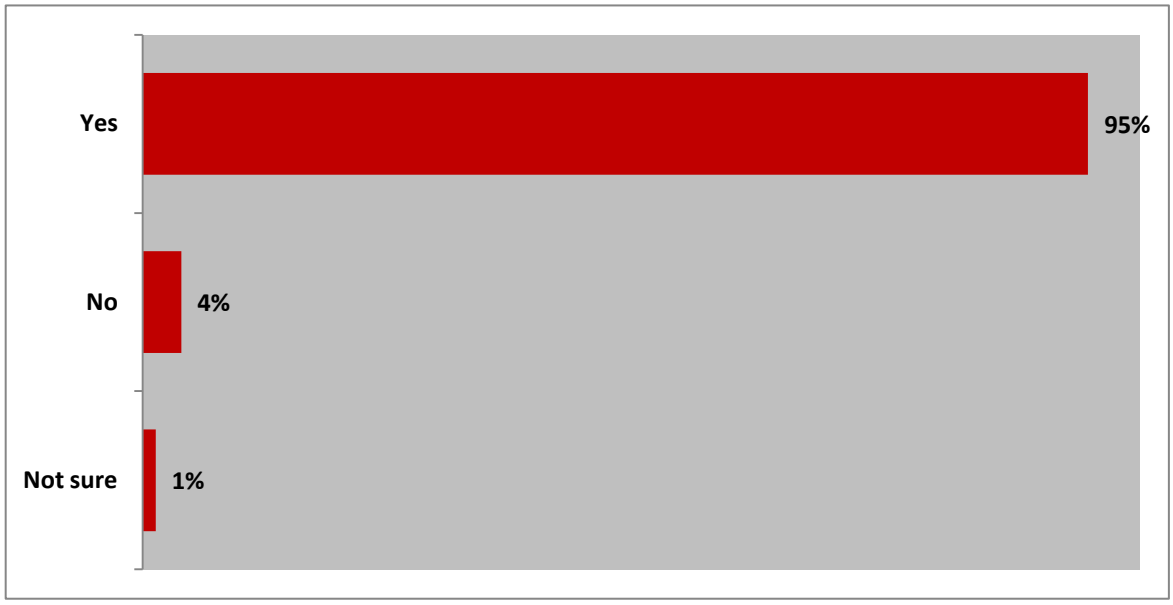


Other (please specify)
night light
tiny ones for lamps
Florescent tubes
florescent tubes
depends on price
daylight bulbs
depends on where they are needed
solar

Do you have any spare light bulbs in your home that are not currently in a light fixture or lamp?

QUESTION TOTAL:	619
DID NOT ANSWER:	0

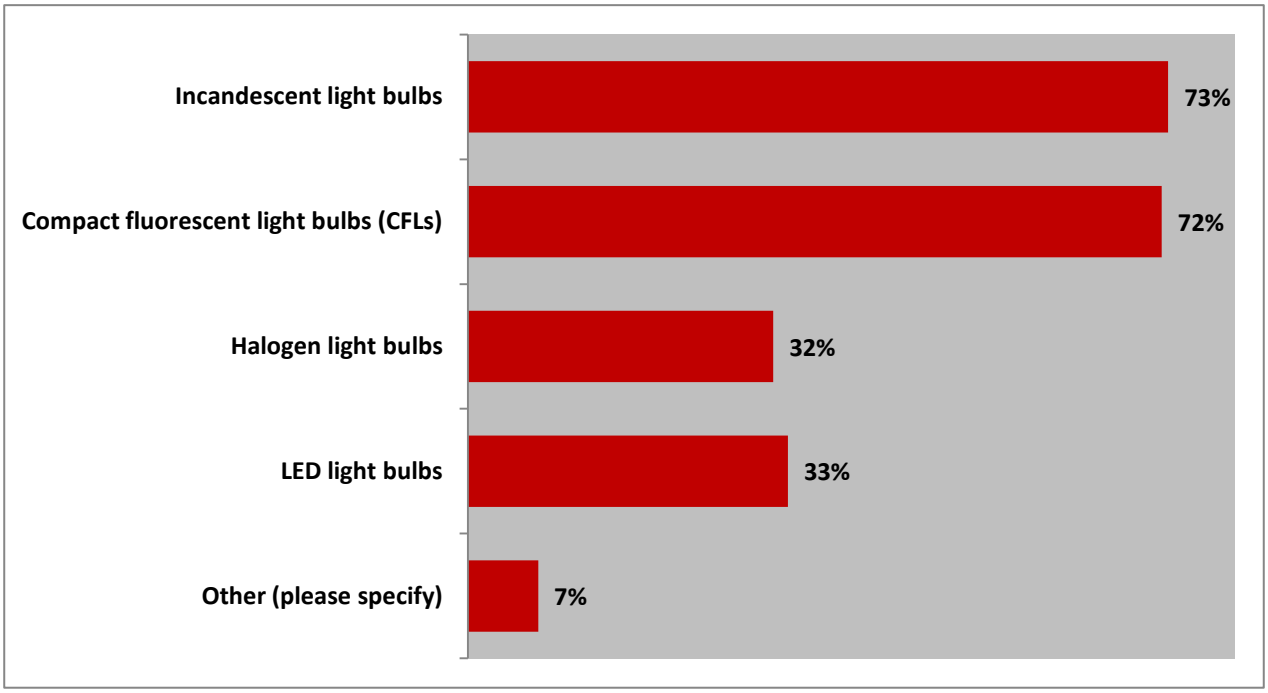
	OPTIONS	PERCENT
	Yes	95%
	No	4%
	Not sure	1%



Which of the following types of spare bulbs do you have in your home that are not currently in a light fixture or lamp?

QUESTION TOTAL: 587
DID NOT ANSWER: 0

	OPTIONS	PERCENT
	Incandescent light bulbs	73%
	Compact fluorescent light bulbs (CFLs)	72%
	Halogen light bulbs	32%
	LED light bulbs	33%
	Other (please specify)	7%



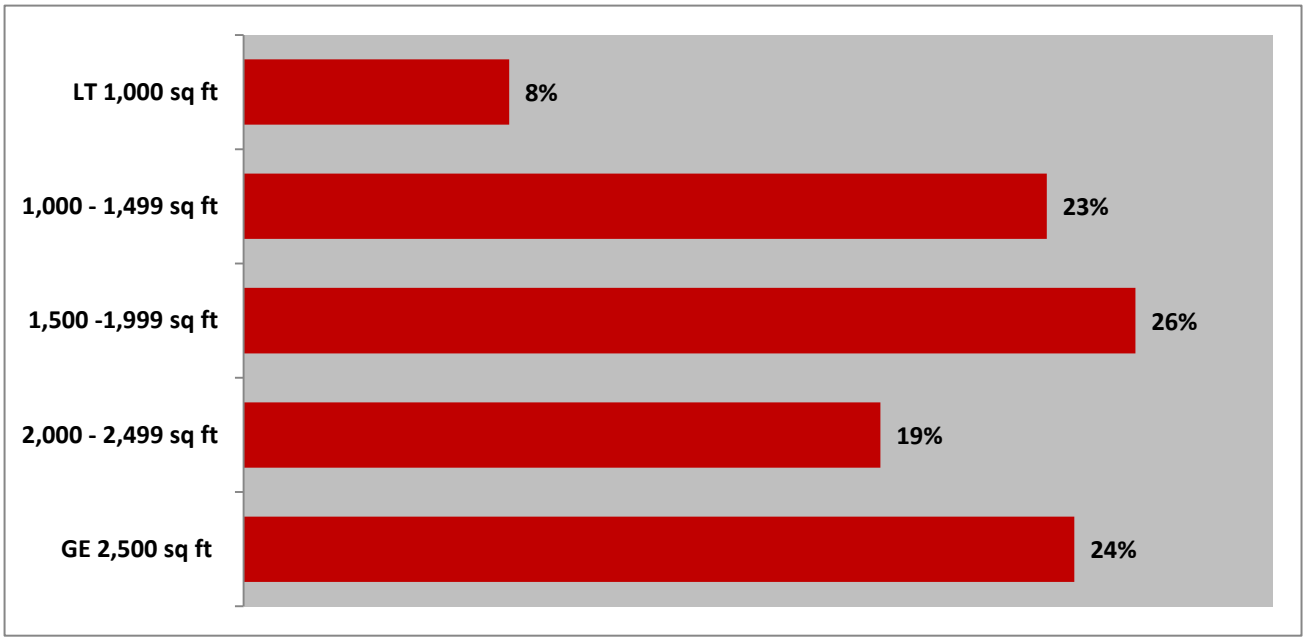
Other (please specify)
heat bulbs for animals...
night lights
fluorescent tubes
florescent long for kitchen
Fluorescent Linear
appliance bulbs
Regular
florescent
Flood light bulbs
fluorescent
T4 flourescent for plant growing
Fluorescent tubes
Flourescent tubes
nightlight bullbs
fancy shaped ones
Round bathroom lights
florescent tubes
Flourescent
night light and candle warmer bulbs
fan bulbs
Chandelier lights
fluorescent tubes
not sure, I just assume there's something
ffluorescent tubes
florescent
flood
fluorescent tube bulbs
Fluorescent tube
Fluorescent tubes
fluorescent tubes
flourescent tube
long fluorescent tubes
black light
Fluorescent
florescent
Fluorescent tube
heatlamp bulbs
florecent tubes
T8 bulbs
Unusual sized lije heat bulbs for food warmer and chandeliers
Special
Florescent
solar

What is the approximate square footage of your home?

QUESTION TOTAL: 619

DID NOT ANSWER: 0

	OPTIONS	PERCENT
	LT 1,000 sq ft	8%
	1,000 - 1,499 sq ft	23%
	1,500 -1,999 sq ft	26%
	2,000 - 2,499 sq ft	19%
	GE 2,500 sq ft	24%

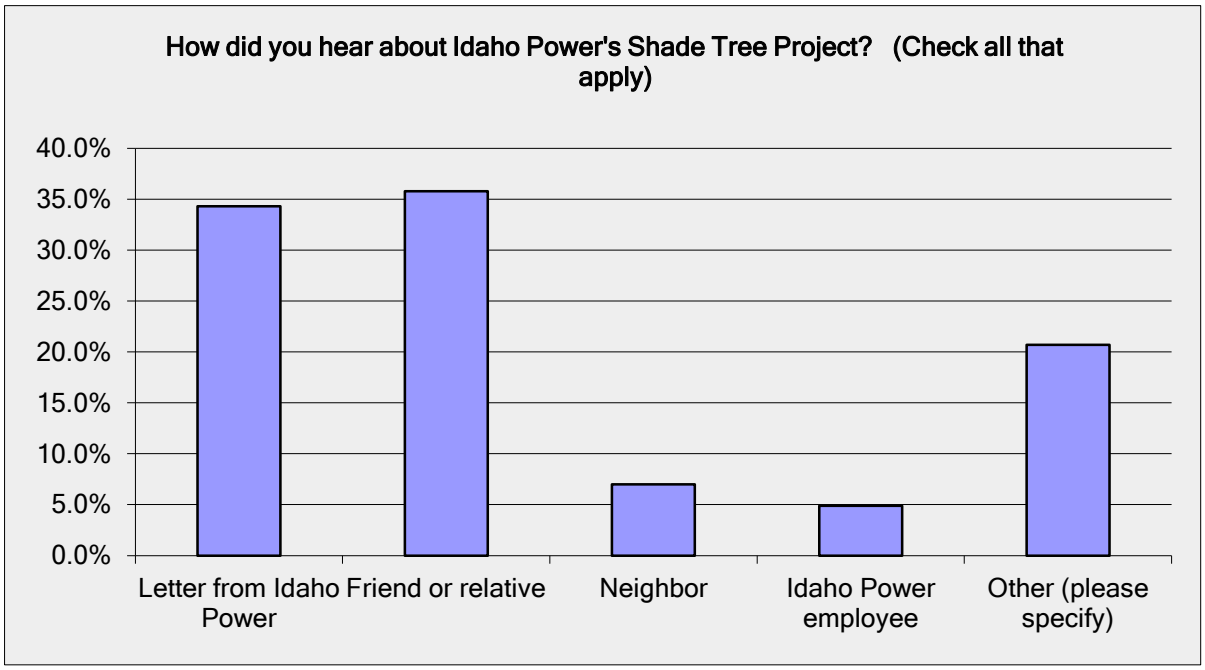


Shade Tree 2016 Survey Results

Survey was sent to 1,112 Shade Tree Project participants.
The number of respondents was 531.
Participation rate was 48%

Idaho Power Shade Tree Survey

How did you hear about Idaho Power's Shade Tree Project? (Check all that apply)		
Answer Options	**Response Percent**	**Response Count**
Letter from Idaho Power	34.3%	182
Friend or relative	35.8%	190
Neighbor	7.0%	37
Idaho Power employee	4.9%	26
Other (please specify)	20.7%	110
	answered question	**531**
	skipped question	**0**



How did you hear about Idaho Power's Shade Tree Project? (Check all that apply)
Other (please specify)
IEF meeting
Saw them delivering the prior years trees
Facebook
In the park when they were handing trees out.
Mom Group
Online email
Internet
Co worker
Found on internet
Facebook
Facebook
missed last year - had it on my calendar - think notice was in with my bill
FB GROUP
A friend at work sent me the link to the website.
Facebook
On-line
Website
Facebook post
Idaho Power Website
Facebook
Facebook
website
Radio
Facebook
on facebook
Co-worker posted it on FB
Email from Patti Best
And the website
Announcement on Facebook
Idaho Power website
Facebook
Idaho Power website
Fall 2015 Fall Newsletter, main story was about the free tree program.
Radio
City of Boise employee
Saw post on FB
Posting on social media
Friend's post on Facebook
Online?
Checked online - had participated last year
Facebook group member shared
city of nampa
Facebook
Public Website
unsure...read it somewhere
Facebook

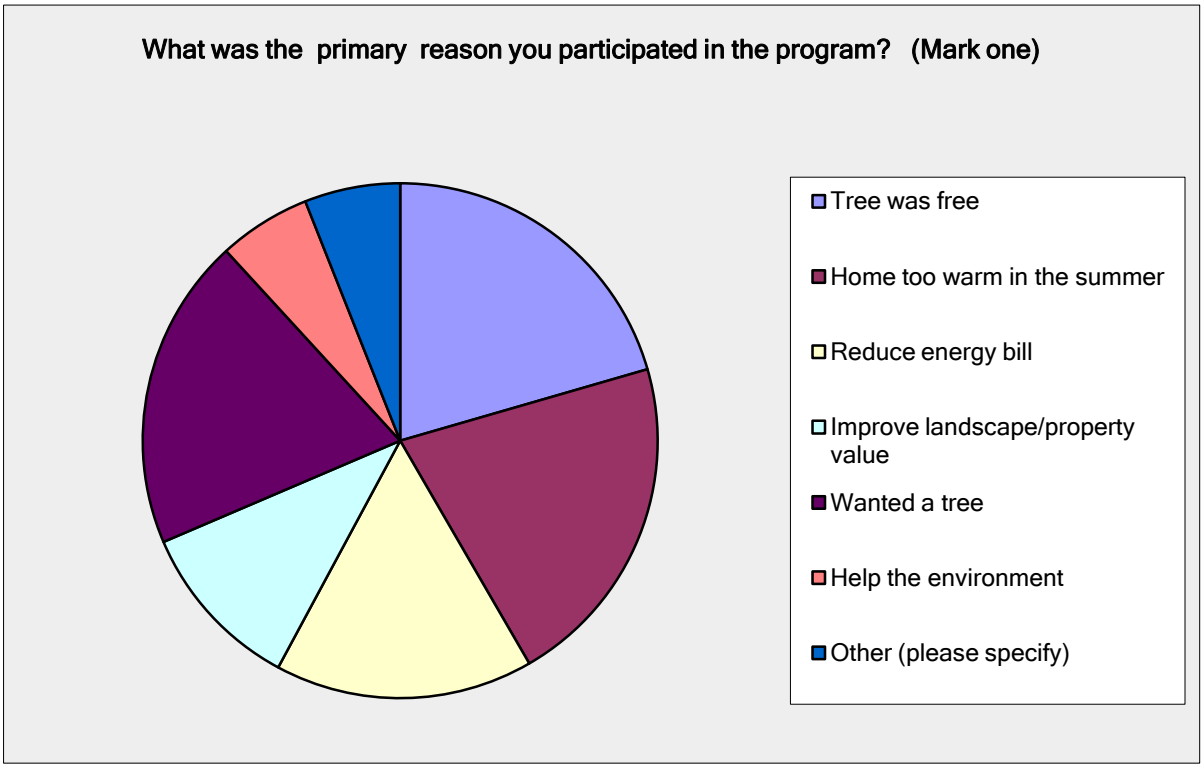
facebook posting from a friend
facebook post from Idaho Power
In my bill
facebook
Through work
Next door app
radio, Home Fix show
Facebook or the website
North End Neighborhood Assoc. newsletter.
A forward on Facebook
drove by event... signed up for future event
Facebook
Drive by delivery area
shared facebook post
facebook
can't remember
Doctor's office
Facebook
Facebook post
University of Idaho Extension Canyon County
Facebook
Facebook
Website
Sat AM Radio Program
Facebook
Facebook
Facebook
City employee
nextdoor.com
Timmy's Tree Service
Aware of other similar programs and checked out website
looking for free treed via google
ID Power Facebook page
Facebook post
Facebook Post
Friends FB post
Coworker
Friend on Facebook
facebook
Idaho power web site
www.reddit.com/r/boise
facebook
Facebook
Social media
Facebook
Facebook
Idaho Power website
Facebook
Facebook
Co-worker
Co-worker
I participated in 2015 so I contacted IPower about this year

Facebook
It was posted in www.reddit.com/r/Boise
Email
Coworker
facebook group
Facebook.com
email
Nextdoor app
Facebook
Reddit
Boise Subreddit
Saw a post on Facebook from a friend

Idaho Power Shade Tree Survey

What was the primary reason you participated in the program? (Mark one)

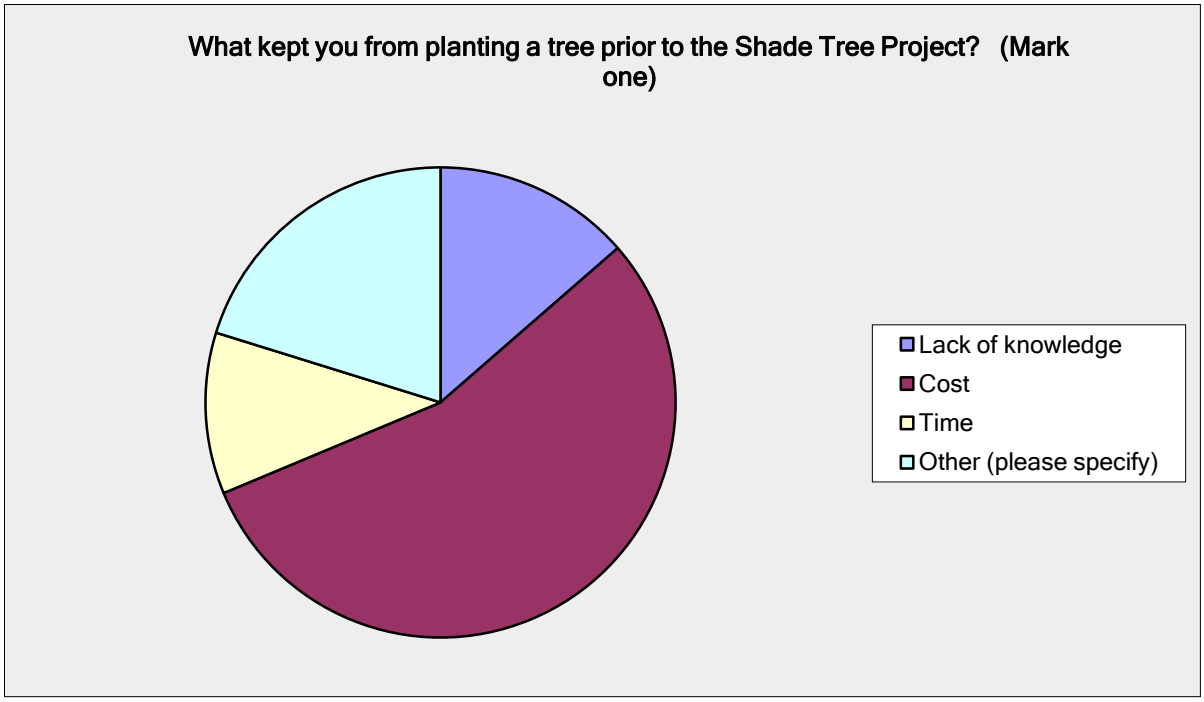
Answer Options	Response Percent	Response Count
Tree was free	20.5%	109
Home too warm in the summer	21.1%	112
Reduce energy bill	16.2%	86
Improve landscape/property value	10.7%	57
Wanted a tree	19.6%	104
Help the environment	5.8%	31
Other (please specify)	6.0%	32
	answered question	531
	skipped question	0



What was the primary reason you participated in the program? (Mark one)
Other (please specify)
Our backyard had no shade
Had a "hole" in my western property line in terms of shade. Plus I love birch trees.
existing trees shading the house are old and deseased
need more shade for my yard, it burns up in the summer
to replace a tree that died
Wanted to replace some trees that had died a few years ago.
Required by HOA
We had to remove an old maple and wanted to replace it with another shade tree
Replace a dead tree.
all of the above
my old tree was dead from poor trimming need one to replace it
I have aging trees that I have removed, and need to replace them for the shade and also for the Squirrels
All of the above reasons are important to me
Just lost a big tree to bug indestation
to give shade in summer and replace the black walnut trees that are so old. Property needs more trees to help with savings.
just bought my first house and wanted to plant a couple trees
Had no trees on my property, so I wanted a tree for some shade
previous honey locust died due to boers
All of the above
add shade for my house
All of the above
Need shade in back yard and for all the other reasons not chosen
Tree was free AND I needed shade on the side of my house.....would've planted a tree there anyway.
I had a dead tree that needed to be replaced
To shade window from direct sunlight
Moved in to a new house and wanted to get some trees planted
shade sun from child's room on west side of house in summer to help them go to and stay asleep
Needed a tree
My existing tree died and my HOA requires one tree i the yard. Since I just moved in and limited on funds a free tree was the way to go for me. Plus the tree was drought tolerant and a great water saver.
Hoping to block some road noise some day
For my house but we got forced to move and couldn't take our tree with us :(208-297-0272
Tree was free and wanted to reduce energy bill

Idaho Power Shade Tree Survey

What kept you from planting a tree prior to the Shade Tree Project? (Mark one)		
Answer Options	**Response Percent**	**Response Count**
Lack of knowledge	13.6%	72
Cost	55.1%	292
Time	11.1%	59
Other (please specify)	20.2%	107
	answered question	**530**
	skipped question	**1**



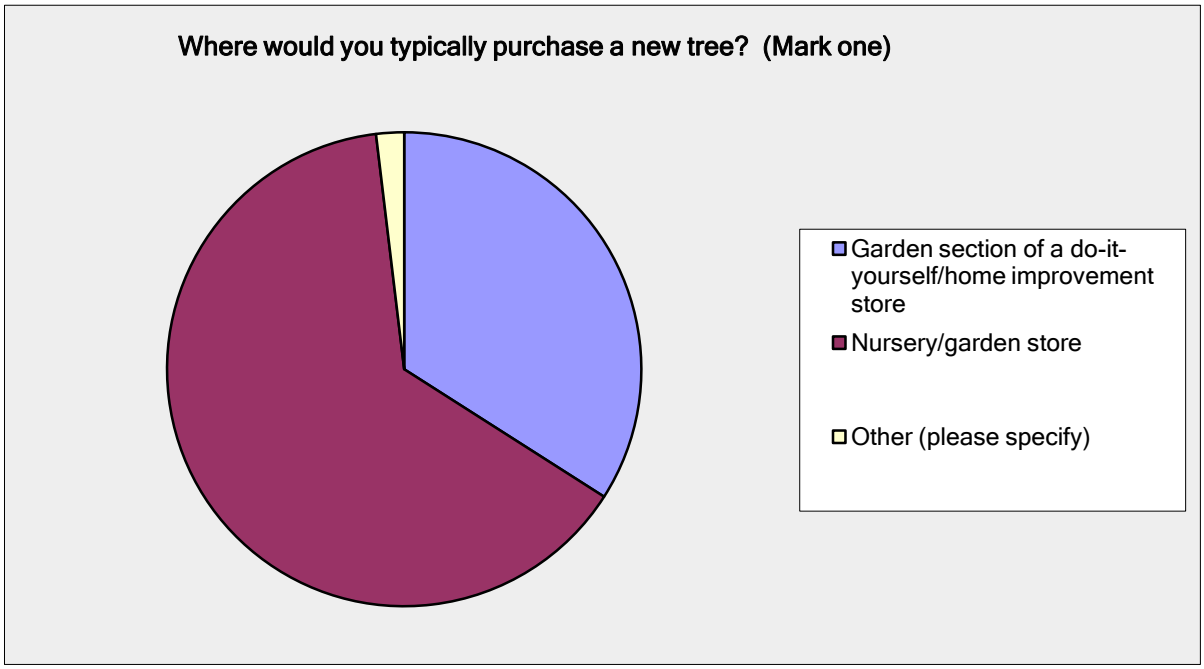
What kept you from planting a tree prior to the Shade Tree Project? (Mark one)
Other (please specify)
Availability of tree type
Had not heard of this project before.
We have planted other trees on the property.
Replaced dead tree cut down earlier in the summer
Had a tree that died.
New home, just hadn't got that far yet
Just moved in.
Hoping a suffering tree would improve
Awareness and convenience.nce
just purchased home
Just bought a home
We had a tree
I never took the time to research it. The program tools made it easy.
All of the above, cost, time, and lack of knowledge
focus
We had just removed a maple in the backyard that needed to be replaced
Bought home in 2012 and haven't got to landscape yet
Needed more trees for shade
just moved to idaho
Planted 2 in 2016
Got trees 2yrs in a row from Arbor Day & they came dead
I have planted other trees prior to the Shade Tree Project. I still have 4 old trees to remove and will plant additional as I am able to remove the aged trees remaining.
Was unaware of program
Just moved in
already had a tree that was lost to bugs
Weren't sure we wanted another tree
JUST HADN'T GOTTEN AROUND TO IT
talked about placement of another tree but had not followed through
Space where needed was small, tried to plant in neighbors yard but they didn't want to.
Just move there
New build, hadn't gotten to it yet
No house yet
I planted others but didn't have much success with them
Recently purchased this home.
was not aware of program
New (to us) home
Other trees planted did not thrive
Just moved in to this house this past summer. New to the valley.
Had tree and it died
Lost a tree from winter want sure if should replace
There was another tree in that same spot that we had to take out.
Buy one and was not the correct tree for the property
Lots of other projects in the works
just moved in to new home
We had just moved into the house and hadn't picked one out yet.

other pressing issues
Just moved to the house a month prior
We had just moved in & there were no trees. we thought, why not? It's awesome!
I did plant trees, just wanted more
I was going to buy one when i got the letter
this was just an addition to what I have already done
Moved to a new house
We just moved in and haven't had the time or money to landscape properly yet.
New home
We were in the middle of deciding when the program happened. We are new to this home.
Was planning on it just hadnt gotten around to it yet
just purchased home
timing, waiting until we were ready/ far enough along on landscape ideas/ project
I didn't realize that side of the house wasn't shaded until this summer.
I have already planted over 100 trees, a free one is great.
recently moved into home - had not prioritized yet
I have been adding trees, IP offer complemented my plan
Tree died completly this year
Didn't think about it
First time home buyer
Not enough room
I've planted lots of trees prior
The tree that was there originally was old and died.
Just hadn't gotten around to it.
new landscaping
Nothing - I'm a new home owner. The more trees in my yard, the better!
We have 12 acres and have planted lots of trees. One more is always welcome.
Water supply and waiting to see other trees survived
Just haven't thought about it, until I heard about the shade project
I didn't think about it
a bunch of trees died when winter came too fast in 2014
Just bought house.
had/have other trees; but 2 died in the past few years
Not necessary
we had already planted several trees in our yard but needed more!
I have other trees- wanted more
I had 38 trees prior that I paid for. 2 free sounded fun.
Had to replace a tree that died, the timing was right.
Just hadn't considered it.
None, last one died. ID Power timing was perfect.
Combination of all three
we plant lots of trees
Just moved into the house last summer
Location
NOT FINISHED LANDSCAPING YET
Had just purchased the home
Had older trees that were removed
Didn't own our home
My former property was too small
Just moved into our home
We had plenty of shade until our trees were cut in half by Idaho Power
Just bought home

Just moved into house
Moved into house less than a year ago.
Money
Timing
Combination of time and lack of knowledge.
Planting lots of trees. Needed more
New home
Have purchased a tree twice for west side of house but one ended up too short and the other half of the tree died. Also added a garage which needed a tree to the west of it for shade.
Already have number of shade trees
$

Idaho Power Shade Tree Survey

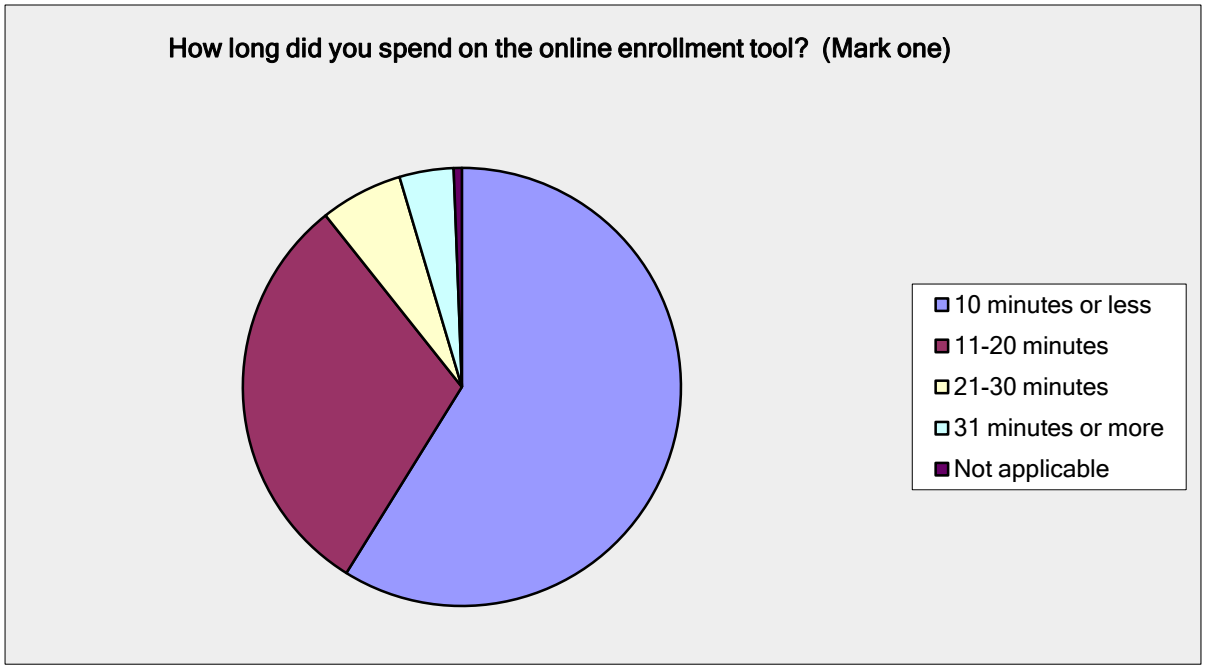
Where would you typically purchase a new tree? (Mark one)		
Answer Options	**Response Percent**	**Response Count**
Garden section of a do-it-yourself/home improvement	34.0%	177
Nursery/garden store	64.0%	333
Other (please specify)	1.9%	10
	answered question	520
	skipped question	11



Where would you typically purchase a new tree? (Mark one)
Other (please specify)
I probably wouldn't have bought them
online
both
We have gotten all of our trees we planted as reject trees from nursery
local tree nursery
costco
place with good tree selection
Not sure
Friends needing transplany
Arborist

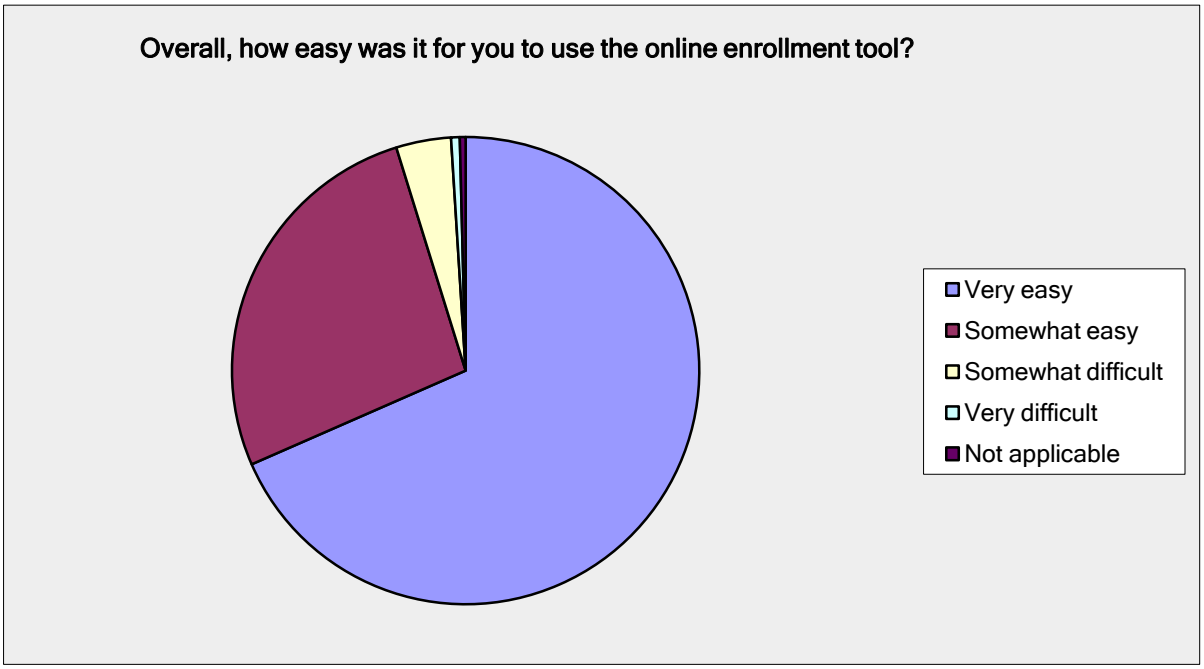
Idaho Power Shade Tree Survey

How long did you spend on the online enrollment tool? (Mark one)		
Answer Options	**Response Percent**	**Response Count**
10 minutes or less	58.9%	309
11-20 minutes	30.5%	160
21-30 minutes	6.1%	32
31 minutes or more	4.0%	21
Not applicable	0.6%	3
	answered question	**525**
	skipped question	**6**



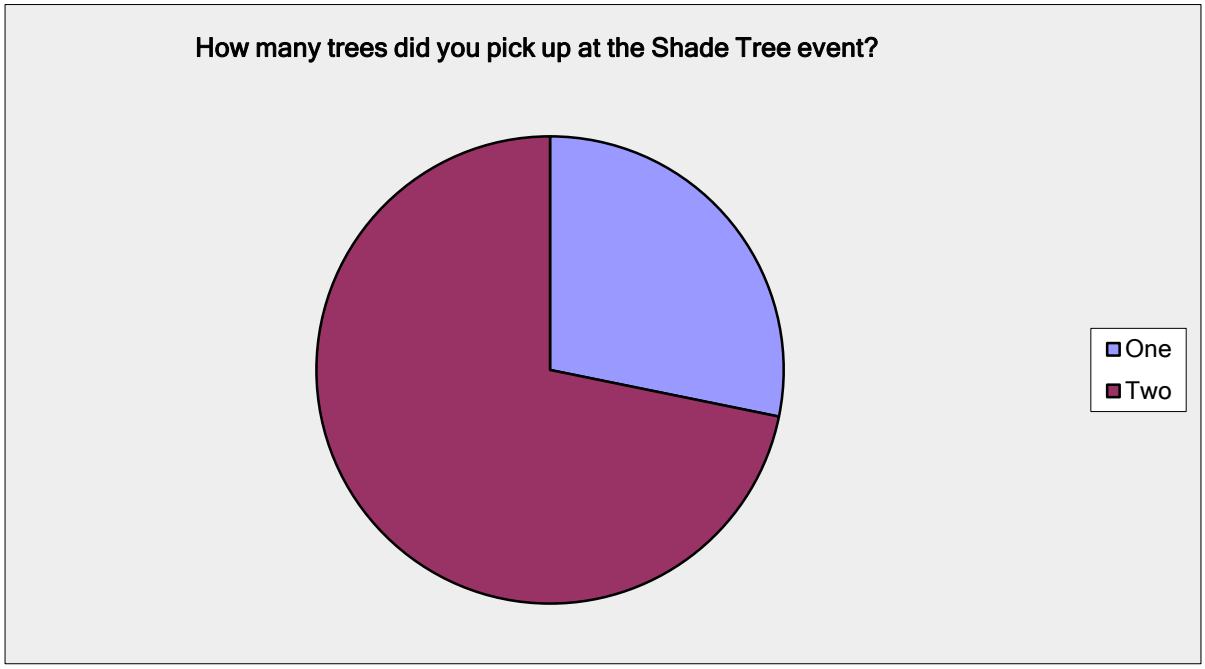
Idaho Power Shade Tree Survey

Overall, how easy was it for you to use the online enrollment tool?		
Answer Options	**Response Percent**	**Response Count**
Very easy	68.5%	361
Somewhat easy	26.8%	141
Somewhat difficult	3.8%	20
Very difficult	0.6%	3
Not applicable	0.4%	2
	answered question	**527**
	skipped question	**4**



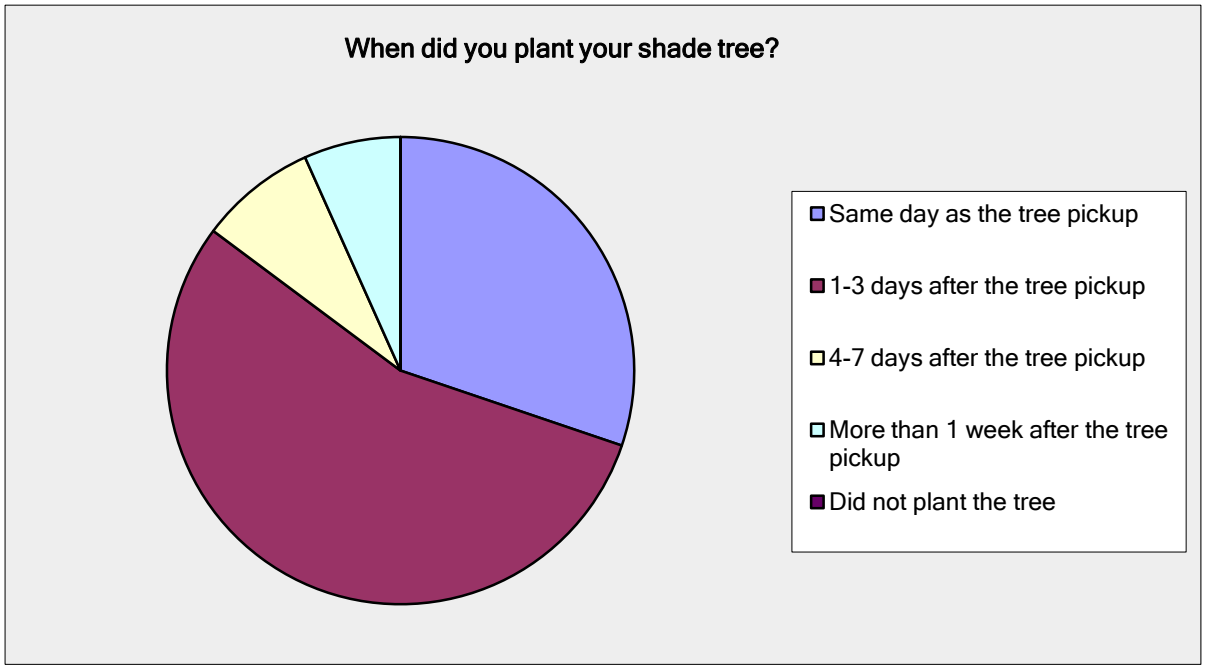
Idaho Power Shade Tree Survey

How many trees did you pick up at the Shade Tree event?		
Answer Options	**Response Percent**	**Response Count**
One	28.2%	149
Two	71.8%	379
	answered question	**528**
	skipped question	**3**



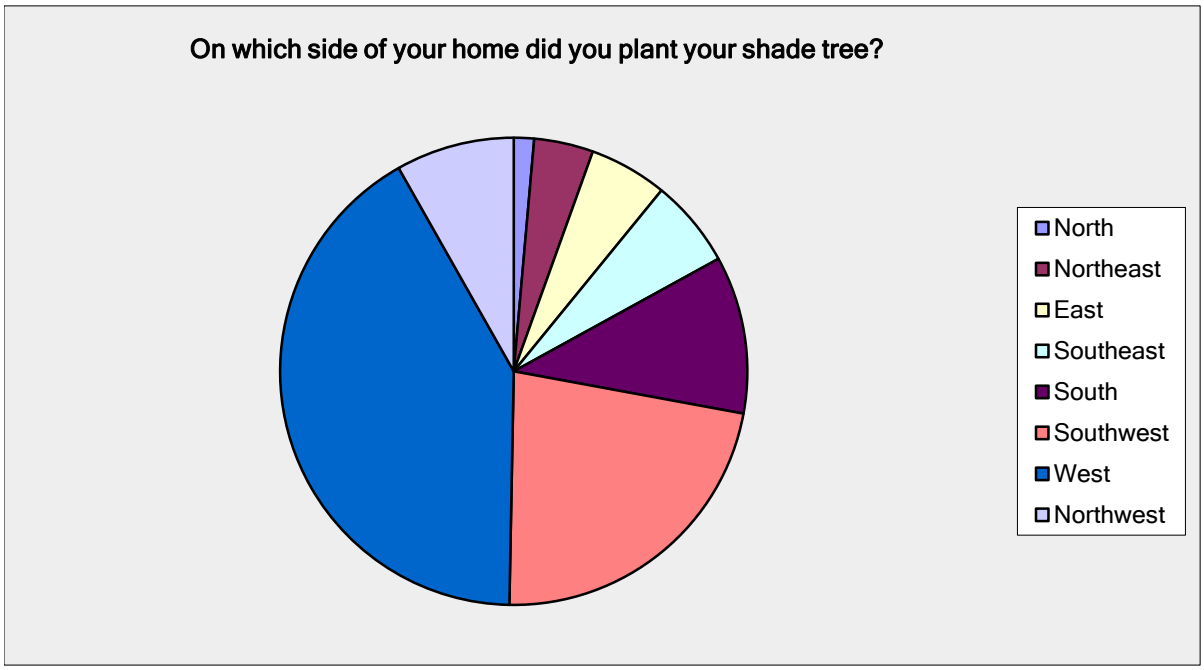
Idaho Power Shade Tree Survey

When did you plant your shade tree?		
Answer Options	**Response Percent**	**Response Count**
Same day as the tree pickup	30.2%	45
1-3 days after the tree pickup	55.0%	82
4-7 days after the tree pickup	8.1%	12
More than 1 week after the tree pickup	6.7%	10
Did not plant the tree	0.0%	0
	answered question	**149**
	skipped question	**382**



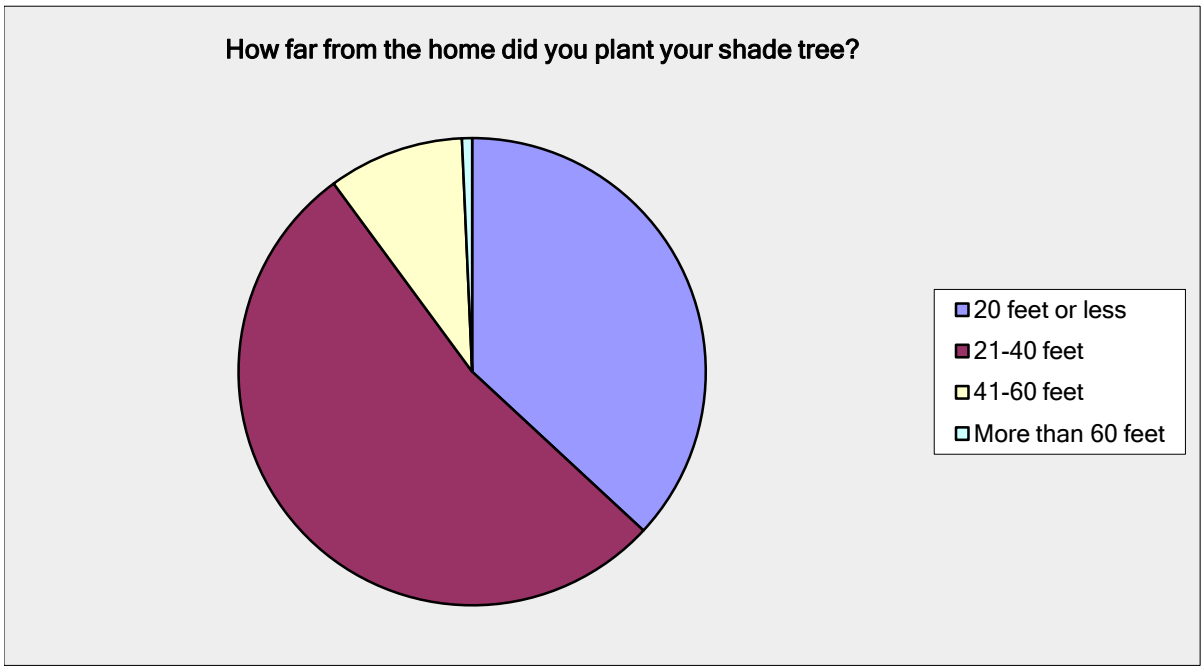
Idaho Power Shade Tree Survey

On which side of your home did you plant your shade tree?		
Answer Options	**Response Percent**	**Response Count**
North	1.4%	2
Northeast	4.1%	6
East	5.4%	8
Southeast	6.1%	9
South	10.9%	16
Southwest	22.4%	33
West	41.5%	61
Northwest	8.2%	12
	answered question	**147**
	skipped question	**384**



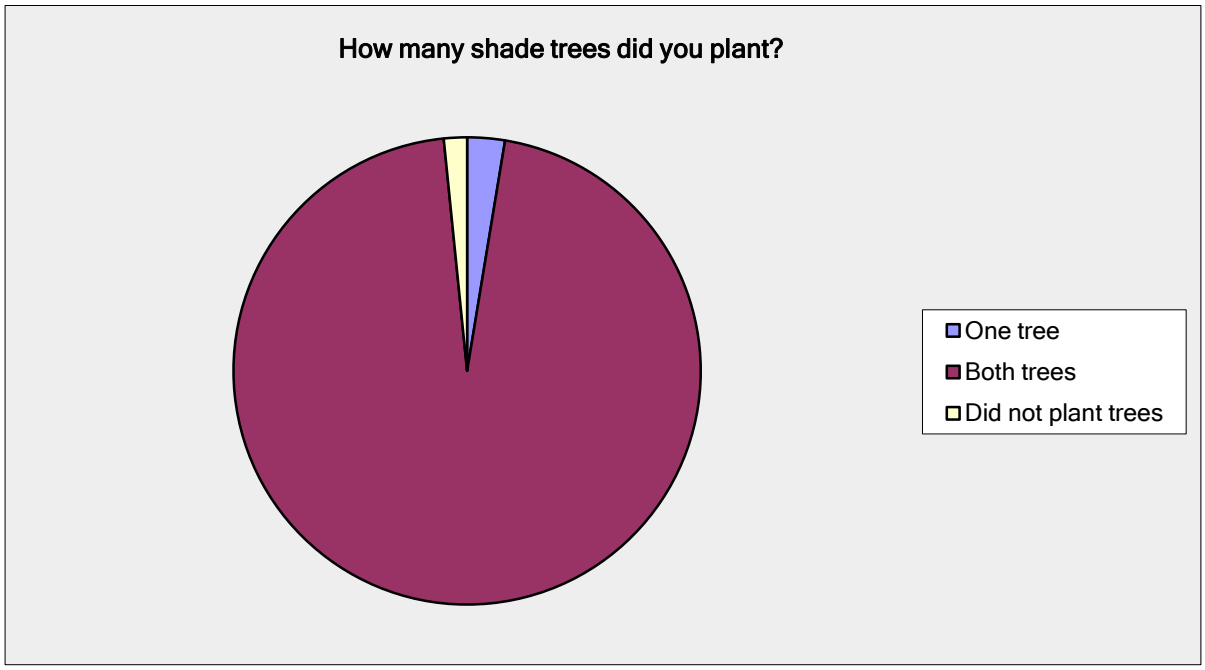
Idaho Power Shade Tree Survey

How far from the home did you plant your shade tree?		
Answer Options	**Response Percent**	**Response Count**
20 feet or less	36.9%	55
21-40 feet	53.0%	79
41-60 feet	9.4%	14
More than 60 feet	0.7%	1
	answered question	**149**
	skipped question	**382**



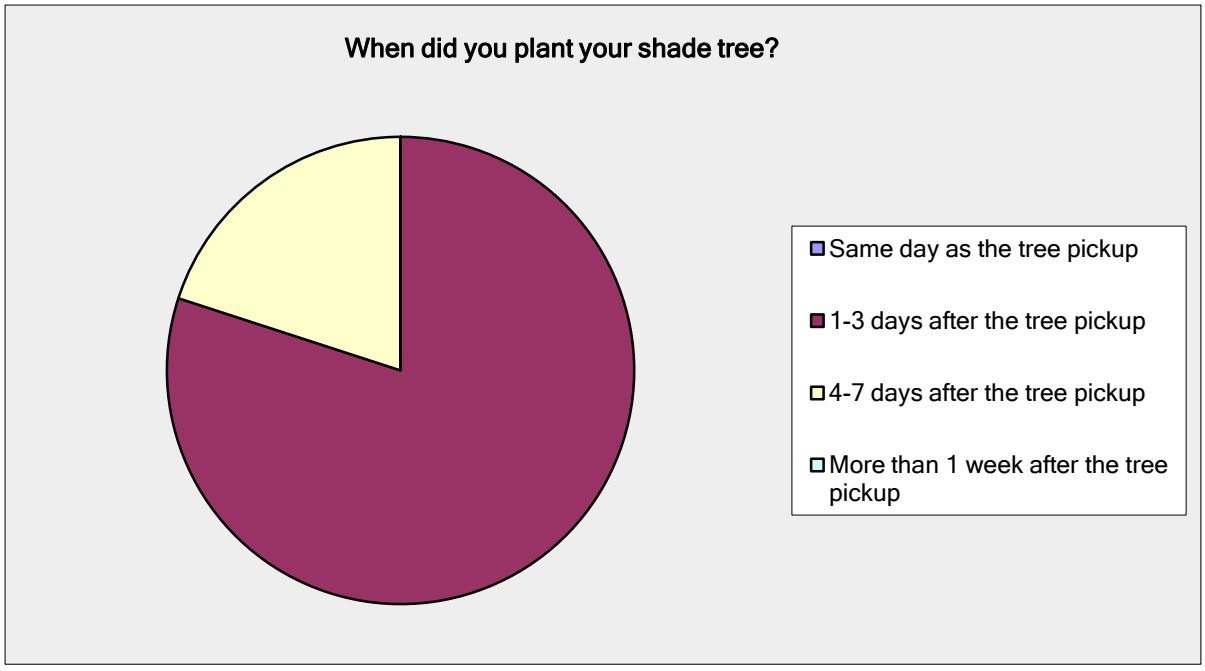
Idaho Power Shade Tree Survey

How many shade trees did you plant?		
Answer Options	**Response Percent**	**Response Count**
One tree	2.6%	10
Both trees	95.8%	363
Did not plant trees	1.6%	6
	answered question	379
	skipped question	152



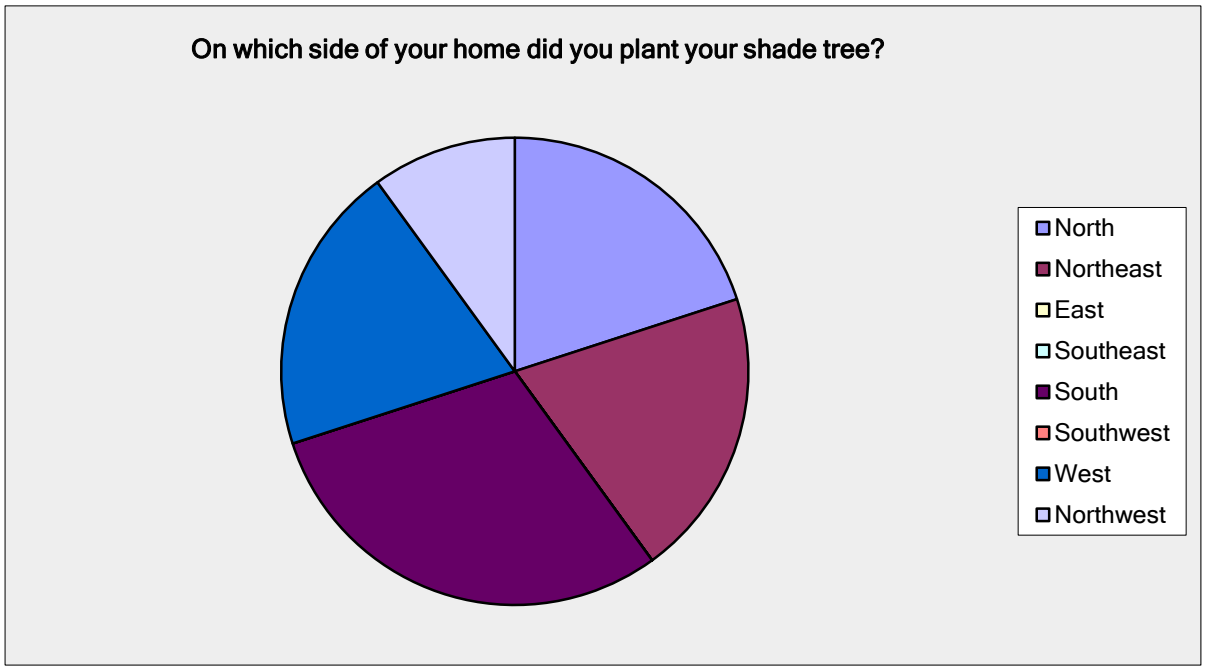
Idaho Power Shade Tree Survey

When did you plant your shade tree?		
Answer Options	**Response Percent**	**Response Count**
Same day as the tree pickup	0.0%	0
1-3 days after the tree pickup	80.0%	8
4-7 days after the tree pickup	20.0%	2
More than 1 week after the tree pickup	0.0%	0
	answered question	10
	skipped question	521



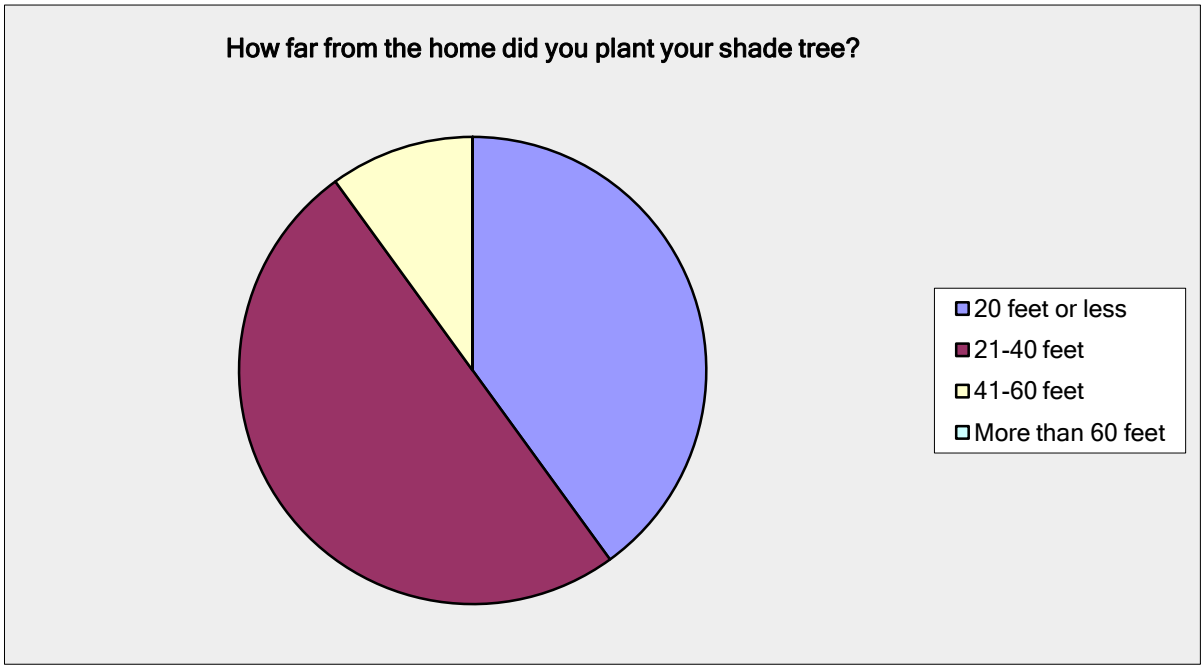
Idaho Power Shade Tree Survey

On which side of your home did you plant your shade tree?		
Answer Options	**Response Percent**	**Response Count**
North	20.0%	2
Northeast	20.0%	2
East	0.0%	0
Southeast	0.0%	0
South	30.0%	3
Southwest	0.0%	0
West	20.0%	2
Northwest	10.0%	1
	answered question	10
	skipped question	521



Idaho Power Shade Tree Survey

How far from the home did you plant your shade tree?		
Answer Options	**Response Percent**	**Response Count**
20 feet or less	40.0%	4
21-40 feet	50.0%	5
41-60 feet	10.0%	1
More than 60 feet	0.0%	0
	answered question	10
	skipped question	521



Idaho Power Shade Tree Survey

When did you plant your shade trees?

Answer Options	Same day as the tree pickup	1-3 days after the tree pickup	4-7 days after the tree pickup	More than 1 week after the	Response Count
Tree 1	89	167	55	53	364
Tree 2	77	160	52	58	347

	Question Totals
answered question	364
skipped question	167

Idaho Power Shade Tree Survey

On which side of your home did you plant your shade trees?

Answer Options	North	Northeast	East	Southeast	South	Southwest	West	Northwest	Response Count
Tree 1	22	26	46	28	31	57	116	20	346
Tree 2	19	27	39	31	42	55	102	25	340

	Question Totals
answered question	**346**
skipped question	**185**

Idaho Power Shade Tree Survey

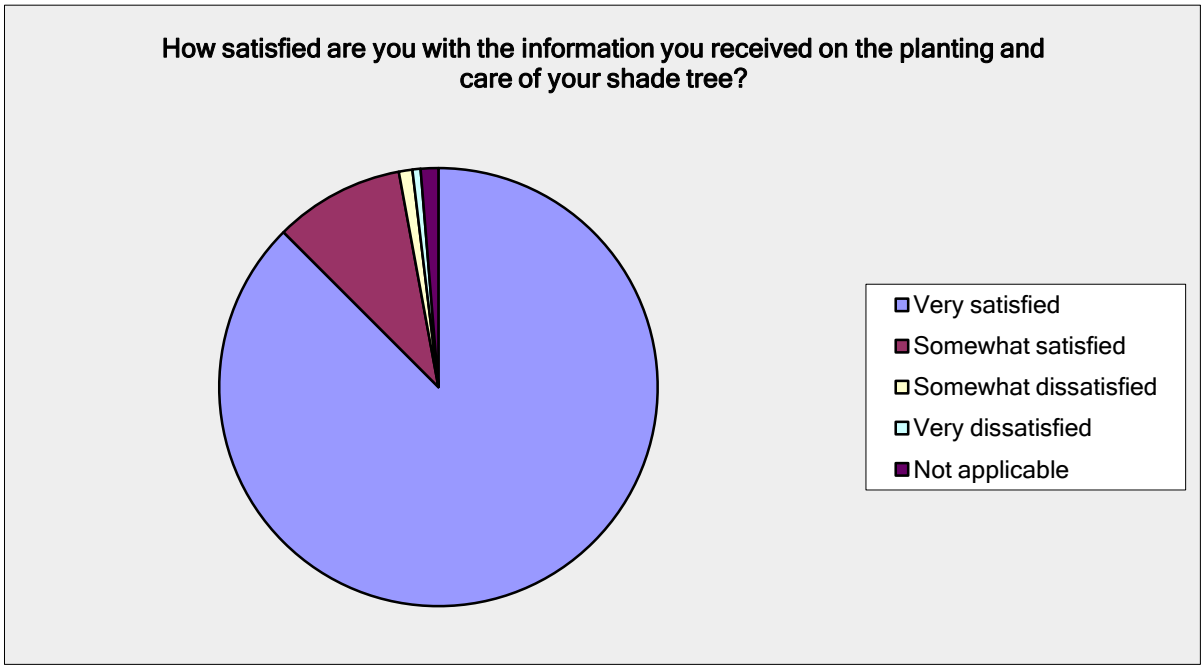
How far from the home did you plant your shade trees?

Answer Options	20 feet or less	21-40 feet	41-60 feet	More than 60 feet	Response Count
Tree 1	128	185	30	13	356
Tree 2	103	177	43	21	344

	Question Totals
answered question	356
skipped question	175

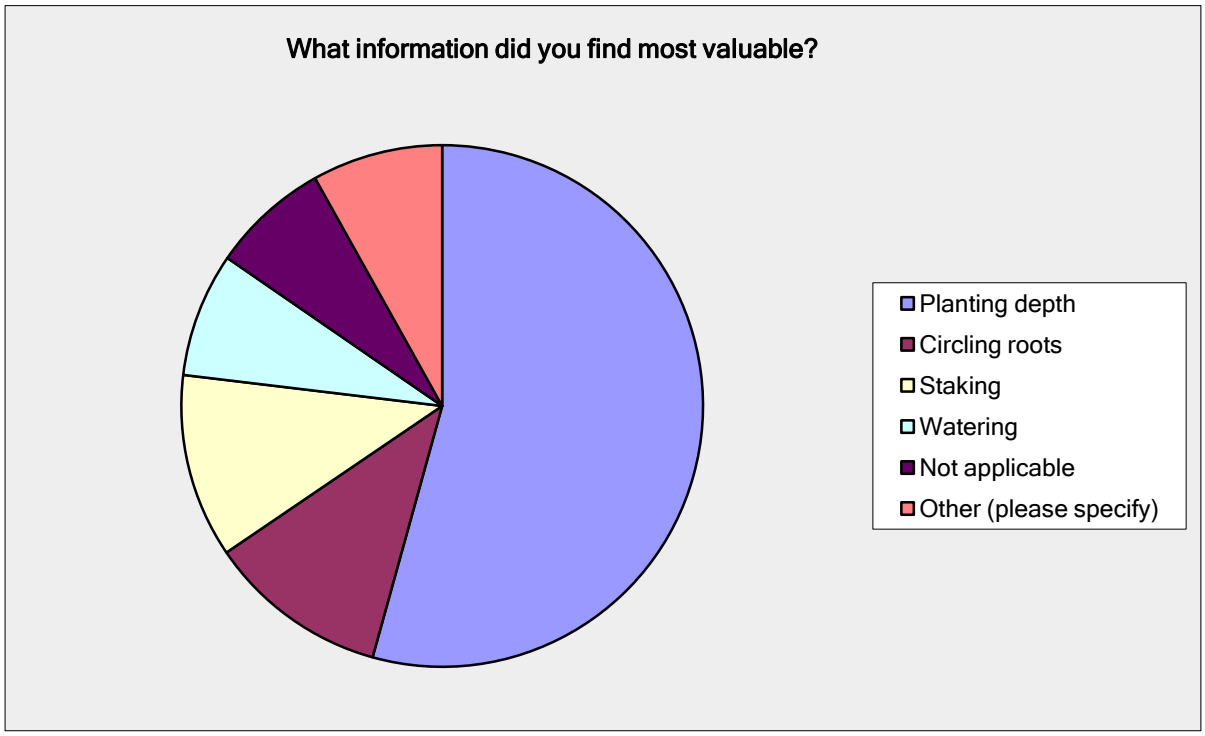
Idaho Power Shade Tree Survey

How satisfied are you with the information you received on the planting and care of your shade tree?		
Answer Options	**Response Percent**	**Response Count**
Very satisfied	87.5%	455
Somewhat satisfied	9.6%	50
Somewhat dissatisfied	1.0%	5
Very dissatisfied	0.6%	3
Not applicable	1.3%	7
	answered question	520
	skipped question	11



Idaho Power Shade Tree Survey

What information did you find most valuable?		
Answer Options	**Response Percent**	**Response Count**
Planting depth	54.3%	282
Circling roots	11.2%	58
Staking	11.4%	59
Watering	7.7%	40
Not applicable	7.3%	38
Other (please specify)	8.1%	42
	answered question	519
	skipped question	12



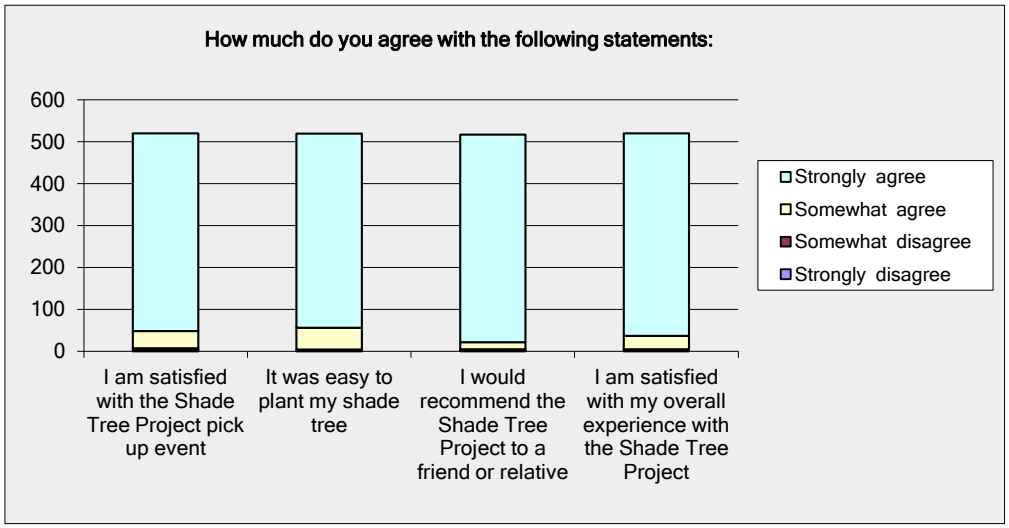
What information did you find most valuable?

Other (please specify)
Planting depth and not to mulch too close to the trunk. A mistake I've been making for 25 years.
All of the above. I knew how to plant a tree, I was just doing small things incorrectly.
The arbonist from City of Kuna was very helpful in explaining and what to expect from the tree
Mulching
All above
Info from on site arborist
all info was useful
All
the mature size of the trees
All of the above other than not applicable
all of the above
Trees planted where noted on tool
All was helpful!
We have planted many trees over the years so we knew all the info provided alrady
facing direction.
All the info was valuable since it was my 1st time planting a tree
The guy was very helpful answered all my question
Everything - I have never planted before
All of the above..
They gave good instruction and explained how to plan. they explained what was happening to the older trees. People very knowledgeable.
All
All of the above
All of it!
all
I liked the whole brochure. I sis not really get to talk to somebody because there were quite a few people and I did not have the time to wait.
all of it
All of the above
Prevously took a class for volunteering for Releaf Boise
BOTH TREES DIED
All the info was thorough and professional looking
I found all the info provided most valuable
All of the above; the arborist was very helpful and informative
all information
Location to place them
How much to fertilize and what not to use.
all of the above
All
I had planted trees before and was somewhat knowledgeable already
How to treat tulip tree for aphids
This is not my first tree so I already knew
All of the information offered was helpful
All info was equally as valuable.

Idaho Power Shade Tree Survey

How much do you agree with the following statements:

Answer Options	Strongly agree	Somewhat agree	Somewhat disagree	Strongly disagree	Response Count
I am satisfied with the Shade Tree Project pick up event	472	41	5	2	520
It was easy to plant my shade tree	463	52	4	0	519
I would recommend the Shade Tree Project to a friend	495	17	3	2	517
I am satisfied with my overall experience with the Shade	483	32	3	2	520
				answered question	521
				skipped question	10



Idaho Power Shade Tree Survey

If you have additional comments you would like to offer about the Shade Tree Project, please enter them in the space below.	
Answer Options	Response Count
	171
answered question	171
skipped question	360

If you have additional comments you would like to offer about the Shade Tree Project, please enter them in the space below.
Response Text
I was sad that I could not get trees for our cabin in McCall. Our natural forested area is dying out and we need trees to shade us in the summer.
Fantastic experience. Love my tree. Was surprised that it was a real tree and not just a twig. Could not use your online program. However, the person I talked to when I called was wonderful--a great help
very friendly folks giving out the trees. The "planting teacher" was very knowledgable and personable
Some of the trees looked very sad. I really wonder if some of the trees will survive if the people that got them don't give them some extra care.
We truly appreciated the Volunteers & their advice as well as information. The Volunteers were very friendly &
I am excited to watch it grow and plant around it. thank you
The staff was very knowledgeable about the trees when picking them up and clarified planting directions. Overall my experience with the shade tree project was great. Thank you!
We wanted two trees, however I could not get the sign up to accept.
I wish the trees had been a bit bigger and a broader selection available. That said, I do appreciate a free tree.
Love this program in every way!
I think it would have been more beneficial if the trees were bigger
This was an amazing project. One of our trees is struggling, the other seems great. I wish there had been information about calling digline when registering or emailed. By the time I got our letter we had trees and had to wait for digline. Otherwise we have hopes for some future shade and beauty!
Thanks... It was a very shady experience.
It was so much FUN picking up my clumping birch at Storey Park in Meridian. The staff was extremely welcoming and helpful with the planting instructions. Thank you very, very much!!!
I would like another tree when another of these projects becomes available. Only one tree was available when I got in contact about this project.
Trees from the event seemed to go fast. When I first signed up the tree's I wanted were available, but somewhere along the way I got an error and then the tree was gone.
This is a great program, I hope you continue it. Thanks for the free trees! We are looking forward to watching
I found out about this project late in sign up. The trees I wanted were already sold out when I signed up. Still a
Trees are so so tiny ;)
Thank you for my tree!
Great program!
Thank you!!
Please let me know if this is going to happen again. Great way to naturally minimize energy usage.
The pick up process was so well organized . The people helping with the trees etc. were very friendly and gave
Thank you for offering this program!
Would have like more selection of a slightly smaller tree (at maturity).
This is a great idea for energy savings!
The trees were pretty picked over and our tree was not in the best of health. It was also smaller than expected. We are hoping that it will make it through the winter
This was just a great project. It helped me make my landscape better while saving energy and helping the earth.
Great program! I think this program will make a huge difference in peoples lives.
awesome experience

The leaves were heavily battered... when I asked about it the employee said it was from the wind in the truck. I'd suggest you somehow cover everything so they aren't so beaten up. Otherwise my kids and I very much
Would have loved the opportunity to get more trees, even if we had to buy them through the program. Just would have been good to get more of the same variety and size. Great program though
Picking them up in Oct. Made it a little hard to dig in the ground.
I would like to participate again next year!
Thank you very much! Excellent program!
The trees were free, but still a great idea. Planted them to shade my house and yard, and help environment too.
only difficulty I had was with the selection form on line. I made a selection and wanted to change it but was not able to navigate successfully.
Orientation question hard, I have no idea (south, west etc.)
good idea who ever came up with it
This was such a great idea and so appreciated.. Please continue to provide such opportunities.
 Thank you for the opportunity to plant trees and for the friendly and helpful people at the tree pick up process.
I had to go out of town unexpectedly on the day I was supposed to pick up my trees, so I went online and called the number for the Shade Tree Project to either cancel my pick-up, or make other arrangements. I only got a recorded message, but was able to leave a voice message. I really didn't expect to hear back from anyone. I received a call back that same day! She moved my scheduled pick-up day and location so I could pick-up my trees. I was very surprised and impressed that I received a callback and was able to get my trees with only a
We appreciate the program and hope our trees survive and live for many years to provide shade for future generations. I know quality trees are very expensive and hesitate to purchase given budget constraints - so
I really appreciate the opportunity to participate in the program. The online tool was helpful to show energy savings depending on where I planted my tree, but I was limited on where I could plant it, and could not plant it in the most beneficial area on the west side because there just was not enough room.
Hopefully they live!
Find a better distribution area for Nampa with more parking for a more organized and less congested project.
Thank you very much!
This was a great program to 1. Save cost per household 2. Help with the environment 3. Help with a family of low income to acquire a tree. This was great and I hope you are able to continue this program.
I was out of town on the day of the tree pick up. So, I am not sure what information was provided regarding
I think this is a great project and appreciate all of the help Idaho Power has provided as far as the trees and the light bulb packages. I have recommended this tree project to friends as well.
It was very helpful to have a tree arborist that knew about the tree and how to take of it
I tell everyone about the free tree program. At least one of my co-workers received a free tree this fall. And I've told 2 more about the program who have recently bought homes. Its a great program! The tree I received this past spring has already grown about a foot taller! I can't wait to see how much the tree I received this fall grows.
Thank you i would not have trees in my back yard without this project
Thank you. Tree is small but will be a great asset in the future
Think it is a great project, wish I had applied earlier for more choice in selection.
Thank you for offering this program!!
Bigger/older trees! Though we appreciate that the trees are free, it will take years for energy savings/heat
The map on the website is not compatible with an iPad. I was not able to select the tree placement on my own. After fussing with it forever I had to call customer service to do this for me; and they got the placement wrong. It didn't matter though, I got the trees anyway. I would just like the website to be more user-friendly for tablet users.
It was not clear how to sign up for two trees. I was allowed two trees at pick up . Staff was knowledgeable and
I liked the interactive map helping with placement, & the ability to go back & forth with tree choices. VERY user friendly. The planting advice was so clear that my 14-yr-old took on the project and did a great job.

I was very impressed by the knowledge that was shared during the pick up. There was take home information printed out as well as knowledgeable people there to show how to plant and answer any questions that one would have. I was also very pleased with the variety of trees I had to choose from. It was a little intimidating at first, I wanted to make sure to get the trees that would fit best in my yard. I spent extra time googling each tree and how tall/wide they grow as well as pros and cons. I am very happy with the project and look forward to many
The men who instructed us about the trees knew their stuff and were MOST helpful. We were so blessed to get these much-needed trees. Thanks for the great program!
This is a great program, not only for the home owners efficiency, but also for our environment! I really hope this program can continue and grow! Thank you for the opportunity!
These trees are pathetic. It will take 5 years just to get 20 square feet of shade. 5-6' tall but less than 1/2" thick. Planted trees in back yard garden so one day I can transplant to the SW side and not be embarrassed for
Great program. Only suggestion is allow people to participate more than once. Every other year, every 3 yrs etc.
I am VERY happy with the project as it came at a time when I needed a tree and was a little perplexed at to where to go & how much money I could spare...(which was not much) so seriously thank you very much for the project.. Carole
Loved this, passed in the info to relatives, they got trees too...looking forward to shadier days.
I wish the trees were a little bigger in diameter and a little taller!! They look funny in my big front yard!!
It would be helpful if delivery and planting was also included. I had to have a friend with a larger car pick up the trees. This friend delivered the trees to the wrong address and I couldn't get them home.
Thank you, thank you, thank you! I would rather have trees than money!! What a wonderful program. I have recommended your program to multiple neighbors, who said they will apply for trees next year.
The shade tree project was very organized and people at the pick up site were great.
Great program! Thank you so much.
Thank you for allowing me to participate. The way my house is situated on my lot, I could not plant the tree in the most ideal spot to help with heat, but I hope it might help a little!
It is a shame that more people did not know about the project including the IP employees I talked to about it. Also had a hard time to decide about what type of tree and when we finally figured out what would work the trees were all gone. We were able to take another type of tree to work. This is a blessing for people.
Would like to thank the people responsible for making this possible!
I should have got 2!
It was difficult to determine which trees would work best for us given the info about each specific tree. I looked up each tree and read about them online first and found either conflicting info or more useful info. For instance, the sweetgum sounded amazing. Until I read elsewhere how it can be quite the messy tree. And some say the Tulip tree doesn't bloom until it's around 15 years old. Other than that, I love this program and gave let neighbors know
Thank you!
Thank you very much. I think this is a wonderful program for our community. Utilizing green methods to conserve energy is going to be the direction of the future. Thanks again.
Thanks, I hope you do it again next year.
The mapping was a bit difficult to get right....kept making me put my tree outside my actual yard
I was not impressed with the arborist knowledge of the trees at the pick up. The arborist I spoke with was only able to read from their flash card about the trees and. It provide any other information.
One tree was a good size for its growth rate, but the other one was literally a grafted stick from a bigger tree in a pot of dirt. It is a slower growing breed, and I'll probably end up replacing it in the spring for a more substantial, faster growing one. But thank you for the generosity and the thought!

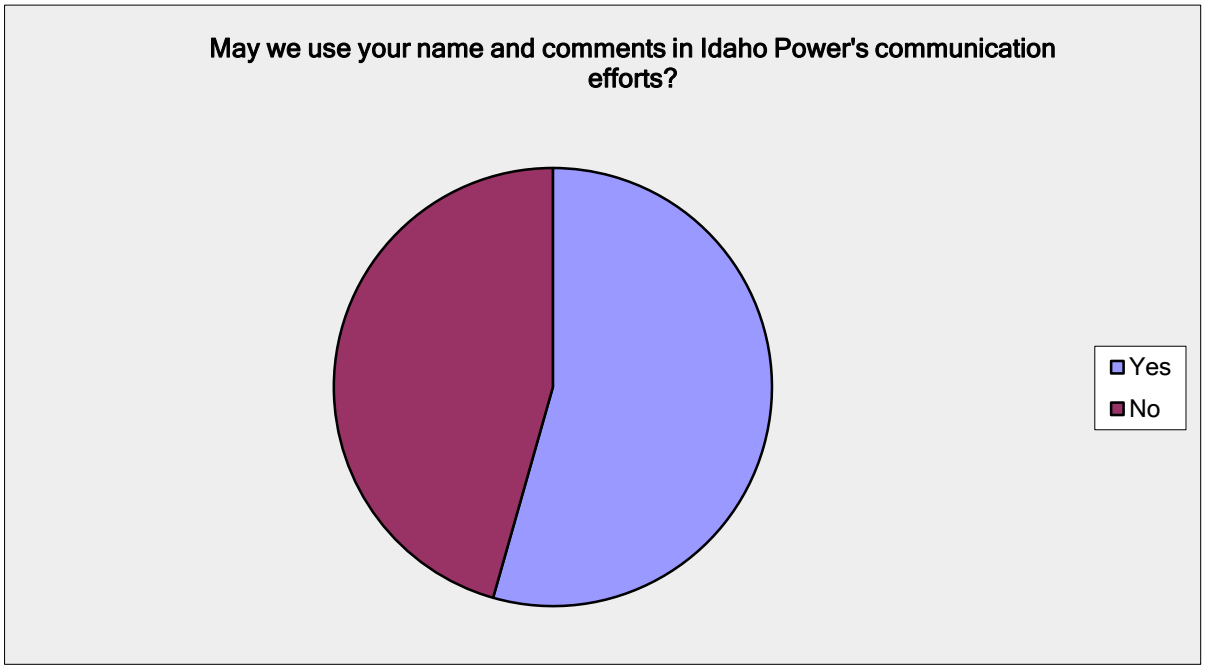
The only part I didn't care for was the limit of 2 per household in a lifetime. I bought my house in April and didn't know that the previous owner had already done 1 tree in a previous run of the program. It then turned into an issue because I registered for 2 but could only get 1 and the system wouldn't accept it anymore because they sold out of the tree I requested, etc., etc. I ended up getting the tree I wanted with the backups they had available but still only got 1. Trees can get diseased, die, get damaged by the elements and humans. It seems very restrictive to only allow two trees for the life of the house. I get that you have to keep costs down and all that also though and unfortunately, I'm sure there are tons of people out there that order these and never pick them up or never plant them so then it's a waste. Maybe customers with a lengthy positive history could earn more? Overall it was a good experience and I have told friends, I just wish I had the opportunity to get the other tree or another
We didn't really get time to find out anything about the trees, as soon as I turned in the paperwork someone working there ran off and grab two trees and put them in the back of our truck, we weren't able to even look at any of the trees or talk to anyone because they were so busy it was all a bit overwhelming. Luckily I used online
Thank you!
Thank you so much
The trees were barely a sapling. I was embarrassed to plant them in my yard. I picked the common hackberry.
Thanks so much! We love our little Oak!
Thank you for the trees!
great experience.. helpful folks at pick up....thanks so much
Great idea! Another reason why I love Boise!
I wish the tree was a little bigger.
This is a wonderful ides. Thank you.
The trees were far smaller than the site led us to believe. We purchased additional trees to match the description of 3-5 gallon trees and we dissapointed to find the trees we were given were 1-2 gallon root balls. The time and additional investment we made into the program was not worth the saplings we received in exchange.
Thank you! so excited!
Unfortunately, my horse ate one of the trees. :(
its a great program and brings more trees/vegetation to the valley
Great Program for the City of Trees!!
Wow! Fantastic program!
Thank you for doing this!
Thank you for this wonderful project.
One is very vigorous and one is kind of iffie
THANK YOU!
This is a great program from Idaho Power! It was very easy to place our order, we received clear communication on picking up and planting our trees, and everyone at the pick up event was really friendly and knowledgeable.
The process seemed unnecessarily long and convoluted. I had to indicate interest (email sign up), wait for the tool, play with the tool)which was very cool!), then I got a series of notifications, and finally went to the event. The only time dig line was mentioned was in a letter about a week before the pick up event, but that could've
The people who were at the pick up event were so friendly and made the process fun. I learned cool facts about the trees and had a great time. I was really excited to get picked and to go home and plant the trees. The
BOTH TREES DIED
Trees were delivered too late. Lost one tree to heat or was dead on arrival. Should have delivered at leat 30 days or more prior to the April pickup.
Thanks !!
Everyone was very helpfull
Thank you so much for making trees available to help with future energy costs.
I strongly support this program and believe it is very worthwhile
On the online tool I was going to plant the second tree on the southwest side of my house. It looked like a good location based on your map tool. But after selecting the tree and talking to the folks when I picked up the tree, my selected site / tree is not appropriate. It will be too big for that location. But Overall things went great and I
The tape that held the stick to the tree needs to be stronger. I didn't realize my tape had ripped and when the first winds started I almost lost the tree.

A fantastic program!
Wonderful project. I love my trees. Thank you.
I just want to say THANK YOU for my 2 beautiful trees. They are thriving and growing!! THANK YOU
Thank you for my free trees. I love them!!!
Thank you so much for my trees! They are doing very well and I truly appreciate them. While one will not end up providing much shade to my home, it will provide more shade to my yard, and my neighbors will appreciate it in
We got a Kentucky coffee tree. I read up on them and found that the fruits are poisonous. Did we get male or
A job very well done. The arborist was knowledgeable, helpful, friendly, and informative. I would participate again if allowed, but for now I'll just tell everyone I know about the project. The trees are beautiful and provide so many
My new northern red oak tree is doing great and we are looking forward to the shade it will soon provide.
One tree already died, I don't think the other one is going to make it either.
This is a nice project, but the advertising that the trees will save money is somewhat in error-- most people don't stay in there homes long enough for these "trees" to be of any shade value for 5-10 years from planting--they're just too small to provide any volume of shade. The cost of water for the trees outweighs the savings in power that won't come for several years. It is nice to get trees, but the advertising of the benefits vs. the actual costs
I not only would recommend the Shade Tree Project to friends, I have recommended it to several. And at least one has gone online to sign up for the next time. I know I have also signed up to get a second tree.
Great program
Great idea. Promotes tree life and tree Abu dance in our city of trees. Very proud to be lucky enough to have
Love the trees I got and all the helpful planting tips, although I thought maybe the trees would be a little bigger than they were but I didn't really know what to expect.
Cool project, thanks!
Great program!! Thank you for this generous program.
it was a wonderful and fun day..:-)
We think it is so awesome that Idaho Power offers this service. Do wish that they would allow us to get more then 2 trees-I know, sounds greedy. So glad that people are excited about the program and are putting more trees in
Thanks for helping with cooling down my yard and home.
I would like care instructions for the future. Pruning? Fertilizer?
I think this was a great project. The whole process was very simple, the people that were at the pickup event were very knowledgable and helped me understand how to plant the tree with confidence.
Thanks for the free trees!
If possible, I would like to get two more trees next year. They're great and doing well.
Awesome program. Thank you.
Offer more varieties of trees.
I only waited to plant my tree because I wasn't physically able. I kept it watered and it is doing beautifully.
Have told my friends about this program! Thank You
Great program
I've already mentioned it to several friends who may be looking to plant a tree at some point.
My only regret after planting was that I didn't have any fertilizer/special soil/root ball treatments to add. About a month after I planted the shade tree, I later planted another tree I purchased at Farwest and they were very knowledgable about what fertilizer to add, etc. It would be ideal to either receive treatments to add when planting
I AM VERY GRATEFUL TO HAVE PARTICIPATED IN THIS PROJECT
When picking up the tree they didn't have names or anything. You just told them you were picking up trees. Hopefully everyone got their trees.
This program is great. The trees are small but will grow. I passed this program on to several clientsand friends.
One of the trees looked to be dead when it was given to us. We planted it but it did not survive.
The tree I was given was in very poor health. I have planted many trees in my yard and this the first one that died. I was able to get it to grow from the root base, but the tree is in poor shape. I will be removing the dead tree and possibly replacing it with a new shade tree in the spring.
Would love to see larger tree options - even if there was a 'pay extra for a larger tree' opportunity. Maybe at a

I was told at the tree pick up to remove the stake from the tree so it could "learn to grow strong in the wind." They completely bent over and we had to re-stake them. We had stakes a few inches away from them, but not right on the trunk like they came. One of them might not make it.
If you offer this project again, please contact us who participated this year, so we can refer family/friends to the
Please call me. I have questions. 208-297-0272
Great program. I now have my second and last tree. Too bad. I got this 2016 tree to replace a tree that is dying in backyard. Wish you would acquire large corner property in Meridian and create a forest of your own. It would alleviate air pollution from all this traffic. Meridian downtown and ALL parking lots need more trees. It would also help absorb rain for much needed ground water. Can't say enough good things about this program. Also thanks
my tree was doing great, budded out into leaves then we got a hot spell and all the leaves turned became dry
One tree was almost dead, it never leafed out and has instead grown as a bush from the roots. Disappointed to receive an almost dead tree
Our tree is doing great!
This is a great opportunity. Our trees are very healthy and we were highly impressed with the quality. Thank you Idaho Power for your wonderful program!
I've been recommending this program to friends and family. Hopefully it continues!
I am struggling to keep my trees alive. I have been told by a local nursery that Burr Oaks are not a good choice for the soil in the Kuna area. I am hoping that the trees will survive, but I would suggest that Idaho Power provide trees that are actually suited to the Kuna soil conditions.
This is the best program ever I wish I could enroll every year
Nice job! I think this a better solution than building more coal power plants.
Thank you!
Maybe offer a few maple trees next time. Also if it weren't for my friends I would have never known about this and not received a tree. I don't think I received any info about it and I live in a new home.
Pay for delivery?
Thank you, Idaho Power!
I found the Shade Tree project to be incredibly helpful and beneficial. Part of this was timing, admittedly - I'd just recently purchased a home with a large west-facing backyard and no landscaping in the backyard, so it was basically your ideal scenario - but the overall ease of use and information was fantastic. I didn't even think of a
Your web site sucks
Would like to receive a follow-up when it is offered again. This is a great idea and think it is impactful to the energy use of homes in our sunny environment.

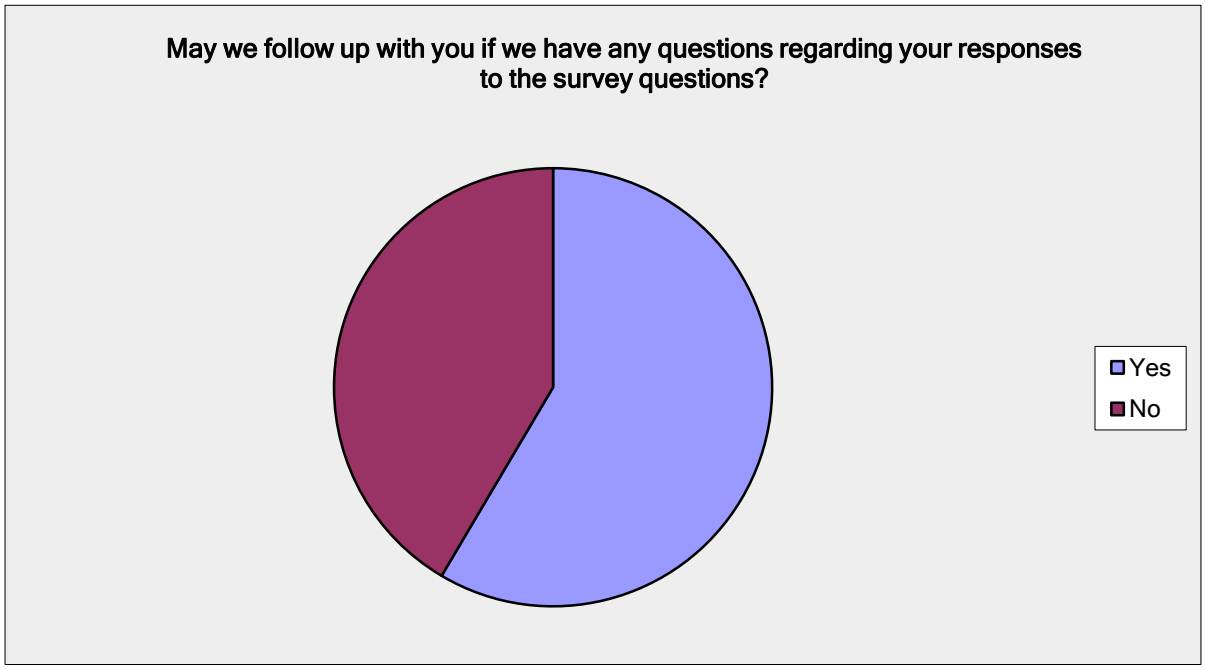
Idaho Power Shade Tree Survey

May we use your name and comments in Idaho Power's communication efforts?		
Answer Options	**Response Percent**	**Response Count**
Yes	54.4%	280
No	45.6%	235
	answered question	515
	skipped question	16



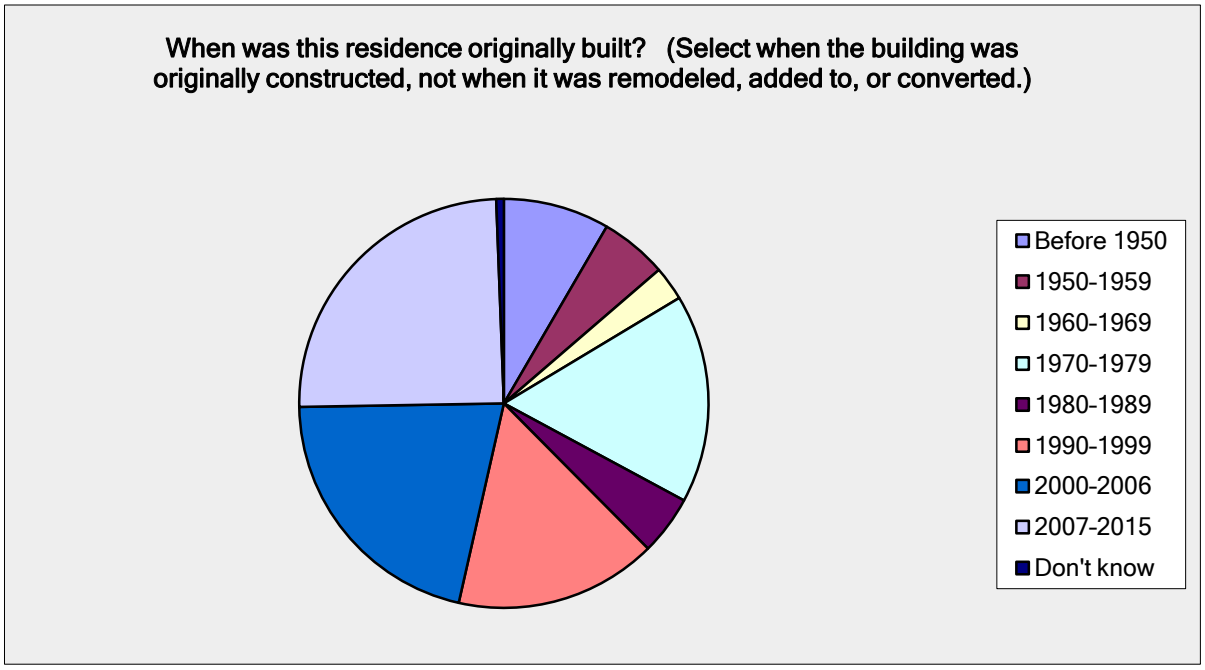
Idaho Power Shade Tree Survey

May we follow up with you if we have any questions regarding your responses to the survey questions?		
Answer Options	**Response Percent**	**Response Count**
Yes	58.5%	299
No	41.5%	212
	answered question	511
	skipped question	20



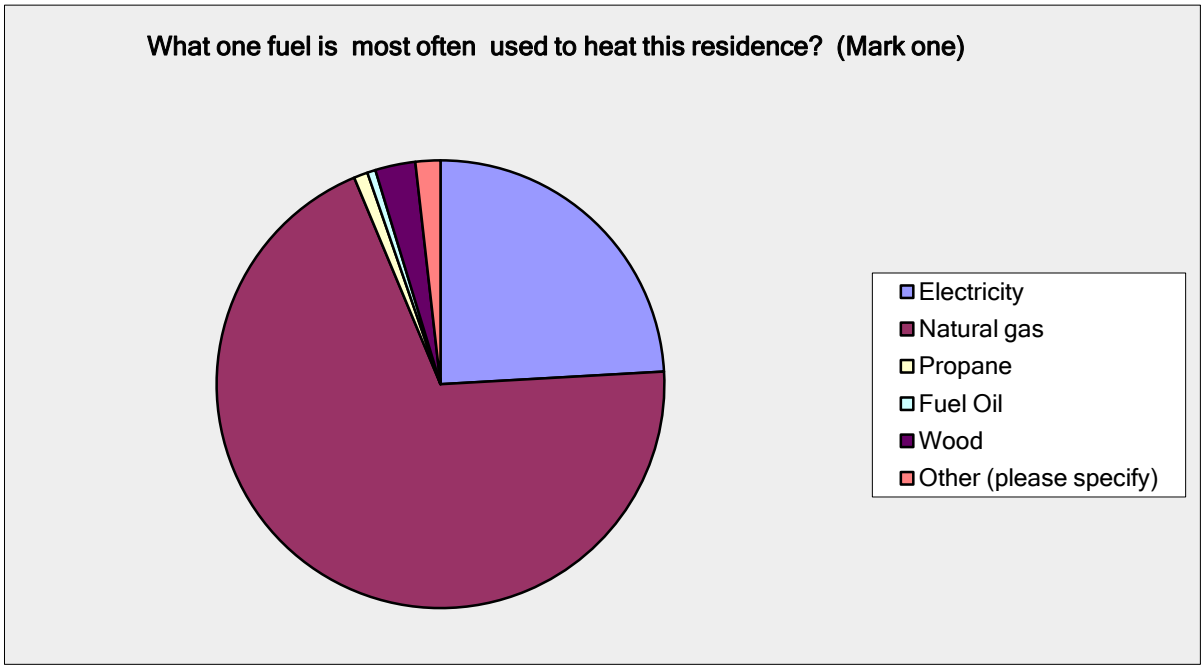
Idaho Power Shade Tree Survey

When was this residence originally built? (Select when the building was originally constructed, not when it was remodeled, added to, or converted.)		
Answer Options	**Response Percent**	**Response Count**
Before 1950	8.4%	43
1950-1959	5.3%	27
1960-1969	2.7%	14
1970-1979	16.5%	85
1980-1989	4.7%	24
1990-1999	16.0%	82
2000-2006	21.2%	109
2007-2015	24.7%	127
Don't know	0.6%	3
	answered question	**514**
	skipped question	**17**



Idaho Power Shade Tree Survey

What one fuel is most often used to heat this residence? (Mark one)		
Answer Options	**Response Percent**	**Response Count**
Electricity	24.1%	124
Natural gas	69.6%	358
Propane	1.0%	5
Fuel Oil	0.6%	3
Wood	2.9%	15
Other (please specify)	1.8%	9
	answered question	**514**
	skipped question	**17**

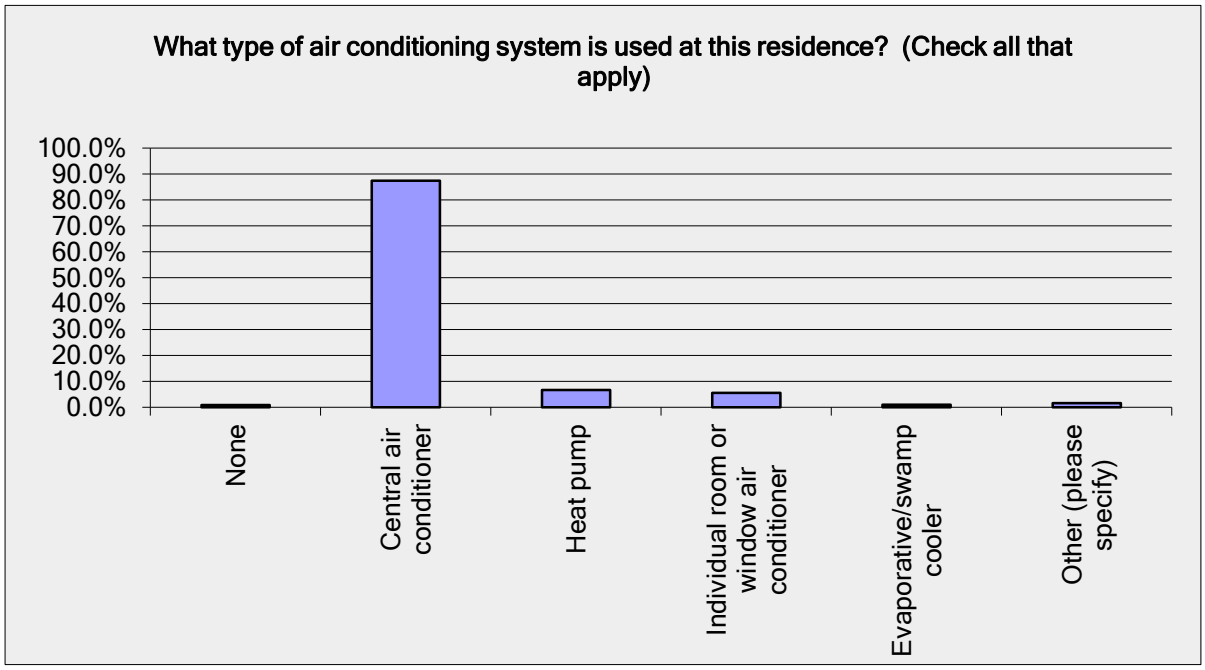


What one fuel is most often used to heat this residence? (Mark one)
Other (please specify)
Geothermal
Geothermal
combinationof wood and gas
Geothermal
pellets
Wood Pellets
Pellets
I
Pellet stove

Idaho Power Shade Tree Survey

What type of air conditioning system is used at this residence? (Check all that apply)

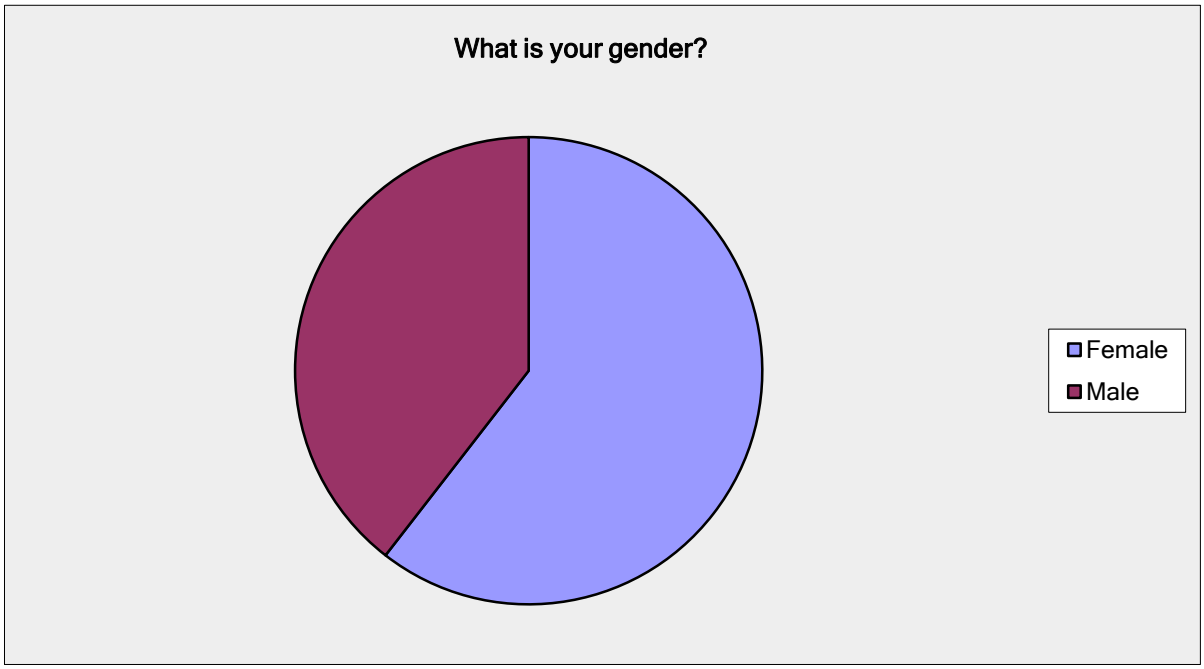
Answer Options	Response Percent	Response Count
None	0.8%	4
Central air conditioner	87.4%	450
Heat pump	6.6%	34
Individual room or window air conditioner	5.6%	29
Evaporative/swamp cooler	1.0%	5
Other (please specify)	1.6%	8
	answered question	515
	skipped question	16



What type of air conditioning system is used at this residence? (Check all that apply)
Other (please specify)
Geo-thermal
Geothermal
Geothermal
water to air heat pump
Gas Furnace
Box fans
Swamp cooler
Ceiling fans, air circulation, open windows and floor fans at night

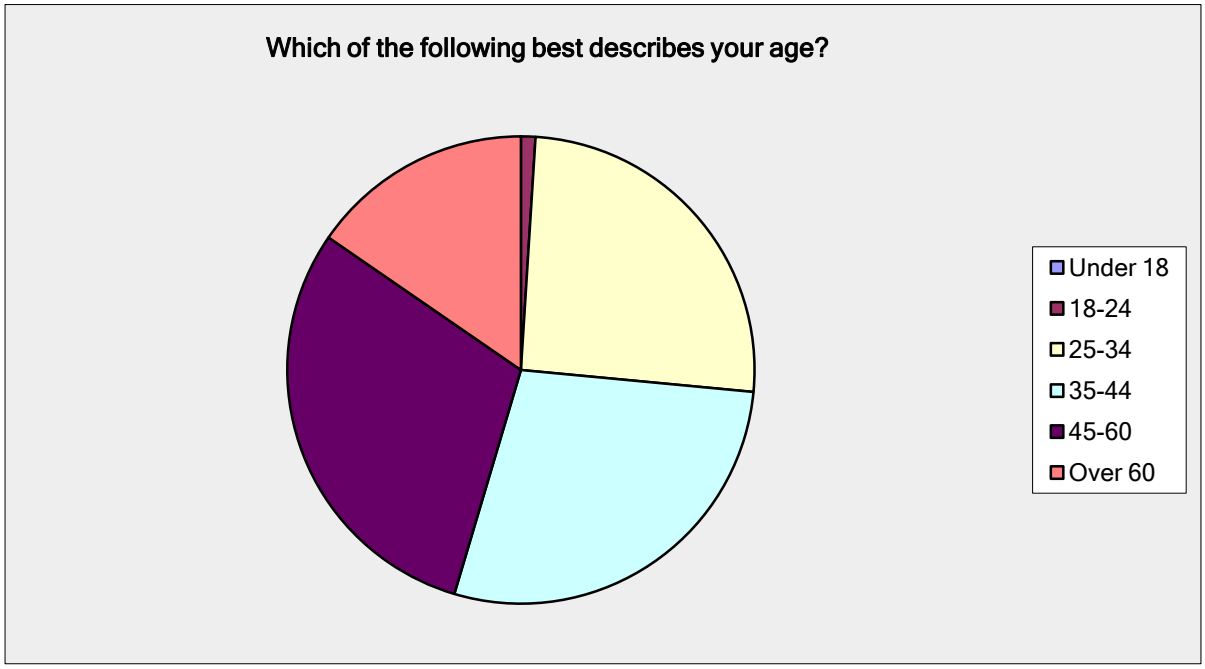
Idaho Power Shade Tree Survey

What is your gender?		
Answer Options	**Response Percent**	**Response Count**
Female	60.5%	306
Male	39.5%	200
	answered question	**506**
	skipped question	**25**



Idaho Power Shade Tree Survey

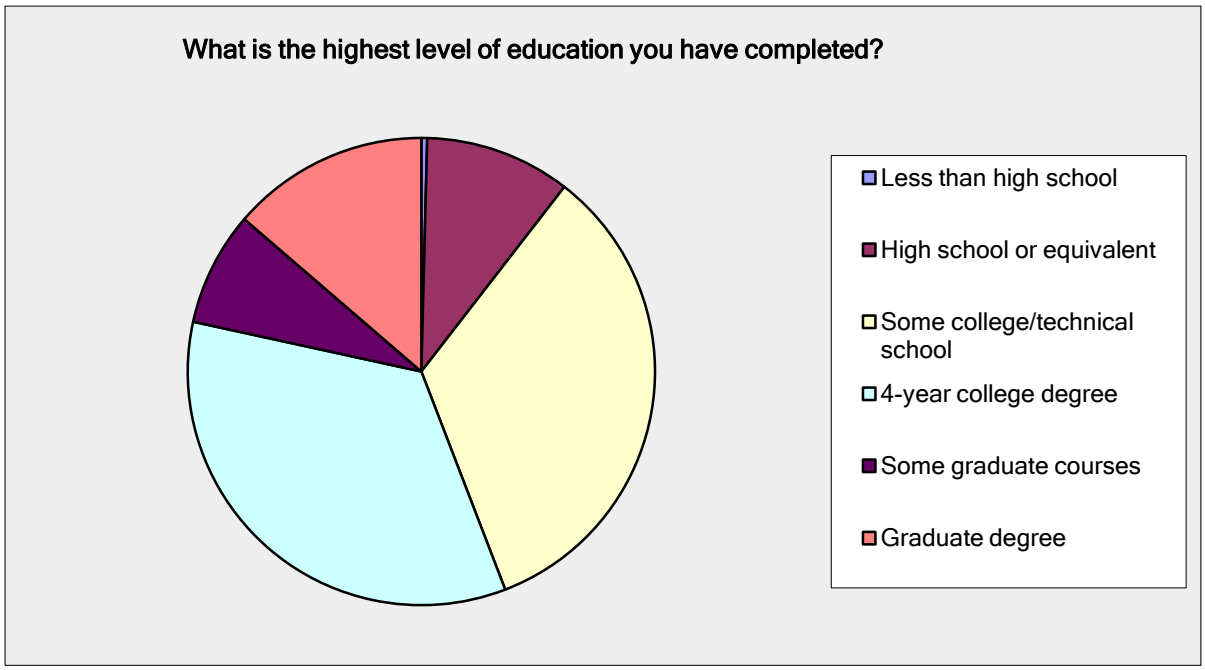
Which of the following best describes your age?		
Answer Options	**Response Percent**	**Response Count**
Under 18	0.0%	0
18-24	1.0%	5
25-34	25.5%	129
35-44	28.1%	142
45-60	30.0%	152
Over 60	15.4%	78
	answered question	506
	skipped question	25



Idaho Power Shade Tree Survey

What is the highest level of education you have completed?

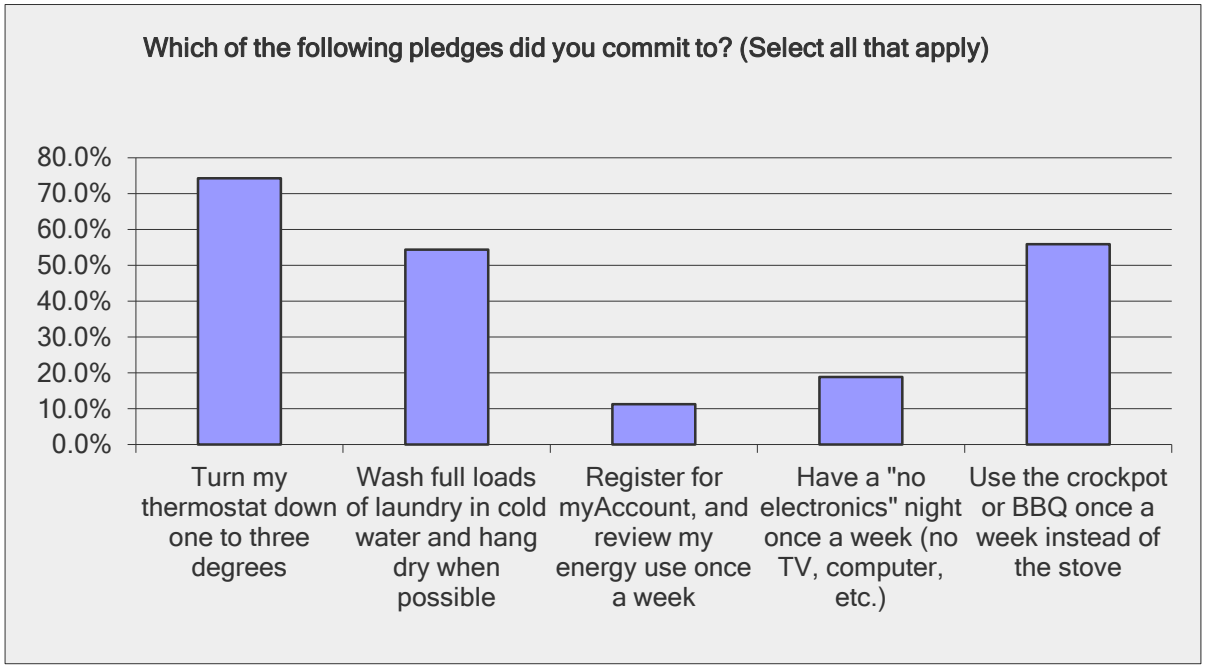
Answer Options	Response Percent	Response Count
Less than high school	0.4%	2
High school or equivalent	10.1%	51
Some college/technical school	33.7%	170
4-year college degree	34.3%	173
Some graduate courses	7.9%	40
Graduate degree	13.7%	69
answered question		505
skipped question		26



Smart-saver Pledge 2016 Survey Results

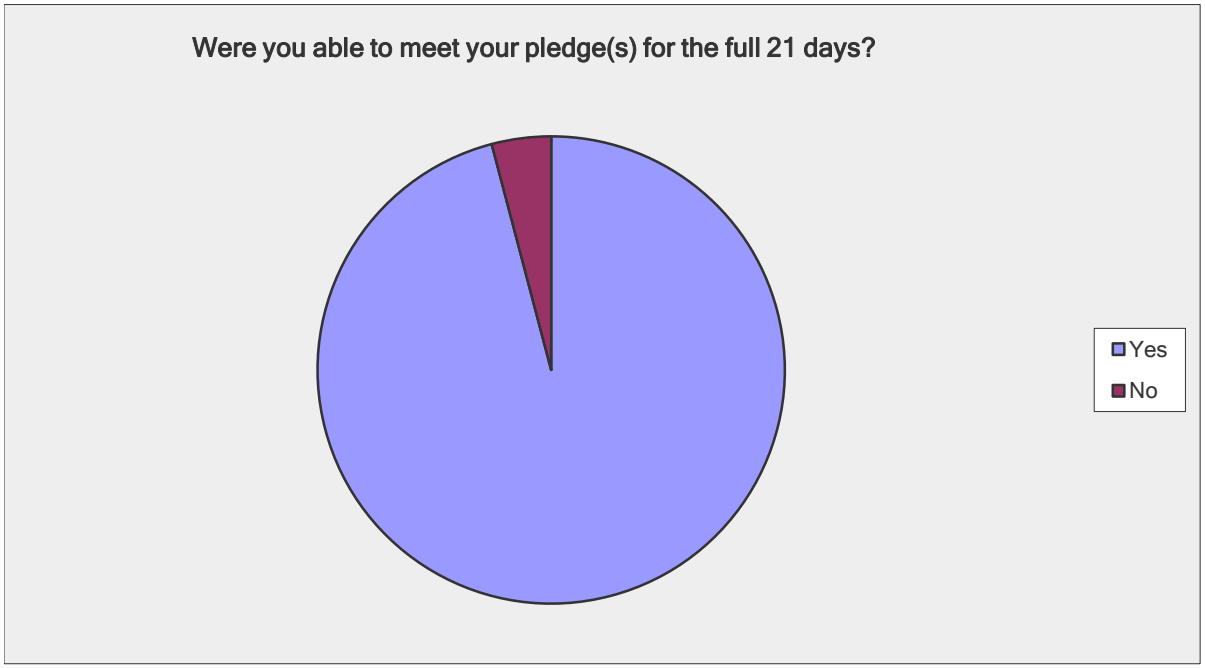
2016 Smart-saver Pledge Follow-Up Survey

Which of the following pledges did you commit to? (Select all that apply)		
Answer Options	**Response Percent**	**Response Count**
Turn my thermostat down one to three degrees	74.3%	303
Wash full loads of laundry in cold water and hang dry	54.4%	222
Register for myAccount, and review my energy use once	11.3%	46
Have a "no electronics" night once a week (no TV,	18.9%	77
Use the crockpot or BBQ once a week instead of the	55.9%	228
	answered question	**408**
	skipped question	**3**



2016 Smart-saver Pledge Follow-Up Survey

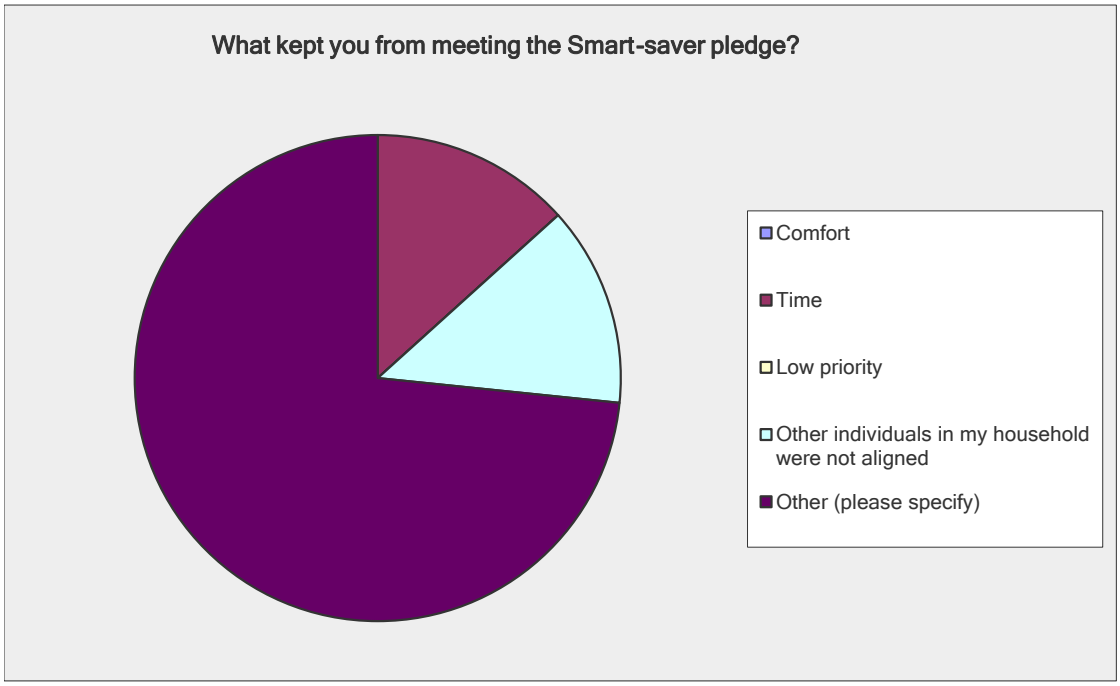
Were you able to meet your pledge(s) for the full 21 days?		
Answer Options	**Response Percent**	**Response Count**
Yes	95.9%	394
No	4.1%	17
	answered question	**411**
	skipped question	**0**



2016 Smart-saver Pledge Follow-Up Survey

What kept you from meeting the Smart-saver pledge?

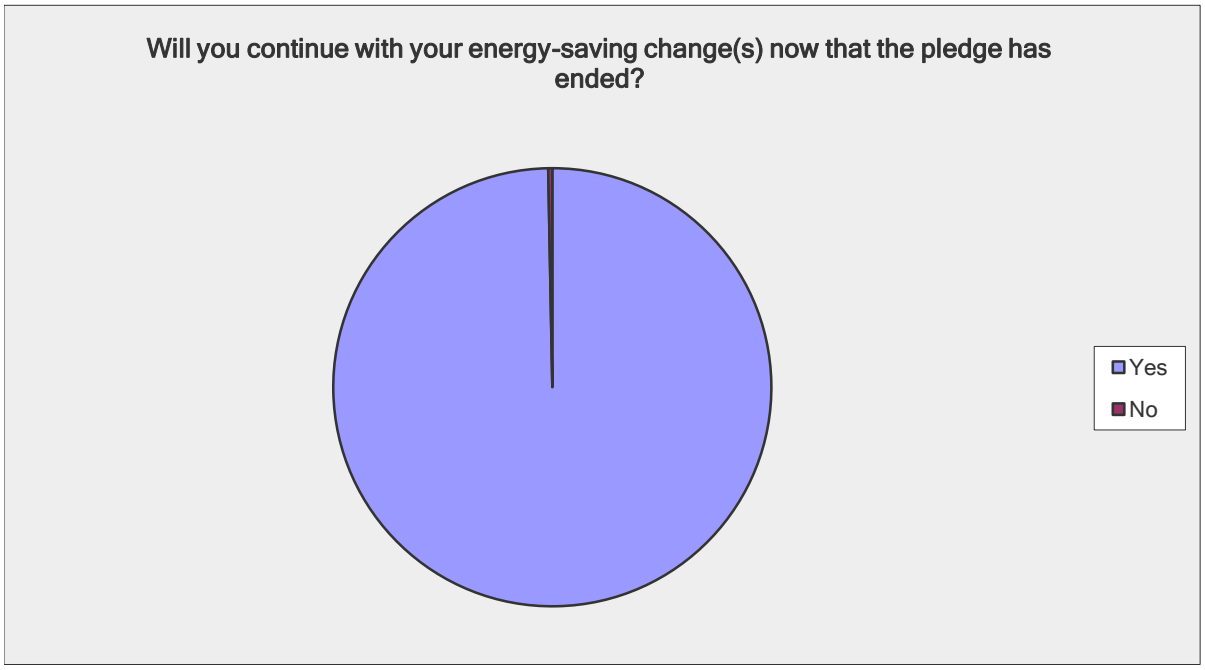
Answer Options	Response Percent	Response Count
Comfort	0.0%	0
Time	13.3%	2
Low priority	0.0%	0
Other individuals in my household were not aligned	13.3%	2
Other (please specify)	73.3%	11
answered question		15
skipped question		396



What kept you from meeting the Smart-saver pledge?
Other (please specify)
forgot about checking useage
Tv
Too cold most days to hang laundry outside.
hard to hang laundry outside when it is cold, or too wet. It doesn't dry very well
I forgot to turn thermostat down one day after I left for work.
cold laundry wahes DON'T give me clean I want. Did purchase energ ef washing machine and do hang clothes outside. . .until it snowed :(
I forgot to check the usage during the second week.
Time to reprogram the thermostat
havent got around to it
Had to do laundry for my folks a couple times and they did not have full loads
I had lots of company. Hard to manage their use. Back in schedule now will do better

2016 Smart-saver Pledge Follow-Up Survey

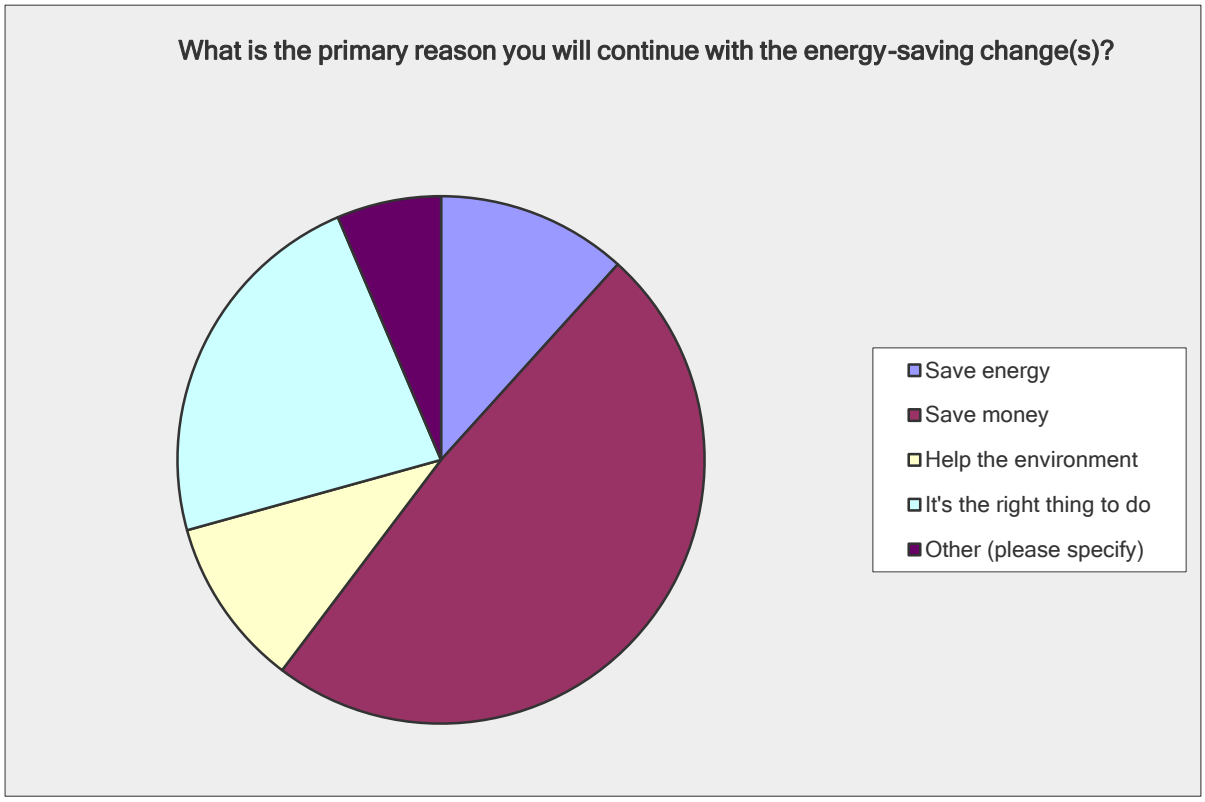
Will you continue with your energy-saving change(s) now that the pledge has ended?		
Answer Options	**Response Percent**	**Response Count**
Yes	99.7%	393
No	0.3%	1
	answered question	**394**
	skipped question	**17**



2016 Smart-saver Pledge Follow-Up Survey

What is the primary reason you will continue with the energy-saving change(s)?

Answer Options	Response Percent	Response Count
Save energy	11.7%	46
Save money	48.6%	191
Help the environment	10.4%	41
It's the right thing to do	22.9%	90
Other (please specify)	6.4%	25
answered question		393
skipped question		18



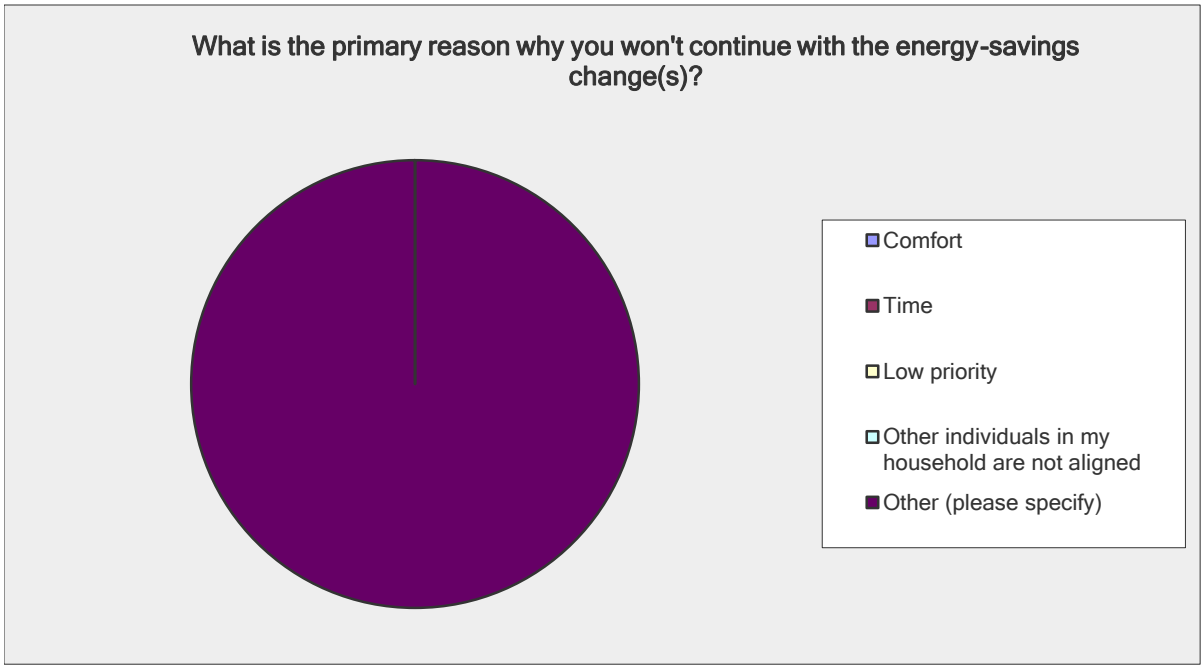
What is the primary reason you will continue with the energy-saving change(s)?

Other (please specify)

Save money and energy and help the environment
all of the above
Save money and energy both
Do hand washables at home. Go out to wash when need a big wash.
I have always done these things - my parents taught me long ago
all the above
All are very important to us
all of the above
All of the above
All of the above plus decrease screen time
All of the above
Line-dried clothes smell SO good and ultraviolet light kills germs.
It is an easy enough change to implement in order to save energy & money without having to alter our daily patterns too much.
All of the above factor into my decision
All of the above!!!!
I don't need electronics in my lifestyle every day.
Adds variety to meals consumed.
All of the above
Not home all the time
All of the above
All of the above. It started as a money saving endeavor but it's always the right thing to do to save energy and the environment.
The crock pot has been super nice as I've been making meals in the morning when I personally still have energy. It's harder to make dinner after a long day chasing a baby and toddler.
All of the above
Preference
All of the above

2016 Smart-saver Pledge Follow-Up Survey

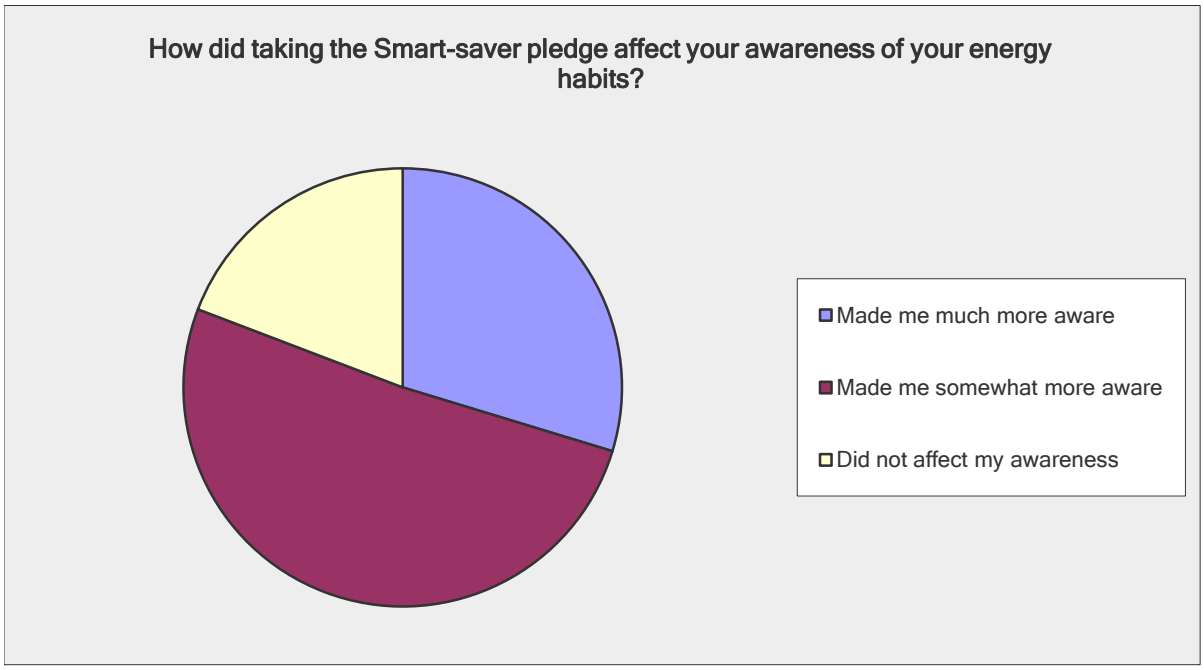
What is the primary reason why you won't continue with the energy-savings change(s)?		
Answer Options	**Response Percent**	**Response Count**
Comfort	0.0%	0
Time	0.0%	0
Low priority	0.0%	0
Other individuals in my household are not aligned	0.0%	0
Other (please specify)	100.0%	1
	answered question	**1**
	skipped question	**410**



What is the primary reason why you won't continue with the energy-savings change(s)?
Other (please specify)
I think warm water gets my clothes cleaner, and we've both had colds recently, so I want to get rid of the germs.

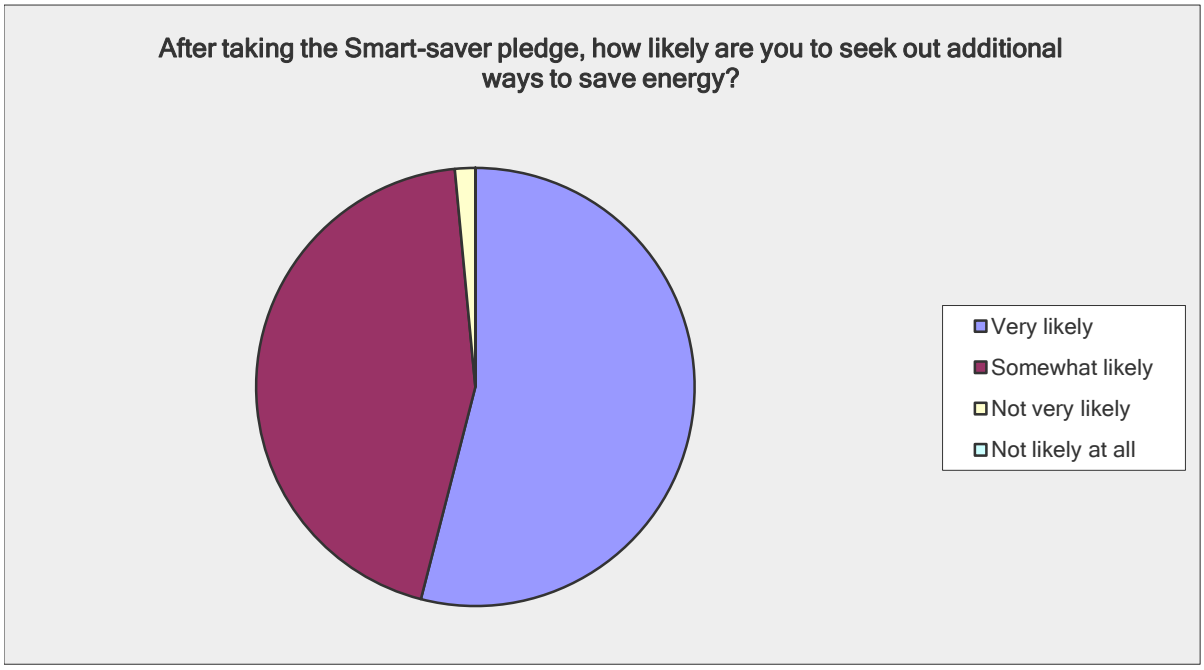
2016 Smart-saver Pledge Follow-Up Survey

How did taking the Smart-saver pledge affect your awareness of your energy habits?		
Answer Options	**Response Percent**	**Response Count**
Made me much more aware	29.7%	121
Made me somewhat more aware	51.1%	208
Did not affect my awareness	19.2%	78
	answered question	**407**
	skipped question	**4**



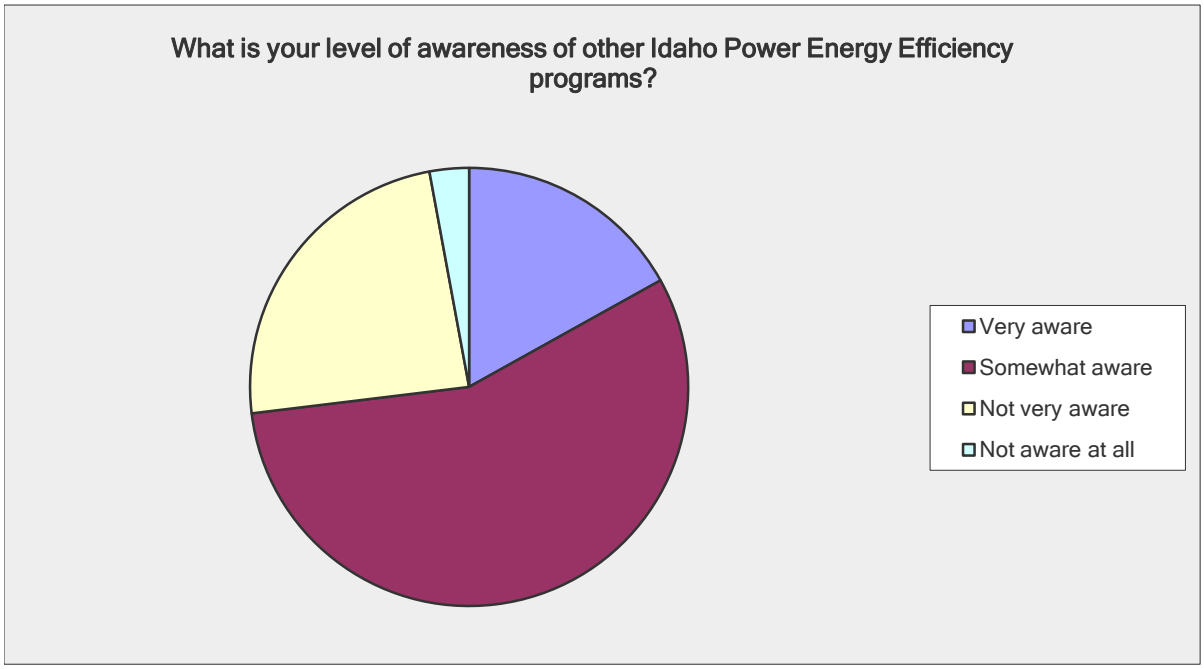
2016 Smart-saver Pledge Follow-Up Survey

After taking the Smart-saver pledge, how likely are you to seek out additional ways to save energy?		
Answer Options	**Response Percent**	**Response Count**
Very likely	54.0%	221
Somewhat likely	44.5%	182
Not very likely	1.5%	6
Not likely at all	0.0%	0
	answered question	**409**
	skipped question	**2**



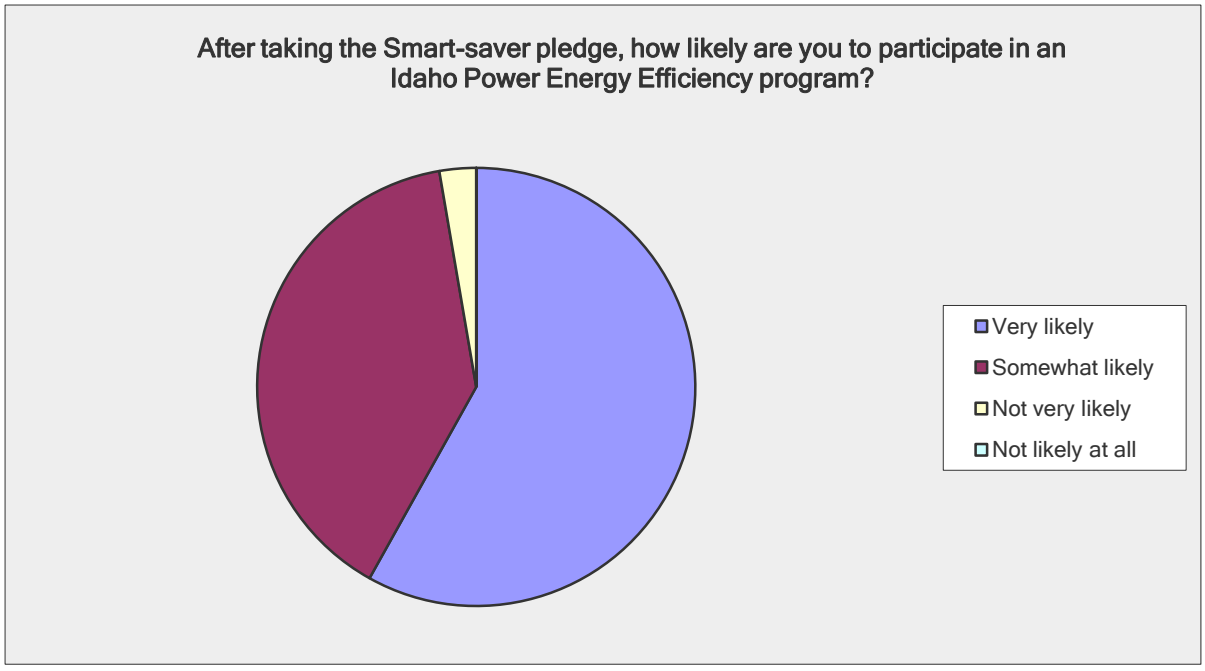
2016 Smart-saver Pledge Follow-Up Survey

What is your level of awareness of other Idaho Power Energy Efficiency programs?		
Answer Options	**Response Percent**	**Response Count**
Very aware	16.9%	69
Somewhat aware	56.1%	229
Not very aware	24.0%	98
Not aware at all	2.9%	12
	answered question	**408**
	skipped question	**3**



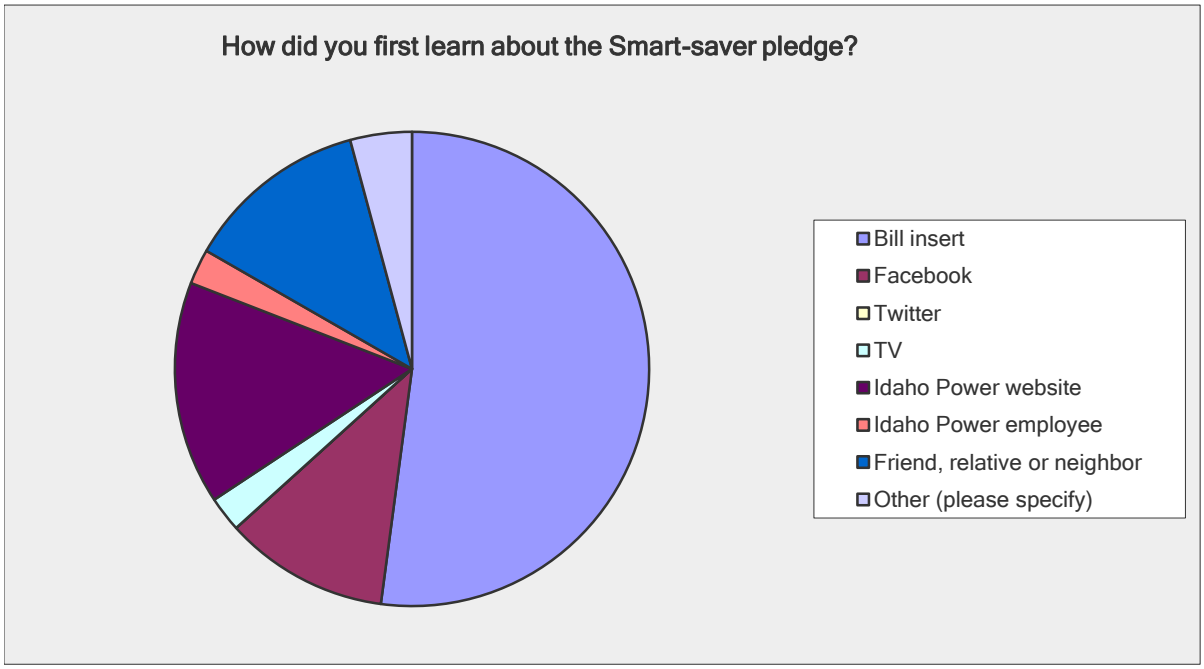
2016 Smart-saver Pledge Follow-Up Survey

After taking the Smart-saver pledge, how likely are you to participate in an Idaho Power Energy Efficiency program?		
Answer Options	**Response Percent**	**Response Count**
Very likely	58.1%	172
Somewhat likely	39.2%	116
Not very likely	2.7%	8
Not likely at all	0.0%	0
	answered question	**296**
	skipped question	**115**



2016 Smart-saver Pledge Follow-Up Survey

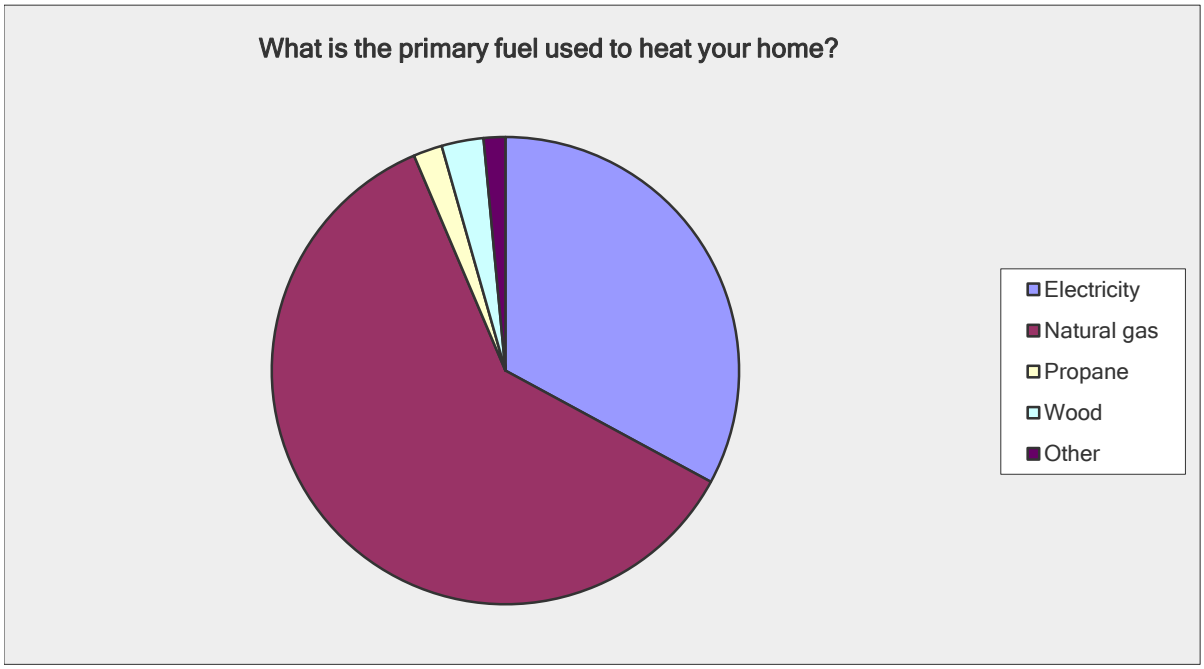
How did you first learn about the Smart-saver pledge?		
Answer Options	**Response Percent**	**Response Count**
Bill insert	52.1%	213
Facebook	11.2%	46
Twitter	0.0%	0
TV	2.4%	10
Idaho Power website	15.2%	62
Idaho Power employee	2.4%	10
Friend, relative or neighbor	12.5%	51
Other (please specify)	4.2%	17
	answered question	**409**
	skipped question	**2**



How did you first learn about the Smart-saver pledge?
Other (please specify)
Sweepstakes
E mail notice
dont remember
Item in The Boise Weekly
Email
can't remember - either bill insert or e-mail from Idaho Power Empowered Community
Email
Email
sent me an e-mail
Article in the Boise Weekly
Received and emial from Idaho Power about it.
If I recall correctly it showed up in an email or through the emPowered community
empowered community
Nextdoor
online I think
Idaho Power pamphlet sent to me
Mail. It came with my bill

2016 Smart-saver Pledge Follow-Up Survey

What is the primary fuel used to heat your home?		
Answer Options	**Response Percent**	**Response Count**
Electricity	32.9%	134
Natural gas	60.7%	247
Propane	2.0%	8
Wood	2.9%	12
Other	1.5%	6
	answered question	**407**
	skipped question	**4**



2016 Smart-saver Pledge Follow-Up Survey

What is your zip code?	
Answer Options	**Response Count**
	330
answered question	**330**
skipped question	**81**

Response Text
83705
83686
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83204
83702
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83651
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83686
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83605
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83221
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83617
83467
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83607
83676
83686
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83646
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83709
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83211
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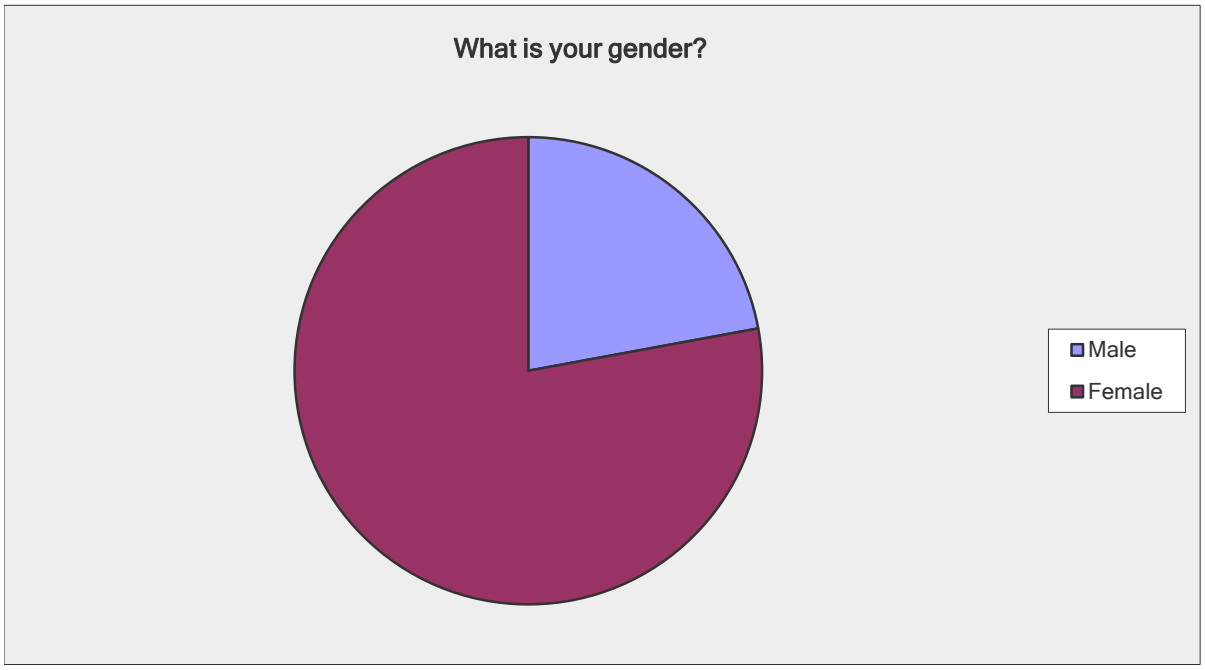
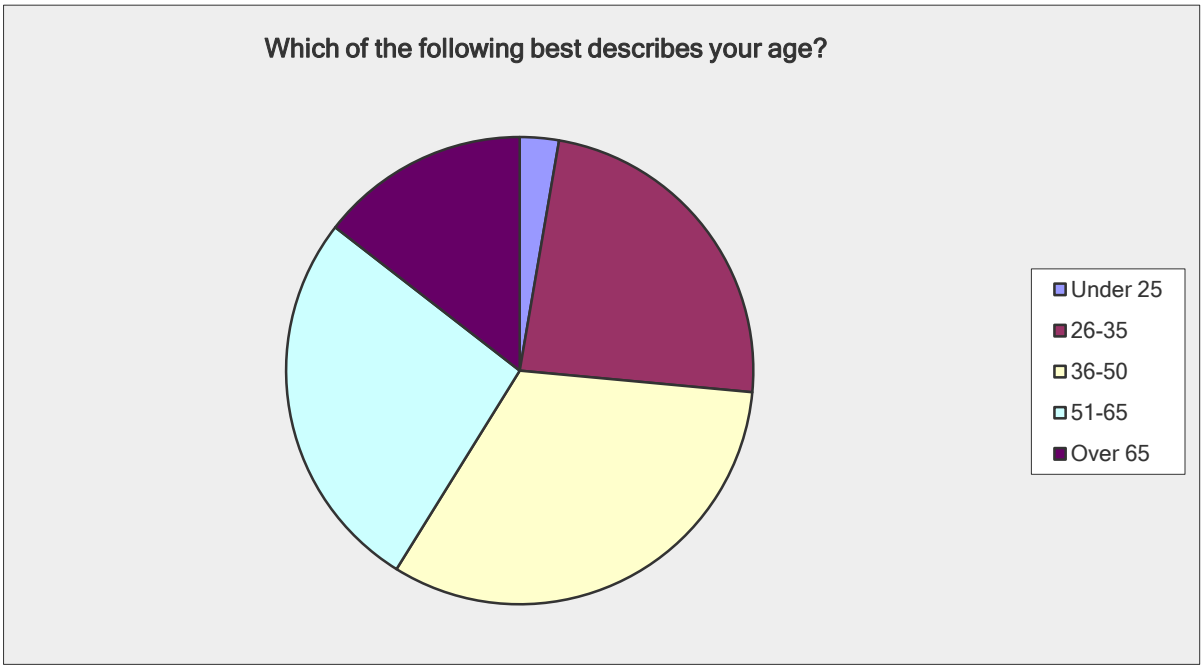
2016 Smart-saver Pledge Follow-Up Survey

What is your gender?		
Answer Options	**Response Percent**	**Response Count**
Male	22.1%	89
Female	77.9%	314
	answered question	**403**
	skipped question	**8**



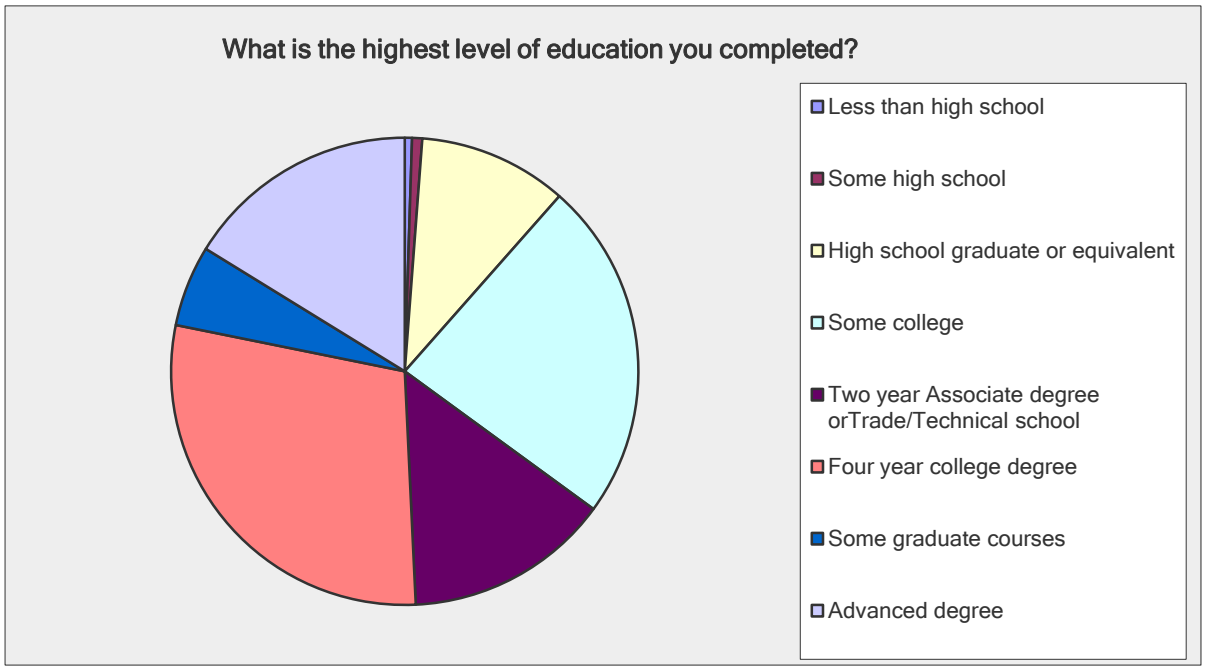
2016 Smart-saver Pledge Follow-Up Survey

Which of the following best describes your age?		
Answer Options	**Response Percent**	**Response Count**
Under 25	2.7%	11
26-35	23.8%	97
36-50	32.4%	132
51-65	26.7%	109
Over 65	14.5%	59
	answered question	**408**
	skipped question	**3**



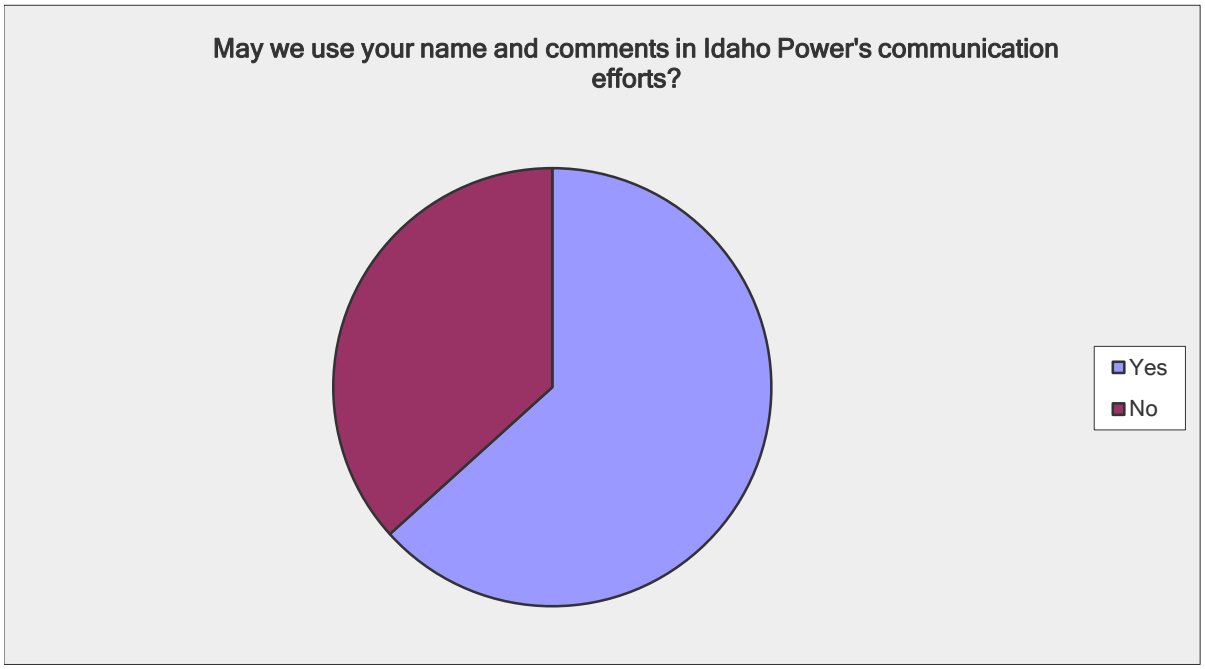
2016 Smart-saver Pledge Follow-Up Survey

What is the highest level of education you completed?		
Answer Options	**Response Percent**	**Response Count**
Less than high school	0.5%	2
Some high school	0.7%	3
High school graduate or equivalent	10.3%	42
Some college	23.5%	96
Two year Associate degree orTrade/Technical school	14.2%	58
Four year college degree	28.9%	118
Some graduate courses	5.6%	23
Advanced degree	16.2%	66
	answered question	**408**
	skipped question	**3**



2016 Smart-saver Pledge Follow-Up Survey

May we use your name and comments in Idaho Power's communication efforts?		
Answer Options	**Response Percent**	**Response Count**
Yes	63.3%	257
No	36.7%	149
	answered question	**406**
	skipped question	**5**



2016 Smart-saver Pledge Follow-Up Survey

Thank you for taking the time to participate in this survey. We value your opinions and

Answer Options	Response Count
	92
answered question	92
skipped question	319

Thank you for taking the time to participate in this survey. We value your opinions and comments. If you have any additional comments, please share your thoughts in the space below.

Response Text
I have learned some things. I have not been able to change the shower head as I can't get the old one off. I am not changing the kitchen faucet because I have a portable dishwasher attachment on it. I have replaced all my incandescent bulbs. I checked all the temperatures and found them okay. It will be interesting to see the results.
I'd love more emails on ways to save on energy and programs you will be running.
Take the time to help save energy and lower your monthly bill!
The drying rack broke about a week after I received it.
I love all the energy savings programs that you do! Though I often hear about them after they are done. It would be nice if people interested in participating in such programs could sign up to be notified of upcoming programs beforehand.
My power usage was less November 2016 when I was not using my oven as much to save power compared to November 2015
Good to see Idaho Power reaching out to promote energy awareness.
i verey much want to save power. will take all the help i can get.
Thanks for caring!
Thank you to Idaho Power for reaching out in order to educate and support our community and state.
I already filled this out. Why did I receive it again?
My bills may not effect any decreased usage as I recently purchased a hot tub.
Loved the program. :)
I appreciate what Idaho Power is doing to inform consumers about ways to use energy efficiently.
making the public of energy saver & environment awareness is a bright idea. reminder is awareness with incentive is motivating. it is a good idea specially for those who needs it.
Thank You for taking the time to educate others and encourage awareness in our communities.
Power pledge is a good one thanks;
I was grateful for the opportunity to

It really makes you aware of how much energy you are using by logging on to Idaho Power Website and looking at your Usage.
This is a great program. I think that the investment cost for energy efficient light bulb, faucets, showers, etc. keep people from doing these things, even when they know the benefits. Combining free products, education, and follow-up is a perfect combination. Thank you.
I am glad to see that there is an effort to help people learn about conserving energy.
I have always tried to be very energy conscious, shutting off lights when leaving a room, adjust washer per load, not stand with the door open when cooling or heating. But by conserving the way that I had this time was a challenge. I have always left my heating set at 70 degrees, which was still a bit cool for me at times. I pledged to turn down my heat. I figured that I would decrease by 4 instead. I need to decrease my bills anyway because of being on a very limited income. I found that I could survive at 66 degrees with a very warm blanket while stationary. My dogs are happier with the lower temperature and I will continue to be also. Thank you Idaho Power for giving me that extra little nudge that I needed to meet a new & lasting goal.
I always thought I was energy efficient, until I read more of Idaho Power's energy saving tips and took this pledge! I have shared this information with my friends, relatives, & everyone at work as well. Thank you!
Now that we've gone solar, we are getting a plug in hybrid car, and a ceramic core heater which we'll use in our living room in the evenings.
I have always tried to be conscious of energy use and saving money. When the energy saving list bulbs first came out years ago, I switched to using them all over my house, and it significantly lowered my ID. Power bill. Plus, have always turned off lights when leaving a room.
I am always looking for ways to save energy. We have been given such a gift with our heating and cooling system and I want to make it last a long time. Thank you
Please commit to a participants complete and total privacy. Several survey questions were offensive wherein they do not give desired privacy and anonymity.
If you have additional boxes of bulbs etc. We would be grateful. As our incomehas dramatically declined. Thank you for the information. It's very helpful and makes me think about how we can save a little here and there.
I would like to learn about more ways to save as a renter.
Idaho Power is a good company. I like its innovation and initiatives.
Thank you for all you do to increase energy savings and to preserve our beautiful environment in Idaho. Very important work you are doing!
I appreciate your efforts to save energy.
Thanks for giving us the information to start with the energy saving program. We have had the inspection, which changed out some light bulbs and pointed out household repairs that needed to be made, planted two trees and are getting ready to sign up for additional light bulbs.
Thanks for giving ideas and incentives to save power.
none
Thank you for everything you provided for my home.

I think Idaho Power is the best.
Could sure use another box of those great light bulbs. Cost way to much to buy in McCall.
Great job bringing awareness to your customers.
Thanks for the kit.
I think these challenges and incentives are highly effective in getting the community on board with saving e energy and becoming more aware of other options they have in helping our environment thrive. Thank you!
Great service, great projects great communication, thank you
I really appreciate the energy news" insert in the monthly bill. Also, my family appreciates the energy contest you have each year. This "smart-saver" idea was a wonderful, quick and easy way to make a difference, both economically and environmentally. Similar to your A/C credit. Fantastic ideas! Speaking of money....I am surprised you have color inserts. That is a lot of money, energy use, and expensive ink. Maybe, you could go black & white and pass on the savings.... As an educator, I really appreciate that you have provided wonderful learning opportunity tours of the hydroelectric facility for our youth. Keep up the great work! Idaho Power is truly part of the community!!
I was glad to see this pledge on Channel 7 News in Boise, Idaho. It definitely gave me more ideas of how to save energy.
It has been quite easy for me to lower my thermostat 3-5 degrees. The dogs are not as hot and I simply snuggle up with a blanket while watching tv or sitting down.
I hope many of your customers took the pledge to be energy smarter and not for hopefully a monetary reward but for pride and satisfaction for just doing it. Here are some of my family's experiences - seeing my adult children's young faces and now grandchildren's as they burrow in outdoor dried bed sheets taking in the smell of fresh air and sunlight, tasting awesome flavors of charcoal grilled meats and vegetables all year long not just in the summer (the Weber knows all seasons), sleeping better at night by turning down the temp during the winter or opening the windows/patio doors during the summer, and never turning on the bathroom and laundry room lights during the day since installing solar tube lighting. When my husband and I installed the last of the solar tubes in the darkest rooms of our house (2 bathrooms and laundry room), I started tracking our monthly electric usage and cost for two years. My thought was following for two years would give me a good compare to see if the investment was worth it. Boy, was it! I'll continue to monitor; it's become habit and actually fun to follow the monthly progress and figure out what caused a difference if any. Habit is the key to becoming an energy smart saver and, for our multi-generations family, has become a daily and normal practice to us. We're instilling this lifestyle to our grandchildren so they too will be good energy smart ambassadors. I apologize for the lengthy comment but I could go on and on but will stop now. :)
None

We moved here from California and did the same thing there. We keep the temp at the same temp and the and it is easier keeping the house at one temp and it gets to worm and the temp has to be turned down even with it being cold outside.
I will be watching for the free drying rack you offer. I wasn't able to hang every thing because I only could put in one line. It will certainly be a continued process. Thanks
Keep helping us make smart choices in energy consumption!
I always have my heat turned down in the winter to about 64*. I work at night so I don't get to watch much t.v. I changed all the light bulbs in the home to ones you sent. They are very nice.
I'm glad you are doing this type of program to bring greater awareness to our community members. If people realize they can save money AND help the environment, everyone wins!
Great program! Thank you to whoever organized this effort!
Always willing to help out the environment and save money along the way. Thank you for offering various saving programs.
Thank you for the box of energy saving light bulbs!
I wouldn't have know about the smart-saver program unless I had seen the insert in my monthly bill. My furnace repairman didn't even about it.
n/a
We sit in dark w/;only TV going most nights. I was taught to turn out light when leaving room. Have few "new" lights that are frustrating kuz they take 10 min to actually come on and then lend to not turning them off when you leave room so that when you come back into the room you'll be able to see what you want and then leave again. Have visited energy efficiant vacation resorts and VERY frustrated that the lights DON'T give the light needed to see! It doesn't seem like anything is saved if instead of turning lights off when you are done w/them you are encouraged to LEAVE them on so that when you return
I really learned a lot about my electricity consumption during this pledge. Thank you.
I love stuff like this. It makes us just more aware of the things we "should" be doing and helps us make smarter choices...like using a BBQ or Crock-pot and turning down that temperature a few degrees.
I was very pleased with the items in the Energy Saving Kit and put them all to use right away! I have been practicing energy conservation for several years on my own, so the kit just reinforces my efforts. I really like the LED nightlight and the shower timer!
The changes that I make to my electricity usage would never be driven by the Pledge. The Pledge was a fun way to test my awareness and enter the drawing. Changes to my household energy usage are driven by personal circumstances, economics, and somewhat by environmental concerns.
Although I did not make all the changes I had planned to, they are still on my to-do list. Thank you for the reminders and encouragement!

I try to save power and be energy efficient most the time. So that's why I answered being part of the challenge did not cause me to be more aware.
I was already aware that turning my thermostat down saves energy but this challenge pushed me to actually do it. We usually have it set at 71 and we turned it down to 68. It was a little cold for a day or two but we soon got used to it. Now that Idaho powers challenge is over we have left it there because we had gotten used to it. We may as well continue to save the money and the energy. Thanks for the push, Idaho Power.
When I called Idaho Power with a question the CSR walked me thru your website & I really liked being made aware of all the savings programs offered there I'd just never seen before.
Thank you for the opportunity and the helpful information regarding saving energy and conserving our resources.
Happy to see Idaho Power taking the initiative to make Idaho more energy efficient!
Don't use dishwasher. Turn therm. down to 68 degrees at night. Hang clothes when possible. Use less water.
I appreciate Idaho Power encouraging everyone to save energy and help the environment!
I think this was a great idea. We need to try more things like this and keep doing it so it reaches more and more people.
I have implemented more of the energy saving ideas like changing my usage for both washer/dryer and dishwasher, changing house temperature, using the windows for more solar energy/heat etc.; also qualified for the Weatherization project for needed upgrades. Glad to do my part to save energy and lower my bill.
I appreciate the modern technological advances but know that life is possible with less of them. I lived as a child where oil lamps were all that was available. Electric lights are a real blessing. The solar farms are fascinating to me. What a great idea!! Thanks for the steady, economical supply of electricity
I liked taking the pledge and trying something new that saves energy and money. I knew that using cold water to wash my clothes would save energy but I didn't think my clothes would come clean. After taking the pledge and 21 days of washing with cold water I discovered the clothes come just as clean. I will be using cold water from now on.
Thank you.....
This is the lowest months power bill I have ever had! Thanks!
Thanks for having a program! Please continue to offer more and continue to educate all users to the benefits of efficiency!
I'd really like to see an expansion / more info on the clothes racks. I think it's a great tool, but many people don't have them, know where to get them, know enough about them. I'd like to normalize this practice :)

It will be an additional incentive if people are able to visually see the difference on before and after the changes were made. Eg cost or energy used before each change.
I think your energy efficiency programs are great. I've participated in 3 (shade trees, home energy kit, and this one) and I think it's a great service to the customers
Good idea to make me more aware of my energy use. I wasn't 100%, but I did think about my energy consumption more often.
Love Idaho Power.
Pledge helped me be more aware of energy usage and small and easy ways to save energy.
I want to say that it's great that Idaho Power is helping customers understand and lower there power bill. It is so important to help others and our environment!!
Continue these types of programs which will help reduce energy use and save money!
Thank you for the free drying rack I use it ALL the time and it does help on lowering our energy bills and the environment...Happy Holidays to each and everyone...May God Bless!
Also switched over to all leds.
Please keep trying and helping others to save money on there electricity.
I value your outreach. It is a beneficial reminder, in which I take action. Thank you. Happy Holidays!
I love Idaho Power my father, grandfather and uncle all have been employed by the company.
Love that the survey is always short and to the point. No unnecessary questions
Thank you for recognizing and rewarding power saving efforts!

empowered community

Thanksgiving Cooking Efficiency Study

Final Results

November 30, 2016

Survey was sent to 1,017 em**powered** community members
Participation rate was 66%

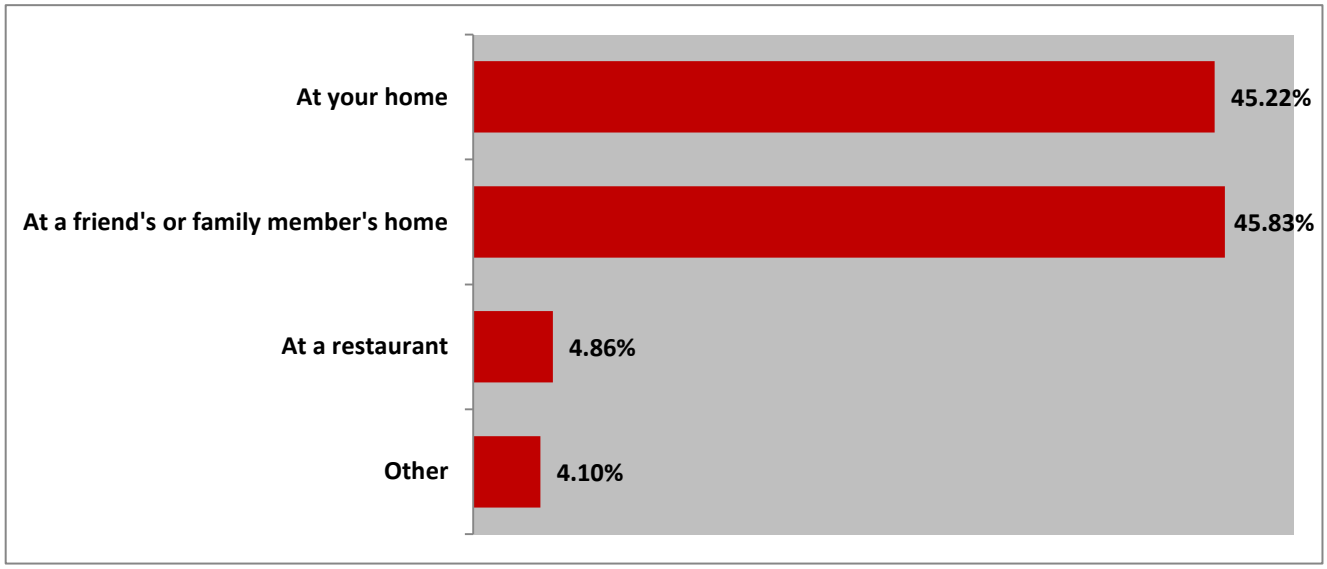
Respondent data

- 83% homeowners / 11% renters
- 49% male / 51% female
- 23% from CanyonWest region / 55% from Capital region / 22% from SouthEast region
- 27% from electrically heated homes / 65% from natural gas heated homes / 8% from homes heated by other fuel sources

Where do you plan to have Thanksgiving dinner?

QUESTION TOTAL:	659
DID NOT ANSWER:	0

	OPTIONS	TOTAL	PERCENT
O1	At your home	298	45.22%
O2	At a friend's or family	302	45.83%
O3	At a restaurant	32	4.86%
O4	Other	27	4.10%

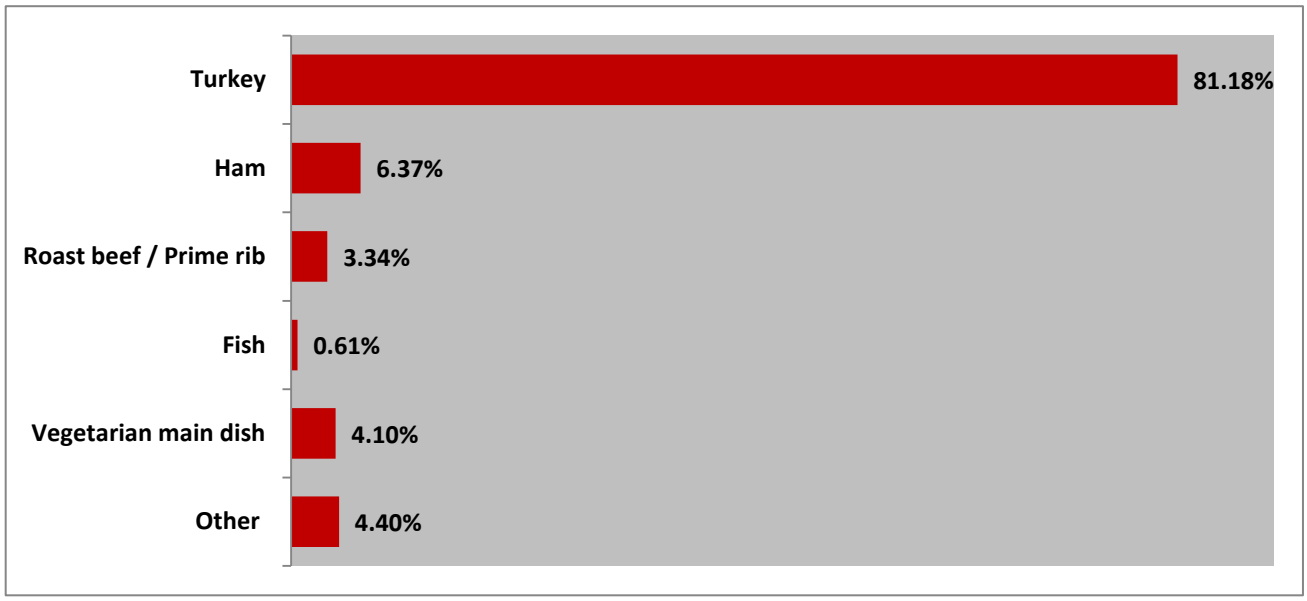


What is your preferred main course for Thanksgiving dinner?

QUESTION TOTAL: 659

DID NOT ANSWER: 0

	OPTIONS	TOTAL	PERCENT
O1	Turkey	535	81.18%
O2	Ham	42	6.37%
O3	Roast beef / Prime rib	22	3.34%
O4	Fish	4	0.61%
O5	Vegetarian main dish	27	4.10%
O6	Other	29	4.40%



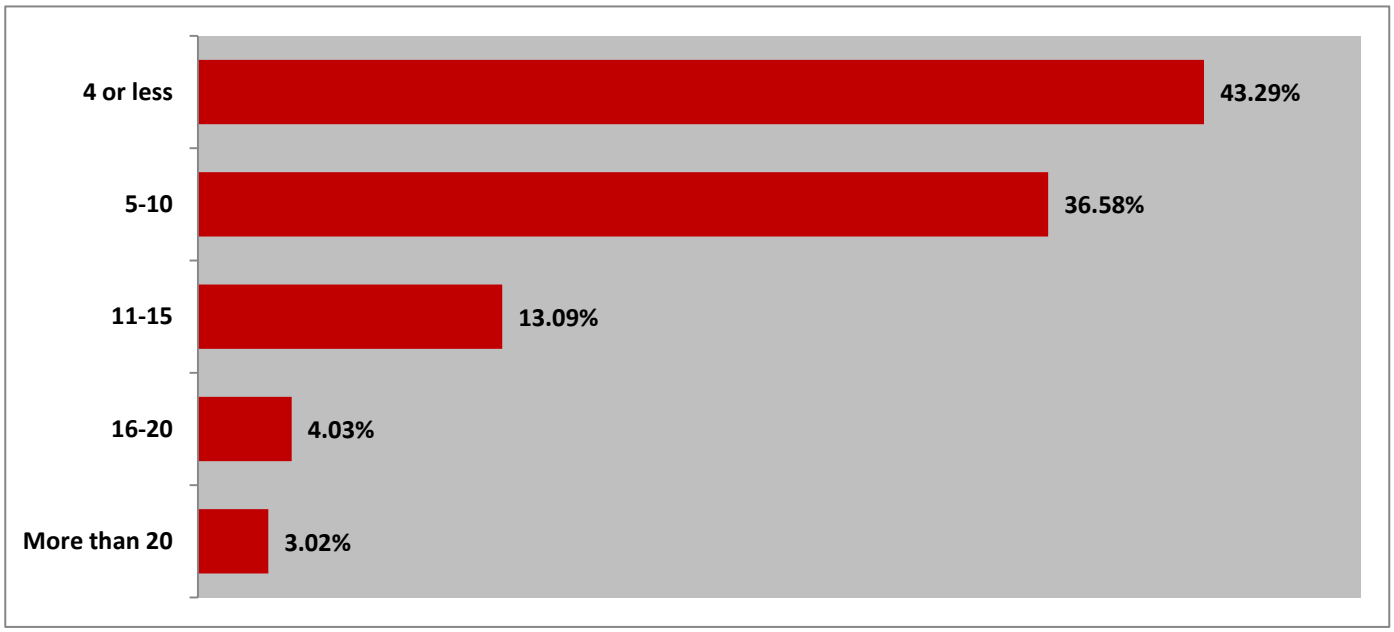
What is your preferred main course for Thanksgiving dinner? Other (please specify).
Verbatim Responses
Pizza
Game Hens
cheese fondue
chinese takeout
cornish hen
depends on what we want to cook
desserts
Don't celebrate and too poor too if I did.
eclectric
Enchiladas
Escargot/Crusty Baguettes/Ceasar salad
Fried chicken
i dont have anywhere to go
Lamb
Lasagna
Lobster
Not sure yet
Pork roast
tacos
Thai food
Turduckin
Turkey if we could afford
unknow
Vegan Main Dish
vegetables
Whatever is affordable

asked only of respondents who said they were having Thanksgiving dinner at their home

How many people will you be preparing dinner for?

QUESTION TOTAL:	298
DID NOT ANSWER:	0

	OPTIONS	TOTAL	PERCENT
O1	4 or less	129	43.29%
O2	5-10	109	36.58%
O3	11-15	39	13.09%
O4	16-20	12	4.03%
O5	More than 20	9	3.02%

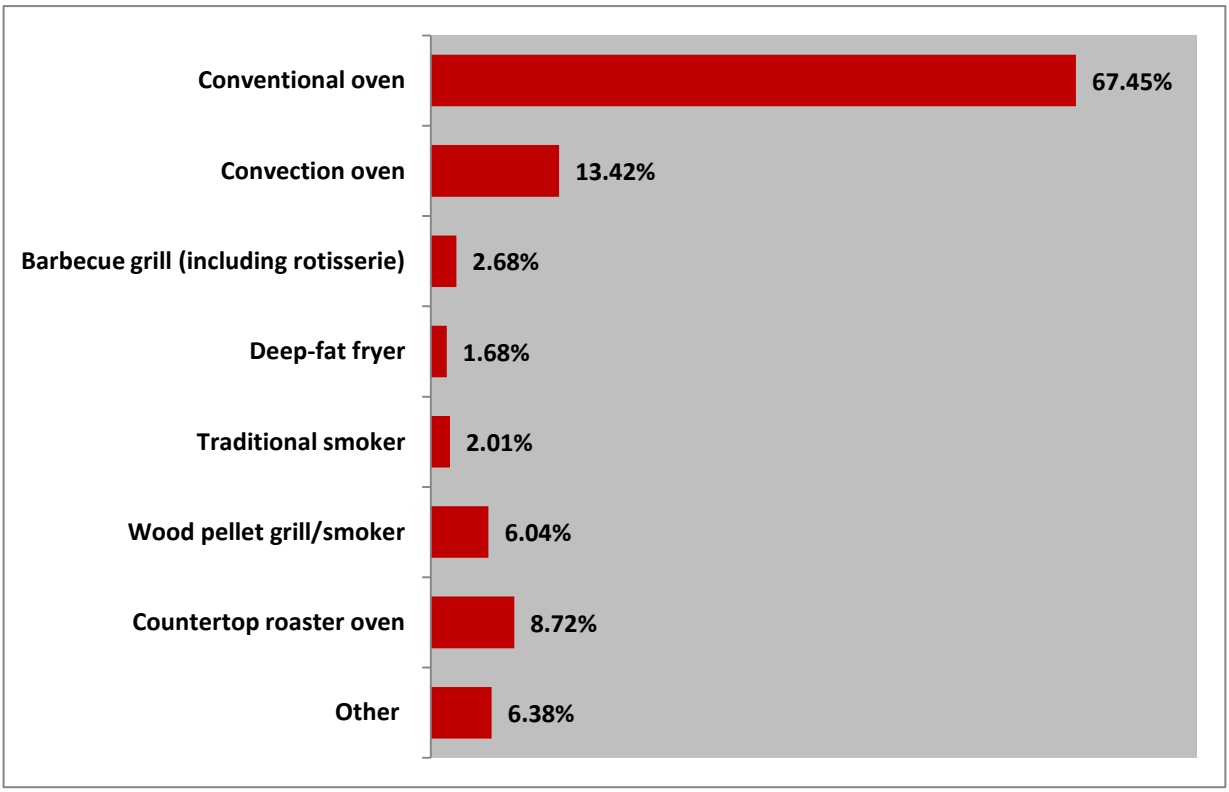


asked only of respondents who said they were having Thanksgiving dinner at their home

How will you prepare the main course for your Thanksgiving dinner (regardless of whether it is a turkey or other meat or meat alternative)?

QUESTION TOTAL:	298
DID NOT ANSWER:	0

	OPTIONS	TOTAL	PERCENT
O1	Conventional oven	201	67.45%
O2	Convection oven	40	13.42%
O3	Barbecue grill (including rotisserie)	8	2.68%
O4	Deep-fat fryer	5	1.68%
O5	Traditional smoker	6	2.01%
O6	Wood pellet grill/smoker	18	6.04%
O7	Countertop roaster oven	26	8.72%
O8	Other	19	6.38%



How will you prepare the main course for your Thanksgiving dinner? Other (please specify).

Verbatim Responses
crock pot
Big Easy Infrared fryer
cooktop
Crockpot
Crock-Pot
Dutch oven with charcoal briquettes
electric range
Grill no rotisserie
in a juicer
Induction cooktop
microwave
Microwave - Subway Turkey Sandwich heated up!
oven
someone else will prepare
stove top
Stove top (boiling water)
Turkey frying pot using propane burner
unknow

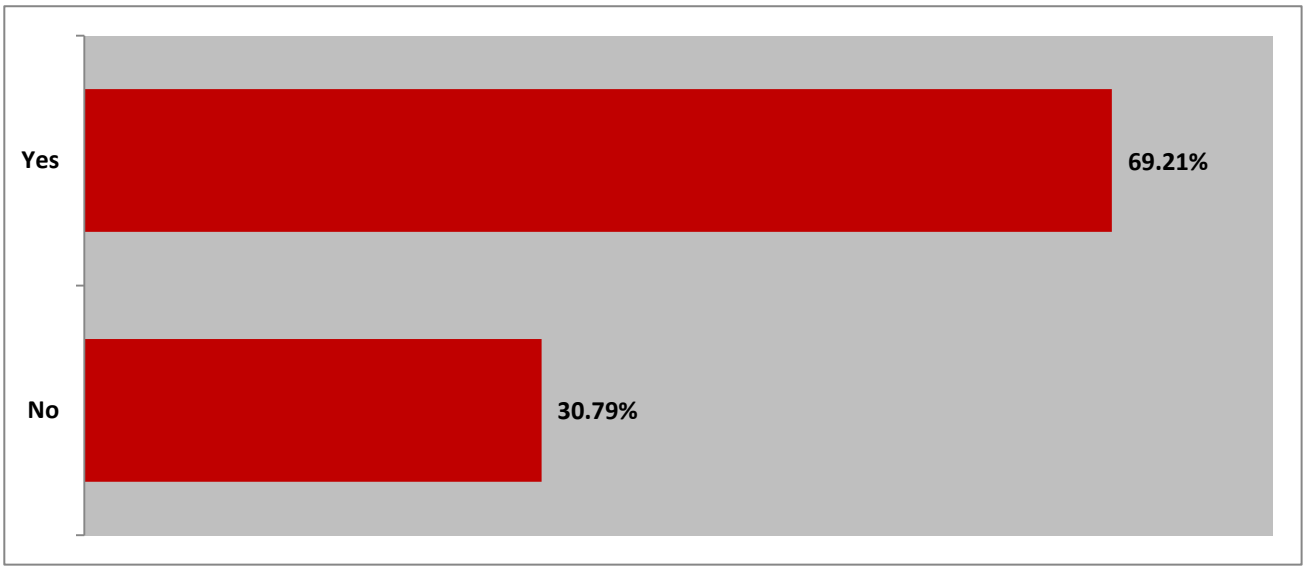
Energy Efficiency Tips offered related to cooking
Here are a few energy efficiency tips to consider while preparing your Thanksgiving dinner:
- Using a grill, countertop roaster, smoker or other means of cooking uses less energy than a conventional oven.
If you are using a conventional oven:
- Set the oven to the exact temperature you intend to use. The oven won't heat up any faster at a higher setting.
- Don't preheat the oven unless the recipe specifically calls for it. There's no need to preheat long-cooking foods like a turkey.
- Turn off the oven 10-15 minutes prior to completion. Your oven will maintain the temperature for that length of time.
- Limit the number of times you open the oven door. Every time you open it, the temperature drops about 25-30 degrees and more energy is used to generate the desired level of heat.
- Cook as many items in the oven as can be cooked at one time.

asked only of respondents who said they were going to a friend or family member's for Thanksgiving dinner

Will you be preparing any dishes at your home to take to Thanksgiving dinner at your friend's or family member's

QUESTION TOTAL:	302
DID NOT ANSWER:	0

	OPTIONS	TOTAL	PERCENT
O1	Yes	209	69.21%
O2	No	93	30.79%

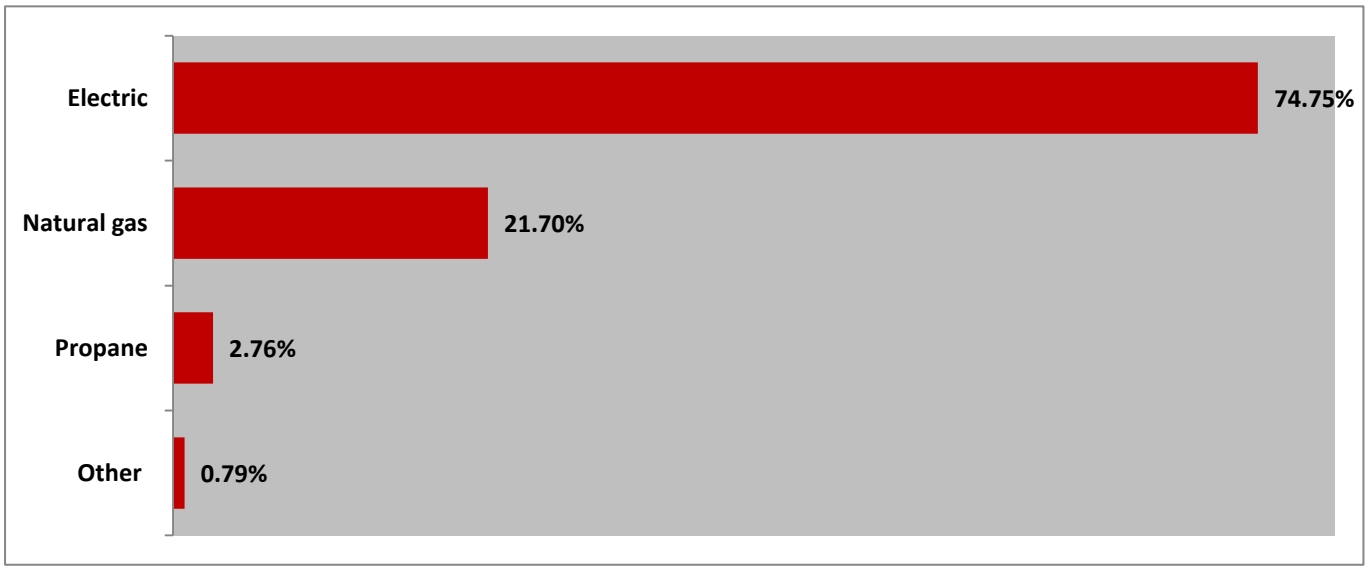


asked only of respondents who said they were cooking Thanksgiving dinner at their home or going to a friend or family member's for Thanksgiving dinner

What type of kitchen range do you have in your home?

QUESTION TOTAL:	507
DID NOT ANSWER:	0

	OPTIONS	TOTAL	PERCENT
O1	Electric	379	74.75%
O2	Natural gas	110	21.70%
O3	Propane	14	2.76%
O4	Other	4	0.79%



What type of kitchen range do you have in your home? Other (please specify).

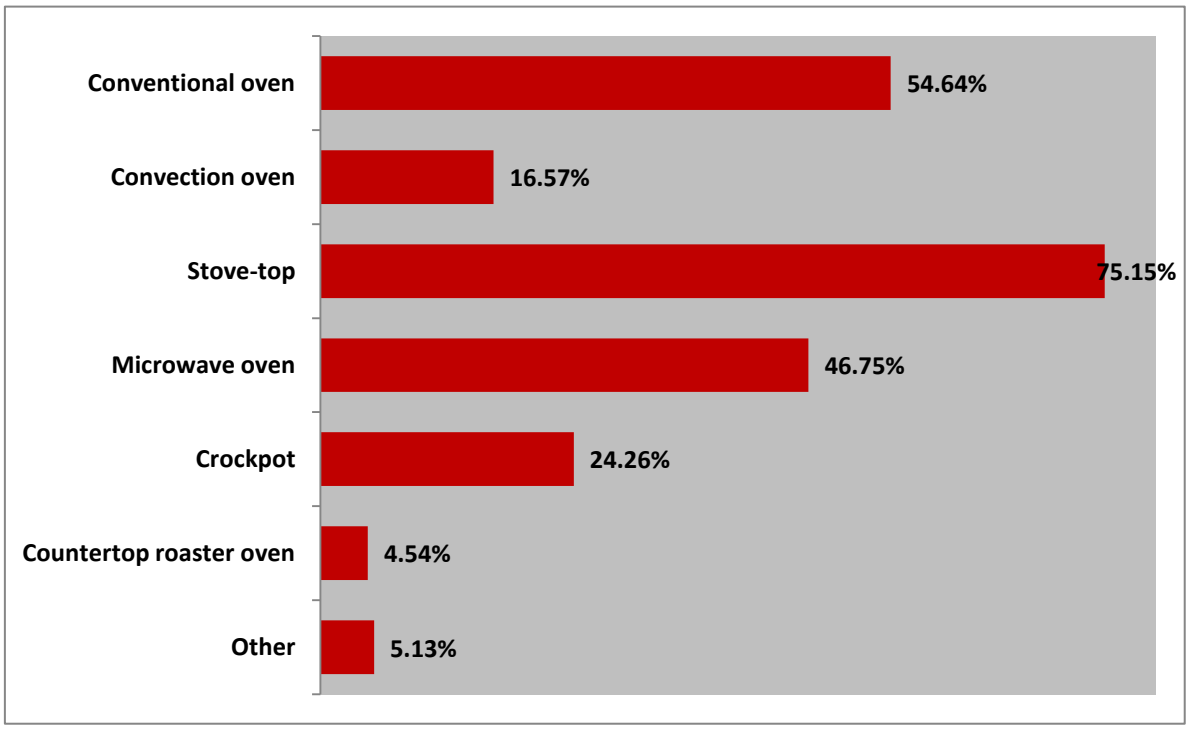
Verbatim Responses
Gas cooktop, electric wall oven
gas top, electric oven
Gas top, electric oven (propane)
NGas top, Elec oven

asked only of respondents who said they were cooking Thanksgiving dinner at their home or going to a friend or family member's for Thanksgiving dinner

Which of the following appliances will you use to prepare side-dishes for your Thanksgiving dinner?

QUESTION TOTAL: 507
DID NOT ANSWER: 0

	OPTIONS	TOTAL	PERCENT
O1	Conventional oven	277	54.64%
O2	Convection oven	84	16.57%
O3	Stove-top	381	75.15%
O4	Microwave oven	237	46.75%
O5	Crockpot	123	24.26%
O6	Countertop roaster oven	23	4.54%
O7	Other	26	5.13%



Which of the following appliances will you use to prepare side-dishes for your Thanksgiving dinner? Other (please specify).

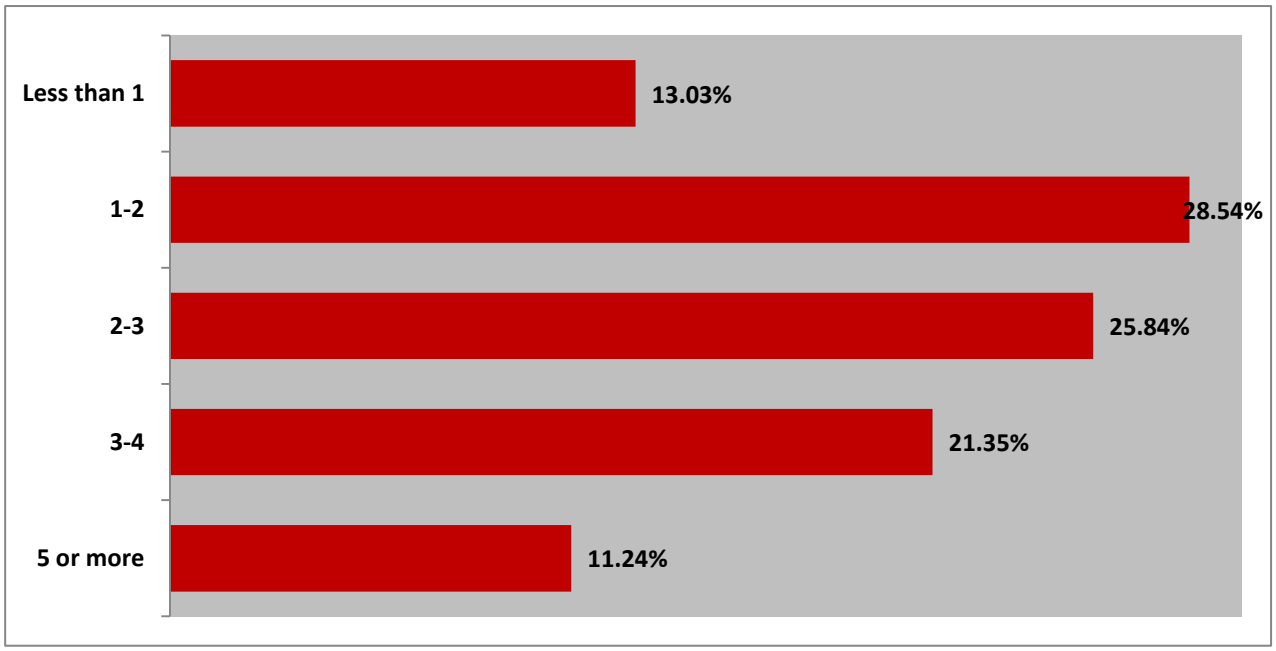
Verbatim Responses
refrigerator
barbecue
BBQ
blenders/mixers
Conduction cooktop.
Egg boiler
George Foreman Grill
Griddle
Grill no rotisserie
I will take a cold dish
Induction Plate
infared
juicer
no cooking required
none
none - salad and cranberry sauce
none, all cold items
Pressure cooker
Propane Turkey Fryer
Salad components from refrigerator
Solar Oven (if sunny)
take along and prepare there
toaster oven
Traeger
Treager Grill

asked only of respondents who said they were cooking Thanksgiving dinner at their home or going to a friend or family member's for Thanksgiving dinner

Approximately how many hours do you estimate you will be using your oven and/or stovetop to prepare your Thanksgiving dishes?

QUESTION TOTAL: 445
DID NOT ANSWER: 0

	OPTIONS	TOTAL	PERCENT
O1	Less than 1	58	13.03%
O2	1-2	127	28.54%
O3	2-3	115	25.84%
O4	3-4	95	21.35%
O5	5 or more	50	11.24%



Energy Efficiency Tips offered related to cooking

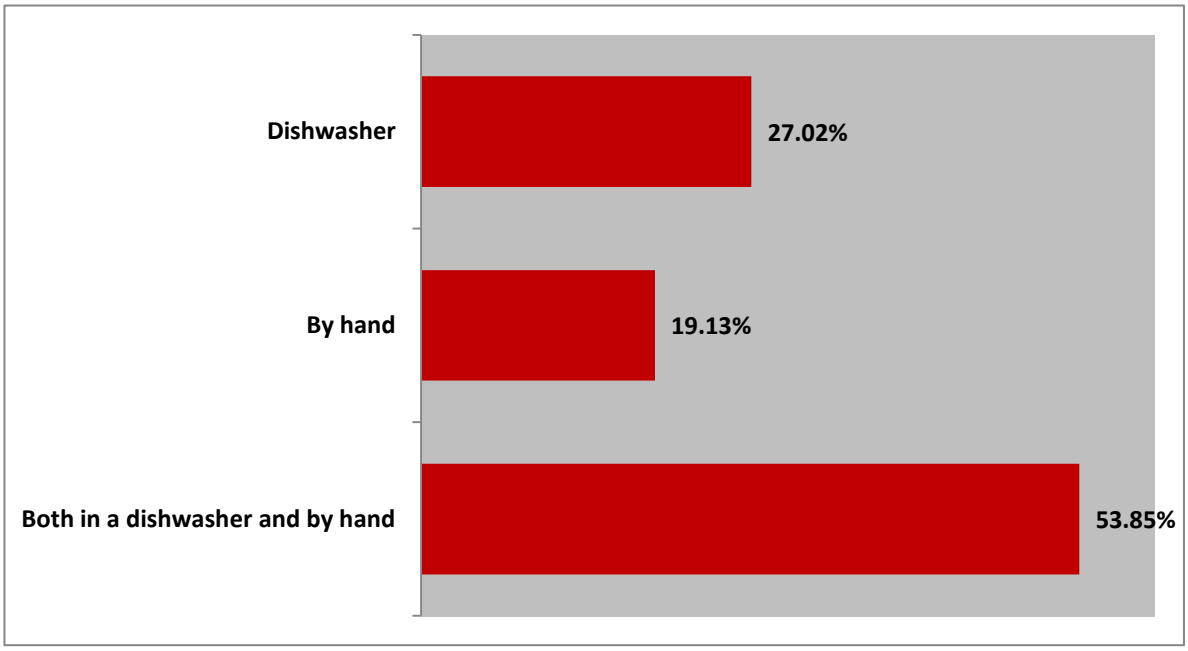
More energy efficiency tips:
- If you use the stovetop...
  * Remember to put lids on pots and pans to prevent heat loss.
  * Match the pot to the size of the burner to prevent heat from escaping around the sides.
  * Use the lowest-possible heat setting necessary to cook foods.
- Using glass baking or roasting dishes helps retain the heat better, helps food cook faster and you can usually use a
- Using a microwave, crockpot, pressure cooker, toaster oven or countertop roaster helps reduce your energy use.
- Keeping the inside of your microwave clean, improves the efficiency of microwave heating.

asked only of respondents who said they were cooking Thanksgiving dinner at their home or going to a friend or family member's for Thanksgiving dinner

How do you wash dishes at your home?

QUESTION TOTAL:	507
DID NOT ANSWER:	0

	OPTIONS	TOTAL	PERCENT
O1	Dishwasher	137	27.02%
O2	By hand	97	19.13%
O3	Both in a dishwasher and by hand	273	53.85%

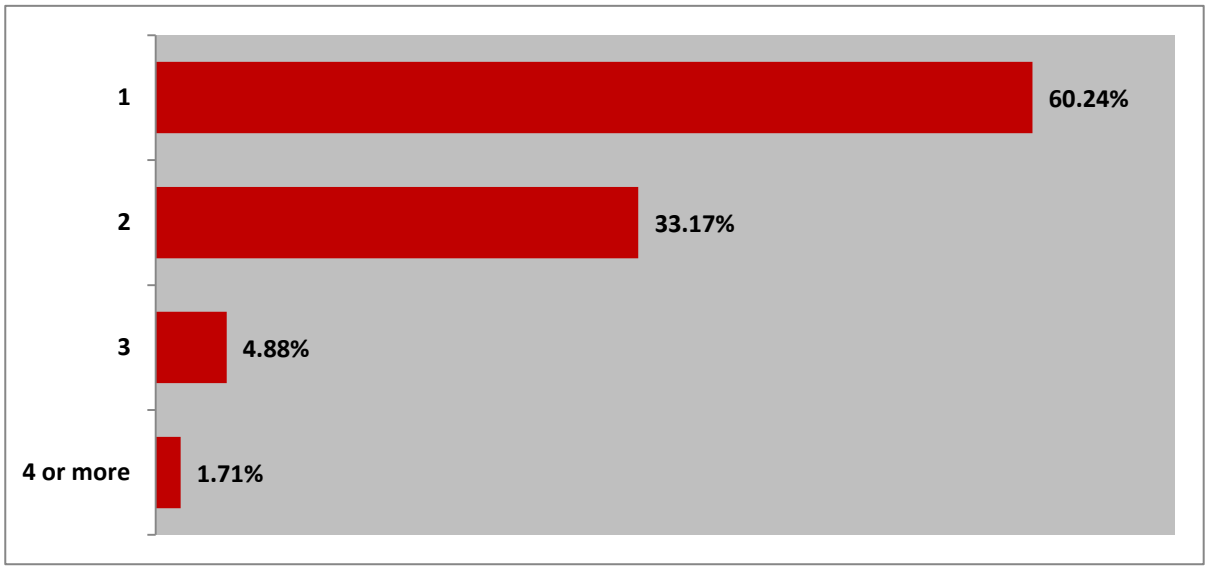


asked only of respondents who said they use a dishwasher to wash dishes

Approximately how many loads of dishes do you anticipate washing in your dishwasher related to preparing and serving Thanksgiving dinner?

QUESTION TOTAL:	410
DID NOT ANSWER:	0

	OPTIONS	TOTAL	PERCENT
O1	1	247	60.24%
O2	2	136	33.17%
O3	3	20	4.88%
O4	4 or more	7	1.71%

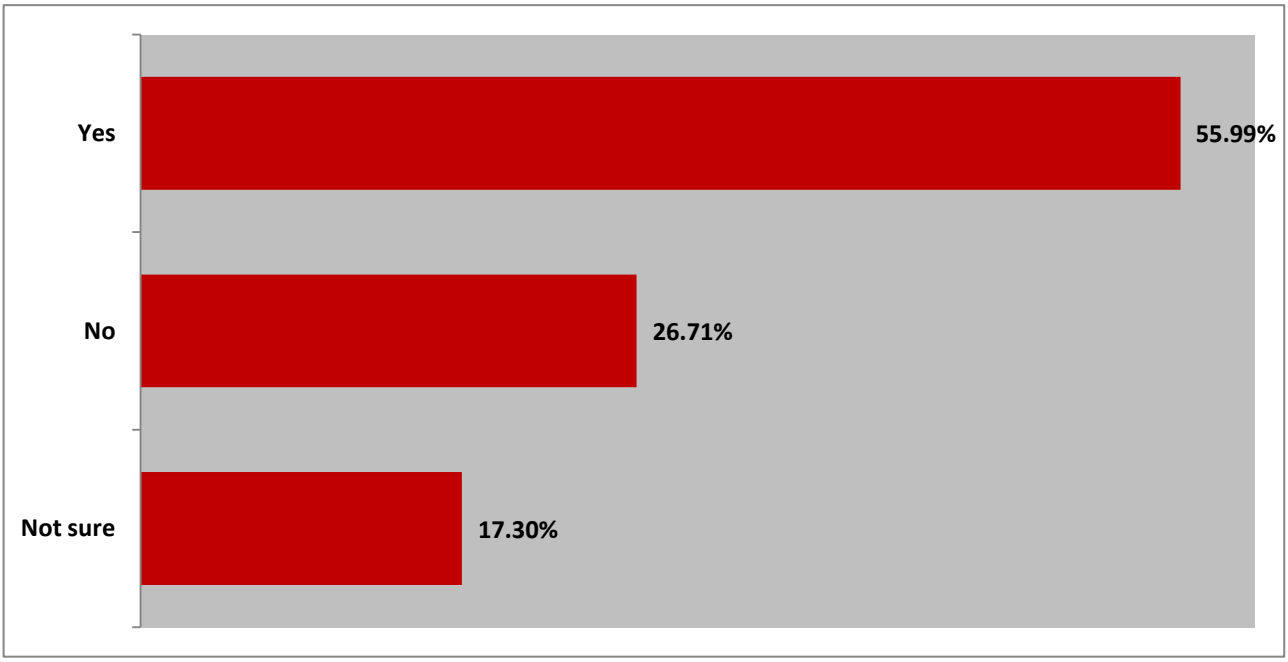


Energy Efficiency Tip offered related to washing dishes
Remember to always wash full loads of dishes in your dishwasher for highest efficiency!

Will you, your family and/or your guests be watching parades or football games on TV on Thanksgiving Day?

QUESTION TOTAL:	659
DID NOT ANSWER:	0

	OPTIONS	TOTAL	PERCENT
O1	Yes	369	55.99%
O2	No	176	26.71%
O3	Not sure	114	17.30%

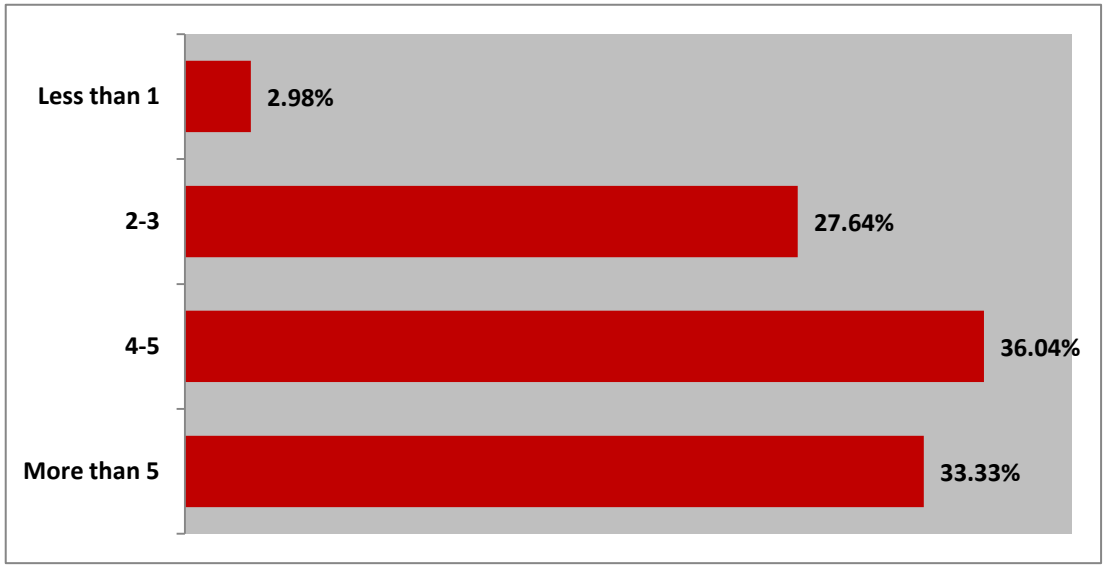


asked only of respondents who said they would be watching TV

Approximately how many hours do you estimate your television will be on during Thanksgiving Day?

QUESTION TOTAL:	369
DID NOT ANSWER:	0

	OPTIONS	TOTAL	PERCENT
O1	Less than 1	11	2.98%
O2	2-3	102	27.64%
O3	4-5	133	36.04%
O4	More than 5	123	33.33%



Energy Efficiency Tip offered related to watching TV
Remember to turn off the television and lights when no one is in the room.

empowered community

Thermostatic Shut-off Valve Study

Final Results

November 8, 2016

Survey was sent to 1021 em**powered** community members
Participation rate was 67%
Survey was sent to all em**powered** community members regardless of heat source
Customers were dropped from the survey at three different decision points:

1. No shower in home
2. Do not warm up shower prior to getting in
3. Warm up shower using tub spout only

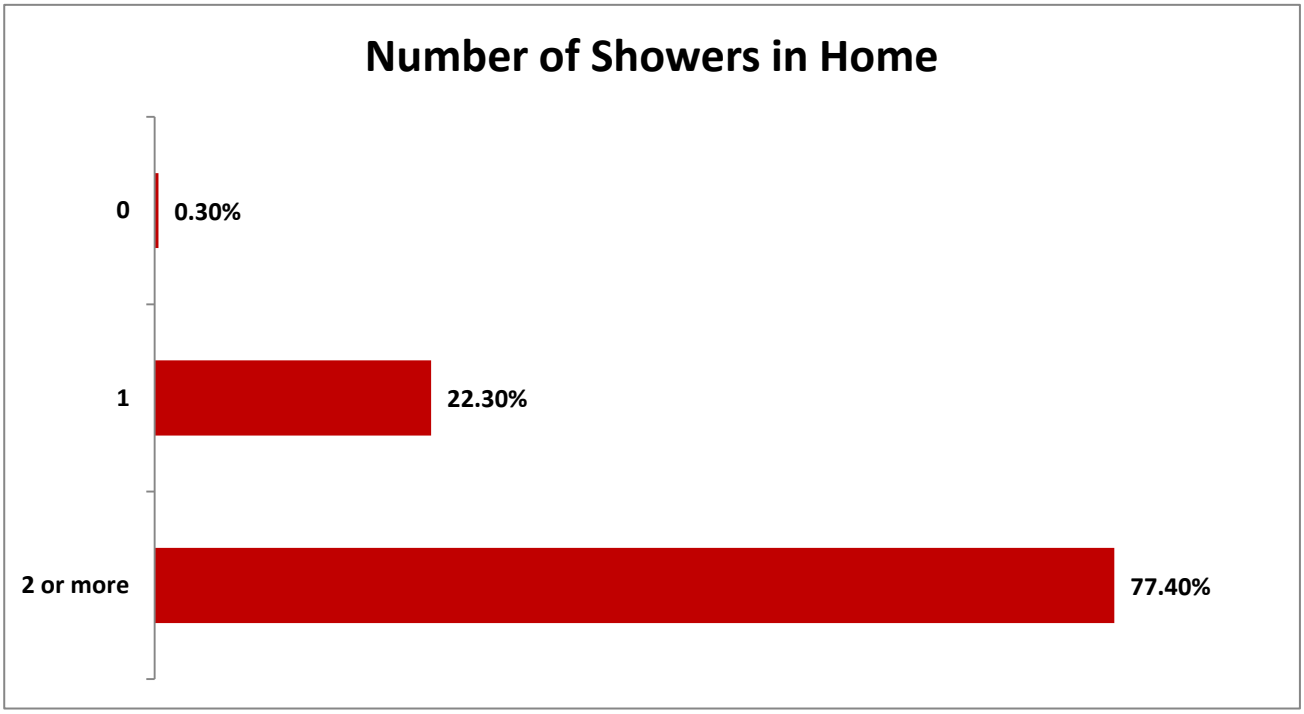
Respondent data

89% homeowners / 11% renters
49% male / 51% female
22% from CanyonWest region / 54% from Capital region / 23% from SouthEast region
28% from electrically heated homes / 64% from natural gas heated homes / 8% from homes heated by other fuel sources

How many showers do you have in your home?

QUESTION TOTAL:	677
DID NOT ANSWER:	0

	OPTIONS	TOTAL	PERCENT
O1	0	2	0.30%
O2	1	151	22.30%
O3	2 or more	524	77.40%



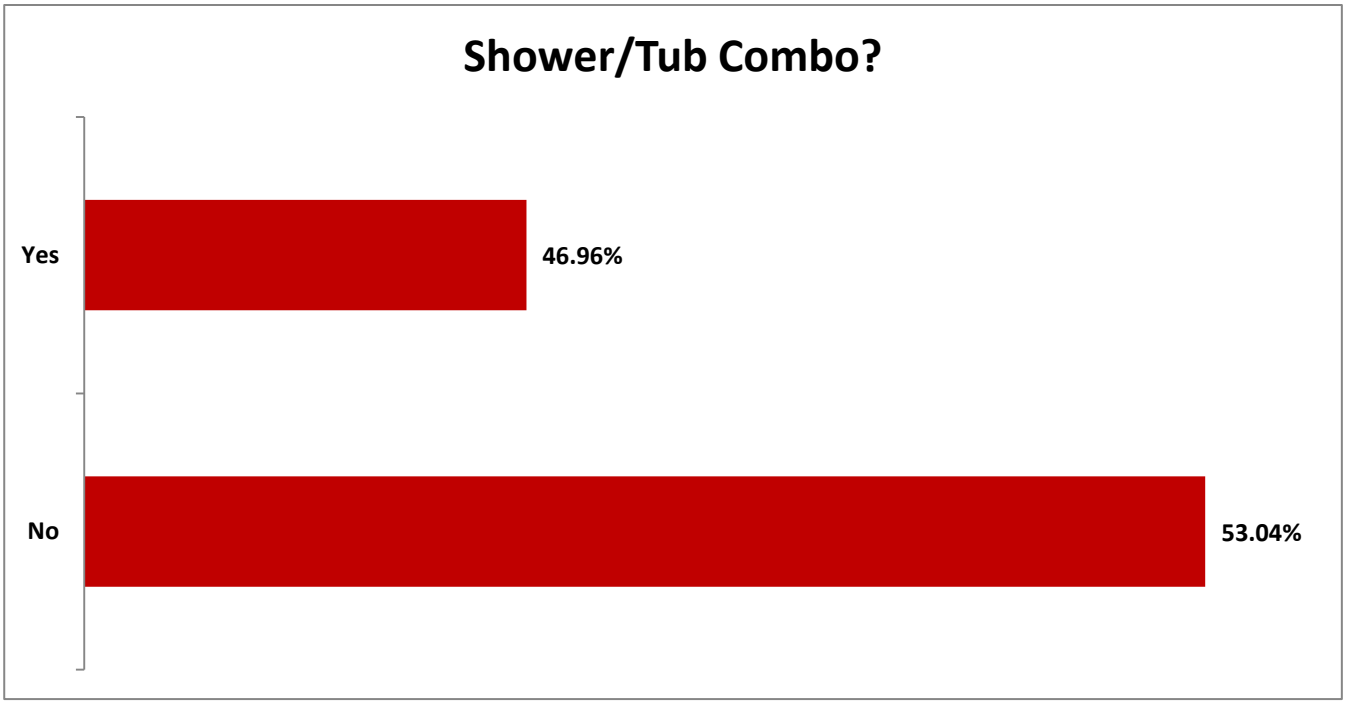
Asked only of respondents with at least one shower in the home

Please answer the following questions about the shower you yourself use most often in your home

Is it a shower/tub combination?

QUESTION TOTAL:	675
DID NOT ANSWER:	0

	OPTIONS	TOTAL	PERCENT
O1	Yes	317	46.96%
O2	No	358	53.04%



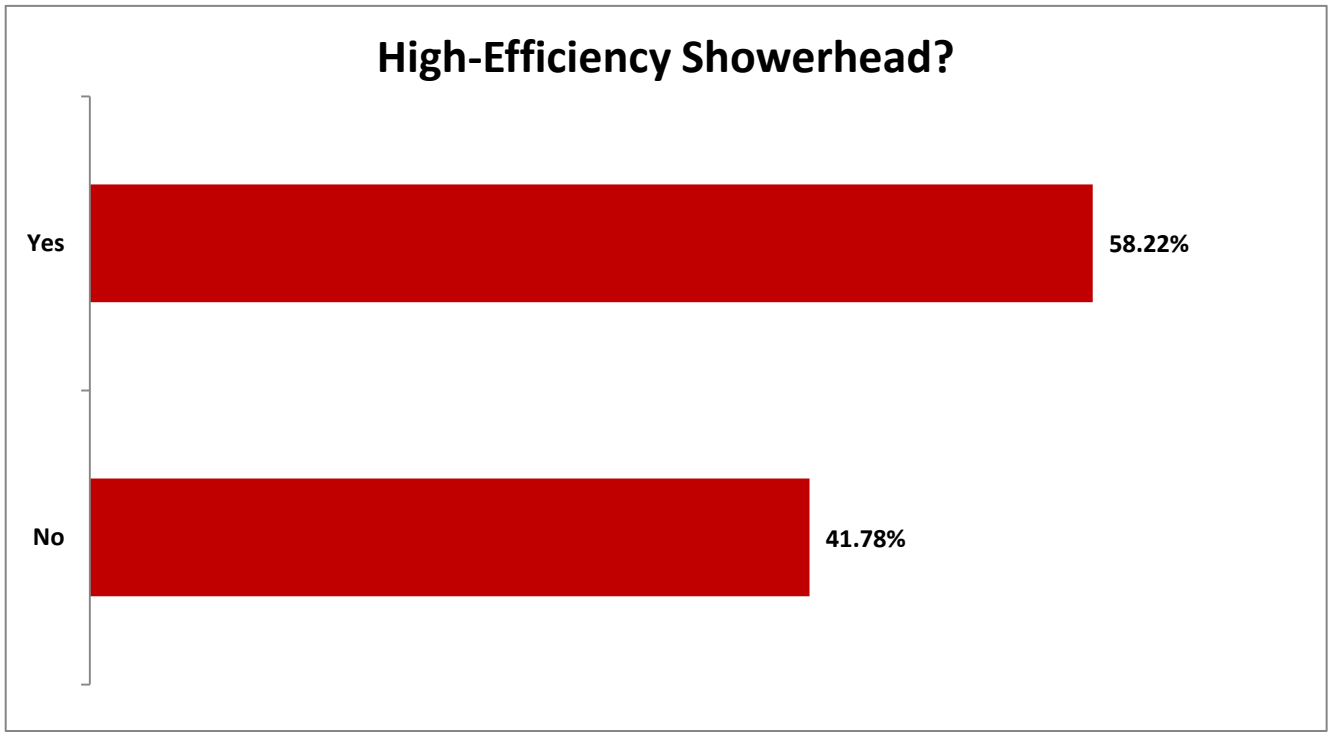
Asked only of respondents with at least one shower in the home

Please answer the following questions about the shower you yourself use most often in your home

Does it have a high-efficiency showerhead?

QUESTION TOTAL:	675
DID NOT ANSWER:	0

	OPTIONS	TOTAL	PERCENT
O1	Yes	393	58.22%
O2	No	282	41.78%



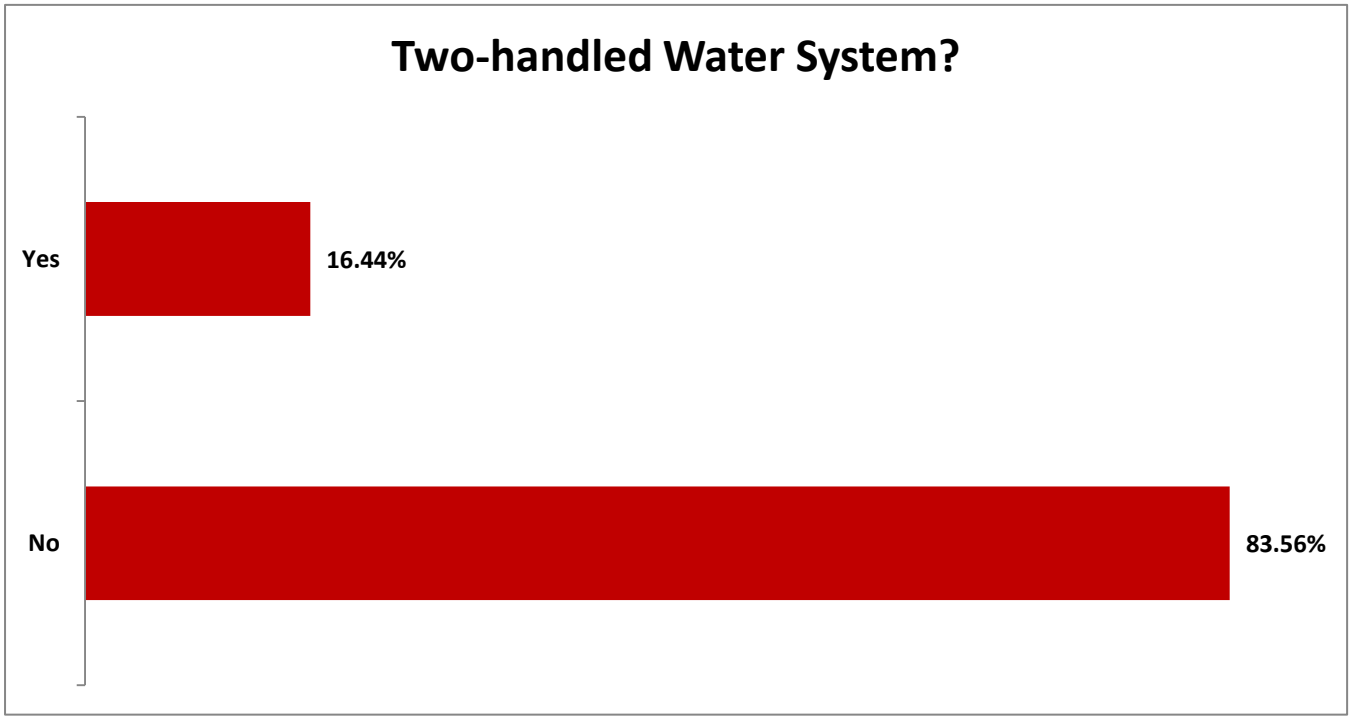
Asked only of respondents with at least one shower in the home

Please answer the following questions about the shower you yourself use most often in your home

Does it have a two-handled water system where one handle is for hot water and the other is for cold water?

QUESTION TOTAL:	675
DID NOT ANSWER:	0

	OPTIONS	TOTAL	PERCENT
O1	Yes	111	16.44%
O2	No	564	83.56%

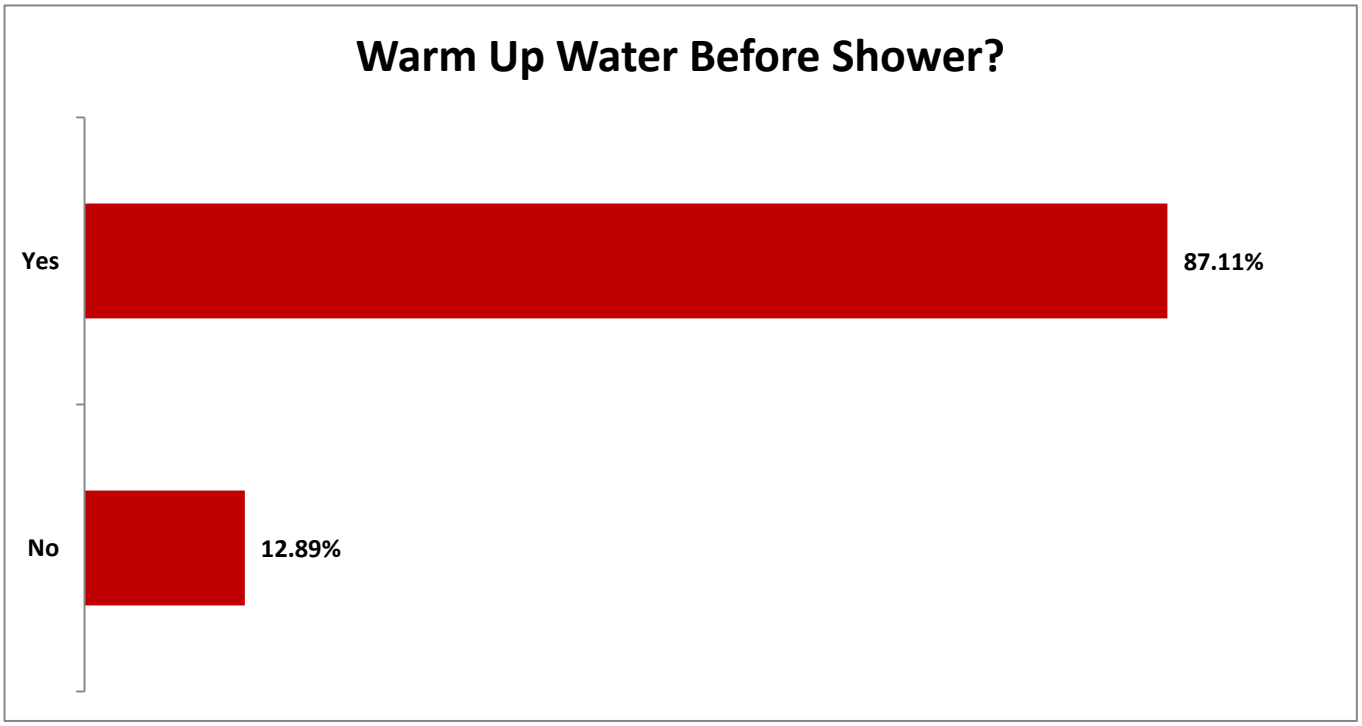


Those with more than one shower were instructed to respond based on the shower they use and their personal shower behaviors.

Do you turn the water on to warm up prior to getting in the shower?

QUESTION TOTAL:	675
DID NOT ANSWER:	0

	OPTIONS	TOTAL	PERCENT
O1	Yes	588	87.11%
O2	No	87	12.89%

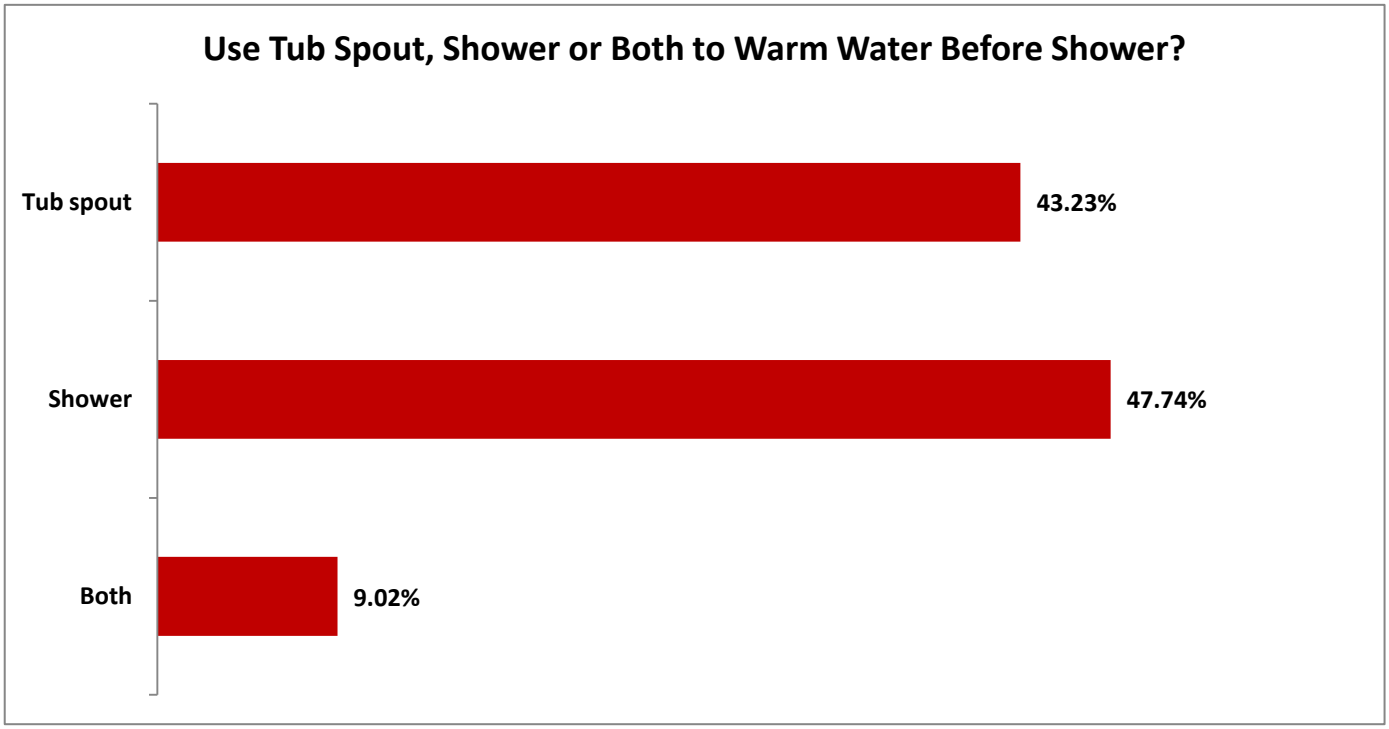


Asked only of respondents that have a tub/shower combo
Asked only of respondents who say they warm the water up prior to getting in the shower
Those with more than one shower were instructed to respond based on the shower they use and their personal shower behaviors.

Do you warm the water up using the tub spout or the shower?

QUESTION TOTAL:	266
DID NOT ANSWER:	0

	OPTIONS	TOTAL	PERCENT
O1	Tub spout	115	43.23%
O2	Shower	127	47.74%
O3	Both	24	9.02%

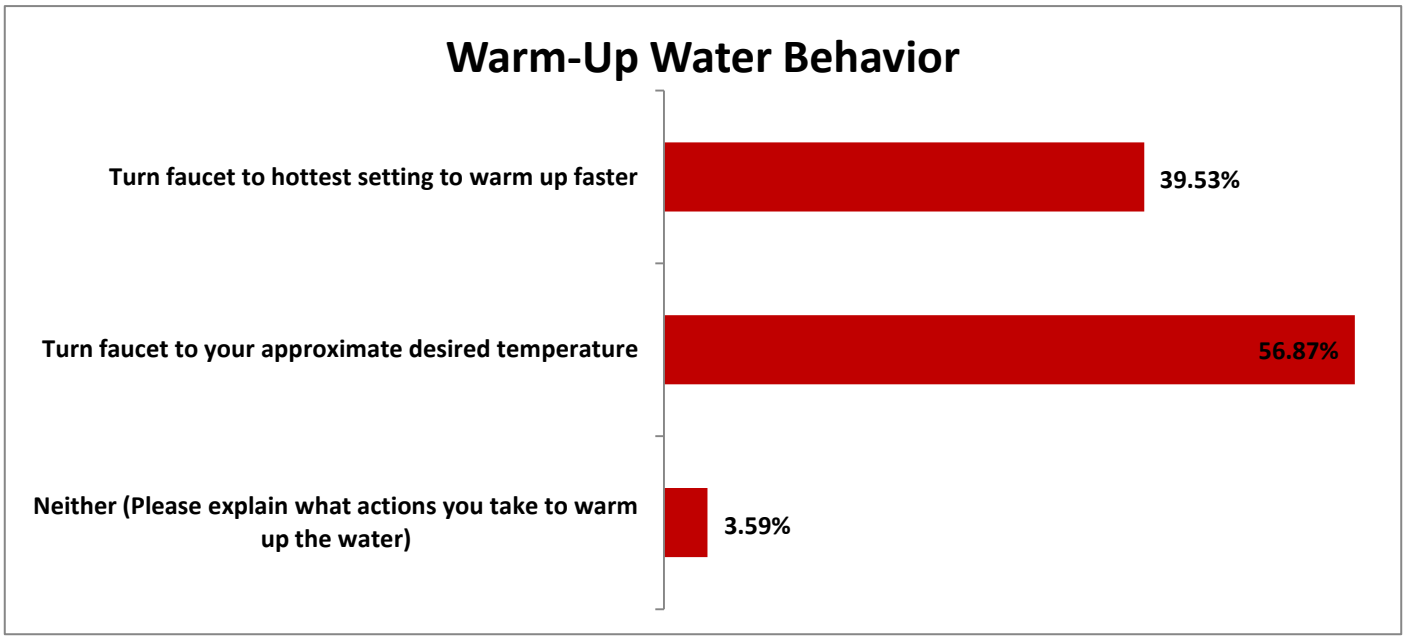


Asked only of respondents who say they warm the water up prior to getting in the shower
Those with more than one shower were instructed to respond based on the shower they use and their personal shower behaviors.

When you turn on the water to warm up, which of the following actions do you take?

QUESTION TOTAL:	473
DID NOT ANSWER:	0

	OPTIONS	TOTAL	PERCENT
O1	Turn faucet to hottest setting to warm up faster	187	39.53%
O2	Turn faucet to your approximate desired temperature	269	56.87%
O3	Neither (Please explain what actions you take to warm up the water)	17	3.59%



(Please explain what actions you take to warm up the water)

Verbatim Responses
Hotter than normal but not max
I set the temp on the dial for my tankless water heater and turn the hot water on.
I turn the water to full hot, but I have shower heads that shut off once the water gets hot. When ready to shower a reset is ativated to
It takes less than half a gallon to get warm
Run it into bucket to use for toilet flushing
step in tub section and wait for cold to became luke warm
The temp is preset.
Turn it about 2/3rd full hot
Turn my sink faucet on
Turn on Sink Faucet while shaving. Hot only
Turn on the hot water only and when it gets to tub, adjust temp using cold and get in.
Turn the facet to a little past the tempature that I use to shower with
Turn to hot and capture water while it heats up.
Turn to slightly warmer than normal setting.
Water temperature is preset by the faucet

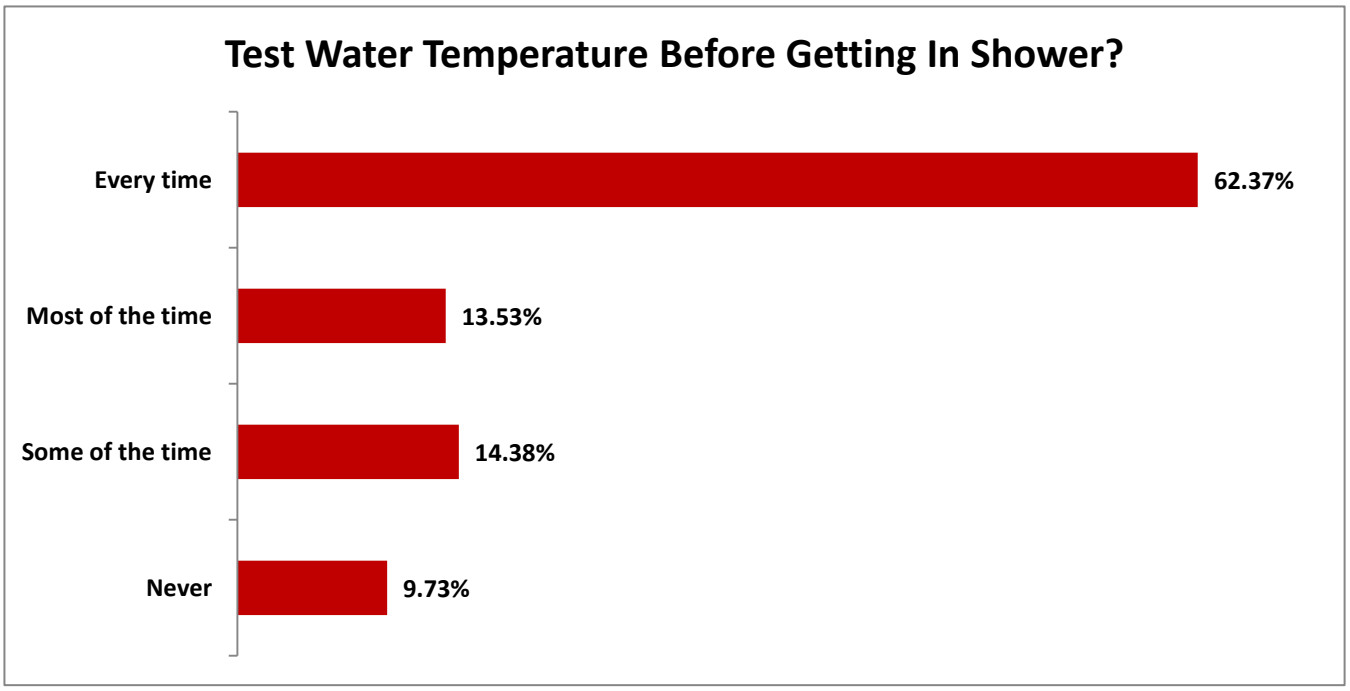
When it starts to get warm I get in, and when it gets too hot I quit

Asked only of respondents who say they warm the water up prior to getting in the shower
Those with more than one shower were instructed to respond based on the shower they use and their personal shower behaviors.

How frequently do you test the temperature of the water and adjust it before getting in the shower?

QUESTION TOTAL:	473
DID NOT ANSWER:	0

	OPTIONS	TOTAL	PERCENT
O1	Every time	295	62.37%
O2	Most of the time	64	13.53%
O3	Some of the time	68	14.38%
O4	Never	46	9.73%

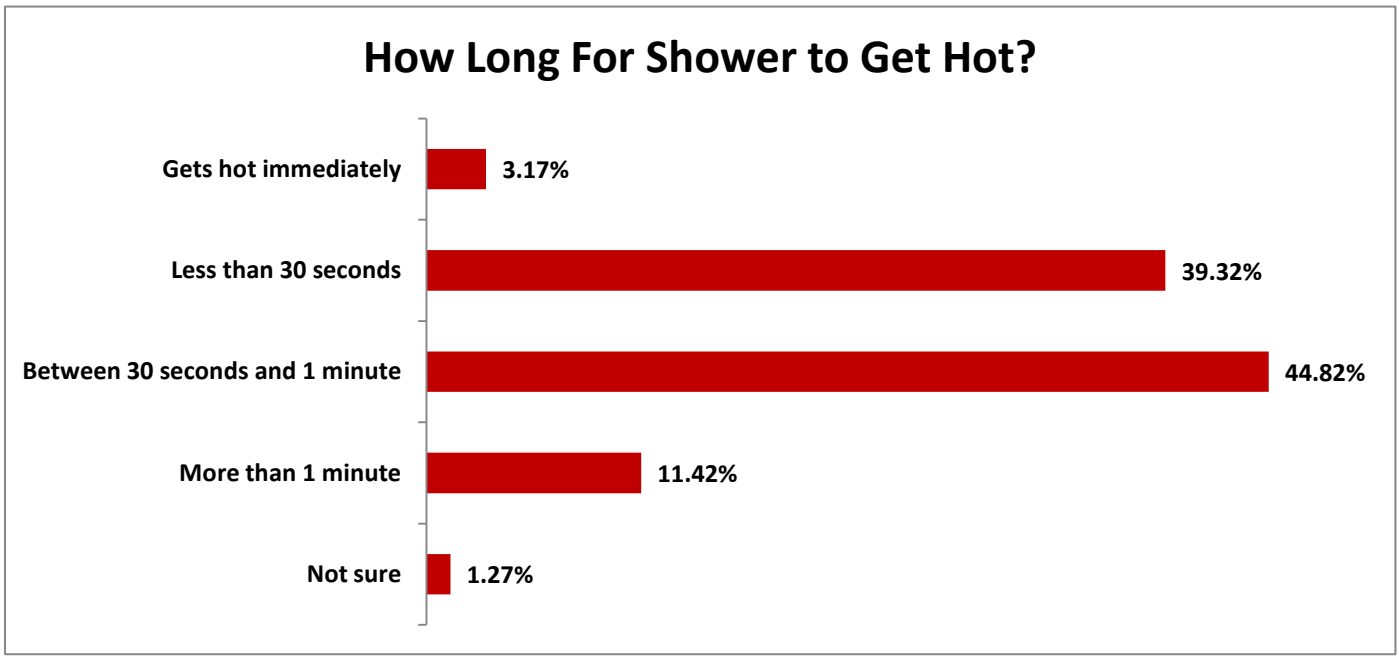


Asked only of respondents who say they warm the water up prior to getting in the shower
Those with more than one shower were instructed to respond based on the shower they use and their personal shower behaviors.

Approximately how long does it take for the water in this shower to reach your desired temperature?

QUESTION TOTAL:	473
DID NOT ANSWER:	0

	OPTIONS	TOTAL	PERCENT
O1	Gets hot immediately	15	3.17%
O2	Less than 30 seconds	186	39.32%
O3	Between 30 seconds and 1 minute	212	44.82%
O4	More than 1 minute	54	11.42%
O5	Not sure	6	1.27%

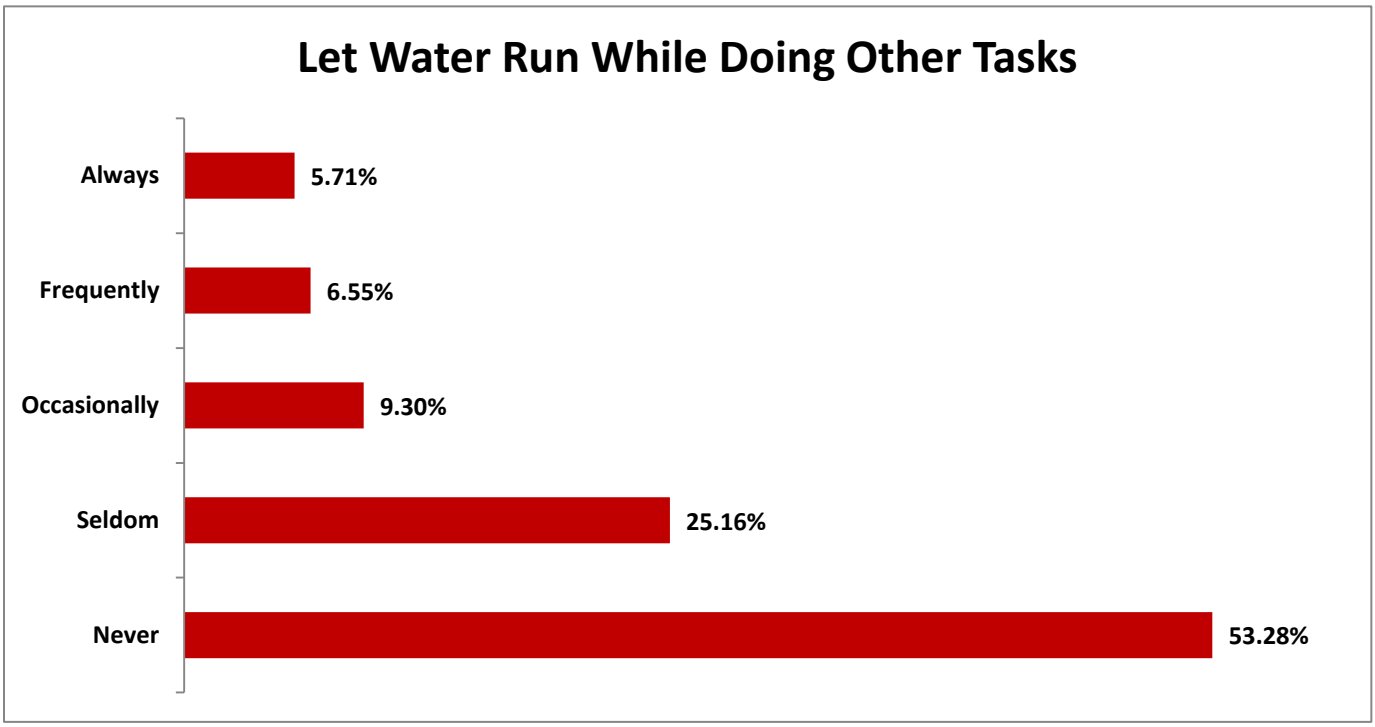


Asked only of respondents who say they warm the water up prior to getting in the shower
Those with more than one shower were instructed to respond based on the shower they use and their personal shower behaviors.

How frequently would you say you let the water run a bit before you get in the shower while you do others tasks like perhaps brushing your teeth, getting a cup of coffee, picking out your clothes for the day, etc.?

QUESTION TOTAL:	473
DID NOT ANSWER:	0

	OPTIONS	TOTAL	PERCENT
O1	Always	27	5.71%
O2	Frequently	31	6.55%
O3	Occasionally	44	9.30%
O4	Seldom	119	25.16%
O5	Never	252	53.28%

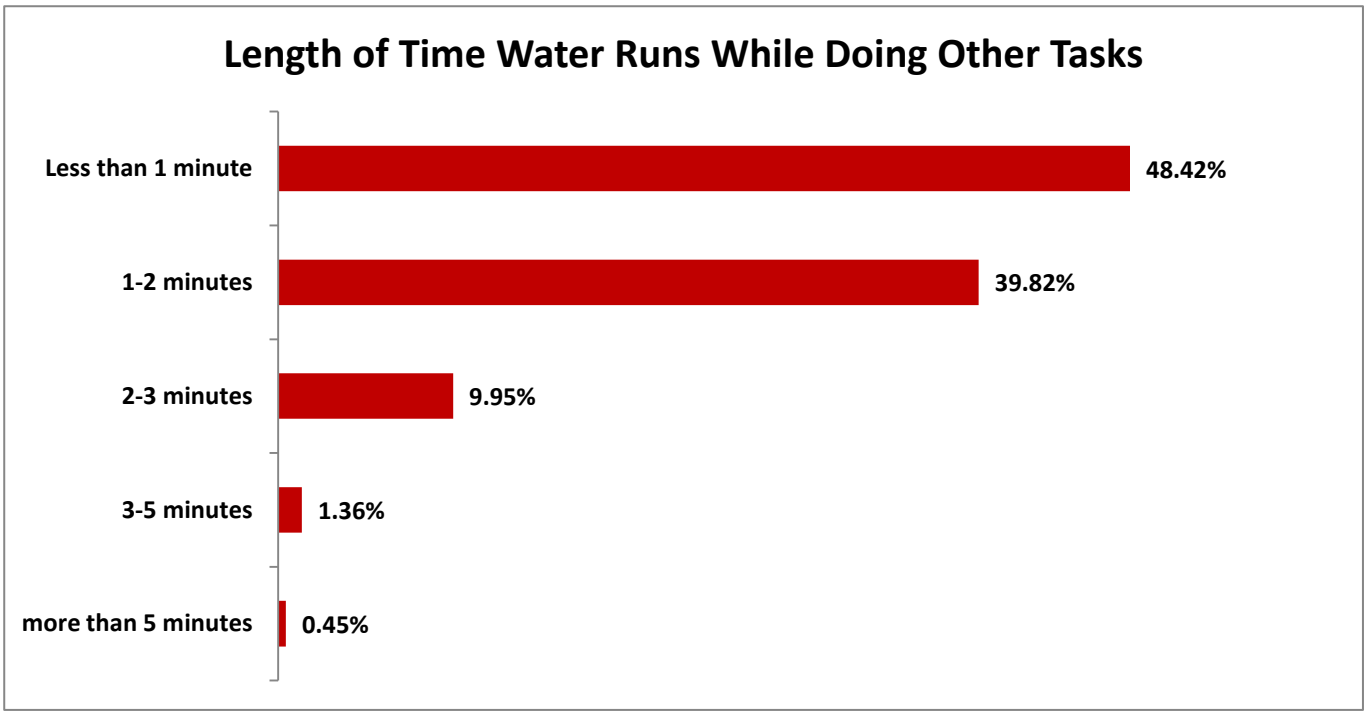


Asked only of respondents who say they warm the water up prior to getting in the shower
Asked Only of respondents who say they do other tasks while water is warming up
Those with more than one shower were instructed to respond based on the shower they use and their personal shower behaviors.

Approximately how long would you estimate the water typically runs before you get in the shower?

QUESTION TOTAL: 221
DID NOT ANSWER: 0

	OPTIONS	TOTAL	PERCENT
O1	Less than 1 minute	107	48.42%
O2	1-2 minutes	88	39.82%
O3	2-3 minutes	22	9.95%
O4	3-5 minutes	3	1.36%
O5	more than 5 minutes	1	0.45%



Asked only of respondents who say they warm the water up prior to getting in the shower
Those with more than one shower were instructed to respond based on the shower they use and their personal shower behaviors.

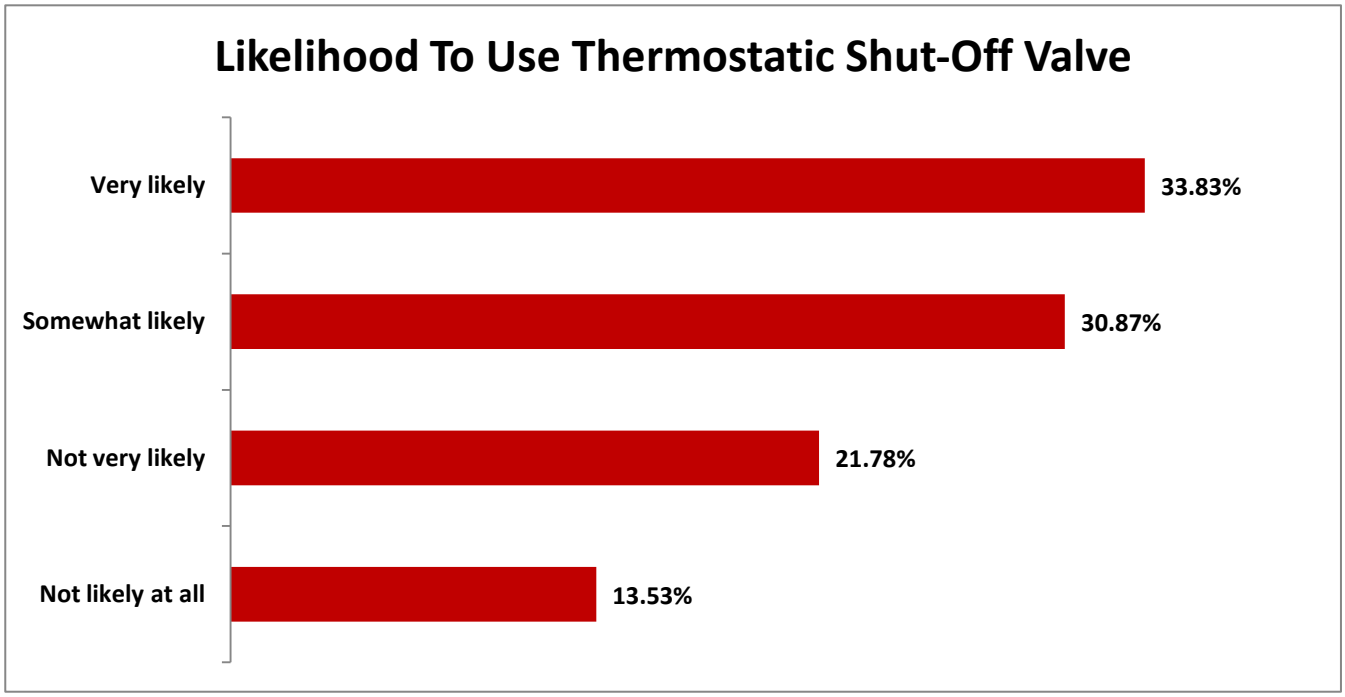
As part of its energy efficiency programs, Idaho Power is investigating a thermostatic shut-off valve to help eliminate hot-water waste. The shut-off valve is easy to install behind most showerheads. It allows cold water to flow out of the showerhead when the shower is first turned on, then, once the temperature of the water reaches 95 degrees, it shuts off the flow of water until you are ready to shower. When you are ready, you simply pull the cord and the shower will return to full pressure.

Below is an example of a thermostatic shut-off valve:

How likely would you be to use a thermostatic shut-off shower valve in your home (for you or anyone else in your household)?

QUESTION TOTAL:	473
DID NOT ANSWER:	0

	OPTIONS	TOTAL	PERCENT
O1	Very likely	160	33.83%
O2	Somewhat likely	146	30.87%
O3	Not very likely	103	21.78%
O4	Not likely at all	64	13.53%



Why would you not be interested in a thermostatic shut-off valve?

QUESTION TOTAL:	153
DID NOT ANSWER:	0

Verbatim Responses
Installation
A step that seems unecssasary.
Adds complexity. As soon as the water is hot I begin to wash.
Aesthetically, it fails every mantra in the book. If you can get a shut-off valve with a pull string to be idolized in a Better Homes & Gardens-style magazine, then maybe it would have more wife-acceptance-factor.
Already pretty careful not to run shower unnecessarily.
Although it's sad to admit it, our shower head has a specific style that clashes with the style of the shut-off valve. And we jump in the shower right at the time it heats up (we don't let it run hot without us in it).
As soon as the water is at the wanted temperature, I get in.
As soon as the water is warm enough, I get in, this device would turn off the water when I'm getting in.
As soon as the water warms, I'm in the shower anyways
Basically, I do the same function and sometimes enter the shower even before the temperature reaches what the valve is set at. Also, it's a minor inconvenience to have to pull a string and still have to adjust the temperature.
Because as soon as the water gets warm enough i get into the shower.
because I get right into the shower now. The water warms right away.
Because I stand in the shower but out of the water flow until it's hot, then step into the water immediately. I also turn off the water while applying soap or shampoo. So I don't think I need an extra device. I am sorry that I can't control the amount of water that flows out of the shower head.
Because I use the sink hot faucet to shave. Then turn on shower and get in. It is seconds until the shower water hits 95.
because we start the shower and get right in.
being I turn on the hot water faucet first then the cold then check the temp and might need minor adjustment in all is only a few seconds, then get in the shower, so don't see the need for it.
clutter, hassle, wouldn't use
cost, appearance, another thing to go wrong
Don't feel it would make any difference
don't need
Don't need it
Don't need it. You provide the electricity, I will decide how to use it!!
Don't see a need, the shower only takes a few seconds to warm up.
Don't see the need
Don't want to
Fine the way it is.
for my personal experience, it's like tripping over dollars to save pennies. Not a good use of money for us. Other habits may have different results
gadgets complicate things
Generally get right in the shower with minimal warm up time.
hassle to install
Have a tankless water heater,don't need a valve like that.
have it rigged so we get hot water quickly, so never takes very long; don't wait very long before get in
Hot water comes quick enough that it doesn't sound like much savings would be realized.
I am at the shower attending it waiting for it to warm up. You already asked this question earlier

I am more interested in a recirculating system for the shower and a electrical heater at each of the taps in the house.
I am not sure if it would be economical. What would be the cost to install the device?
I am standing near the shower as it is warming up and once warm may only run for 30 seconds prior to stepping in.
I control the temperature and make my shower as short as possible, while running adequate water to do my purposes. I've lived in CA and HATED what they do to you.
I do not think we waste hot water and that it is necessary
I don't believe it would be beneficial.
I don't do anything else while waiting for the temperature to come up
I don't feel I waste water, I get in the shower immediately when the water is warm enough. I don't see the need.
I don't feel that I waste water.
I don't just let the shower run. Once it gets warm enough, I get in.
I don't leave the hot water running for more than a few seconds.
I don't let the water run long enough to make a difference.
I don't let the water run very long before getting in. Sounds like it would be a hassle to deal with.
I don't like putting low flow or any valves on my water faucets.
I don't need any extra complication to my morning and I don't see that it would save enough to be worth the extra hassle.
I don't run water that long
I don't see that it would have much value in my situation.
I don't take hot showers, in fact I usually shower in cool water.
I don't think I waste hot water. I get in as soon as it's hot most of the time.
I don't think it's necessary. I don't think we have much hot water waste.
I don't wait to get into the shower after turning on the water
I don't want something else controlling the water temp
I get in the shower as soon as it gets warm! I don't mess around and waste hot water! It is too expensive!
I get in the shower as soon as it is warm, so I wouldn't want the water to shut off soon after I get in.
I get in when the water first gets warm...my whole family does
I get into the shower as soon as the water is warm enough. The shutoff valve would not be useful to me.
I have a tankless gas water heater.
I have entered an answer three times in this box. Each Time I am bounced out. I give up.
I have very brief showering habits learned from the military. I only have the water on to get wet then rinse. This device seems unnecessary considering the brevity of my showers
I installed a Grundfos hot water circulation pump years ago that works great. The water is instantly WARM. After a few seconds it is hot.
I just don't think we would want to be bothered with such a devise. We both turn on the shower when we are ready to inter it. Very little wait time.
I really don't have a reason, it just didn't interest me
I really don't see any value or savings in it!
I stand in the shower while it heats up and use it as soon as it's ready. Just don't see a need for this.
I stand right there to get water hot. Only about 5 seconds since the hot water heater is on the other side of the wall (garage) from the shower.
I take "GI" showers. I wet down, turn the water off while I wash my body and shave my legs and then turn it back on to rinse off and wash my hair. I don't think I waste much water.
I tend to get into my shower as soon as it is warm. Doubt it would save water in my specific case. It's a great idea though, and I recommend you pursue.
I think a tank less water heater would be more efficient
I turn on the water at a flow rate such that it is just starting to get warm when I get in.
I turn the water on, wait about half a minute to hop in, get in, shower and get out. Every time.
I turn water on, as soon as its warm I get in and quickly shower. dont feel this is necessary

I typically don't leave the shower running long enough to warrant such a device.
I use a tankless waterheater approx4 feet from shower.
I usually get into the shower before the desired temperature is reached.
I want hot water when I want it.
I would have to real evidence that it would save me money to make the effort to install it.
I would not qualify for the program since my water heater is fueled by propane.
If it's going to let the cold water out, the shower floor will be cold when I get in, so what's the point of letting it warm up?
I'm an old person
I'm not sure. Just looks funky and I don't really understand what it will do. I only let the water get warmed up before showering so I don't think it would save much (for me).
I'm satisfied with how quickly the water warms up and I don't feel I waste any water in getting it ready to shower
I'm usually right there monitoring the temperature.
Invalid husband also uses this shower.
it appears that you would have to reinstall the plug every time you use it.
It doesn't take long to heat the water, and we jump in quickly and shower, then shut it off - never more than 5 minutes.
It is an extra unnecessary step as I am generally already in the shower waiting for the hot water. I turn the shower head to the side and as soon as the water is just warm I turn it back and begin to shower. Such a device would turn the water off while I am showering!
It sounds like to much trouble, I shower for about 5 min., not 35 minutes.
Its a mental thing.
It's no big deal to wait 30 seconds.
It's not necessary. I turn the water on, in 30 seconds it's ready and I begin showering.
Just another gadget.
just another piece of equipment to worry about
just one more thing to adjust and get right I need to get in shower and get out fast, this sounds like a way to waste time and I would need someone to prove it really would save hot water.
Just seems like a hassle and another junky Chinese thing to break or get clogged. I wait for the hot water to come it doesn't take that long.
Labor involved in installation.
Like the sound of running water as background noise in the morning
Looks klunky and probably wouldn't help much given we have recirc and water is nearly always at time we turn on spigot.
more stuff to master
My current shower-heads work fine and I don't let the water run very long to warm up. The instant hot water heater is just on the other side of the wall.
my folks have one and I don't like it.
My hot water heater is directly on the other side of the shower so it does not take anytime at all to heat up. No water is being wasted in 'warm up' time. I turn both hot and cold on and pull the shower.
My shower is a long way from the hot water heater. I only run the water until the hot water starts coming out.
My water heater is turned down to save energy I do not feel I need it.
My well water is about 55 degrees, waiting for the cold to heat up to 95 will happen about the same time as hell freezes over.
Never leave the shower unattended. When it's warm enough I'm in.
Never turn on the shower unless I'm ready to step in immediately.
never walk away from shower
no point - once the water warms up, I get into the shower. It would be annoying to have to start the water again!
Not interested

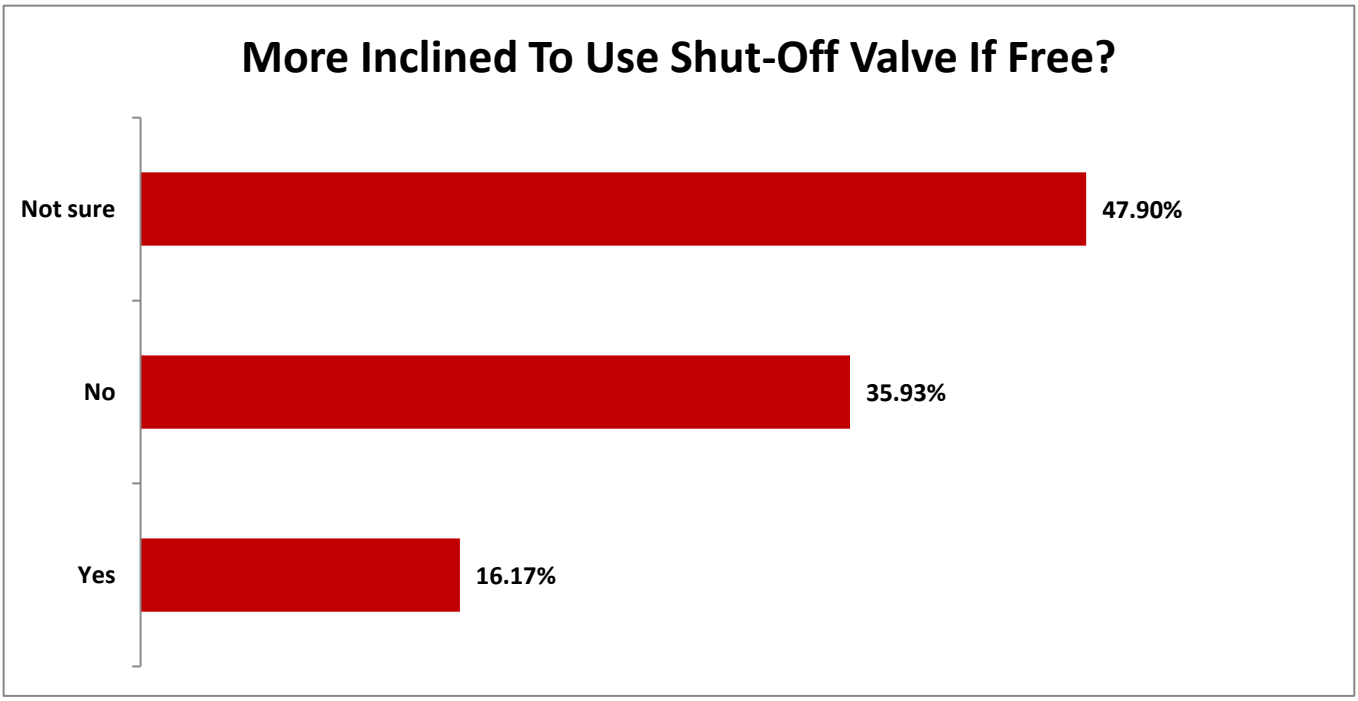
Not knowing cost and effectiveness
not my kind of thing
Not necessary since I get in as soon as the water is warm.
Not needed
Not needed. We have recirculating hot water thus I turn the water on full hot for less than 5 seconds then set the temperature and get right in.
Not sure what it does.
On3 more step
One more part that can fail. seems like it would further reduce height of shower head.
one more step to take. not interested in complicating the morning
Our shower is already temperature controlled. The hottest temp. is very comfortable, not scalding. I close the shower door, turn on the water(dial is always kept at hottest setting), wait 30-45 secs., and begin showering.
Our water is up to temperature in a very short time and I get in immediately afterwards.
Overkill don't take too many showers that it would provide much savings and when my solar water heater is installed it won't matter if I use some extra sunshine
Probability of reduced water pressure. Don't like being controlled by others.
Really don't think it would make any difference in the amount of water I use.
Seems like it would break
Seems like something that is going to break, and then I will have to remove it (maybe the cord). Then, there's the issues of aesthetics.
Seen them in California and it's a pain to figure out how to get the hot water back on.
Shower has premixed hot and cold set to desired temp
Something to malfunction
That's not the problem the hot water heater is to far for our shower .
The cost for the device would be much more than the minute to run the shower.
The cost. I'd be interested if Idaho Power paid for it.
the minerals in our private well make faucets and shower heads a mess. They get plugged up. I'd question how this device is just one more thing to maintain.
The new regulations for new plumbing installations in Oregon require some weird plumbing where the shower will not reach a HOT temperature anyway, probably to prevent scalding, but if you like a hot shower, it never will reach the temp you want. So, we built a new bathroom and I refuse to use it because I can't stand how chilly the shower water is. I get in an old fashioned shower the second the water gets warm and that's the way I like it. No special conservation needed here.
The new shower we installed last year is only about 20 feet from the hot water heater, so we don't have to wait that long for the water to get hot. We also installed pex tubing so the water comes directly to the shower.
The room is cold so the hot shower heats the whole bathroom,
The shower gets warm pretty quick. I often step into the stall while it is still cold and let it hit my feet. When it is warm it's go time.
The shower I use is close to the water heater so hot water arrives in 10 seconds, no savings with the device.
The way I use water in the shower it would provide no benefit.
there are better solutions
There are days that I would want hotter than 95
These devices promise but my experience has shown they seldom deliver.
Tired of these ecodevices that cause dismal end user experience to be honest.
To small of shower space. Also Cost
Too difficult to install.
too many items already in line of the shower head (shut off, diverter for hand held)
Too much of a bother.
Ugly

We are not big water wasters. With the tankless water heater, everything is so easy and dialed in we wouldn't need it.
We don't let it run longer than needed to warm up
We don't use too much extra hot water at the beginning of showers.
We have a recirculating pump that gets water to shower quickly, and hi effeficency shower head already.
We have a tiny bathroom and I don't think it would fit in our little shower. Our space that we do have is very precious to us!
We have tankless water heater so we have to wait for it to heat up and then it comes in. So, we don't have hot water sitting in a tank 24/7.
We just built a new house and those were not an option.
We save all shower water in 5 gallon buckets.
We typically don't let the water run and do other tasks.
we usually use the shower as soon as it warms up, it would not benefit us.
Why do I have to have a reason. I'm not interested, period.
worried about install and we usually get right into a shower as soon as the hot water has arrived
would have to remember to put it back into position once I'm finished in the shower
Wouldn't like it's look
You haven't mentioned the cost. Since my energy costs are generally quite low, I doubt that I waste much water. When I take a shower, I stay in the bathroom and am generally in the shower as soon as the hot water is coming out.

If Idaho Power were to offer thermostatic shut-off valves at no cost to you, would you be more inclined to use one?

QUESTION TOTAL: 167
DID NOT ANSWER: 0

	OPTIONS	TOTAL	PERCENT
O1	Yes	27	16.17%
O2	No	60	35.93%
O3	Not sure	80	47.90%

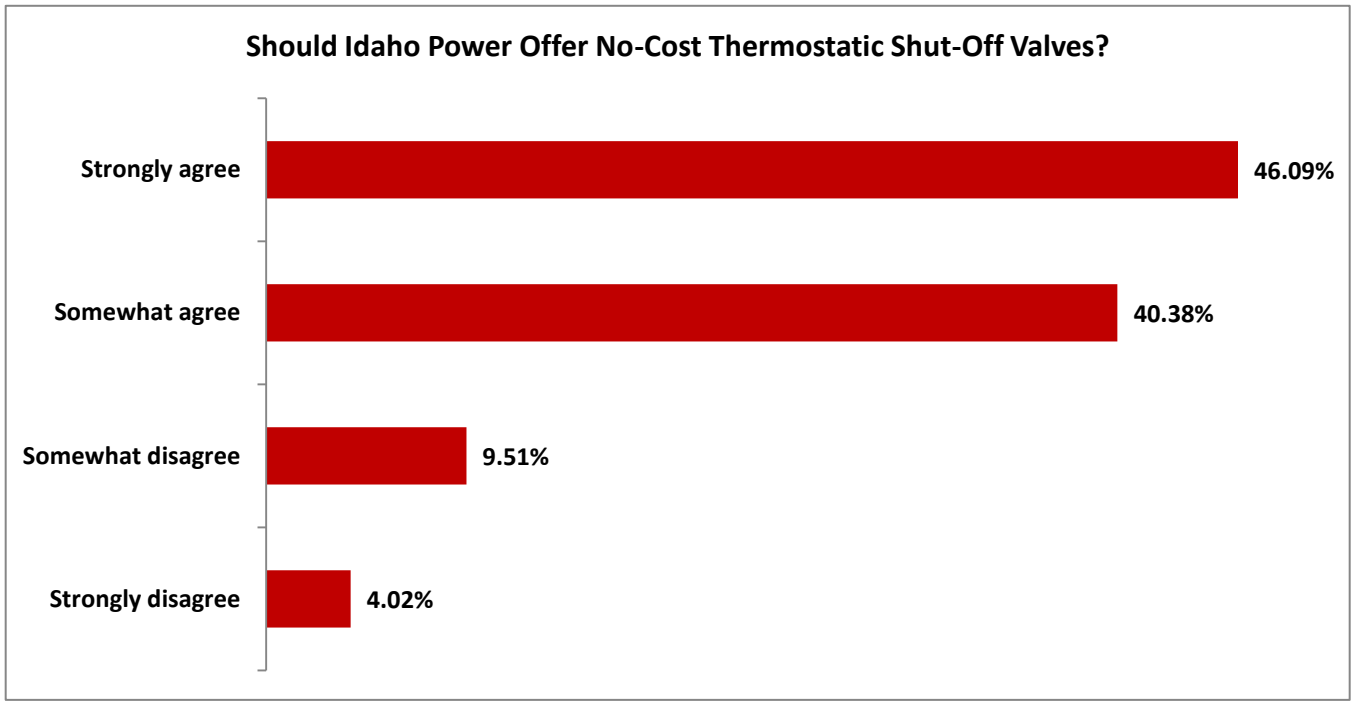


Asked only of respondents who say they warm the water up prior to getting in the shower

How much do you agree, or disagree, that Idaho Power should offer no-cost thermostatic shut-off valves to its customers as part of its energy efficiency programs?

QUESTION TOTAL: 473
DID NOT ANSWER: 0

	OPTIONS	TOTAL	PERCENT
O1	Strongly agree	218	46.09%
O2	Somewhat agree	191	40.38%
O3	Somewhat disagree	45	9.51%
O4	Strongly disagree	19	4.02%



Asked only of respondents who say they warm the water up prior to getting in the shower

Do you have any additional thoughts, or concerns, about thermostatic shut-off valves you would like to share?

Verbatim Responses
Great idea.
sounds like a great idea
Already have one. Is part of daily routine. One interesting problem with using it is we have a tankless water heater. After the water comes up to temperature the thermostatically controlled valve reduces the flow to less than the minimum flow of the water heater, so
Are they easy to install?
are they easy to use?
Are they more efficient than a circulation loop?
are they safe for older people and kids to operate?
As far as I am concerned, i don't think they are necessary in our home. As for other people, they need to decide for themselves.
As long as it does not reduce water flow. We do not have great water pressure. Flow restricted faucets and shower heads do not work in our household.
As long as the operation would be easy to learn for all family members, I would be all for it.
Behind the shower head? So... in the wall? If I have to open up the wall to put it in, no thanks. If it simply screws onto the head itself, that sounds pretty easy. Does it need power? Do I have somehow have to plug this thing in? Great idea, very forward thinking. Please tell us more. Hi Becky!
Being aware of the product is helpful. Some folks may like to use it. It would not benefit me.
Can the user adjust the shut off temperature or is it fixed at 95 degrees?
Can you put one on every shower?
charge to cover costs
Do they come in finishes to match existing shower heads or does it only come in chrome?
Do you get to take the cost of these free items off your taxes? My concern is about the cost.
does it take a plumber to install? If so, it would not be cost effective.
For home owners there is no problem to install thermostatic shut-off valves. The issue is for rented properties. Renters cannot install anything without the authorization of the landlord.
For most UT should save hot water overuse
Good idea for those that turn on the shower and walk away.
Great idea but users should share the cost of these devices with Idaho Power that way you can be assured they will be installed and used!
Great idea!
Great idea. I'm in.
has to be an incentive for me to install it.
How do they hold up with hard water build up?
I absolutely believe that Idaho Power should offer low-flow showerheads before this thermostatic gizmo is even considered. People would consider a functional showerhead way before favorably considering your current gizmo brainstorm.
I am afraid Id Pwr would find a way to charge all of us for something we do not need. I have learned to not trust free offers from utilities or any
I am impressed that you would even look at this. Technology that would seem to solve a problem that some would not see as an issue.
I am interested.
I am not sure rate payers should pay the cost.
I believe most homes hot water is gas
I believe most people would install this in their home especially if it was given to them for free. You may have to look into hiring an installer for people with disabilities. Overall, I believe it is a good idea. Help lessen the amount of water wasted.

I believe that if it were offered at no cost to your customers that people would be more likely to use it.
I can say it could help some people
I didn't know such a device is available, so haven't thought about it before.
I do appreciate the effort and thought!!! I wish there were more efforts for efficient systems. Like furnaces that heat water and generate electricity while heating the house. Idaho power wants to build new natural gas plants....almost every home already has one sitting there burning gas, generating nothing but exhaust.
I don't like the idea that Idaho Power or it's consumers should foot the bill for getting customers to conserve resources however I realize that many people are not concerned about conservation and waste energy and resources and will only do what is right if it is free and easy to use.
I feel like if a person or household is cognizant of taking an efficient, quick shower they don't need one. If they are not, they will not use one. It might educate people though and they'll be more thoughtful.
I guess that with many showers that don'the warm up quickly, it may be a good idea.
I have a gas hot water heater. Why would IP give me this and not IG? I use the 5 minute hour glass you supplied with the LED Bulbs and other efficiency items but if I flip it over when I turn the water on it is a very short shower once the water heats up until the sand is gone. :-) Long way from water heater to shower. Poor design on a 25 year old house. I appreciate IPs conservation efforts but I can't help but think I am paying for this as a part of my bill. I am sure it is mot coming from the VIPs bonuses. Thank you for being a good company and doing what you do very well (most of the time) .
I have a gas water heater, so I don't think it makes sense for Idaho Power to provide shutoff valves to people who don't use electricity to heat water. For those who do have electric water heaters, a cost-benefit analysis is needed to determine if free valves benefit all rate payers. If not, then please determine the amount of a subsidy that is appropriate, so the rest of use who use gas are not subsidizing those who use a less efficient method to heat water.
I have a hot water recirculating system in my home (that runs during common shower times), so I don't usually need to wait long for the water to warm up and therefore almost never leave the shower running when the water is hot.
I have explored a recirculating pump to solve this problem
I have never heard of a thermostatic shut-off valve and am interested in having one as soon as possible.
I have used shower heads with thermostatic shut-off for several years now.
I like it.
I like this concept, I am all about saving and not wasting
I live in a rental , can I take it with me if I move?
I might buy the temp sensor if it is proven to save me money. But nothing is free so having Idaho Power give them out just means a rate increase so not thrilled about that. However if Idaho Power gets a bulk rate ando made it cheaper to buy. That's not so bad.
I only take maybe 3 to 5 min shower.
I see no reason to offer it "no cost". There is no such thing as "no cost."
I suspect if offered for "free", we would all end up paying for them one way or another.
I think for the majority of your customers this is a fantastic solution.
I think high efficiency shower head would be better than a thermostatic valve.
I think it is a great idea to try, especially for households that don't manage use of resources like water and electric well.
I think it is a great idea, anything to reduce usage is helpful, and for Idaho power to show that they care about their customers by even the possibility of providing equipment and accessories to do so is very comforting from a customer's perspective.
I think it is a great improvement and I would buy one. Second generation would allow collection of the water on warm up, rather than wasting it!
I think it sounds like an amazing idea and I personally believe most customers would use the item.
I think it's a great idea and if it ultimately helps Idaho Power in its energy efficiency efforts, great - but I don't think Idaho Power should be obligated to provide them - personal responsibility plays a role.
I think it's a great idea for someone if they do wait to get into the shower after turning it on. The best measure of course though is to practice water conservation by not turning it on until you're ready for it
I think it's a great idea. It would help control the waste my children have.
I think on demand hot water makes more sense but could not be within the scope of any of your programs since it would be gas powered.

I think our family would try it.
I think the use of these devices would be a good idea and ultimately would save in energy costs.
I think there are other options that are more efficient like a high efficiency hot water heater.
I think they should be no cost for people who ask for them. It would be too expensive to send them to every household unasked as many people might not use them.
I use natural gas to heat my water, not electricity. I think that the gas company should offer this sort of device instead of the electric company.
I wonder how much of an issue this really is. People should be able to just not have the water run for so long.
I wonder if it would be cost effective.
I worry my 7 year old wouldn't be able to reach it.
I would agree to paying for my own, everyone paying for their own, or giving them for free as long as it doesn't make our rates go up!
I would be more interested in a timer to force renters to do reasonable length showers
I would be very excited about this product.
I would be willing to at least try it.
I would like to know how difficult it is to turn the water back on when I'm ready to get into the shower.
I would prefer a circulator
I would start out giving it to people who would volunteer to use the shut-off valve. Collect data on it's use to decide whether it would be cost effect for Idaho Power to offer it to the general public for free.
I would use it if it were possible with my tankless water heater
I would worry about cold water waste as people will think they are not wasting even though they are wasting cold water.
I wouldn't want to see any cost increase on my electric invoice that came from the distribution of these "no cost" devices.
I'd like to have a little more information about how they work and how much energy they save.
I'd like to learn more about how they work and save energy.
If I thought I needed one, I would want it, but don't think I need it.
If it restricts how hot the water is when you are showering then I wouldn't use it and neither would any one in my house. We like hot showers.
if the hot water line is shut off till the water reaches 95 degrees how does the water from water heater to outlet that is cool get out so that the hot water can reach the outlet? if hot water flow is opening at 95 degrees and cold is not obstructed why the pull cord? and does the cord close again once it is shut off?
If the thermostatic shut-off valves helps lower my power bill, then I'm all for it.
If you offer them at no-cost, who is buying them? Will you raise all our rates to pay for those that decide to get one? Am I paying for my neighbor's 3 showers??? I don't think so.
I'm curious what the approximate cost is/would be to purchase one if Idaho Power decides not to provide them for free.
I'm okay with it!
I'm sure this new mechanism would be a great benefit for some households with several members or with motels/hotels.
In SE Idaho most of the water has high mineral concentrations. If you don't have a water softener shower heads and other devices get clogged easily. It would be unfortunate to offer the valves to have them clog quickly and then get thrown away.
Instant electric water heaters are the way to go.
instead of no cost, maybe offer a one time credit for people who install them
Interested
Interesting product that may save both energy and water.
Is it easy to install and are there any downsides to it.
Is there a bypass option for those with arthritis that like to take very hot showers?
Is this for electric water heaters or does it include gas heaters with water from a private well with an electric pump
It seems like a solution in search of a problem
It sounds like a good idea for folks who don't get in the shower right away, but folks should! It would save wasting heating the water.
It sounds like a good idea for those who let the water run too long.
It sounds like a hassle to install and I have very limited space in my shower. I wouldn't want any extra gadgets in my shower.

It sounds like a neat idea.
It would be good for people who warm up their showers for 30 seconds or longer. We don't do that.
It would be helpful to consider a solution that would address the water waste as well as the energy waste of running the shower to get to the right temperature. Perhaps Idaho Power could partner with Suez Water.
It would be interesting to try. If it works, I would have no problem with it.
It would be nice to offer these to our tenants, since we pay for their water bills.
It's a great idea to help save on water waste.
its an interesting idea. I prefer baths and even if I use more water I retain it and it helps heat the bathroom if i wait until it cools to drain it.
ITS REALLY POSITIVE THINKING and fits planning (uses) for the 7th Generation
Just a question. If you waited so long to get in the shower that the temperature of the water in the pipe went below 95 degrees, would the water start flowing again? Or would you get blasted with cold water?
Just don't like the idea of the water shutting off in the middle of a shower.
Just dont see why this would be a useful item
Just that it would be a wonderful addition to any water conservation program
like to save where I can.Natural gas is reasonable as is water, why waste either I think. My "jewish" attitude.
Love technology and hate waste. Good job
Love to save money, any way I can thank you!
Maybe offer at a discouted price for users
Might clog due to hard water...
most urban water heaters are gas, how would this benefit IPCO rate payers? If it saved an appreciable amount of energy I suppose I would be more in favor. Perhaps if the gas utilities furnished the valve to nat. gas heater users it would make more sense.
My hot water heater is gas. It seems like Intermountain Gas should be helping.
Need to look "nice" so people are not put off by them.
No - it just doesn't sound like it's something for us.
no thank you
No thanks.
No thoughts about the thermostat at this time. What I would like to see is getting away from hot water heaters with big tanks that have to keep the water warm at all times and convert to instant water heating elements that heat only the water that is needed at the time! I know they exist but are too expensive and don't provide a good water flow or pressure (last I checked anyway!)
No thoughts.
No.
No. Most people shower for 30 minutes, I shower for 5 minutes.
nope
not enough information to decide one way or the other
Not for me, but certainly an option for some people.
Not really
Not sure how it would work, but if it would more efficiently heat the water, I would for sure use it.
Not sure it should be Idaho Pwers expense
Not sure?? Does it only run at 95 degrees? In my case if it shut off & I did not get immediately into shower, if left for any length of time likely to have cooled. My water heater is in basement, shower on first floor, especially sink and shower but also appliances on first floor have to run a long time before I get hot water. I think that must really be energy waster but don't know what other option I might have.
Not today.
Nothing that I can think of.
Offer to customers at cost

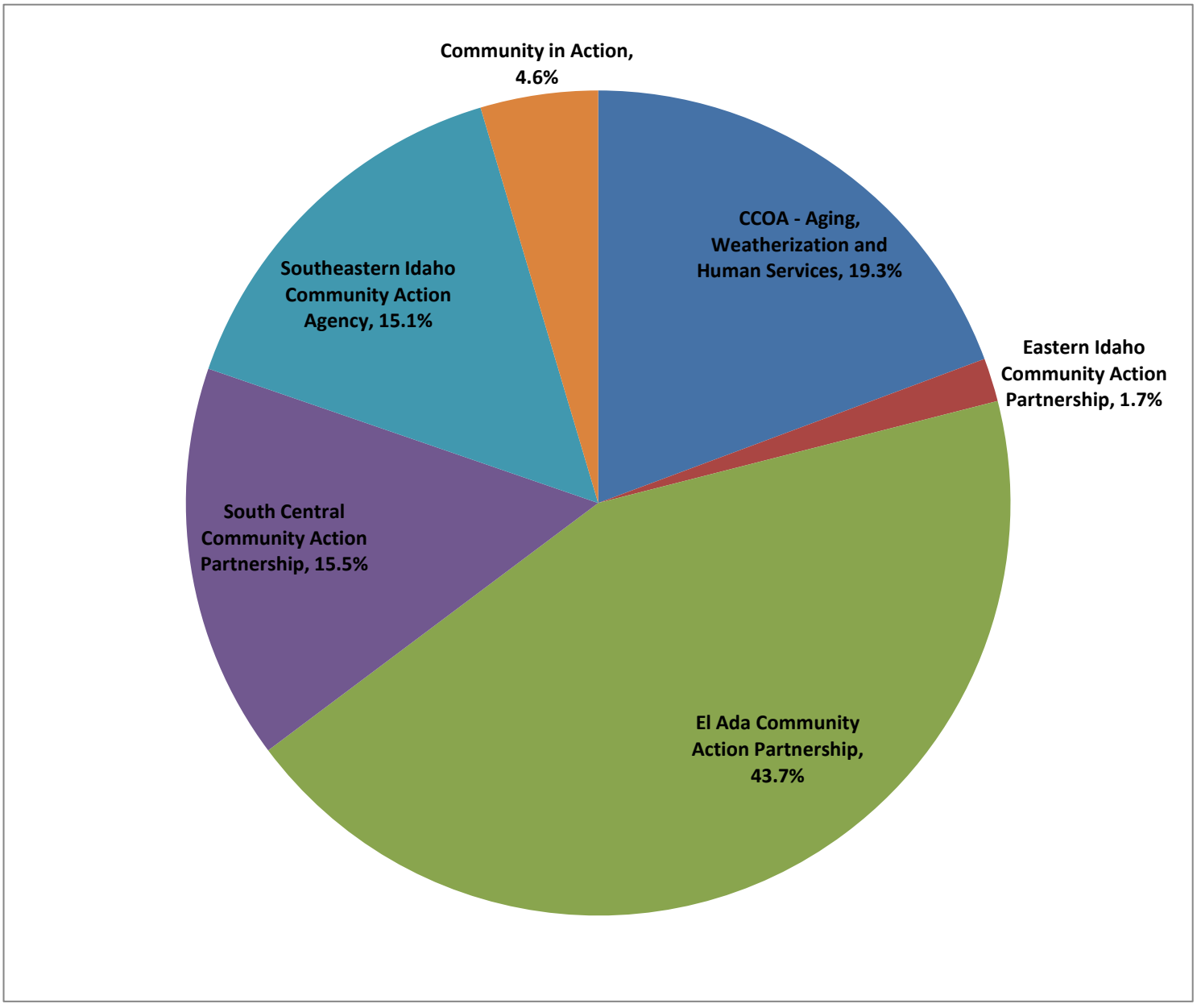
One more device that can fail. Besides, it takes energy to mfg. the valve - what about that? We have hard water and there are always problems generated from that - don't need another device to become fouled.
Only how long it would take for mineral deposits to build up in the valve, making it less efficient and necessary to clean with vinegar.
Others in my household might be more wasteful of pre-shower hot water.
Our showers are at the other end of the house from the hot water heater so it takes quite a while for the hot water to arrive. So one is tempted to do other things while waiting. This device would sure help save the hot water once it arrives at the shower head.
Probably not.
Seems like a "better" idea if the users have electric hot water heaters. Also wonder if the trend toward tankless water heaters (properly installed) might have some impact on benefits??? (not totally sure what I am thinking...more about I guess if your setup is already highly efficient, is this not overkill?).
Shouldn't Idaho Power be working with local water companies on a program of this type? Isn't it as much a water conservation issue as an electricity conservation issue?
Show them on TV and explain them. Talk about them on radio. Show demos at expos
sounds exciting
SOUNDS GOOD IF IT WORKS
sounds like a good idea
Sounds like a good idea for my kids bathroom!
Sounds like a great idea! I'd be happy to try one out and share my experience.
Sounds like a great idea. Anything to help cut down on waste and immprove efficency should be promoted.
Sounds like a great item
Sounds like a scam to me
Sounds useful.
Still confused as to how this all works and what it saves. If I get into the shower as soon as the temperature is where I want, how would this help?
Sure would like to try one.
Switch to an instant-hot type of system so the water doesn't have to run as long.
Thank you for caring! We are always supportive of energy efficiency.
Thank you for investigating the possibility of the shut off valve! I would install them on the 4 faucets we have in our home.
Thanks. Never knew something like this existed
That would be a lot of money for Idaho Power to spend on shut-off valves. I would be paying for them in my electric rate. I would rather Idaho Power energy costs.
The consumer should share the cost.
The issue will be ease of installation
The only such device I have ever encountered (Maryland Hotel) did not work well.
The shut-off valves should be free to all idaho power customers.
The valve needs to be intuitive
They may have value in saving energy for those who have long warm up times and have to leave the area while their water heats up.
They scare me big brother.
They sounds like it should work real well. Let me know when we can get one.
They would be great!
They would only be of benefit if one was in the habit of turning on the water and then waiting to get in for a long period of time.
This is a great idea!
this is the first time I've heard of them. I investigated installing some sort of water recycling device so it would take the 'cold' water and 'reuse' it until it came to temp but the unit was big! this would be better

This seems like a really stupid idea. If forced to use one, I would disable it. I pulled out the low flow shower heads we had to buy in CA and punched out the flow inhibitor so we could get adequate flow.
This sounds like a great tool to help conserve both water and energy. Thanks for your efforts to conserve these resources.
This type of device would be more beneficial to me for use at the kitchen sink. I would prefer an under-counter install with above counter release, or installed at the base of the faucet rather than the spout.
Ways to save energy & water are always important to explore. I do not have any info on this products help, ease in use, cost to use, etc. Need more info.....
We have 3 levels in our older, historical area home and the GAS (not electric) hot water heater is located in the basement which is why it takes a while for the temp of the water to reach the upstairs showers.
We have a low flow shower head on all showers in the home with filters inline too.
We have pressure balance shower valves that limit water temp at 95 degrees but they don't shut the water off when temp is reached. I think the shutoff valve is an excellent idea.
We installed the shower head from the Idaho Power kit. If a thermostatic shut off valve had been included we would have installed it as well. Sounds like a useful item.
We would be glad to test it for you.
What are the dimensions of it?
What other options are there?
When ordering Idaho power energy efficiency products I should be able to choose which ones to receive rather than ordering the whole package. Also, you should offer incentives like discounts for home owners of energy star accredited homes.
When you give something away to others, I still end up having to pay for it. How about you give me free solar panels?
While the thermostatic shut-off valves are not for me, I can see that there may be many customers who would want to take advantage of it.
Who and how is it maintained? Can the temperature be altered manually?
Why would an electric utility provide a device that would save natural gas and waster but not electrical usage?
Why would Idaho Power buy thermostatic shut-off valves for water heated by natural gas??
WILL IDAHO POWER INCLUDE THE COSTS OF THE SHUT OFF IN IT'S RATE BASE IN IT'S NEXT RATE CASE?
Will it cause a hammer affect and cause a leak in the wall? Shower risers do not normally see much actual pressure but with the valve at the head it will and if it shuts to fast it will hammer it.
Will it work with all types of water heaters, especially tankless?
Would be nice to test one.
Would like to see it in real life to see the quality before giving 100% commitment.
would like to see one work and see the savings
Would like to try to make sure it would work in our home. Don't recommend for rentals.
Would need more info...is it compatible with all showers? How easy is it to install and/or remove? Would it be easy to clean out calcium deposits if needed? How big is it? What maintenance might be needed? Etc.?
You need to explain the estimated cost of this item and the program you are proposing and the effect on a persons power bill. Who it would help and who it would not from a cost payback. Also the cost payback to Idaho Power
You're going to have to describe the impact of said valve on the actual experience.

WAQC 2016 Survey Results

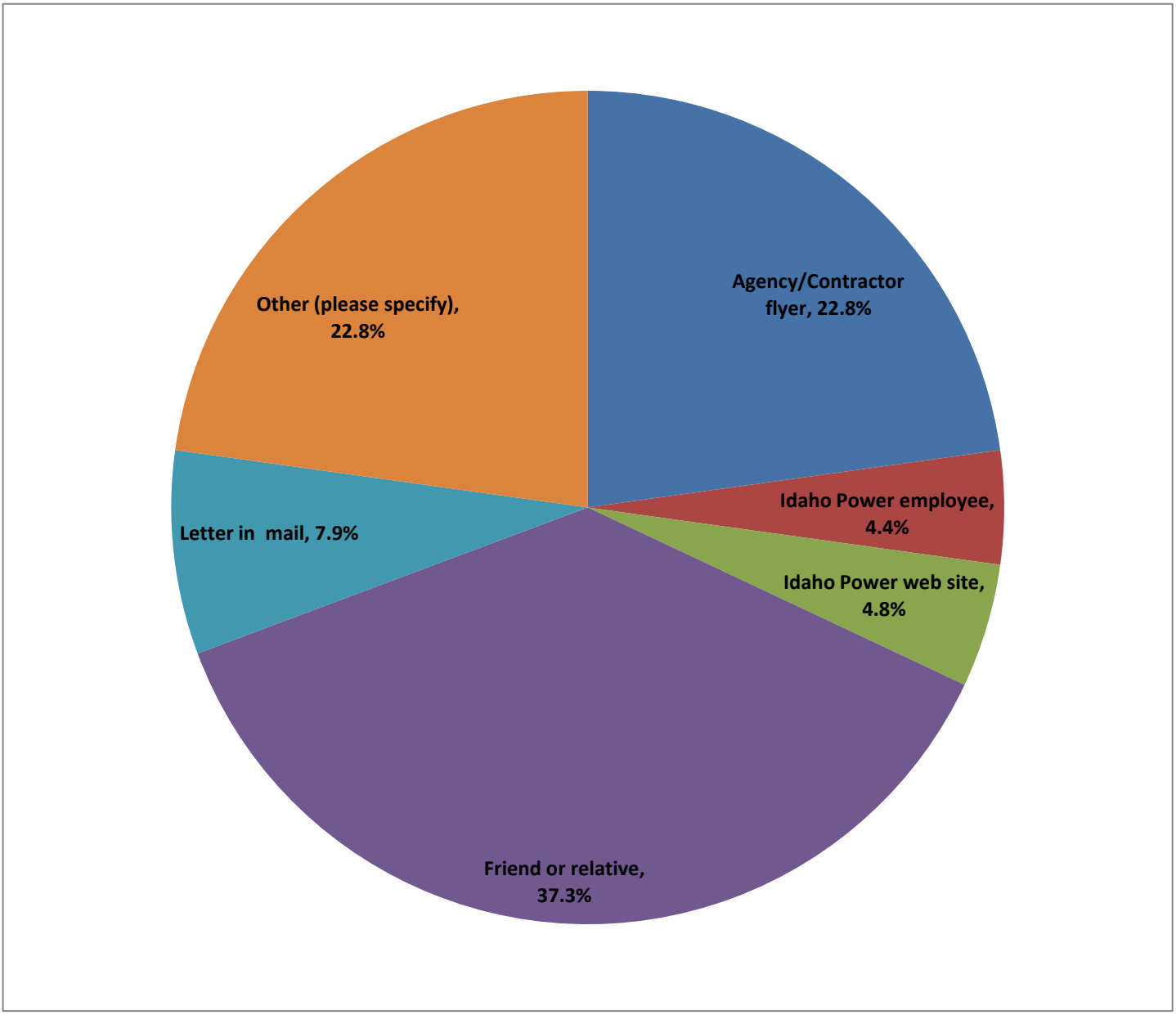
Idaho Power Weatherization Programs

Agency/Contractor Name:		
Answer Options	**Response Percent**	**Response Count**
CCOA - Aging, Weatherization and Human Services	19.3%	46
Eastern Idaho Community Action Partnership	1.7%	4
El Ada Community Action Partnership	43.7%	104
South Central Community Action Partnership	15.5%	37
Southeastern Idaho Community Action Agency	15.1%	36
Community in Action	4.6%	11
answered question		238
skipped question		0



Idaho Power Weatherization Programs

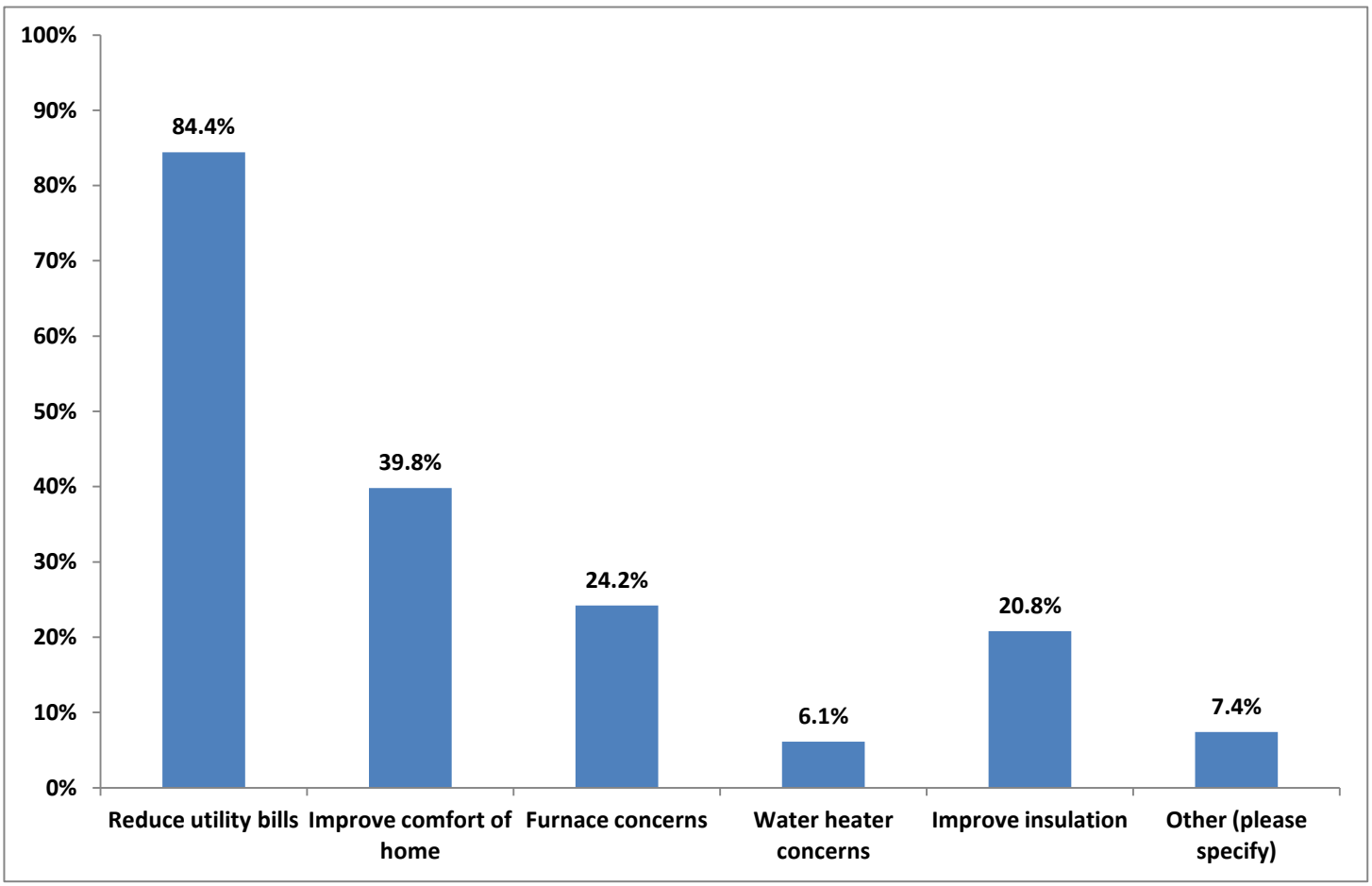
How did you learn about the weatherization program(s)?		
Answer Options	**Response Percent**	**Response Count**
Agency/Contractor flyer	22.8%	52
Idaho Power employee	4.4%	10
Idaho Power web site	4.8%	11
Friend or relative	37.3%	85
Letter in mail	7.9%	18
Other (please specify)	22.8%	52
	answered question	228
	skipped question	10



How did you learn about the weatherization program(s)?
Other (please specify)
Help packet
Dr. Office
El-Ada
El-Ada
El Ada
El-Ada
El Ada
El Ada
Idaho Power bill insert
Human
just listed other
just listed other
Community in Action
bill stuffer
El Ada
bill insert
El Ada Called us
landlord
landlord
landlord
landlord
management
landlord
landlord
property manager
landlord decided
apt. manager
bill insert
bill insert
apt manager
apartment manager
landlord
bill insert
bill insert
Idaho Power Bill insert
TV
Canyon County Fair
Johns Heating & Plumbing
Idaho Power bill insert
SEICAA
don't remember
Head Start
El Ada
Bill insert
unknow
Community in Action
WICAP
SEICAA
place in Blackfoot
SEICAA

Idaho Power Weatherization Programs

What was your primary reason for participating in the weatherization program? (check all that apply)		
Answer Options	**Response Percent**	**Response Count**
Reduce utility bills	84.4%	195
Improve comfort of home	39.8%	92
Furnace concerns	24.2%	56
Water heater concerns	6.1%	14
Improve insulation	20.8%	48
Other (please specify)	7.4%	17
	answered question	231
	skipped question	7



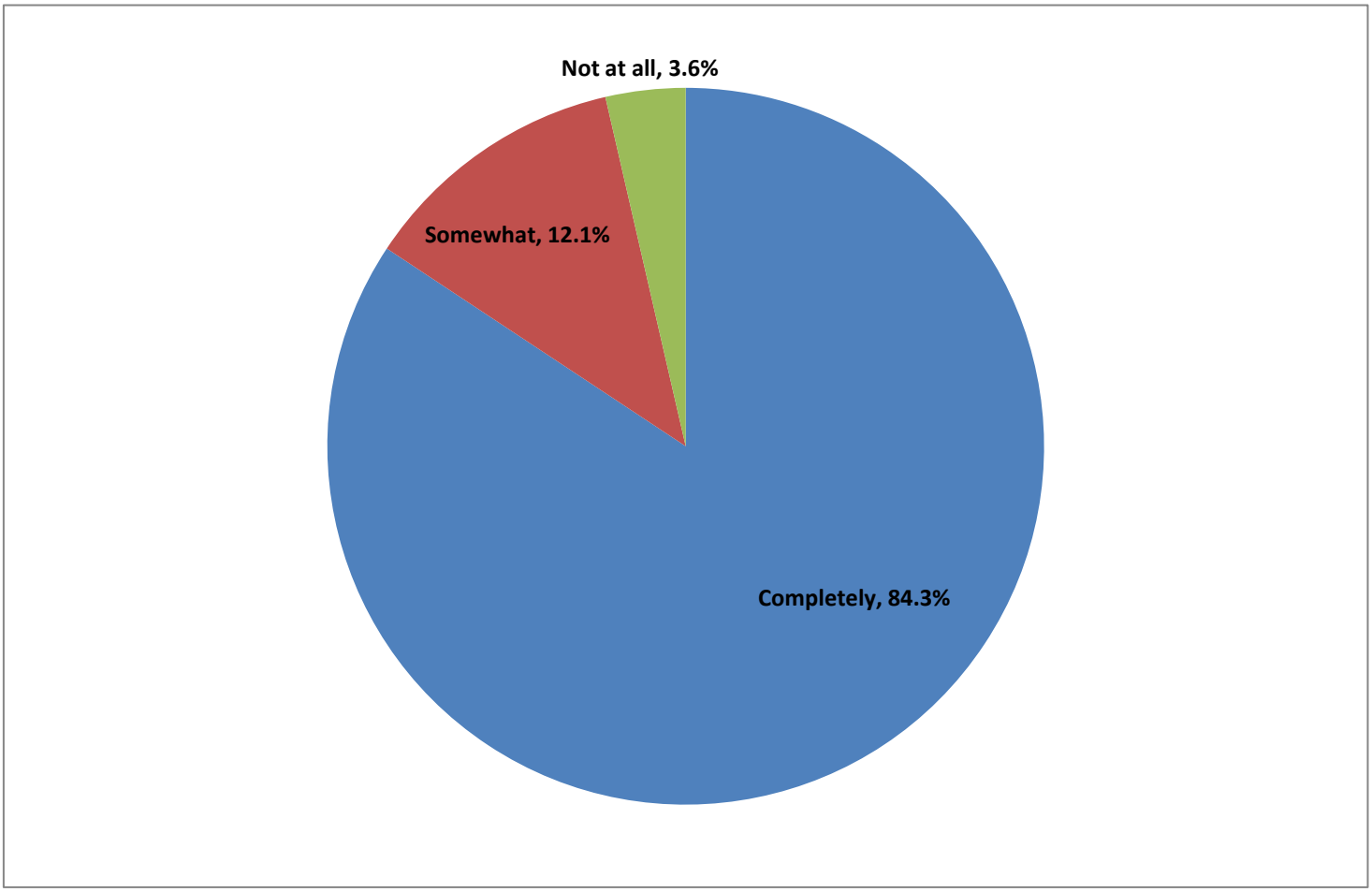
What was your primary reason for participating in the weatherization program? (check all that apply)

Other (please specify)

Make sure my house is in optimal condition
I've been without a usable furnace for two years, I so appreciate my new furnace!
Windows from 1979
Windows leaked
Leaking roof
just listed other
applied for assistance
windows
management
owner decided
improve AC
no comment
Leaky doors
leaking windows
furnace broke down
needed new doors
air vent & crawl space look at

Idaho Power Weatherization Programs

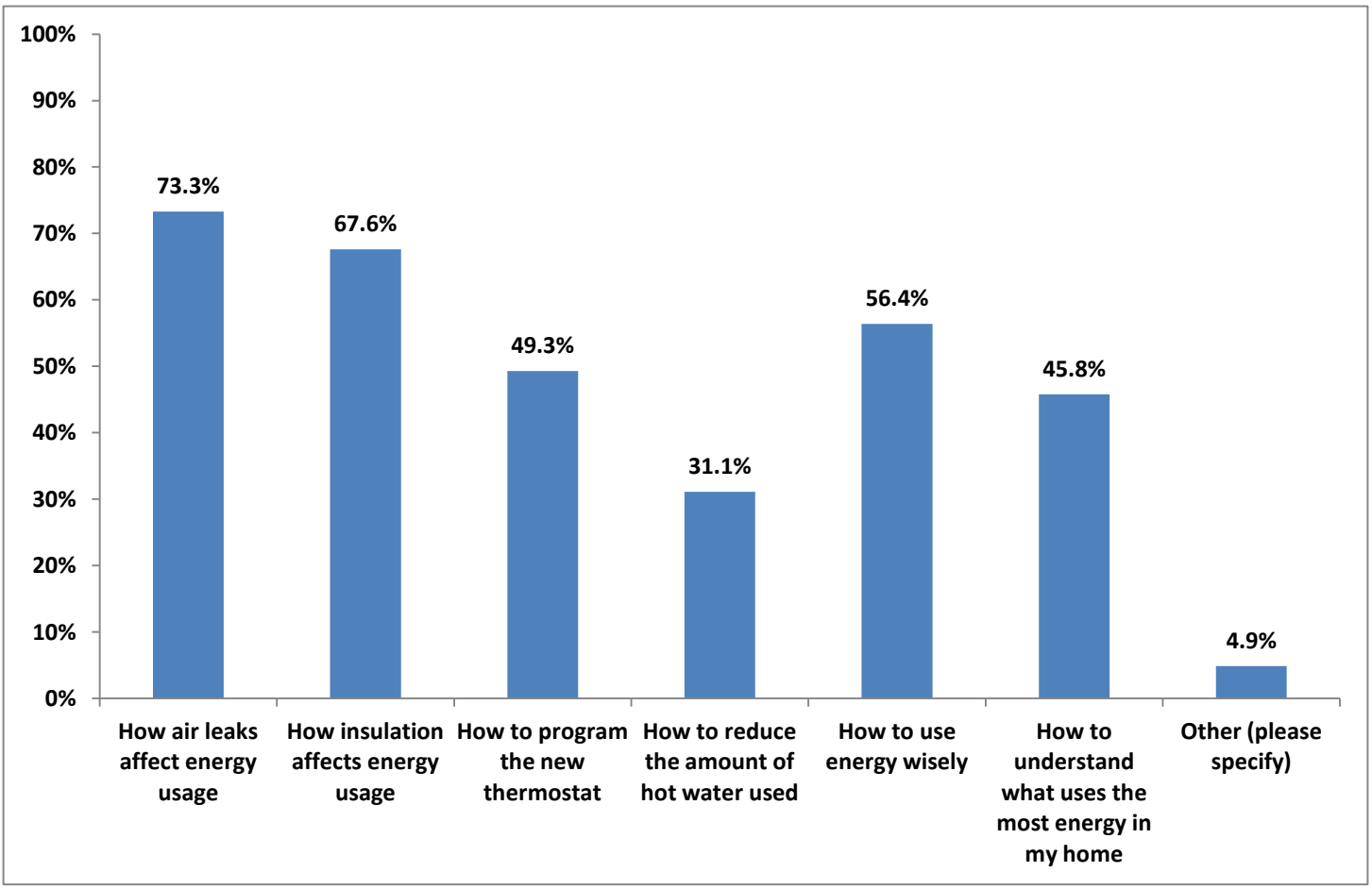
If you received any energy efficiency equipment upgrade as part of the weatherization, how well was the equipment's operation explained to you?		
Answer Options	**Response Percent**	**Response Count**
Completely	84.3%	188
Somewhat	12.1%	27
Not at all	3.6%	8
	answered question	223
	skipped question	15



Idaho Power Weatherization Programs

Which of the following did you learn about from the auditor or crew during the weatherization process? (Check all that apply)

Answer Options	Response Percent	Response Count
How air leaks affect energy usage	73.3%	165
How insulation affects energy usage	67.6%	152
How to program the new thermostat	49.3%	111
How to reduce the amount of hot water used	31.1%	70
How to use energy wisely	56.4%	127
How to understand what uses the most energy in my home	45.8%	103
Other (please specify)	4.9%	11
	answered question	225
	skipped question	13

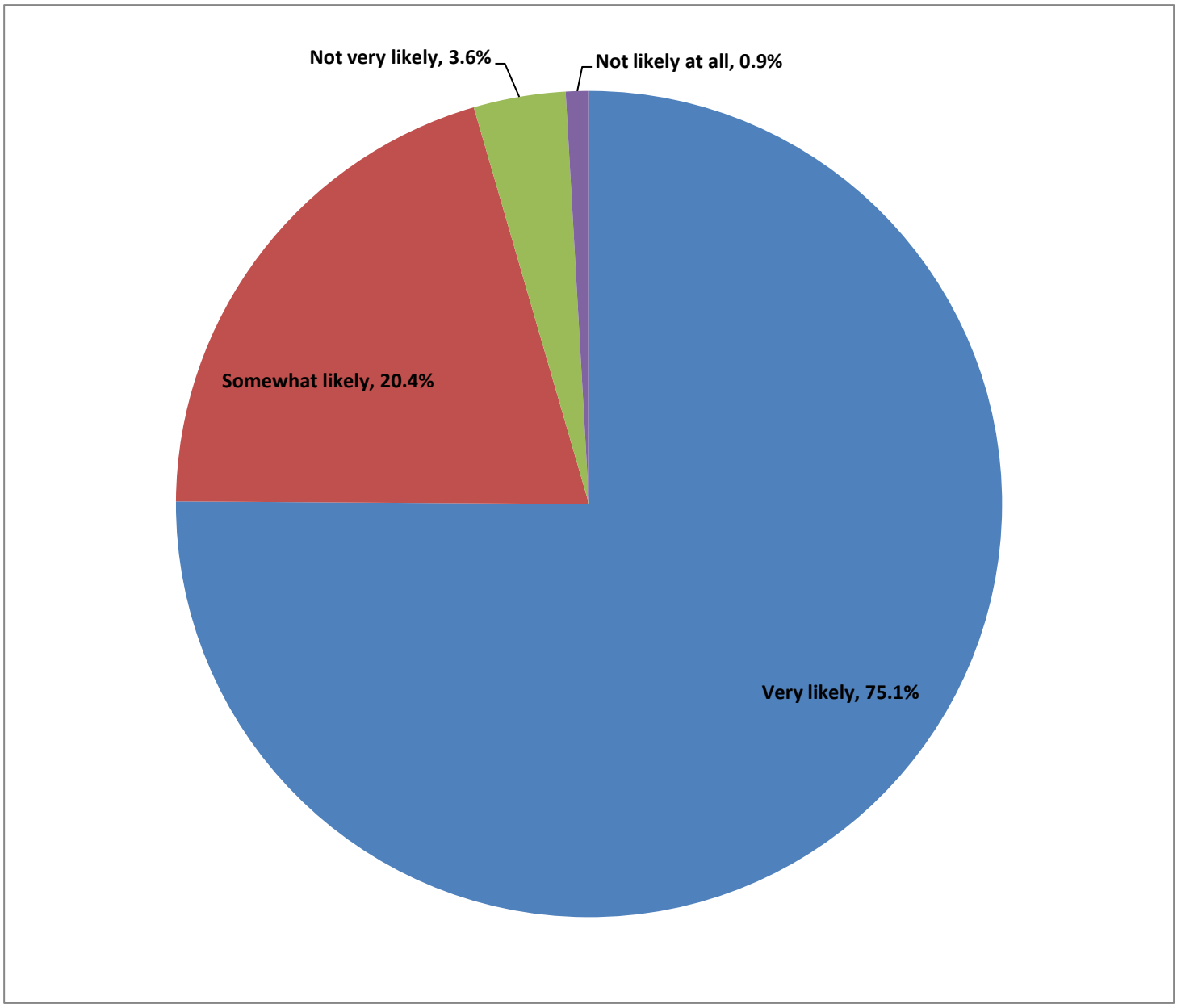


Which of the following did you learn about from the auditor or crew during the weatherization process? (Check all that apply)
Other (please specify)

how a heat pump functions
none from installers. The auditor did explain clearly my questions and concerns. Very nice man.
just listed other
none of the above, just a book
none of the above
none of the above
none of the above
my water heater was too cold
got a booklet for information
how to connect the breaker to reduce energy use
to keep fans running for health

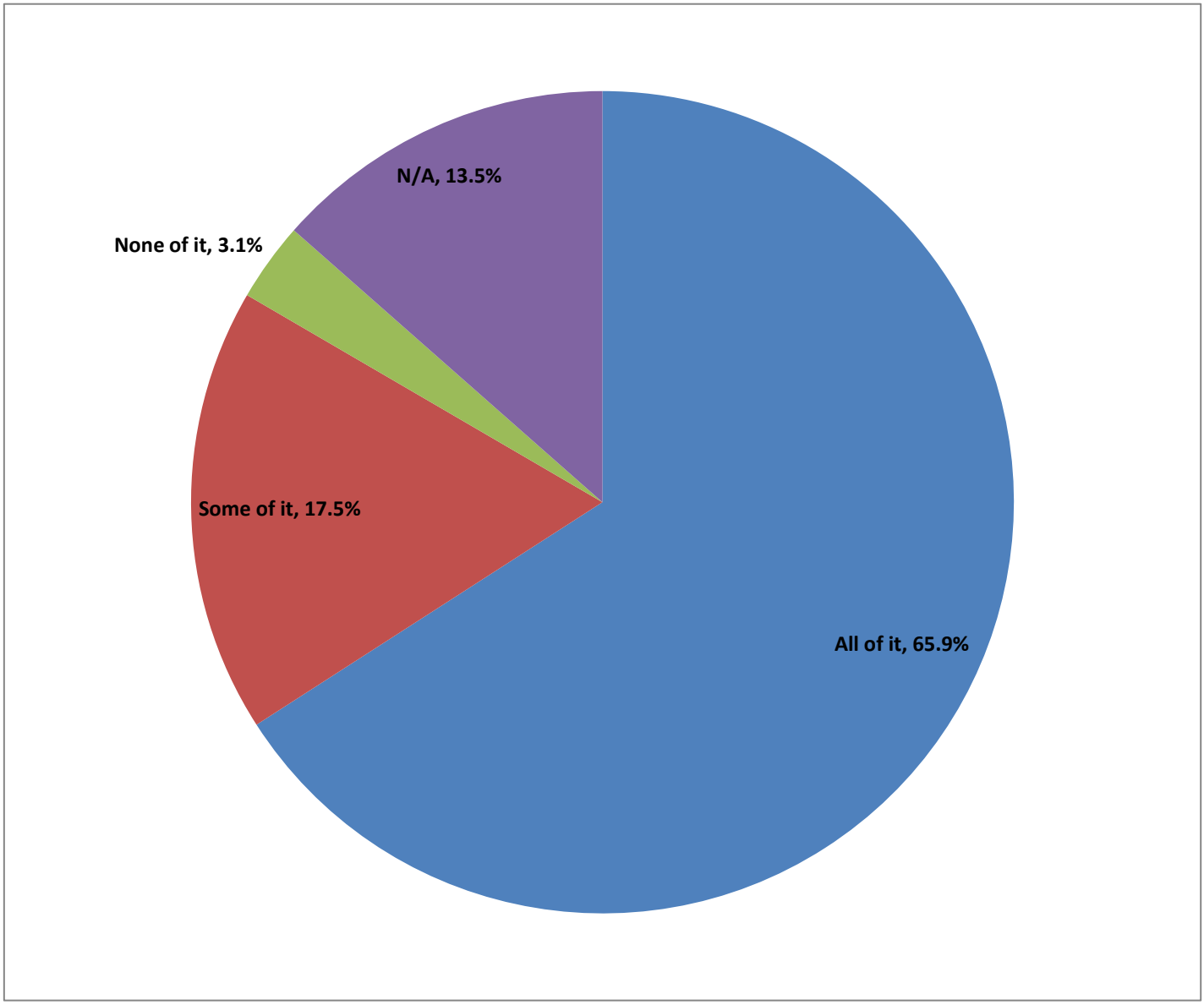
Idaho Power Weatherization Programs

Based on the information you received from the agency/contractor about energy use, how likely are you to change your habits to save energy?		
Answer Options	**Response Percent**	**Response Count**
Very likely	75.1%	169
Somewhat likely	20.4%	46
Not very likely	3.6%	8
Not likely at all	0.9%	2
	answered question	225
	skipped question	13



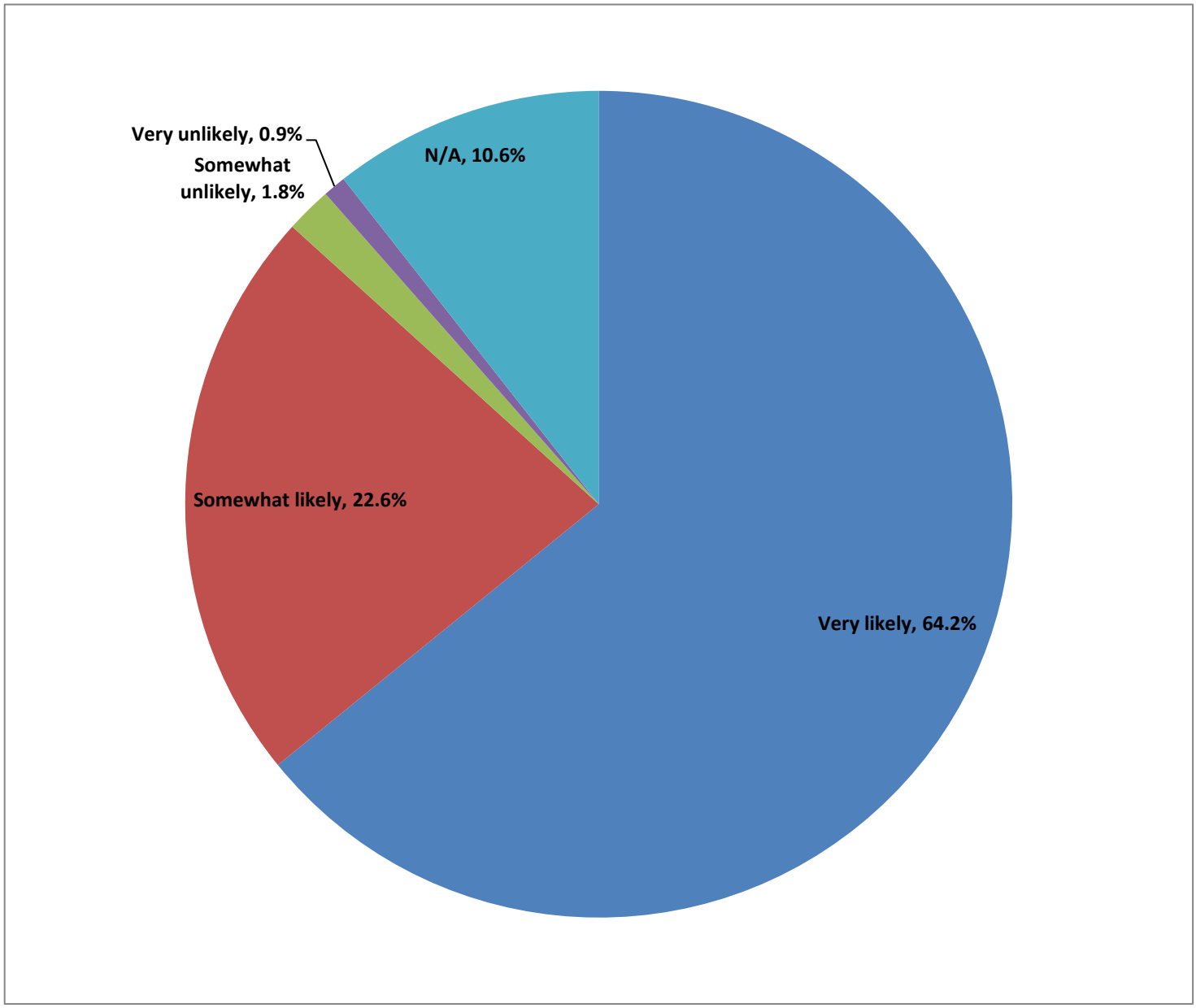
Idaho Power Weatherization Programs

How much of the information about energy use have you shared with other members of your household?		
Answer Options	**Response Percent**	**Response Count**
All of it	65.9%	151
Some of it	17.5%	40
None of it	3.1%	7
N/A	13.5%	31
	answered question	229
	skipped question	9



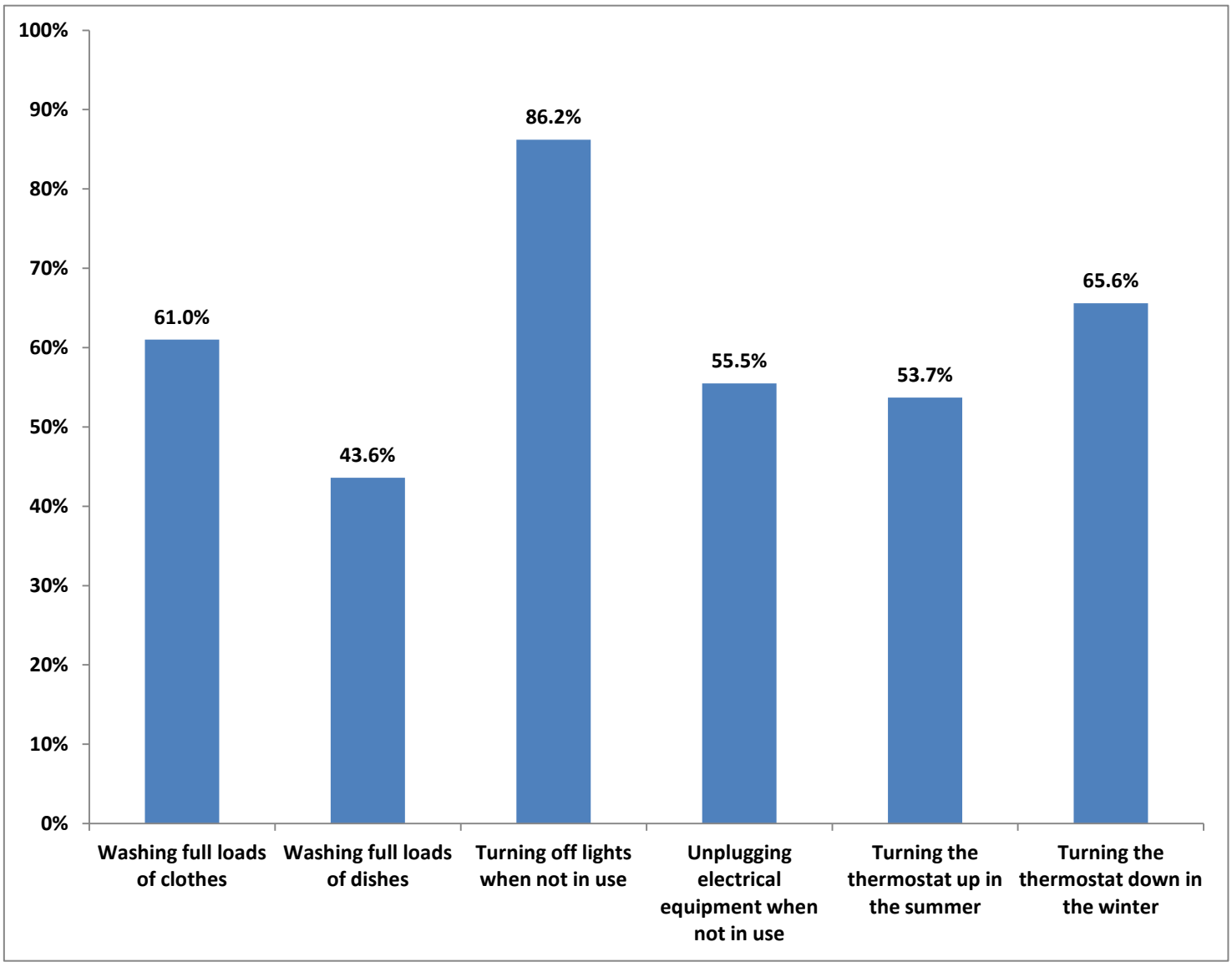
Idaho Power Weatherization Programs

If you shared the energy use information with other members of your household, how likely do you think household members will change habits to save energy?		
Answer Options	**Response Percent**	**Response Count**
Very likely	64.2%	145
Somewhat likely	22.6%	51
Somewhat unlikely	1.8%	4
Very unlikely	0.9%	2
N/A	10.6%	24
	answered question	226
	skipped question	12



Idaho Power Weatherization Programs

What habits are you and other members of your household most likely to change to save energy? (check all that apply)		
Answer Options	**Response Percent**	**Response Count**
Washing full loads of clothes	61.0%	133
Washing full loads of dishes	43.6%	95
Turning off lights when not in use	86.2%	188
Unplugging electrical equipment when not in use	55.5%	121
Turning the thermostat up in the summer	53.7%	117
Turning the thermostat down in the winter	65.6%	143
Other (please specify)		17
	answered question	218
	skipped question	20



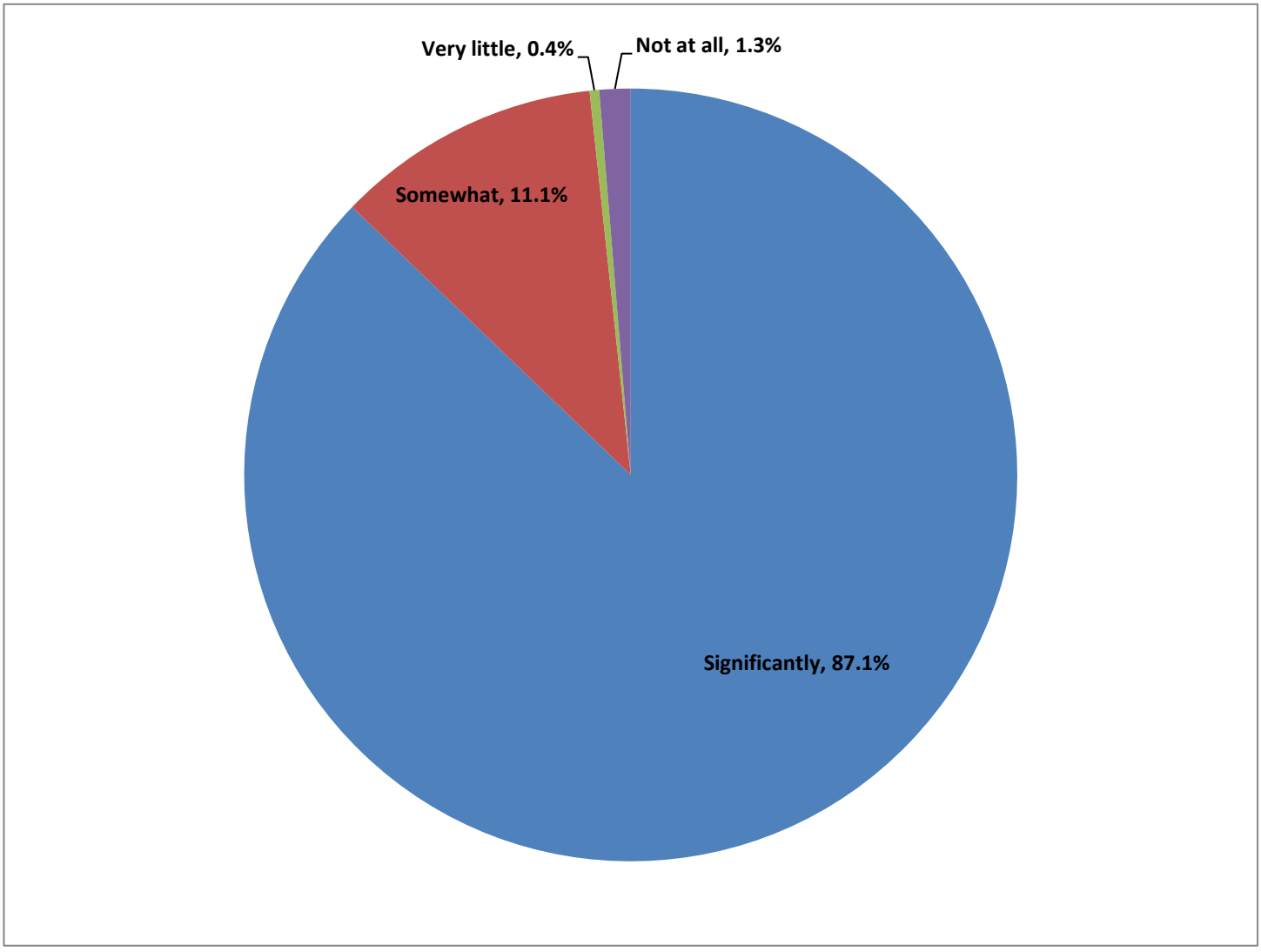
What habits are you and other members of your household most likely to change to save energy? (check all that apply)

Other (please specify)

Already doing all of this
I have been doing all of the above to save energy already.
Use dryer less; hang clothes instead
do all already
just listed other
we already have tried to save energy in the past
does all of the above already
changing out light bulbs for LED's
leaving thermostat at one temperature
am aware and practice all
already do these things
no one told me anything
already do all of the above
already do all of these
I was raised with power conservation training!
already do loads of clothes and dishes
we try to do these already

Idaho Power Weatherization Programs

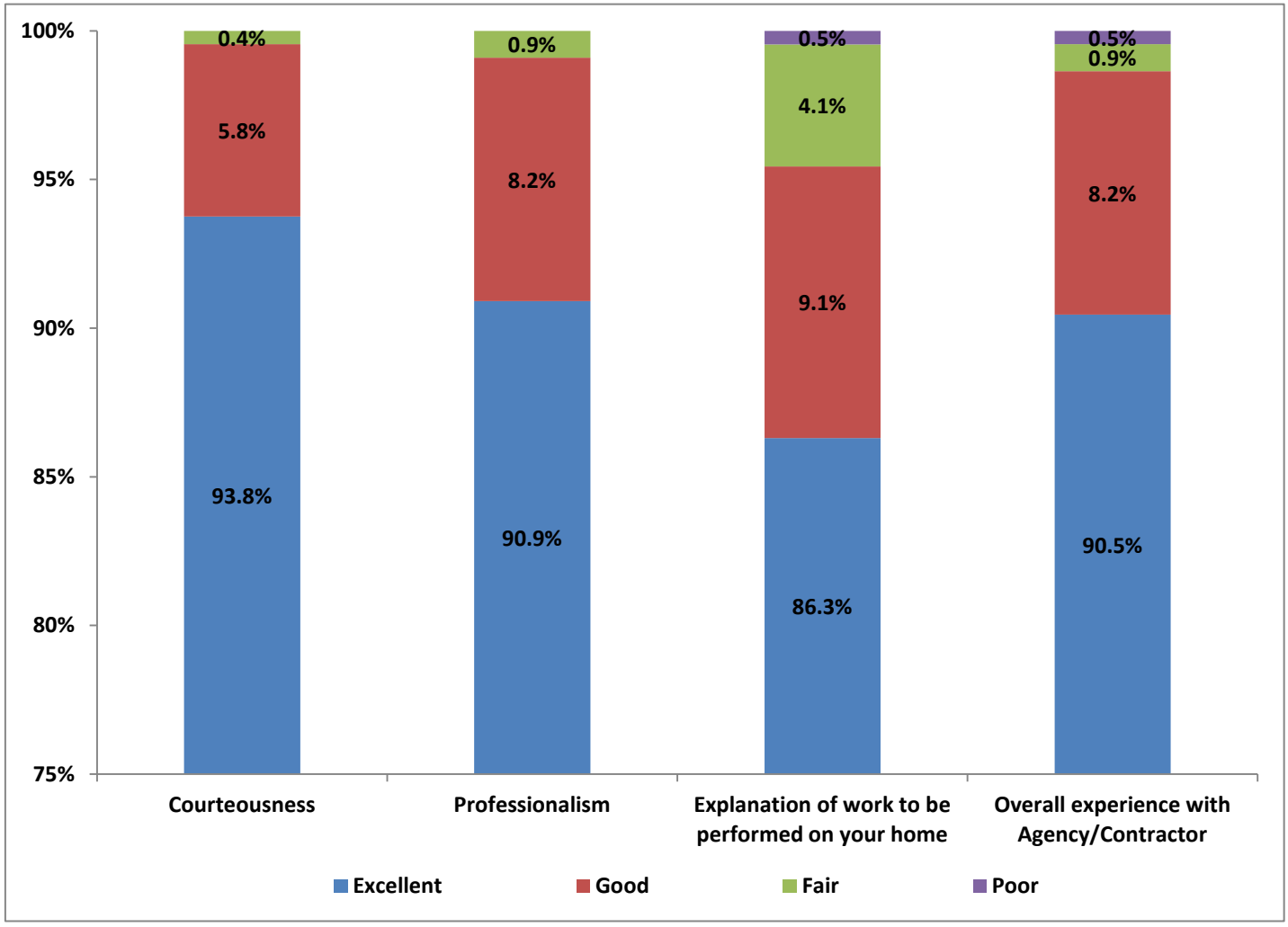
How much do you think the weatherization you received will affect the comfort of your home?		
Answer Options	**Response Percent**	**Response Count**
Significantly	87.1%	196
Somewhat	11.1%	25
Very little	0.4%	1
Not at all	1.3%	3
	answered question	225
	skipped question	13



Idaho Power Weatherization Programs

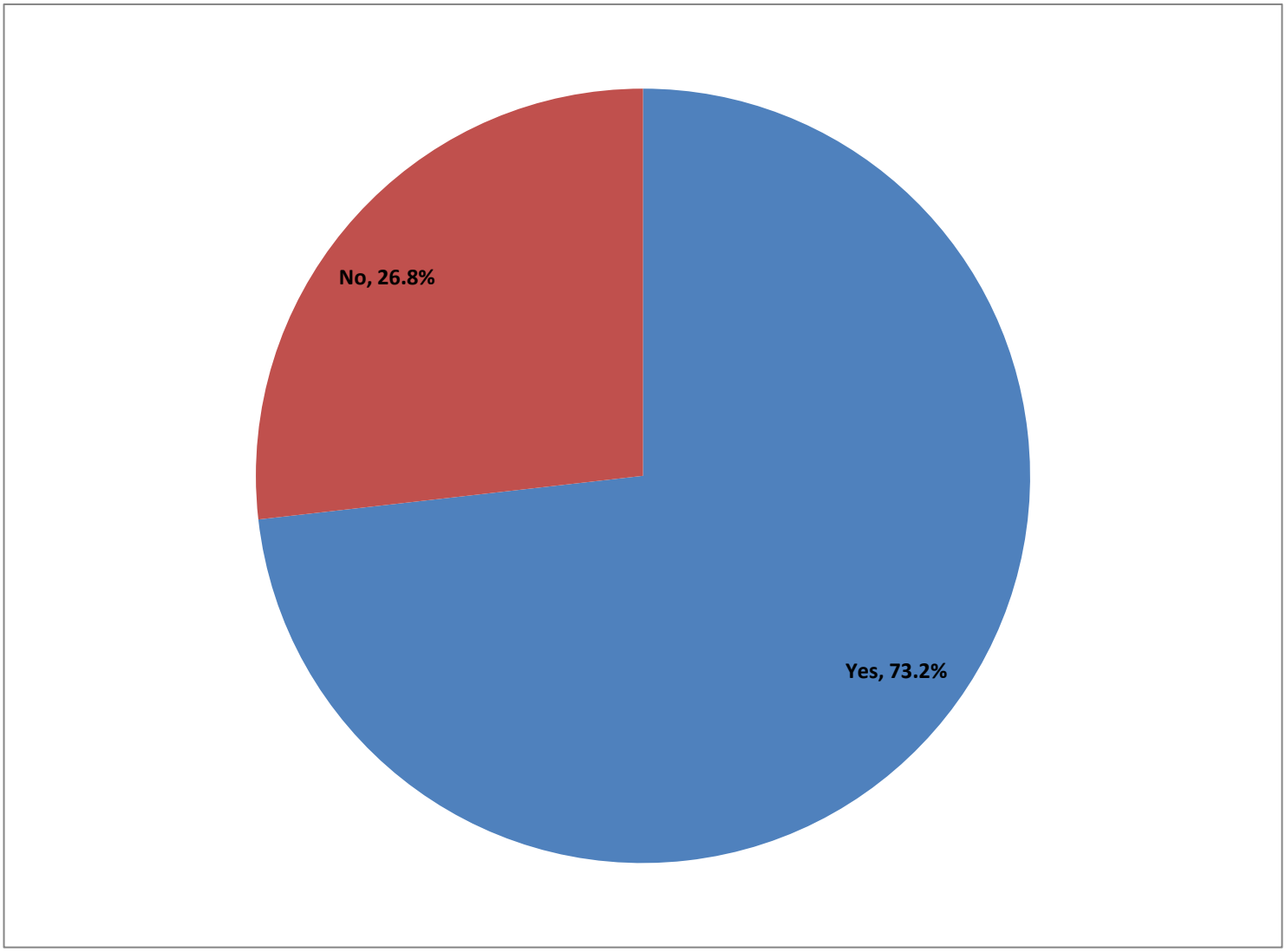
Rate the Agency/Contractor based on your interactions with them.					
Answer Options	**Excellent**	**Good**	**Fair**	**Poor**	**Response Count**
Courteousness	210	13	1	0	224
Professionalism	200	18	2	0	220
Explanation of work to be performed on your home	189	20	9	1	219
Overall experience with Agency/Contractor	199	18	2	1	220
				answered question	226
				skipped question	12

Rate the Agency/Contractor based on your interactions with them.				
	Excellent	**Good**	**Fair**	**Poor**
Courteousness	93.8%	5.8%	0.4%	0.0%
Professionalism	90.9%	8.2%	0.9%	0.0%
Explanation of work to be performed on your home	86.3%	9.1%	4.1%	0.5%
Overall experience with Agency/Contractor	90.5%	8.2%	0.9%	0.5%



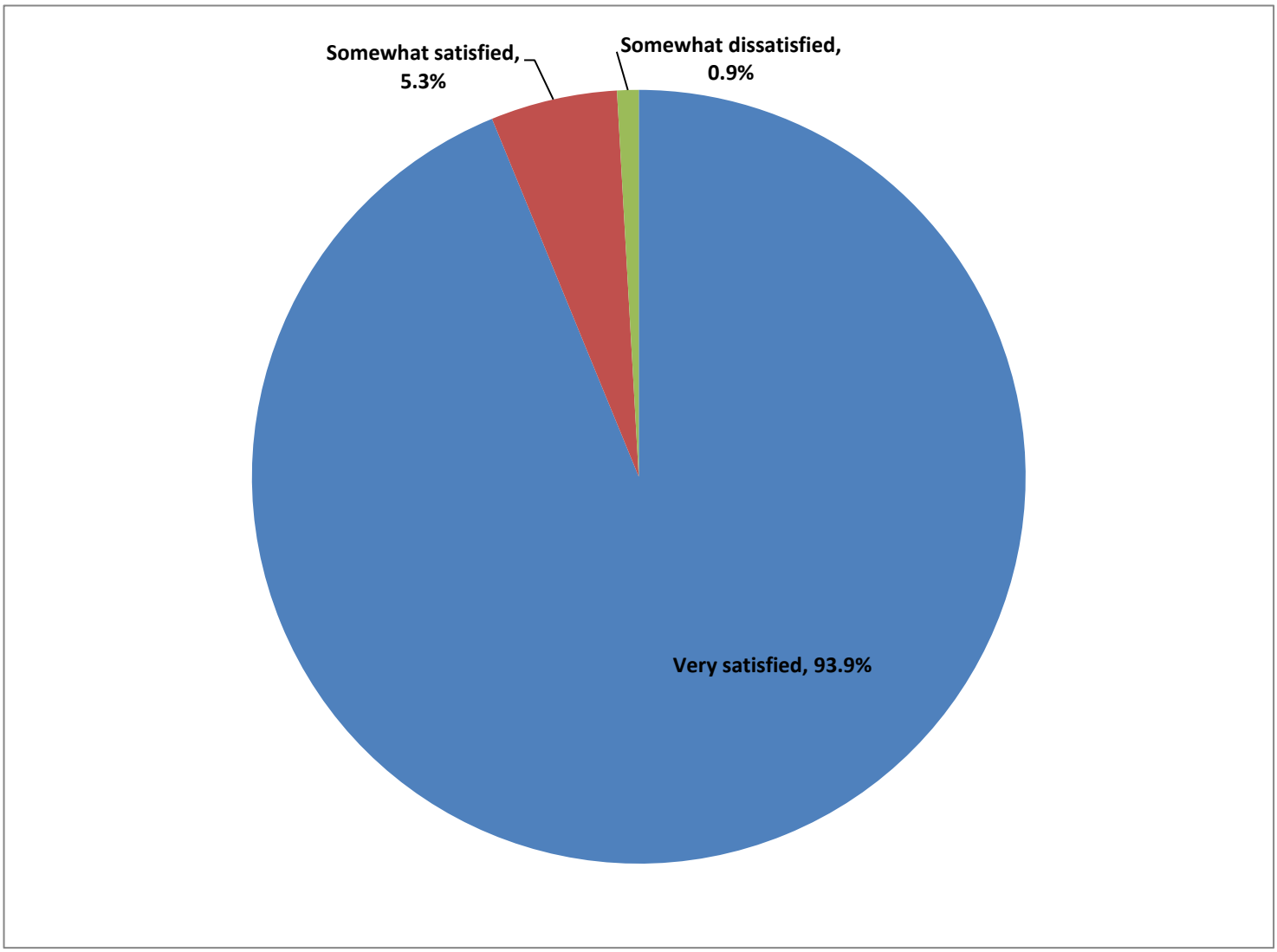
Idaho Power Weatherization Programs

Were you aware of Idaho Power's role in the weatherization of your home?		
Answer Options	**Response Percent**	**Response Count**
Yes	73.2%	164
No	26.8%	60
	answered question	**224**
	skipped question	**14**



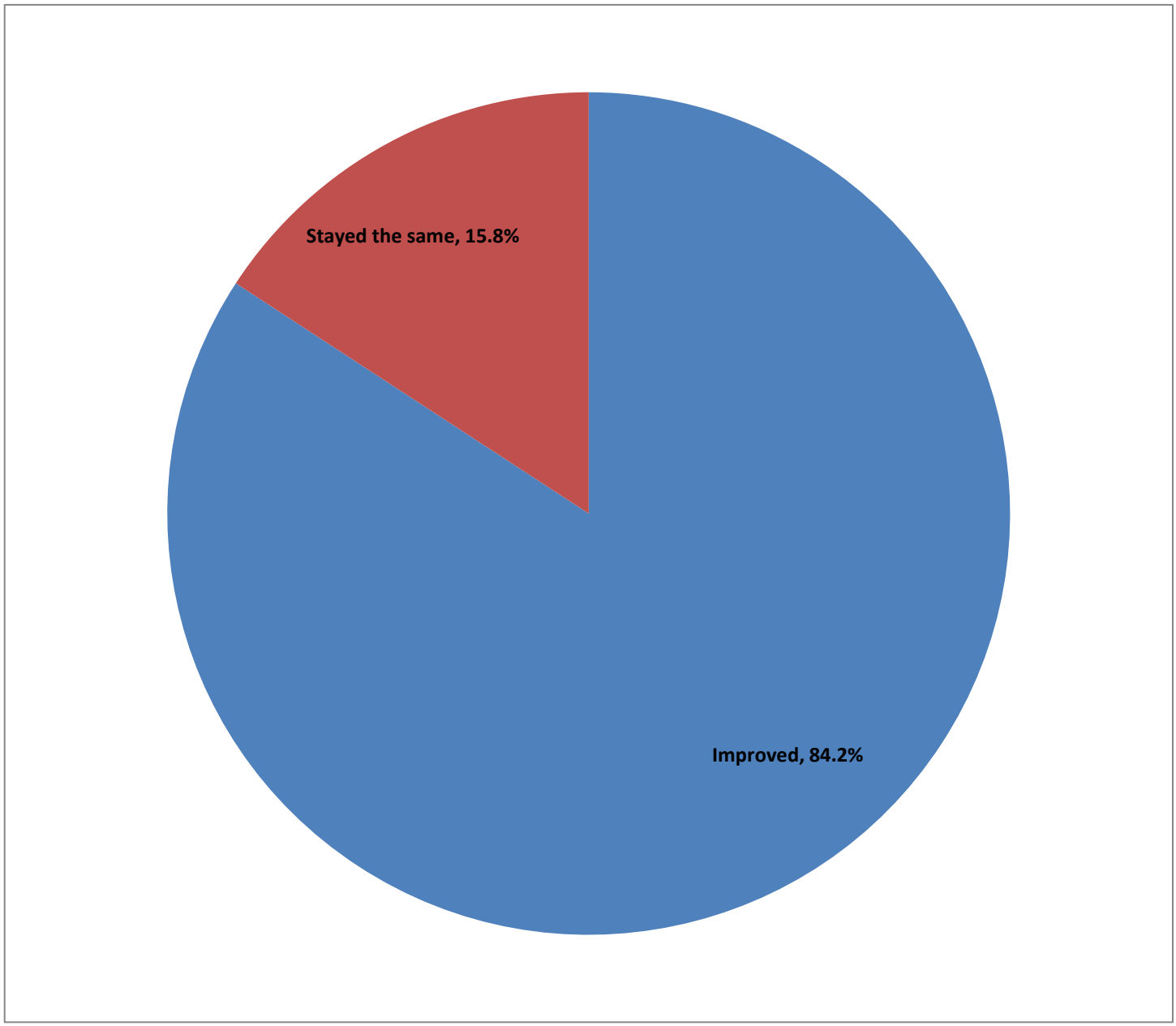
Idaho Power Weatherization Programs

Overall how satisfied are you with the weatherization program you participated in?		
Answer Options	**Response Percent**	**Response Count**
Very satisfied	93.9%	214
Somewhat satisfied	5.3%	12
Somewhat dissatisfied	0.9%	2
Very dissatisfied	0.0%	0
	answered question	228
	skipped question	10



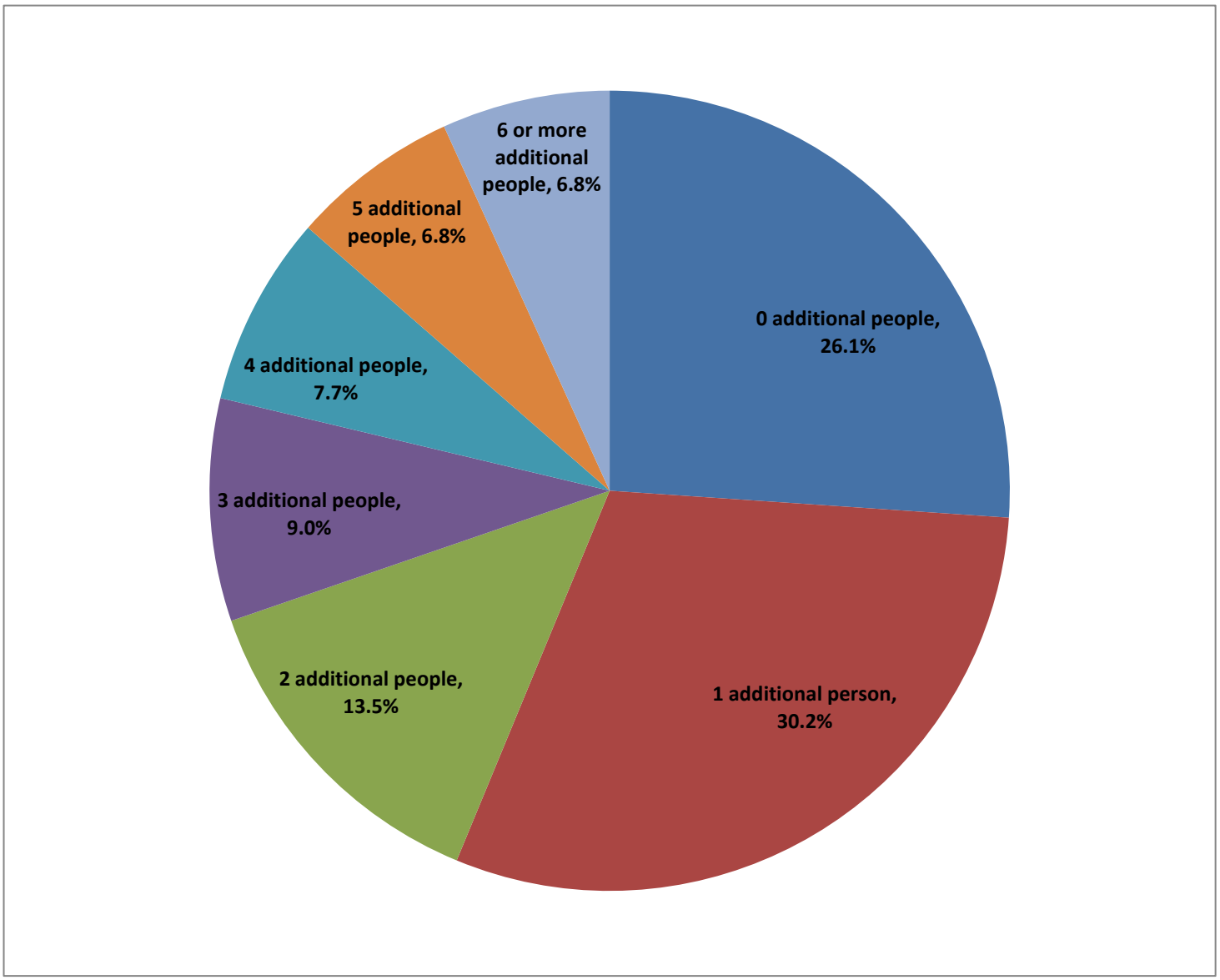
Idaho Power Weatherization Programs

How has your opinion of Idaho Power changed as a result of its role in the weatherization program?		
Answer Options	**Response Percent**	**Response Count**
Improved	84.2%	192
Stayed the same	15.8%	36
Decreased	0.0%	0
	answered question	228
	skipped question	10



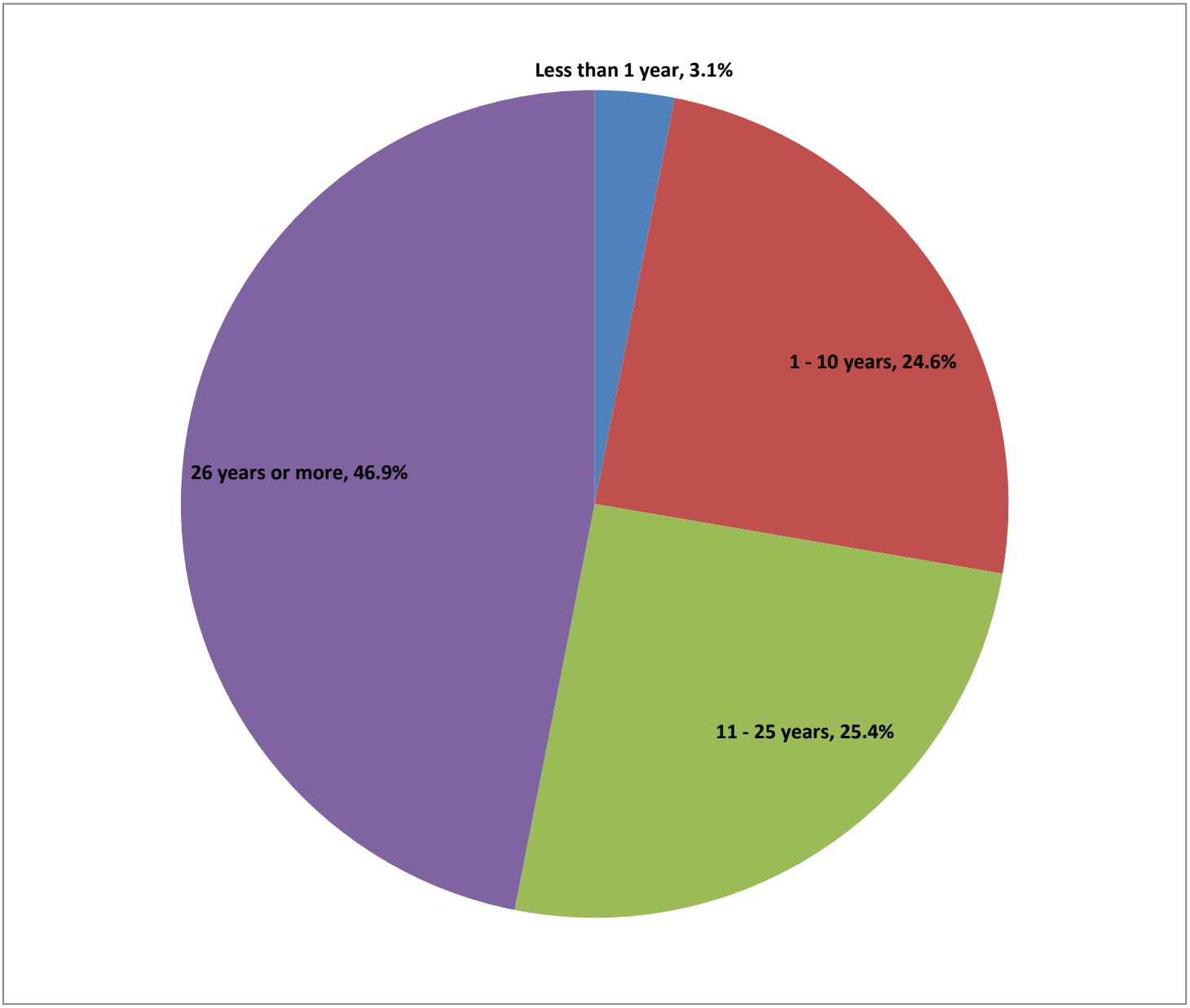
Idaho Power Weatherization Programs

How many people beside yourself live in your home year-round?		
Answer Options	**Response Percent**	**Response Count**
0 additional people	26.1%	58
1 additional person	30.2%	67
2 additional people	13.5%	30
3 additional people	9.0%	20
4 additional people	7.7%	17
5 additional people	6.8%	15
6 or more additional people	6.8%	15
	answered question	222
	skipped question	16



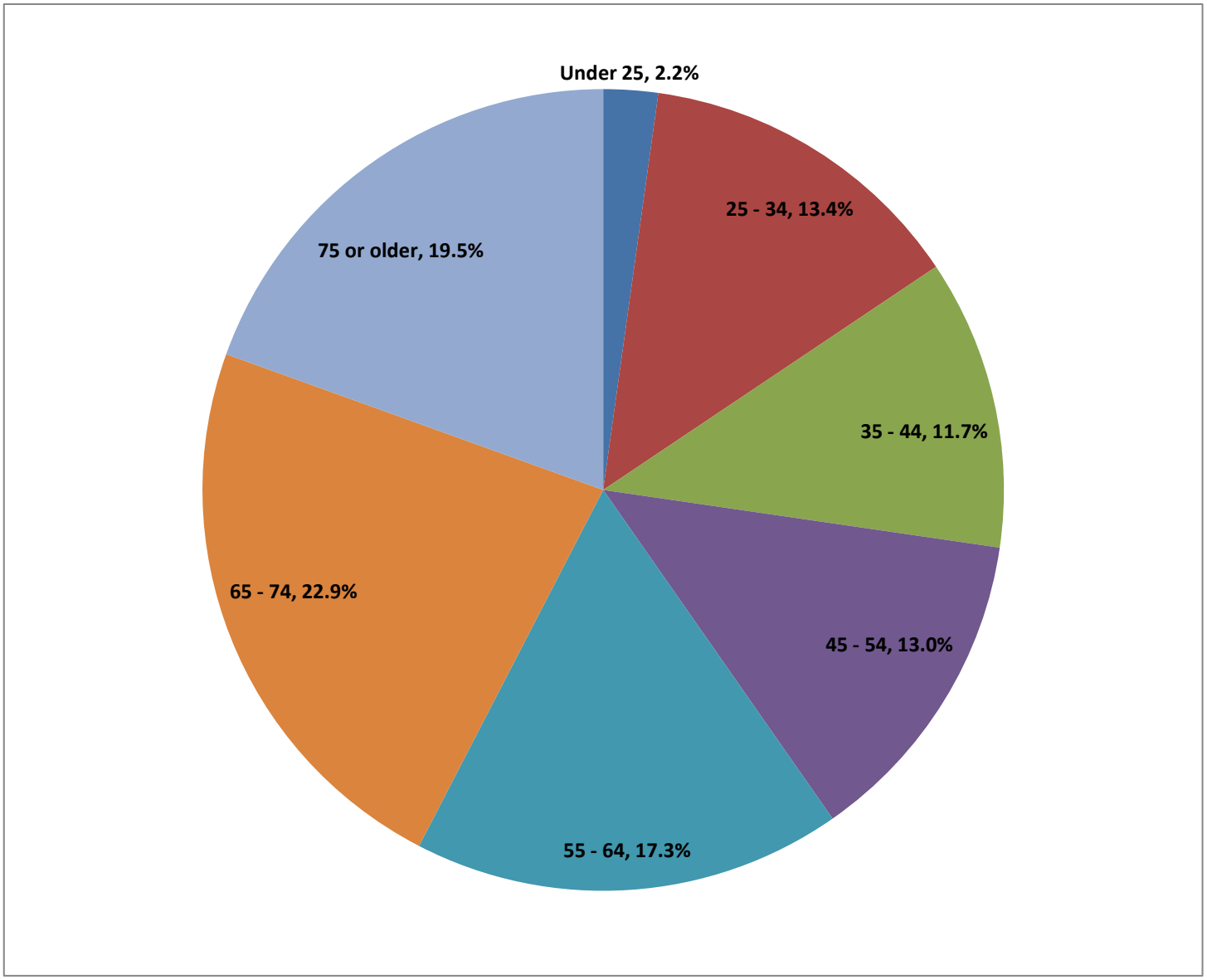
Idaho Power Weatherization Programs

How long have you been an Idaho Power customer?		
Answer Options	**Response Percent**	**Response Count**
Less than 1 year	3.1%	7
1 - 10 years	24.6%	56
11 - 25 years	25.4%	58
26 years or more	46.9%	107
	answered question	**228**
	skipped question	**10**



Idaho Power Weatherization Programs

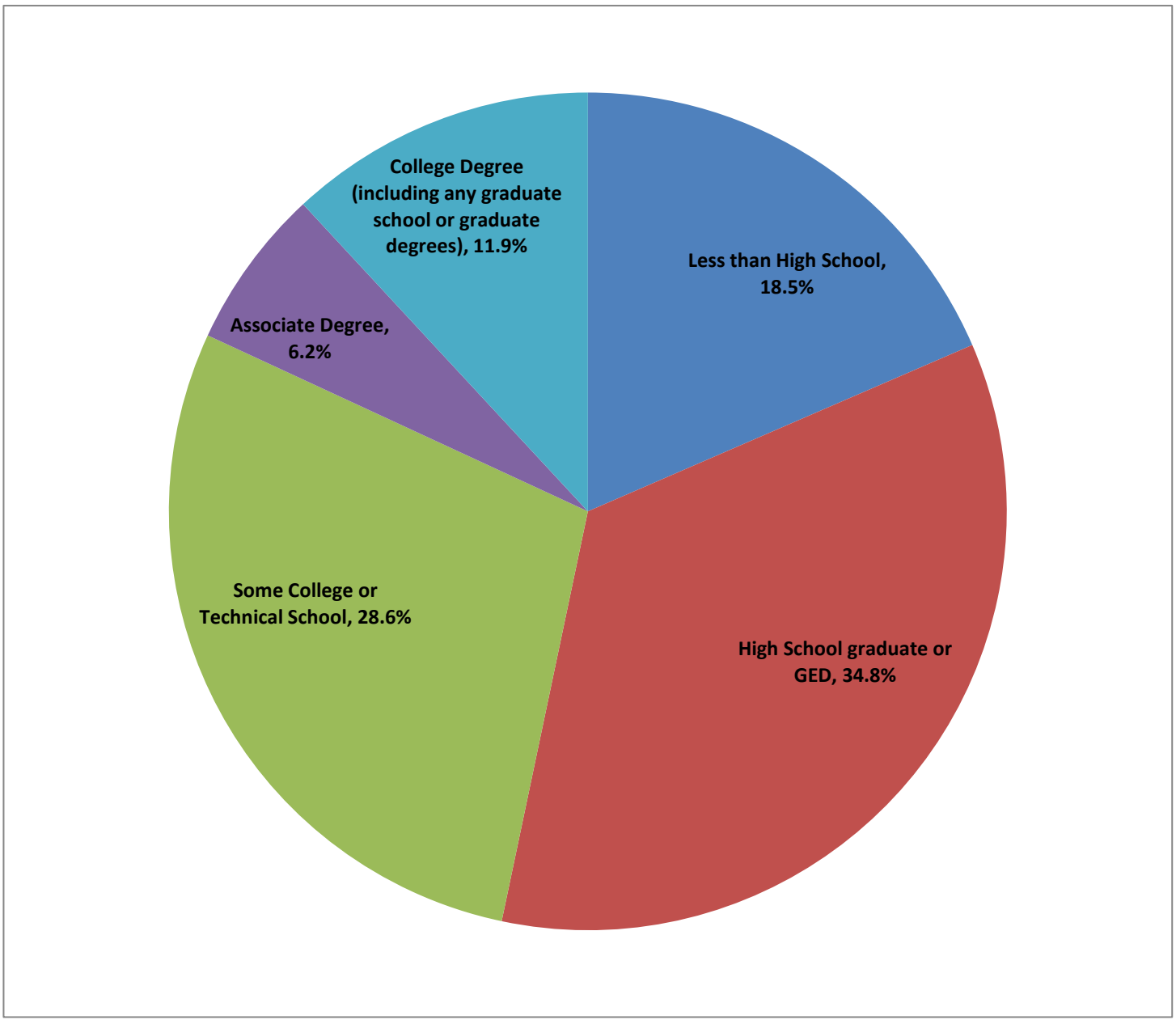
Please select the category below that best describes your age:		
Answer Options	**Response Percent**	**Response Count**
Under 25	2.2%	5
25 - 34	13.4%	31
35 - 44	11.7%	27
45 - 54	13.0%	30
55 - 64	17.3%	40
65 - 74	22.9%	53
75 or older	19.5%	45
	answered question	231
	skipped question	7



Idaho Power Weatherization Programs

Select the response below that best describes the highest level of education you have attained:

Answer Options	Response Percent	Response Count
Less than High School	18.5%	42
High School graduate or GED	34.8%	79
Some College or Technical School	28.6%	65
Associate Degree	6.2%	14
College Degree (including any graduate school or graduate degrees)	11.9%	27
answered question		227
skipped question		11



Idaho Power Weatherization Programs

Please share any other comments you may have regarding Idaho Power's weatherization programs. Thank you.

Answer Options	Response Count
	89
answered question	89
skipped question	149

Response Text
I'm very much surprised, about how much that Idaho Power is willing to re-invest back into their customers with programs like this.
Thank you.
client did not complete survey
Thank you
This program has changed my lifestyle tremendously. Having just a wood stove was hard because I could never leave the house in winter. Having AC made it so I didn't get heat exhaustion after installation! The insulation/windows helped with temperature regulation and I don't have to put cardboard in the windows every morning-and fans every night. That will give me hours every summer that I won't spend doing that. Thank you.
Very helpful and needed.
Thank you!
everyone was very kind.
client refused to fill out
They (HVAC) never returned my phone calls. Other than that, my experience was wonderful.
I need help paying my utility bill during winter months Dec-Feb/March
customer did not finish survey
Very pleased with all of installs thanx soo much
They did a wonderful job on the windows and the furnace was totally unexpected. Gentlemen were very professional
I am very grateful for the services my family has received. I was not able to be home for any explanations by the employees, but I have tons of pamphlets & instruction manuals that were left for me.
Very good program for people who don't make much money and can't afford power bills
Excellent Program thanks for your help. (Excellente Programa Gracias Por Su Ayuda)
would be nice to know how to use thermostat
Very happy with the improvements
The team that worked on my house were very friendly , efficient, and informative. Quick and efficient. Thanks for the help...
We are so happy there is a program like this. Our house is so much more comfortable and the savings on our power bill will be tremendous.
Everything that was done has been a very big blessing. We feel very thankful for the way we have been provided for. Thank you ! (not a strong enough expression)
I think this is a wonderful program. With only 1 income right now and furnace was out we could not afford a new one. Friends of ours told us about the program. This program has gone above & beyond what we expected so we want to thank you for this service.
I am so thrilled to have all this work done. Fantastic. It is so great that I received this work and now everything is new and no charge.
Everyone was great and furnace is fantastic.

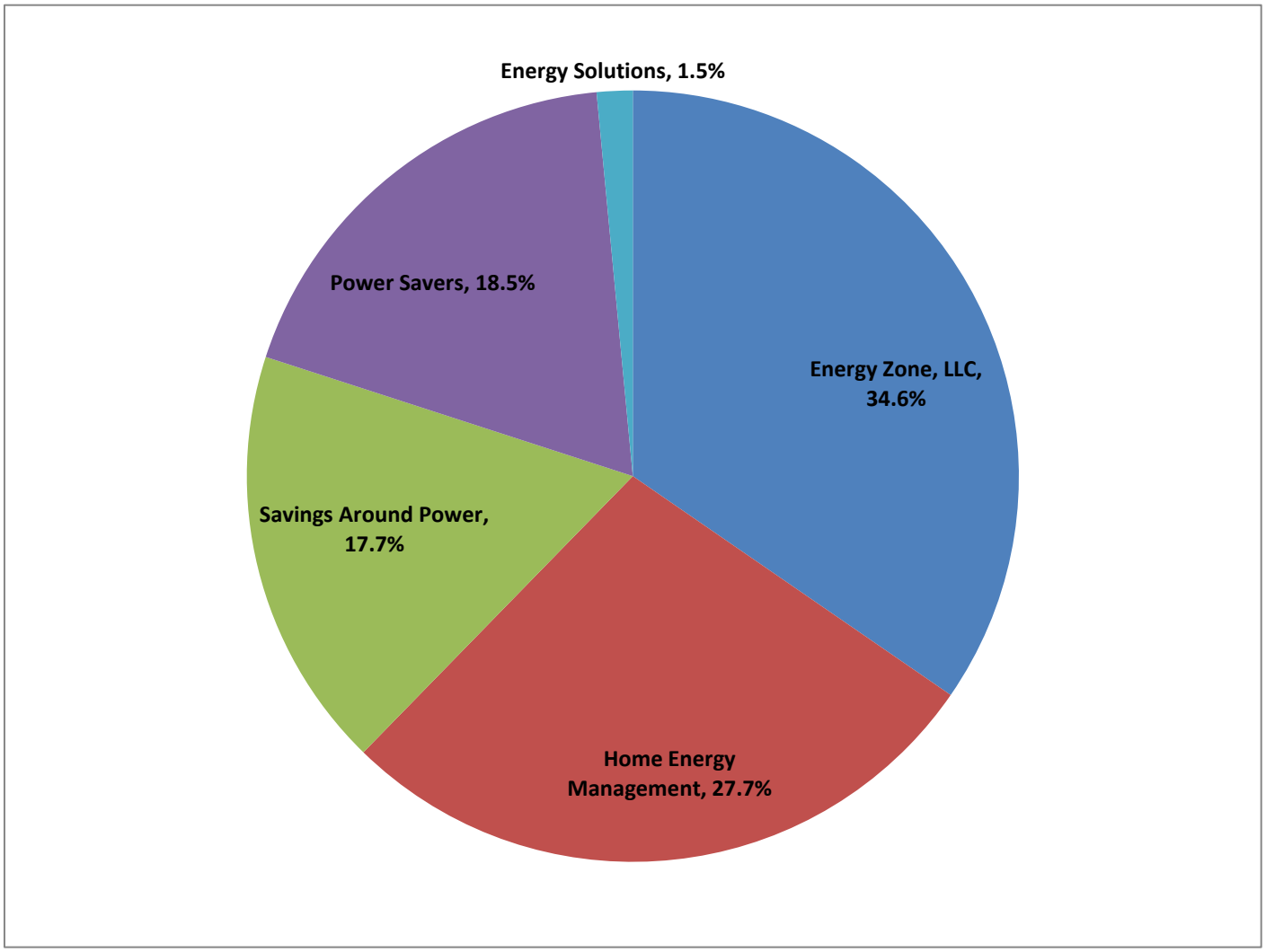
Just that we are very thankful for the help. We are nice and warm this year!
thank you!
Excellent program, all states should have the same, the program has helped me more than you can imagine.
its a good thing
Such a blessing and improvement! Thank you for all you have done!
cover and block out windows and doors.
wish you would have done more with heating
Thank you for all your help I appreciate it a lot, especially for my escalating power bills. Thank you for the work. Gracias portodo su ayuda fuedo mucho, ayuda para mi y mes hijos fue on escalente. Trabajo gracias.
Very good program
Thank you so very much for everything! I am very impressed and grateful for all you have done for me and my family!
Great for people!
Thank you for all your help. Looking forward to seeing the savings in the following months.
Thank you so much for all the work you did on my home this is such a wonderful program.
Wonderful program. We are very blessed to have participated.
The guys were nice. I'm the one who asked about how things work. Most of the time it was one guy who did most of the work. Sometimes there were 3 others standing around talking to each other. They did a good job of cleaning up.
Did not appreciate the fact that the person who installed the a/c and heating unit did not use screws in all the assigned locations for screws to make the unit stable and safe.
My electric bill was reduced immediately! Great!
I appreciate the program so much as I could never afford to do all of the improvements. Thank you.
Idaho Power for your concern and help.
This is a wonderful program. I am so thankful for all that has been done in my home to help with my power bill!
This program is a God send!
I love the fact that you help people ho are not able to do all of this themselves. I want to thank everyone involved in this program. I thank everyone for their hard work.
Very helpful with reducing power bill
All the subcontractors were awesome! Explained what they were doing and why. Thank you!
If I'm to learn something new, it's best if I get to push the buttons.
None of your business what my education is, I have no comments, this is a joke.
Great work.
Thanks and bless you all
Very pleased with the program, thank you.
Excellent programs
The combination of insulation-vent sealing, pipe insulation, ceiling insulation--have resulted in more heat retention. Still some inconvenience with furnace pipes sticking out in hallway and furnace filter is an obsolete size and doesn't fit properly. Overall, we are very pleased with the personel and program! Thank you!
My home is so much better- in all ways so I intend to stay here as long as I can- until I have to go to a nursing home!
Thank you very much
Very Pleased with everything done
Thank you- such a wonderful service for our elderly citizens.
Thanks it will help us as an older couple
All contractors and El Ada folks were excellent. I couldn't be happier.
I am extremely happy with all the work provided and excellent communication. For someone with limited income what an exceptional program. Thank you very much
This is a great program for hard working people trying to make ends meet but just don't have anything extra to spend on weatherization

I felt very grateful for everything the program did. I was amazed at the amount of help I received.
A great program, Help me to save money on cost & heating
This program has been the most extraordinary experience! I bought a house that had been empty for 2 years. I thought I might need weather stripping for the doors- how wrong- ? The weather stripping was fine- other issues were needing attention. It's hard to comprehend all the improvements and impact they will have on my life! Thank you.
Thank you so much
Your weatherization team has been wonderful to work with. Thank you so much for the repairs and improvements.
Inspectors went up above andn beyond their work, making sure my front door didn't leak at the bottom!
I would be homeless if it weren't for your help
I am very very happy--I will sleep very much better
The different contractors were excellent
I didn't know about this program until a friend told me at school. My trailer was horrible to live in, but since the weatherization, I am liking my new home.
Very Pleased
Thank you so much you made this little house a home. Everyone was so nice. From beginning to end!
I love it and thank you so very much
Did a great job
I am very satisfied with everyone, they were very professional. (Muy satisfecha con todo muy profecional.)
We are very thankful for Idaho Power and this marvelous program that improved our home efficiency. Looking forward to utility bill decreasing as we are all electric home.
Idaho residents are very fortunate to have Idaho Power providing our energy use, compared to other states. Good Job!
Thank you so much.
Everything and everyone was great.
We appreciate all the things that have been done & it was done quickly and efficiently and everyone involved was very courteous. Our home now stays warmer than it did before!
As I'm on a fixed income insulating the attic helped greatly and the weather stripping around the doors.
Outstanding in ALL ways. Professional people doing outstanding work.
keep up the good work and thank you very much
Thank you very much for you help. They were very kind. (Muchas gracias partuda su alluda fueron muy amabres.)
Absolutely love it. Am amazed & very appreciative. Great community service.

Weatherization Solutions 2016 Survey Results

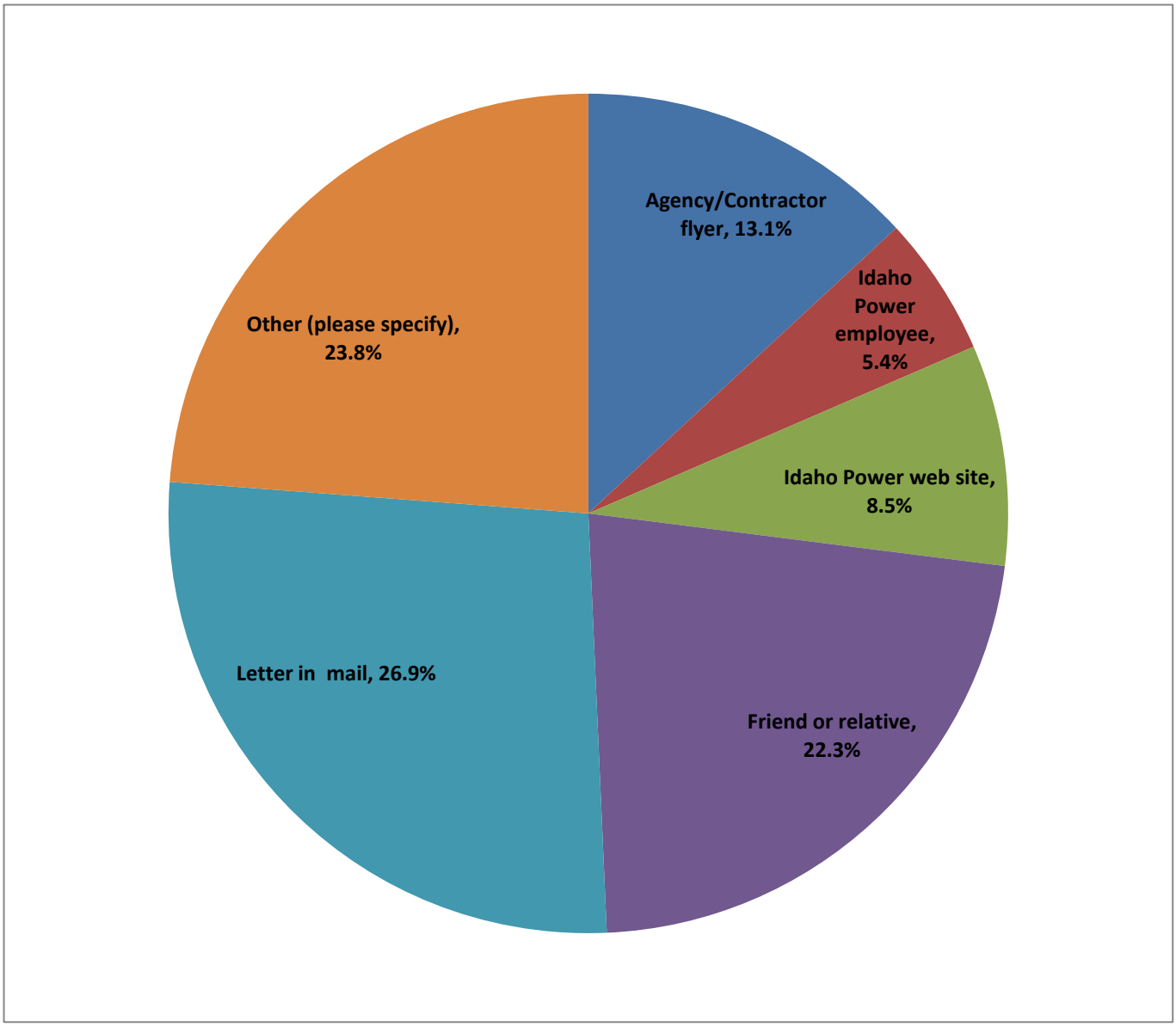
Idaho Power Weatherization Programs

Agency/Contractor Name:		
Answer Options	**Response Percent**	**Response Count**
Energy Zone, LLC	34.6%	45
Home Energy Management	27.7%	36
Savings Around Power	17.7%	23
Power Savers	18.5%	24
Energy Solutions	1.5%	2
	answered question	130
	skipped question	0



Idaho Power Weatherization Programs

How did you learn about the weatherization program(s)?		
Answer Options	**Response Percent**	**Response Count**
Agency/Contractor flyer	13.1%	17
Idaho Power employee	5.4%	7
Idaho Power web site	8.5%	11
Friend or relative	22.3%	29
Letter in mail	26.9%	35
Other (please specify)	23.8%	31
	answered question	130
	skipped question	0



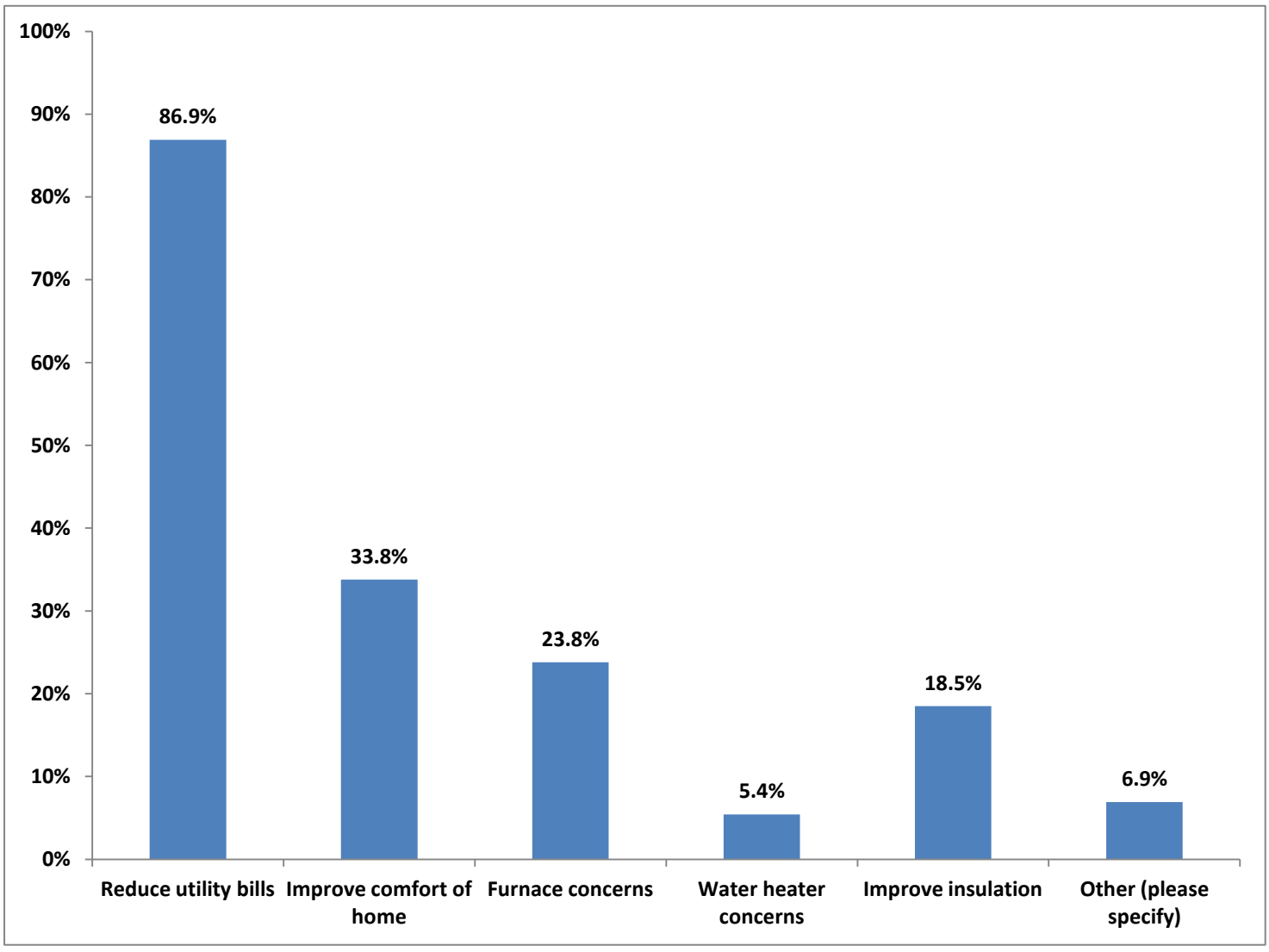
How did you learn about the weatherization program(s)?

Other (please specify)
facebook
Spring Fair Idaho Power Booth
SEICAA
bill stuffer
bill stuffer
bill stuffer
bill stuffer
idaho power flyer in bill
flyer in idaho power bill
bill stuffer
bill stuffer
bill insert
bill insert
Home Energy Fair Idaho Power Flyer
bill insert
bill insert
bill insert
Mtn. Home Newspaper
American Red Cross
bill insert
Idaho Power pamphlet
bill insert
idaho power newsletter
IPC bill insert
IPC bill insert
idaho power bill insert
Idaho Power bill insert
Bill insert
CCOA
Idaho Power Bill

Idaho Power Weatherization Programs

What was your primary reason for participating in the weatherization program?

Answer Options	Response Percent	Response Count
Reduce utility bills	86.9%	113
Improve comfort of home	33.8%	44
Furnace concerns	23.8%	31
Water heater concerns	5.4%	7
Improve insulation	18.5%	24
Other (please specify)	6.9%	9
	answered question	130
	skipped question	0

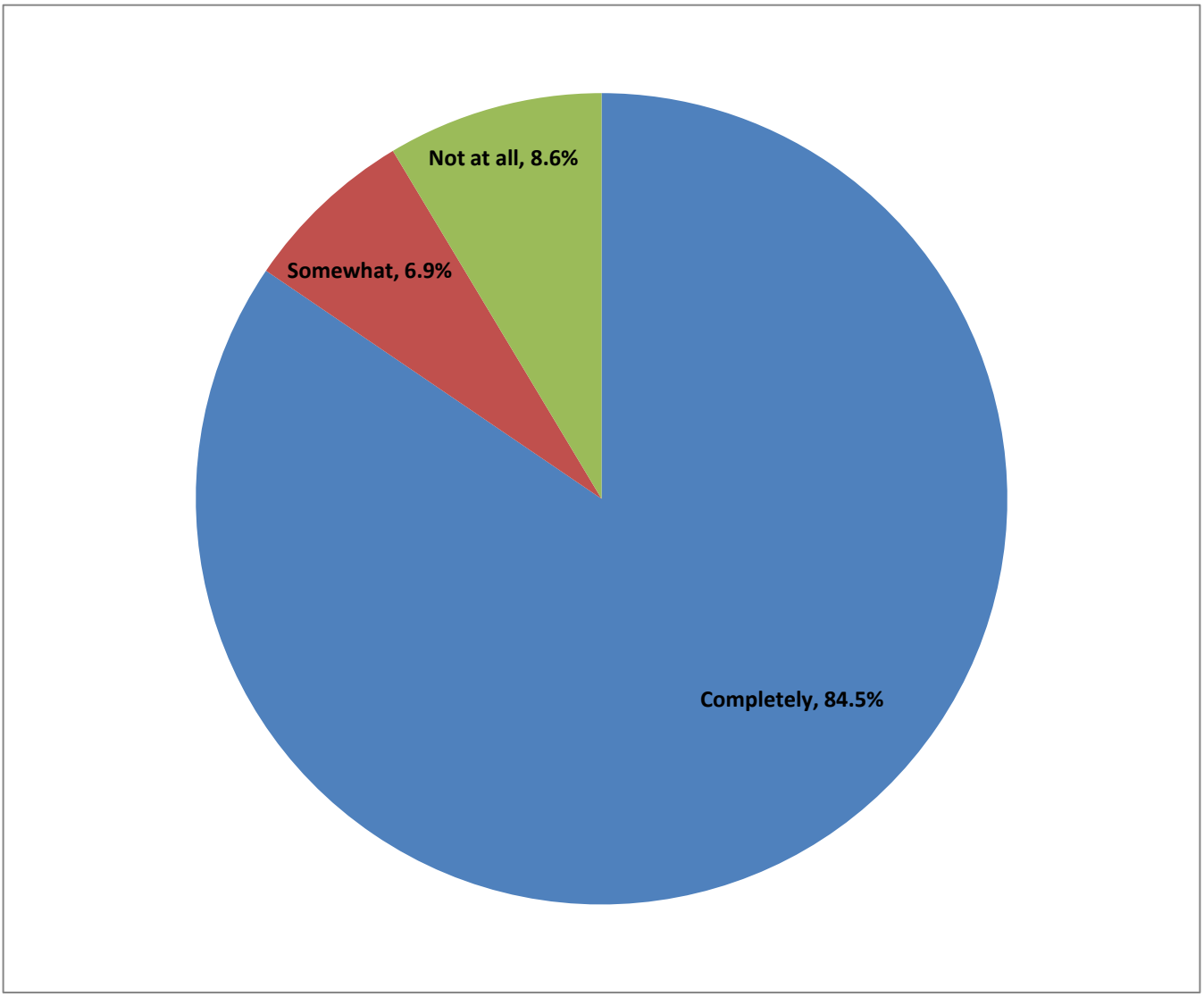


What was your primary reason for participating in the weatherization program?

Other (please specify)
seal home better when windy
utility bills and heating efficiency
electrical problem
replace old doors
especially water heater
Furnace went out. Ended up getting on at Home Depot.
I was cold
was unable to do these things ourself and had lost hope after rough stroke last year. I'm overwhelmed by everything your doing to help us help you in saving energy. God Bless~
Better heating

Idaho Power Weatherization Programs

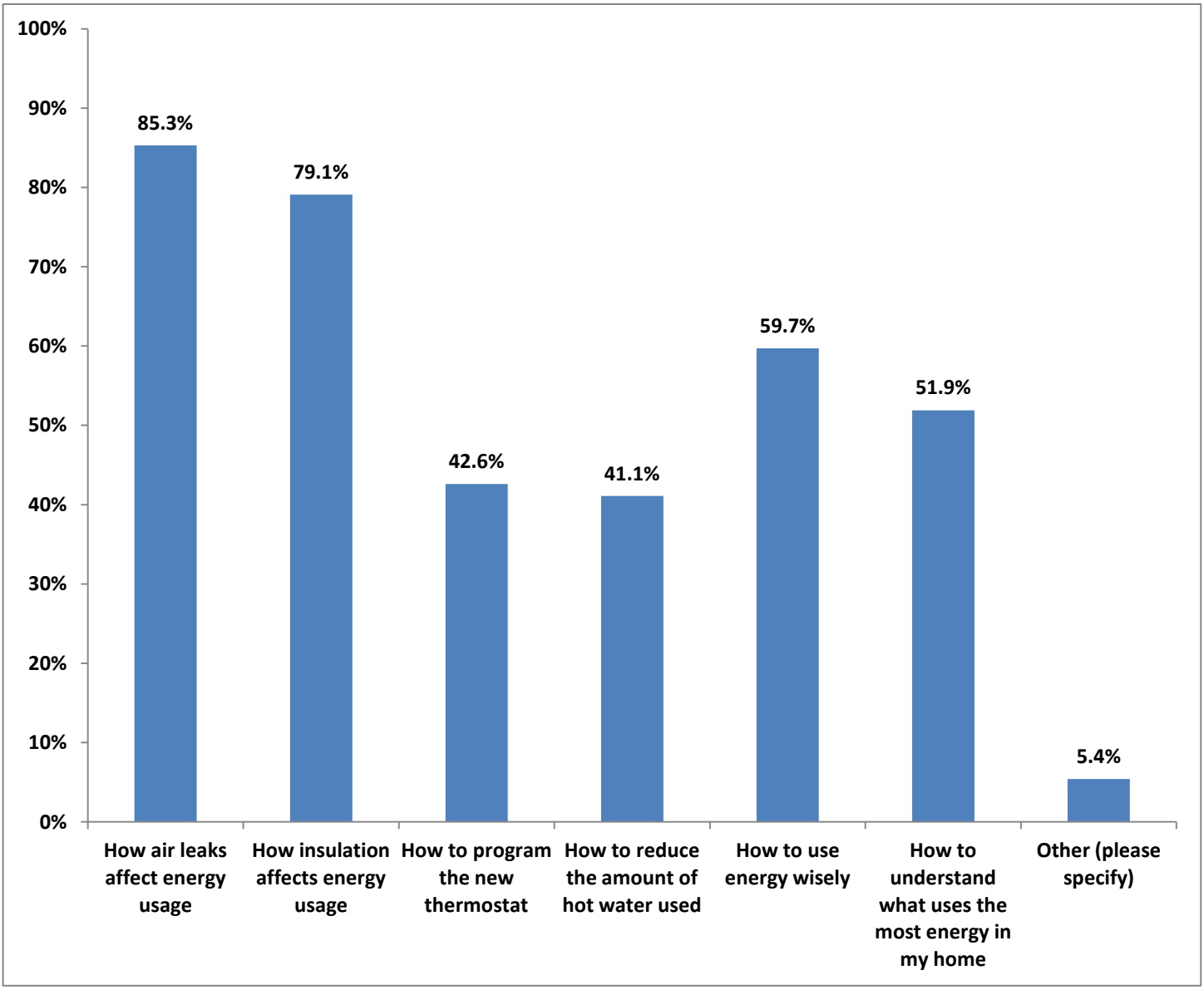
If you received any energy efficiency equipment upgrade as part of the weatherization, how well was the equipment's operation explained to you?		
Answer Options	**Response Percent**	**Response Count**
Completely	84.5%	98
Somewhat	6.9%	8
Not at all	8.6%	10
	answered question	**116**
	skipped question	**14**



Idaho Power Weatherization Programs

Which of the following did you learn about from the auditor or crew during the weatherization process? (Check all that apply)

Answer Options	Response Percent	Response Count
How air leaks affect energy usage	85.3%	110
How insulation affects energy usage	79.1%	102
How to program the new thermostat	42.6%	55
How to reduce the amount of hot water used	41.1%	53
How to use energy wisely	59.7%	77
How to understand what uses the most energy in my home	51.9%	67
Other (please specify)	5.4%	7
	answered question	129
	skipped question	1

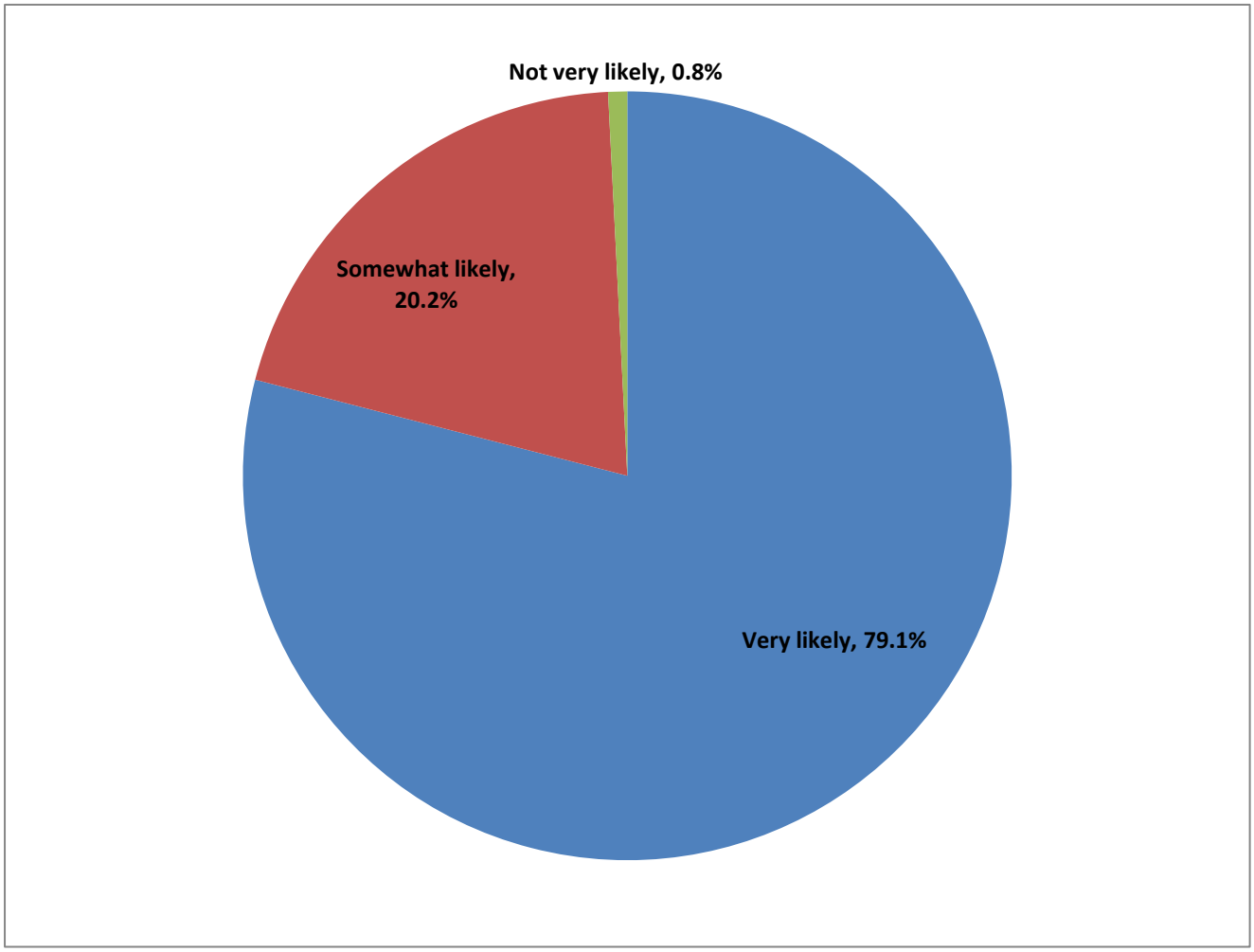


Which of the following did you learn about from the auditor or crew during the weatherization process? (Check all that apply)

Other (please specify)
where the cold air was coming from
info about attic insulation
info from booklets
air flow & circulation
what they were doing and very in-depth explanations
We also learned how ld. Power cares, can't thank you enough
That the ceiling heat was still drawing power

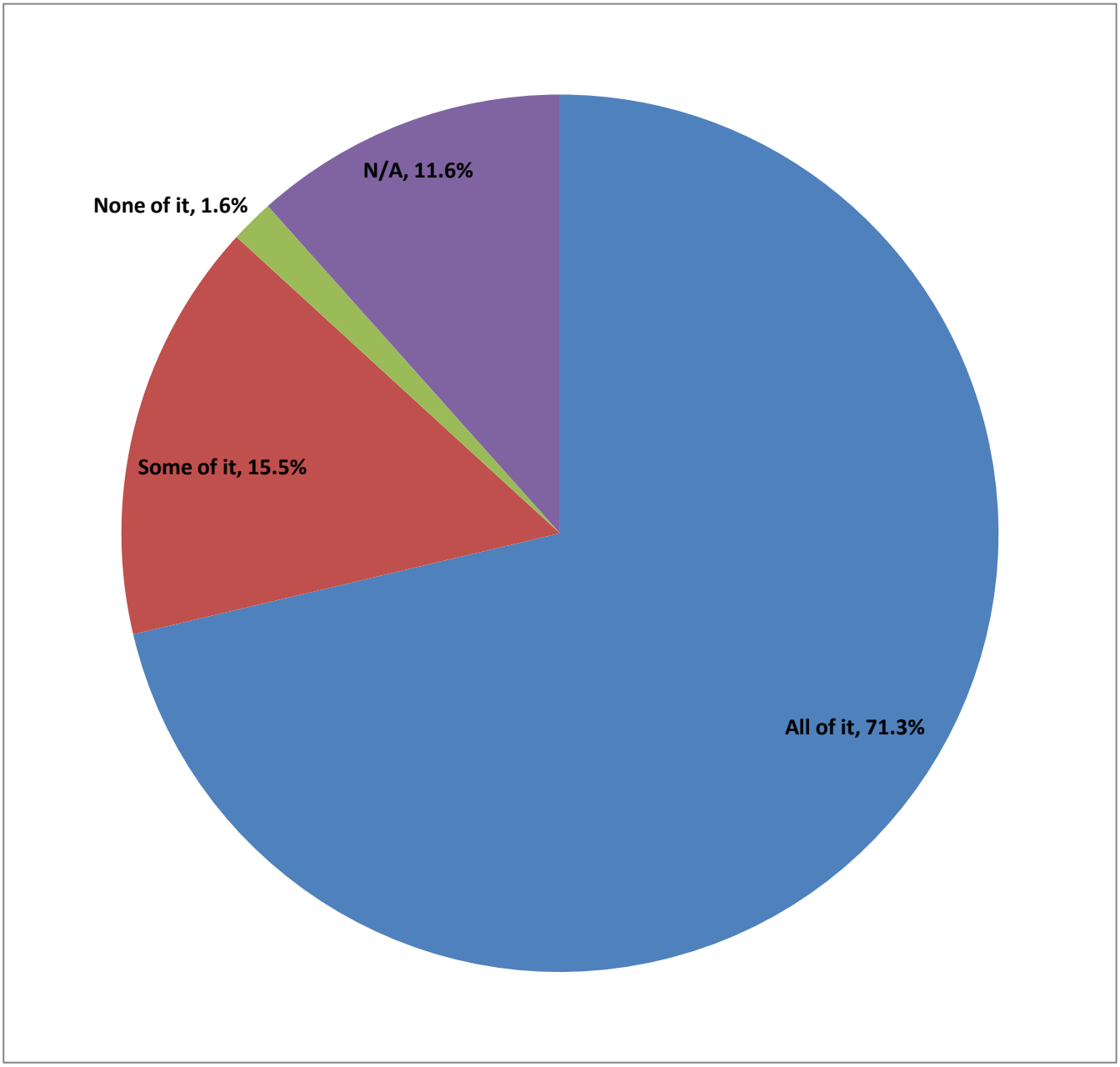
Idaho Power Weatherization Programs

Based on the information you received from the agency/contractor about energy use, how likely are you to change your habits to save energy?		
Answer Options	**Response Percent**	**Response Count**
Very likely	79.1%	102
Somewhat likely	20.2%	26
Not very likely	0.8%	1
Not likely at all	0.0%	0
	answered question	129
	skipped question	1



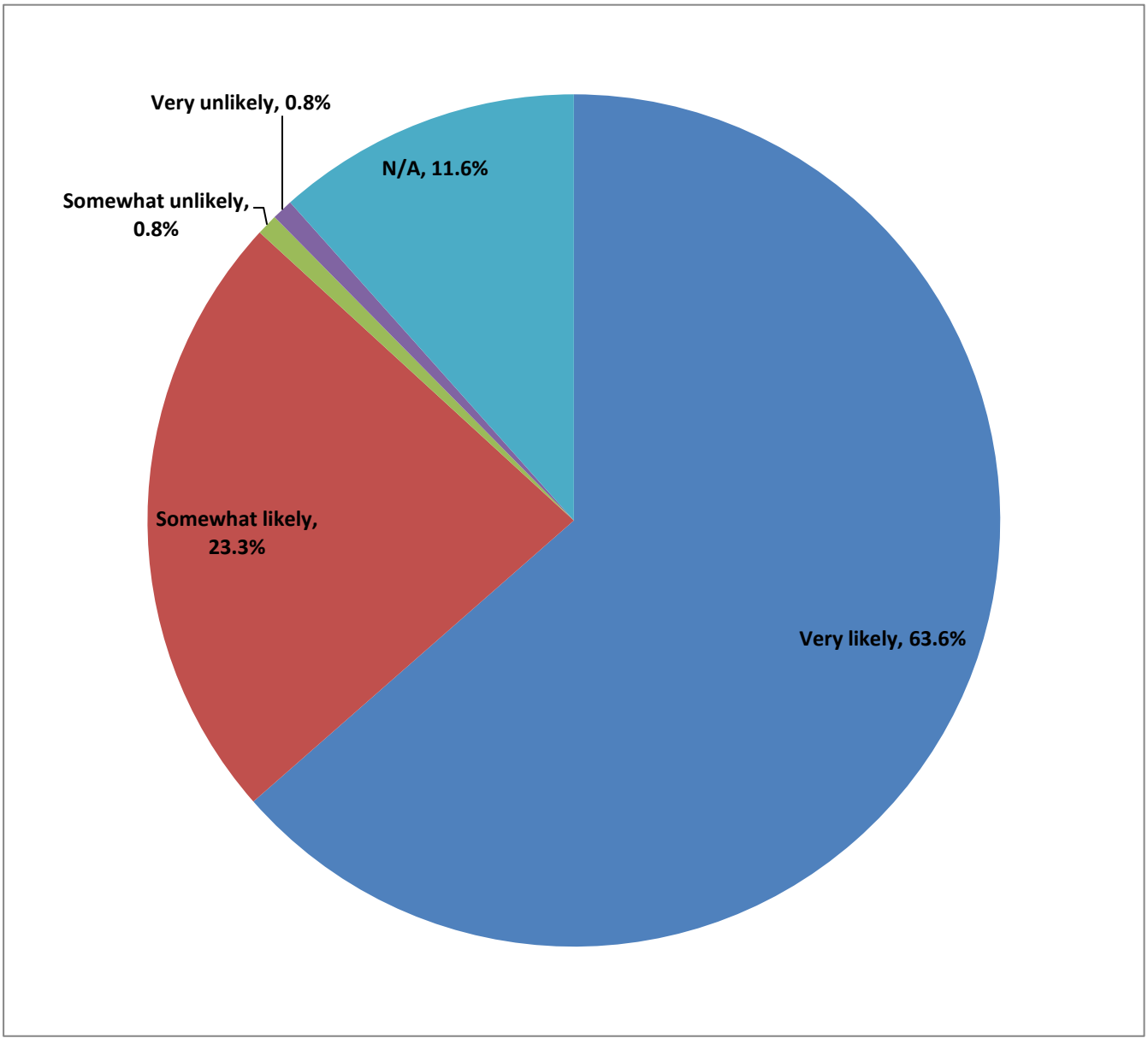
Idaho Power Weatherization Programs

How much of the information about energy use have you shared with other members of your household?		
Answer Options	**Response Percent**	**Response Count**
All of it	71.3%	92
Some of it	15.5%	20
None of it	1.6%	2
N/A	11.6%	15
	answered question	129
	skipped question	1



Idaho Power Weatherization Programs

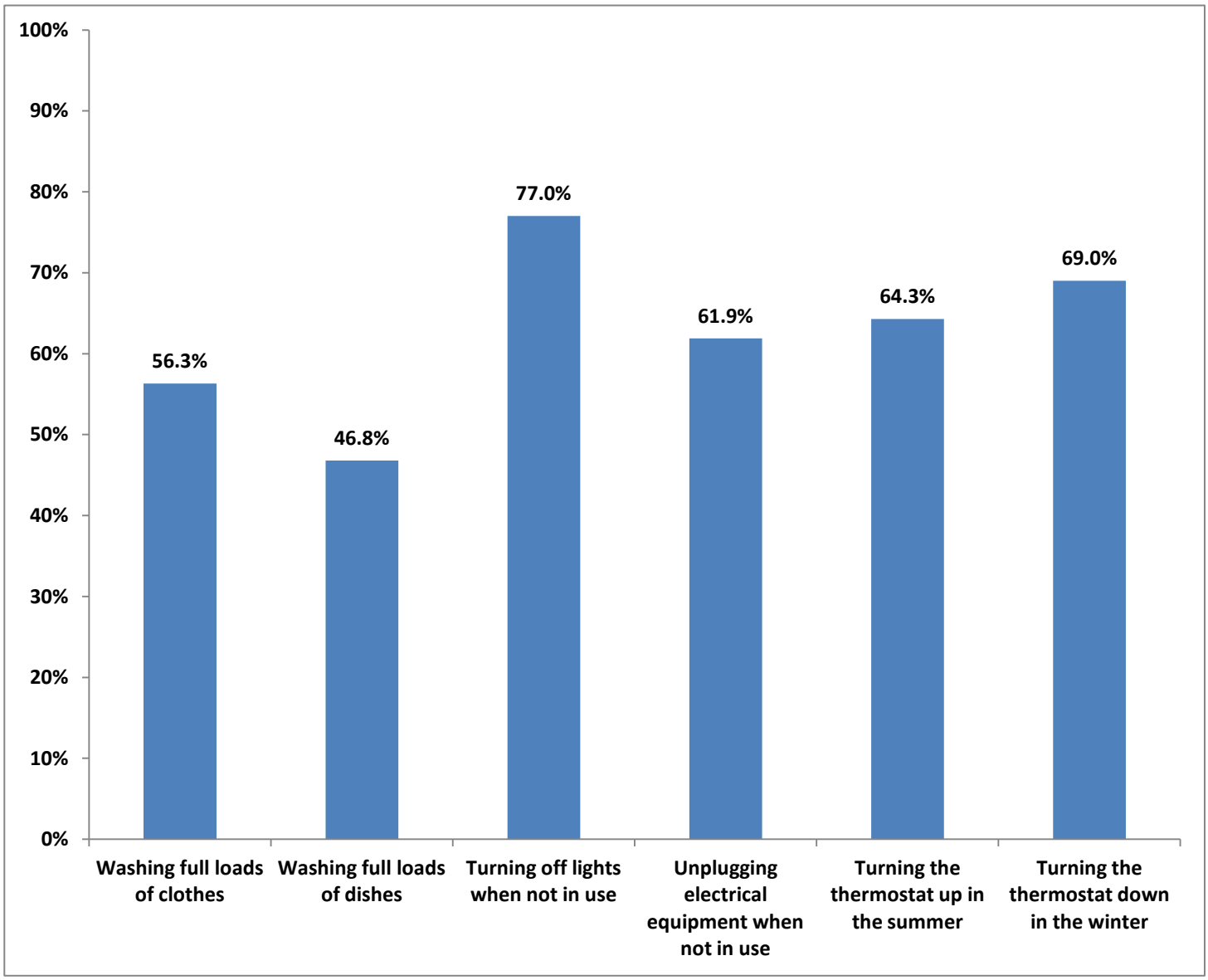
If you shared the energy use information with other members of your household, how likely do you think household members will change habits to save energy?		
Answer Options	**Response Percent**	**Response Count**
Very likely	63.6%	82
Somewhat likely	23.3%	30
Somewhat unlikely	0.8%	1
Very unlikely	0.8%	1
N/A	11.6%	15
	answered question	129
	skipped question	1



Idaho Power Weatherization Programs

What habits are you and other members of your household most likely to change to save energy? (check all that apply)

Answer Options	Response Percent	Response Count
Washing full loads of clothes	56.3%	71
Washing full loads of dishes	46.8%	59
Turning off lights when not in use	77.0%	97
Unplugging electrical equipment when not in use	61.9%	78
Turning the thermostat up in the summer	64.3%	81
Turning the thermostat down in the winter	69.0%	87
Other (please specify)		16
answered question		126
skipped question		4

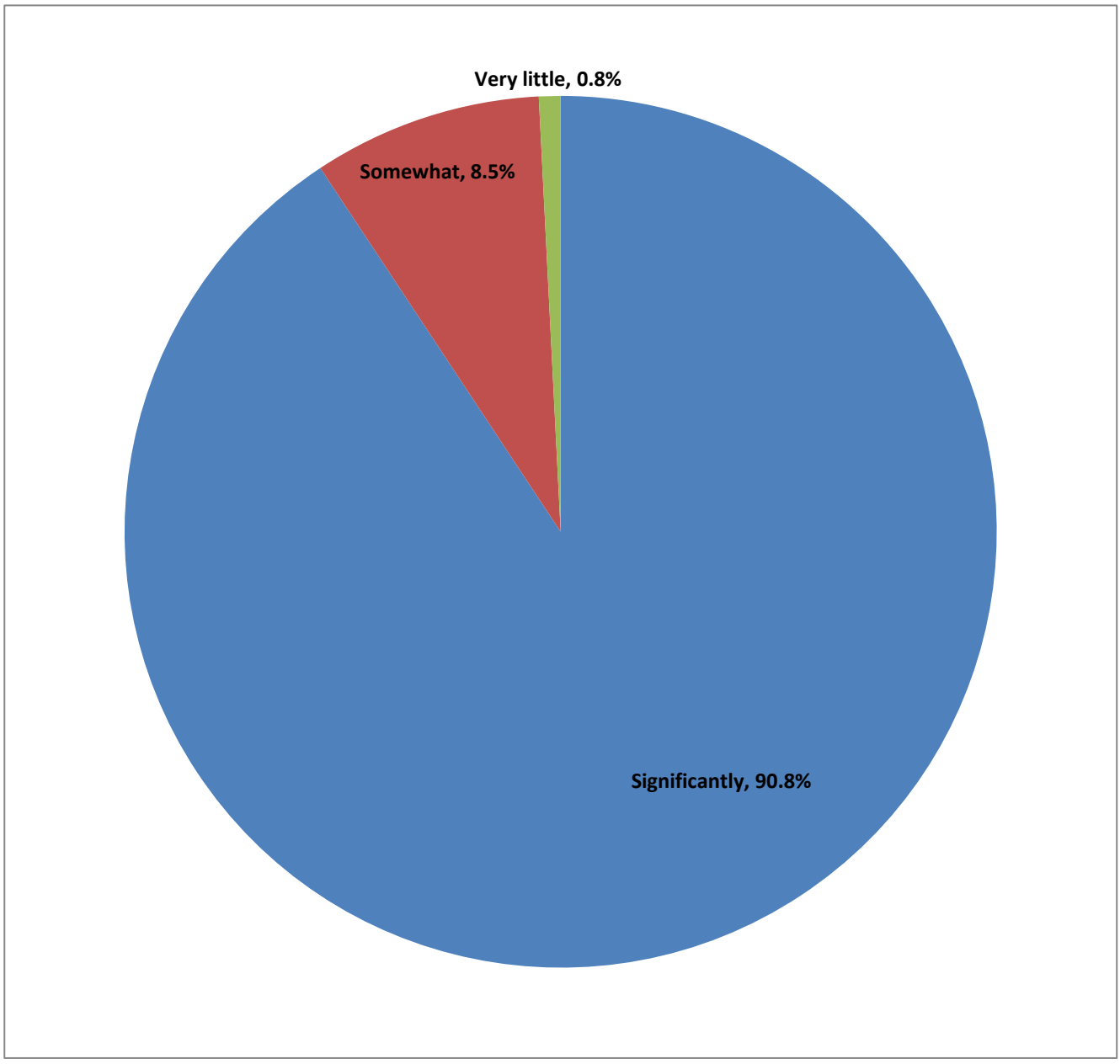


What habits are you and other members of your household most likely to change to save energy? (check all that apply)

Other (please specify)
drying clothes on line or rack
change out all light bulbs to energy efficient bulbs
we do most of them
info from booklets
already do all of this
already do some of these
customer already does all of the above
customer already does all of the above
already do all of the above
already do most of these
already do all of these
we do all this now :)
we do all of the above already
Close outside doors
Run Fans
Use natural cooling/heating

Idaho Power Weatherization Programs

How much do you think the weatherization you received will affect the comfort of your home?		
Answer Options	**Response Percent**	**Response Count**
Significantly	90.8%	118
Somewhat	8.5%	11
Very little	0.8%	1
Not at all	0.0%	0
	answered question	130
	skipped question	0

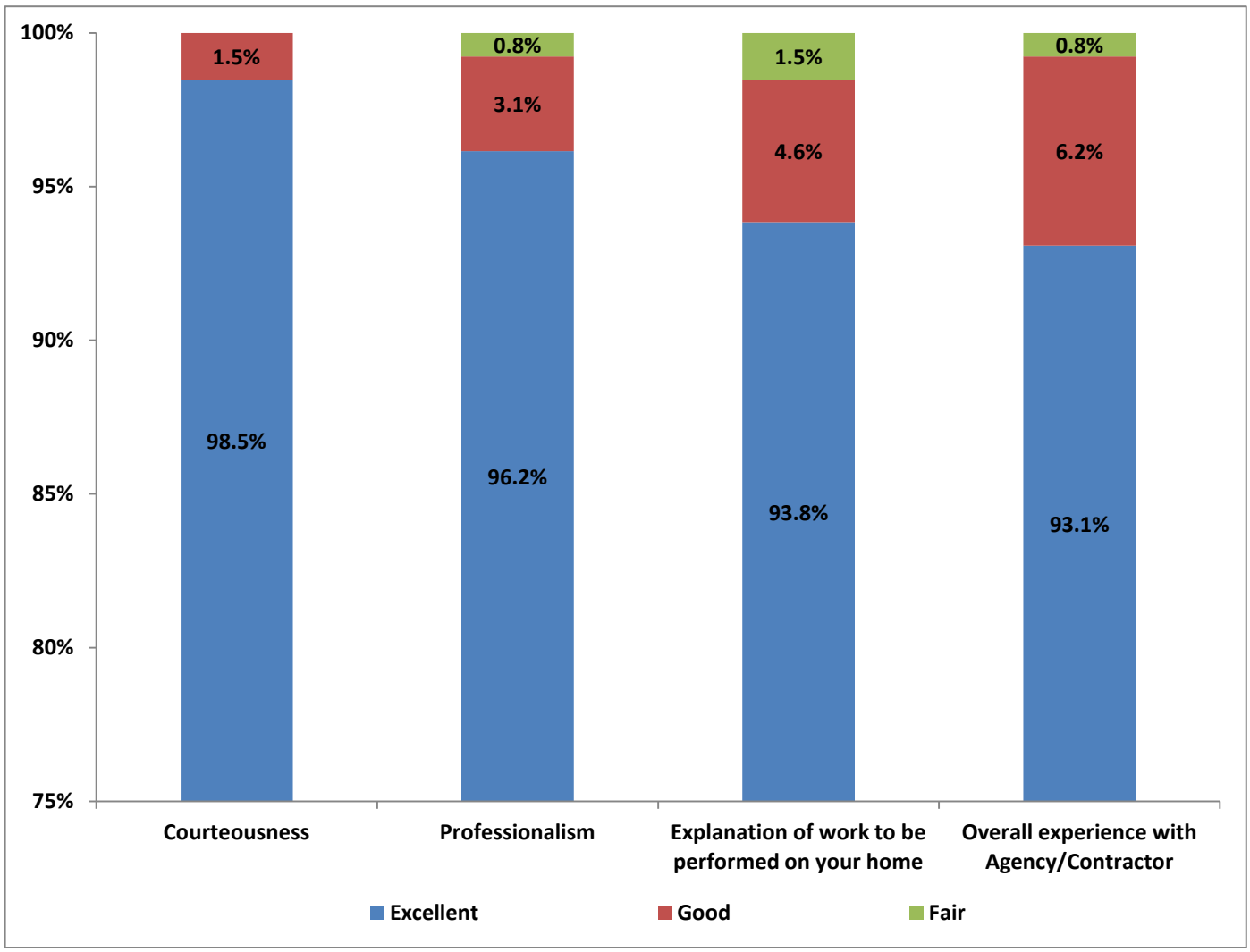


Idaho Power Weatherization Programs

Rate the Agency/Contractor based on your interactions with them.

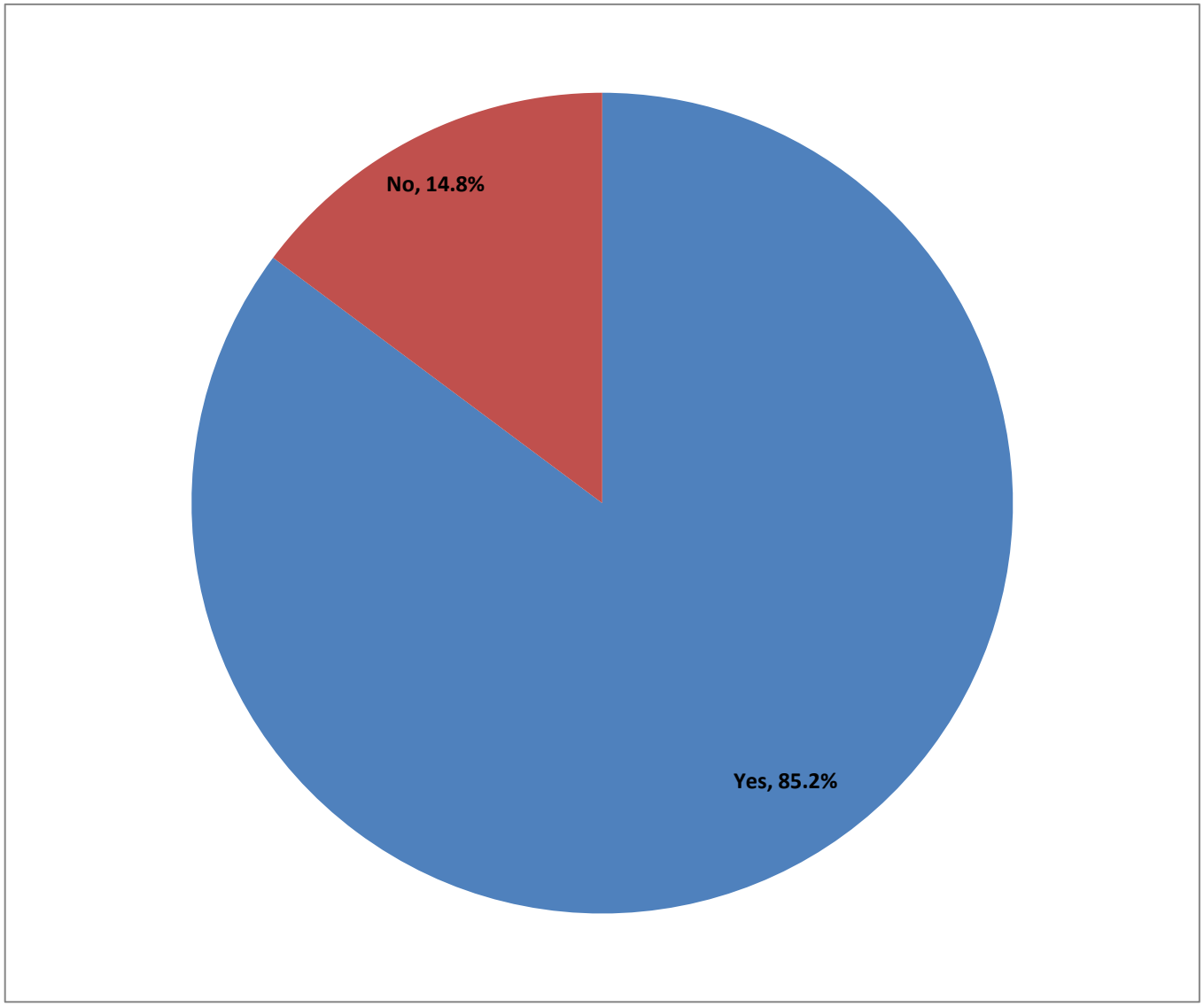
Answer Options	Excellent	Good	Fair	Poor	Response Count
Courteousness	128	2	0	0	130
Professionalism	125	4	1	0	130
Explanation of work to be performed on your home	122	6	2	0	130
Overall experience with Agency/Contractor	121	8	1	0	130
				answered question	130
				skipped question	0

	Excellent	Good	Fair
Courteousness	98.5%	1.5%	0.0%
Professionalism	96.2%	3.1%	0.8%
Explanation of work to be performed on your home	93.8%	4.6%	1.5%
Overall experience with Agency/Contractor	93.1%	6.2%	0.8%



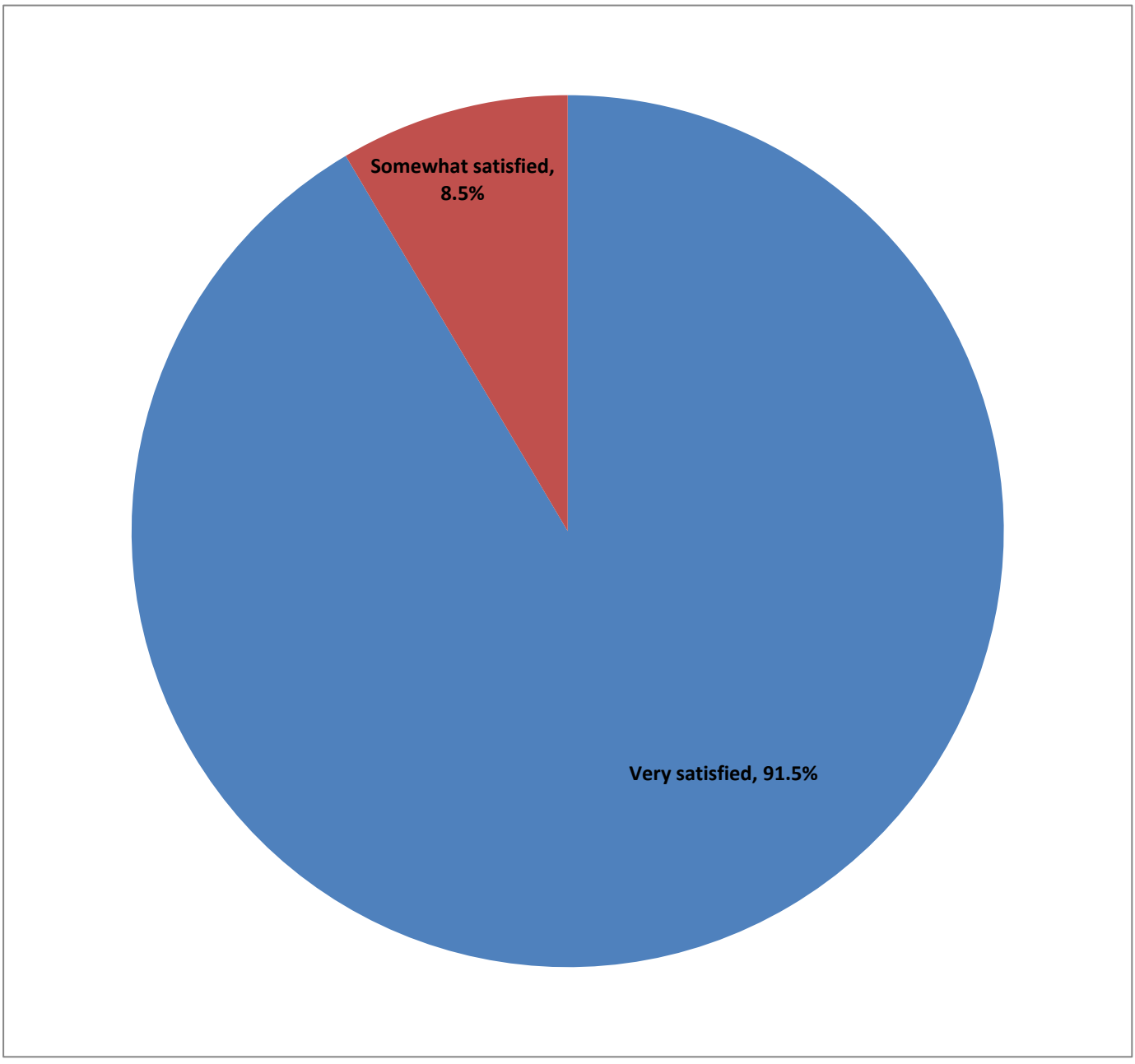
Idaho Power Weatherization Programs

Were you aware of Idaho Power's role in the weatherization of your home?		
Answer Options	**Response Percent**	**Response Count**
Yes	85.2%	109
No	14.8%	19
	answered question	**128**
	skipped question	**2**



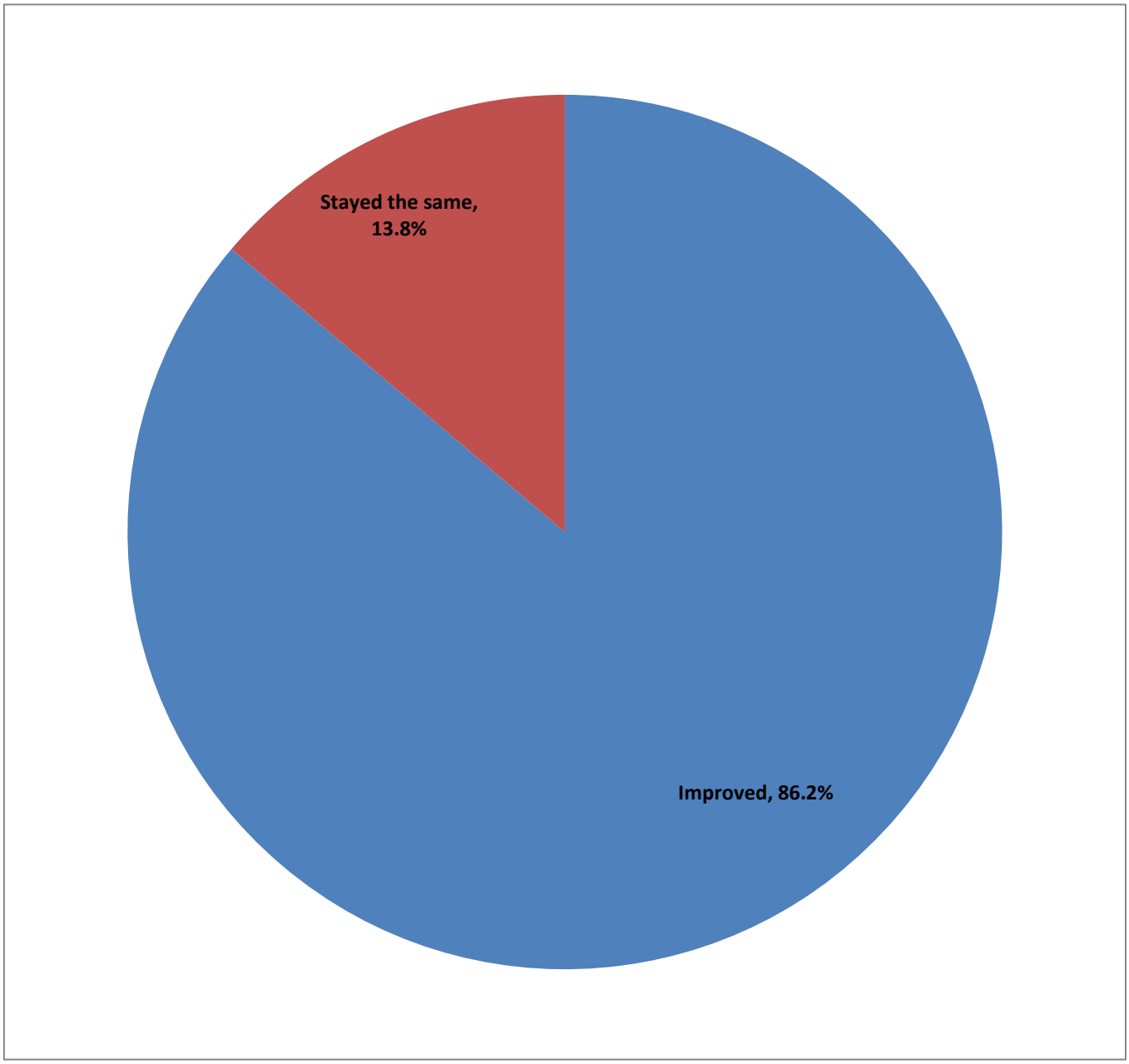
Idaho Power Weatherization Programs

Overall how satisfied are you with the weatherization program you participated in?		
Answer Options	**Response Percent**	**Response Count**
Very satisfied	91.5%	118
Somewhat satisfied	8.5%	11
Somewhat dissatisfied	0.0%	0
Very dissatisfied	0.0%	0
	answered question	129
	skipped question	1



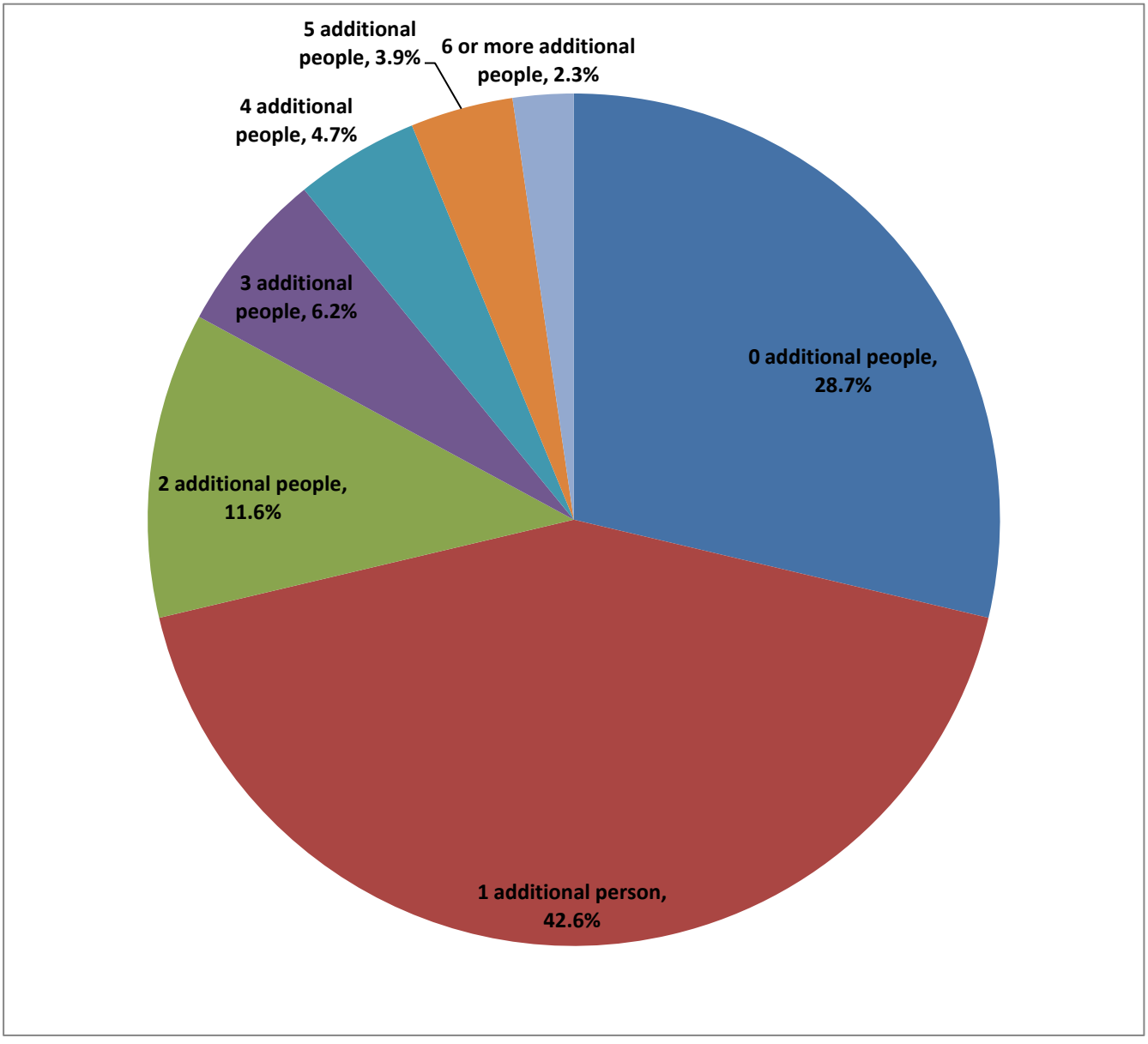
Idaho Power Weatherization Programs

How has your opinion of Idaho Power changed as a result of its role in the weatherization program?		
Answer Options	**Response Percent**	**Response Count**
Improved	86.2%	112
Stayed the same	13.8%	18
Decreased	0.0%	0
	answered question	**130**
	skipped question	**0**



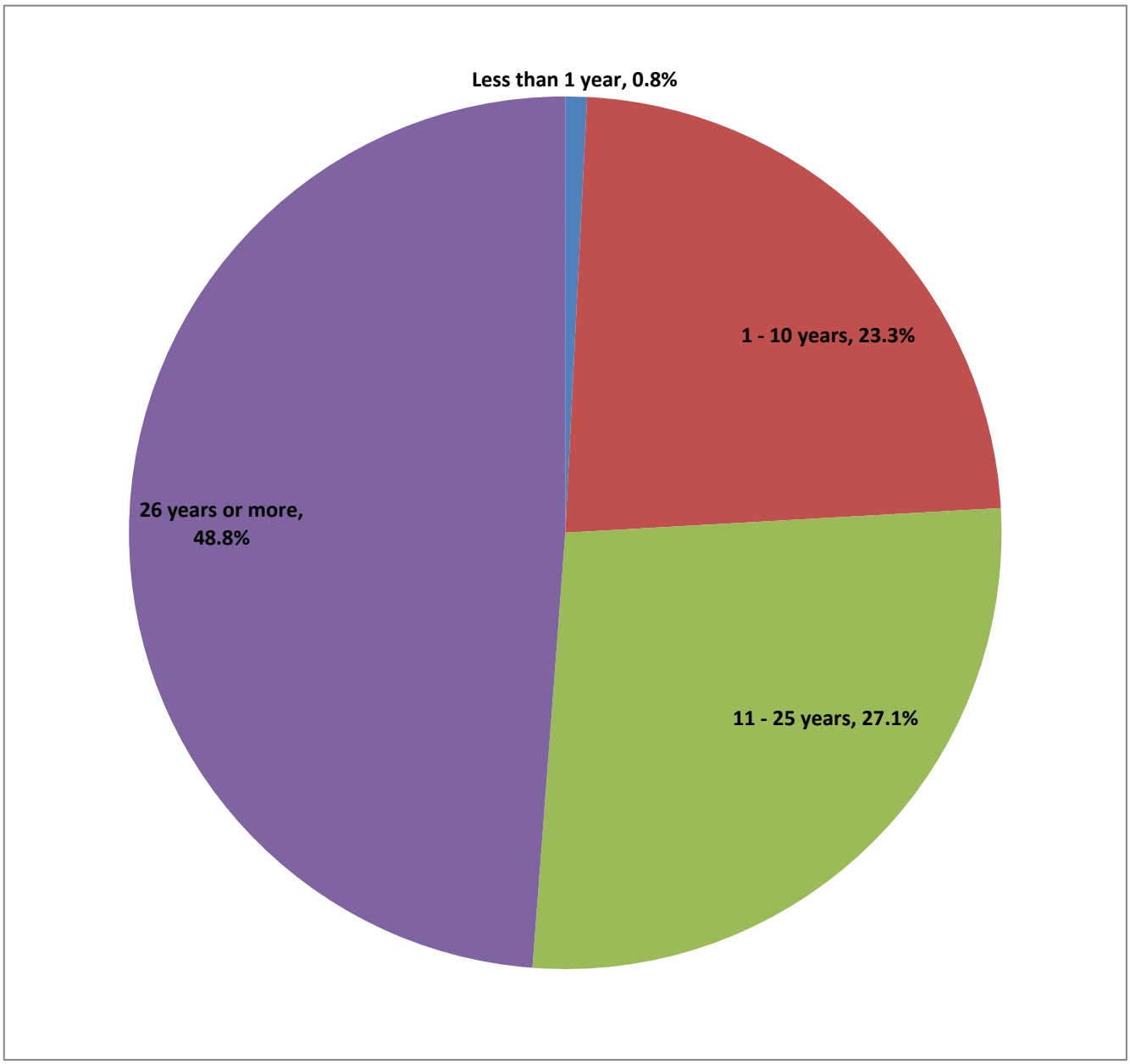
Idaho Power Weatherization Programs

How many people beside yourself live in your home year-round?		
Answer Options	**Response Percent**	**Response Count**
0 additional people	28.7%	37
1 additional person	42.6%	55
2 additional people	11.6%	15
3 additional people	6.2%	8
4 additional people	4.7%	6
5 additional people	3.9%	5
6 or more additional people	2.3%	3
	answered question	129
	skipped question	1



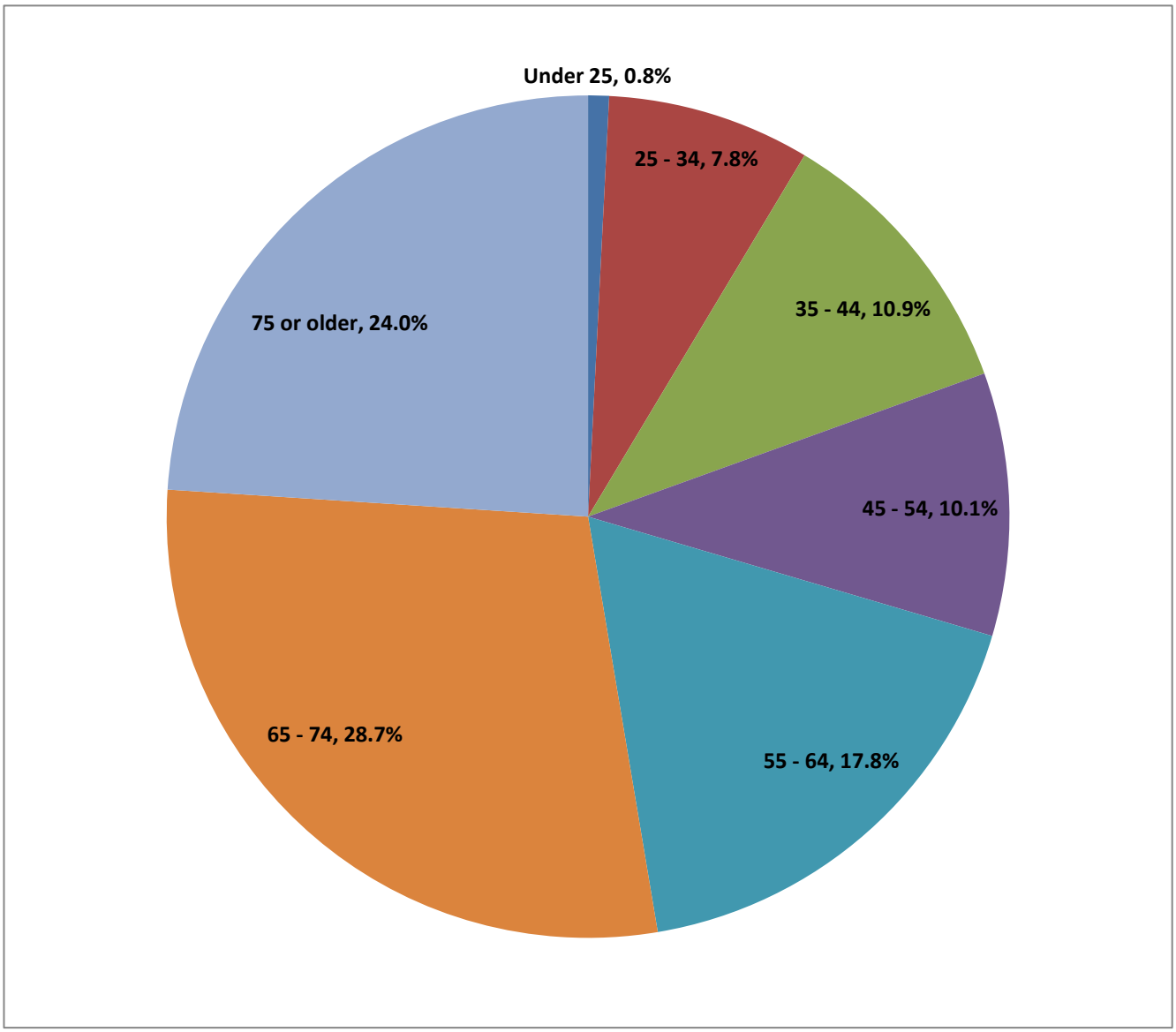
Idaho Power Weatherization Programs

How long have you been an Idaho Power customer?		
Answer Options	**Response Percent**	**Response Count**
Less than 1 year	0.8%	1
1 - 10 years	23.3%	30
11 - 25 years	27.1%	35
26 years or more	48.8%	63
	answered question	129
	skipped question	1



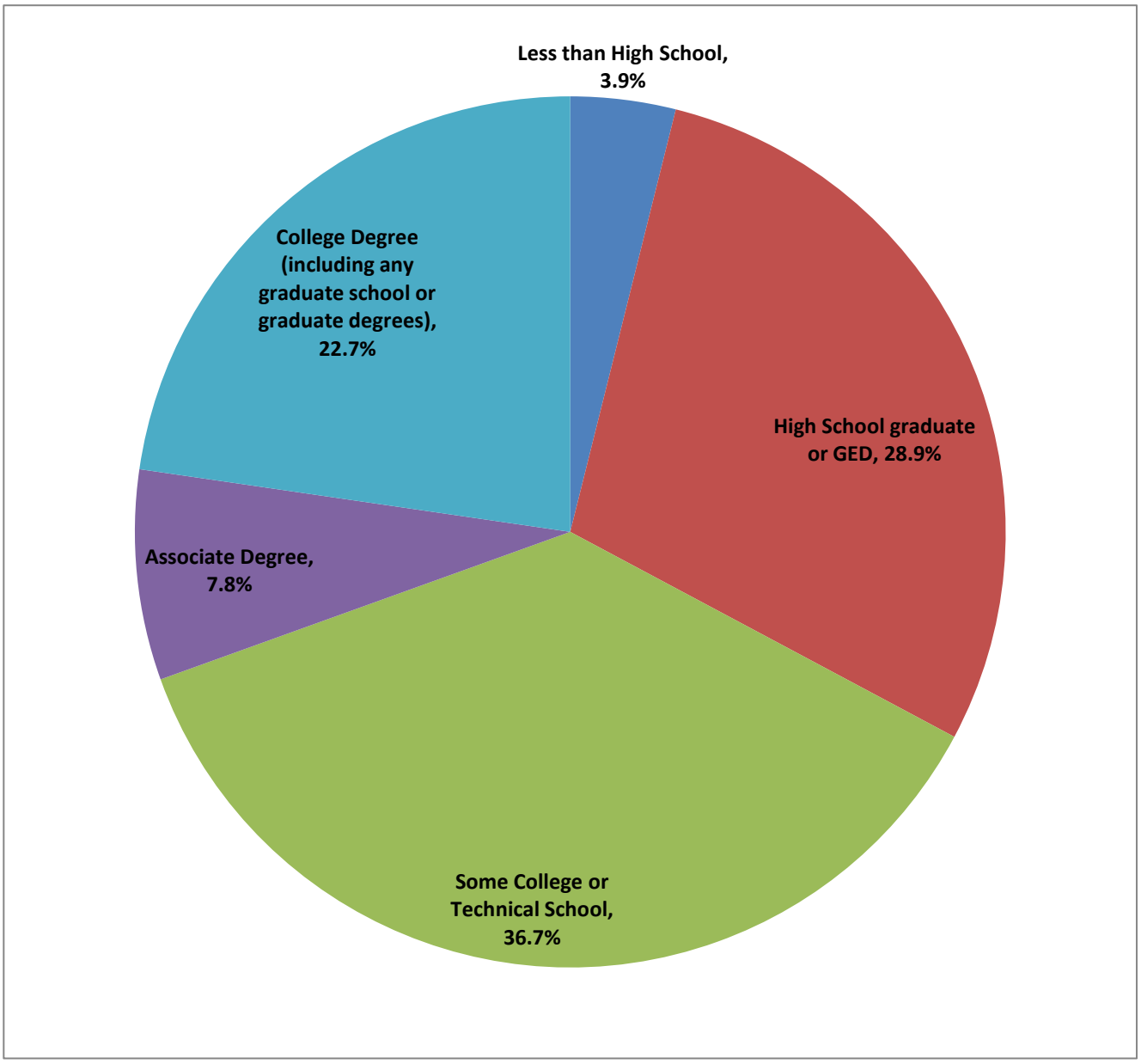
Idaho Power Weatherization Programs

Please select the category below that best describes your age:		
Answer Options	**Response Percent**	**Response Count**
Under 25	0.8%	1
25 - 34	7.8%	10
35 - 44	10.9%	14
45 - 54	10.1%	13
55 - 64	17.8%	23
65 - 74	28.7%	37
75 or older	24.0%	31
	answered question	129
	skipped question	1



Idaho Power Weatherization Programs

Select the response below that best descirbes the highest level of education you have attained:		
Answer Options	**Response Percent**	**Response Count**
Less than High School	3.9%	5
High School graduate or GED	28.9%	37
Some College or Technical School	36.7%	47
Associate Degree	7.8%	10
College Degree (including any graduate school or graduate	22.7%	29
answered question		128
skipped question		2



Idaho Power Weatherization Programs

Please share any other comments you may have regarding Idaho Power's weatherization programs. Thank you.

Answer Options	Response Count
	74
answered question	74
skipped question	56

Other comments regarding Idaho Power's weatherization programs.
What an awesome program and such great workers. Everyone was very helpful and professional, explain what and why they were doing things. I learned a lot. They even found some issues I never knew were there with the mobile home. They even vacuumed up when they were done. So blessed to have this program and the wonderful crew.
I believe this is a fantastic program that Idaho power has to improve energy efficiency for people that have older homes and that live on low or limited incomes. I continue to read all the inserts you send out with the power bills and that is how I leaned about this program. Thank you! thank you! Thank you! All of the guys who worked on this weatherization program including Bonnie were very friendly, courteous and informative.
Very good
Thank you so much for doing this!!
I would like to see a review of what will happen after the audit and work will be performed
excellent program
All work was very thorough and we were always informed about what the crew was doing.
Great crew and service. Thank you for all that was done for our family and home. Awesome program!
Great program, great people, great work done. Looking forward to the future savings and comfort.
What a great program! A great way to give back and educate families on Energy efficiency!
I am grateful for your program. Booklets helpful!
thank you!
The manager and contractors were very pleasant and efficient, courteous and knowledgeable. Would recommend them to anyone.
The El Ada people were terrific! Personal but professional and very clean!
Because of the program we will most likely be able to stay in this home longer than planned-Thanks.
I sincerely appreciate the help. They were courteous and helpful. Thank you
Thank you for helping us. Great program. Great bunch of people doing the work!
I feel very blessed and am very thankful to Idaho Power and Energy Zone for all they have done.
Thank you very much!
Thank you very much for the things you have done for us.
I appreciate this aid in upgrading my energy conservation. Thank you
You will never know how much this has meant to us. We could not have done it ourselves and we can tell a difference now. From my heart- Thank you so much!
My thanks to everyone. It was a job well done.
We thank Idaho Power for this program and will enjoy it for years.
Wonderful program. Everything has been extremely positive. All employees have been great and answer any questions I have.
So appreciate you.
Carter comfort people did a great job. Metro contractor services did a great job also.
We're very appreciative of our new furnace, heat pump weatherization and new bathroom fan.
Very good contractors
Thank you very much.

We definitely appreciate all that you have done to help us get our electric bill under control. thank you.
I believe it to be a very good program that can help anyone, especially those that may be on fixed incomes or lower incomes.
Very pleased with this program. Thank you. Looking forward to improved power bills.
I have been telling everyone about what you have done for me. I have worked hard all my life and I hate that it came down to that I had to ask for help but thank you so much.
It has helped me a lot in understanding how to cut down on energy use
I am very pleased to have qualified for this program, it has helped me significantly-thank you! The gentleman answered all questions I had and even gave me info--
Everyone was very professional and kind. The care and workmanship was outstanding we thank everyone very much.
I can't say enough about the courtesy of the crew that worked on my house. They went above and beyond to make my house more efficient and the windows and doors are beautiful. Thanks and God Bless. I think this is a fantastic program. It benefits so many people in so many ways. I can't say enough about this program, great job, well done.
Thanks to Idaho Power for this program.
What a great program. Thank you so much.
Thank you for the work performed on my home-it will make such a difference! I so appreciate this!
To Idaho Power, you will never believe how much we appreciate what you have done. Thank you very much and God Bless you.
I was treated very well the people that came to my home were very nice and did a great job.
Great crew, I was amazed at how extensive your assistance is! Amazing!! Thank you!! Idaho is a great state.
I am so pleased with my new heater and air conditioner. I could never have gotten this fixed on my own. Thank you so much and to all your wonderful staff.
I think it is a wonderful program for those who are elderly and on fixed incomes
They are out there. People just need to be told about them.
This has been just a wonderful program and we are excited to see the difference our new improvements make in lowering our power bill.
Everyone was very nice and accommodating. Very sweet, I have referred several people.
We truly appreciate all you have done for us. The workers worked hard and did a great job. Thank you again.
Every phase of the improvements to my home completed by individuals who were courteous, friendly and very polite. They worked diligently and were considerate of keeping my home clean. Thank you for such a great Blessing!
I am very pleased with all work performed. The workers were very informative on all work done. They were very respectful of all my needs. I also can't thank Idaho Power enough for the help, changed my life. Thank you.
Thank you!
Thank you very much, to Idaho Power and Home Energy Management.
Our family has deep gratitude and appreciation to everyone that has helped make our house a home. It is a great relief to have the confidence in knowing that the risk of extreme temperatures and negative consequences will no longer be a threat to my children's health. Thank you.
Very Satisfied. Thank you
Excellent work. Thank you.
We would like to thank Idaho Power and Home Energy Management for everything. We really appreciate it.
Satisfied with program overall. Good explanations and very professional. Thank you! So happy and grateful for the program. Very satisfied. Work was done quickly and efficiently. Installation workers were polite and professional. Thank you!
Great Job! Great Crew! Excellent Job! Thanks!

Thank you- they did a very good job and we appreciate all they have done.
Thanks so much- Great Program.
Thank you for this helpful service & info.
Very grateful for the service.
Thank whomever for the help to conserve energy.
Wait list is too long. Took through the whole winter to winterize the house and while waiting, energy use skyrocketed.
I can't say thank you enough for all you have done for us! Our home was so cold and we didn't have the money to change it, due to medical bills and medical issues I haven't been able to work. We thank you so much for helping us, and Thank all the many workers who came to our home! they were truly amazing!
I am grateful for the help. It wouldn't get down without this program.
Very helpful program.
As a disabled senior widow who lost her home of 27 years due to medical bills-This program was a God Send- It would have been years, if ever, before I could have made these improvements on my own. God Bless all of you.
It is so nice to have a program to help the elderly and people on Social Security they do a very very good job. Thanks again
It's wonderful to know that you care enough to have help for us elderly who can't get these things done on our own. God Bless
We are very appreciative of the work that was done and how it will impact our comfort and budget.
This is an amazing program and such a blessing to us. Thank you so much- we're telling everyone about what you've done for us.

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EVALUATIONS

Table 4. 2016 Evaluations

Report Title	Program or Sector	Analysis Performed by	Study Manager	Study/Evaluation Type
2016 Flex Peak Program End-of-Season Annual Report	Commercial/Industrial	Idaho Power	Idaho Power	Impact
2016 Irrigation Peak Rewards Program Report	Irrigation	Idaho Power	Idaho Power	Impact
A/C Cool Credit Program 2016 Impact Evaluation	Residential	CLEAResult	Idaho Power	Impact
Easy Upgrades Impact Evaluation	Commercial	Leidos Engineering	Idaho Power	Impact
Flex Peak Demand Response Program 2016 Impact Evaluation	Commercial/Industrial	CLEAResult	Idaho Power	Impact
Impact and Process Evaluation of the Irrigation Efficiency Rewards Program	Irrigation	Leidos Engineering	Idaho Power	Impact/Process
Impact and Process Evaluation Rebate Advantage	Residential	Leidos Engineering	Idaho Power	Impact/Process
Impact Evaluation of New Construction (Building Efficiency) Program	Commercial	Leidos Engineering	Idaho Power	Impact
Residential Energy Efficiency Education Initiative Best Practices Review	Residential	Leidos Engineering	Idaho Power	Best Practices

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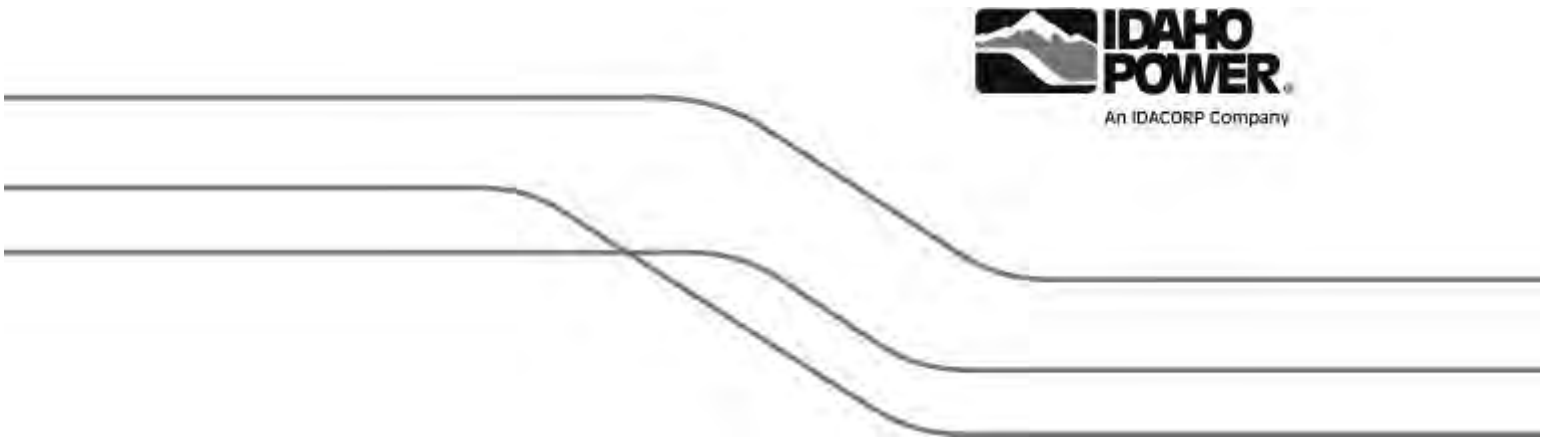

2016 Flex Peak Program
End-of-Season Annual Report

November 3, 2016

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CLEAResult Impact Evaluation

Introduction

The Flex Peak Program ("Program") has been operated by Idaho Power Company ("Idaho Power" or "Company") for two years. Prior to 2015, a similar demand response ("DR") program for commercial and industrial customers was operated by a third-party vendor. The results presented in this report are from the Company's second year of operating the Program. In its second year, the Program experienced a growth in participation (both in number of participants and size diversity), increased load reduction, high realization rates, and improved customer satisfaction. There were 67 new sites added and the increased participation resulted in the highest hourly load reduction for the season of 41.5 megawatts ("MW"). The average realization rate for the three load reduction events that occurred in the 2016 Program season was 98.8 percent. Customer satisfaction remained high with survey results indicating a satisfaction level of 3.6 out of 4. Enrollment in the Program increased for the season and 97 percent of previous sites re-enrolled in the Program. The total Program costs through October 1, 2016, were $744,955. The cost of having this resource available was $17.95 per kilowatt ("kW") based on (1) the maximum demand reduction achieved on July 26, 2016, of 41.5 MW for the season compared to $39.48 per kW and (2) the maximum demand reduction of 39.6 MW under the prior commercial and industrial DR program in 2014.

Background

The Program is a voluntary DR program available to industrial and large commercial customers that are capable of reducing their electrical energy loads for short periods during summer peak days. By reducing demand on extreme system load days during summer months, the Program reduces the amount of generation and transmission resources required to serve customers. This Program, along with Idaho Power's other DR programs, Irrigation Peak Rewards and the Residential Air Conditioner Cycling Program, has helped to delay the need to build supply-side resources.

As part of Order No. 33292, the Idaho Public Utilities Commission ("Commission") ordered the Company to file an annual end-of-season report that should include the number of participants, number of participating sites, MW of DR under contract, MW of DR realized and incented per dispatch, percent of nominated MW achieved in each dispatch event by participant, and a detailed program cost analysis. This report addresses the annual end-of-season reporting requirements.

Program Details

The Program pays participants a financial incentive for reducing load within their facility and is active June 15 to August 15, between the hours of 2 p.m. and 8 p.m. on non-holiday weekdays.

Customers with the ability to nominate or provide load reduction of at least 20 kW are eligible to enroll in the Program. The 20 kW threshold allows a broad range of

customers the ability to participate in the Program. Participants receive notification of a load reduction event ("event") two hours prior to the start of the event, and events last between two to four hours.

The parameters of the Program are in Schedule 82,[1] and include the following:

- A minimum of three load reduction events will occur each program season.
- Events can occur any weekday, excluding July 4, between the hours of 2 p.m. and 8 p.m.
- Events can occur up to four hours per day and up to 15 hours per week, but no more than 60 hours per program season.
- Idaho Power will provide notification to participants two hours prior to the initiation of an event.
- If prior notice of a load reduction event has been sent, Idaho Power can choose to cancel the event and notify participants of cancellation 30 minutes prior to the start of the event.

Program Incentives

The Program includes both a fixed and variable incentive payment. The fixed incentive is calculated by multiplying the actual kW reduction by $3.25 for weeks when an event is called or the weekly nominated kW amount by $3.25 for weeks when an event is not called. The variable energy incentive is calculated by multiplying the kW reduction by the event duration hours to achieve the total kilowatt-hour ("kWh") reduction during an event. The variable incentive payment is $0.16 per kWh and is implemented for events that occur after the first three events.

The Program also includes an incentive adjustment of $2.00 when participants do not achieve their nominated amount during load reduction events. This adjustment amount is used for the first three events. After the third event, the adjustment is reduced to $0.25 per kW. Incentives are calculated using Idaho Power's interval metering billing data and participants received the incentive checks within 30 days of the end of the Program season. Participants were mailed their incentive checks by September 15 in 2016. The incentive structure offered for the 2016 season is listed in Table 1.

[1] Idaho Power Company, I.P.U.C. No. 29, Tariff No. 101, Schedule 82

Table 1.

Fixed-Capacity Payment Rate*	Variable Energy Payment Rate**
$3.25 per Weekly Effective kW Reduction	$0.16 per kWh (Actual kW x Hours of Event)
Adjustment for first three events	**Adjustment after first three events**
$2.00 per kW not achieved up to nomination	$0.25 per kW not achieved up to nomination

*To be prorated for partial weeks

**Does not apply to first three Program events

Program Results

The results reported throughout this report are at the generation level and system losses have been taken into account. Idaho Power called three load reduction events in 2016. The first event occurred on June 30, the second on July 26, and the third on July 28. The maximum realization rate during the season was 120 percent and the average for all three events combined was 98.8 percent. The realization rate is the percentage of load reduction achieved versus the amount of load reduction committed for an event. The highest hourly load reduction achieved was during the July 26 event at 41.5 MW.

Participants had a committed load reduction of 34.2 MW in the first week of the Program, which was the peak committed load reduction for the season. This weekly commitment, or "nomination", was comprised of 65 participants totaling 137 sites. Out of the total number of sites, 70 sites participated in the 2015 season, and 67 sites were newly added in 2016. There were two sites that did not re-enroll from the 2015 season. One of the sites closed down and the other site felt the program did not fit its business operations. The committed load reduction at the end of the season was 33.9 MW, which was achieved by 137 facility sites.

The first event was called on Thursday, June 30. Participants were notified at 2 p.m. for a four hour event from 4-8 p.m. The total nomination for this event was 34.2 MW. The average load reduction was 32.8 MW. The highest hourly load reduction was 34.8 MW during hour three. The realization rate for this event was 96 percent.

The second event was called on Tuesday, July 26. Participants were notified at 2 p.m. for a four hour event from 4-8 p.m. The total nomination for this event was 33.5 MW. The average load reduction was 40.3 MW. The highest hourly load reduction was 41.5 MW during hour one. The realization rate for this event was 120 percent.

The third event was called on Thursday, July 28. Participants were notified at 2 p.m. for a four hour event from 4-8 p.m. The total nomination for this event was 33.9 MW. The average load reduction was 27 MW. The highest hourly load reduction was 27.7 MW during hour one. The realization rate for this event was 80 percent. The lower realization rate for this event was primarily due to some larger sites that underperformed or reduced participation as a result of having two events in one week.

Participation

Idaho Power utilized direct customer mailings to encourage both past participants and new customers to enroll in 2016. Idaho Power launched a marketing campaign early in 2016 using Customer Representatives to recruit new participants. The Company also developed new Program literature, as well as a new Program brochure. Potential commercial and industrial participants were identified early winter with field visits from Idaho Power Customer Representatives and had a follow up communication in early spring. This marketing campaign focused on identifying customer characteristics that make for successful Program participants and also highlighted available incentive amounts based on customers load size.

The Program was jointly marketed along with Idaho Power's energy efficiency programs. In addition, the marketing campaign goals were to increase the number and size diversity (in terms of nominated load reduction) of sites enrolled. By having a larger diversity of customer sizes enrolled, the Program should be less prone to volatility in its realization rate. The Company utilized Customer Representative support for the sites with the largest nominated load reduction with the goal of ensuring all large sites were able to participate when load reduction events were called. The Company also used several advertisements in the *Energy at Work* spring edition of Idaho Power's quarterly newsletter and included an article promoting the Program in its commercial and industrial newsletter, *Energy Insights*.

Idaho Power implemented an educational campaign with both currently enrolled participants and potential new participants to inform them of DR strategies with the goal of refining the amount of nominated load reduction from each site to more realistically align with load reduction potential.

The number of sites enrolled in the Program for 2016 was 137. Of those 137 sites, 67 were newly enrolled during the 2016 season. The total number of sites enrolled in 2016 increased by approximately 90 percent compared to 2015.

Figure 1 represents Idaho Power's service area divided into five regional areas: Western, Canyon, Capital, Southern, and Eastern.

Figure 1.

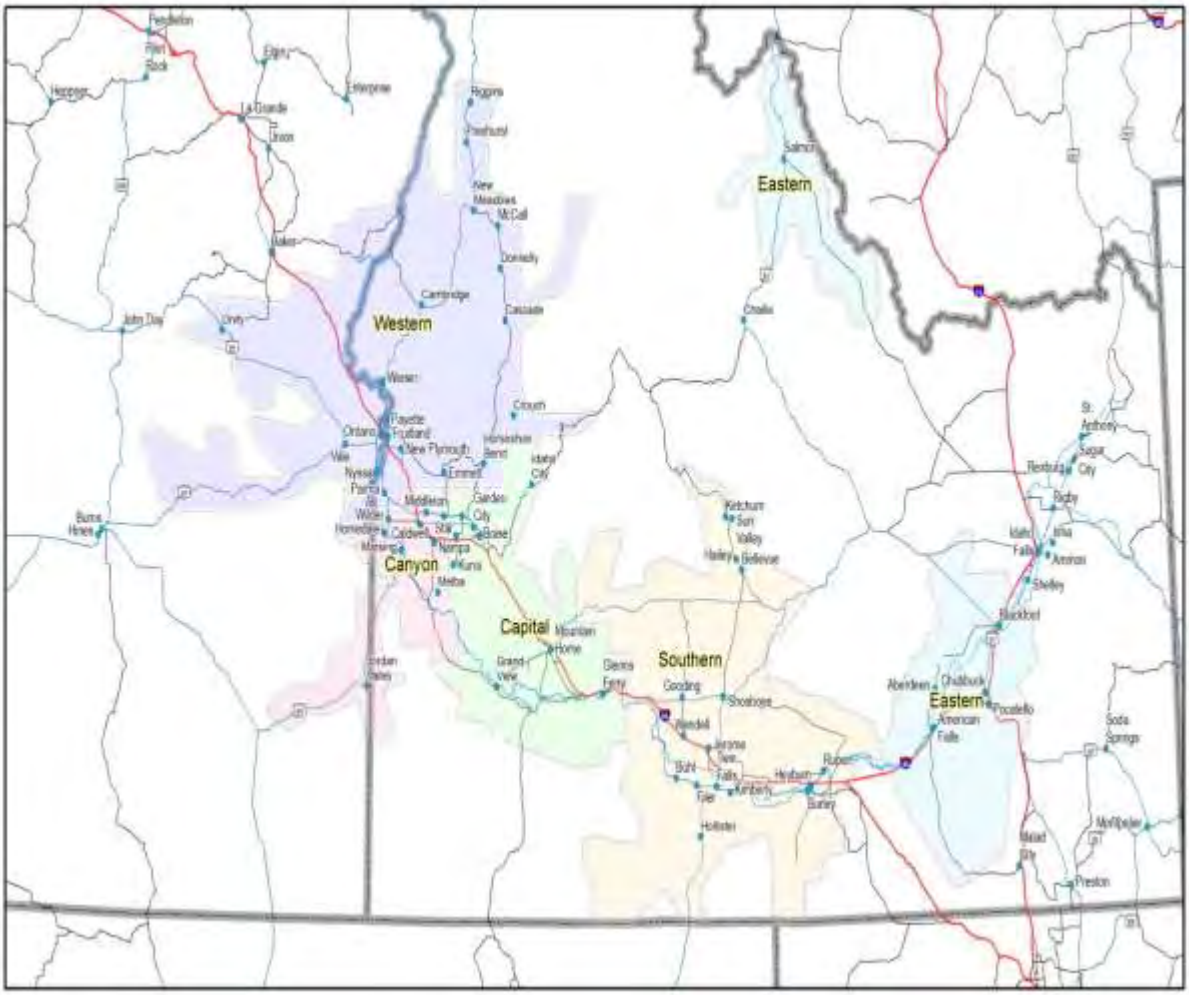


Figure 2 represents the 137 sites that were enrolled in 2016 and their distribution by Idaho Power's regional service areas.

Figure 2.

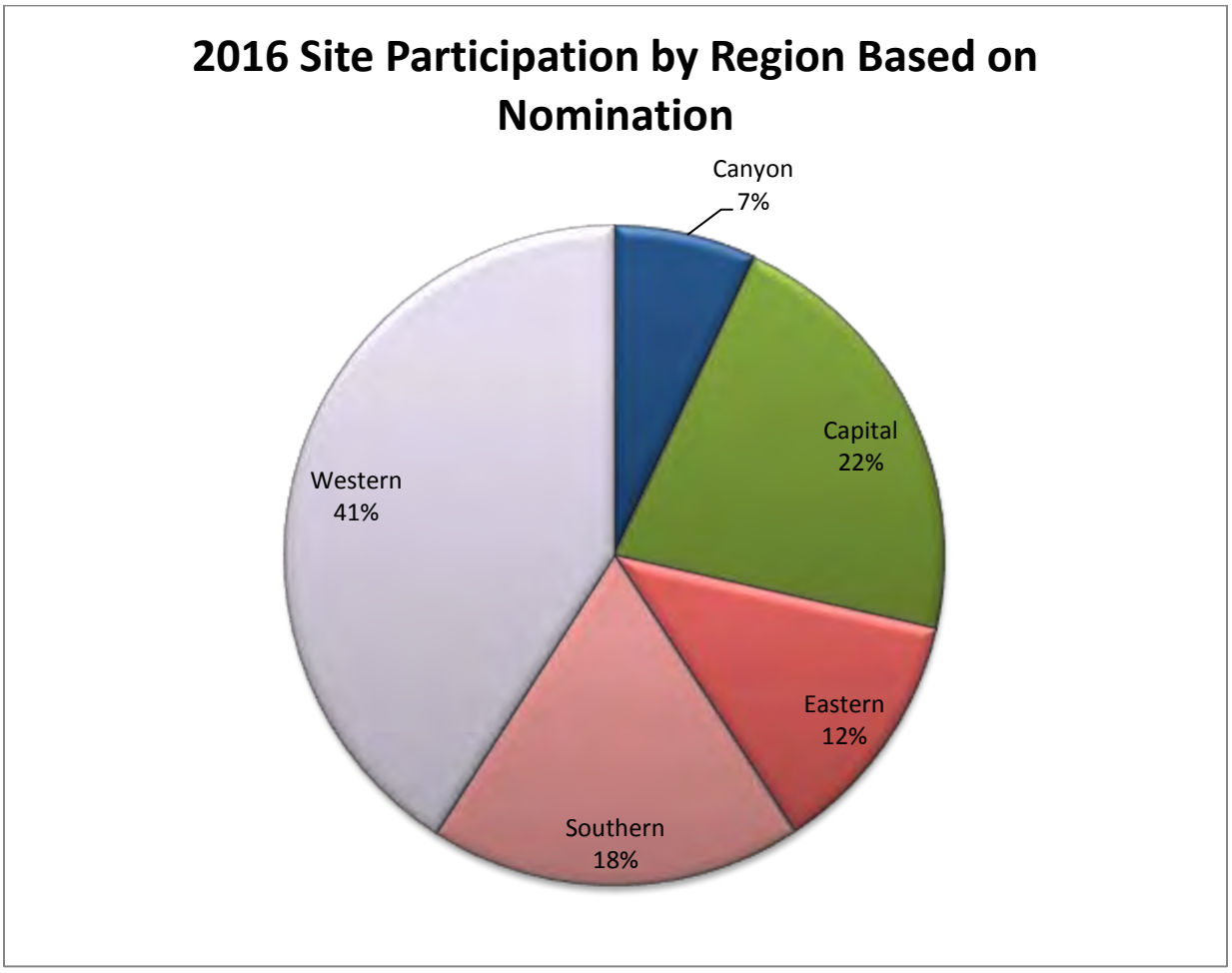
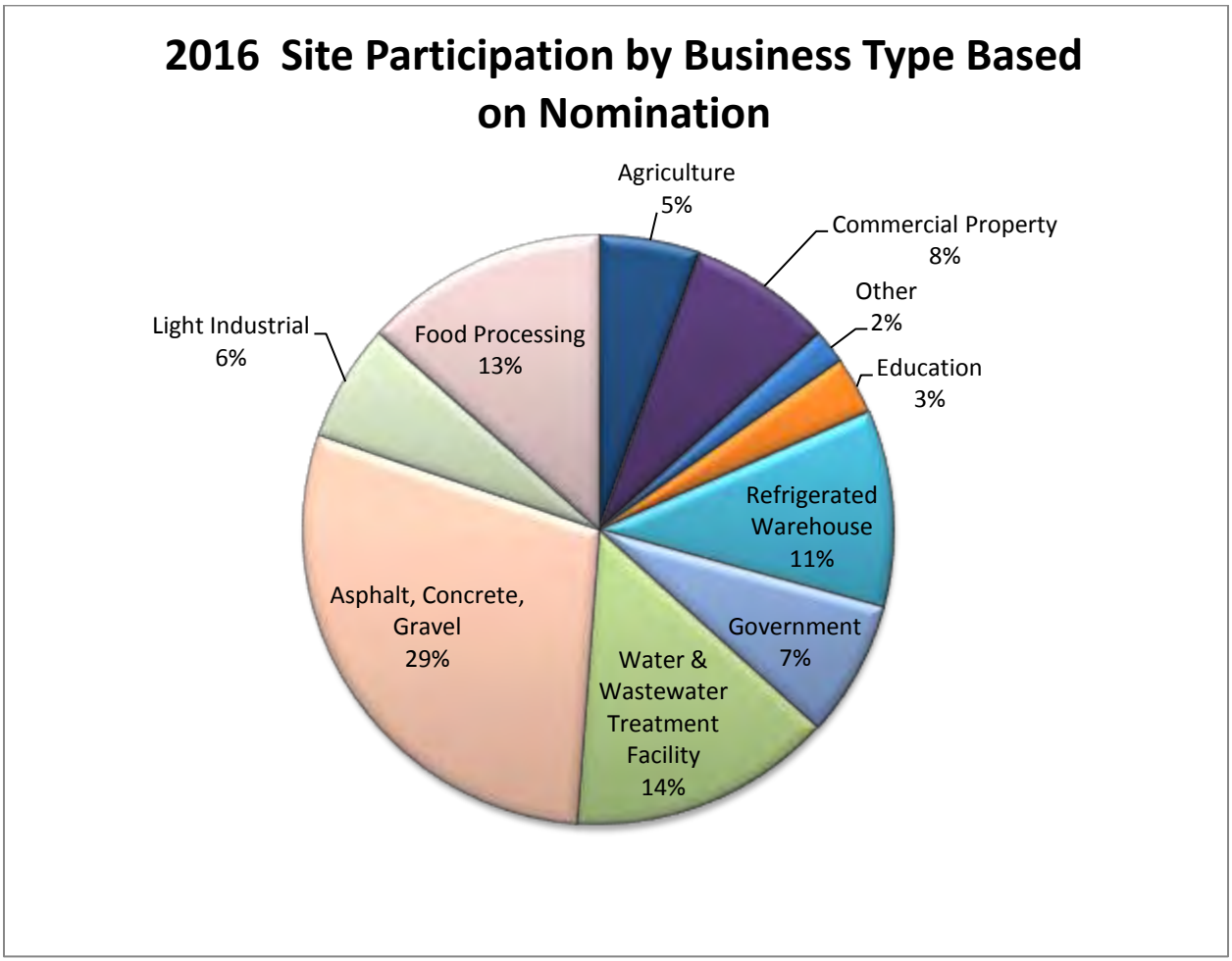


Figure 3 represents the 137 sites that were enrolled in 2016 and their diversity based on business type.

Figure 3.



Operations

Interval metering data provides Idaho Power the ability to view all participants' load after events. This metering data was used to calculate the reduction achieved per site during load reduction events. Using this data, Idaho Power provided participants post-event usage reports that showed hourly baseline, actual usage, and reduction during an event. The data assisted participants in refining their nomination for future events. This data also provides information useful in determining which participating sites may have opportunity to provide more reduction or change their reduction strategy if nomination amounts were not achieved.

Load Reduction Analysis

Potential load reduction impacts in 2016 were verified by an impact evaluation performed by a third-party contractor, CLEAResult. The impact evaluation report performed by CLEAResult is included as an attachment to this report. The goal of the impact evaluation was to calculate load reduction in MW under Idaho Power's methodology used for the Program. The evaluation also analyzed and verified load reduction per site and per event.

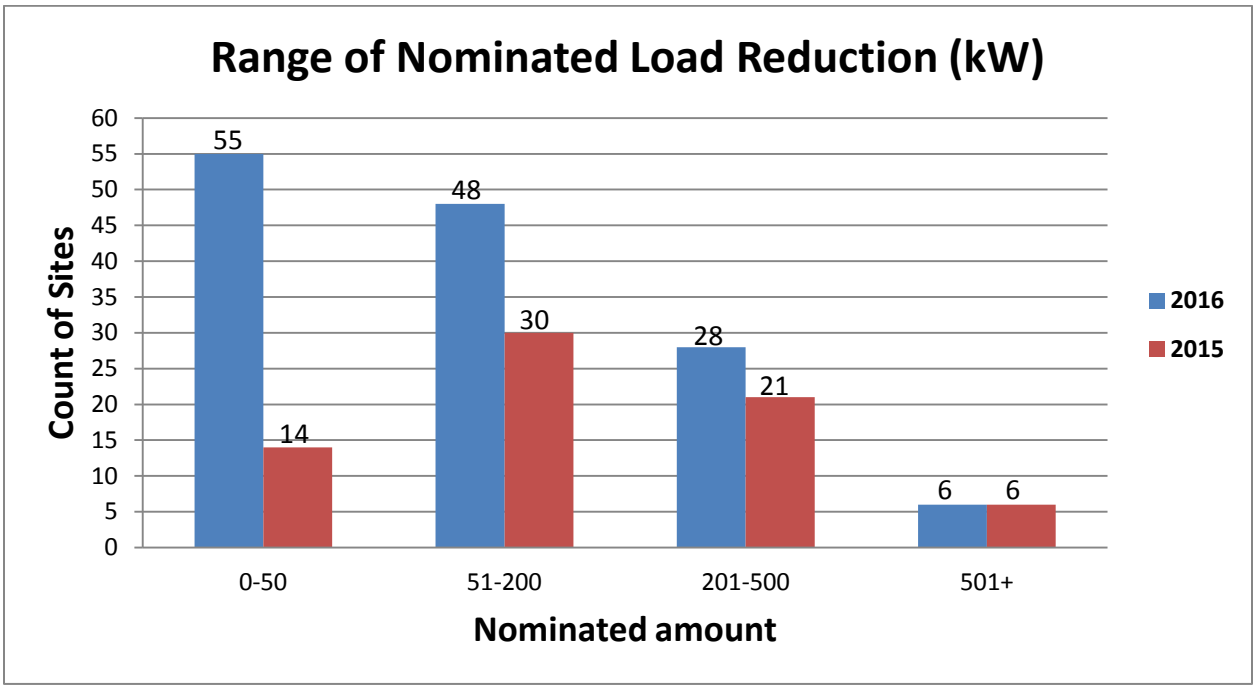
The baseline that load reductions are measured against during load reduction events is calculated using a 10-day period. The baseline is the average kW of the highest energy usage days during the event availability time (2-8 p.m.) from the highest three days out of the last 10 non-event weekdays. Individual baselines are calculated for each facility site. Once the original baseline is calculated, there is an additional piece included in the methodology called the Day-of-Adjustment ("DOA") that is used to arrive at the adjusted baseline.

Adjustments address situations where load is lower or higher than it has historically been and the baseline does not accurately reflect the load behavior immediately prior to the event. The DOA is applied to each site's original baseline by accounting for the difference between the average baseline kW and the average curtailment day kW during hours 2-3 prior to the start of the event. The DOA is calculated as a flat kW and is applied to all baseline hours and capped at +/- 20 percent of the original baseline kW. The DOA is symmetrical, having either an upward or downward adjustment to the baseline, and is applied to the original baseline kW for each facility site for each hour during the Program event.

The average nominated kW per site was 247 kW, while the average load reduction was 244 kW per site. The 137 enrolled sites nominated an average of 33.8 MW across the three events and included 65 unique participants. The average number of sites enrolled per participant was 2.1.

As Figure 4 below depicts, the most common nominated load reduction was in the 0-50 kW range, accounting for 40 percent of the sites. The 0-50 kW group accounted for 41 of the 67 new sites, which is 61 percent of the new site participation. These results indicate that expanding the Program availability to smaller customers has been successful.

Figure 4.



CLEAResult also analyzed the realization rate for each event with all sites aggregated together, as well as on an individual site basis. Table 2 shows the Program realization rates for 2016 based on average load reduction per event.

Table 2.

Curtailment Event	Event Timeframe	Nominated Demand Reduction	Average Demand Reduction (MW)	Max Demand Reduction (MW)	Realization Rate*
June 30	4-8 pm	34.2	32.8	34.8	95.9%
July 26	4-8 pm	33.5	40.3	41.5	120.3%
July 28	4-8 pm	33.9	27.0	27.7	79.6%
Average		33.8	33.4	34.7	98.8%

** Based on average reduction*

Figure 5 below shows both the average and peak demand reduction achieved during each of the three curtailment events. The maximum demand reduction achieved ranged from a low of 27.7 MW for the July 28 event to a high of 41.5 MW for the July 26 event. The July 28 event's 27.7 MW reduction achieved a realization rate of 79.6 percent, while the July 26 event's 41.5 MW reduction achieved a realization rate of 120 percent. When considered together, the three events had an average realization rate of 98.8 percent.

The realization rate analysis shows that maximum load reduction was achieved in the middle of the Program season during the second event, which correlates with Idaho Power's overall summer system peak.

Figure 5.

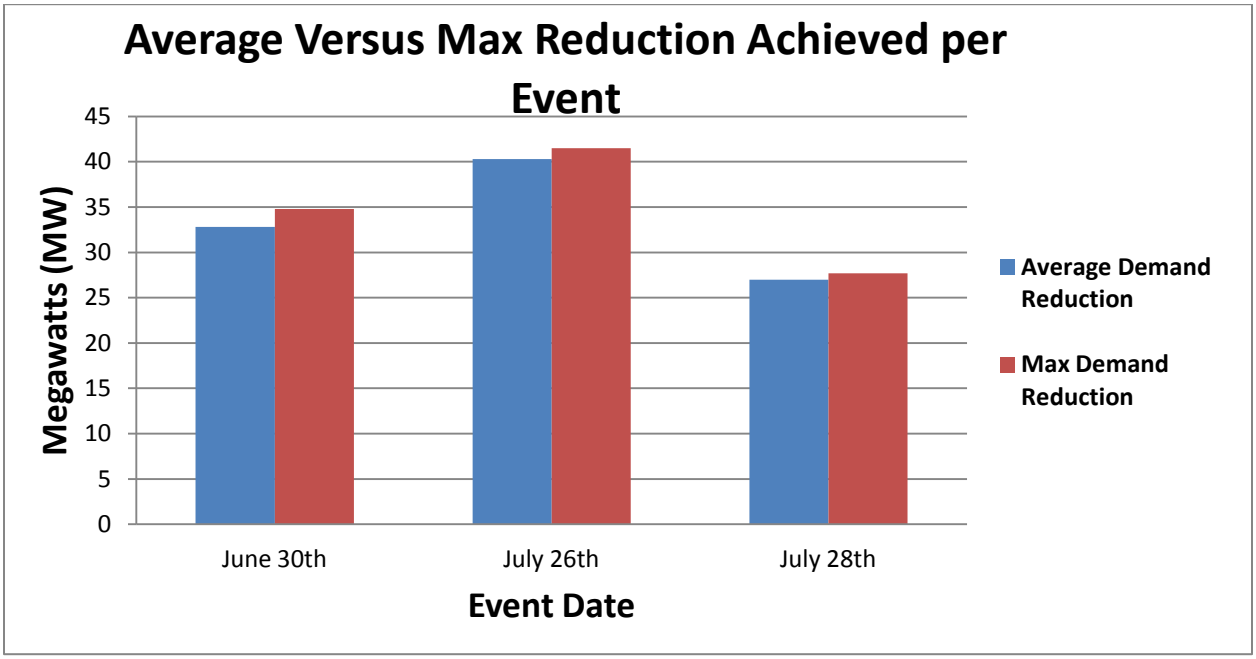


Table 3 shows the realization rate for each participant in the Program for 2016.

Table 3.

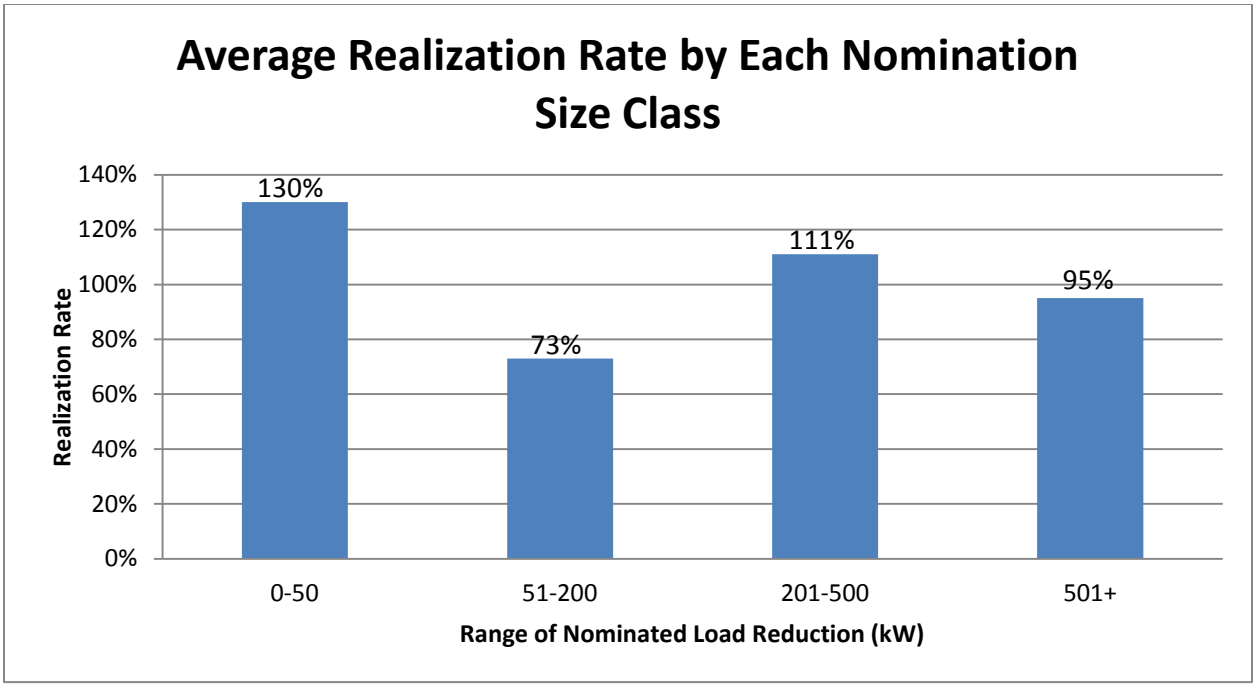
Participant Number	June 30 Event Realization	July 26 Event Realization	July 28 Event Realization	Season Average Realization
1	170%	149%	164%	161%
2	72%	77%	62%	70%
3	8%	64%	67%	46%
4	82%	86%	97%	88%
5	95%	27%	50%	57%
6	118%	100%	74%	97%
7	138%	431%	38%	202%
8	118%	124%	120%	121%
9	34%	92%	158%	95%
10	203%	216%	38%	152%
11	79%	176%	93%	116%
12	27%	0%	0%	9%
13	58%	65%	58%	60%
14	68%	87%	87%	81%
15	96%	71%	93%	87%
16	76%	71%	76%	75%
17	59%	5%	14%	26%
18	92%	47%	44%	61%
19	86%	73%	119%	93%
20	72%	153%	112%	112%
21	231%	153%	150%	178%
22	54%	149%	194%	132%
23	78%	98%	96%	91%
24	138%	93%	101%	111%
25	23%	6%	27%	19%
26	72%	64%	81%	72%
27	173%	212%	182%	189%
28	79%	3%	3%	28%
29	54%	66%	60%	60%
30	2%	60%	89%	50%
31	111%	139%	132%	127%
32	227%	264%	31%	174%
33	19%	228%	229%	158%
34	62%	221%	84%	122%
35	83%	195%	229%	169%
36	100%	107%	123%	110%

37	320%	1955%	195%	823%
38	196%	106%	25%	109%
39	13%	72%	87%	57%
40	83%	88%	100%	90%
41	70%	62%	68%	67%
42	32%	0%	10%	14%
43	224%	30%	170%	141%
44	81%	112%	213%	135%
45	131%	117%	24%	91%
46	25%	104%	99%	76%
47	20%	11%	32%	21%
48	0%	316%	22%	113%
49	320%	298%	420%	346%
50	99%	69%	66%	78%
51	0%	0%	0%	0%
52	91%	68%	51%	70%
53	106%	112%	104%	107%
54	106%	100%	85%	97%
55	25%	11%	2%	13%
56	108%	24%	47%	60%
57	42%	87%	10%	46%
58	72%	58%	68%	66%
59	103%	92%	87%	94%
60	66%	65%	63%	65%
61	174%	135%	192%	167%
62	113%	302%	60%	158%
63	96%	92%	60%	83%
64	133%	74%	88%	98%
65	52%	19%	73%	48%

When broken out across four size classes, the sites with the smallest nominated load reduction, 0–50 kW, achieved the highest average realization rate across the three events at 130 percent. The 0-50 kW group had the largest portion of sites enrolled in the Program, totaling 55 sites that accounted for 40 percent of total enrolled sites. The second smallest size class, 51–200 kW, had 48 sites enrolled and achieved the lowest average realization rate at 73 percent. The 201-500 kW group had 28 sites enrolled and achieved a realization rate of 111 percent. The largest size class, 501+ kW, had six sites enrolled and achieved a realization rate of 95 percent. Idaho Power will continue to work with all customer segments to help refine nominations to align closer with realistic reduction opportunities which will increase the realization rate specific to this group.

Figure 6 below represents the realization rate achieved by each nomination group, averaged across all three events. To calculate the results, each site's average load reduction (across three events) was divided by its average nomination across the three events and then grouped by size.

Figure 6.



Program Costs

Program costs totaled $744,955 through October 1, 2016. Incentive payments were the largest expenditure comprising 86 percent of total costs. The incentive payments were fixed-capacity payments resulting from the three events called during the 2016 Program season. Variable energy payments were not made during the season because the variable energy payment is implemented starting with the fourth event. Total Program costs for 2016 were $17.95 per kW based on the maximum demand reduction of 41.5 MW, or $22.30 per kW, based on average load reduction for the season of 33.4 MW. Table 4 below displays the 2016 Program costs by category.

Table 4.

Item	2016 Program Costs
Materials & Equipment	$951
Contract Services	$19,836
Marketing & Administration	$84,557
Incentive payments	$639,611
Total	**$744,955**

Benefit-Cost Analysis

The Benefit-Cost analysis for the Program is based on a 20-year model that uses financial and demand-side management alternate cost assumptions from the *2015 Integrated Resource Plan* ("IRP"). As part of the public workshops in conjunction with Case No. IPC-E-13-14[2], Idaho Power and other stakeholders agreed in a settlement agreement ("Settlement") on a new method for valuing DR. The Settlement, as approved in Commission Order No. 32923, defined the annual cost of operating Idaho Power's three DR programs for the maximum allowable 60 hours must be no more than $16.7 million. This amount was reevaluated in the 2015 IRP, as agreed upon in the Settlement, to be $18.5 million.

In 2016, the preliminary cost estimate of operating all three of Idaho Power's DR programs was $8.9 million through October 1, 2016. It is estimated that if the three programs were dispatched for the full 60 hours, the total costs would have been approximately $12.2 million which is below the total annual costs agreed upon in the Settlement as revised in the 2015 IRP.

Idaho Power's cost-effectiveness for DR programs is updated annually. A more comprehensive cost-benefit analysis will be included in the Company's 2017 Demand-Side Management Annual Report when all the data will be available.

Customer Satisfaction Results

Idaho Power conducted a post season survey that was sent via email to all participants enrolled in the Program. The survey focused on quantifiable questions that encouraged customer feedback and could be used to improve the Program in future years. Questions were based on a four point rating scale. Idaho Power received feedback from 34 of the 64 (excluding Idaho Power) participants enrolled for a response rate of

[2] *In the Matter of the Continuation of Idaho Power Company's A/C Cool Credit, Irrigation Peak Rewards, and Flexpeak Demand Response Programs for 2014 and Beyond*

53 percent. The results of the survey were favorable and participants were satisfied, as shown below:

- When asked, how satisfied were you with the enrollment process, 4 being "very satisfied," the average response was 3.8.
- When asked, how satisfied were you with the notification process, 4 being "very satisfied," the average response was 3.4.
- When asked, how satisfied were you with the program support from Idaho Power, 4 being "very satisfied," the average response was 3.6.
- When asked, how satisfied were you with the post event performance data, 4 being "very satisfied," the average response was 3.4.
- When asked, how satisfied were you with the timeliness of receiving the incentive payment, 4 being "very satisfied," the average response was 3.6.
- When asked, how satisfied were you with the incentive amount, 4 being "very satisfied," the average response was 3.5.
- When asked, how satisfied were you with the ability to reduce demand in your facility during scheduled events, 4 being "very satisfied," the average response was 3.4.
- When asked, overall how satisfied are you with Idaho Power's Flex Peak Program, 4 being "very satisfied," the average response was 3.8.
- When asked, how likely would you be to re-enroll in the Flex Peak Program in the future, 4 being "very likely," the average response was 3.9.

Program Activities for 2017

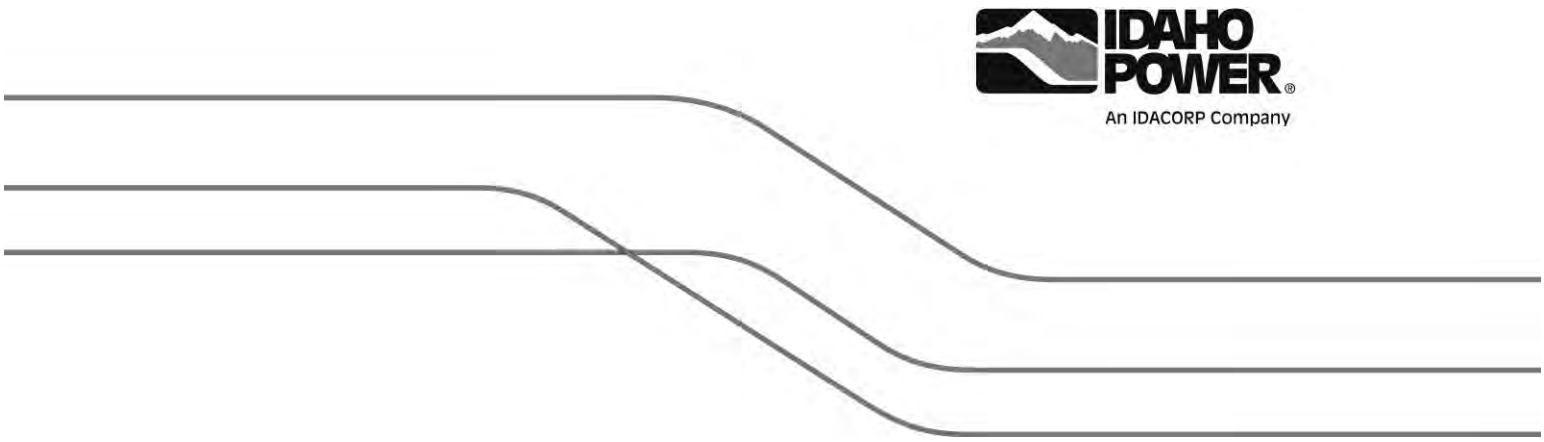
Recruitment efforts for the 2017 season will begin the first quarter of 2017 to encourage participation. Idaho Power will meet with existing participants during the off-season to discuss past-season performance and upcoming season details.

Similar to 2016, the Program will be jointly marketed along with Idaho Power's applicable energy efficiency programs. The Company will utilize its Customer Representatives to retain the currently enrolled sites and encourage new sites to participate.

For the upcoming season, Idaho Power plans to focus on retaining current enrolled customers and enroll new customers that show interest and are a good fit for the Program. However, the Company does not plan to actively market the program like it did in 2016 because the capacity from this past season remained around 35 MW, which is in line with the desired Program capacity set forth in the Settlement agreement.

Conclusion

The Program is successful in achieving DR load reduction at a lower cost to customers when compared to the former commercial and industrial DR program. When analyzing the Program at the generation level, industrial and commercial customers have made noteworthy contributions to Idaho Power's DR programs. The Program currently contributes approximately 10-12 percent of the Company's overall DR portfolio and can be relied on to provide dispatchable load reduction to the electrical grid. The Program had a total of 137 sites reducing peak demand by 41.5 MW with 67 new sites enrolling in 2016. The Program retained 97 percent of past enrolled sites (70 of 72) from the 2015 season. Load reduction event results showed maximum load reductions of 34.8, 41.5, and 27.7 MW, respectively, for the three events, and an average of 34.7 MW. The events achieved realization rates of 96 percent, 120 percent, and 80 percent, respectively, averaging 98.8 percent. The total Program costs for 2016 through October 1 were $744,955. The cost of having this resource available was $22.30 per kW based on average reduction for the season. The Program continues to enjoy high customer satisfaction results among participants with average survey responses at 3.6 on a scale of 1 to 4.



2016 Irrigation Peak Rewards Program Report

February 15, 2017

Idaho Power 2017

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EXECUTIVE SUMMARY

The Irrigation Peak Rewards program (the Program) is a voluntary demand response program that pays irrigation participants a financial incentive for the ability to turn off participating irrigation pumps at potential system peak load periods. The Program success is measured by the amount of demand reduction, in MW, available to Idaho Power during potential system peak periods.

SUMMARY OF PROGRAM RESULTS

The following items summarize the key components of the 2016 Irrigation Peak Rewards program.

- The Program had an estimated actual generation level load reduction of 302.7 MW on June 29.
- The Program had a maximum estimated load reduction potential of 316.9 MW.
- The Program dispatched three load reduction events; June 29, July 27 and July 29.
- Customers were divided into one of four dispatch groups; 2:00 p.m. to 6:00 p.m., 3:00 p.m. to 7:00 p.m. 4:00 p.m. to 8:00 p.m., or 5:00 p.m. to 9:00 p.m.
- 623 eligible participants chose to participate.
- 2,286, or 82% of the 2,778 eligible service points, enrolled in 2016.
- Total billing demand enrollment of participating sites was 415,583 (kW).
- The total program costs for 2016 were $7,600,075.

INTRODUCTION

The Irrigation Peak Rewards Program (the Program) is a voluntary demand response program that has been available to Idaho Power's agricultural irrigation participants since 2004. The Program pays irrigation participants a financial incentive for the ability to turn off participating irrigation pumps at potential high system load periods. The Program is designed to minimize or delay the need to build new supply-side resources. Idaho Power estimates future capacity shortfalls through the Integrated Resource Plan (IRP) and then plans resources to mitigate these shortfalls. The Program is a result of this planning process. The Program success is measured by the amount of demand reduction, in MW, available to Idaho Power during potential system peak periods.

The Program continually increased demand response resource capacity to 340 megawatts (MW) in 2012. Following the 2012 program season, Idaho Power determined through the 2013 IRP that there would be no capacity shortfalls for a few years into the future. In 2013, Idaho Power filed IPUC Case No. IPC-E-12-29 to temporarily suspend the Program to allow time to work with stakeholders and interested parties to determine how the Program should operate in the future. These workshops resulted in settlement agreements reached in Case No. IPC-E-13-14 and UM 1653. The Program was again offered as a demand response program in 2014, with some modifications. Under the terms of the settlement agreement, the Program was only available to service locations that currently had a Load Control Device (Device) installed or that participated in the Manual Dispatch Option in 2012. In the most recent 2015 IRP, Demand Response (DR) programs were considered as committed resources as part of the load and resource balance. This new way of considering DR, contributed to the development of a new load and resource balance indicating no capacity shortfalls until 2026. There were no changes to the Program for the 2016 program season. This report provides a review of the Program's activities, performance and expenditures for 2016 and is a supplement to the 2016 DSM Annual Report.

Program Details

Interruption Options

The Program is available to Idaho Power irrigation participants taking service under Schedule 24 in both Idaho and Oregon, had service locations that currently had a Device installed or that had previously participated in the Manual Dispatch Option. Participants are placed in one of two Interruption Option classes:

Automatic Dispatch Option

For each Metered Service Point (service points) in the Automatic Dispatch Option, Idaho Power installs a Device which provides the ability to send a signal that controls the associated irrigation pumps. The Device operates a contact to control the associated irrigation pumps to turn off

during dispatched Load Control Events. This option requires that all pumps at the service points be controlled.

Manual Dispatch Option

Service points with at least 1,000 cumulative HP, or that Idaho Power has determined to have limited communication availability are eligible for the Manual Dispatch Option. Customers under this classification choose to manually control which pumps are turned off during a Load Control Event. Manual Dispatch Option participants are required to select a nomination for the amount of kilowatts (kW) available to dispatch during load control events.

Program Parameters

The parameters of the Program included the following:

- A minimum of three (3) load control events occur each program season.
- Dispatch load control events could occur any weekday or Saturday, excluding July 4, between the hours of 1 p.m. and 9 p.m.
- Customers were divided into one of four dispatch groups:
    - 2:00 p.m. to 6:00 p.m.
    - 3:00 p.m. to 7:00 p.m.
    - 4:00 p.m. to 8:00 p.m.
    - 5:00 p.m. to 9:00 p.m.
- Load control events could occur up to 4 hours per day and up to 15 hours per week, but no more than 60 hours per program season.
- Idaho Power provides notification to Manual Dispatch Option participants four hours prior to the initiation of a control event. Idaho Power may not always provide prior notification of a load control event for Automatic Dispatch Option participants.
- If prior notice of a load control event had been sent, Idaho Power could choose to cancel the event and notify participants of cancellation up to 30 minutes prior to the load control event.
- The provisions for this program did not apply to system emergencies or events outside the control of Idaho Power.

Program Incentives

Automatic Dispatch Option participant's incentive appeared as a demand credit and an energy credit applied to the monthly bills June 15 through August 15. The demand and energy credits for the Manual Dispatch Option participants for the period of June 15 through August 15 are paid with a check.

The demand credit was calculated by multiplying the monthly billing kW by the demand-related incentive amount. The energy credit was calculated by multiplying the monthly billing

kilowatt-hour (kWh) usage by the energy-related incentive amount. Credits were prorated for periods when meter reading/billing cycles did not align with the Program season dates from June 15 to August 15.

The incentive structure includes a "Fixed" and "Variable" payment, with an increased variable credit amount for service points that voluntarily participate in the "Extended" 9 p.m. interruption period. All participants' "Fixed" incentives in the Automatic and Manual Dispatch options were calculated using Idaho Power metered billing data.

Automatic Dispatch Option participants' received a credit on their monthly bill calculated and applied by Idaho Power's Customer Relations and Billing software (CR&B).

Manual Dispatch Option participants' incentives were calculated using billing kW and kWh from 2016 interval metering data and nominated kW, and participants received the incentives in the form of a check. Any "Variable" incentive payments (applied to events occurring after the first three) would be paid by check no more than 45 days after the end of the program season. The incentive rates for 2016 are listed in Table 1. There were no "Variable" incentive payments made in 2016.

Table 1. 2016 incentive rates

Option	Fixed Demand Credit	Fixed Energy Credit	Variable Energy Credit	Extended 9 p.m. Variable Energy Credit (5-9 p.m.)
	($/billing kW)	($/billing kWh)	($/event kWh)	($/event kWh)
Automatic and Manual Options	$5.00	$0.0076	$0.148	$0.198

Program Opt Out

Under the rules of the Dispatch Option, participants had the ability to opt out of dispatch events up to five times per service point. Each opt out incurred a fee. The opt out fee was $5.00 per kW of demand for the first three events, and $1.00 per kW of demand for remaining events (Variable) based on the current month's billing demand (kW). Opt out penalty fees never exceeded the incentive amount. Manual Dispatch Option service locations were charged opt out penalty fees based on the nominated kW that was not turned off during a load control event.

In 2016, 25 participants received opt out penalties for one or more of the event dates. The opt out penalties were low due to a communication error in the EnerNoc notification system. Many participants were not notified of the event happening on June 29. This created a situation where some participants turned pumps back on not realizing there was an event. Charging a penalty unless participants explicitly opted out would not have been correct.

REVIEW OF PROGRAM RESULTS

Participation

Idaho Power presented the Program details at irrigation workshops across the service area. In addition, each year Idaho Power staff participates in four agriculture shows and discusses the Program and changes to the Program with customers/participants. After the Program suspension in 2013, Idaho Power has made a concerted effort to encourage past participants to re-enroll in the Program. In 2016, Idaho Power presented the details of the Program at eight workshops across five regional areas. Additionally, Idaho Power agriculture representatives answered specific participant's questions by phone, email, and face to face contact to inform participants about the program details.

In March 2016, Program enrollment packets were mailed to all participants that currently had a Device(s) installed or past participants in the Manual Dispatch Option. Contents of this packet included program details, a program application, incentive structure, eligible pump locations and an estimated incentive for each program option listed by pump locations.

For 2016 the total billing demand enrollment was 415,583 (kW) on 2,286 service points. This accounted for approximately 82 % of the eligible service points. This was a 1 % increase over 2015.

Figure 1 portrays Idaho Power's service area divided into five regional areas; Western, Canyon, Capital, Southern, and Eastern. These areas are used throughout this report in reference to program information.

Figure 1. Idaho Power service areas

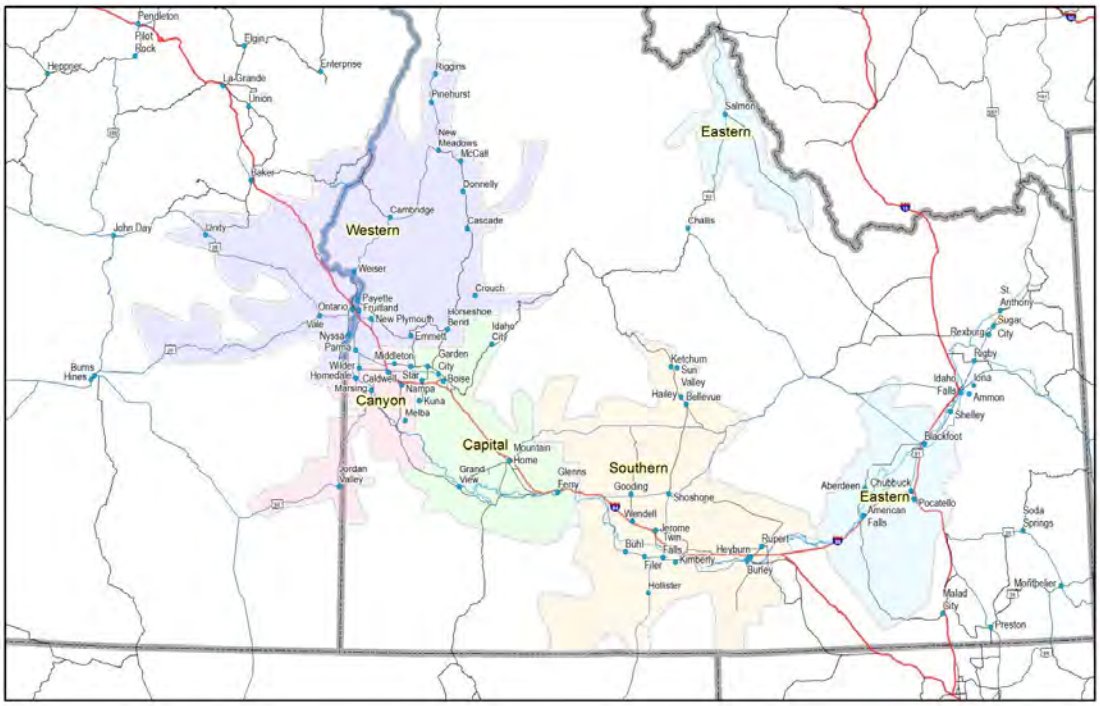


Figure 2. Distribution by service area of 2016 participants

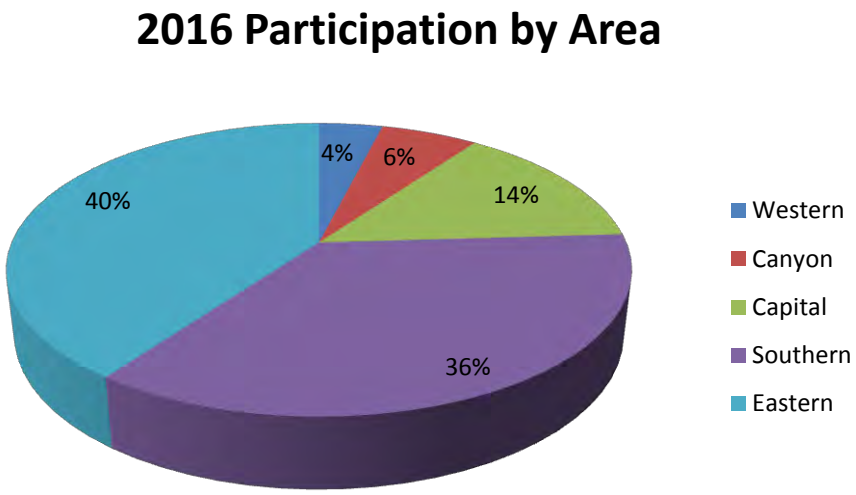


Table 2. 2016 Eligible service locations and participation levels by area

Idaho Power Area	State	Eligible Service Locations	Automatic Device	Manual	Total Enrolled by Area	Eligible Enrolled (%)
Western	Idaho	60	41	0	41	68%
	Oregon	66	42	4	46	70%
Canyon	Idaho	151	129	8	137	91%
	Oregon	4	3	0	3	75%
Capital	Idaho	386	299	24	323	84%
Southern (Twin Falls)	Idaho	525	420	3	423	81%
Southern (Mini-Cassia)	Idaho	456	399	0	399	88%
Eastern	Idaho	1,127	914	0	914	81%
Total Service Points		**2,775**	**2,247**	**39**	**2,286**	

Operations

Equipment and Monitoring

Idaho Power contracted with EnerNOC (originally M2M Communications) in 2016 to provide equipment, installation, and service for the Irrigation Peak Rewards devices that were not controlled by Idaho Power's Automated Metering Infrastructure (AMI) system. Idaho Power initiated Irrigation Peak Rewards dispatch control events on a customized EnerNOC Web site. The Web-to-wireless remote control system, developed by EnerNoc utilizes cell or satellite devices installed in participants' pump motor control circuit to turn off or prevent the pump from running during an interruption event. The Web service allows Idaho Power to dispatch, schedule and carry-out interruption events. Communication from the Device provided feedback to determine the status of the participants' equipment surrounding an interruption event.

Idaho Power has also been expanding the use of power line carrier technology used for its automated metering system. The power line carrier technology provides the ability to turn off pumps for the Program. This technology utilizes an Aclara Demand Response Unit (DRU), installed in the participants' pump motor control circuit to turn off or prevent the pump from running during a load control event. The DRU receives commands via Idaho Power owned power line carrier technology.

The AMI technology allows Idaho Power to monitor status of the majority of participating irrigation pumps during load control events by supplying hourly usage reports. These reports provide useful information in determining which service locations had Devices that functioned properly or failed to turn off pumps during events.

In addition to using the AMI technology with DRUs, Idaho Power has developed its own load control device. The load control device is installed on the participant's pump panel and turns off the pump when signaled by a text message communicated by a cell signal. This device will be used where AMI technology is not available.

Program Analysis

Idaho Power conducted the 2016 Irrigation Peak Rewards load reduction evaluation through the use of four primary data sources: AMI interval data (hourly kWh readings), MV-90 meter interval data (hourly kW readings), a program participant list and total system load data for event days.

The participant list included for each enrolled pump and curtailment event day:

- Dispatch group
- Nominated kW
- Opt out status
- Pump number
- Meter number

All interval meter data included error codes for cases where the source data was missing or estimated. This data was removed from event days before results were tabulated. Due to not having AMI or interval data for approximately 15% of Automatic Dispatch Option pumps, the results of the sites with AMI data were assumed to represent the rest of the sites. Calculations were extrapolated to total program sites in the Automatic Dispatch Option to estimate total reduction for the Program. Also total system load data was reviewed as a secondary check of total estimated load reduction.

Data Gathering and Processing

Two distinct datasets were created: one for Automatic Dispatch Option pumps where AMI data was available and one for all Manual Dispatch Option sites. Idaho Power system load was used as a comparison for impact of the DR events. The system load used for comparison consists of total MW readings in 5 minute increments on event days as well as one comparative non event day.

Baseline for Interval Metering Data

The baseline load for each pump was calculated by averaging the hourly interval readings in the second, third and fourth hours preceding the beginning of each pumps' curtailment event. The reasons for not including the immediately preceding hour (first hour) in the baseline determination are:

- The frequent practice of pump operators manually shutting off the pump prior to the start of the curtailment event (up to an hour prior to the event).
- The dispatch system does not communicate with the load control devices at exactly the same moment in time. This causes the load control devices to turn off at slightly different times at the beginning of the event. This causes usage to be recorded in the first hour of the event, therefore, the first hour of usage data was ignored for analysis purposes.

Each pump's baseline is summed to arrive at a unique baseline for each dispatch group.

Demand Reduction Calculation Method

The Demand Reduction (in kW) for each pump (with hourly metering) was calculated during the last three hours of each curtailment event was calculated as follows:

$$\text{Demand Reduction}_{\text{Pump}} = \text{Baseline Load}_{\text{Pump}} - \text{Average Event Load}_{\text{Pump}}$$

The aggregated demand reduction (in kW) for all pumps within a dispatch group yield a total hourly reduction for each group in each event as follows:

$$\text{Demand Reduction}_{\text{Group}} = \sum \text{Demand Reduction}_{\text{Pump}} \text{ in Groups 1-4}$$

The total Demand Reduction for the Automatic Dispatch Option was calculated as follows:

$$\text{Demand Reduction}_{\text{Automatic Dispatch Option}} = \sum \text{Demand Reduction}_{\text{Group}}$$

Usage data for The Manual Dispatch Option was collected by AMI meters or other Company owned hourly meters (MV90). The total Demand Reduction for the Manual Dispatch Option was calculated by the following method:

$$\text{Demand Reduction}_{\text{Manual Dispatch Option Group}} = \sum \text{Demand Reduction}_{\text{Manual Dispatch Option Pump-AMI}} + \sum \text{Demand Reduction}_{\text{Manual Dispatch Option Pump-MV90 Groups 1-4}}$$

The total Demand Reduction for the Manual Dispatch Option was calculated as follows:

$$\text{Demand Reduction}_{\text{Manual Dispatch Option}} = \sum \text{Demand Reduction}_{\text{Manual Dispatch Option Groups 1-4}}$$

The total Program Demand Reduction was calculated by summing the Automatic Dispatch Option sites and the Manual Dispatch Option sites calculated reduction:

$$\text{Total Program Demand Reduction} = \text{Demand Reduction}_{\text{Manual Dispatch Option}} + \text{Demand Reduction}_{\text{Automatic Dispatch Option}}$$

The total Program results represent the estimated reduction for all pumps in the Program, not just those analyzed. Idaho Power applied the realization rate to the nominated load (kW) of all pumps where AMI data was not available in order to estimate the total demand reduction achieved during each curtailment event. This could be the result of a manually read meter (i.e. no AMI available) or AMI data that was removed as part of the data cleaning process.

Load Reduction Results – Interval Metering Data

In 2016 the Program dispatched three load control events with a maximum meter level demand reduction:

- June 29 – 275.8 MW 302.7 MW with line losses
- July 27 – 222.8 MW 244.6 MW with line losses
- July 29 – 227.1 MW 249.3 MW with line losses

Idaho Power has determined that the full value of the demand reductions at the generation level include an average 9.76 % line loss. The events achieved realization rates of 70.6 %, 53.8 % and 54.6 %, respectively.

During the first event of 2016 (June 29), Idaho Power experienced an AMI communication issue that reduced potential load reduction by approximately 12.9 MW at the meter level. The issue occurred because it was the first actual dispatched event using a new dispatch control interface. The new interface provides a method that allows Idaho Power Load Serving Operators to dispatch each of the demand response programs from one screen.

Based on the analysis of the data the expected maximum load reduction for the season should have happened on June 29, which absent the AMI communication issue would have resulted in an estimated 316.9 MW of load reduction at the generation level. This was calculated by using the actual load reduction of 302.7 MW and adding back the estimated load that would have turned off without the AMI communication issue of 14.2 MW (12.9 MW at meter level).

The interface was developed in late 2015 and completed in early 2016 for use in the 2016 season. The interface caused a communications problem with irrigation AMI dispatched DRUs for the first two groups on June 29. The cause of the problem was that the time limit for the AMI communication process was not timed sufficiently. In essence, the “time-out” limit to send the control signals for the event to the DRU was not long enough to communicate with all of the Devices. Many of the Devices were not dispatched in the first two groups.

Prior to the start of the season the interface had been successfully tested on a few Devices. However, not enough Devices were tested at one time to cause the issue to occur during testing. The problem was discovered and corrected before the last two groups dispatched. The interface dispatched properly the rest of the season. Discovering and rectifying problems such as this is

part of the reason Idaho Power uses the Program at least three times each season. Other reasons include testing the processes, procedures and to engage customers in program operation.

As discussed above, load reduction is calculated separately for the Manual Dispatch Option Sites and the Automatic Dispatch Option Sites. Following are tables and graphs displaying this information.

Table 3. Manual Dispatch Option sites - meter level DR

Group and Event Date	Enrolled Demand (Billing)	Nominated Demand	Load Off in Baseline Hours	Load on during Event (Nonresponsive)	Load Reduction
	(kW)	(kW)	(kW)	(kW)	(kW)
Jun 29 2-6 p.m.	100,157	7,630	1,156	0	6,473
Jun 29 3-7 p.m.	105,811	15,134	3,194	4	11,936
Jun 29 4-8 p.m.	91,212	51,462	4,955	6,427	40,080
Jun 29 5-9 p.m.	118,403	7,842	2,344	966	4,532
Jul 27 2-6 p.m.	100,157	7,630	907	0	6,723
Jul 27 3-7 p.m.	105,811	15,134	957	4	14,173
Jul 27 4-8 p.m.	91,212	51,462	8,074	6,204	36,288
Jul 27 5-9 p.m.	118,403	7,842	2,332	1,732	3,778
Jul 29 2-6 p.m.	100,157	7,630	1,464	2	6,163
Jul 29 3-7 p.m.	105,811	15,134	3,314	3	11,816
Jul 29 4-8 p.m.	91,212	51,462	8,074	6,412	36,976
Jul 29 5-9 p.m.	118,403	7,842	2,612	1,790	3,440

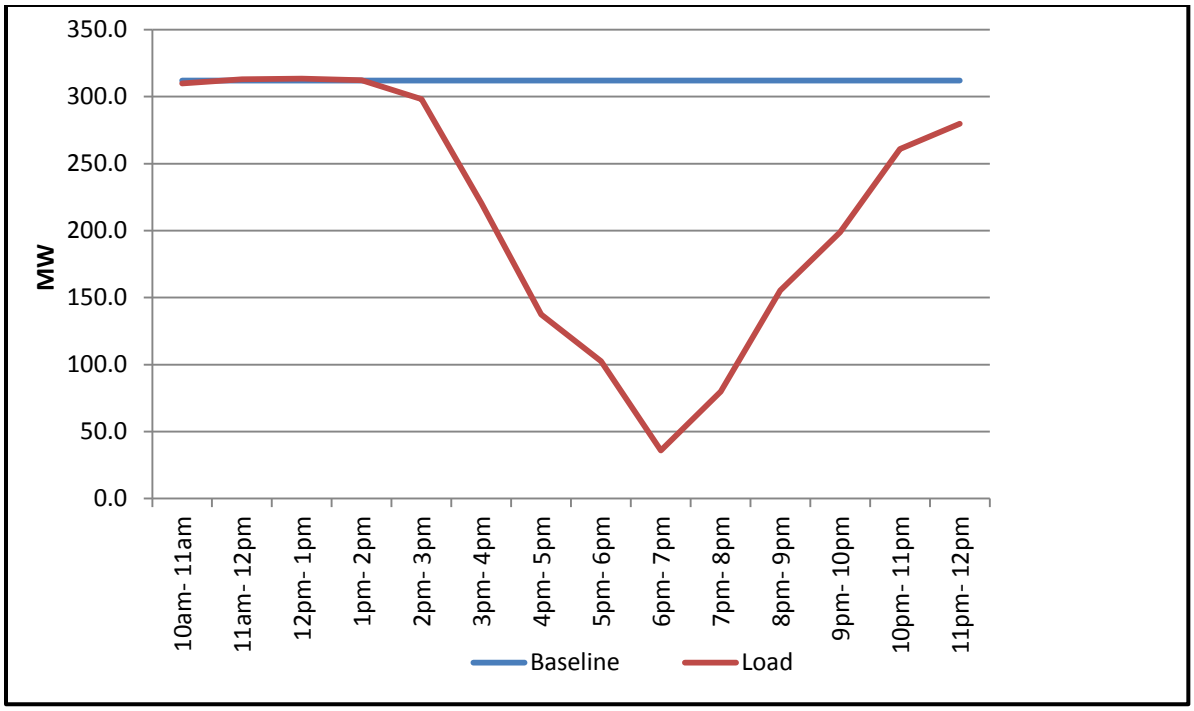
Table 4. Automatic Dispatch Option sites - meter level DR

Group and Event Date	Nominated Demand	Load Off in Baseline	Auto Opt out	AMI Communication Problem	Load on during event (Nonresponsive)	Load Reduction
	(kW)	(kW)	(kW)	(kW)	(kW)	(kW)
Jun 29 2-6 p.m.	92,527	15,116	860	5,606	5,382	65,563
Jun 29 3-7 p.m.	90,677	25,648	0	7,306	9,942	47,782
Jun 29 4-8 p.m.	39,750	12,675	52	0	1,952	25,072
Jun 29 5-9 p.m.	110,561	30,136	221	0	5,803	74,401
Jul 27 2-6 p.m.	92,527	56,137	229	0	2,851	33,310
Jul 27 3-7 p.m.	90,677	34,878	0	0	5,563	50,235
Jul 27 4-8 p.m.	39,750	9,748	47	0	2,417	27,539
Jul 27 5-9 p.m.	110,561	55,076	149	0	4,559	50,777
Jul 29 2-6 p.m.	92,527	49,870	7	0	3,157	39,493
Jul 29 3-7 p.m.	90,677	35,140	0	0	4,690	50,847
Jul 29 4-8 p.m.	39,750	13,298	13	0	2,379	24,060
Jul 29 5-9 p.m.	110,561	51,388	16	0	4,844	54,313

Table 5. Demand reduction results for each event by hour

Date and Description	Interval (Hour)						
	2-3 p.m.	3-4 p.m.	4-5 p.m.	5-6 p.m.	6-7 p.m.	7-8 p.m.	8-9 p.m.
	(kW)	(kW)	(kW)	(kW)	(kW)	(kW)	(kW)
29-June	72,036	131,754	196,905	275,838	203,802	144,085	78,933
w/losses	79,067	144,613	216,123	302,760	223,693	158,147	86,637
27-July	40,033	104,440	168,267	222,822	182,789	118,382	54,555
w/losses	43,940	114,634	184,690	244,569	200,629	129,936	59,880
29-July	45,656	108,320	169,356	227,109	181,453	118,790	57,753
w/losses	50,112	118,892	185,885	249,275	199,163	130,384	63,390

Figure 3. Demand Reduction (Demand Response) – June 29



Realization Rate Analysis

For the purposes of this report, *Realization Rate* is defined as the likelihood an irrigation service point is not operating during the demand response event (interruption period) and includes equipment failures, opt outs and load left on during an event. Realization rate is used to determine the Program impacts. The realization rate can be characterized as the percentage of monthly billing demand expected to result in an actual load reduction on the system during a given interruption period in a typical summer. This rate is highest at the end of June and the beginning of July when many irrigation pumps are operating nearly 24 hours per day and 7 days

per week. The realization rate is lower later in the irrigation season when many irrigation pumps are not operating due to reduced irrigation demands because of crop maturity (primarily small grain crops).

Device failures also affect realization rates because they reduce how much load reduction is achieved during each event. The Program staff engages in a continual effort to mitigate Device failures caused by communication problems, problems with customer's electrical panels, and actual inoperative Devices. The Device failure rates for each event in 2016 were:

- June 29 – 5.45%
- July 27 – 3.65%
- July 29 – 3.57%

The rate on June 29 was higher due to a notification problem in the EnerNoc outbound calling system. Many customers were not notified of the event and a few turned their pumps back on not realizing that an event had been dispatched.

Realization rate is calculated as follows:

$$\text{Realization Rate}_{\text{Potential}} = \text{Nominated Load}_{\text{Total}} - \text{Nominated Load}_{\text{Off during Baseline Period}} - \text{Average Opt Out} - \text{Average Device Failure/Communication Errors} - \text{Did Not Reduce Total Nominated Load}$$

The first quarter of the Program season (June 15–July 30) showed an average expected realization rate of 65.2 %, the expected realization rate in the last three quarters of the Program season (July 1–August 15) reduced significantly, to an average of 54.9 %. This reduction in realization rate is due to a higher percentage of pumps not operating during the baseline period. The analysis determined that the highest potential realization rate for the season was 70.6 %.

Table 6. Average realization rates

Date Range	Load Off in Baseline Hours	Average Opt-Out Rate	Average Device Failure Rate (options 1&2)	Did not reduce total nominated load (Manual Dispatch Option)	Potential Realization Rate	Total
Jun 15-30	28.52%	0.13%	4.29%	1.89%	65.17%	100%
Jul 1-15	35.18%	0.13%	4.29%	1.89%	58.51%	100%
Jul 16 -31	38.99%	0.13%	4.29%	1.89%	54.70%	100%
Aug 1-15	42.32%	0.13%	4.29%	1.89%	51.37%	100%

Note: Table includes the average percent categorized load expected to operate during a load control event had it occurred during each respective two week period throughout the Program season.

Figure 4. Realization rate distribution – June 29

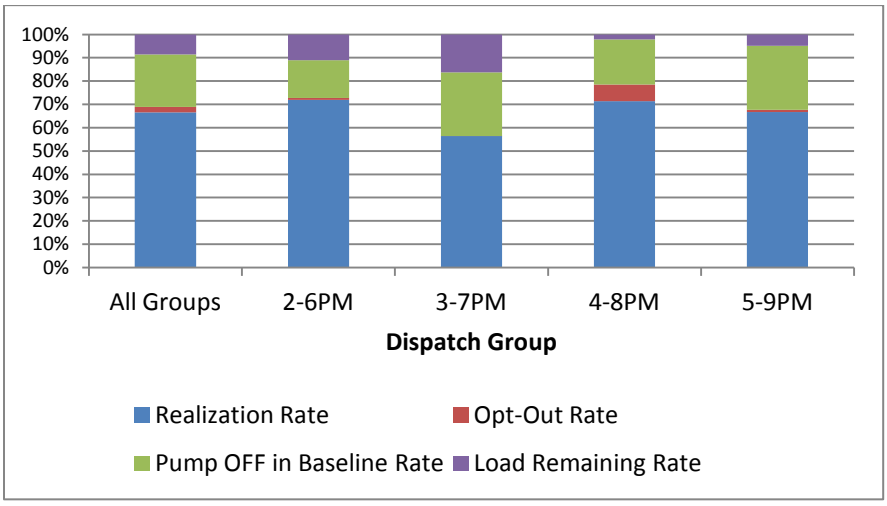


Figure 5. Realization rate distribution – July 27

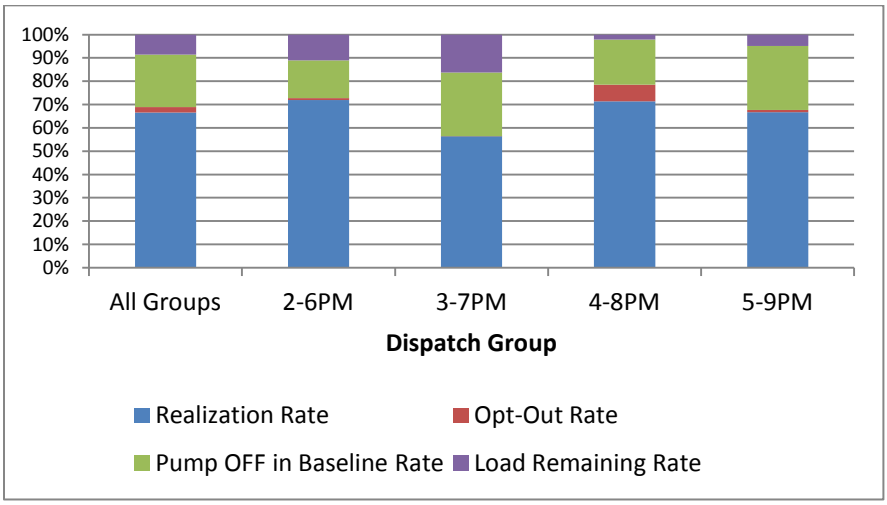


Figure 6. Realization rate distribution – July 29

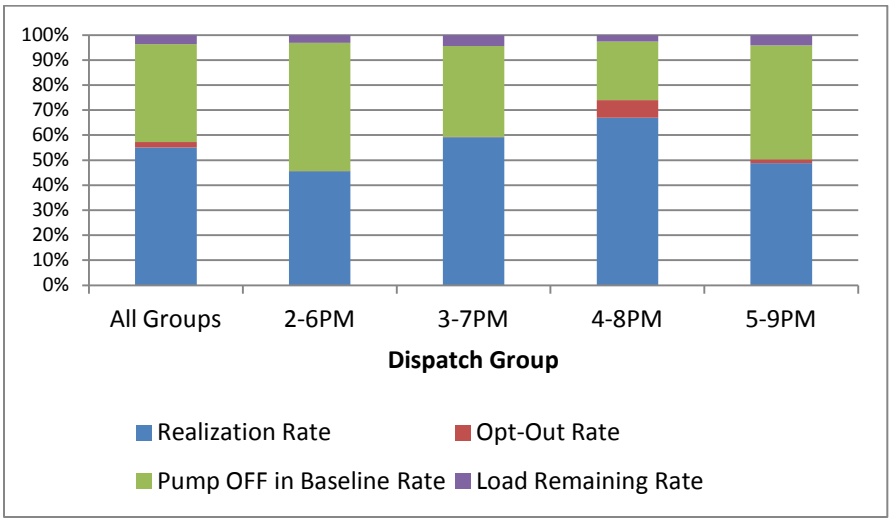
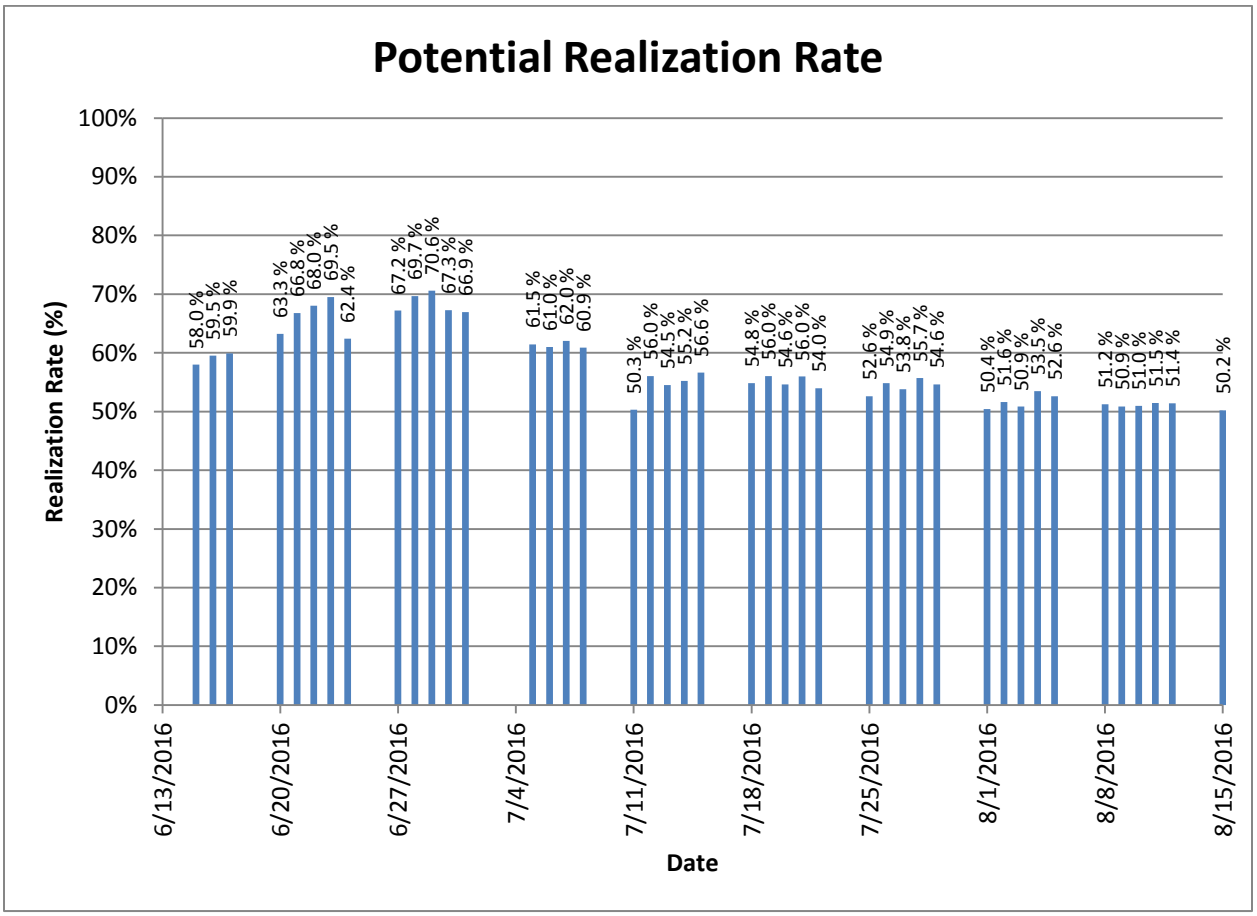


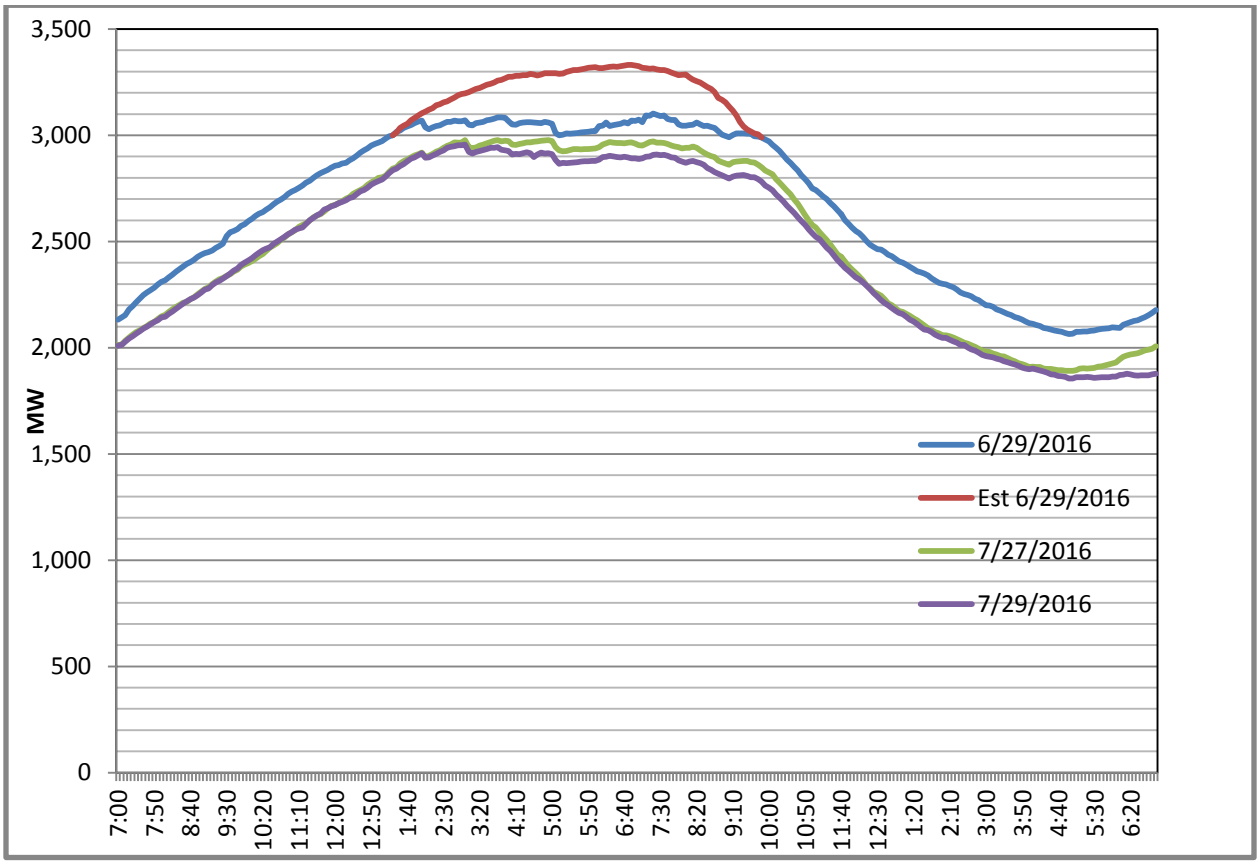
Figure 7. 2016 Program season potential realization rate



Load Reduction Results – Total System Load Data

Idaho Power measures system load data in 5 minute intervals. This data was also used to estimate load reduction for the Program. Each event day was viewed to see results of the Program operation. Load reduction is very clear from graphs of each event day (see Figure 8). However, the magnitude of what would have happened absent an event is what makes the load reduction an estimate. Idaho Power estimated what total system load would have been on June 29 using data from June 28 as a surrogate day to determine the shape of the load. For this analysis the data from June 28 was adjusted upward to match the shape and magnitude of the system load on June 29 from before the event till after the event was over. The graph of this data shows an approximate reduction of 300 MW at 6 p.m. on June 29, which correlates well with the interval metering data analysis which estimated a maximum 302 MW reduction also at 6 p.m.

Figure 8. Total system load on June 29, July 27 and July 29



Program Costs

In 2016, the Program had a total cost of $7,600,075 with the incentive credit being the largest expenditure at 84.3% of total costs. Table 7 displays the annual program costs by category.

Table 7. Annual program costs 2016

Item	2016 Program Costs
Materials and Equipment	$ 133,154
Installation and Contract Services	$ 961,777
Incentive Payments	$ 6,406,340
Marketing and Administration	$ 98,805
Total	**$7,600,075**

CONCLUSIONS

The Program had a demand reduction potential of 316.9 MW and an actual reduction of 302.7 MW.

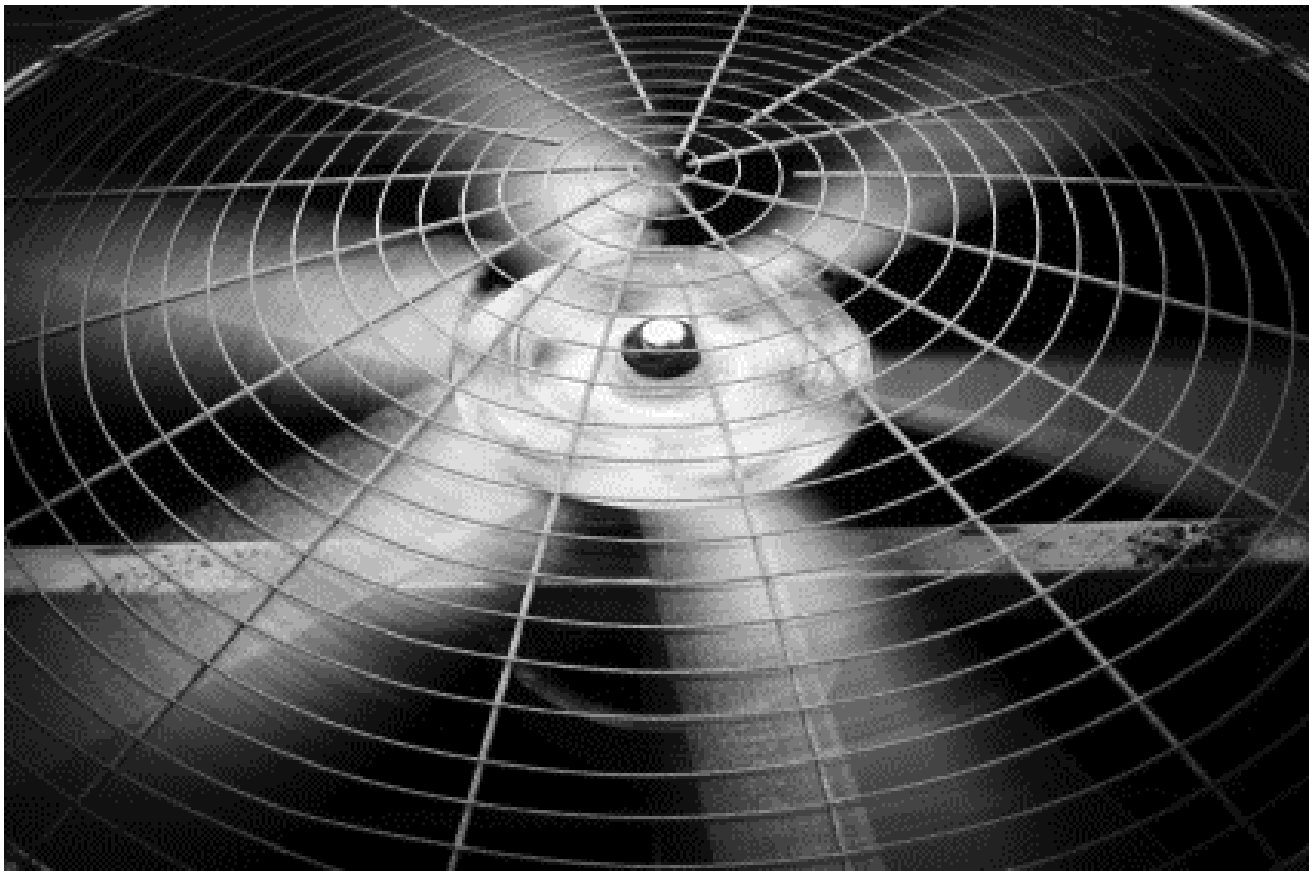
The Program increased its enrollment from 2015 to include over 82% of eligible service locations in 2016.

The Program had a total of 2,286 service points with total enrolled billing demand of 415.5 MW.

When looking at the Program at the generation level, irrigation participants have made significant contributions to Idaho Power's DR programs. The Program currently contributes approximately 80% of Idaho Power's overall demand response portfolio.

The cost of having this resource available to Idaho Power was $23.98 per kW in 2016.

CLEAResult



A/C Cool Credit Program

2016 Impact Evaluation

November 3, 2016

PREPARED BY CLEAResult

PREPARED FOR Idaho Power Company

REPORTING PERIOD July – August 2016

We change the way people use energy™

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Executive Summary

Idaho Power Company contracted CLEAResult to complete an impact evaluation of the 2016 A/C Cool Credit program. The goal of the impact evaluation was to calculate the estimated demand reduction achieved by three A/C Cool Credit curtailment events and update the program's existing predictive model to account for the 2016 curtailment event results.

CLEAResult completed analyses of curtailment events held on June 30th, July 26th, and July 28th, 2016, each with a three hour duration. The results of the analyses showed maximum single hour demand reductions of 1.07, 1.06, and 1.11 kW per participant, respectively, for the three events. The average hourly demand reduction was 0.98, 0.96, 1.01 kW per participant, respectively, for the three events. Due to the distinct weather patterns between the Boise and Pocatello/Twin Falls regions, each curtailment event analysis includes region-specific results.

The impact evaluation demonstrated that Idaho Power's A/C Cool Credit program functions as intended, and, if properly maintained, can be relied on to provide dispatchable demand reduction to the electricity grid.

Introduction

Background

Summer use of air conditioning (A/C) systems places a burden on Idaho Power Company's power supply, power contracts, and transmission and distribution systems. Demand reduction programs in which customers agree to curtail A/C use in times of high demand have proven to successfully deliver significant and dispatchable demand (kW) reduction.

Idaho Power's A/C Cool Credit is one such program that curtails demand from residential A/C units. After being suspended for the 2013 season, the program has been reinstated since 2014 on a limited basis, completing three curtailment events each year during the June 15th through August 15th program season as required under the provisions of the program. The program's function is to curtail residential A/C demand during periods of peak demand by utilizing direct load control technology to cycle A/C units OFF for a portion of each curtailment event period. A/C Cool Credit program curtailment events are limited to non-holiday weekdays with a maximum of 60 hours per curtailment season (with the exception of a system emergency). In exchange for having their A/C units curtailed, program participants receive a $5 credit on their July, August, and September electric bills.

CLEAResult completed impact evaluations on the A/C Cool Credit program in 2011, 2012, 2014 and 2015. The 2012 evaluation also included a research component, investigating how different cycling strategies and temperatures impacted kW reduction results, as well as indoor air temperatures of participating homes. The outcome of that research was used to develop a predictive model (the "IPC Curtailment Calculator") that uses regression formulas to estimate load reductions based on cycling strategy and temperature inputs. The calculator has been updated with every impact evaluation, resulting in the sample size of events informing the calculator's regression formulas, as well as the calculator's accuracy, to increase with each passing season.

The goals of this 2016 impact evaluation were to:

- Determine and verify the demand reduction (MW) during a minimum of three events in 2016
- Utilize data analysis results to update regressions informing the existing predictive model

Analysis Methodology

The demand reduction impact evaluation was conducted through the analysis of hourly Advanced Metering Infrastructure (AMI) data provided by Idaho Power. This approach was supported by the findings of the 2012 impact evaluation, which analyzed both AMI and logger data, and showed both sources to produce similar estimations of energy reduction per curtailment event.

Analysis of the AMI data was conducted using the SAS analytics program. SAS provides a robust platform for analyzing large amounts of data in a consistent manner. The SAS model developed as part of the 2012 and 2014 A/C Cool Credit research projects was utilized to complete the analysis for each 2016 curtailment event. The model first imports the relevant AMI data from Comma Separated Values (CSV) files; second, processes the data to configure it in a way suitable for analysis; and third, analyzes the data to produce the desired result metrics.

The sub-sections below describe the project's methodology related to the sampling plan, demand reduction analysis, and updating of the predictive model.

Sampling Plan

The availability of AMI data for all program participants allowed the project's sampling plan to be a census of program participants. Table 1 below details the number of participants included in each of the curtailment event analyses. Participants were not analyzed if their interval meter data included an error code during the curtailment event period of the baseline period. With an average of 99.7% of all participants analyzed, the results calculated from the analyzed participants have been extrapolated to all participants in the results section.

Table 1: Unit Counts by Curtailment Event

Curtailment Event	Count of Total Participants	Count of Participants Analyzed	Percent of Total Participants Analyzed
June 30	28,372	28,153	99.2%
July 26	28,306	27,970	98.8%
July 28	28,228	27,991	99.2%
Average	28,302	28,038	99.1%

Demand Reduction Analysis

A. Baseline Data

The load reduction achieved during curtailment events was calculated by comparing the average load from each curtailment day against the average load developed from non-curtailment days selected for the baseline. The "previous days" approach was used, which utilizes the average load data from the previous 10 non-weekend, non-curtailment days. Baseline kW was calculated as the average of the three days with the greatest demand from these previous ten non-curtailment days, as ranked by the highest hourly demand occurring during the curtailment timeframe. Curtailment days normally occur on hot, high demand days, thus selecting high demand days for the baseline ensures a similar load profile is used for the baseline days as the curtailment days.

B. Offset Factor

In order to effectively compare baseline and curtailment day loads, the baseline load was adjusted using an offset factor, calculated as the difference in kW between the baseline and curtailment event day load during the hour prior to the start of the curtailment. The offset factor was applied to the baseline day to "normalize" the baseline kW to the curtailment day kW. The offset factor mitigates underlying differences in load due to slight differences in outdoor temperature or other external factors.

Predictive Model

The “IPC Curtailment Calculator” was developed using data results from the seven curtailment events from the 2012 AC Cool Credit Research Project with the aim of providing Idaho Power with a tool for estimating demand reduction levels based on temperature and cycling percentage inputs. The calculator was then updated after the 2014 impact evaluation to include regression formulas that accounted for the 2012, 2014 and 2015 event results.

The calculator is Excel-based and driven by regression formulas developed in the SAS analytics program. Users can input expected temperature at the start of the curtailment event and percent cycling strategy and the model will provide an estimated kW reduction per unit and total MW for the population of program participants. Alternatively, users can input temperature and a requested MW reduction amount and the model will estimate the percent cycling required to achieve the requested MW reduction.

The model uses a regression formula developed for both regions (Boise and Pocatello/Twin Falls) based on an independent variable representing the interaction of “Temperature at start of curtailment event” and “Percent cycling.” This variable was shown in the 2012 Research Project to produce the most statistically significant results.

As part of the 2016 impact evaluation, the predictive model was updated to account for the results of the 2016 curtailment events. This entailed developing new regression formulas that used as inputs results from 2012, 2014, 2015 and 2016 curtailment events

Results

Curtailment Events Summary

A total of three curtailment events were completed as part of the 2016 A/C Cool Credit program. Table 2 below details the characteristics of these events, including high temperature, event time period, and cycling percent. All A/C Cool Credit participants were included in each curtailment event that Idaho Power called. The maximum temperature in Boise during event days ranged from 97 degrees to 99 degrees on event days. The maximum temperature in Pocatello during event days ranged from 95 to 97 degrees.

Table 2: 2016 Curtailment Event Schedule

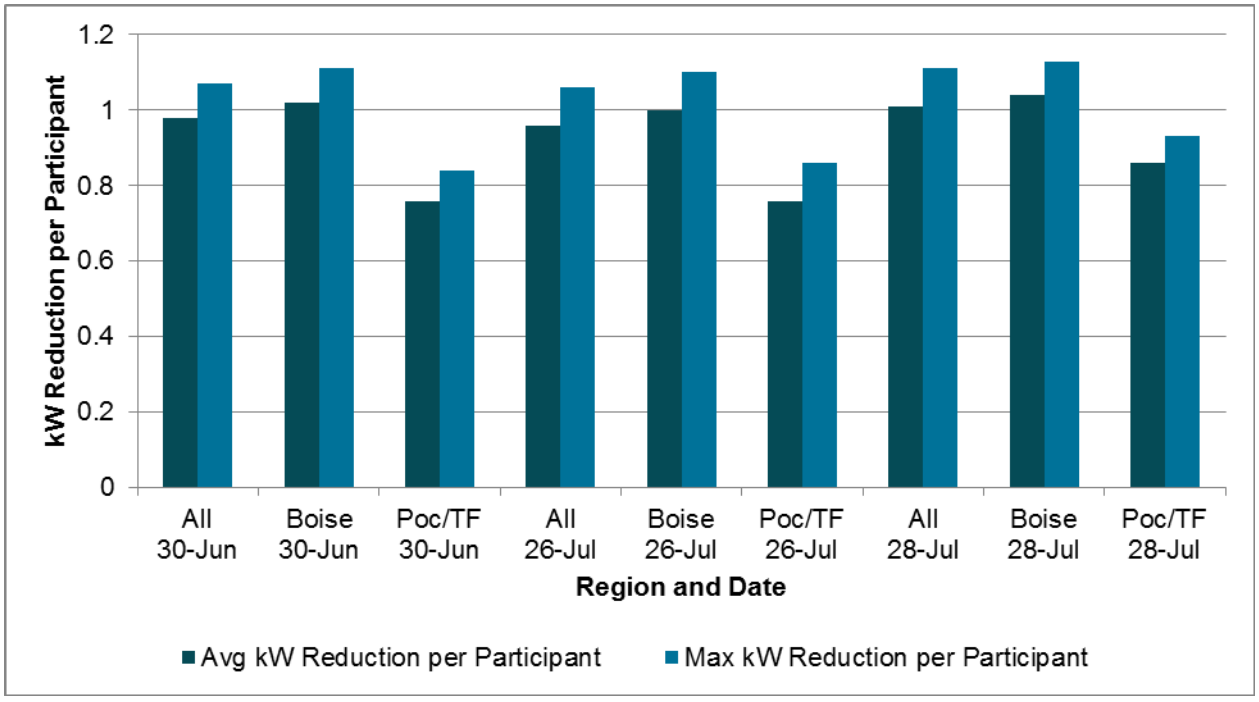
Curtailment Event	Boise Temp (high)	TF/Pocatello Temp (high)	Control Event Start Time	Control Event End Time	Length (hrs)	Cycling Percent
June 30	97	97	4:00pm	7:00pm	3	55%
July 26	99	95	4:00pm	7:00pm	3	55%
July 28	99	95	4:00pm	7:00pm	3	55%

Table 3 summarizes the AMI data analysis results for each curtailment event. Figure 1 also shows an overview of the results for each curtailment event in kilowatt (kW) reduction at the meter level. The meter level results do not include line losses. Because temperatures in Boise differ from the Twin Falls/Pocatello area, they are treated as separate events and results are reported individually. The July 28th event showed the highest maximum and average kW reductions for both Boise and Pocatello/Twin Falls regions.

Table 3: 2016 Summary Results of Executed Control Events

Date and High Temp	Percent Curtailment	Region	Avg. kW Reduction per Participant	Max kW Reduction per Participant	Avg. kW Reduction - Total	Max kW Reduction - Total
June 30 Boise: 97° Poc/TF: 97°	55%	All	0.98	1.07	27,637	30,165
		Boise	1.02	1.11	24,521	26,733
		Poc/TF	0.76	0.84	3,125	3,443
July 26 Boise: 99° Poc/TF: 95°	55%	All	0.96	1.06	26,981	29,770
		Boise	1.00	1.10	23,889	26,274
		Poc/TF	0.76	0.86	3,096	3,496
July 28 Boise: 99° Poc/TF: 95°	55%	All	1.01	1.11	28,264	30,935
		Boise	1.04	1.13	24,765	27,129
		Poc/TF	0.86	0.93	3,496	3,802

Figure 1: Summary of 2016 Events



June 30th Curtailment

The event called on June 30th implemented a 55 percent curtailment strategy and resulted in a system wide average demand reduction of 0.98 kW per participant across the three hours of the event, and a maximum single hour demand reduction of 1.11 kW per participant. In the Boise region, the average demand reduction for the event was 1.02 kW per participant, whereas in Pocatello/Twin Falls it was 0.76 kW per participant. The maximum demand reduction for the Boise area was 1.11 kW per participant and in Pocatello/Twin Falls it was 0.84 kW per participant. Figure 2 and 3 below present the aggregate load profiles for the Boise and Pocatello/Twin Falls participants, respectively, for the June 30th curtailment event .

Figure 2: June 30 Curtailment Event Results - Boise

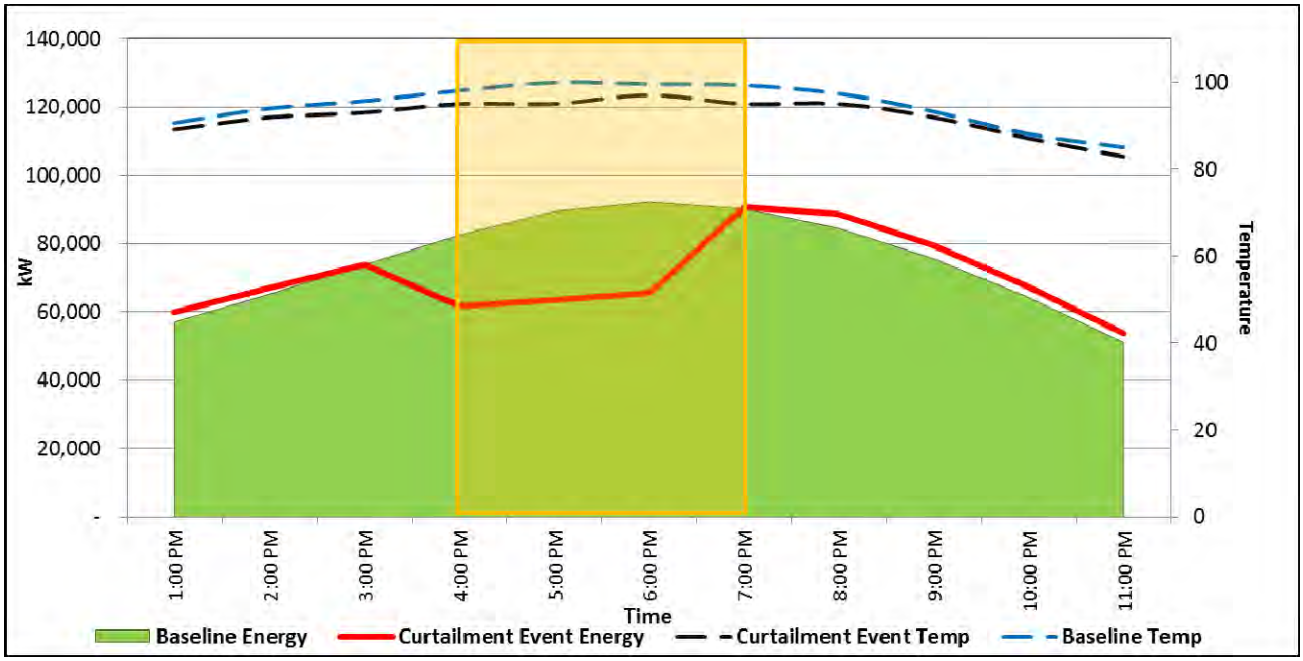
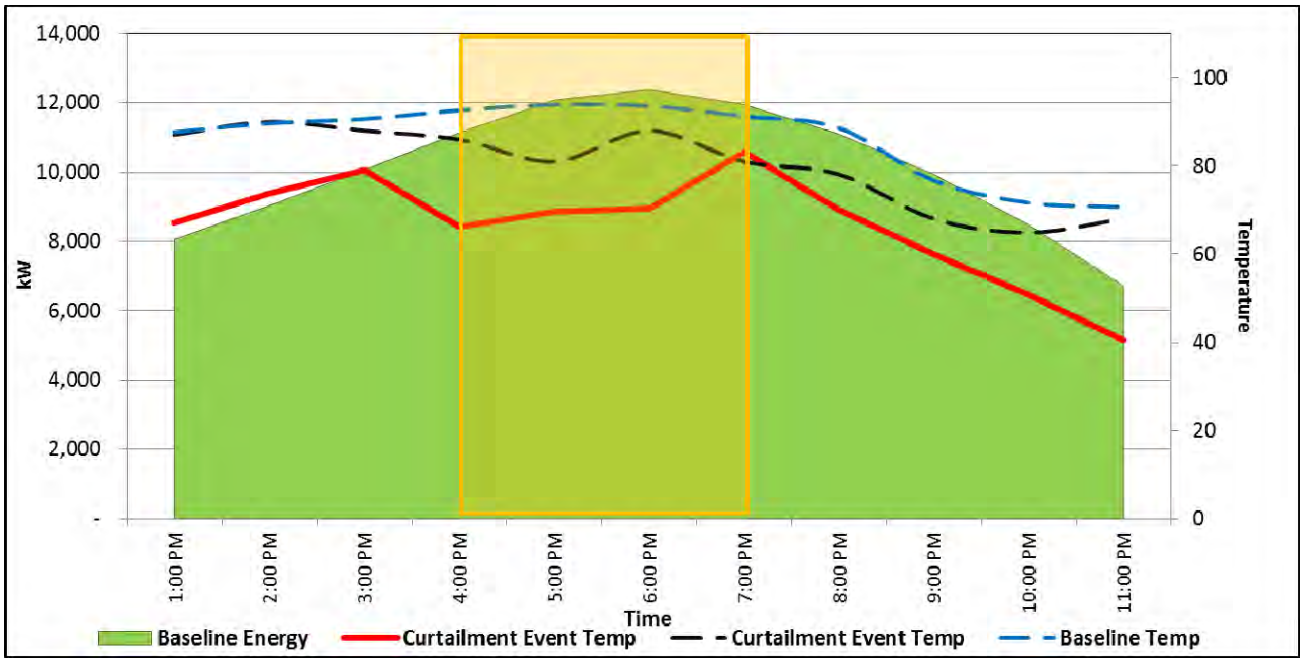


Figure 3: June 30 Curtailment Event Results - Pocatello/Twin Falls



July 26th Curtailment

The event called on July 26th implemented a 55 percent curtailment strategy and resulted in a system wide average demand reduction of 0.96 kW per participant across the three hours of the event, and a maximum single hour demand reduction of 1.06 kW per participant. In the Boise area, the average demand reduction for the event was 0.64 kW per participant, whereas in Pocatello/Twin Falls it was 0.50 kW per participant. The maximum demand reduction for the Boise area was 1.10 kW per participant and in Pocatello/Twin Falls it was 0.86 kW per participant. Figure 4 and 5 below present the aggregate load profiles for the Boise and Pocatello/Twin Falls participants, respectively, for the July 26th curtailment event.

Figure 4: July 26 Curtailment Event Results - Boise

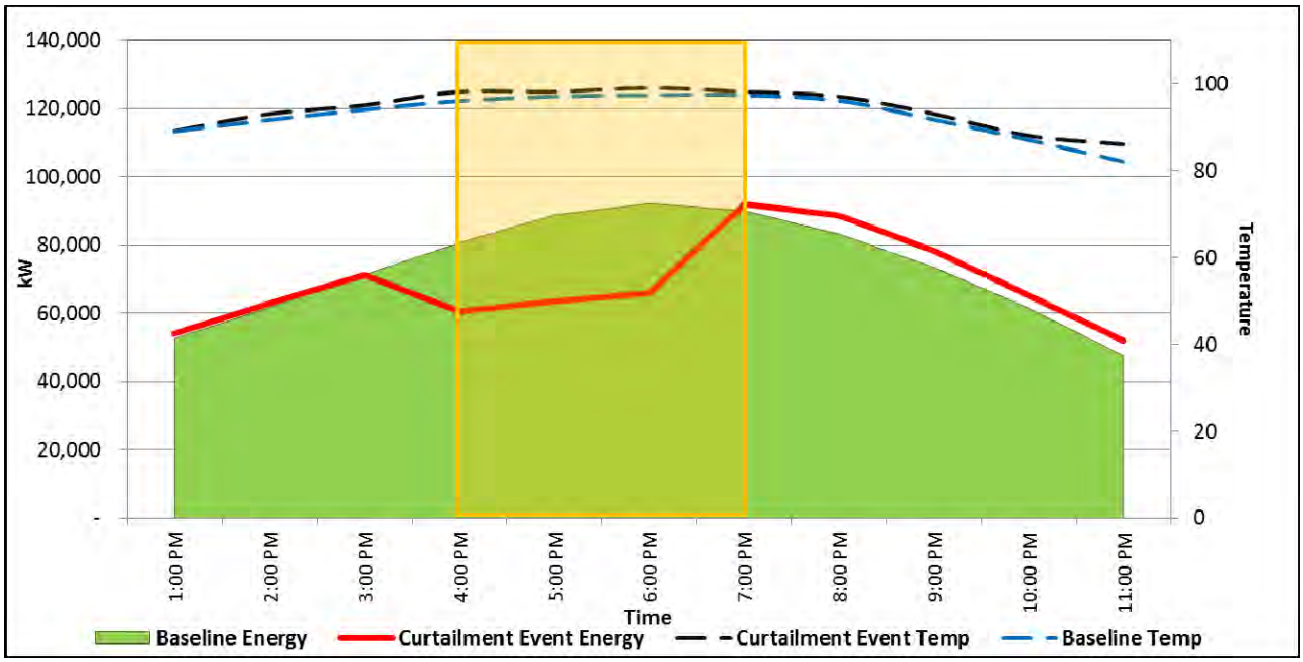
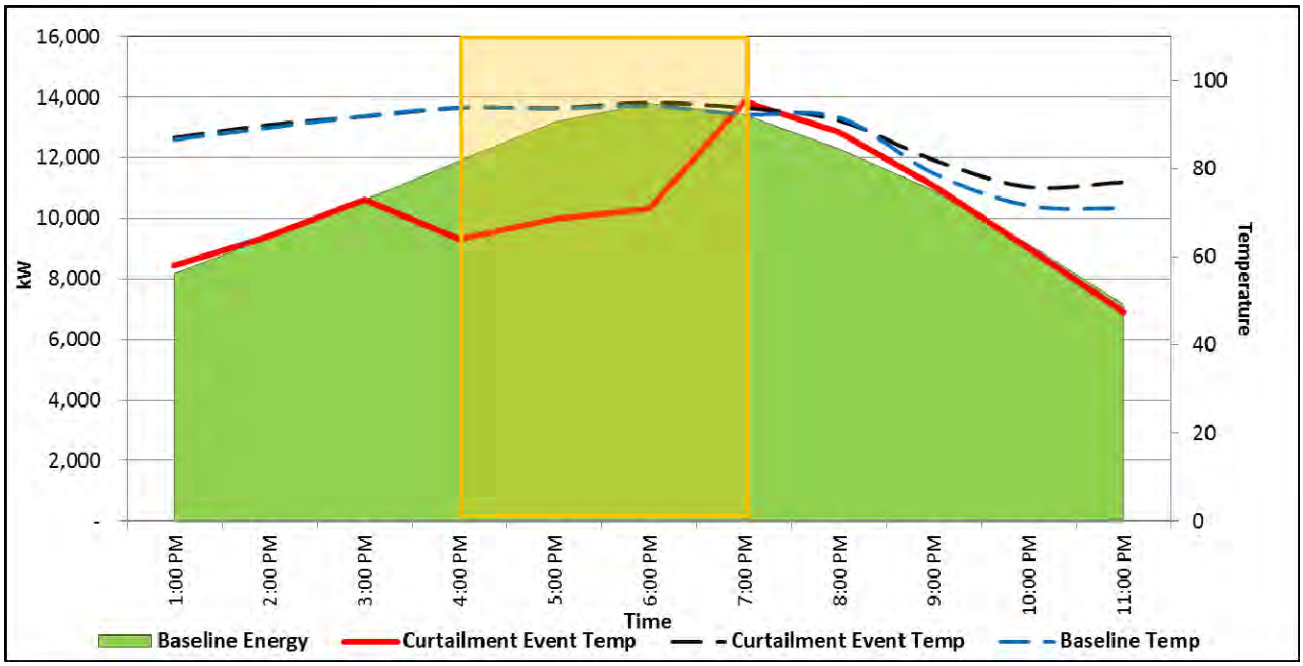


Figure 5: July 26 Curtailment Event Results - Pocatello/Idaho Falls



July 28th Curtailment

The event called on July 28th implemented a 55 percent curtailment strategy and resulted in a system wide average demand reduction of 1.01 kW per participant across the three hours of the event, and a maximum single hour demand reduction of 1.11 kW per participant. In the Boise area, the average demand reduction for the event was 1.04 kW per participant, whereas in Pocatello/Twin Falls it was 0.86 kW per participant. The maximum demand reduction for the Boise area was 1.13 kW per participant and in Pocatello/Twin Falls it was 0.93 kW per participant. Figure 6 and 7 below present the aggregate load profiles for the Boise and Pocatello/Twin Falls participants, respectively, for the July 28th curtailment event.

Figure 6: July 28 Curtailment Event Results - Boise

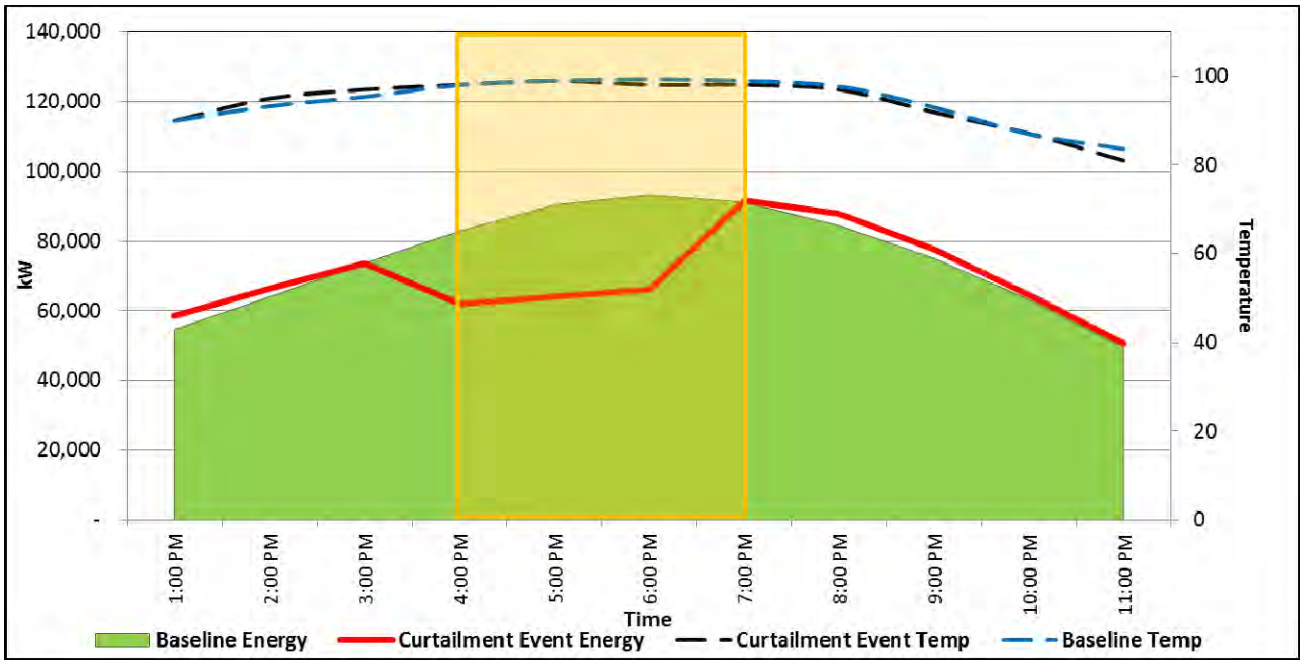
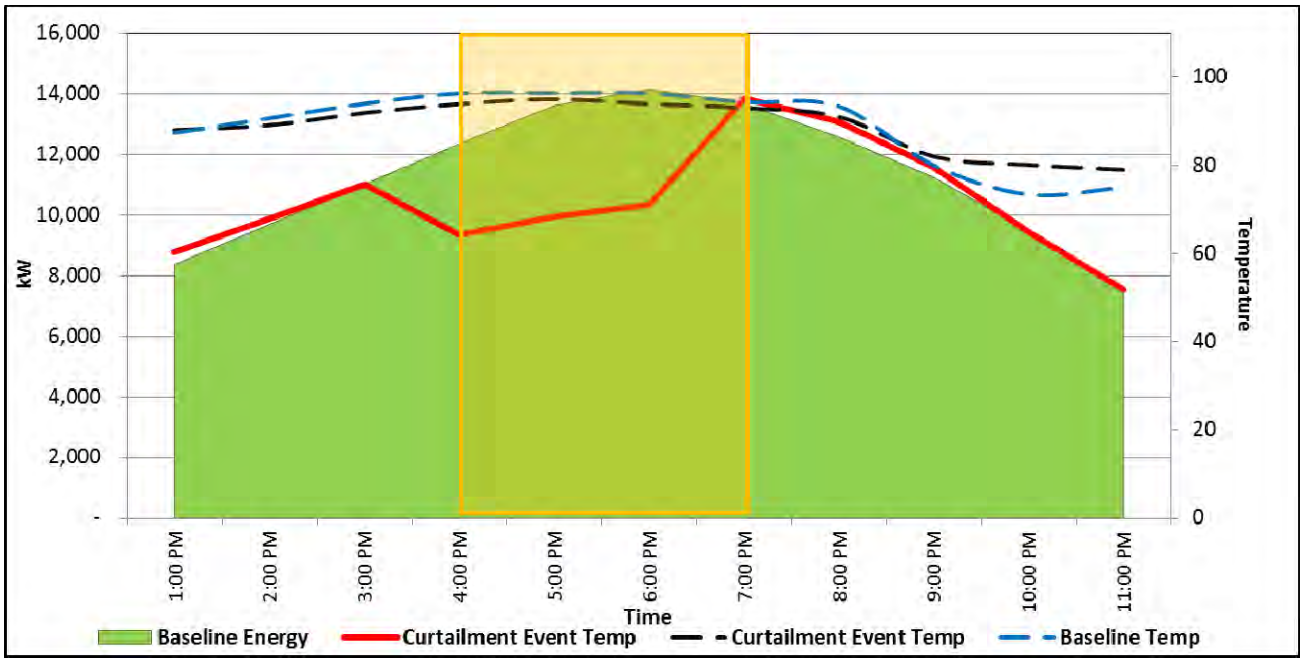


Figure 7: July 28 Curtailment Event Results - Pocatello/Idaho Falls



Predictive Model

As part of the 2012 impact evaluation, a predictive model was developed that estimates load reductions based on cycling strategy and temperature inputs. The model utilizes a regression formula for each region (Boise and Pocatello/Twin Falls) based on an independent variable representing the interaction of "Temperature at start of curtailment event" and "Percent cycling." As discussed in the Methodology section above, the model was updated in 2016 to account for the results of the 2012, 2014, 2015 and 2016 curtailment events for the Pocatello/Twin Falls region. The year 2012 was removed for the Boise region due to a statistically significant discrepancy between the model's output for 2012 events and the 2014 and 2015 events. This is presumably due to the 2012 program's device communication challenges.

Table 4 and 5 below compare the actual maximum demand reduction results in the 2012, 2014, 2015 and 2016 impact evaluations with the estimated maximum demand reductions output by the model. The results of this comparison show a high amount of variability between model outputs and actual results for both regions. The model over predicted reductions in 2015, and under predicted reductions in the 2016 event days.

Table 4. Predictive Model Outputs Compared to Actual - Boise

Curtailment Event	Temp at Start of Event	Percent Cycling	Max kW Reduction Predicted by Model	Actual Maximum kW Reduction	Percent Difference
14-Jul-14	100	65%	1.35	1.34	1.1%
31-Jul-14	93	55%	0.88	0.98	-10.1%
11-Aug-14	101	55%	1.16	1.15	1.4%
30-Jun-15	102	55%	1.20	1.16	3.3%
21-Jul-15	92	55%	0.84	0.67	26.0%
31-Jul-15	96.1	55%	0.99	0.88	12.4%
30-Jun-16	95	55%	0.95	1.11	-14.4%
26-Jul-16	98	55%	1.06	1.1	-3.9%
28-Jul-16	98	55%	1.06	1.13	-6.5%
Average	97	56%	1.05	1.06	1.0%

Table 5. Predictive Model Outputs Compared to Actual - Pocatello/Twin Falls

Curtailment Event	Temp at Start of Event	Percent Cycling	Max kW Reduction Predicted by Model	Actual Maximum kW Reduction	Percent Difference
12-Jul-12	99	60%	0.74	0.69	6.7%
19-Jul-12	93	65%	0.70	0.66	7.3%
31-Jul-12	94	70%	0.74	0.90	-17.9%
13-Aug-12	93	50%	0.64	0.44	48.0%
16-Aug-12	91	75%	0.72	0.59	22.7%
20-Aug-12	85	65%	0.63	0.52	21.0%
22-Aug-12	87	100%	0.76	0.75	1.5%
31-Jul-14	89	55%	0.63	0.56	12.3%
11-Aug-14	93	55%	0.66	0.60	10.6%
30-Jun-15	92	55%	0.66	0.78	-15.8%
21-Jul-15	89	55%	0.63	0.54	17.9%
31-Jul-15	93	55%	0.66	0.49	35.6%
30-Jun-16	86	55%	0.61	0.84	-27.6%
26-Jul-16	94	55%	0.67	0.86	-21.8%
28-Jul-16	94	55%	0.67	0.93	-27.7%
Average	91	62%	0.68	0.68	4.8%

Conclusions

The 2016 impact evaluation of the A/C Cool Credit program's curtailment events confirmed that the program is operating as intended, and, properly maintained, can be relied on to provide dispatchable demand savings to the electricity grid. The results of the analyses showed maximum single hour demand reductions of 1.07, 1.06, and 1.11 kW per participant, respectively, for the curtailment events held on June 30th, July 26th, and July 28th, 2016. The average hourly demand reduction was 0.98, 0.96, 1.01 kW per participant, respectively, for the three events.

Due to the distinct weather patterns between the Boise and Pocatello/Twin Falls regions, each curtailment event analysis includes region-specific results. Driven by cooler temperatures, the 2016 maximum demand reductions seen in the Pocatello/Twin Falls region were on average 21 percent less than those in the Boise region. For the curtailment events from the 2014, 2015 and 2016 seasons, the maximum demand reductions seen in the Pocatello/Twin Falls region were on average 36 percent less than those in the Boise region.

To better understand the program's demand reduction potential, it's recommended to utilize a variety of cycling percentages (other than 55%) during future curtailment events. Doing so will provide a broader set of data points for the program's predictive model, increasing the statistical significance of its regression formulas (i.e. increasing its accuracy), and providing more value to Idaho Power and grid operators when demand response resources are more urgently needed.

FINAL REPORT

Easy Upgrades Impact Evaluation

January 30, 2017

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Idaho Power Company

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Contents

Executive Summary

This executive summary presents findings from an evaluation of the 2015 Easy Upgrades program offered by Idaho Power Company (Idaho Power). The Easy Upgrades commercial and industrial retrofit incentive program, launched in 2007, covers standard prescribed energy efficiency measures. In 2015, there were 1,222 projects completed with ex-ante savings of 23,594,701 kWh determined from a defined set of measures.

The impact evaluation study was designed with the following objectives:

- Verify the ex-ante energy savings attributable to the projects
- Provide credible and reliable impact estimates and ex-post realization rates attributed to the program
- Review program applications and provide recommendations to enhance the effectiveness of future ex-ante energy savings estimates and accurate and transparent reporting of program savings

The study approach began with an interview with the Program Specialist to determine how the program is marketed, savings are claimed, goals are set and achieved, and explore research questions of interest. Review of program collateral and tracking database contents followed. A random sample of 35 projects, tiered by magnitude of kWh savings and then screened for representation of each eligible measure, resulted in a total of 41 measures across 7 measure types and 19.7% of the program-reported savings being sampled. Nine measures received on-site inspections.

All indications are that the program is well designed, well managed and well implemented. The project documentation was adequate for verifying most measure impacts, and project data are recorded and tracked with high accuracy.

The study determined a high level of ex-post realization for program energy savings, as well as high realizations at the measure level.

The results of the Easy Upgrades program impact evaluation were high annual kWh savings realization rate of 0.99 with 90% confidence at +/- 0.2% precision. A total of 23,408,947 kWh are attributable to the 2015 Easy Upgrades program.

Table 11. Easy Upgrades Program Evaluation Results

Measure Type	Ex-ante kWh Gross	Ex-post kWh Gross	Realization Rate
Appliances	64,157	61,887	0.96
Building Envelope	29,305	28,328	0.97
Cooling	71,092	76,361	1.07
HVAC Controls	1,300,825	1,153,599	0.89
Lighting	19,414,518	19,372,620	1.00
Lighting Controls	230,739	230,738	1.00
Motors & Drives	2,423,314	2,424,663	1.00
Refrigeration	60,752	60,752	1.00
Track total	**23,594,701**	**23,408,947**	**0.99**
Relative Precision at 90% Confidence	**0.2%**		

Additional observations that may be considered for program improvement that arose during the review of individual projects are summarized below:

- Default wattage values for the certain types of lighting should be checked in the lighting calculator
- Clarification of how energy savings are attributed between measures that may be overlapping should be considered. It may be reasonable to consider setting guidelines or flagging applications for potential duplication of similar measures
- While most of the project files had good explanatory notes, for projects that are multi-phased, reviewers should especially be vigilant to note in the files the differences between the supporting invoicing and/or other documentation and the measures that are approved for the particular phase.

1.0 Introduction

This report documents the results of an impact evaluation performed on Idaho Power Company's 2015 Easy Upgrades non-residential incentive program, which was launched in 2007 and covers standard energy efficiency measures. In 2015, there were 1,222 projects completed with ex-ante savings of 23,594,701 kWh determined from a defined set of measures.

1.1 Program Description

The program targets all existing commercial and industrial customers through the service territory, which includes a market of approximately 64,000 customers.

The incentive structure of the program is based on an average incentive amount of approximately $0.18/kWh. The non-lighting measures follow a deemed savings method for both the incentives and savings values derived from the Technical Reference Manual (TRM).

Projects are initiated by customers, trade allies, and energy services companies for applications that are expected to have incentives equal to or greater than $1,000, customers are encouraged to seek pre-approval. Projects are selected for inspection based on incentive amount, contractor experience with the program and past project submittals, and type of project.

The program had goals of 18,000,000 kWh and 1300 projects and contributes approximately 19% to the overall Idaho Power portfolio of energy savings programs. In 2015, there were 1,222 projects completed with an ex-ante savings of 23,594,701 kWh.

Measures for incentive under the program include:

- Appliances (reach-in or open freezers and coolers, convection ovens, dishwashers)
- Building Envelope (high-efficiency windows, reflective roof treatments and wall insulation)
- Cooling (air conditioners, heat pumps and variable refrigeration flow)
- HVAC Controls (economizers, occupancy control, optimum start/stop, demand controlled ventilation, supply air reset, chilled water reset, condenser water reset)
- Lighting (new fixtures, lamp/ballast replacement, redesign)
- Lighting Controls (occupancy sensors)
- Motors & Drives (variable speed drives)
- Refrigeration (floating head pressure control, floating suction pressure control, anti-sweat heaters)

1.2 Program Reported Energy Savings

Table 2 shows the Easy Upgrades participants and energy savings metrics for 2015. A total of 1,333 measures installations were delivered through 1,222 participant projects.

Table 2. Energy Program Savings Metrics

Metric	2015
Participants	1,222
kWh Savings	23,594, 701

The ex-ante energy savings are presented for each measure type in the following table.

Table 3. Easy Upgrades Project Ex-Ante Savings by Measure

Measure Type	Number	Gross kWh Savings	Percent of Total
Appliances	4	64,157	0.3%
Building Envelope	12	29,305	0.1%
Cooling	24	71,092	0.3%
HVAC Controls	57	1,300,825	5.5%
Lighting	1,128	19,414,518	82.3%
Lighting Controls	93	230,739	1.0%
Motors & Drives	12	2,423,314	10.3%
Refrigeration	3	60,752	0.3%
Total	**1,333**	**23,594,701**	**100%**

1.3 Overview of Evaluation Approach

A kick-off meeting was held to review the proposed evaluation approach and to make sure the approach aligned with the program design. Following the kick-off meeting a final work plan was developed and submitted to Idaho Power for approval before subsequent evaluation work began.

Key elements of the impact evaluation approach of this program were:

- Verify the ex-ante energy savings attributable to the projects
- Provide credible and reliable impact estimates and ex-post realization rates attributed to the program at 90% confidence within +/- 10% precision
- Review program applications and provide recommendations to enhance the effectiveness of future ex-ante energy savings analysis and accurate and transparent reporting of program savings

2.0 Methodology

2.1 Overall Sampling Methodology

The sampling methodology applied to this program resulted in a total of 35 projects for the primary sample with 2 projects in the backup sample. This represents an increase in the primary sample from the evaluation work plan because there were so few projects that had more than one measure type in the program.

The kWh savings values for this program were divided into three strata:

1. Over 85,000 kWh savings.
2. Over 26,000 kWh savings AND less than 85,000 kWh savings.
3. Less than 26,000 kWh savings.

A random value was then assigned to each project and the projects were ranked by the product of the random value and their kWh savings. The top 7-8 projects in each strata were considered for the initial primary sample and then the individual measure types and their recorded savings were analyzed. For measure types that were underrepresented in the initial sample, additional projects were selected within each strata that had the underrepresented measure types until a sufficient amount of kWh savings was represented for each measure type. We explored adding projects with multiple measure types, but the program had so few projects with multiple measure types, particularly between lighting and non-lighting measures, that this approach was abandoned. The goal was to obtain a sample with each measure type having 40% of the kWh savings in the sample, with the exception of the lighting and lighting controls where the goal was 12% of savings. Table 4 below shows the results of the measure types within the sample.

Table 4. Program Review Sample Characteristics

Measure Types	Program Measures	Measures Sampled	Ex-ante kWh Savings	% kWh
Appliances	4	1	58,603	91.3%
Building Envelope	12	1	18,000	61.4%
Cooling	24	2	32,109	45.2%
HVAC Controls	57	6	519,409	39.9%
Lighting	1,128	22	2,340,120	12.1%
Lighting Controls	93	4	20,018	8.7%
Motors & Drives	12	4	1,617,260	66.7%
Refrigeration	3	1	38,080	62.7%
Total	**1,333**	**41**	**4,643,599**	**19.7%**

Table 5 below shows the projects that were selected for the primary and backup samples. The backup projects were chosen for certain measure types so that they could be pulled into the primary sample, if necessary, to replace projects that may have issues as we go through the evaluation. Several measure types have projects critical to achieving the necessary savings review goals due to the magnitude of their savings relative to the overall population.

Table 5. Primary and Backup Sample Projects

Project ID	Strata	Lighting	Non-Lighting	kWh Savings	Sample
130596	1	No	Yes	956,340	Primary
140970	1	Yes	No	339,199	Primary
150769	1	No	Yes	101,246	Primary
150048	1	Yes	No	173,138	Primary
140831	1	Yes	No	209,424	Primary
150204	1	Yes	No	266,903	Primary
140830	1	No	Yes	166,976	Primary
150435	1	Yes	No	200,726	Primary
140944	1	Yes	No	236,171	Primary
150733	1	Yes	No	196,387	Primary
151039	2	No	Yes	76,352	Primary
150572	2	Yes	No	80,056	Primary
150581	2	No	Yes	39,220	Primary
140654	2	No	Yes	58,603	Primary
150652	2	No	Yes	28,346	Primary
141008	2	Yes	No	80,453	Primary
140779	2	No	Yes	38,080	Primary
150516	2	Yes	No	58,618	Primary
150183	2	Yes	No	79,990	Primary
140974	2	Yes	No	78,094	Primary
150807	2	No	Yes	68,656	Primary
150184	2	Yes	No	77,129	Primary
150808	2	No	Yes	80,683	Primary
150466	2	Yes	No	79,646	Primary
151010	2	Yes	No	60,921	Primary
150202	3	Yes	No	25,409	Primary
141050	3	Yes	No	25,723	Primary
150281	3	Yes	No	25,360	Primary
150867	3	Yes	No	25,783	Primary
140891	3	Yes	No	25,517	Primary
150981	3	No	Yes	13,400	Primary
150174	3	No	Yes	18,000	Primary
141150	3	Yes	No	25,240	Primary
150499	3	Yes	No	25,904	Primary
140725	3	Yes	No	25,268	Primary
130569	1	No	Yes	637,560	Backup
150775	1	Yes	No	106,229	Backup

On-Site Inspections

The on-site inspections were chosen based on the project file review results; projects with more complex measures and higher savings measures were prioritized and selected for on-site inspections. Table 6 summarizes the characteristics of on-site sample selected.

Table 6. On-Site Sample Characteristics

Measure Types	Program Measures	Measures Sampled	Ex-ante kWh Savings	% kWh
Appliances	4	0		-
Building Envelope	12	0		-
Cooling	24	1	3,763	5.3%
HVAC Controls	57	1	97,483	7.5%
Lighting	1,128	4	628,881	3.2%
Lighting Controls	93	1	5,608	2.4%
Motors & Drives	12	1	956,340	39.5%
Refrigeration	3	1	38,080	62.7%
Total	**1,333**	**9**	**1,730,156**	**7.3%**

2.2 Overview of Impact Evaluation Approach

The impact evaluation for the Easy Upgrades program consisted of conducting project file reviews, desk reviews and on-site inspections to verify key energy savings characteristics.

Information from the program savings determination methods, file and desk reviews and on-site inspections was used to develop estimates of energy impacts at the program and measure levels. The analysis provides an estimation of program realization rates to assist in determining ex-post gross energy savings. Each step of the analysis is discussed briefly below.

Step 1: Review Program Documentation

A review of the current data tracking system, associated documentation, and the calculation of energy savings, including an assessment of the adherence to the energy savings protocol values on a measure basis is first conducted. Corrections to the ex-ante savings identified in this step are implemented as needed.

Step 2: Determine Desk Review Sample

The desk review/site review samples for the Easy Upgrades program were drawn from the population of projects that accounted for the savings claimed for the 2015 program year. A total of 35 projects comprising 41 measures were sampled, along with 2 backup projects.

Step 3: File Review

The project files for sampled projects were requested from Idaho Power and were reviewed for evaluability.

For a project to be evaluable, proper information must be available in the project documentation to determine the proper deemed measure savings algorithm and to determine evidence of the project completion. Evaluable projects typically contain:

- A project application, which identifies the entity requesting the incentive and the equipment being incented
- Invoices for purchased equipment identifying make and model of purchased equipment and categorizing labor activities. Invoices also provide documentation for purchase dates confirming adherence with program rules
- Documentation of the calculations, assumptions and QA/QC procedures, as appropriate

If projects are determined to not be evaluable, additional documentation was requested or alternate backup projects were selected

Step 4: Desk Reviews

Desk reviews were conducted for the sample of projects from Step 2 that were validated in Step 3. The desk reviews consisted of reviewing the inputs for energy savings and determining the adherence to the protocols for individual measures, as evidenced by the project documentation. The desk reviews verified that the project tracking data were consistent with the project documentation. Project documentation was used where any discrepancies were found. Project documentation reviewed included project application, equipment specifications, invoices, calculation spreadsheets, and the database tracking and reporting information, as available.

The key output from the desk reviews is the evaluated savings of the sampled projects. This evaluation also helps to guide what was to be inspected during the site visits.

Step 5: Site Visits

Site inspections were conducted on a subset of the desk review sample. During the site visits, installation and quantities of measures as recorded in the tracking database, project documentation, and as observed through the desk review were verified to the extent reasonable, focusing on the energy consuming equipment and characteristics associated with the projects.

Step 6: Adjusting Savings Estimates

For this prescriptive program, the adjustments for savings estimates were made through identifying differences from the ex-ante savings, and differences caused from the measure characteristics such as specific measure equipment, quantities, sizing, etc. and savings determination protocol. Further, on-site inspection information was used to further inform the savings estimates.

3.0 Analysis and Verified Savings

Review of the Easy Upgrades program database, project documentation, and site visit results were supportive and consistent with how the ex-ante savings were calculated, with any inconsistencies having minimal overall impact to energy savings realization.

3.1 Tracking System Review

We compared the recorded energy savings and incentive value in the Easy Upgrades database to those found in the project application and worksheet for each project in the sample, and found the database accurately reflects the project documentation at the project and measure level.

3.2 Review of Projects

Sampled projects were subject to independent energy savings calculations given measure quantities, sizes, and other characteristics found in the application, worksheets, manufacturer data sheets, invoices and site inspections. Calculation methodologies followed the TRM v.1.7 as well as those applied by Idaho Power in 2014 Demand Side Management, Supplement 1. These documents provided deemed or calculated energy savings rules and methods followed for 2015 Easy Upgrades applications.

The following provides a summary of the ex-post findings and the major causes for any deviation from the ex-ante savings for each of the measures. These measure-level data are presented for general information only to illustrate the measure level assessments and potential factors of uncertainty. *It is emphasized that these measure-level data are not statistically valid or individually representative of the program savings impact findings; program results are presented later in this report.*

Appliances

One project was in the desk review sample for Appliances as the replacement of refrigeration case doors on an existing unit, and the installation of a new efficient refrigeration case to replace another older unit. These appliance measures were fully deemed in the TRM v.1.7 on a per linear foot basis. The energy savings for this measure have a realization rate of 0.96 upon making some minor adjustments based on the project documentation for the linear feet of new cases by case type and climate zone.

Building Envelope

One sample site for a reflective roof was included in the desk review. This measure has an ex-post savings realization rate of 0.97. Reflective roofing was fully deemed per square foot of roof area, and these deemed values were used to calculate ex-post savings based on the application documentation and specifications. The only adjustment was that the TRM-stated unit savings value is 0.116 kWh/sf while the program estimated 0.12 kWh/sf; this is a minor rounding differential.

Cooling

This measure has 2 sample projects, one which also received an on-site inspection. The inspection confirmed the quantity, capacity and efficiency of the installed air conditioning equipment. Adjustments to the energy savings estimates for project 150769, an air conditioning efficiency improvement

measure, were made in the desk review to match the processes of the TRM considering Consortium for Energy Efficiency (CEE) Tiers.

Table 7. Cooling Savings

Project ID	Ex-Ante kWh Savings	Ex-Post kWh Savings	Realization Rate
150652	28,346	28,346	1.00
150769	3,763	6,143	1.63
2	**32,109**	**34,489**	**1.07**

Heating Ventilating and Air Conditioning (HVAC Controls

A total of six projects were sampled for this measure, with one receiving an on-site inspection. Overall, the documentation supported the measure types and counts. Ex-post savings calculations of HVAC control measures resulted in close to 100% realization, excepting Project 150769, which was adjusted. Here, the original estimate applied energy savings for both the repair of an economizer and then the installation of an economizer on the same HVAC unit. An adjustment was made at the desk review to only count the savings attributed from the economizer repair.

Table 8. HVAC Control Savings

Project ID	Ex-Ante kWh Savings	Ex-Post kWh Savings	Realization Rate
140830	166,976	166,976	1.00
150581	29,260	29,260	1.00
150769	97,483	38,665	0.40
150807	68,656	68,688	1.00
150808	80,683	80,683	1.00
151039	76,352	76,352	1.00
6	**519,409**	**460,623**	**0.89**

Lighting

Lighting measures comprise the largest savings of all measures in the program. A total of 22 lighting projects were sampled of which 5 received site inspections. Ex-post savings were determined by using the standard lighting calculator. Quantities and types of lighting were determined through invoicing and other supporting documentation during the desk reviews. The on-site inspections were able to verify for these sites that 1) the equivalent full load hours (EFLH) were reasonable, 2) the space types were appropriate, and 3) the fixture types and quantities were reasonable. Across the sample however, it is noted that some invoices were not itemized to be able to confirm the specific equipment.[1] Invoices for some fluorescent retrofit projects did not include lamp and or ballast manufacturer or model. While specification sheets were provided for the most prevalent fixtures, some fixtures (and projects) did not have specifications. Additionally, some of the default input wattages for selected lighting types did not

[1] The program staff reports that they will sometimes elect to accept incomplete or non-detailed invoice submittals and obtain information through other means such as through the lighting calculation entries, supplier invoices, etc.

seem correct in the lighting calculator. For example, Input watts for some preexisting HO T12 and High Pressure Sodium (70 & 100 Watt) equipment appear to be low, and input watts seemed high for 100 watt Metal Halide fixtures.

Overall, the lighting projects were typically well-documented and properly calculated providing an overall ex-post realization rate of 1.0.

Table 9. Lighting Savings

Project ID	Ex-Ante kWh Savings	Ex-Post kWh Savings	Realization Rate
140725	25,021	26,182	1.05
140831	209,424	209,743	1.00
140891	25,517	25,515	1.00
140944	230,563	230,562	1.00
140970	339,199	339,198	1.00
140974	78,094	77,838	1.00
141008	80,453	80,254	1.00
141050	25,723	25,358	0.99
141150	25,240	25,240	1.00
150048	167,867	167,838	1.00
150183	79,990	80,004	1.00
150184	77,129	77,129	1.00
150202	25,409	25,350	1.00
150204	266,903	266,903	1.00
150281	25,360	25,360	1.00
150435	200,726	200,751	1.00
150466	79,646	79,646	1.00
150499	25,904	21,092	0.81
150516	49,727	49,732	1.00
150572	80,056	80,056	1.00
150733	196,387	196,387	1.00
150867	25,783	24,930	0.97
22	**2,340,120**	**2,335,070**	**1.00**

Lighting Controls

Lighting projects also had lighting controls were sampled; these controls were nearly all occupancy sensors. In total, four projects were sampled and one of these received an on-site inspection. Ex-ante energy savings were determined by using the lighting calculator and estimated that 25% of the connected controlled circuit kWh load was attributable to the controls. All lighting control components were able to be verified, thus applying the program savings estimation methods, the ex-post measure savings realization rate is 1.0.

Table 10. Lighting Control Savings

Project ID	Ex-Ante kWh Savings	Ex-Post kWh Savings	Realization Rate
140725	247	247	1.00
140944	5,608	5,608	1.00
150048	5,271	5,271	1.00
150516	8,891	8,891	1.00
4	**20,018**	**20,018**	**1.00**

Motors and Drives

This measure encompasses Variable Frequency Drives (VFDs). The sample was comprised of four projects, two of these for process VFD applications and two for HVAC applications. One of the process VFD sites received an on-site inspection, also. While the 2014 program has discontinued support for VFDs for process applications, the two included in this 2015 program are holdovers from their original application in 2013 and were not processed for payment until 2015. VFD ex-post energy savings are determined through application of deemed energy savings per unit of Horsepower. The process projects were under the deemed savings approach in effect when the applications were submitted. The deemed amount was 3,542 kWh per Horsepower. At this point, Easy Upgrades no longer has VFDs on process applications on its incentive menu, however, it is noted that current TRM values for process VFDs are about one-third of this prior deemed unit savings.

The ex-post measure realization ratio for the VFD projects is shown below.

Table 11. Motors and Drive Savings

Project ID	Ex-Ante kWh Savings	Ex-Post kWh Savings	Realization Rate
130569	637,560	637,560	1.00
130596	956,340	956,340	1.00
150581	9,960	9,960	1.00
150981	13,400	14,300	1.07
4	**1,617,260**	**1,618,160**	**1.00**

Refrigeration

One refrigeration site received a desk review and site inspection. The measure specifically was for floating head and suction pressure controls. On-site horsepower was verified and the deemed savings values were applied for an ex-post energy savings realization ratio of 1.0

4.0 Conclusions and Recommendations

The results of the Easy Upgrades program impact evaluation were high annual kWh savings realization rate of 0.99 with 90% confidence at +/- 0.2% precision. As shown in Table 12, total of 23,408,947 kWh ex-post savings are attributable to the 2015 Easy Upgrades program.

Table 12. Easy Upgrades Program Evaluation Results

Measure Type	Ex-ante kWh Gross	Ex-post kWh Gross	Realization Rate
Appliances	64,157	61,887	0.96
Building Envelope	29,305	28,328	0.97
Cooling	71,092	76,361	1.07
HVAC Controls	1,300,825	1,153,599	0.89
Lighting	19,414,518	19,372,620	1.00
Lighting Controls	230,739	230,738	1.00
Motors & Drives	2,423,314	2,424,663	1.00
Refrigeration	60,752	60,752	1.00
Track total	**23,594,701**	**23,408,947**	**0.99**
Relative Precision at 90% Confidence	**0.2%**		

In general, application data and measure characteristics are accurately transcribed in the Easy Upgrades database, and the applications and supporting documentation for the projects are reasonable to describe the projects. Overall, the program-reported savings and measure-level savings were found to be reasonable and the documentation reliable.

- Review of the files showed reasonable documentation considering that the Easy Upgrades program is prescriptive
- Review of the data tracking system information and the applications showed good correlation
- On-site inspections verified that the measures were reflected properly

Additional observations that may be considered for program improvement that arose during the review of individual projects are summarized below:

- Default wattage values for the certain types of lighting should be checked in the lighting calculator. For example, Input watts for some preexisting HO T12 and High Pressure Sodium (70 & 100 Watt) equipment appear to be low, and input watts seemed high for 100 watt Metal Halide fixtures
- Clarification of how energy savings are attributed between measures that may be overlapping should be considered. In one instance in this study, there appeared to be savings and incentives taken for both the repair of an economizer and the installation of an economizer controller for the same air conditioning unit. While the specific magnitude of these potential areas for duplication is unknown, it may be reasonable to consider setting guidelines or flagging applications for potential duplications
- A select few projects seemed to be multi-phased, where not all equipment shown on the invoicing was being applied for in the particular application. This caused extra equipment (which happened to be technically eligible) to be listed in supporting documentation, but not part of the incentivized equipment. While most of the project files had good explanatory notes, for projects that are multi-phased, reviewers should especially be vigilant to note in the files the differences between the supporting invoicing and/or other documentation and the measures that are approved for the particular phase.

CLEAResult

Flex Peak Demand Response Program
2016 Impact Evaluation

October 2016

PREPARED BY CLEAResult

PREPARED FOR Idaho Power Company

REPORTING PERIOD June 15th – August 15th, 2016

CLEAResult

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CLEAResult

Executive Summary

Idaho Power Company contracted CLEAResult to complete an impact evaluation of the 2016 Flex Peak Program, a voluntary demand response (DR) program that has been available to Idaho Power's commercial and industrial customers. The goals of the impact evaluation were to determine the demand reduction (in MW) and realization rate for at least three curtailment events during the program's June 15th - August 15th season.

CLEAResult completed analyses of curtailment events held on June 30th (4-8pm), July 26th (4-8pm), and July 28th (4-8pm), 2016. The results of the curtailment event analyses showed maximum demand reductions of 31.7, 37.8, and 25.3 MW, respectively, for the three events, and an average of 30.4 MW at the meter level. The events achieved realization rates of 96.0%, 120.8%, and 79.5%, respectively, averaging 98.8%.

The results of the impact evaluation show that Idaho Power's 2016 Flex Peak Program functioned as intended and provided up to 37.8 MW to the electricity grid at the meter level. In addition, the Flex Peak Program is scalable and with additional participants and more diversity among participants, could contribute more reduction as future capacity requirements dictate.

Introduction

Background

The Flex Peak Program is a voluntary demand response (DR) program available to Idaho Power's commercial and industrial customers. The program's objective is to reduce the demand on Idaho Power's system during periods of extreme peak electricity use. The program is designed to reduce peak load by paying a financial incentive to customers to turn off or reduce electrical system load at their facilities during called events. The program has a fixed payment amount of $3.25/kW per week of nominated load reduction (or actual load reduction if an event was called) during the program season, and a variable payment amount of $0.16/kWh for energy savings achieved during curtailment events after the third event.

The Flex Peak Program provides customers with a notification two hours prior to the start of curtailment events via phone, text message and email. Events can be called from June 15th - August 15th anytime from 2 - 8pm and can last from 2 - 4 hours.

Impact Evaluation Goals

Idaho Power contracted CLEAResult to complete an impact evaluation of the 2016 Flex Peak Program. This 2016 impact evaluation has two primary goals:

1. Determine and verify the demand reduction (MW) during 2016 curtailment events
2. Determine realization rate for each event

The results contained in this report will enable Idaho Power to better define the impact of the program on the electricity grid and provide more accurate estimates of the program's load reduction in the future.

Methodology

The section below describes the data used to complete the impact evaluation, the sampling plan, and the methodology for gathering and processing data, determining baseline, calculating the demand reduction, and determining the curtailment event realization rates. Throughout this report the event reduction is calculated using

customers metering data. (meter-level). Actual reductions seen by the Idaho Power system would be larger if distribution/transmission line losses of 9.76% were included.

Data Sources

CLEAResult conducted the 2016 Flex Peak impact evaluation through the use of two primary data sources: interval data (hourly kW readings) and an event-specific participant list. The participant list included site ID, nomination kW, and the customer's aggregated option. Some interval meter data included error codes for cases where the source data was missing or estimated. See Table 1 for a list of error codes included in the data.

Table 1. Error Code Key

Error Code	Description
1	Power Outage
9	Missing Reading
Q	Estimated Reading

Sampling Plan

The use of hourly interval metering data allowed the impact evaluation's sampling plan to be a census of program participants (i.e. all participants were considered in the analysis).

Data Gathering and Processing

CLEAResult processed all data provided by Idaho Power using the analytics platform SAS®. The use of SAS® created a consistent and appropriate data format for all three curtailment events. The interval metering data was reviewed to identify the presence of error codes during the curtailment event period or in the baseline period, and two occurrences were found in the second event, which lead to those sites being excluded from the analysis.

Determine the Baseline

CLEAResult determined site-specific baselines by first identifying the three days with the greatest demand from the previous ten non-weekend/holiday and non-curtailment days (hereto called comparison days). The greatest demand was determined as the day with the highest average demand during the hours of 2pm - 8pm. CLEAResult then determined each site's unadjusted baseline demand during the event timeframe by averaging the demand for each hour across all three comparison days.

CLEAResult then calculated a day-of-adjustment (DOA) for each site. The DOA was calculated using the average of hours 12pm and 1pm (hours 3 and 4 prior to the beginning of the curtailment period) for both the comparison days and the event day. The DOA was calculated as a flat kW, and was capped at +/- 20% of the value for the same time period during the original baseline window. The DOA was applied to all baseline hours. This was done to avoid the baseline being affected by participant action to prepare for the curtailment event (e.g. pre-cool the building). This DOA approach was applied to each service location and summed to arrive at the program's aggregate baseline.

Calculate Demand Reduction

CLEAResult calculated the demand reduction for each participant by subtracting its load during each hour of the curtailment event from the participant's adjusted baseline load (determined in the previous steps). The hourly demand reductions were then aggregated for all participants. Note that to maintain consistency with the program's methodology for calculating demand reduction estimates, participants' hourly demand reduction estimates that resulted in net load increases were zeroed out. The total event impact (both average and maximum reduction) was calculated by aggregating each participant's results.

Determine Curtailment Event Realization Rate

CLEAResult determined the realization rates for each curtailment event by dividing the aggregate maximum demand reductions calculated in the previous step by the total nominated load for the all participants included in the analysis.

Findings

The section below presents the findings of the 2016 Flex Peak Program impact evaluation, beginning with a characterization of the sites enrolled in the program and ending with a presentation of the results of each curtailment event. Note that numbers presented in tables are expressed in MW, unless otherwise indicated.

Participant Characterization

The 2016 Flex Peak Program included 137 enrolled sites, accounting for an average of 30.8 nominated MW across the three events. The 137 sites were accounted for by 65 unique customers.

Table 2: Number of Sites by Processing Step

Curtailment Event	Nominated MW	Count of Total Sites	Count of Sites Analyzed	Percent of Total Sites Analyzed
June 30th	31.1	137	137	100%
July 26th	30.5	137	135	98.5%
July 28th	30.9	137	137	100%
Average	30.8	137	136	100%

When site's nominated kW was averaged across the three events, the average nominated load reduction was 220 kW, while the median reduction was 90 kW.

Curtailment Event Results

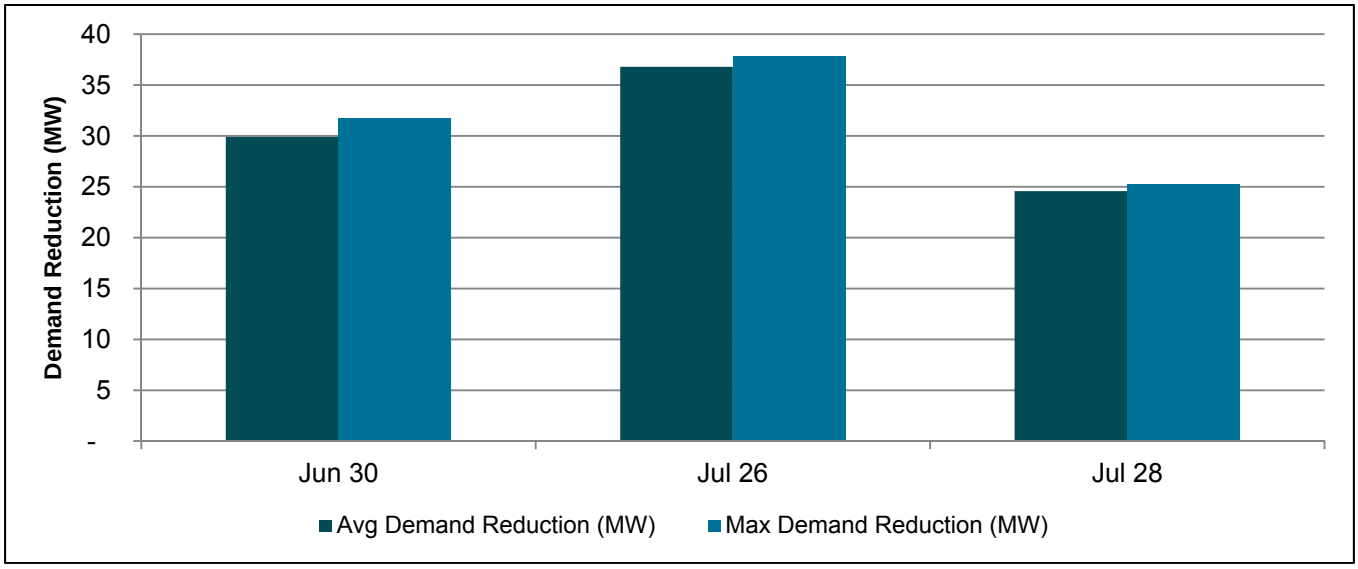
Table 3 and Figure 2 below summarize the estimated demand reduction achieved during each of the three curtailment events and the resulting realization rate. The maximum demand reduction achieved ranged from a low of 25.3 MW for the July 28th event to a high of 37.8 MW for the July 26th event. When considered together, the three events had an average realization rate of 98.8%.

Table 3: Summary of Demand Reduction and Resulting Realization Rate (MW)

Curtailment Event	Event Timeframe	Nominated Demand Reduction	Avg. Demand Reduction (MW)	Max Demand Reduction (MW)	Realization Rate*
June 30th	4-8pm	31.1	29.9	31.7	96.0%
July 26th	4-8pm	30.5	36.8	37.8	120.8%
July 28th	4-8pm	30.9	24.6	25.3	79.5%
Average		30.8	30.4	31.6	98.8%

** Based on average reduction*

Figure 1. Summary of Demand Reduction (MW)



June 30th Curtailment Event

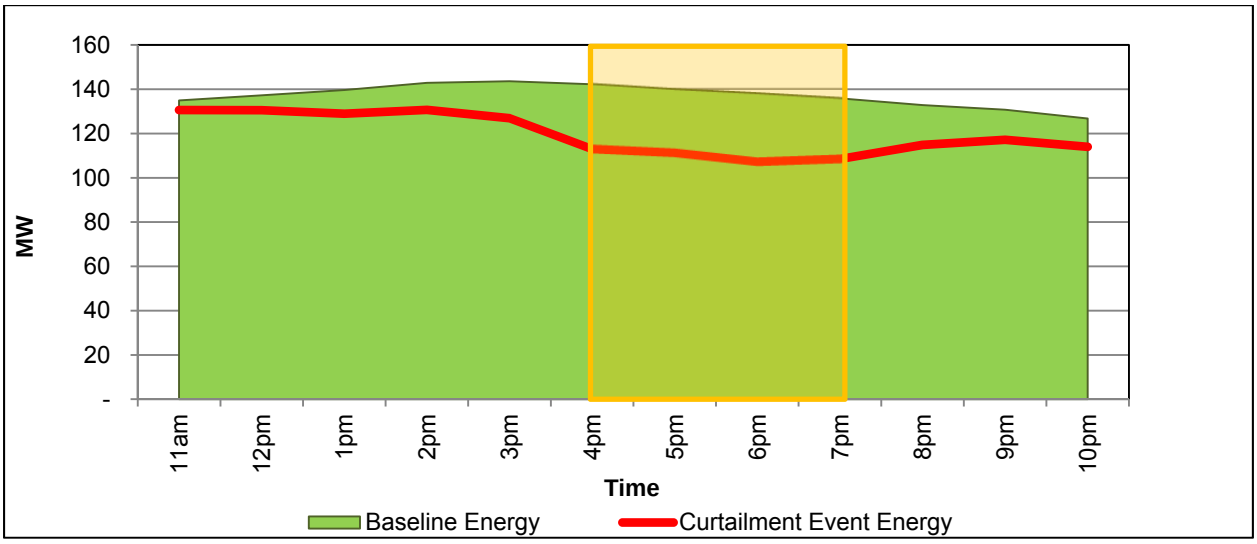
Table 4 below breaks out demand reduction for each hour of the curtailment event. The hour between 6pm and 7pm experienced the largest total reduction (31.7 MW).

Table 4: June 30th Curtailment Event Results by Hour (MW)

Curtailment Event Date	4-5pm	5-6pm	6-7pm	7-8pm	Avg. Reduction	Max. Reduction
June 30th	29.7	29.6	31.7	28.5	29.9	31.7

Figure 2 below presents the load profile of the June 30th curtailment event and its baseline, graphically depicting the results from Table 4 above.

Figure 2. June 30th Curtailment Event Load Profile



Notes:

- Energy usage for a given hour is reported in the time reading at the beginning of the hour. For example, energy usage from 4-5pm is depicted in the 4pm reading.

- The Baseline Energy and Curtailment Event Energy lines do not intersect at the beginning of the event due to the Day-of-Adjustment (DOA) being calculated prior to the event start time. The DOA's +/-20% cap results in the baseline energy not intersecting with the curtailment event energy during the period the DOA is calculated.

July 26th Curtailment Event

The second Flex Peak event was called in the last week of July. The July 26th event achieved the highest demand reduction results out of the three events.

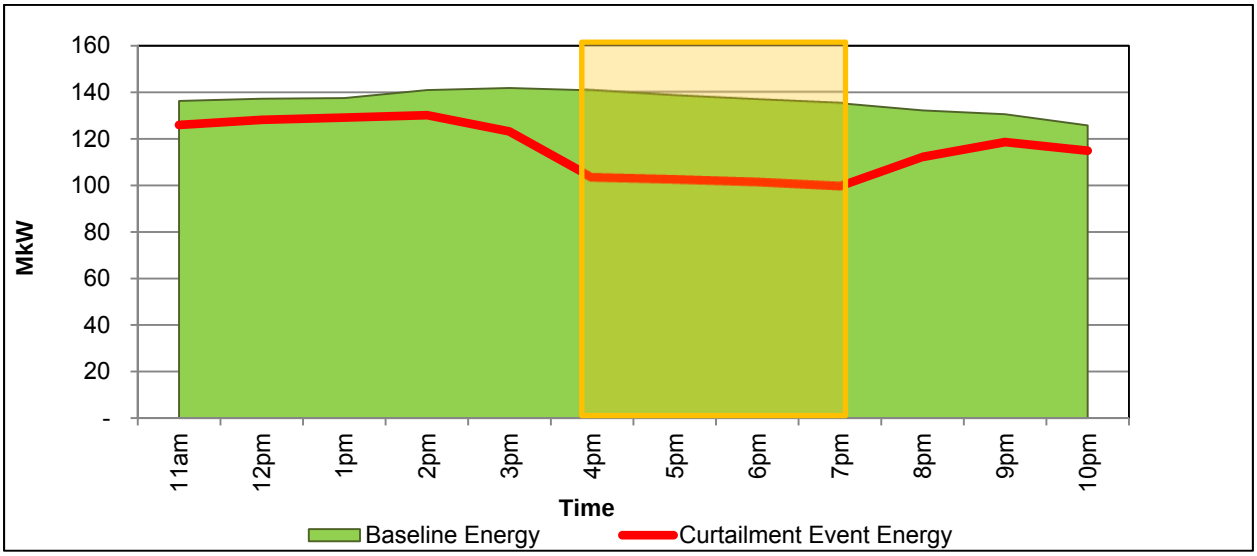
Table 5 below breaks out demand reduction for each hour of the curtailment event. The hour between 4pm and 5pm experienced the largest total reduction (37.8 MW).

Table 5: July 26th Curtailment Event: Baseline Results by Hour (MW)

Curtailment Event Date	4-5pm	5-6pm	6-7pm	7-8pm	Avg. Reduction	Max. Reduction
July 26th	37.8	36.8	36.3	36.3	36.8	37.8

Figure 3 below presents the load profile of the July 26th curtailment event and its baseline, graphically depicting the results from Table 5 above.

Figure 3. July 26th Curtailment Event Load Profile



Notes:

- Energy usage for a given hour is reported in the time reading at the beginning of the hour. For example, energy usage from 4-5pm is depicted in the 4pm reading.

- The Baseline Energy and Curtailment Event Energy lines do not intersect at the beginning of the event due to the Day-of-Adjustment (DOA) being calculated prior to the event start time. The DOA's +/-20% cap results in the baseline energy not intersecting with the curtailment event energy during the period the DOA is calculated.

July 28th Curtailment Event

The third Flex Peak event was called two days after the second event. The July 28th event saw the lowest demand reduction out of the three events.

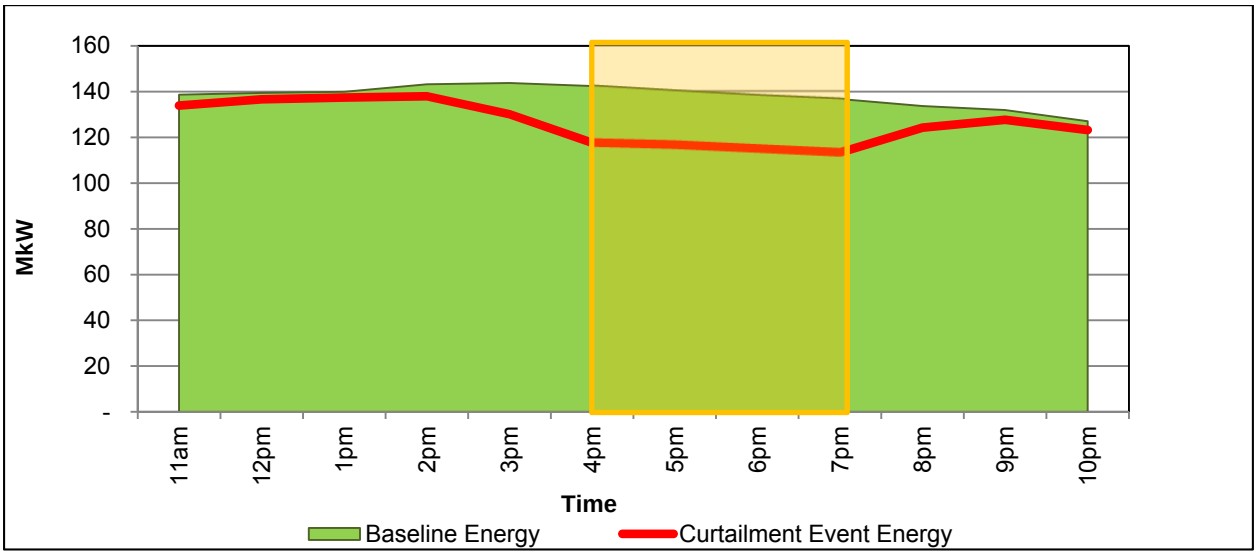
Table 6 below breaks out demand reduction for each hour of the curtailment event. The hour between 4pm and 5pm experienced the largest total reduction (25.3 MW).

Table 6: July 28th Curtailment Event Results by Hour (MW)

Curtailment Event Date	4-5pm	5-6pm	6-7pm	7-8 pm	Avg. Reduction	Max. Reduction
July 28th	25.3	24.3	24.3	24.5	24.6	25.3

Figure 4 below presents the load profile of the July 28th curtailment event and its baseline, graphically depicting the results from Table 6 above.

Figure 4. July 28th Curtailment Event Load Profile



Notes:

- Energy usage for a given hour is reported in the time reading at the beginning of the hour. For example, energy usage from 4-5pm is depicted in the 4pm reading.

- The Baseline Energy and Curtailment Event Energy lines do not intersect at the beginning of the event due to the Day-of-Adjustment (DOA) being calculated prior to the event start time. The DOA's +/-20% cap results in the baseline energy not intersecting with the curtailment event energy during the period the DOA is calculated.

When considering the relatively poor performance of the July 28th event compared to the other two events, the reduced realization rate can be attributed to 22 low performing sites (realization rate <10%) and a lack of performance by the site with the largest nominated load reduction in the program. Had the realization rates for these underperforming sites been 100%, the event's realization rate would've increased by 14.9% to 94.4%.

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Conclusions

The goals of the 2016 Flex Peak impact evaluation were to determine and verify the demand reduction (MW) during curtailment events and determine the realization rate for each event.

CLEAResult completed analyses of curtailment events held on June 30th (4 – 8pm), July 26th (4 – 8pm), and July 28th (4 – 8pm). The events had an average of 136 unique sites, with an average load reduction of 30.4 MW across the three events. The results of the analyses showed maximum demand reductions of 31.8, 37.8, and 25.3 MW, respectively, for the three events, and an average of 31.6 MW. The events achieved realization rates of 96.0%, 120.8%, and 79.5%, respectively, averaging 98.8%.

The results of the impact evaluation show that Idaho Power's 2016 Flex Peak Program functioned as intended and provided up to 38 MW to the electricity grid at the meter level. In addition, the Flex Peak Program is scalable and with additional participants and more diversity among participants, could contribute more reduction as future capacity requirements dictate.

FINAL REPORT

Impact and Process Evaluation of the Irrigation Efficiency Rewards Program

December 23, 2016

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Contents

Irrigation Efficiency Rewards

Executive Summary

This executive summary presents findings from an evaluation of the Irrigation Efficiency Rewards program offered by Idaho Power Company (Idaho Power). The evaluation included an impact evaluation, a review of the program non-electric benefits, and a process evaluation.

The Irrigation Efficiency Rewards program promotes the use of energy-efficient equipment in the design and implementation of new irrigation systems and the improvement of existing systems. To accomplish this, the program offers customer education, training, and irrigation-system assessments, as well as financial incentives to offset the costs of installing more efficient equipment and/or systems.

The program has one Engineer/Segment Coordinator and six Agriculture Representatives (Ag Reps) covering different regions of the utilities service area. The Ag Reps organize and conduct educational workshops for irrigation customers, conduct pump testing and system evaluations to estimate customers' potential savings, and engage with agricultural irrigation equipment dealers.

The program offers two ways to participate - the Custom Incentive Option and the Menu Option. The Custom Incentive Option addresses extensive retrofits of existing systems or new irrigation systems, providing component upgrades and large-scale improvements. Idaho Power reviews, analyzes, and makes recommendations on each Custom Incentive Option application and reviews all project information on completed projects before it is approved for final payment. The Menu Option offers prescribed per unit incentives to cover a portion of the costs of repairing and replacing specific components that help with the irrigation system efficiency.

In 2015 the program had 902 participants (799 in the Menu Option and 103 in the Custom Incentive Option), with ex-ante savings of 14,027 MWh and a budget of approximately $1.8 million.

The evaluation team conducted forty-six (46) desk reviews; thirty (30) for a stratified sample of Menu Option projects and sixteen (16) for a stratified sample of Custom Option projects. The team also completed site visits for eleven (11) custom incentive projects.

The findings from the impact evaluation are shown in Table 1, with a realization rate of 0.98, with a relative precision of +/- 2.4% overall at 90% confidence, on the ex-post kWh savings for both the Menu Option and the Custom Option savings combined. The realization rate on the ex-post kW impacts was 0.97 for the Menu Option and 0.75 for the Custom Option, respectively. The overall combined realization rate for the program demand savings was 0.90 with a relative precision of +/- 3.3% at 90% confidence.

Table 1. Summary of Impact Evaluation Results

Program Option	Ex-ante kWh Gross	Ex-post kWh Gross	Realization Rate	Ex-ante kW Gross	Ex-post kW Gross	Realization Rate
Menu Option	11,261,548	10,953,996	0.97	2,203.8	2,144	0.97
Custom Option	2,675,788	2,641,560	0.99	1,203.5	906	0.75
Program Total	**13,937,336**	**13,595,555**	**0.98**	**3,407.3**	**3,050**	**0.90**
Relative Precision at 90% Confidence	**2.4%**			**3.3%**		

Idaho Power operates a comprehensive irrigation efficiency program, specifically targeted to the important agricultural customer segment that is delivered by a team of regional Agricultural Representatives (Ag Reps) who are highly knowledgeable about irrigation and efficiency. While the use of account representatives is not a unique way to serve the needs of customers in programs, none of the other similar utility programs reviewed offered the level of account representative support that is provided by Idaho Power.

All indications are that the program is well designed, well managed and well implemented. However, there are a few recommendations presented for consideration, which could support incremental improvements in program operations.

Impact evaluation recommendations and observations include:

- Continue to make improvements in the quality of the project level documentation such as through annotations on invoicing and specification sheets, and summary tables for measure counts

- Assess the viability of developing more specific default values for the hours of operation considering the various factors that may influence operation time such as geographic location, crop type and irrigation system type, possibly using data from projects that have already been completed

Process evaluation recommendations and observations are summarized in Table 2:

Table 2. Process Evaluation Recommendations and Observations

Program Materials	• Update the program handbook to a more user-friendly electronic format
Program Design	• Review whether adding measures to the Menu Option component of the program would add value to the program and program participants • Assess the impact of increased rebates on program cost-effectiveness and participation • Take a deeper look at the program participation trends over time to better understand drivers for the 20% reduction in participation from 2014 to 2015.[1] • Consider conducting a market assessment that would review cost-effectiveness, incentives, market size for the agricultural sector. • Assess whether there are more program opportunities for savings from motors, and pumps • Increase the methods in which awareness of the green rewind program is promoted through the program
Non-Electric Benefits ((NEBs)	• Be prepared to integrate water and CO2 values into NEBs estimates if the Regional Technical Forum (RTF) approves values from the pending research on those topics • Conduct some additional research on NEBs related to irrigation efficiency to better understand and support the self-reported NEBs values provided by participants • Consider establishing caps on self-reported estimates to avoid overstating the value of NEBs

[1] Idaho Power's program managers report that participation has increased in 2016.

1.0 Introduction

This report presents findings from an evaluation of the Irrigation Efficiency Rewards program offered by Idaho Power Company. The evaluation included an impact evaluation, a review of the program non-electric benefits, and a process evaluation. The report is organized accordingly with the following sections, in addition to this introduction:

- Estimation of Program Energy and Demand Savings
- Non-Electric Benefits
- Process Evaluation Findings
- Conclusions and Recommendations

The impact evaluation and review of non-electric benefits focused on program ex-ante savings claimed for the 2015 program year.

This introduction provides a brief description of the program, presents the program reported energy savings, and provides an overview of the evaluation approach.

1.1 Program Description

The Irrigation Efficiency Rewards program promotes the use of energy-efficient equipment in the design and implementation of new irrigation systems and the improvement of existing systems. To accomplish this, the program offers customer education, training, and irrigation-system assessments, as well as financial incentives to offset the costs of installing more efficient equipment and/or systems.

The program has six Ag Reps covering different regions of the utility service area, who organize and conduct educational workshops for irrigation customers, conduct pump testing to evaluate prospective customers' potential savings, and engage with agricultural irrigation equipment dealers.

Qualified irrigators in Idaho Power's Idaho and Oregon service area are made aware of the program through direct mailings, advertisements in agricultural publications, radio spots, direct customer and equipment dealer interaction, participation in agricultural conferences, and through workshops and training sessions.

The program offers two ways to participate in the program: The Custom Incentive Option and the Menu Option. The Custom Incentive Option addresses extensive retrofits of existing systems or new irrigation systems, providing component upgrades and large-scale improvements. Idaho Power reviews, analyzes, and makes recommendations on each Custom Incentive Option application and reviews all project information on completed projects before it is approved for final payment.

Under the Custom Incentive Option, the incentive structure varies slightly depending on whether it is a new system or an upgrade to an existing system:

New System[2]	$0.25 per kWh saved in the first year, capped at 10% of the cost of the new system.
Upgrade to Existing System	The greater of $0.25 per kWh saved in the first year or $450 per kW demand reduction, capped at 75% of the total project cost.

The Menu Incentive Option covers a portion of the costs of repairing and replacing eleven specific components that help the irrigation system use less energy. The prescribed incentive amount paid for each of those eleven components is presented in Table 3 below.

Table 3. Menu Option Incentives

Component Description	Incentive per Unit
New flow-control type nozzles	$1.50
New nozzles for impact, rotating or fixed head sprinklers	$0.25
New or rebuilt impact or rotating type sprinklers	$2.75*
New or rebuilt wheel line levelers	$0.75
New complete low-pressure pivot package (per sprinkler head, nozzle and regulator)	$8.00
New drains for pivot and wheel lines	$3.00*
New riser caps and gaskets for hand lines, wheel lines or portable mainline	$1.00*
New wheel line hubs (on Thunderbird wheel lines)	$12.00
New gooseneck with drop tube or boom back	$1.00 per outlet
Cut and pipe press or weld repair of leaking hand lines, wheel lines and portable mainline (invoice must show number of joints repaired)	$8.00 per joint
New center pivot base boot gasket	$125.00

**These incentive options are limited to the lesser of the incentive or 50 percent of the invoice cost, and also limited to a maximum of 2 measure units per measure type per acre.*

[2] New systems are generally defined as irrigation system retrofits that were comprehensive enough to be deemed as a new system. New systems primarily include adding acreage that had not been previously farmed and installing a new irrigation system on that acreage.

1.2 Program Reported Energy Savings

The reported program savings and funding information are presented in Table 4 below for the program years 2014 and 2015.

Table 4. Irrigation Efficiency Rewards

	2015	2014
Participation and Savings		
Participants (projects)	902	1,128
Energy Savings (kWh)[3]	14,027,411	18,463,611
Demand Reduction (MW)	N/A	4.6
Average Savings per Project	15,551	16,368
Program Costs by Funding Source		
Idaho Efficiency Rider	$1,714,399	$2,256,235
Oregon Efficiency Rider	$61,295	$144,392
Idaho Power Funds	$60,018	$45,880
Total Program Costs—All Sources	$1,835,711	$2,446,507
Program Levelized Costs		
Utility Levelized Cost ($/kWh)	$0.016	$0.016
Total Resource Levelized Cost ($/kWh)	$0.085	$0.119
Benefit/Cost Ratios		
Utility Benefit/Cost Ratio	6	
Total Resource Benefit/Cost Ratio	3.84	

Source: Idaho Power Company Demand-Side Management 2015 Annual Report, page125

1.3 Overview of Evaluation Approach

A kick-off meeting was held to review the proposed evaluation approach and to make sure the approach aligned with the program design. Following the kick-off meeting a final work plan was developed and submitted to Idaho Power for approval before subsequent evaluation work began.

Key elements of the impact evaluation approach of this program were:

1. Conducting the impact evaluation efficiently with a small sample size that provides evaluated results at 90% confidence within +/- 10% precision.
2. Accessing customer sites and systems with minimal disruption to the customer.
3. Re-assessment of NEB values for this program.
4. Review of implementation of Regional Technical Forum calculations for impact estimates of Menu Option measures.

[3] Includes kWh savings from Green Rewind projects

1.3.1 Goals of the Evaluation

The goals of the evaluation are to:

- Provide actionable recommendations based on a solid foundation of knowledge about the program
- Assess program implementation including quality control, operational practice, and outreach in the context of industry best practices and comparable programs
- Identify areas of risk
- Identify program strengths and areas for improvement
- Assess program administration including program oversight, staffing, management, training, documentation, and reporting
- Provide an estimation of program realization rates to assist in determining ex-ante gross energy savings based on an assessment of whether program impacts are consistent with the RTF (where applicable) or a review of best practice engineering calculations and assumptions when measures are custom calculated

1.3.2 Evaluation Methodologies

The evaluation methodologies utilized for the process and impact evaluations are listed below. Discussion regarding each of these methodologies is presented in Table 5 below.

Table 5. Process and Impact Evaluation Components

Process Evaluation	• Program staff interviews • Summary of process findings from impact reviews • Review of recommendations from previous evaluations • Materials review • Process mapping • Benchmarking and best practice review
Impact Evaluation	• RTF review • Desk review • Site visits • Impact analysis

1.3.3 Site Visits and Participant Interviews

The Leidos Team worked with Idaho Power Ag Reps prior to making contact with any customers selected for the site visits. Information provided by program participants is considered confidential in terms of attribution and is not shared with any other party.

Participant Interviews

Participant interviews were conducted with program participants during the site visits. The participant interviews assessed participant's interactions with the program, assessed the participant's satisfaction

with various elements of the program and further explored participant's valuation on non-electric benefits realized from the program.

Site Visits

The Leidos Team conducted site visits with 11 participants (out of a total sample of 16) in the Custom Option component of the program.[4] The participants were selected at random after being assigned to 3 strata, with a minimum of 5 participants (and 1 backup) selected from each strata.

During the site visits, installation and quantities of measures as recorded in the tracking database, project documentation, and as observed through the desk review were verified to the extent that was reasonable given large and distributed nature of most of these projects. There was a focus on the energy consuming equipment associated with the projects, such as pump motors.

The field data collection reports are shown in Appendix A along with photographs of key aspects of measures such as nameplate data, to allow for review of information in the analysis of the field data for the impact analysis.

1.3.4 Program Energy and Demand Savings

The data collected during the site visits was analyzed along with the data from the RTF review and the desk reviews to develop estimates of energy impacts at the program and measure levels. The analysis provides an estimation of program realization rates to assist in determining ex-post gross energy savings. Each step of the analysis is discussed briefly below.

Step 1: Review Program Documentation

The Leidos Team conducted a thorough review of the current data tracking system, associated documentation, and the calculation of energy savings, including an assessment of the adherence to the RTF energy savings values on a measure basis. Corrections to the ex-ante savings identified in this step are implemented as needed. For this step, all measures included in the Menu Option were assessed.

Step 2: Determine Desk Review Sample

The desk review/site review samples for the Irrigation Efficiency Rewards program were drawn from the population of 902 projects that accounted for the ex-ante savings claimed for the 2015 program year. Sampling was separately performed for the Menu Options and the Custom Options projects. A total of 30 projects plus 3 backups were sampled for the Menu Options. For the Custom track, a total of 15 project plus 3 backups were selected for the sample.

[4] While the sample was designed to complete 15 Custom projects for desk reviews with 10 of these also receiving on-site inspections, an additional project was completed for a total of 16 desk reviews and 11 on-site inspections. This occurred because one particular site was initially unresponsive to accepting the site visit, therefore a backup project was selected for desk review and site visit. After completion of the backup project, however, the original participant accepted an on-site visit; the inspection was then completed by the evaluators to fulfill commitments to the participant.

Step 3: File Review

The project files for sampled projects were requested from Idaho Power and were reviewed for evaluability.

For a project to be evaluable, proper information must be available in the project documentation to determine the proper deemed measure savings algorithm and to determine evidence of the project completion. Evaluable projects typically contain:

- A project application, which identifies the entity requesting the rebate and the equipment being rebated
- Invoices for purchased equipment identifying make and model of purchased equipment and categorizing labor activities. Invoices also provide documentation for purchase dates confirming adherence with program rules
- Documentation of the calculations, assumptions and QA/QC procedures adhered to by the program staff

If projects are determined to not be evaluable, additional documentation was requested or alternate backup projects were selected.

Step 4: Desk Reviews

Desk reviews were conducted for the sample of projects from Step 2 that were validated in Step 3. The desk reviews for Custom Option Incentive projects consisted of reviewing the algorithms and inputs for energy savings and determining the adherence to the protocols for individual measures, as evidenced by the project documentation. The desk reviews for the Menu Option projects consisted of verification that the project tracking data was consistent with the project documentation. Project documentation was used where any discrepancies were found.

Project documentation reviewed included project application, equipment specifications, invoices, calculation spreadsheets, and the database tracking and reporting information.

The key output from the desk reviews is the evaluated savings of the sampled projects. For the Custom Option projects, this evaluation also helped guide what was to be inspected during the site visits.

Step 5: Adjusting Savings Estimates

For the Menu Option projects in the Irrigation Efficiency Rewards program, the adjustments for savings estimates were made through identifying differences from the RTF values, and differences in the unit quantities per measure type.

For the Custom Option projects, an engineering review of the detail project documentation was completed. This included review of invoices for quantities and equipment sizing; equipment specifications for sizing, efficiency and performance; calculation worksheets for estimation of savings, and database tracking and reporting information. On-site inspection information was used to further inform the savings estimates for 11 of the Custom projects.

1.3.5 Process Evaluation

The following activities were conducted for the process evaluation:

- Program staff interviews
- Process findings coming out of the data reviews, desk reviews and site visits
- A review of the program logic model
- A review of actions taken is response to recommendations from previous evaluations
- A review of program educational and marketing materials
- A re-assessment of the process flow diagrams for the Menu Option and Custom Incentive Option components of the program
- Benchmarking of the Idaho Power Program as compared to similar programs

2.0 Overall Sampling Methodology

The sampling methodology applied to this program selected a total of 45 projects for the primary sample with 6 projects in the backup sample. The samples were determined separately for the Menu Option and the Custom Option projects.

2.1 Menu Option Sample

For the Menu Option projects, the kW savings were found to be proportional to the kWh savings for each project, so stratification was only necessary on the kWh values. The project-level kWh savings values in the program database were divided into three strata:

1. Over 55,000 kWh savings.
2. Over 16,000 kWh savings AND less than 55,000 kWh savings.
3. Under 16,000 kWh savings.

A random value was assigned to each project and the projects were ranked by the product of the random value and their kWh. The top 10 projects in each strata were considered for the initial primary sample and then the individual measure types and their recorded savings were analyzed. For measure types that were underrepresented in the initial sample, lower ranked projects in the initial primary sample were dropped in favor of selecting projects with the underrepresented measure types. Where possible, alternate projects were selected within the same strata, this process was repeated until the quantity of the measure types or the number of projects was adequately represented in the sample. The goal was to obtain a sample with at least 15% of the total quantity of that measure or at least 10 projects represented in the sample. Table 6 shows the Menu Option sample projects by measure and the percentage of the total program measure count for each measure type in the sample.

Table 6. Menu Option Sample Measure Types

Measure Types	# of Projects	% of Populaton Measures Count
Flow Cont	5	52.7%
New Nozzle	14	27.3%
Impact SP	15	35.1%
Levelers	8	19.3%
Low Press	21	7.1%
Drains	11	17.2%
Risercaps/Gaskets	17	25.8%
Wheel line hubs	3	17.2%
Gooseneck	11	9.7%
Pipe Press	7	17.3%
Boot Gasket	4	16.0%
Total	**30**	**21.7%**

Table 7 below shows the project IDs that were selected for the primary and backup samples. The backup projects were chosen so that they cover all of the measure types under the program and can be

pulled into the primary sample, if necessary, to replace projects that may have issues as the evaluation progressed.

Table 7. Menu Option Primary and Backup Samples Projects

Project ID	Strata	Measure Types	Quantity	kWh Savings	kW Savings	Sample
IRRM7195	1	4	18,129	512,019	100.2	Primary
IRRM7307	2	7	1,463	30,738	6.0	Primary
IRRM7326	1	6	1,795	183,957	36.0	Primary
IRRM7341	3	1	134	13,400	2.6	Primary
IRRM7343	2	1	484	48,400	9.5	Primary
IRRM7418	2	5	2,314	42,088	8.2	Primary
IRRM7440	1	5	1,827	107,036	21.0	Primary
IRRM7442	1	7	1,190	77,358	15.1	Primary
IRRM7449	1	4	1,531	199,315	39.0	Primary
IRRM7505	2	6	2,432	20,994	4.1	Primary
IRRM7513	3	1	248	12,911	2.5	Primary
IRRM7537	3	5	150	3,039	0.6	Primary
IRRM7560	3	3	191	12,623	2.5	Primary
IRRM7561	1	6	1,348	100,151	19.6	Primary
IRRM7577	3	3	139	15,194	3.0	Primary
IRRM7603	2	3	786	48,039	9.4	Primary
IRRM7611	3	3	249	14,300	2.8	Primary
IRRM7658	1	2	240	275,351	53.9	Primary
IRRM7679	2	5	1,542	31,782	6.2	Primary
IRRM7700	2	4	881	26,892	5.3	Primary
IRRM7705	2	2	716	41,170	8.1	Primary
IRRM7710	2	5	488	40,002	7.8	Primary
IRRM7833	3	1	151	15,100	3.0	Primary
IRRM7917	3	1	151	15,100	3.0	Primary
IRRM7975	1	8	4,305	149,641	29.3	Primary
IRRM7986	1	6	1,349	157,540	30.8	Primary
IRRM8017	3	2	260	12,864	2.5	Primary
IRRM8050	2	2	217	36,914	7.2	Primary
IRRM8057	1	6	1,424	140,372	27.5	Primary
IRRM8060	3	3	209	15,061	3.0	Primary
IRRM7302	1	7	2,661	188,964	37.0	Backup
IRRM7564	2	7	1,636	22,490	4.4	Backup
IRRM7967	3	3	2,532	1,220	0.2	Backup

For the desk reviews of Menu Option participants, the following information was requested for each project in the Primary and Backup samples:

- Application forms
- Supporting cost estimate information
- Project invoices
- Proof of incentive payments
- Savings calculations spreadsheets (if any)

2.2 Custom Option Sample

For the Custom projects, the project-level kW and kWh savings values in the program database were divided into three strata:

1. Over 75,000 kWh savings OR 50 kW savings.
2. Over 25,000 kWh savings OR 17 kW savings, AND Less than 75,000 kWh Savings AND 50 kW savings.
3. Under 25,000 kWh savings AND 17 kW savings.

A random value was assigned to each project and the projects were ranked by the product of the random value and their kWh and kW savings. The top 5 projects in each strata were considered for the initial primary sample and a backup project was selected for each strata. The goal was to obtain a sample with at least 35% of the kWh and kW savings represented in the sample. The Table 8 below shows the breakdown of the savings in the primary.

Table 8. Custom Samples Savings Summary

Savings Sampled	% of Total
kWh	37%
kW	50%

Table 9 below shows the project IDs that were selected for the primary and backup samples. The backup projects were chosen so that they can be pulled into the primary sample, if necessary, to replace projects that may have issues as the evaluation progressed.

Table 9. Custom Primary and Backup Sampled Projects

Project ID	Strata	kWh Savings	kW Savings	Sample	On-Site Inspection
1893	1	235,783	293.1	Primary	Yes
1947	1	83,632	35.3	Primary	Yes
1969	1	83,227	35.0	Primary	
1992	1	150,439	64.1	Primary	Yes
1993	1	86,726	34.7	Primary	
1925	2	35,553	17.8	Primary	
1957	2	42,675	3.4	Primary	Yes
1961	2	51,351	35.3	Primary	
1987	2	66,379	19.6	Primary	Yes
1899	3	24,353	13.9	Primary	Yes
1948	3	20,890	0.0	Primary	Yes
1985	3	17,814	14.7	Primary	Yes
1986	3	24,408	-3.8	Primary	Yes
1994	3	23,838	11.9	Primary	Yes
1918	1	105,349	57.9	Primary	Yes
1971	2	35,535	23.4	Primary	
1927	2	50,161	25.1	Backup	
1904	3	16,796	9.0	Backup	

For the desk reviews and the on-site data collection for this program, the following information was requested for each project in the Primary and Backup samples, where available:

- Applications (both Pre-Application and Final Application)
- Supporting cost estimate information
- Product cut sheets
- Project invoices
- Proof of incentive payments
- Correspondence for pre and final approval
- Relevant correspondence between Agricultural Rep and Irrigation Vendor
- On-Site Agricultural Rep inspection information (photos and notes)
- Sequences of operations
- Savings calculation spreadsheets
- Applicable design drawings
- Third-party engineering reports
- Internal audit documentation

3.0 Impact Evaluation

The impact evaluation for the Irrigation Efficiency program consisted of conducting project file review, desk audits and on-site inspections to verify key energy savings and demand characteristics.

3.1 Sampling Results

The project review and site inspection sample sites were adjusted as the evaluation progressed to overcome restrictions such as lack of information or inability to gain access to the site. In such instances, the backup sample sites were substituted for primary sites. Characteristics of the final sample for this evaluation are presented in Table 10.

Table 10. Final Sampling Characteristics

	Project File Evaluation Sample					
Measure	**N**	**$n_{project}$**	**$kWh_{n,\ ex\ ante}$**	**$kW_{nex\ ante}$**	**%kWh**	**%kW**
Menu Option	799	30	2,399,350	469.5	21.3%	21.3%
Custom Option	103	16	1,087,952	656.3	40.7%	54.5%
Total	**902**	**46**	**3,487,302**	**1,125.8**	**25.0%**	**33.0%**
	Onsite M&V Sample Subset					
Measure	**N**	**n_{onsite}**	**$Wh_{onsite,ex\ ante}$**	**$W_{onsite,\ ex\ ante}$**	**%kWh**	**%kW**
Menu Option	799				-	0.0%
Custom Option	103	11	795,560	510.1	29.7%	42.4%
Total	**902**	**11**	**795,560**	**510.1**	**5.7%**	**15.0%**

3.2 Verification of Impacts

The ex-post savings impacts for each of the Menu Options and the Custom projects were determined independently for each of these programs for their separate samples. From this, the total integrated program impacts are determined through weighting of the two program option tracks. The Realization Rate is the ratio of the Ex-post to Ex-ante savings representing the savings that are verified through the sample and statistically weighted to the program participation. The impact evaluation results of the total impacts for energy and demand savings are shown on Table 11.

Table 11. Summary of Impact Evaluation Results

Program Option	Ex-ante kWh Gross	Ex-post kWh Gross	Realization Rate	Ex-ante kW Gross	Ex-post kW Gross	Realization Rate
Menu Option	11,261,548	10,953,996	0.97	2,203.8	2,144	0.97
Custom Option	2,675,788	2,641,560	0.99	1,203.5	906	0.75
Program Total	**13,937,336**	**13,595,555**	**0.98**	**3,407.3**	**3,050**	**0.90**
Relative Precision at 90% Confidence	**2.4%**			**3.3%**		

The total energy savings of 13,937,336 kWh for the 2015 program year are a direct summation from the Idaho Power program tracking database that was used for this evaluation. However, this total differs slightly from the 14,027,411 kWh of energy savings reported in Idaho Power Company Demand-Side Management 2015 Annual Report, page125. The reason for this 0.64% differential is because the savings from a separate program, Green Motor Rewind, is reported as part of the Irrigation Efficiency program for agricultural motors.

Overall, the realization rate for ex-post energy savings is 0.98 at 90% confidence and +/- 2.4% precision, delivering energy savings of 13,595,555 kWh for the total Irrigation Efficiency program. The Menu Option had an energy saving realization rate at 0.97, while the Custom Option had a realization rate of 0.99. The Menu Option is the larger of the two program tracks and thus is the dominate influence on the total realization rate, and savings, for the program.

- For Menu Options energy savings, verification of the measures across the sample was reliable, with 26 of the 30 sample projects close to unity on their individual realization rates. The variance in ex-post savings realization rate is simply due to a mix of changes in the count of measures for a select few projects. This indicates that there are no systemic problems with the Menu Options program savings determination, but rather the realization rate is just the reflection of a mix of adjustments.

- For the Custom Options program track, the ex-post savings realization result is near unity at 0.99. There were minor adjustments made across all projects in this sample, with a fairly balanced mix between projects with slightly increased and slightly decreased energy savings. This also indicates that there are no systemic problems with the Custom Options program savings determination.

The program ex-post demand savings evaluation resulted in a 0.90 realization rate at 90% confidence at +/- 3.3% precision, delivering demand savings of 3,050 kW. The Menu Options sample, individually, has a realization rate of 0.97, but as previously noted, the demand savings are derived from the energy savings in this program track; thus the realization on demand savings should equal that for the energy savings. For the Custom Option, the demand savings realization rate is 0.75. It is noted that one particular site is the primary driver of this lower realization rate. For one of the largest sites in the Custom evaluation sample, adjustments were made in the energy savings to account for limited capacity in the local electrical feeder capacity, however, the demand savings estimates were not adjusted to consider this limited capacity. As a result, the evaluation adjusted the demand savings from a recorded 293kW to 117 kW for this one site.

4.0 Non-Electric Benefits (NEB) Review

Non-electric benefits as recorded by Idaho Power in their data tracking system for the Irrigation Efficiency Rewards program are valued at almost $1.5 million dollars per year, with just over $1 million of that coming from the Custom Incentive Option component of the program. For the Menu component of the program, this translates to $2.05 per acre or 3 cents per ex ante kWh saved. For the Custom component of the program this translates to $7.83 per acre, or 38 cents per kWh saved. The NEBs estimates for each program component are discussed in more detail below.

Table 12. Irrigation Efficiency Rewards – Non-Electric Benefits Metrics

Program Component	Ex Ante NEBs	Acres	Ex Ante kWh Saved	$/Acre	$/kWh
Menu	$492,026	239,674	17,825,400	$2.05	$0.03
Custom	$1,017,946	129,970	2,675,788	$7.83	$0.38
Total	**$1,494,672**	**369,644**	**20,501,188**	**$4.04**	**$0.07**

4.1 Menu Option

Idaho Power estimates the value of non-electric benefits for the Menu Option participants are approximately $2 per acre, which is applied across all program participants. This is based on a report titled *Irrigation Uniformity*[5] produced by the University of Idaho College of Agriculture which estimated that an increase in irrigation uniformity from 70% to 90% would increase the gross receipts per acre of Russet Burbank potatoes by $144, primarily due to increased yield, but also due to a moderate increase in price.

Almost all of the measures offered through the Menu Option program component contribute to improvement in how evenly the irrigation distributes water over the field area, i.e. increasing irrigation uniformity. While, the irrigation measures installed through the program are not necessarily affecting all of the acres for the affected field and uniformity will have differently levels of impacts on other crops, and the crops in the affected fields may well be lower value crops than potatoes, the application of a significantly discounted value of $2 per acre is reasonable and likely underestimates the non-electric benefits realized through implementation of irrigation efficiency measures through the Menu Option component of the program.

Table 13 shows the benefits and values for the irrigation hardware found in the RTF. The irrigation hardware measures are largely the same measures offered through the Idaho Power Irrigation Efficiency Rewards program. While the RTF has values for each measure, in this case, the values were the same for each measure.

[5] *Irrigation Uniformity*, Bradley A. King, Jeffrey C. Stark, and Dennis Kincaid, University of Idaho College of Agriculture, BUL 824.

Table 13. Irrigation Hardware Benefits and Values in the RTF

Benefits	$/kWh
Present Value Electric Energy Savings	$0.060
Present Value of Transmission & Distribution System Benefits	$0.000
Present Value of Region Act's 10% Conservation Credit	$0.006
Present Value of Non-Electric System Benefits	$0.000
PV Regional Electric Deferred Generation Capacity Credit	$0.000
Present Value Carbon Dioxide Reduction Benefits	$0.000

Source AgIrrigationHardware_V3_2.xlsm

The RTF has a value of $0.000 for Non-Electric System Benefits. This does not mean that these benefits do not exist. The irrigation hardware measures are classified as "small savers", and resources have not yet been expended to quantify those benefits. The RTF is working on establishing a value for diverted water, which is relevant for these measures. The report will not be completed until sometime in 2017. Following delivery of the report a decision will need to be made on adding the value of diverted water to the measure, before it is added to the RTF.

4.2 Avoided C02 Emissions

The RTF is also working on a time-variable carbon pricing for avoided CO2. A white-paper on that topic is expected in the first half of 2017.

For the 2015 program year, the Menu Option measures implemented will avoid 185,003 tons of CO2 over their lifetime[6]. While the RTF has not yet established a value for these avoided CO2 emissions, California recently updated their avoided cost estimates in August of 2016. Using a value of $15.84 cents per ton, derived from the results of that avoided cost study, the value of these avoided emissions is roughly $2,931,106. The value of this non-electric impact is almost six times the value of non-electric impacts currently estimated by Idaho Power. Though, it is important to note that the value of the avoided CO2 emissions as determined by the RTF study may differ significantly from the findings in the California study. And while these estimates of the value of CO2 are often based on active trading markets for CO2, it is somewhat academic until there is policy adopted that is driving avoidance of CO2 or until Idaho Power is eligible to participate in an active market for CO2.

4.3 Custom Incentive Option

Estimates of non-electric benefits for the Custom Incentive Option are based on self-reported estimates provided by participants.

Ag Reps ask customers to fill out a "Non-Energy Benefits Attachment" form which asks:

> *On the Irrigation Efficiency project that you are doing, there are significant energy savings benefits you will experience when it is completed. Are there additional non-energy benefits and other reasons that you are doing the project?*

[6] Based on the per unit, lifetime savings estimates in the RTF ([C02 Reduction (tons over expected measure life)] in AgIrrigationHardware_v3_2.xlsx)

Please check all the reasons for doing your project and estimate a dollar per year for each reason.

- o *Reduces my Labor costs by $_____/yr (estimate)*
- o *Increases by Yield by $_____/yr (estimate)*
- o *Higher Value crops can be grown $_____/yr (estimate)*
- o *Higher Rent $_____/yr (estimate)*
- o *Operation and Maintenance Savings $_____/yr (estimate)*
- o *Other_____ $_____/yr*

The values provided are captured in the project tracking system. Thirty-seven percent of participants provided estimates of labor savings and increased yields, while twenty-two percent of participants provided estimates of maintenance savings. Thirteen participants provided values in all three of these categories. Fifty participants (just less than half) provided a value in at least one of these categories, meaning that just over half did not provide any values for non-electric benefits.

Table 14. Self-Reported Non-Electric Benefits from Custom Incentive Component Projects by Category

Non-Electric Benefit	Dollars per Acre*		
	Average	Minimum	Maximum
Labor Savings	$24.67	$0.05	$149.77
Maintenance Savings	$34.00	$0.89	$153.69
Water Savings	$0	$0	$0
Increased Yield	$116.64	$1.30	$400.00
VFD	$7.80	$0.00	$24.78

**Based on self-reported estimates from program participants*

A review of the values provided showed that the vast majority of the estimates seemed reasonable relative to the expected value of the crops grown and total labor and maintenance costs. However, the values provided by at least two of the participants seemed to push the boundaries of reasonableness without more information on the underlying assumptions made when the estimates were provided. Idaho Power should consider application of some caps for the various categories to ensure that reported values of NEBs are reasonable. Also, since just less than half of participants provided any NEBs values, it would be worthwhile to add an entry on the form that would allow a participant to clearly indicate that they do not expect to realize any non-electric benefits from the project. That would allow a more definitive assessment of the non-electric benefits for the population of participants, by extrapolation of benefits for participants who did not complete the form because they felt they could not provide a reasonable estimate of the benefits, and not because they did not *expect* any benefits to be realized.

5.0 Process Evaluation Findings

5.1 Program staff interviews

Interviews were conducted with the program staff to get an overview of program operations and an orientation to program activities. A second interview with the program manager was conducted following the review of program tracking data, project files, and program materials to answer follow up questions. Interviews were also conducted with the staff responsible for providing marketing services for the program.

5.2 Process Findings from Desk Reviews and Site Visits

Throughout the evaluation of the program impacts, several observations and findings were developed for the Irrigation Efficiency program as noted in the following:

1. **Project documentation is solid and reliable.**

   For both the Menu Options and the Custom program tracks, the project technical files were largely complete, and provided information that made the project evaluable. In a select few cases of the Menu Options documentation, the invoices were very extensive where the qualified equipment was dispersed over dozens of pages and intermixed with other equipment itemizations. In these and other situations where there are complex or extensive documents, document annotations and summary notes were very informative for understanding the project details. Idaho Power program personnel should be encouraged to continue to practice good project documentation, including annotations from reviews, measure count summaries, separate invoices for multi-phase projects, and applicable project communications.

2. **Determination of the energy and demand savings followed the proper protocol and is reasonable for both Menu Options and Custom programs tracks.**

   For the Menu Options, deemed energy savings values are applied as specified in the RTF guideline on a per unit of equipment basis, and these values are properly varied for two geographic climate regions. The maximum energy savings for projects is also reasonably limited to roughly no more than 15% of the total energy use. Idaho Power employs this limit because the standard deemed values of savings from the RTF can often accumulate to be a significant portion of the total electrical use of the affected irrigation system. These “adjusted energy savings” are what are reported in the tracking and reporting systems. Demand savings are not specified in the RTF, so they are calculated by dividing the adjusted energy savings (kWh) by the RTF deemed operation hours for the climate regions.

   For Custom projects, specialized engineering calculations are completed that are specific to the project. Idaho Power program representatives and engineers work with equipment suppliers, system designers, and the farmers to gather project-specific information to build a custom energy and demand savings calculation. For upgrades to the existing irrigation systems where the basic system design is maintained, the baseline energy is determined by averaging the latest 5-year historical metered energy use, and dividing by the pre-existing equipment power (kW) to determine annual operation hours. These operation hours are then used to determine the

energy savings based on the demand differential between the pre-existing base case and the proposed improved case. This is a very robust method of energy savings and demand determination since it applies real historical energy use data.

For Custom irrigation projects that are either new designs, or are significant changes to pre-existing systems such as to essentially constitute a new design, the program baseline is a theoretical system. This theoretical system case considers what would be built as a standard system to provide a comparison case for determining the savings to the new system. Equipment capacities and performance are determined by specifically sizing to the design cases. Demand savings are determined as the power differentials between the cases. Then to determine energy savings a standard default of 2,000 hours of annual operation are applied.

3. **Default annual hours of operation may be researched for future "new" irrigation projects.**

   In the Custom option of the Irrigation program, a standard default value of 2000 hours is used to for the annual operation of the irrigation system to estimate the savings for cases where the actual hours of operation are not derivable from historical meter readings. This is applied when the irrigation system improvement is significantly different from the prior system, or the project is the installation of a new irrigation system. However, for those sites where the project was for an upgrade of the existing system, the annual hours of operation are calculated based on the historical metered energy use (kWh) divided by the appropriate existing demand (kW). These metered data based annual hours of operation ranged from a minimum of 1,058 hours to a maximum of 3,394 hours across the sample.

   While the standard default of 2000 hours appears to be a reasonable general proxy for irrigation system operations in Idaho Power's territory, there is a wide range of meter based hours of operation in the sample projects that range across the territory. This potentially indicates that additional research may be applied to develop more specific default values for the hours of operation considering the various factors that may influence operation time such as geographic location, crop type and irrigation system type.

4. **Calculations of energy savings for Variable Frequency Drives (VFDs) for pump motors are specific to the projects.**

   In the Custom irrigation option, Idaho Power engineering staff perform specific calculations for each pump motor and VFD using an Excel-based calculation to determine savings for the application of a VFD. All VFDs are processed as Custom applications and are reported and tracked separately from the other project savings. In the Custom sample for this evaluation, the 5 sites with VFDs were found to have complete and specialized calculations for the energy and demand savings of the VFDs. The engineering staff considered the part load performance of the irrigation systems considering the pumping system configurations and controls, and the watering schedules with variations for different crops. This is a reasonable, yet specialized, approach to estimating the savings for VFDs that considers specific project attributes.

5. **Site complexities make verification difficult in many instances.**

   Several observations and challenges in conducting the on-site inspections may be considered to streamline future on-site activities.

   a. First, the farm personnel were mostly very receptive to assisting in providing site access. However, the individual representing the farm may not have been involved with the irrigation system improvement and in some cases knew very little about the project; this is more likely the case for corporate farm operations.
   b. Overall, the farmers liked the program and the results. They were aware that electric cost savings were a key benefit and they generally were aware of Non-Electric Benefits such as reduced water use, reduced maintenance and less "wear and tear" on the equipment.
   c. In several instances, it was difficult to locate the exact pump station, and sometimes the farm representative was not sure of project location for the reasons noted in item a above. The longitude and latitude coordinates for project locations, which Idaho Power has in the data set, should be used to locate particular pump stations.

Further qualitative observations made by the evaluation field staff while conducting the site visits are noted in following.

- The field staff interacted with a wide variety of participating farms and their representatives. Contacts could be the owner of a family farm, someone from the head-office of a large corporate farm, or a designer from an irrigation firm, but rarely was it someone that was familiar with every aspect of the project. In all cases, the contact was met at the project site "somewhere in the middle of the country"
- In almost all cases, contacts expressed satisfaction with the program and especially the Idaho Power Ag Reps. There was also a high level of satisfaction with the irrigation companies, and a lot of brand loyalty was expressed that impacted the selection of an irrigation company to work with on a project. The irrigation companies were very service oriented and answered questions as needed about projects, sometimes being called while at the site with the project contact
- There was one contact who expressed dissatisfaction, which was driven by a disagreement on the proper baseline usage for determining project savings. The contact felt the baseline should have been based on the usage for only the previous year and not a multi-year average of previous years' usage. The contact did not indicate that there had been any changes in the irrigation practices in previous years that would invalidate an average of multiple years. A review of the difference in savings from the two baselines indicated that the difference in results was not material
- There is room for improvement in the documentation for the Custom projects. Aerial views of the project site which are helpful, but often there is no clear indicators of location that would allow the site in the pictures to be definitively located such as Universal Transverse Mercator (UTM) or longitude/latitude of the affected irrigation pumps
- Another observation by the evaluation field team was the difficulty of extracting load data from some of the VFDs. While it was easy to get the load data from some, it was not as straightforward for others, and the project contacts did not know how to do it. This required reading equipment manuals and in some cases, calls to the irrigation company. One suggestion

from a participant was that operator training, including extraction of the usage data, might be considered as a program requirement or recommendation for the VFD contractor

- It was not clear that the project contacts were aware of the availability of the green motors rewind program

5.4 Materials Review

The Irrigation Efficiency Rewards program has a comprehensive set of program materials to support program administration, serve as resources to customers, support program marketing efforts, and customer training.

All of the requested program materials were provided, with the caveat that there was not a formal program logic model. However, much of the information that is expected to be included in a program logic model can be found in the program handbook. While development and maintenance of a program logic model is considered a best practice, since it conveys a lot of information about the program design in a fairly concise format, it is not uncommon for one not to be maintained by program staff since it takes some time and commitment to develop. If staff is going to be expected to produce formal program logic models, they would benefit from training in logic model development. However, they tend to be available from program staff more as an exception than the rule.

The one document that appeared to be ready for a refresh was the Irrigation Efficiency Program Handbook. The document was not readily available in an electronic format, however, a hard-copy from a three-ring binder was scanned and provided to support the materials review. While the document contains the basic materials necessary to serve the purpose of a program handbook, an electronic version may be a more easily updated and distributed.

Additional project level materials were requested to support the impact evaluation efforts for sampled projects. These materials are discussed briefly above in the section on process findings from desk reviews and site visits.

Table 15 presents a summary of the program materials that were reviewed as part of the process evaluation.

Table 15. Program Materials

Materials	Description
Administrative	
Irrigation Efficiency Program Handbook	An 18-page document covering basic topics relevant to program staff, including a program summary description, contact information, budget and goals, worksheets and forms, process flow diagrams, field staff information, contracts and quality assurance.
Irrigation Agreement*	A one-page agreement between Idaho Power and a customer, executed once the customer's program application has been reviewed and accepted by Idaho Power.
Irrigation Efficiency Custom Application*	A one-page application to participate in the Irrigation Efficiency Rewards Custom Incentive program capturing basic information about the customer, the existing system, proposed modifications and expected savings, along with some agreement language covering topics outside of the irrigation agreement.
Irrigation Efficiency Menu Application*	A one-page application to participate in the Irrigation Efficiency Rewards Menu Option program capturing basic information about the customer, the number of each measure installed and total incentive claimed for each measure, along with some agreement language covering topics outside of the irrigation agreement.
Customer Resource	
Irrigation Efficiency Incentive Options*	A seven-page brochure with brief outline of the program, copies of the menu and custom applications with terms and conditions, program FAQs and contact information.
List of Regional Representatives*	A list of the six agricultural representatives supporting the program and the area they serve. It includes name, address, phone, fax and e-mail address.
Irrigation Energy Saving Ideas*	A ten-page brochure covering the concepts of how to increase the efficiency of new and existing irrigation systems.
Irrigation Efficiency Tips*	One pager that provides examples of the kind of system improvements that qualify for incentives for the Menu Option component of the program and the custom incentive component of the program.
Marketing Materials	
Success Stories*	Write-ups on seven different irrigation efficiency projects that cover some basic information about the farm and the crops, the equipment that existed, the improvements that were made and the outcomes from the project in energy and dollar savings.
Irrigation Newsletter*	A short newsletter that appears to be produced once or twice per year. The latest version came out in August 2016 and covered information on the customer's read date, the availability of summary bills and information on the types of system improvements that would qualify for the irrigation efficiency rewards program.
Irrigation Thank You Postcard	A postcard sent at the end of the program year to all program participants thanking them for their participation.
Radio Scripts	Scripts for radio ads aired during the Agri Action and FFA Ag Week events promoting the Irrigation Efficiency Rewards program.
Ag Expo Ads	Four one-page print ads for the 2014 Ag Expo, each page featuring a different crop; spud, sugar beet, corn & hay.
Training/Workshop	
Irrigation Efficiency Rewards Workshop Presentation	A 57-page PowerPoint presentation that provides a basic overview of the program, where to get more information about the program, reviews the Menu Option measures and goes through a number of detailed examples of custom incentive projects. These workshops are offered at different locations around the state.

**Available on the website*

5.5 Benchmarking

The benchmarking of the Idaho Power Program as compared to similar programs was also performed.

The first step in this effort was to identify states that had sufficient irrigation usage to support an irrigation efficiency program. The second step was to identify the utilities operating in those states. The third step was to identify the irrigation efficiency program components offered by those utilities based on information publicly available on their website. The results of this research are presented in Table 16 below.

Irrigation water usage by state was based on data from the U.S. Geological Survey's Water Science School.[7] As of 2005, California was the only state in the U.S. withdrawing more water for irrigation than Idaho, each withdrawing between 15,000 – 25,000 million gallons per day. There are six states withdrawing from 5,000 – 15,000 million gallons per day, these are Arkansas, Colorado, Montana, Nebraska, Oregon and Texas. These eight states accounted for approximately 73% of the irrigation water withdrawals in U.S. in 2005.

Table 16 shows the existence of irrigation efficiency program components for sixteen utilities in eight states (utilities operating in multiple states were counted as a separate entity for each state). There are eight utilities operating in Texas. They are not included in the table because the state has been de-regulated and each of the utilities provides energy efficiency services through energy efficiency service providers with standardized incentives based on the level of savings. While irrigation efficiency could be eligible though their custom commercial offerings, none of the websites had any information specific to agriculture or irrigation. Nebraska is not included in the table because there are no Investor-Owned Utilities (IOUs) operating in Nebraska, as all electricity is delivered through public power districts and co-ops. There are two programs that have been included in the table even though they are not operating in one of the high irrigation use states; Rocky Mountain Power operating in Utah and the Columbia River Rural Electric Power Association operating in Washington.

Ten of the fourteen utilities in the table in high irrigation use states have an irrigation efficiency offering.

Five have a motors & drive offerings that are specifically targeted to agriculture or irrigation customers, and another three have motors & drive offerings but do not call out agriculture or irrigation specifically.

[7] http://water.usgs.gov/edu/wuir.html

Table 16. Irrigation Efficiency Program Offerings by Utilities in States with High Irrigation Water Use

State	Irrigation Water Use[8]	Utilities	Irrigation Efficiency Program Components		
			Menu Option	Custom	Motors & Drives
California	Very High	PG&E	◐	●	●
		SCE			●
		SDGE		●	
Idaho	Very High	Avista			
		Idaho Power Company	●	●	○
		Rocky Mountain Power		●	
Arkansas	High	AEP-SWEPCo			○
		Entergy Arkansas			●
Colorado	High	Black Hills Energy			
		Xcel Energy			○
Montana	High	Northwestern Energy		●	●
Oregon	High	Idaho Power Company	●	●	●
		Pacific Power & Light*	●		
		Portland General Electric*	●		
Utah	Moderate	Rocky Mountain Power	●	●	
Washington	Moderate	Columbia Rural Electric Association	●	●	●

● Utility offers program component
◐ Utility has a limited offering for this component
○ Utility offers this component, but it is not specific to ag irrigation
**Offered through the Energy Trust of Oregon*

Six of the utilities in high irrigation use states have a custom offering, although, none of the other utilities appear to have a team of Ag Reps knowledgeable in irrigation efficiency that serve as a resource to their agricultural customers.

Northwestern Energy offers a document that walks customers through the calculation of the efficiency of an irrigation system, with many steps and calculations. Though there is not an accompanying spreadsheet to help with the calculations.

[8] Very High = 15,000-25,000 million gallons per day; High = 5,000-15,000 million gallons per day; Moderate = 1,000-5,000 million gallons per day

5.5.1 Menu Option Benchmark Comparisons

Five of the utilities have a menu option-type offering, though two are offered through Idaho Power and two are offered through the Energy Trust of Oregon. PG&E's menu option component only covers drip irrigation and low-pressure systems.

Rocky Mountain Power does not offer a menu option type irrigation efficiency program in Idaho, or in its Wyoming territory, but it does run program very similar to Idaho Power Company in Utah.

Pacific Power & Light and Portland General Electric in Oregon both offer menu option type irrigation efficiency programs, through the Energy Trust of Oregon.

Table 17 below provides a comparison of the rebate levels for Menu Option offerings for Idaho Power, Rocky Mountain Power in Utah, the Energy Trust of Oregon and the Columbia Rural Electric Association. Setting appropriate rebate levels for a program requires consideration of many factors and are affected by utility policy and objectives, regulatory policy, market conditions, utility rates, and other factors so rebates across programs are not expected to be the same. However, a comparison can be informative.

Table 17. Comparison of Rebate Amounts for Irrigation Measures*

Description	Idaho Power	Rocky Mountain Power	Energy Trust of Oregon	Columbia REA
New gooseneck with drop tube or boomback	$1.00	$0.50	$1.65	$1.65
New or rebuilt impact or rotating type sprinklers	$2.75	$2.25	$3.75	$3.75
New nozzles for impact, rotating or fixed head sprinklers	$0.25	$0.50	$1.50	$1.50
New flow-control type nozzles	$1.50	$2.75	$4.00	$4.00
New risercaps and gaskets for hand lines, wheel lines or portable mainline	$1.00	$2.00	$2.75	$2.75
Cut and pipe press or weld repair of leaking hand lines, wheel lines and portable mainline (invoice must show number of joints repaired)	$8.00	$10.00	$10.00	$10.00
New drains for pivot and wheel lines	$3.00		$1.00	$1.00
New or rebuilt wheel line levelers	$0.75	$3.00		$0.75
New wheel line hubs (on Thunderbird wheel lines)	$12.00	$10.00		$14.50
New center pivot base boot gasket	$125.00	$125.00		$175.00
New complete low-pressure pivot package (per sprinkler head, nozzle and regulator)	$8.00		$12.00	$12.00
New rotating-type sprinklers that replace low-pressure sprinklers		$3.00	$4.00	$4.00
New multi-trajectory sprays that replace low-pressure sprinklers			$1.00	$1.00
New multi-trajectory sprays that replace impact sprinklers			$4.00	$4.00
New or rebuilt wheel line feed hose replacing leaking feed hose		$12.00		
New center pivot span boot replacing leaking span boot (tower gasket)		$4.00		
New low pressure sprinkler (of same design flow or less) replacing worn low pressure sprinkler		$1.50		

** The colors on the table indicate: 1) the highest values in yellow, and 2) the lowest values in orange-brown when there are at least 2 values.*

Idaho Power offers eleven measures through the Menu Option component of their program. All of these measures were offered by at least two of the other three programs with similar menu option offerings. Idaho Power had the lowest rebate amount on seven of the eleven measures, and had the highest rebate amount on only one of the measures. Idaho Power rebates tended to be much lower (20-80% lower) than the rebates offered through the Energy Trust of Oregon and Columbia REA programs. Energy Trust of Oregon and Columbia REA's rebates were identical for all of the measures they offered in common. Rocky Mountain Power's Program offers fourteen measures, nine of which are

common with Idaho Power. The rebate offered by Rocky Mountain Power is lower than the Idaho Power rebate for three of those measures and higher for five measures. Rocky Mountain Power's rebates were the highest offered on only one measure.

The positive implications for lower rebates, is that the Idaho Power program either costs less to administer or allows the program to serve more customers for a given budget level. The negative implications are that lower rebates can be less of an incentive for customers, resulting in lower levels of program participation than could be achieved with higher rebates.

There are seven measures that are offered through at least one of the other programs that are not offered through the Idaho Power Irrigation Efficiency Rewards program. While it is likely these measures have been reviewed and not included in the program for good reason, it is worth taking a look and re-considering whether these measures could add value to the program.

All of the measures offered by Idaho Power are included in the Regional Technical RTF (RTF) library of unit energy savings measures. They are offering all of the RTF measures under Irrigation Hardware. Idaho Power, The Energy Trust of Oregon and Columbia REA in Washington all contribute to the regional power plan for the states of Idaho, Oregon, Washington and Montana, developed under the purview of the Northwest Power and Conservation Council. The RTF is a resource maintained by the Northwest Power and Conservation Council. The Rocky Mountain Power program offered in Utah appears to also be somewhat consistent with the measures in the RTF, while the program offered by Northwestern in Montana, does not have a menu option offering for the measures in the RTF.

6.0 Conclusions and Recommendations

Idaho Power delivers a comprehensive irrigation efficiency program, specifically targeted to the important agricultural customer segment in their territory. The program offers the services of a team of regional account representatives that are highly knowledgeable about irrigation and efficiency. While the use of Ag Reps is not a unique way to serve the needs of customers in programs, none of the similar programs by other utilities reviewed offered the level of account representative support that is provided by Idaho Power. This is likely a contributing factor to their ability to meet participation expectations in the Menu Option component of the program even though Idaho Power offers significantly lower rebates than any of the other menu option program offerings for other utilities.

Overall, the Irrigation Efficiency Rewards program achieved a realization rate for energy savings of 0.98, delivering 13,595,555 kWh, and a demand savings realization rate of 0.90, delivering 3050 kW.

All indications are that the program is well designed, well managed and well implemented. However, there are a few recommendations presented for consideration, which could support incremental improvements in program operations.

6.1 Impact Evaluation Recommendations

- Continue to make improvements in the quality of the project level documentation such as through annotations on invoicing and specification sheets, and summary tables for measure counts.

- Assess the viability of developing more specific default values for the hours of operation considering the various factors that may influence operation time such as geographic location, crop type and irrigation system type, possibly using data from projects that have already been gathered.

6.2 Process Evaluation Recommendations

Recommendations from the process evaluation are noted in Table 18 below.

Table 18. Process Evaluation Recommendations and Observations

Program Materials	• Update the program handbook to a more user-friendly electronic format
Program Design	• Review whether adding measures to the Menu Option component of the program would add value to the program and program participants • Assess the impact of increased rebates on program cost-effectiveness and participation • Take a deeper look at the program participation trends over time to better understand drivers for the 20% reduction in participation from 2014 to 2015.[9] • Consider conducting a market assessment that would review cost-effectiveness, incentives, market size, in a holistic way • Assess whether there are more program opportunities for savings from motors, and pumps • Increase the methods in which awareness of the green rewind program is promoted through the program
Non-Electric Benefits ((NEBs)	• Be prepared to integrate water and CO2 values into NEBs estimates if the RTF approves values from the pending research on those topics • Conduct some additional research on NEBs related to irrigation efficiency to better understand and support the self-reported NEBs values provided by participants • Consider establishing caps on self-reported estimates to avoid overstating the value of NEBs

[9] Idaho Power's program managers report that participation has increased in 2016.

FINAL REPORT

Impact and Process Evaluation Rebate Advantage PY2015 Program

December 28, 2016

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Idaho Power Company

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1 Contents

2 Executive Summary

This report presents the results of an independent impact and process evaluation of the Idaho Power Company (Idaho Power) Rebate Advantage incentive program for energy efficient manufactured homes. The Rebate Advantage program encourages sales and purchase of U.S. EPA ENERGY STAR® (ENERGY STAR) qualified homes in conjunction with the Northwest Energy Efficiency Manufactured Home Project (NEEM). This evaluation study was designed with the following objectives:

- Verify the energy impacts attributable to the 2015 Rebate Advantage program
- Provide credible and reliable impact estimates and ex-post realization rates attributed to the Rebate Advantage program
- Evaluate program design including program mission, logic, and use of industry best practices
- Evaluate program implementation including quality control, operational practice, organizational structure, and outreach
- Evaluate program administration including program oversight, staffing, management, training, documentation, and reporting
- Evaluate customer participation, barriers, marketing, and satisfaction
- Report observations on program delivery, project documentation, and program processes; and provide recommendations to enhance the effectiveness of future ex-ante savings analysis, accurate and transparent reporting of program savings, and overall program delivery.

The approach to program evaluation began with a review of the tracking database and interview with the Program Specialist to determine how savings are claimed and what issues the program team might want to explore. Program educational and marketing materials were collected and reviewed. Seventeen applications were randomly sampled for detailed desk review of project documentation and comparison to the Regional Technical Forum (RTF) manufactured home weatherization workbook, and two dealer sites were selected for site visit and live interviews. In addition, program staff and the NEEM Manager were interviewed as part of a process evaluation for this program, documented in the process evaluation report.

NEEM reported a new push for modular construction of manufactured homes, driven by trends in home loan markets. There are 9 manufactured home plants in the Pacific Northwest that produce approximately 4,000 homes per year. The number of newly manufactured homes in the Northwest has increased substantially in the last five years – from 1,800 in 2011, to 2,800 in 2015 and to an expected 4,000 in 2016. Some new home sales are happening via the Internet, bypassing the dealers, and NEEM is looking to help utilities identify such new home sales in their service territory.

All participating dealers actively promote ENERGY STAR over standard efficiency to home-buying customers by touting utility bill savings, higher quality construction and a better living environment. Twenty-five percent of dealers said that "all" of their customers had prior knowledge of ENERGY STAR, 25 percent "half", 38 percent "few" and 13 percent said "none."

Dealers report that 79 percent of homes sold are manufactured (not stick-built) - with 84 percent of manufactured homes being ENERGY STAR and 87% sold in Idaho receiving an Idaho Power incentive. ENERGY STAR is the only type of home sold for 75 percent of dealers. Manufactured home dealers offer an average of 3.6 model home types ranging from 400 to 4,000 square feet in size.

The level of satisfaction with the program among participating manufactured home dealers is exceptionally high. Volume and complexity of paperwork scored 9.5, and the process of obtaining ENERGY STAR compliance forms and the courteousness and professionalism of Idaho Power staff both scored 9.8 on a 10-point scale.

The impact evaluation found that submitted applications were accurately assigned ex-ante unit energy savings values according to assigned equipment type, cooling zone, and heating zone codes in the tracking database, but the methods for translating actual manufactured home installed equipment and location to these codes were not transparent. Equipment type was determined to vary between ENERGY STAR with electric resistance heating, Eco-Rated with electric resistance heating, and ENERGY STAR with electric heat pump heating. This equipment therefore appeared to be accurately coded in the tracking database (with the exception of two Eco-Rated projects which were assigned 'regular' ENERGY STAR savings values). Accuracy of cooling zone and heating zone coding for each project could not be verified due to lack of information on how these codes were assigned. Overall, this impact evaluation found an ex-post savings realization rate that exceeds 100%.

The Rebate Advantage program had 58 participants in 2015, exceeding the program goals of 25 ENERGY STAR manufactured homes per year. Program marketing materials and administration were reviewed and found to be clear, simple and straight forward. No significant issues or problems were found or reported in this evaluation.

This study found that the program processes in place are effective, efficient, and result in a high degree of accuracy in program tracking. Two recommendations for consideration in future program implementation are provided:

1) The program should create and maintain a brief memo summarizing the approach to assigning ex-ante savings to manufactured homes using the RTF manufactured homes weatherization workbook. This memo should include workbook version utilized and clarify how submitted Rebate Advantage applications are assigned to location- and equipment-specific codes that dictate ex-ante unit savings claims.
2) The program could expand interviews to additional manufactured homes dealers in a future evaluation to further investigate the manufactured home 'industry standard' equipment or feature packages available as an alternative to ENERGY STAR certified features. Two dealers of an estimated ten dealers selling to the market (who also contributed the majority of sales to the program) attested that they sold only ENERGY STAR certified homes in site visits and interviews, but it is the experience of the program staff that market transformation has not been achieved in the Idaho Power territory. Further findings of manufactured homes' energy performance characteristics and sales via the Idaho Power program are addressed in the process evaluation report.

3 Impact Evaluation Introduction

3.1 Program Description

The Rebate Advantage residential incentive program for energy efficient manufactured homes was launched in 2003, and serves a market of roughly 10 manufactured home dealers in the Idaho Power service territory. Homes meet U.S. EPA ENERGY STAR® or Eco-Rated/ENERGY STAR® co-branded efficiency requirements as set and verified by the Northwest Energy Efficiency Manufactured Home Project (NEEM). Customers purchasing qualifying homes are eligible for $1,000 per home, while dealers receive $200 per qualified home sold.

3.2 Ex-Ante Savings

The 2015 program had a sales goal of 25 homes; 58 home sales were submitted to the program. Deemed annual kWh savings reported in the RTF Manufactured Home Weatherization workbook, v.3.1[1], are applied to each project according to energy efficient rating category, electric heating equipment type installed, and climate represented by heating and cooling zones. A summary of the total ex-ante savings claimed by the Rebate Advantage program in 2015 is provided in Table 3-1.

Table 3-1 Rebate Advantage Program Ex-Ante kWh Savings

Rating	Equipment Type	Climate	Annual kWh	Project Count
ENERGY STAR	Heat Pump	HZ 2 CZ 1	4,346	1
		HZ 2 CZ2	4,390	1
		HZ 3 CZ 3	5,516	1
	Electric Forced-Air Furnace	HZ 1	140,920	26
		HZ 2	143,787	21
		HZ 3	48,342	6
Eco-Rated	Electric Forced-Air Furnace	HZ 1	11,382	2
Grand Total			**358,683**	**58**

3.3 Evaluation Approach

The impact evaluation was intended to verify correct use of the RTF deemed savings values to claim energy savings for the Rebate Advantage program, verify overall program energy savings and savings realization, and to explore opportunities to enhance the effectiveness of ex-ante savings analysis and reporting of program savings. Leidos' approach to the evaluation included:

- Interview the Idaho Power Program Specialist on application processes and program objectives
- Review of the Rebate Advantage project database and project documentation

[1] Regional Technical Forum Manufactured Home Weatherization Measure. Available at https://rtf.nwcouncil.org/measure/manufactured-home-electric-resistance-heat?id=151

- Review of prior program achievements and assumptions in the Idaho Power Demand Side Management Annual Report
- Verify correct application of RTF unit savings values given reported site and home characteristics for a sample of 17 homes
- Visit two manufactured home dealers to verify certified ENERGY STAR and/or Eco-Rated home characteristics in building stock

4 Impact Evaluation Methodology

The interview with the Rebate Advantage Program Specialist affirmed that the process of applying deemed electric heating savings values to each project by rating type, heating equipment, and heating/cooling zones is straightforward.

The sample of 17 homes for analysis was derived by multiplying each project's claimed kWh value by a random value, sorting the resulting values, and selecting the top 17 projects out of the list, with 2 projects selected for backup. The sample represents over 47% of the claimed program energy savings. This oversampling approach was expected to meet 90% confidence/10% precision criteria.

Finally, the top two manufactured home dealers contributing to eligible sales in the program were selected for on-site interviews and inspection of stock characteristics. These two dealers contributed roughly 64% of sales by volume and 62% of energy savings for the program. The interview was designed to affirm heating, cooling, and energy efficient measures and features in the home, which were then verified with a walk through inspection of examples of on-site housing stock.

5 Analysis and Verified Savings

5.1 Tracking System Review

The project data entered into the tracking database included numerically coded heating equipment/rating type, heating and cooling zones along with buyer name and contact information, dealer name and contact information, and manufacturer details. The deemed savings value and incremental costs from the RTF workbook are also recorded along with the incentive payment details.

The transfer of data from the application forms to the tracking database was found to be accurate and complete. Energy efficient measure data collected in the database are limited to heating equipment type only, which is converted to a numeric code of 1, 2, or 3. 1 and 2 types refer to electric forced air furnace and type 3 refers to electric heat pump. Accuracy of these code assignments to project characteristics was not evaluated due to lack of information to explain how these were "mapped".

5.2 Desk Review of Projects

Review of the Rebate Advantage database and project documentation determined that each project is documented with an application form, ENERGY STAR certificate of compliance, and a purchase agreement. The application form captures dealer and buyer information and signatures. The certificate of compliance summarizes qualifying efficiency measures including heat type. Every approved project receives the same incentive regardless of savings claimed or rating certification.

For the sampled projects, Leidos determined that selection and application of unit savings values from the version 3.1 RTF weatherization workbook for manufactured homes was accurate. In two of four homes in the sample with "Eco-Rated" certification, the slightly lower unit savings for ENERGY STAR certification with same equipment and heating zone were claimed, as shown in Table 5-1.

Table 5-1. Ex-Ante and Ex-Post Unit kWh Savings by Project and Rating

Rating/Certification	Ex-Ante Unit kWh	Ex-Post Unit kWh
Eco-Rated Project ID		
842	*5420*	*5691*
873	*5420*	*5691*
882	5691	5691
894	6847	6847
ENERGY STAR Project ID		
841	8057	8057
852	5420	5420
859	5420	5420
862	5420	5420
863	8057	8057
868	6847	6847
874	5420	5420
877	5516	5516
881	8057	8057
890	5420	5420
891	5420	5420
893	6847	6847
895	6847	6847

Details provided in the application and purchase agreement for each project were used to verify the project ID, buyer name, and heating equipment type were accurately recorded in the database along with the correct unit savings for the site and home characteristics. Heating and cooling zones assigned to each project may be determined by zip code or address lookups, but the assignment methodology could not be verified in the RTF workbook or in the supplements to the Idaho Power Demand Side Management Annual Reports on the program website. While three coded descriptors for assigning project savings are recorded—equipment type, heating zone, and cooling zone—there appear to be four distinguishing project characteristics determining unit savings assignment from the RTF workbook: Eco-Rated/ENERGY STAR co-branded or ENERGY STAR certified, equipment type, heating zone, and cooling zone.

Table 5-2 below provides detail on the overall sample realization rate, which as previously stated reflected lower savings assignments in the database for projects 842 and 873 than the RTF workbook values for similar Eco-Rated home characteristics. The overall realization rate exceeded 100% for the sample.

Table 5-2. Sample Project Savings Verification and Realization

Strata	Project ID	Ex-Ante Savings	Ex-Post Savings	Realization Rate
RA Homes	841	8,057	8,057	1.000
RA Homes	842	5,420	5,691	1.050
RA Homes	852	5,420	5,420	1.000
RA Homes	859	5,420	5,420	1.000
RA Homes	862	5,420	5,420	1.000
RA Homes	863	8,057	8,057	1.000
RA Homes	868	6,847	6,847	1.000
RA Homes	873	5,420	5,691	1.050
RA Homes	874	5,420	5,420	1.000
RA Homes	877	5,516	5,516	1.000
RA Homes	881	8,057	8,057	1.000
RA Homes	882	5,691	5,691	1.000
RA Homes	890	5,420	5,420	1.000
RA Homes	891	5,420	5,420	1.000
RA Homes	893	6,847	6,847	1.000
RA Homes	894	6,847	6,847	1.000
RA Homes	895	6,847	6,847	1.000
Total	**17**	**106,126**	**106,668**	**1.0051**

Applying the sample results to the broader program population resulted in excellent energy savings realization within the 90% confidence/10% precision statistical bounds of the evaluation, shown in Table 5-3.

Table 5-3. Rebate Advantage Program Verified Results for 2015 Program Year

Program	Ex-Ante Gross kWh	Ex-Post Gross kWh	RR
Rebate Advantage Program	226,013	227,167	1.01
Track total	**226,013**	**227,167**	**1.01**
Relative Precision at 90% Confidence	**0.4%**		

5.3 Manufacturer Visits

Both manufacturers visited sold only ENERGY STAR minimum or better homes, certified by the Northwest Energy Efficiency Manufactured Housing Program (NEEM). The ENERGY STAR certified homes feature the following energy efficient measures:

- Floors – R-33 insulation levels
- Walls – R-21 2” x 6” framing to accommodate thicker wall batt insulation
- Ceiling – R-40 blown-in insulation
- Windows – U-0.35 or better insulating performance
- Heating – Electric resistance heating (electric heat pump is also an option)

Other features include an ENERGY STAR dishwasher option, high efficiency water heater, and programmable thermostat. An "Eco-rated" option is available which features additional energy and water-saving as well as environmentally friendly measures.

6 Impact Evaluation Conclusions and Recommendations

The Rebate Advantage impact evaluation found that the program employs appropriate energy savings estimates for certified manufactured homes and accurately records project information necessary to claim those savings. Our evaluation determined a realization rate exceeding 100% with excellent precision with 90% confidence.

The program relies on the RTF v3.1 Manufactured Home Weatherization workbook, published in 2012, for claiming energy savings. An updated version of the workbook (v4.1), released in February 2016, is now available and should be reviewed for possible savings value changes.

A brief memo summarizing the RTF workbook version used, components within the workbook used, and how projects are assigned to cooling and heating zones would improve transparency in ex ante savings reporting.

The sample data suggest that Eco-Rated/ENERGY STAR co-branded homes can assume higher savings than the equivalent ENERGY STAR certified home. The program could consider applying a higher incentive rate to encourage more Eco-Rated manufactured homes in the market.

7 Process Evaluation Introduction and Overview

The program description and goals and methods of this evaluation are outlined in this section of the report.

7.1 Program Description

The Rebate Advantage residential incentive program promotes the purchase of ENERGY STAR manufactured homes in the Idaho Power Company service territory and educates buyers and retailers of manufactured homes about the benefits of owning energy-efficient models. First launched in 2003, the program serves Idaho Power customers in the market for a manufactured home by partnering with manufactured home dealers to increase the efficiency of manufactured homes available. There are currently ten dealers participating in the program.

Program qualifying homes meet U.S. EPA ENERGY STAR or Eco-Rated/ENERGY STAR co-branded efficiency requirements as set and verified by the Northwest Energy Efficiency Manufactured Home Project. The Northwest Energy Efficient Manufactured housing program establishes Quality Control/Quality Assurance (QA/QC) and energy efficiency specifications for qualified homes. NEEM is a consortium of manufacturers and state energy offices in the Northwest. In addition to specifications and quality, NEEM tracks the production and on-site performance of ENERGY STAR qualified manufactured homes.

Manufactured home dealers in Idaho Power's Idaho and Oregon service area are made aware of the program through direct mailings and dealer interaction. The program supports dealerships by providing them with program specific brochures, banners, and applications. Customer Representatives (CRs) visited dealerships to distribute materials, promote the program, and answer salespersons' questions. The program offers two incentives; one to dealers ($200) and another to home-buying customers ($1000) who purchase ENERGY STAR certified manufactured homes in Idaho Powers' service territory. During 2015, Idaho Power paid 58 incentives on new manufactured homes, which accounted for 358,683 annual kWh savings.

7.2 Goals of the Evaluation

The key objectives of the process evaluation include:

- Evaluate program design including program mission, logic, and use of industry best practices
- Evaluate program implementation including quality control, operational practice, organizational structure, and outreach
- Evaluate program administration including program oversight, staffing, management, training, documentation, and reporting
- Evaluate customer participation, barriers, marketing, and satisfaction
- Report findings and observations and provide recommendations to enhance program effectiveness

8 Process Evaluation Methodologies

The process evaluation findings are based on:

- Review of previous evaluations
- Program staff interviews
- NEEM Manager interview
- Program participating manufactured home dealer interviews
- Process findings coming out of the data reviews, desk reviews and site visits
- A review of the program logic model
- A review of program educational and marketing materials

9 Process Evaluation Findings

This section details the results of the process evaluation from:

- Program staff interviews of Program Specialist and Marketing Specialists
- Program process findings from engineering desk reviews and on-site visits of dealership model homes
- Review of program materials, administration and logic
- Recommendations from previous evaluation(s)
- Interview of NEEM manager

9.1 Program Staff Interviews

Interviews were conducted with the Program Specialist and Marketing Specialist to get an overview of program operations and an orientation to program activities. The Rebate Advantage program had 58 participants in 2015, exceeding the program goals of 25 ENERGY STAR manufactured homes per year. Marketing efforts consist of:

1) Program brochures, banners, and applications, (provided by customer representatives visiting dealerships to distribute these materials, promote the program, and answer salespersons' questions).;
2) Bill inserts, that co-marketed Rebate Advantage with Home Energy House-Call.
3) Letter to dealers to update and remind of the program.
4) Facebook ads.

9.2 Process Findings from Engineering Desk Reviews and Site Visits

Applicants to the Rebate Advantage program submit an application form capturing dealer and buyer information and signatures, an ENERGY STAR certificate of compliance, and a purchase agreement for the manufactured home. The applications are processed and savings are claimed by assigning each project an equipment type, cooling zone, heating zone, and applying a deemed energy savings value per home as provided in the Regional Technical Forum's Manufactured Home Weatherization workbook (version 3.1). Only electric heating savings are claimed for the program. Each project receives the same incentive regardless of savings claimed (which vary according to whether the home is ENERGY STAR certified or co-branded with an Eco-Rating, as well as by heating equipment type and cooling/heating zones). The application process and incentive process appear straightforward and effective.

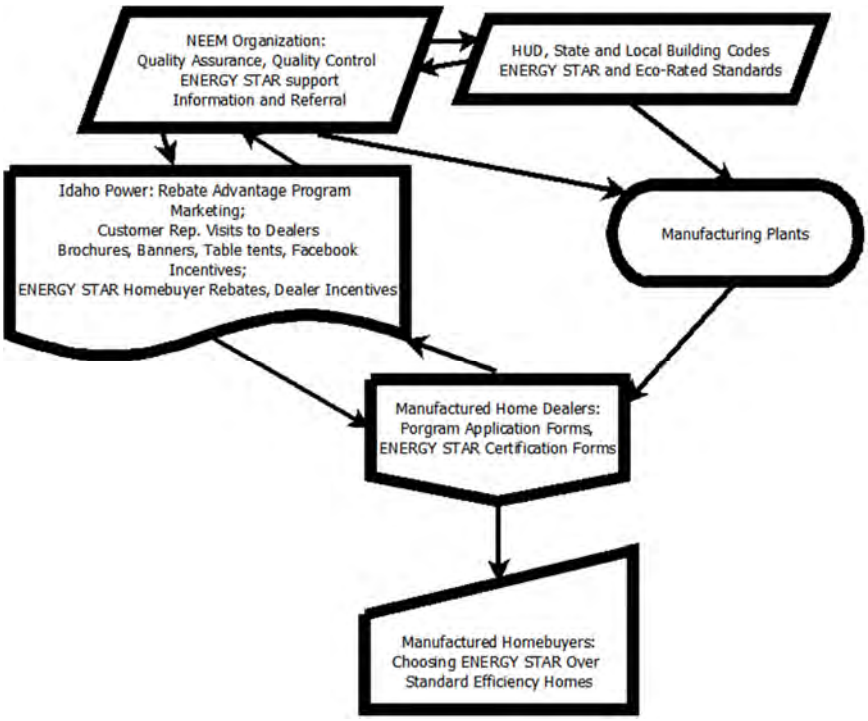
No visits to manufactured homes purchased with assistance from the program were conducted.

9.3 Process Findings from On-site Inspections of Dealership Model Homes

On-site inspections were performed of model homes at the two manufactured home dealerships that were most active in the Rebate Advantage program. Three model home types were audited and found to be ENERGY STAR compliant, up to Eco-Rated standards and otherwise consistent with process evaluation findings. The two dealers visited in fact sell only ENERGY STAR-certified manufactured homes. This finding raises a point for further inquiry in future evaluations: to what extent has ENERGY STAR certification and associated features penetrated the manufactured housing market in the Idaho Power territory?

9.4 Program Logic Model

The Program Logic Model for the program is shown below.



9.5 Recommendations from Previous (2010) Evaluation

In 2009 (during housing and banking crises) one-third of manufactured home dealerships closed-down, and the 2009 program goal of 70 ENERGY STAR homes was not reached. Idaho Power responded with creative marketing strategies. Customers were reached via company newsletters and dealerships were visited every quarter. Prior to 2009, the Rebate Advantage program was limited to "point of purchase" marketing.[2]

9.6 Materials Review

Program marketing materials and administration (including bill inserts and program application forms) were reviewed and found to be clear, simple and straight forward in marketing and administering the program process. No significant issues or problems were found or reported in this evaluation.

[2] 2010 Idaho Power DSM Report.

9.7 Northwest Energy Efficient Manufactured Housing Program (NEEM) Manager Interview Findings

Background on NEEM

The NEEM program and managers support the Idaho Power Rebate Advantage program indirectly in several ways. The NEEM's manager performs; database maintenance, in-plant inspections, customer dispute resolution, specification development and maintenance, energy savings modeling, and utility outreach and marketing. NEEMs mission is to be the regional manufactured housing collaborative to create a level playing field that brings energy efficient manufactured housing to the marketplace. NEEM provides third party specification development and enforcement and works with regional utilities (such as Idaho Power) to develop support for manufactured housing. Currently, NEEM does not have an active research agenda with the US DOE, but has in the past when new technology specifications are under development. NEEM supports BA-PIRC[3] to fund its work with builders to develop a new generation of manufactured homes.

Codes and Standards for Manufactured Homes

The HUD building code, as it pertained to ENERGY STAR manufactured homes hasn't changed since 1994. But there is word that the HUD code is going to update soon. NEEM has reportedly been corresponding with the EPA, to ensure that new ENERGY STAR specifications are meaningful and realistic given technology changes since 1994. NEEM collects industry data from regional manufacturers and aggregates it to protect their trade secrets. NEEA (Northwest Energy Efficiency Alliance) uses this industry data to inform energy codes and standards. NEEM also monitors state and local building codes in the northwest.

For QA/QC, NEEM performs quarterly plant inspections by sending QC inspectors to look at each house on assembly lines for potential individual defects. NEEM also performs QC of the construction process itself to ensure manufacturers and other mechanisms reliably produce high-quality manufactured homes, by ensuring they have clear job specifications and effective training programs.

In addition to new HUD building codes, possibly forthcoming, other change is afoot. There is reportedly a new push for modular[4] construction, driven by finance companies[5] because site built homes enjoy favorable treatment among bankers and lenders. This is causing the manufactured home industry to build modular versions of manufactured home that lenders will treat as site-built.

[3] Building America Partnership for Improved Residential Construction (BA-PIRC) was formally known as Building America Industrial Housing Partnership (BAIHP). UCF (Univ. of Central FL) functioned as research team leader and developed promising technologies (e.g. ductless heat pumps, advanced building assembly).

[4] "Modular" is a factory built home constructed to meet the local 1 and 2 home local construction code standards. Within modular there are two levels of designation. The "full mod" and "hudgular." The hudgular is manufactured to meet 1-2 local building code and stays on the steel chasse (trailer carriage). A true "mod" removes chasse home and places it atop a full stem-wall foundation. Modular manufactured homes may also be stacked side-by-side and atop one another into multi-family structures.

[5] Appraisers generally ding manufactured homes, by assigning a lower rating of quality construction than they do for stick built homes, simply based on perception.

ENERGY STAR Manufactured Home Market Size and Potential

The NEEM manager said that there are 9 manufactured home plants in the Pacific Northwest that produce approximately 4,000 homes per year. Idaho is the location for three of these plants producing an estimated 1,000 manufactured homes per year (an estimated 10% of all new Idaho homes per year). Fifty-five percent of regional manufactured homes are ENERGY STAR (ES), with possibly an even higher percent in Idaho, with its relatively colder weather. According to the NEEM manager, the number of newly manufactured homes in the Northwest has increased substantially in the last five years – from 1,800 in 2011, to 2,800 in 2015 and to an expected 4,000 in 2016.

Marketing of ENERGY STAR Manufactured Homes

To market ENERGY STAR manufactured homes, NEEM does drop-ins on manufactured home dealers and joins utility representatives and energy program implementation contractors when they visit dealers. NEEM also participates in state industry housing associations, such as the NW Housing Association and Oregon Manufactured Housing Association and writes articles for their newsletters. NEEM has relationships with utilities to assist in energy program design, marketing strategies and trade ally collaborations. NEEM hosts brown-bags and webinars that utilities participate in. Some new home sales are happening via the Internet, bypassing the dealers, and NEEM is looking to help utilities identify such new home sales in their service territory.

The NEEM manager stated that the best way to market ENERGY STAR manufactured homes to homebuyers is as an "up-sell" that improves comfort, quality of home construction and energy efficiency. The NEEM manager rated the relative importance of various motivational drivers for manufactured homebuyers, with results shown in Table 9-1 below. Internal aesthetics was rated highest (9) on a 10-point scale – followed by price (8), home size (8), floorplan (7), and external aesthetic (7). Energy efficiency, the ENERGY STAR brand and HVAC and appliances choices were all rated a 6.

Table 9-1. NEEM Reported Importance Level of Various Factors for Homebuyers

Importance Level of Various Factors for Home-buyers	Satisfaction Score (1-10 scale)
Internal Aesthetic	9.0
Price	8.8
Size Sqaure Footage	8.4
Layout Floorplan	9.1
External Aesthetic	8.6
Energy Efficiency	8.9
ES Branding Label	7.8
HVAC & Appliances	7.7
Home Warranty	7.8
Property Location	7.6

Some homebuyers choose non-ENERGY STAR homes because of lower first cost or if a dealer employs a selling strategy to convince the customer that their cheaper homes are just-as good as ENERGY STAR. Some manufactured homebuyers purchase homes for tenants, farmworkers or short-term occupants, where "cheap" first-cost is top of mind. However,

well-educated consumers (via well-known programs such as "Super Good Cents")[6] and reputable utility endorsements have reportedly increased ENERGY STAR market share.

Characteristics of ENERGY STAR Manufactured Homes

The NEEM manager was asked what distinguishes ENERGY STAR manufactured homes from those not rated ENERGY STAR. ENERGY STAR homes have higher levels of insulation and other accompanying features such as; better counter tops, carpets, doors and windows. ENERGY STAR homes are quieter due to added insulation and HVAC exhaust fans. ENERGY STAR homes always include an ENERGY STAR dishwasher and most include an ENERGY STAR refrigerator and CFL/LED lighting packages. Some manufactures have reportedly begun to look at making ENERGY STAR manufactured homes "solar-ready" with roof-mounts that are PV racking system ready.

Utility Sponsored ENERGY STAR Manufactured Home Programs of the Northwest Region

Approximately 70 utilities (about half of which are irrigation districts) currently offer incentives for ENERGY STAR manufactured homes in the Pacific Northwest (NW) region. No single utility reportedly sees many manufactured homes sited in their service territory. This may lead some to think program participation is low, but in fact the market is simply small. Despite a relatively small market for manufactured homes, NEEM estimated a 80% slippage rate (between ENERGY STAR manufactured homes sold in the NW region vs. utility incentive claimed) mainly because not all utilities in the region have a program to incentivize ENERGY STAR homes. NEEM also attributed some of this slippage to the home buying process, where homebuyers are overwhelmed with much paperwork to sign when buying a home, and buyers forget about or mistakenly think rebate application is already taken care of. For the NW region, NEEM estimated that of 4,000 manufactured homes were sold in 2016, 2000 were ENERGY STAR and only 400 received a utility rebate. The slippage rate is reportedly much less than 80% in Idaho Power's service territory because of the long running Rebate Advantage program.

9.8 Program Participating Manufactured Home Dealers

Eight out of the ten manufactured home dealers who are listed as program participants were interviewed. Thirty-eight percent of Rebate Advantage participating manufactured home dealers interviewed were sales consultants or associates. Twenty-five percent were sales managers. The remaining three respondents were general manager, corporate manager and owner.

[6] "Super Good Cents" Program: Pacific Northwest area program first created in 1988 provided incentives for the purchase of highly efficient manufactured homes with upstream incentives added in 1992. Please see: http://www.workingre.com/wp-content/uploads/2013/08/Mobilizing-Energy-Efficiency-in-Manufactured-Housing.pdf

Table 9-2. Job Title of Manufactured Home Dealers

Job Title	Percent of Dealers (n=8)
Sales Consultant or Associate	38%
Sales Manager	25%
General Manager	13%
Corporate Manager	13%
Owner	13%

Thirty-eight percent of dealers described their job role as primarily sales, while 25 percent characterize their role as management (Table 9-2). The remaining respondents self-described as jack-of-all trade generalist who assume multiple roles at work.

Table 9-3. Job Role of Manufactured Home Dealers

Job Role	Percent of Dealers (n=8)
Sales	38%
Everything	25%
Manage dealership	25%
Contracting, sales, consulting, software modeling of home design/layout, site work and remoding	13%

Participants were asked how they first heard about the Rebate Advantage Program. Thirty-eight percent indicate being contacted by Idaho Power directly, 25 percent via coworkers, 25 percent via company participation predating their employment and 12 percent did not know (See Table 9-4 below).

Table 9-4. How Manufactured Home Dealer First Heard About Program

How Dealers First Heard of Program	Percent of Dealers (n=8)
IPC Contacted Dealer	38%
Coworker	25%
Company already participating before respondent took job	25%
Don't Know	13%

Manufactured home dealers participating in the Idaho Power Rebate Advantage program cited six reasons for participating in the program. Seventy-six percent of dealers report participating so that their customers obtain the $1000 rebate for purchasing ENERGY STAR homes. Half (50%) were motivated to participate because ENERGY STAR homes are reportedly better built and of higher quality than standard efficiency ones. Thirty-eight percent said they were motivated by the increase in sales and marketing attributable to the program, and another 38% only offer ENERGY STAR homes. One dealer (13%) indicated participation to obtain the $200 dealer sales incentive and another was motivated by the ease of participation (See Table 9-5 below).

Table 9-5. Why Manufactured Home Dealers Participate

Reason for Dealer Participation	Percent of Dealers (n=8)
$1000 Customer Rebate	75%
Better home for customer	50%
Increases sales and marketing	38%
Only offer ES homes	38%
$200 Sales Incentive	13%
Easy program	13%

Dealers were asked if their manufactured home-buying customers know about ENERGY STAR homes prior to discussing this topic. Twenty-five percent of dealers said that "all" of their customers had prior knowledge of ENERGY STAR, 38 percent "few" and 13 percent said "none" (Table 9-6).

Table 9-6. Homebuyer Prior Knowledge of ENERGY STAR

Home-buyer Prior Knowledge of Energy Star	Percent of Dealers (n=8)
All	25%
Half	25%
Few	38%
None	13%

All (100%) program participating manufactured homes dealers interviewed said that they promote ENERGY STAR homes to prospective home-buying customers. Dealers stated 16 different selling points in Table 9-7, are employed to persuade home-buying customers to choose ENERGY STAR over standard efficiency homes. Most selling points fall under three general categories; utility bill savings, higher quality home, or better living environment.

Table 9-7. Selling Points Used to Promote ENERGY STAR to Homebuyers

How Dealers Promote Energy Star Manufactured Homes to Customers	Percent of Dealers (n=8)
ES (Energy Star) homes have better windows	25%
Don't stock non ES homes	25%
ES homes have good payback via lower utility bills	25%
ES homes have quick payback because of program rebate	25%
ES homes are cooler in the summer	25%
ES homes have higher insulation levels	13%
Tell customer ES is a better built home	13%
Benefits of higher R-value	13%
ES Homes include better appliances than standard efficiency homes	13%
ES Homes are quiter with added insulation	13%
Teach customer about construction charateristics of ES homes	13%
Lower utility bills	13%
ES homes are warm/cozy in winter	13%
Energy Efficiency of ES homes is a selling factor	13%
ES homes made are manufactured nearby in Oregon	13%
ES homes have a tighter air seal of thermal envelope	13%

Seventy-five percent of dealers said they use the Rebate Advantage brochure provided to them by Idaho Power to promote the program to their customers. The other twenty-five percent do not, reportedly because they are out of brochures. Among dealers who distribute the brochure, all but two said it was effective. One dealer was simply not sure about its effectiveness and the other felt that people just throw away brochures without reading them.

Only one dealer expressed a way to improve the brochure, by simplifying the technical nature in how it explains insulation's role in saving energy. One dealer expressed interest in obtaining a new program promoting banner (2"x6" vinyl) from Idaho Power to display on the exterior of dealership. Though not prompted by a question about it, two (25%) dealers mentioned that the program table tents provided by Idaho Power were useful in promoting ENERGY STAR homes.

All dealers reported very infrequent interactions with Idaho Power regarding the program, and only for simple requests such as to obtain program application forms when they run out or to process completed forms.

Seven-of-eight dealers provided an estimate for the number of homes per year that they sell in the state of Idaho (Table 9-8). The responses ranged from as few as 12 to as many as 60 homes per year, with an average of 29.9 homes sold across the seven dealers responding. On average, 79% of the homes sold by the participating dealers are manufactured (as opposed to modular or "stick-built"), with responses ranging from 20-100%. Among manufactured homes sold, an average of 84% are ENERGY STAR certified (18-100% range among dealers). For these ENERGY STAR homes sold in Idaho, 87% received the Idaho Power rebate. This is much higher than what the NEEM manager estimated for the Northwest region. This is likely attributable to the long running Rebate Advantage program in Idaho Power's service territory. New Idaho ENERGY STAR manufactured homes not receiving rebates were not eligible for the program because they were either not located in Idaho Power service territory or did not have an all-electric home.

Table 9-8. Manufactured Home Dealer Market Characteristics

Dealer Market Characteristic	Average	Range	n
Homes per Year Sold in Idaho	29.9	22-60	7
Percent Manufactured (not Stick-built)	79%	20%-100%	7
Percent Manufactured homes that are ES	84%	18%-100%	8
Percent of Manufactured ES homes in Idaho that received Rebate Advantage program rebate	87%	28%-100%	7

Dealers were asked how many model home types they offer customers. On average, dealers report 19.7 model home type offerings. The range of model home types varied widely, from 2 to 100. This question was interpreted differently with some dealers. On the low end of the range, a dealer offers two model types, a single and double wide manufactured home. On the high end, a dealer reportedly offers customers 100 model types because of a wide array of floor plan options and variants. Anecdotally, some dealers mentioned a triple wide and one even mentioned a quadruple wide model option. If the high-end response of 100 is treated as an outlier and as such is removed from consideration (because it is a count of floor plans not model types), then the average number of model home types is 3.6 with a range of 2 to 6.

The smallest manufactured home model type offered by any dealer was reportedly 400 square feet and the largest 4,000 square feet. On average, for all dealer offerings, the smallest model home type is 813 square feet and largest 2,925 square feet.

The level of satisfaction with the program among participating manufactured home dealers is exceptionally high. Three of four program aspects scored at 9.5 and above on a 10-point scale (Table 9-9). Volume and complexity of paperwork scored 9.5 and the process of obtain ENERGY STAR compliance forms and the courteousness and professionalism of Idaho Power staff both scored 9.8 on a 10-point scale. Phrases such as, “they are awesome,” “they are great,” and “great excellent people” were used to describe Idaho Power staff.

Timeliness of rebate payments also received a high score of 8.6. This score would have been near a perfect 10, had it not been for individual situations. In one case, the dealer had trouble finding the customer to obtain a signature on the rebate application and in another isolated case it took 6 weeks to process rebate payment. If the rating score associated with these two dealers is excluded from the average of 8.6, average score rises to 9.5. It is unusual in program evaluation research to see satisfaction scores quite this high.

Table 9-9. Level of Satisfaction with Program among Dealers

Level of Satisfaction with Pogram Aspects for Dealers	Satisfaction Score (1-10 scale, n=8)
Process of Obtaining Energy Star Compliance Form	9.8
Courteousness and Professionalism of IPC Staff	9.8
Volume and Complexity of Paperwork	9.5
Timeliness of Rebate Payment	8.6

Manufactured home dealers were asked what makes ENERGY STAR homes different than standard efficiency homes. Seventy-five percent said that ENERGY STAR is the only type of home that they sell and 25 percent noted that ENERGY STAR homes have higher levels of insulation and weather-sealing. One dealer (13%) mentioned ENERGY STAR benefits as lowering utility bills, factory certified, an up-sell in some instances, and only an extra $100 to insulate and weather-seal to higher standard.

Table 9-10. What Makes ENERGY STAR Manufactured Homes Different from Standard Efficiency Homes

Difference between Energy Star and Standard Efficiency	Percent of Dealers (n=8)
All our manufactured homes are ES. ES is only type of home we sell.	75%
ES homes have higher insulation and weathersealing	25%
ES certification of each home from factory	13%
One brand makes ES standard and another brand makes ES an optional upsell	13%
Lower power bills with ES homes	13%
It only costs an extra $100 to bring insulation and weathersealing levels up from standard efficiency levels to ES levels	13%

Dealers were asked what could be done to increase the number of their customers who choose ENERGY STAR Manufactured homes over those of standard efficiency. Half could not think of anything and 25 percent said that ENERGY STAR is already the standard option for homebuyers (Table 9-11). One dealer suggested reducing the cost of ENERGY STAR certification and another suggested not giving customers any choice but ENERGY STAR.

Table 9-11. What Would Increase Customer Choice of ENERGY STAR

What would Increase Customer Choice for ES Homes	Percent of Dealers (n=8)
Don't Know	50%
ES is standard option already	25%
Bring down cost of ES certification	13%
Don't give customers any choice but to buy higher quality ES homes	13%

Dealers said that 65 percent of their customers are persuaded to buy ENERGY STAR manufactured homes by the $1,000 rebate. Six dealers estimated this to be 20-100% of their customers.

Dealers were asked to list the factors that drive their customers to choose ENERGY STAR over standard efficiency homes. Half of dealers sited energy efficiency and better construction features and quality. A quarter (25%) of dealers mentioned; greater insulation, value-added and utility bill savings. One dealer (13%) suggested that the ENERGY STAR rebate and greater levels of comfort associated with an energy efficient home as motivational drivers for their home buying customers.

Table 9-12. Factors that Drive Customers to Purchase ENERGY STAR Homes

Factors that Drive Customer to Purchase ES homes	Percent of Dealers (n=8)
Energy efficiency and savings	50%
Better construction features (e.g. 2x6 walls) or quality	50%
Greater insulation levels	25%
Bang-for-the-buck or value-added	25%
Utility bill savings	25%
ES rebate	13%
More comfort	13%

Eighty-eight percent of dealers said that the $200 dealer incentive, for selling as ENERGY STAR home, is adequate to cover the added cost of doing program paperwork. One dealer suggested the incentive be raised to $500.

Dealers were asked to rate the level of importance of 10 factors that play into decision-making for their home-buying customers. Floorplan and layout was most important at 9.1 on a 10-point scale, followed by internal aesthetic (9.0), energy efficiency (8.9), price (8.8), external aesthetic (8.6), and square-footage (8.4). Of still significant but lesser importance were; home warranty (7.8), ENERGY STAR branding (7.8), HVAC & appliances (7.7) and (7.6) property location (Table 9-13).

Table 9-13. Importance Level of Various Factors for Homebuyers

Importance Level of Various Factors for Home-buyers	Satisfaction Score (1-10 scale)	n
Internal Aesthetic	9.0	7
Price	8.8	8
Size Sqaure Footage	8.4	7
Layout Floorplan	9.1	7
External Aesthetic	8.6	7
Energy Efficiency	8.9	8
ES Branding Label	7.8	8
HVAC & Appliances	7.7	7
Home Warranty	7.8	8
Property Location	7.6	5

Two dealers volunteered "lending and appraisal costs" as an important factor on the mind of homebuyers. One dealer mentioned several other factors in Table 9-14 below.

Table 9-14. Other Factors of Importance for Homebuyers

Other Factors Important to Manufactured Home-buyers	Percent of Dealers (n=8)
Don't Know	50%
Lending costs and appraisals	25%
Doors, trims, custom cabinetry, the drywall and custom painting	13%
Quality of construction	13%
Marketing skill and salesmanship	13%
Manufactured homes and modular IRC homes are both very air tight, it seems like ES threshold should be just as easy for both home types to meet.	13%

Dealers were asked what they like most about the Rebate Advantage Program. Half (50%) mentioned the rebate for their home-buying customers and one-quarter (25%) that ENERGY STAR homes give the homebuyer "value-added." The remaining most-liked program aspects included Idaho Power endorsement, better-built homes, sales incentive, and simplicity of program and rewarding of homebuyers for choosing energy efficiency (Table 9-15).

Table 9-15. What Dealers Like Most about the Rebate Advantage Program

What Dealers Like Most about Program	Percent of Dealers (n=8)
$1000 rebate for my home-buying customers	50%
Program gives customer value-added ES homes	25%
IPC endoresment, which gives ES manuf. homes better reputation. This helps overcome old stereotype of manufactured homes being poorly made and inefficient.	13%
Sales team can make a little more money by selling ES homes	13%
ES homes are better homes for customers	13%
Program is simple to explain to customers	13%
Rewards customer for choicing ES	13%
Don't Know	13%

Dealers were asked what they like least about the Rebate Advantage Program and 75 percent said "nothing." Two other said the only issue they have is the sometimes-difficult nature of tracking down hard-to-reach customers to obtain their signature on the rebate form after the purchase of an ENERGY STAR manufactured home.

Last, dealers were asked for any final comments for Idaho Power. Two dealers (25%) want Idaho Power to offer a rebate program for stick-built homes and one other (13%) reiterated a desire to obtain more Rebate Advantage program brochures.

10 Process Recommendations

Given the Rebate Advantage program's current success, simplicity and very high levels of satisfaction, only three minor changes are recommended.

- Idaho Power Marketing Specialists should continue existing Facebook advertisements and research innovative ways to micro-target program marketing ads towards manufactured homebuyers who bypass dealers and purchase directly via the Internet
- Given the recent growth in manufactured home sales and the fact the Rebate Advantage program already exceeds its goal for 25 ENERGY STAR manufactured homes per year, this goal should be raised above 25
- Refresh supply of program brochures at participating dealerships

Appendix A. IPC Rebate Advantage Manufactured Home Dealer Questionnaire

Appendix B. IPC Rebate Advantage NEEM Questionnaire

Appendix A

Participating Manufactured Home Dealer Questionnaire

Introduction: Hello my name is Jeff Riggert calling on behalf of Idaho Power's Rebate Advantage Program. This is the program providing $1,000 rebates to your customers who purchase Energy Star manufactured home and also a $200 incentive to dealers such as yourself.

1) Are you familiar with this program? *If not, ask* who would be best to speak with.
2) We'd like to get your feedback on the program to find out how it is working for you and how it might be improved in the future. Is now a good time to talk? *If not, schedule a time that is convenient for dealer.*

Introduction

3) What is your job title?
4) What is your roll and responsibility at work?

Program Marketing

1) How did you first hear about the Rebate Advantage Program?
2) What factors drove your company's decision to participate in the program?
3) Do customers know about Energy Star homes or ask about them before you bring up the topic?
4) Is Energy Star something that you promote to customers looking to purchase a home?
    a. *If yes to Q4,* how do you market Energy Star Manufactured homes to your customers?
5) Do you distribute Idaho Power's brochure that describe the Rebate Advantage program directly to your home buying customers?
    a. How effective is the brochure?
    b. Is there anything that could be changed to improve the brochure?
6) How often do you interact with Idaho Power staff regarding the Rebate Advantage Program?
    a. What topics are discussed in these interactions?

Market Size and Potential

7) About how many single family homes per year do you sell in the state of Idaho?
8) What percentage of these homes are manufactured homes?
9) What percentage of these manufactured homes are certified as Energy Star?
10) What percentage of these Energy Star homes receive rebates via the Idaho Power Rebate Advantage Program?
11) How many model homes types (such as ranch-style vs. two-story) do you sell?
12) What is(are) the square footage of your model home type(s)?
13) What would you guess is the percentage of new homes being built in Idaho today that are manufactured homes vs. those constructed conventionally?
14) When it comes to new home construction, is the portion of manufactured homes increasing, decreasing or staying about the same when compared to 5 years ago?

Program Administration and Paperwork

15) On a scale of 1-10, with 1 being unreasonable and 10 being very reasonable, how would you rate the volume and complexity of the paperwork associated with the Rebate Advantage Program?
    a. What factors affected your rating?
16) On that same scale, how would you rate the process of obtaining the Energy Star compliance form for customer homes?
    a. What factors affected your rating?
17) On the 1-10 scale, how would you rate the timeliness of rebate payment?

a. What factors affected your rating?

18) On a scale of 1-10, with 1 being poor and 10 being excellent, how would you rate the courtesy and professionalism of Idaho Power staff?
    a. What factors affected your rating?

Energy Star Homes and Rebates

19) What is different about your Energy Star manufactured homes from the manufactured homes you sell that are not Energy Star compliant? *(probe for any building shell, HVAC, mechanical and appliance differences)*
20) What do you think would need to happen to increase the number of your customers that choose Energy Star over standard efficiency homes?
21) In your experience, what percentage of customers are persuaded to purchase an Energy Star manufactured home by the $1,000 rebate?
22) What other factors drive customers to purchase an Energy Star manufactured home?
23) Is the $200 sales bonus adequate to cover any additional costs associated with selling Energy Star homes and participating in the Idaho Power program?
    a. If not, what would be a more appropriate dollar amount for the sales bonus?

Customer Motivational Drivers

24) Now I would like to get your perspective on what motivates customers to purchase manufactured homes. Using a 1-10 scale, where 1 is Not at all important and 10 is Very important, how would you rate the importance of the following factors in customer decisions to purchase a manufactured home. Starting with…

- Price — Importance, 1-10 scale ____
- Property location — Importance, 1-10 scale ____
- Home Warranty — Importance, 1-10 scale ____
- Layout/floorplan — Importance, 1-10 scale ____
- Size/square footage — Importance, 1-10 scale ____
- Energy Efficiency — Importance, 1-10 scale ____
- The Energy Star Branding Label — Importance, 1-10 scale ____
- External aesthetic / curb appeal — Importance, 1-10 scale ____
- Internal aesthetic (fixtures, furnishings, treatments) — Importance, 1-10 scale ____
- HVAC and Appliances — Importance, 1-10 scale ____
- Other factors? Please specify_____ — Importance, 1-10 scale ____

Conclusion

25) What do you like most about the Rebate Advantage Program?
26) What do like least about this program?
27) Is there anything else that you would like to share or suggest regarding this program or Idaho Power?

Scheduling On-sites

For two most active dealers only, 1) United Family Homes - Kit Homebuilders West and 2) Jensen Homes of Nampa – Marlette model.

28) Soon you will be getting a call from <SEED Idaho> who is under contract to conduct on-site inspections of Energy Star manufactured homes to gather data on their actual structure. Are you the right person to work with to schedule the inspection? *If not,* who? *(Obtain other Contact Info.).*
29) What are the best times or days of the week to reach you/other dealer contact?

Thank you very much for your time and valuable feedback!

Idaho Power Company Rebate Advantage Program,

Northwest Energy Efficient Manufactured Housing Program (NEEM) Questionnaire

Introduction: Hello [NEEM Managers: Tom Hewes and/or Brady Peeks] my name is Jeff Riggert calling on behalf of Idaho Power's Rebate Advantage Program. This is the program providing $1,000 rebates to your customers who purchase Energy Star manufactured home and also a $200 incentive to dealers such as yourself.

1) Are you familiar with this program? *If not, explain further*
2) We'd like to get your feedback on the market and best practices as it related to manufactured homes in the northwest and beyond. Your feedback is key, invaluable and will be used to inform this year's evaluation of Idaho Power's program. Is now a good time to talk? *If not, schedule a time that is convenient for NEEM.*

If IPC contact requested, mention Gary Grayson (GGrayson@idahopower.com) and Becky Arte Howell.

NEEM Name	[NEEM Managers: Tom Hewes and/or Brady Peeks]
NEEM Address	
NEEM Phone	888.370.3277
NEEM E-mail	info@northwestenergyworks.com, tom@northwestenergyworks.com, brady@northwestenergyworks.com
Manufacturer Names	Kit Homebuilders West, Marlette, Champion, Fleetwood, Nashua,

Attempt #	Date	Time	Result

Introduction

3) What is your job title?
4) What is your roll and responsibility at work?
5) What is NEEMs role and mission?
6) Northwest Energy Works is a U.S. DOE Building America Partner. Can you describe what this means and what NEEMs role or interactions are with Northwest Energy Works?
7) Building America Partnership for Improved Residential Construction (BA-PIRC) was formally known as Building America Industrial Housing Partnership (BAIHP). What does NEEM do with this organization?

Codes and Standards

8) What is NEEMs role in setting Energy Star standards for manufactured homes? *(probe for role in setting QA/QC standards and specifications)*
9) Can you describe NEEMs role in conducting Quality Control and Quality Assurance (QA/QC) at the plant sight of manufactured home manufacturers?
10) How has this QA/QC impacted the energy performance of manufactured homes?
11) Aside from Energy Star, how do other building codes effect the performance of manufactured homes?
12) What do you think the future holds for manufactured homes in terms of codes and standards?

Market Size and Potential

13) About how many single family homes per year (both modular or "stick-built" and manufactured) are sold in the state of Idaho?
14) What percentage of these homes are manufactured homes?
15) What percentage manufactured homes are certified Energy Star?
16) When it comes to new home construction, is the portion of manufactured homes increasing, decreasing or staying about the same when compared to 5 years ago?

Program Marketing

17) What sort of interactions do you have with manufactured home manufacturers?
18) What kind of interactions do you have with manufactured home dealers?
19) What sort of interactions do you have with energy utilities like Idaho Power?
20) What are the best ways to market and promote Energy Star manufactured homes?
21) What factors drive manufactured home buyers to choose Energy Star?
22) What factors drive some manufactured home buyers to NOT choose Energy Star?

Customer Motivational Drivers

23) Now I would like to get your perspective on what motivates customers to purchase manufactured homes. Using a 1-10 scale, where 1 is Not at all important and 10 is Very important, how would you rate the importance of the following factors in customer decisions to purchase a manufactured home. Starting with…
    - Price — Importance, 1-10 scale ____
    - Property location — Importance, 1-10 scale ____
    - Home Warranty — Importance, 1-10 scale ____
    - Layout/floorplan — Importance, 1-10 scale ____
    - Size/square footage — Importance, 1-10 scale ____
    - Energy Efficiency — Importance, 1-10 scale ____

- The Energy Star Branding Label — Importance, 1-10 scale ____
- External aesthetic / curb appeal — Importance, 1-10 scale ____
- Internal aesthetic (fixtures, furnishings, treatments) — Importance, 1-10 scale ____
- HVAC and Appliances — Importance, 1-10 scale ____
- Other factors? Please specify_____ — Importance, 1-10 scale ____

Energy Star Homes

24) What is different about Energy Star manufactured homes from manufactured homes that are not Energy Star compliant? *(probe on; building shell, HVAC, mechanical, lighting, water heating, appliance, quality of construction materials differences, etc.)*
25) Do any manufactured homes include; photovoltaic arrays, fuel cells or other types of distributed energy generation?
26) What are the best ways to leverage trade ally relationships so as to advance Energy Star in the manufactured home marketplace?
27) Please describe the process, step-by-step, of obtaining Energy Star compliance forms and what is on the form?

Programs External to Idaho Power

28) What significant programs or activities are occurring in the Pacific Northwest?
29) What about outside of the Northwest, when it comes to Energy Star manufactured home programs?

Conclusion

30) What do you like most about Idaho Power's Rebate Advantage Program?
31) What do like least about this program?
32) Is there anything else that you would like to share or suggest regarding the Energy Star manufactured homes marketplace?

Thank you very much for your time and valuable feedback!

FINAL REPORT

Impact Evaluation of New Construction (Building Efficiency) program

December 22, 2016

Prepared for:

Idaho Power Company

Prepared by:

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Executive Summary

The Idaho Power Company's New Construction (Building Efficiency) program underwent evaluation of the energy impacts of supporting energy-efficient, non-residential new construction and major renovation projects finalized in 2015 in Idaho and Oregon. The impact evaluation study was designed with the following objectives:

- Verify the ex-ante energy savings attributable to the Building Efficiency projects
- Provide credible and reliable impact estimates and ex-post realization rates attributed to the Building Efficiency program
- Review program and application processes and provide recommendations to enhance the effectiveness of future ex-ante energy savings analysis and accurate and transparent reporting of program savings

The study approach began with an interview with the Program Engineer to determine how the program is marketed, savings are claimed, goals are set and achieved, and explore research questions of interest. Review of program collateral and tracking database contents followed. A random sample of 14 projects, tiered by magnitude of project kW and kWh savings and then screened for representation of each eligible measure in the sample, was selected for detailed desk review and independent calculation of project demand and energy savings using project data, a Technical Reference Manual published in 2014, and two documents titled "Overview Document per Measure" summarizing energy savings algorithms and assumptions for eligible measures used by the program. From the desk sample, five projects were selected for site visit and verification of installed measures and site-specific savings assumptions.

The study determined a high level of ex-post realization for program demand and energy savings, as well as high realization at the measure level. In general, project documentation was adequate for verifying most measure impacts, and project data are recorded and tracked with high accuracy. With energy savings more than doubling set program goals in 2015, program collateral and marketing methods seem to be successful.

Table 1. Results of the Building Efficiency Program Impact Evaluation by Measure Type

Measure Type	kWh			kW		
	Ex-Ante Gross	Ex-Post Gross	RR	Ex-Ante Gross	Ex-Post Gross	RR
Air-Conditioning	561,449	508,111	0.90	462.6	417.6	0.90
Appliances w/ Electric Water Heating	19,273	19,398	1.01	2.1	2.1	0.96
Building Shell	221,858	223,301	1.01	9.6	10.9	1.14
Controls	19,482,694	19,506,635	1.00	48.3	48.8	1.01
Lighting	2,788,153	2,402,896	0.86	488.0	519.1	1.06
Refrigeration	158,571	158,571	1.00	11.2	11.2	1.00
Total	**23,231,998**	**22,818,912**	**0.98**	**1,021.8**	**1,009.6**	**0.99**
Relative Precision at 90% Confidence	**0.2%**			**4.8%**		

Key recommendations resulting from this study include the following:

1. Review fundamental units of measure used to calculate incentives and energy savings, and consider opportunities to align those units where possible for improved clarity on the application and in verifying savings
2. Investigate whether the program should limit eligibility of variable speed drives on HVAC pumps and fans, lighting occupancy sensors, and/or energy management controls, where some of those measures or the operating conditions enabled by those measures are required by building energy code.
3. Review eligible energy management control strategies and energy savings assumptions relative to other control-based measures to ensure that the measure 'stacking' methodology employed to adjust for multiple measures' interactive effects fully avoids "double counting" savings enabled by the combination of the equipment and the controls. Further recommendations and findings from this impact evaluation are discussed in the following report.

1. Introduction

This report documents the results of an impact evaluation performed on Idaho Power Company's non-residential new construction incentive program, formerly known as Building Efficiency. This evaluation covers projects preliminary submitted in 2011 to 2015 and finalized in 2015. Eight-one (81) projects were finalized in 2015, contributing ex-ante savings of 23,232,017 kWh, or about 10% of Idaho Power Company's total portfolio savings.

1.1 Program Description

The Building Efficiency program enables customers to apply energy efficient design features and technologies in new construction or major renovation of commercial and industrial projects. The program offers a menu of measures and incentives covering lighting, HVAC, building shell, controls, appliances, and refrigeration end use options. Savings are fully deemed or semi-deemed (variable by building type) in a Technical Reference Manual (TRM) (v.1.7) prepared by ADM Associates, with baseline equipment defined by the applicable building energy code and 2009 International Energy Conservation Code, for projects submitted in 2014. Prior to 2014, ex ante savings for the program were derived following engineering calculations subject to a 2006 International Energy Conservation Code baseline.

Measures for rebate under the program include:

- Appliances (laundry machines, ENERGY STAR® commercial and under counter dishwashers)
- Building Envelope (reflective roof)
- Cooling (air conditioners, heat pumps, chillers, economizers, direct evaporative coolers and variable refrigeration flow systems)
- HVAC Controls (energy management control systems, Guest Room energy management systems with electric heat, and variable speed drives for electric heating, ventilation and air conditioning systems)
- Lighting (interior and exterior load reduction, daylight and occupancy sensor controls, exit signs)
- Refrigeration (floating head pressure control, floating suction pressure control, efficient condensers)

1.2 Ex-Ante Savings

The ex-ante energy and demand savings are presented for each measure type in the following table.

Table 2. Building Efficiency Project Ex-Ante Savings by Measure Type

Measure Type/End Use	Count of Measures	Gross kW Savings	Gross kWh Savings
Air-Conditioning	41	462.63	561,449
Appliances w/ Electric Water Heating	9	2.13	19,273
Building Shell	15	9.62	221,858
Controls	33	48.26	19,482,694
Lighting	130	488.01	2,788,153
Refrigeration	5	11.19	158,571
Grand Total	**233**	**1021.84**	**23,231,998**

1.3 Evaluation Approach

The impact evaluation was intended to verify correct use of the Idaho Technical Reference Manual to claim energy savings for the Building Efficiency program, verify overall program energy savings and savings realization, and to explore opportunities to enhance the effectiveness of ex-ante savings analysis and reporting of program savings. Leidos' approach to the evaluation included:

- Interview the Idaho Power Program Engineer on application processes and program objectives
- Review of the Building Efficiency project database and project documentation
- Review of prior program achievements and assumptions in the Idaho Power Annual Report
- Verify correct application of TRM assumptions and savings calculations given reported site and building characteristics for the sampled projects
- Provide credible and reliable program energy impact estimates and ex post realization rates attributed to the Building Efficiency program for projects finalized in 2015.
- Visit five project sites to verify measure installation as per applications as well as various site characteristics

2. Methodology

2.1 Sampling Method

The sampling methodology applied to this program resulted in a total of 14 projects for the primary sample with 2 projects in the backup sample, designed so the evaluation results are representative of the population with+/- 10% precision at the 90% confidence level.

The project-level kWh and kW savings values in the program database were divided into three strata:

- Strata 1: Over 1,000,000 kWh savings OR 50 kW savings
- Strata 2: Over 100,000 kWh savings OR 10 kW savings, AND Less than 1,000,000 kWh Savings AND 50 kW savings
- Strata 3: Under 100,000 kWh savings AND 10 kW savings

A random value was assigned to each project and the projects were ranked by the product of the random value and their kWh savings. The top 4 to 5 projects in each strata were considered for the initial primary sample and then the individual measure types and their recorded savings were analyzed. For measure types that were underrepresented in the initial sample, lower ranked projects in the initial primary sample were dropped in favor of selecting projects with the underrepresented measure types. Where possible, alternate projects were selected within the same strata. This process was repeated until the magnitude of savings for each measure type was adequately represented in the sample. The goal was to obtain a sample with at least 40% of the kWh savings and 25% of the kW savings for each non-lighting measure type represented in the sample. The lighting portion of kWh savings is 38.1%, which is deemed adequate for sampling purposes. Table 3 below shows the results of the measure types within the sample.

Table 3. Contribution of Sample Measure Types to Total Measure Category Savings

Measure Types	# of Projects	% category kWh Savings	% category kW Savings
Air-Conditioning	6	46.5%	48.3%
Appliances w/ Electric Water Heating	2	47.5%	34.3%
Building Shell	6	79.7%	26.0%
Controls	8	88.4%	34.4%
Lighting	9	38.1%	27.8%
Refrigeration	1	52.8%	52.0%
Total	**14**	**81.7%**	**40.4%**

The table below shows the project that were selected for further desk review and sample analysis. Backup projects were identified in the sample to replace primary projects if necessary during the evaluation process.

Table 4. Final Sampled Building Efficiency Projects

Project ID	Strata	kWh Savings	kW Savings	Sample
11325	1	12,878,549	0.0	Primary**
11174	1	2,795,271	0.5	Primary
11006	1	1,176,392	177.0	Primary**
14143	1	237,898	64.9	Primary
14220	1	77,283	51.5	Primary
11196	2	492,861	0.0	Primary
11348	2	470,327	0.0	Primary**
14125	2	285,889	33.7	Primary
14086	2	125,049	26.5	Primary**
14103	2	50,878	12.3	Primary**
14031	3	86,216	6.4	Primary
11104	3	61,230	8.4	Primary*
14147	3	53,761	0.0	Primary
14024	3	30,991	3.7	Primary
14112	2	86,889	19.4	Backup
14019	3	65,025	8.5	Backup*

**** Projects selected for EM&V site visit**
***** Backup project 14019 was reviewed in lieu of primary project 11104**

Sampled projects energy and demand savings were re-calculated during desk review, based on TRM v.1.7 and Building Efficiency savings calculation guidance documents provided by the Program Engineer. Observations from the EM&V site visits were also taken into consideration for the five relevant sites during the measure verification process.

2.2 Overview of Impact Evaluation Approach

The impact evaluation for the New Construction (Building Efficiency) program consisted of conducting project file reviews, desk review and on-site inspections to verify key energy savings characteristics.

Information from the program savings guideline reviews, file and desk reviews and on-site inspections was used to develop estimates of energy impacts at the program and measure levels. The analysis provides an estimation of program realization rates to assist in determining ex-post gross energy savings. Each step of the analysis is discussed briefly below.

Step 1: Review Program Documentation

A review of the current data tracking system, associated documentation, and the calculation of energy savings, including an assessment of the adherence to the energy savings protocol values on a measure basis was first conducted. Corrections to the ex-ante savings identified in this step were implemented as needed.

Step 2: Determine Desk Review Sample

The desk review/site review samples for the New Construction (Building Efficiency) program were drawn from the population of projects finalized in the 2015 program year. A total of 14 projects were sampled, along with 2 backup projects.

Step 3: File Review

The project files for sampled projects were requested from Idaho Power and were reviewed for evaluability.

For a project to be evaluable, proper information must be available in the project documentation to determine the proper deemed measure savings algorithm and to determine evidence of the project completion. Evaluable projects typically contain:

- A project application, which identifies the entity requesting the rebate and the equipment being rebated.
- Invoices for purchased equipment identifying make and model of purchased equipment and categorizing labor activities. Invoices also provide documentation for purchase dates confirming adherence with program rules.
- Documentation of the calculations, assumptions and QA/QC procedures, as appropriate.

If projects were determined to not be evaluable, additional documentation was requested or alternate backup projects were selected.

Step 4: Desk Reviews

Desk reviews were conducted for the sample of projects from Step 2 that were validated in Step 3. The desk reviews consisted of reviewing the inputs for energy savings and determining the adherence to the protocols for individual measures, as evidenced by the project documentation. The desk reviews verified that the project tracking data were consistent with the project documentation. Project documentation was used where any discrepancies were found. Project documentation reviewed included project application and incentive worksheet, equipment specifications, invoices, QA/QC reports, and the database tracking and reporting information, as available.

The key output from the desk reviews was the evaluated savings of the sampled projects. This evaluation also helped to guide what was to be inspected during the site visits.

Step 5: Site Visits

Site inspections were conducted on a subset of the desk review sample. During the site visits, installation of measures as recorded in the tracking database, project documentation, and as observed through the desk review were verified to the extent reasonable, focusing on the energy-consuming equipment and characteristics associated with the projects.

Step 6: Calculate Ex-Post Savings Estimates

For this program, the adjustments for savings estimates were made through identifying differences from the ex-ante savings, and differences caused from the measure characteristics such as specific measure equipment, quantities, sizing, etc. and savings determination protocol specified in the Overview

Documents or TRM. Further, on-site inspection information was used to further inform the savings estimates.

3. Analysis and Verified Savings

Review of the Building Efficiency program database, project documentation, and EM&V site visit results revealed some uncertainties in how measure characteristics were verified and ex-ante savings were calculated, but the overall impact to demand and energy savings realization was minimal. Ex-ante claimed measure quantities or assumptions that could not be clearly identified in this review were found to be reasonable for ex-post calculations. Discussion of these instances is presented in section 3.2 below.

3.1 Tracking System Review

The recorded demand and energy savings and incentive value in the Building Efficiency database were compared to those found in the project application and worksheet for each project in the sample. This comparison found that the database accurately reflects the project documentation at the project and measure level.

3.2 Desk Review of Projects

Sampled projects were subject to independent demand and energy savings calculations given measure quantities, sizes, and other characteristics found in the application, worksheet, and supplemental documentation such as a Quality Assurance/Quality Control (QA/QC) verification report conducted on behalf of the program, manufacturer data sheets, and invoices. Calculation methodologies followed the TRM v.1.7, or one of two guidance documents provided by the Building Efficiency Program Engineer to elaborate calculation approaches. These documents titled "Overview Document per Measure" provided deemed or calculated demand and energy savings rules and methods followed for projects preliminarily submitted during the 2011 and 2015 Building Efficiency program years. In many cases, these documents' protocols align with the TRM, with the following exceptions:

- EMS controls savings are deemed by HVAC system type and climate zone in the TRM, but deemed by number of strategies in the Overview Document.
- Daylighting controls are deemed per square foot in the TRM, but calculated as 30% of controlled lighting energy usage in the Overview Document.
- Interior and exterior lighting are deemed per lighting power density improvement (percent above code) and square feet of lighted area in the TRM, but ex-ante savings appear to be calculated using COMcheck reported total wattage and Overview Document deemed hours and peak coincidence factors for the project.
- It should be noted that the first version of the TRM was released in early 2014. It is assumed that only the 2011 Overview Document provided by the Program Engineer governed ex-ante savings calculations for preliminary applications sent in 2011 to 2013.

Ex-ante and ex-post savings results of the desk review and independent verification process are discussed below to illustrate project-level factors that led to overall program realization. However, it is emphasized that project-specific, measure-level findings are not statistically valid or individually

representative of the program impact evaluation findings; program results are presented later in this report.

Air Conditioning

One 2011 preliminary project and six 2014 preliminary projects in the sample included air conditioning measures. Ex-post air conditioning full-load energy savings were calculated following the TRM engineering algorithm for improved efficiency cooling equipment. As shown in Table 5, measure-level ex-post savings realization was high and ranged from 75% to 131% of ex-ante kWh and 75% to 100% of ex-ante kW savings with the following findings:

- In project 14019, the application processor reversed the rated efficiencies of a two ton and three ton unit in calculating ex-ante savings.
- A 2009 IECC baseline and 700 cooling hours were applied to university project 14086 for ex-post savings calculations; ex-ante assumptions are not clear.
- A 2009 IECC baseline and 700 cooling hours were applied to university project 14143 for ex-post kWh savings calculations, and divided by 700 cooling hours for ex-post kW savings calculation. Ex-ante kW assumptions are not clear.
- Data center project 14220 was submitted assuming 181 ton capacity chiller; cut sheet provided documented 160 ton capacity, which was used to calculate ex-post savings.

Table 5. Air Conditioning Measure Results

Project ID	Ex-Ante kWh Savings	Ex-Post kWh Savings	kWh Realization Rate	Ex-Ante kW Savings	Ex-Post kW Savings	kW Realization Rate
11006	131,706	128,739	0.977	132	129	0.978
14019	1,855	1,415	0.763	2	1	0.761
14024	4,122	4,108	0.997	3	3	0.999
14086	13,384	10,031	0.749	19	14	0.749
14103	9,158	9,158	1.000	5	5	1.000
14143	25,150	22,943	0.912	14	11	0.771
14220	77,283	61,311	0.793	52	41	0.793
7	**262,658**	**237,705**	**0.905**	**225**	**203**	**0.903**

Appliances

Appliance measures were fully deemed in the TRM v.1.7 and were found in two sampled projects, shown in Table 6. In project 14103, one under counter ENERGY STAR® dishwasher and one commercial dishwasher were submitted in the application, two under counter dishwashers plus one commercial dishwasher were found on the invoices. Three total ENERGY STAR® dishwashers were verified during the site inspection, but according to the site representative, one of these was "purchased outside the program". One under counter dishwasher and one commercial dishwasher were assumed installed and eligible for the program for ex-post verification.

Table 6. Appliance Measure Results

Project ID	Ex-Ante kWh Savings	Ex-Post kWh Savings	kWh Realization Rate	Ex-Ante kW Savings	Ex-Post kW Savings	kW Realization Rate
14024	2,210	2,210	1.000	0.19	0.19	1.000
14103	6,937	5,877	0.847	0.54	0.51	0.950
2	**9,147**	**8,087**	**0.884**	**0.73**	**0.70**	**0.963**

Envelope

Ex-ante kW savings associated with reflective roof measures were not recorded for 2011 preliminary projects in the tracking database. Reflective roof was fully deemed per square foot of roof area in the 2014 Building Efficiency guidance document provided by the Program Engineer, and these deemed values were used to calculate ex-post savings based on application and/or QA/QC verification report roof area, as shown in Table 7.

Table 7. Building Shell Measure Results

Project ID	Ex-Ante kWh Savings	Ex-Post kWh Savings	kWh Realization Rate	Ex-Ante kW Savings	Ex-Post kW Savings	kW Realization Rate
11006	53,662	53,662	1.000	0.00	0.00	
11174	111,134	111,134	1.000	0.00	0.00	
14019	5,106	6,006	1.176	4.18	4.92	1.177
14024	267	267	0.999	0.22	0.22	0.993
14103	1,273	1,497	1.176	1.04	1.23	1.179
14143	1,508	1,508	1.000	1.24	1.24	0.996
6	**172,950**	**174,075**	**1.007**	**7**	**8**	**1.138**

HVAC Controls

Ex-post savings calculations of variable speed drives and EMS controls resulted in close to 100% realization at the measure level (Table 8). Project documentation for 11006 included square footage of building controlled for incentive calculation, but no verified tonnage controlled by the EMS. Ex-ante savings in this case were calculated assuming that the total cooling tonnage in the application was controlled by the EMS.

Table 8. HVAC Controls Measure Results

Project ID	Ex-Ante kWh Savings	Ex-Post kWh Savings	kWh Realization Rate	Ex-Ante kW Savings	Ex-Post kW Savings	kW Realization Rate
11006	94,418	114,077	1.208	0	0	-
11174	2,679,486	2,679,487	1.000	0	0	-
11325	12,878,549	12,878,550	1.000	0	0	-
11348	470,327	476,004	1.012	0	0	-
14019	57,560	57,935	1.007	3	3	1.064
14086	111,665	110,079	0.986	7	7	1.000
14103	14,940	15,100	1.011	0	0	-
14143	76,272	72,118	0.946	9	9	1.003
8	**16,383,217**	**16,403,349**	**1.001**	**19**	**20**	**1.010**

Lighting

Lighting measures consisted of interior and exterior lighting improved design as reported in COMCheck; occupancy and daylighting sensors submitted by sensor quantity and square feet controlled respectively; and exit signs. Per the Program Engineer, ex-ante lighting savings are calculated based on the US Department of Energy's COMcheck software required by the State of Idaho to be completed and provided for new construction permit submittal.

In addition, lighting cut sheets and invoices saved with project documentation typically define lighting equipment differently than the lighting designer would via the COMCheck report. Equipment specifications and quantities could not always be reconciled in the available documentation. In general, ex-post lighting demand and energy savings were verified using the following basic algorithms:

Interior & Exterior Lighting Design

kWh savings = (Code-allowed kW) - (Post-Project Space kW) * Space Lighting Hours
kW savings = kWh savings / Space Lighting Hours for interior, 0 for exterior (2014 projects)

Where Code kW was determined from the baseline allowable wattage in COMCheck and Post-Project Space kW was determined from the design wattage noted in the COMCheck report. Three sampled projects were subject to QA/QC site inspections prior to incentive approval by an independent contractor, in which energy savings from lighting design were verified via fixture counts in a written report. Site visits conducted as part of this evaluation effort did not include lighting fixture counts.

Daylight Photo Controls

kWh savings = 30% * controlled kW * operating hours
kW savings = 0

Occupancy sensors and exit signs were fully deemed in the TRM v.1.7 and 2014 program guidance document; For the 2011 projects, occupancy sensors were assumed to control 300 W and save 25% of energy use over a building type's deemed lighting hours, while efficient exit sign wattage was deemed at 3 W and 8,760 hours.

Ex-post realization for lighting at the project level varied from roughly 75% to over 100% realization, as shown in Table 8 below. Each project contained one or more lighting equipment types; some eligible equipment is defined with one unitary basis for purposes of incentive calculation, and another unitary basis for purposes of claiming savings. For example, daylighting controls are processed based on square feet of lighted area on the application, but kWh savings are calculated using lighting watts controlled. The Building Efficiency application form and documentation requirements do not explicitly require lighting watts controlled as a verifiable input. As shown in Table 4.6 below, two sample projects included daylighting controls. The 2011 11006 project was subject to QA/QC site inspection prior to incentive approval, which confirmed controlled watts in the inspection report. The 2014 project 14143 site inspection report did not explicitly verify controlled watts. According to the Program Engineer, all daylight projects are verified by a third party inspection and confirmation of day lit area and connected wattage, before incentives are paid.

Project 14147 notes on available invoices indicated that the project's proposed exterior lighting design included re-use of existing fixtures for 25% of the lighted area, and therefore savings and incentive should be reduced to 75% of the initial proposal, accordingly. However, the ex-ante kWh savings estimate suggests that this reduction was not taken into account when recording savings in the program database. The ex-post kWh estimate did take this reduction into account, hence the lower realization in Table 9.

Interior lighting was a significant contributor to Building Efficiency energy savings, and the top contributor to sampled lighting equipment savings, demonstrated in Table 10. Project 11006, a warehouse and office facility, assumed 8,760 lighting hours on the application. This site was selected for an evaluation site visit, during which it was found to consist of two buildings: an office building and a nearby distribution center. The site visit verified the distribution center hours at 6200 for 7-day operations, and this was used to calculate ex-post energy savings, resulting in lower realization of lighting savings for this project.

Table 9. Lighting Measure Results

Project ID	Ex-Ante kWh Savings	Ex-Post kWh Savings	kWh Realization Rate	Ex-Ante kW Savings	Ex-Post kW Savings	kW Realization Rate
11006	485,070	369,724	0.762	45.30	55.46	1.224
11174	4,651	4,652	1.000	0.50	0.53	1.062
14019	504	504	1.000	0.06	0.06	1.080
14024	24,392	20,633	0.846	0.55	0.55	1.000
14031	2,562	2,562	1.000	0.61	0.61	0.998
14103	18,570	18,570	1.000	6.12	6.12	0.999
14125	285,889	285,887	1.000	33.72	33.72	1.000
14143	134,968	128,514	0.952	40.70	38.63	0.949
14147	53,761	39,712	0.739	0.00	0.00	-
9	**1,010,367**	**870,758**	**0.862**	**128.00**	**136.00**	**1.064**

Table 10. Ex-Post Realization by Lighting Equipment Type

Equipment Type and Project ID	Ex-Ante kWh Total	Ex-Post Annual Energy Savings	kWh Realization	Ex-Ante kW Savings	Ex-Post Annual Demand Savings	kW Realization
Daylight Photo Controls	**84,049**	**78,643**	**0.94**	**1.38**	**N/A**	**N/A**
11006	78,642	78,643	1.00	0	N/A	N/A
14143	5,407	not verified	0.00	1.38	not verified	0.00
Exterior Light Load Reduction	**76,021**	**58,213**	**0.77**	**0**	**0.00**	**N/A**
14024	22,260	18,501	0.83	0	0.00	N/A
14147	53,761	39,712	0.74	0	0.00	N/A
High Efficiency Exit Signs	**7003**	**7,004**	**1.00**	**0.79**	**0.83**	**1.05**
11174	4,651	4,652	1.00	0.5	0.53	1.06
14019	504	504	1.00	0.06	0.06	1.08
14024	84	84	1.00	0.01	0.01	1.08
14103	336	336	1.00	0.04	0.04	0.96
14143	1,428	1,428	1.00	0.18	0.18	1.02
Interior Light Load Reduction	**784,761**	**664,705**	**0.85**	**113.82**	**112.31**	**0.99**
11006	396,573	281,226	0.71	45.3	45.36	1.00
14024	2,048	2,048	1.00	0.54	0.54	1.00
14103	18,234	18,234	1.00	6.08	6.08	1.00
14125	277,105	277,103	1.00	31.63	31.63	1.00
14143	90,801	86,094	0.95	30.27	28.70	0.95
Occupancy Sensors	**58,533**	**62,193**	**1.06**	**11.57**	**13.57**	**1.17**
11006	9,855	9,855	1.00	0	N/A	N/A
14031	2,562	2,562	1.00	0.61	0.61	1.00
14125	8,784	8,784	1.00	2.09	2.09	1.00
14143	37,332	40,992	1.10	8.87	9.74	1.10
Grand Total	**1,010,367**	**870,758**	**0.86**	**127.56**	**135.68**	**1.06**

Refrigeration

Refrigeration measures (floating head and suction pressure controls) were fully deemed in the TRM v.1.7 for 2014 projects, and were verified using the TRM at 100% realization as shown in Table 11 (negligible ex-post kW difference is due to rounding of kW savings in the database).

Table 11. Refrigeration Measure Results

Project ID	Ex-Ante kWh Savings	Ex-Post kWh Savings	kWh Realization Rate	Ex-Ante kW Savings	Ex-Post kW Savings	kW Realization Rate
14031	83,654	83,654	1.000	5.82	5.82	0.999
1	83,654	83,654	**1.0000**	6	6	**0.9995**

4. Conclusions and Recommendations

The results of the Building Efficiency program impact evaluation were high annual kWh and kW realization and 90% confidence that the results represent the Idaho Power Company program population results with +/-10% precision, as shown in Table 12.

Table 12. Building Efficiency Program Evaluation Results

Measure Type	kWh			kW		
	Ex-Ante Gross	Ex-Post Gross	RR	Ex-Ante Gross	Ex-Post Gross	RR
Air-Conditioning	561,449	508,111	0.90	462.6	417.6	0.90
Appliances w/ Electric Water Heating	19,273	19,398	1.01	2.1	2.1	0.96
Building Shell	221,858	223,301	1.01	9.6	10.9	1.14
Controls	19,482,694	19,506,635	1.00	48.3	48.8	1.01
Lighting	2,788,153	2,402,896	0.86	488.0	519.1	1.06
Refrigeration	158,571	158,571	1.00	11.2	11.2	1.00
Total	**23,231,998**	**22,818,912**	**0.98**	**1,021.8**	**1,009.6**	**0.99**
Relative Error at 90% Confidence	**0.2%**			**4.8%**		

In general, application data and measure characteristics are accurately transcribed as collected by program staff into the Building Efficiency database. It appears that supporting documentation are provided in hard copy and scanned for electronic copy during processing, but occasionally may be only partially available in the electronic file due to double-sided hard copies. According to the Program Engineer, hard copy and electronic copy documents are stored for each project.

For some eligible measures, data collected on the application form and/or worksheet are relevant only for calculating incentives and do not support calculating or verifying demand or energy saved. For example, daylight photo controls and energy management controls are quantified in the program application by controlled square feet and control strategies, respectively. Switching daylight controls savings and incentive calculation inputs to watts controlled may be more convenient for both applicants and program management, and exploring alternative incentive and semi-deemed savings units for analysis of energy management systems could also benefit the program. Additional observations and recommendations that arose during desk review of individual projects are summarized below:

- Building Efficiency savings estimation guidelines provided by the Program Engineer for 2014 preliminary application projects address 'stacking' interactive impacts of demand and energy savings for a series of measures within a given end use to account for lower usage enabled by the first measure, according to cost effectiveness and following an example in the TRM v.1.17. The TRM clarifies that the stacking effect should apply to measures simultaneously impacting a single system; for example, VFDs applied to one chiller system do not have an interactive impact on a separate chiller system. The Building Efficiency Overview Document and/or the TRM could both be improved by addressing the application of this rule more clearly.
- The Building Efficiency program approved combinations of economizer, VFD, and EMS measures and claimed savings in two sampled projects that may double-count impacts of these measures even after the stacking effect adjustments are applied. For example, TRM savings were claimed

for VFDs on HVAC pumps or fans, and TRM savings for EMS control of the same VFDs were also claimed in the same project. Building Efficiency program management could assess whether the energy savings claimed for both the presence of enabling equipment and the control of that equipment are distinct and sufficiently adjusted with the stacking effect, or wholly interdependent.

- 2011 Building Efficiency preliminary projects were subject to the 2006 International Energy Conservation Code (IECC); 2014 preliminary projects were subject to the 2009 IECC (the 2012 IECC became effective January 1, 2015). While prescriptive lighting and cooling minimum performance standards were generally applied per IECC requirements, it is not clear if other energy code requirements such as mandatory occupancy sensors, variable or part load fan motor control, hydronic pump control, or mandatory economizers included in either or both of these codes were considered in project approvals. It is recommend that the program management review eligibility requirements and program goals to determine whether these mandatory controls and equipment should be included or excluded from the program.

FINAL REPORT

Residential Energy Efficiency Education Initiative Best Practices Review

December 28, 2016

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Contents

Executive Summary

The goals of Idaho Power Company's (IPC's) Residential Energy Efficiency Educational Initiative (REEEI) are to 1) promote and inform customers about all IPC programs and 2) deliver energy efficiency information to customers. The REEEI is comprised of 23 different activities, efforts and elements that educate, inform and persuade residential electric customers to install energy efficient measures and take other actions that conserve energy. The initiative both investigates and engages in various behavioral change strategies.

IPC has a comprehensive presence on both traditional and social media channels. The 23 Initiative elements reach over 415,000 IPC electricity customers in a variety of ways: ranging from; 1) in-person contacts and presentations, courtesy of five community educational and approximately twenty customer representatives in the field daily; to 2) newsletters, guides, mailers, conventional broadcasting, social media; and 3) gamification reward systems, sponsorships, educational materials and training. Specifically;

1) Customer Representatives
2) Community Educational Representatives
3) Energy Efficiency Guides
4) 'News Scans'
5) Customer newsletter 'Connections'
6) Monthly bill inserts
7) Weekly 'Newsbriefs' to pitch story ideas to local media
8) 'Native Advertisement'
9) '30 Simple Things You Can Do'
10) 'myAccount' or 'On-Line Tool'
11) TV live in-studio EE segments and Integrated campaign
12) YouTube Postings 'Voices of Customers'
13) Smart Saver Pledge with prizes
14) In-person Event presentations
15) Liaison with Corp Communications on energy efficiency campaigns and other media needs
16) Giveaways with strong EE messaging,
17) Kill-A-Watt meter lending program
18) Educational distributions
19) Sponsorship of Sustainable Energy and Sustainable Homes
20) Student Energy Efficiency Kit (SEEK) Program in partnership with Community Education Reps.
21) 'The Power to Make a Difference' presentation
22) Energy-related workshops at state-sponsored STEM Institutes
23) Monitoring new technologies or programs to educate customers

IPC staff and initiative efforts indicate a strong focus on driving customers to use the 'myAccount' on-line portal located on the IPC website, where customers check on energy use via near real-time smart-meters, billing and account information with links to tools, rebates and other resources that aid in understanding their homes energy use and reduction strategies. Daily customer logins to 'myAccount'

have steadily increased over the last 4.5 years, from 2,000 in mid-2012, to about 5,000 in late-2016. Moreover, the number of 'myAccount' registrations per month is also increasing, from 2,000-4,000 accounts per month in 2010-2011 up to 3,000-5,000 per month more recently.

IPC is marketing energy conservation by linking it to home improvement, money savings, comfort and other non-energy benefits to capture interest in energy efficiency and move it to top-of-mind. External program managers, subject-matter experts and Idaho Power staff rated their customers' non-energy motivational drivers on a 10-point scale. "Saving money" was rated highest (9.4), followed by improved comfort (9.1), health & safety (7.6) and being/feeling "green" and reducing environmental impacts (7.3).

External program managers, subject-matter experts and Idaho Power staff rated marketing channels that involve person-to-person interaction and active learning environments higher than more passive, informal channels, to reach and educate customers. On a 10-point scale, situations where strong in-group social identity exists were rated most effective/useful (8.0), followed by online customer utility accounts (7.7) universities and college settings (7.6), public or community events, online energy dashboards and smart or real-time meters (all-7.3).

Estimating conservatively, Idaho Power staff conducted over 590 in-person (or webinar) outreach activities, training sessions and events recorded in the Outreach Tracker database (from early 2012 to mid-2016) with an average attendance of 809[1] people per event.

The Student Energy Efficiency Kit (SEEK) and 'The Power to Make a Difference' (presented by IPC staff 124 times to 3,359 students in 2015) are also features of the Initiative. Both received numerous positive comments from customers and build strong customer-utility relations. Field staff reported, "The children always express that they tried everything included [in the kits] with their parents or family members. The adults express that they are happy to have the free materials especially the light bulbs and showerheads…teachers cannot thank us enough for this program!" Eighteen high school teachers participated in a 3-day professional development seminar (facilitated by iSTEM)[2], that empowered teachers with information and classroom tools to teach students to think critically about energy, including; the science of energy, energy generation and sources, wise energy use and social impacts.

A literature review of best-practice energy education programs indicated that there are four basic types of behavioral change programs and strategies: informational programs, socially interactive approaches, education and training (E&T) and a stacked approach.[3] The four types of behavioral change strategies are well represented in the breadth of IPC REEEI initiative elements described in this report.

[1] Attendance at some fairs, expos, shows and other events exceeded 10,000 per event.
[2] The iSTEM facilitators (from the STEMazing Program) held the professional development seminar for teachers on energy-efficiency education. The teachers, in turn, implemented curriculum on energy conservation for their K-12 students. More info is available at: http://www.stemazing.org/ and http://istemtucson.weebly.com/
[3] The 'stacked approach' combines multiple programs or strategies from the other three types into a single campaign.

1.0 Introduction

This introduction provides a brief description of the program and provides an overview of the evaluation approach. This report presents findings from an evaluation of the Residential Energy Efficiency Educational Initiative (REEEI) offered by Idaho Power Company (Idaho Power) targeting the residential sector. The evaluation is organized accordingly with the following sections:

- Executive Summary
- Introduction
- Evaluation Methods
- Evaluation Findings
- Conclusions and Recommendations
- Appendix A - annotated bibliography of secondary literature reviewed
- Appendix B – Educational/Instructional Materials
- Appendix C – Data Collection Instruments

1.1 Initiative Description

The Residential Energy Efficiency Education Initiative promotes energy and water efficiency in the residential sector by creating and delivering educational materials and initiatives that inform customers on efficient choices regarding consumption and increase customer awareness of Idaho Power's energy efficiency programs, helping to increase participation. For example, Idaho Power distributes and promotes energy saving guides via inserts in local newspapers (e.g., 16 newspapers and 237,144 homes the week of July 19, 2015), social media sites, TV, community events and radio across Idaho Power's service territory. In addition, school, workplace, and community organizations and events are targeted by the initiative. The initiative is investigating and engaged in behavioral change strategies.

1.2 Energy Savings

Though some energy-saving measures (e.g. clothes drying racks) were distributed to customers via the initiative, no energy savings are reported or claimed under the initiative itself. Instead, savings from these measures is claimed under other Idaho Power programs.

1.3 Overview of Evaluation Approach

A kick-off meeting was held to review the proposed evaluation approach, to provide the evaluation team more background on the program and ensure that the program evaluation team and the program staff agreed on the evaluation objectives and approach. Following the kick-off meeting, a final work plan was developed and submitted to Idaho Power for approval before subsequent evaluation work began.

1.4 Goals of the Evaluation

Energy conservation is bottom-of-mind for most customers. Idaho Power is marketing energy conservation by linking it to home improvement, saving money, comfort and other non-energy benefits to capture interest in energy efficiency and move it to top-of-mind. The best practices review will assess

current initiative activities and provide actionable recommendations based on an assessment of the information gathered.

The key objectives of the best practices review include:

- Internal REEEI research questions
  - Evaluate initiative design including mission, logic, and use of industry best practices
  - Evaluate REEEI implementation including quality control, operational practice, organizational structure, and outreach
  - Evaluate REEEI administration including program oversight, staffing, management, training, documentation, and reporting
  - Evaluate customer participation, barriers, marketing and satisfaction
  - Evaluate future planned initiative activities and relate to external best practices
  - Evaluate which Idaho Power area events and media channels are best suited for residential energy educational outreach
  - Evaluate what the overall research suggests for Idaho Power's Energy Efficiency Integrated Campaign
  - Report findings and observations and make recommendations to enhance program effectiveness
- External best practice research questions
  - Evaluate what other utilities are doing with energy behavioral programs and novelties
  - Evaluate measures and behavioral change strategies that other utilities emphasize
  - Evaluate what kind and quantity of resources are other utilities putting toward residential energy efficiency education
  - Evaluate how other utilities are driving customers to use their on-line accounts and portals
  - Evaluate marketing channels (both traditional & social) and customer targeting strategies
  - Evaluate customer satisfaction with energy education at other utilities

1.5 Evaluation Methodologies

The evaluation methodologies utilized for the best practices review are listed below. Discussion regarding each of these methodologies is presented in the appropriate sections below.

Best Practices Review

- REEEI documents and materials review (educational, marketing and website portal)
- Review previous evaluations
- Program Specialist and Educational Marketing Specialist interviews
- Customer Educational Representative and Customer Representative interviews
- iSTEM professional educator interview
- External program manager and Subject Matter Expert (SME) interviews and best practice review
- Literature and best practices review

1.5.1 Initiative Documents and Materials Review

A thorough review of Idaho Power's literature was conducted (i.e. website, event tracker, and hard copy materials related to energy efficiency awareness and the educational collaborative). This included a review of all marketing and outreach materials that aren't program-specific and include the 21 items described in Table 1 below.

The Leidos Team reviewed initiative documents, including all marketing and educational materials, and tracking databases (e.g. Outreach Tracker and Portal). Documents and databases were examined for content, structure, completeness, quality, compatibility, and accuracy.

A review of past Idaho Power residential energy efficiency education evaluation studies and other Idaho Power program evaluations, along with relevant external evaluation literature, preceded the execution of other best practices review tasks. The purpose of document reviews was to understand the REEEI theory, impetus, objectives, design, logic, process flow, delivery, planning, marketing, and collateral. Understanding gleaned from the document review informed other evaluation activities.

The Leidos Team discussed the use and impacts of initiative documents and materials with Customer Representatives and Community Education Representatives, the results of which were used to inform other tasks of this evaluation and summarized and incorporated into this report. In addition, the Idaho Power Outreach Tracker (containing information about 93 outreach activities) was reviewed. Suggestions for how to best leverage and strengthen this tool are included in the recommendations section of this report. Table 1 lists and describes the function of 21 reviewed documents and activities.

Table 1. Idaho Power Residential Energy Efficiency Education Initiative (REEEI) Documents and Activities

IPC Document or Activity	Description
Energy Efficiency Guides	semi-annual guides intended for broad-based distribution (i.e. newspapers, handouts)
News Scans	internal weekly newsletter distributed to Idaho Power staff that promotes programs, customer engagement strategies, new events and campaigns
Customer newsletter	monthly and topical energy-efficiency focused newsletter with articles that accompanies customer bills
Monthly bill inserts	"bill stuffer" as are added to customer monthly utility bills
Weekly 'Newsbriefs'	stories written about energy efficiency and Idaho Power programs that mimic the look of a media press release
Native Advertisement	stories posted on the media outlets' website as paid advertisement
'30 Simple Things You Can Do'	96-page booklet describes 30 no-cost and low-cost energy efficient measures, along with some more involved energy saving actions
myAccount or On-Line Tool	customers log on to Idaho Power website to check energy use, billing and account information, and see links to information, tools, rebates and other resources
TV live in-studio energy efficiency segments	filmed monthly at local TV stations - included for airing in local newscasts and purchases of 30-second TV ads to push energy efficient actions
YouTube postings "Voices of Customers"	customer participants are videoed sharing how they save energy for posting on Idaho Power website
Smart Saver Pledge	customers pledge to habituate an energy-saving behavior in exchange for prizes
In-person event presentations	in-person (or webinar) outreach activities, training sessions and events
Corporate Communications Liaison	managers and marketing specialists collaborate with Customer Reps and Community Education Reps on content for energy efficiency awareness
Giveaways with energy efficiency messaging,	deepen customer engagement by combining energy efficient equipment giveaways with messaging
Kill-A-Watt meter lending program	public libraries make watt-meters available for check out
Educational distributions	elements of initiative distribute ed. materials
Sponsorship of Sustainable Energy and Sustainable Homes	Community Education Rep puts on a series about sustainable energy and homes in conjunction with US Green Building Council
Student Energy Efficiency Kit (SEEK) Program in partnership with Community Education Reps.	kit includes hands-on in-classroom learning and take-home energy efficiency measures for installation
The Power to Make A Difference presentation	extensive presentation for students and teachers that includes; examples, demonstrations, comparisons and take home/classroom materials
Energy-related workshops at state-sponsored STEM Institutes	high school teachers participated in a 3-day professional development seminar
Monitoring new technologies or programs to educate customers	corporate office monitors new technologies and programs for possible inclusion

Interview respondents (both internal IPC staff and external market actors) were asked questions on energy efficiency efforts, programs, awareness, attitudes, behaviors, use of media and communications channels, satisfaction with Idaho Power, and firmographics. Data collected from interviews and surveys was cleaned, coded, and categorized in preparation for statistical analysis.

1.5.2 Community Educational Representative and Customer Representative Interviews

The Leidos Team performed in-depth interviews with 4 field staff (Community Educational Representatives and Customer Representatives) to glean wisdom from their experiences in the field. The respondents were asked about the initiative's plethora of activities, including; how activities are administrated, citizen presentations "The Power to Make a Difference", student education presentations, the annual student art contest, and Student Energy Efficiency Kit (SEEK) Program.

1.5.3 iSTEM Professional Educator Interview

In 2015, 18 secondary level teachers completed a professional development seminar via an energy education partnership. The Leidos Team contacted the professional educators who put on this seminar for teachers. An interview was conducted and curriculum and classroom materials were obtained and reviewed. The STEMazing[4] manager shared experiences and insights from the seminar and how it impacted teachers, the curriculum, classroom tools and their students.

1.5.4 External Program Manager and SME Interviews and Best Practice Review

From the literature review, residential energy education programs with a strong behavioral component were targeted for in-depth interviews (IDIs) of program staff to further investigate best practices and to discover up-to-date experiences from programs external to Idaho Power. The in-depth interviews were conducted with subject matter experts (SMEs) from energy program evaluation, design and implementation consulting and directly with utility program managers, who possess key insights and cutting-edge knowledge on the most successful and innovative residential energy efficiency educational initiatives and programs. The results of the IDIs are individually detailed and summarized below.

In total, 44 contact attempts were made via phone and e-mail with 15 utilities and other organizations involved in managing and evaluating residential energy behavioral programs. Five interviews with subject matter experts and utility program managers outside of Idaho were successfully completed.

[4] The iSTEM facilitators (from the STEMazing Program) held the professional development seminar for teachers on energy-efficiency education. The teachers, in turn, implemented curriculum on energy conservation for their K-12 students. More info is available at: http://www.stemazing.org/ and http://istemtucson.weebly.com/

Table 2. Disposition of contacts with subject matter experts and external program managers

Contact Disposition	Number of organizations
Interviewed successfully	5
Request not yet answered	5
Confidentiality issues	1
No program to discuss	1
Provided database of programs	1
Referred to other organization	1
Waiting for data	1

2.0 Best Practices Review Findings

This section presents the findings from the evaluation in the following order:

- Recommendations from Previous Evaluations
- Initiative Manager and Key Market Actors Interviews
- Assessment of Marketing Channels
- Non-Energy Benefit Review
- Review of Existing Elements of Initiative
- Other Customer Engagement Strategies
- Best practice review

2.1 Recommendations from Previous Evaluations

According to the Program Specialist of the Residential Energy Efficiency Education Initiative, a previous evaluation recommended that Idaho Power begin tracking contact information for every customer touched via outreach and education efforts, but this is not feasible or possible.

2.2 Initiative Program Specialist and Key Market Actors Interviews

Researchable questions were addressed via in-depth interviews with Idaho Power's Initiative Specialist and Residential Marketing Specialist, the most active Customer Representatives, and regional Customer Educational Representatives, the professional educator with the STEMazing/SEED project (who implemented a three-day professional development seminar for 18 high school teachers) and 5 external residential education program managers and subject matter experts. Findings from the Customer Representatives, Community Educational Representatives, and STEMazing educator are included in a later section on existing initiative activities.

Interviews with the Initiative Program Specialist included an initial interview to get an overview of program operations and an orientation to program activities, followed by ongoing communications and coordination of evaluation activities. The interview conducted with the staff specialist responsible for providing educational marketing services for residential programs included discussions on all initiative elements, marketing channels and their extent and effectiveness.

2.2.1 Summary of Initiative Program Specialist Interview

The contents of various Idaho Power program marketing materials often include energy educational information. The student energy education and kit activity claimed some energy savings under a different program, but not under the REEEI. The Kill-a-Watt meter lending program available through library system is in maintenance mode and does not claim any savings. The Residential Education Initiative manager advises libraries before major educational efforts, so libraries are not surprised when there is a surge in demand for watt meters.

Outreach activities are tracked in the Idaho Power Outreach Tracker and all Idaho Power energy program staff record outreach activities in the tracker along with many staff from other departments. The Outreach Tracker includes categorizing fields to distinguish residential from commercial training, activities and presentations. Some other outreach activities are tracked via an Outreach Portal. The REEEI Program Specialist reports the number of outreach activities in both the Outreach Tracker and Outreach Portal monthly for the Demand Side Management report. Customer Representatives record the name of the event, location, date, how event was promoted and the number of people in attendance.

The goals of the educational initiative are to 1) promote and inform customers about all Idaho Power programs and 2) deliver energy efficiency information to customers. Idaho Power programs and educational efforts also encourage water savings as it relates to energy savings, such as when a customer has an electric water heater.

The High-Energy Use Targeting Program reportedly utilized billing data and ended up finding mostly all-electric homes in rural areas. When a time-of-use pilot was launched, it targeted customers with 2,000-plus kWh of monthly electric usage at certain times of the year. Idaho Power does not offer on-bill financing for energy efficiency upgrades.

2.2.2 Summary of Marketing Specialist Interview

Idaho Power has a comprehensive presence on both traditional and social media channels. The Marketing Specialist indicated that Idaho Power is heavily involved with social media marketing, with increased use of video and infographics as marketing strategies. Instagram is a channel that Idaho Power is attempting to utilize, but has experienced some challenges with photos and imagery working well on that medium.

Idaho Power webpage links to Facebook, Twitter, Instagram and LinkedIn (where customers come to Idaho Power via likes and my network invites). On social media, such as Facebook and Twitter, Idaho Power releases "Tip Tuesday" for energy savings every Tuesday. Facebook ads are purchased and micro-targeted to people who already like Idaho Power website and/or who are located within the service territory, indicate relevant interests and certain economic characteristics. Idaho Power made 84 posts on Facebook and Twitter for “Tips Tuesday” between January 2015 and July 2016, reaching 81,560 people and achieving a 2.7 percent engagement rate[5] (See Table 3 below).

[5] Engagement Rate - Engagement rate is a popular social media metric used to describe the amount of interaction -- likes, shares, comments -- a piece of content receives

Table 3. Idaho Power "Tip Tuesday" posting on Facebook in Twitter (from January 2015 through July 2016)

Number of Posts	Social Medium	People Reached	Likes/Comments / Shares/Engagements	Post Clicks	Engagement Rate
84 Posts	Facebook and Twitter	81,560	933	1,366	2.7%

buys.

Table 4 below displays some recent Idaho Power's social media ad post and boosts. The effort so far has resulted in 17,301 engagements or web clicks, with a reach of 390,715 and 3,676,032 impressions.[6] Idaho Power marketing and program staff monitors the cost and relevance of these marketing ads to inform future ad buys.

Table 4. Idaho Power Social Media Posting (via Ads or Boosts) for behavioral change and promotion of energy efficiency programs

Beginning Date	Program	Ad / Boost	Post Engagements (Boost) or Website Clicks (ad)	Reach	Impressions	Cost Per Engagement	Relevance (1-10) Higher is Better	Total Spent
10/30/2015	See Ya Later, Refrigerator	Boost	599	26,300	41,246	$0.50	DK	$300.00
11/9/2015	Home Energy Audit	Boost	619	12,872	40,971	$0.81	DK	$499.91
1/14/2016	Drying Rack - Boise	Ad	514	6,083	6,158	$0.09	9	$47.83
2/16/2016	Energy House Calls	Ad	707	43,044	241,031	$1.41	2	$999.28
3/7/2016	Residential EE Campaign	Ad	11,399	244,330	3,238,288	$0.88	2 and 3	$9,999.93
3/21/2016	Drying Racks - Salmon	Boost	383	1,528	9,433	$0.80	5	$305.97
4/15/2016	Drying Racks - Pocatello	Boost	1,337	10,520	20,102	$0.15	9	$197.06
5/5/2016	Home Energy Audit - Idaho	Boost	1,743	46,038	78,803	$0.57	4	$1,000.00
Totals or Mean			**17,301**	**390,715**	**3,676,032**	**$0.77**		**$13,349.98**

Idaho Power utilized 'Next Door' neighborhood websites to market clothes-drying rack give-away events via free postings. The event received high levels of attention and filled up quickly with customers. Idaho Power puts out Pandora radio ads and regular radio ads.

Tie-ins to customer online accounts, called 'myAccount,' are included in most marketing. Usage of 'myAccount' is growing and Idaho Power actively (via a variety and program and marketing efforts) desires to boost future usage significantly.

Idaho Power is looking to team with other groups, such as municipalities, for behavioral change that could take the form of neighborhood blitzes and focus on specific geographic regions or a utility-sponsored university competition, with other universities or within a single university. The approach could leverage existing and strong in-group vs. out-group social identities for friendly competitions to save energy.

[6] Impressions - An impression refers to a way in which marketers and advertisers keep track of every time ad is "fetched" and counted.

2.3 Assessment of Marketing Channels

2.3.1 Traditional Marketing Channels

External program managers, SMEs and Idaho Power's Customer Representatives and Community Educational Representatives were asked to rate the usefulness of traditional marketing channels – to reach and educate residential customers about energy conservation. Generally, channels that involve person-to-person human interaction and active learning environments were considered best. Both internal Idaho Power staff and external program managers and SME's (located outside of Idaho) were asked to rate the "usefulness of reaching and effectiveness of educating" customers through various marketing channels and customer segments on a 1-10 scale (where 1 is poor and 10 is excellent). General situations where strong in-group social identity exists (e.g. clubs) were rated highest, averaging 8.0. Next highest were universities and colleges (7.6), public or community events (7.3), neighborhood associations (6.9), K-12 schools (6.8) and government (6.8).

Marketing channels that lacked direct person-to-person interactions and that are received in more passive informal settings and where people are not expecting to learn, were rated lowest for their usefulness/effectiveness. Also at the bottom of the list, utility newsletters (5.0), news briefs/press releases (5.0), live entertainment (5.5) and celebrity endorsements (5.8). Interestingly though, some passive channels rated better. Native advertisement and reporter written stories, TV, radio and print media all received an average rating of 6.6, significantly higher, yet quite similar in nature to utility newsletters and news briefs/press releases. Perhaps there is a greater perception of newsworthiness, originality, authenticity, or simply the actual sensor potency of one channel over another.

Table 5. Usefulness of Traditional Marketing Channel - to Reach and Educate Residential Customers

Traditional Marketing Channel	External Program Managers and SMEs	Idaho Power Customer Reps & Community Educational Reps	All Respondents	n
Situations where Strong In-group Social Identity exists	7.7	9.0	8.0	4
Universities & Colleges	7.3	8.0	7.6	5
Public or Community Events	7.4	7.0	7.3	7
Neighborhood Assoc	6.8	7.0	6.9	7
K-12 Schools	6.5	7.5	6.8	6
Local or Municipal Government	6.5	7.5	6.8	6
Native Adertisement & Reporter Written Stories	6.0	8.0	6.6	7
TV, Radio & Print Media	6.2	7.5	6.6	7
Topically focused Energy Guide mailers	6.4	6.0	6.3	7
Competitions with Prizes	5.6	7.0	6.0	7
Gamification Reward Systems	5.4	9.0	6.0	6
Institutional or Business Sponsors	5.4	7.5	6.0	7
Celebrity Endoresments	6.0	5.0	5.8	6
Sports Music Live Entertainment	5.8	4.0	5.5	6
News Briefs & Press Releases	4.2	7.0	5.0	7
Utility Customer Newsletter	5.2	4.5	5.0	7

One respondent commented that TV, Radio and print media efforts are more potent because of the known and trusted utility brand. Another commented that broadcast markets don't always align well with a utilities service territory.

One respondent noted that bill inserts would be more effective if there was a way to target stuffer content to specific programs and energy end-uses that customers are looking for a (e.g. appliance replacement, new furnace). This respondent stated that utility newsletters are more likely to be read by rural and coop customers than city dwellers. Also, that news-briefs and press releases often get lost in the broader media noise. However, the same respondent said that native advertisement and reporter written stories appear credible and are often viewed as more reliable sources than utility press releases. This individual also said that live entertainment events and third party sponsorships work well if done in conjunction with marketing a contest to push program participation. Another respondent suggested that co-branding between the utility and businesses or institutions is effective.

One respondent compared K-12 student energy kits to the successful approach taken several decades ago to habituate refuse recycling at home and said that neighborhood associations are a good place to socially normalize conservation behaviors. Another respondent said to expend marketing resources only toward associations that are active. Public events specifically mentioned for marketing were the Idaho State Fair and the 4-day long Canyon County Home and Garden Show. Two respondents suggested environmental groups as being a very effective and self-motivated marketing channel, and even for voluntary delivery and installation of energy efficient measures.

2.3.2 Non-Traditional Internet-Based Marketing Channels

External program managers, SMEs and Idaho Power's Customer Representatives and Community Educational Representatives were asked to rate the usefulness of reaching and effectiveness in educating customers about energy efficiency via non-traditional internet-based marketing channels and program types. Aside from one respondent who rated the usefulness/effectiveness of technology-enabled human-interfaced energy-use feedback mechanisms a perfect "10", online customer utility accounts were rated highest, averaging 7.7 on a 10-point scale. Next as most useful/effective was online energy dashboards[7] (often included on utility websites) and smart or real-time meters (both 7.3). E-mails (7.0), blogs (6.8) and Facebook (6.6) were next in importance.

Aside from one respondent who rated free private social networks a 2.0, meet-ups or crowd-sources was rated lowest (4.5), followed by neighborhood networks like Next Door (4.7), Twitter and LinkedIn (4.8) and Instagram (5.0). Opt-in online groups such as Yahoo and Google (5.5) and texting (5.7) fared slightly better.

[7] "Online Energy Dashboards" are a subset of "Technology-enabled human-interfaced energy-use Feedback Mechanisms"

Table 6. Usefulness and Effectiveness of Internet Age Marketing Channel - to Reach and Educate Residential Customers

Non-Traditional Internet-Based Marketing Channel	External Program Managers and SMEs	Idaho Power Customer Reps & Community Education Reps	All Respondents	n
Technology-enabled Human-interfaced Energy Use Feedback Mechanisms	10.0		10.0	1
Online Customer Utility Accounts	7.6	8.0	7.7	7
Online Energy Dashboards	7.3	7.5	7.3	6
Smart or Real-time Meters	6.8	8.5	7.3	6
E-mails	7.2	6.5	7.0	7
Blogs	7.0	6.5	6.8	6
Facebook	5.8	8.5	6.6	7
Enegy Pledges for Beahvior Change with Follow-up Accountability	5.5	7.5	6.2	6
Text Messages	4.3	8.5	5.7	6
Opt-in online groups such as Yahoo or Google	4.8	7.0	5.5	6
Instagram, Photos and Imagry	3.5	8.0	5.0	6
LinkedIn	4.3	6.0	4.8	6
Twitter	4.0	6.5	4.8	6
Next Door, Neighborhood Network	4.0	6.0	4.7	3
Meet-Ups or Crowd Sourcing	1.5	7.5	4.5	4
Other Free Private Social Netowrks	2.0		2.0	1

One respondent suggested the Reddit[8] Blog as a marketing channel. This individual also said utility On-line accounts (e.g. 'myAccount') and energy dashboards only work well if all utility portals are together in one place for the customer using the site. This means having the billing system, information system, dashboard and energy use system all interfaced on a single personalized webpage for the customer. In other words, a modern customer-oriented website, not the legacy utility approach to web design.

Two respondents mentioned weather phone apps such as Apogee,[9] where customer sets usage level that triggers an alert from utility, as a marketing channel. The alerts can be set up to give alert when electric usage trajectory is high early in the month. A third respondent said Apogee is poor because "it's designed by insiders who don't understand energy use or the purpose of utility programs." Instead, this individual suggested NEST[10] thermostats as a most effective way to elicit energy conservation behavior, rating NEST a 10.

[8] Reddit - is a social news site that contains specific, topic-oriented communities of users who share and comment on stories

[9] Apogee is an online energy dashboard accessible via mobile phone application, and allows for the setting of alerts.

[10] NEST is a brand of smart thermostat, which can be used as a tool to build behavioral programs around.

2.4 Non-Energy Benefit Review

Idaho Power program marketing materials often include mention of non-energy benefits (such as improved comfort and financial savings) that occur in associated with energy efficiency. As part of the best practices review; Idaho Power's Customer Representatives, Community Educational Representatives, external program managers and SMEs were asked to rate the value (1-10 scale) of various non-energy benefits as motivational drivers to save energy from the customer perspective. Saving money (9.4) tops the list of non-energy motivators and is followed by improved comfort (9.1), health and safety (7.6), being/feeling "green" and reduced environmental impacts (both 7.3). Convenience and time saving along with home improvement were rated 7.1 in terms of importance to motivate energy conservation actions and behaviors. Both economic prosperity (6.0) and national security (5.5) were viewed least important or perhaps simply least relevant and somewhat contextually abstract.

Table 7. Importance level of non-energy benefits as motivational drivers among residential customers

Non-energy Benefits as Motivational Drivers to Conserve Energy	External Program Managers and SMEs	Idaho Power Customer Reps & Community Education Reps	All Respondents	n
Saving Money	9.6	9.0	9.4	7
Improved Comfort	9.2	9.0	9.1	7
Health & Safety	7.0	9.0	7.6	7
Being/Feeling "Green"	7.4	7.0	7.3	7
Reduced Environmental Impacts	7.4	7.0	7.3	7
Convenience & Time Savings	7.0	7.5	7.1	7
Home Improvement	7.0	7.5	7.1	7
Economic Prosperity	5.5	7.0	6.0	6
National Security	4.8	7.0	5.5	6

2.5 Review of Existing Elements of Initiative

The REEEI produces the following materials and provides marketing services for the following initiative elements. The first two elements described are the Customer Representative and Community Educational Representatives. These two groups of Idaho Power staff were also interviewed about the other 21 elements of the REEEI and related programs. The information gleaned from those interviews is included in the discussion of each element which include:

- Customer Representatives
- Community Educational Representatives.
- Energy Efficiency Guides
- "News Scans"
- Customer newsletter "Connections"
- Monthly bill inserts
- Weekly "Newsbriefs" to pitch story ideas to local media
- "Native Advertisement"
- "30 Simple Things You Can Do"
- ''myAccount'' or "On-Line Tool"

- TV live in-studio EE segments and Integrated campaign
- YouTube Postings "Voices of Customers"
- Smart Saver Pledge with prizes
- In-person Event presentations
- Liaison with Corp Communications on energy efficiency campaigns and other media needs
- Giveaways with strong EE messaging,
- Kill-A-Watt meter lending program
- Educational distributions
- Sponsorship of Sustainable Energy and Sustainable Homes
- Student Energy Efficiency Kit (SEEK) Program in partnership with Community Education Reps.
- "The Power to Make a Difference" presentation
- Energy-related workshops at state-sponsored STEM Institutes
- Monitoring new technologies or programs to educate customers

2.5.1 Customer Representatives

Customer Representatives are assigned to regions within the Idaho Power service territory. There are 6-7 Customer Representatives in the Boise area, and 15-20 total in 5 different Idaho Power regions. Customer Representatives handle all customer relations issues—a portion of which is dealing with high bills and the marketing of DSM programs. They interact with community groups and frequently get called upon to give on-site presentations. Customer Representatives attend and represent Idaho Power while canvassing at community events. As a main point of personal contact with Idaho Power's customer, Customer Representatives are often referred to as 'eyes and ears' in the community. One Customer Representative characterized their role as, "…To reach customer with various resources, tools and programs."

2.5.2 Community Education Representatives

Community Education Representatives primarily interact with the schools and senior citizen centers. There is one Community Educational Representative for each of the 5 Idaho Power regions. Community Educational Representatives give presentations about safety, and environmental stewardship. One of their presentations "The Power to Make a Difference" focuses specifically on energy efficiency and messaging was developed in conjunction with the REEEI. The Community Educational Representatives also market and implement the Student Energy Efficiency Kit (SEEK) program to the teachers in their geographic regions and coordinate enrollment with the REEEI. The program is administered by the REEEI as part of its "Educational Distribution" effort. The vendor for kit fulfillment, curriculum delivery, etc. is Resource Action Programs.

2.5.3 Energy Efficiency Guides

The Energy Efficiency Guides are semi-annual guides intended for broad-based distribution (i.e. newspapers, handouts). Idaho Power creates and distributes "Energy Guides" twice a year - summer and winter issue. There is a new focus with each issue. Examples: a) senior-citizen-focused with lighting strategies, b) family-with-kids-focused including mini-home assessment. These Guides are inserted in printed newspapers. Community Action Programs (CAP) agencies distribute guides to senior population.

Idaho Power distributes widely via events attended and presented at by Customer Representatives and Community Educational Representatives.

One Customer Representative characterized the guides as, "…Good look, current and fresh (less than 18 months old), eye-catching to customers." Another Community Educational Representative uses the energy efficiency guides during school presentations, along with other handouts, workbooks, and bookmarks to reinforce, provide detailed examples of energy saving solutions. Uptake of guides at schools is good and reportedly incorporated by teachers in lesson plans, very popular in the schools and taken home by students and shared with parents. Thus, the Community Educational Representative suggested new guides be developed and/or current ones updated.

2.5.4 'News Scans'

'News Scans' is an internal weekly newsletter distributed to Idaho Power staff that promotes programs, customer engagement strategies, new events and campaigns. 'News Scans' is not distributed externally to utility customers.

2.5.5 Customer Newsletter "Connections"

"Connections" is a monthly and topical energy efficiency-focused newsletter that accompanies customer bills and is sent to over 415,000 customers. 'Connections' often includes energy efficiency updates, and markets a specific Idaho Power energy efficiency program on the flip-side. Two months (April and October) are dedicated to energy efficiency. The December 2015 issue story was about ''myAccount'' and included instructions on using the online tool to help customers understand their homes' energy use and how to reduce it. The art contestant winning image was featured in the newsletter and tied to a program specific article. The newsletter is timed to coincide with overall residential program marketing push and Newspaper, radio, TV, and online elements of the Initiative.

A Community Educational Representative said, "I've heard multiple comments that customers enjoyed or were excited to try the recipes included" [in newsletter]. Another Community Educational Representative indicated that 'Connections' is a bill stuffer, "but a lot of customers throw everything away in bill stuffer. But for those that read it, it's worthwhile."

2.5.6 Monthly Bill Inserts

Idaho Power customers frequently receive bill inserts or "bill stuffers" as accompaniments to monthly utility bills. According to one Community Educational Representative, customers at public events reference bill inserts in asking about the refrigerator removal program and home energy audits. The Community Educational Representative described bill inserts, "as an eye-catching tool, and if a topic interests a customer it leads them to seek more information from the Idaho Power website or staff." A Customer Representative noted that many younger customers never see bill inserts because they have gone paperless and pay bills electronically.

2.5.7 Weekly 'Newsbriefs' to Pitch Story Ideas to Local Media

'Newsbriefs' are stories written about energy efficiency and Idaho Power programs by Idaho Power marketing and program staff and mimic the look of a media press release. A Customer Representative

observed that 'Newsbriefs' are a successful marketing strategy when media "bites on it," and creates a story. 'Newsbriefs,' that pitch story ideas, are a low-cost way to capture earned media time. The public perceives media-produced stories as more authentic than purchased advertisement. The Customer Representative also noted that 'Newsbriefs' are more likely to trigger media coverage when "…short, condensed and to the point." In 2015, reporters did follow up with Idaho Power staff for print and broadcast stories and interviews on the following 'Newsbrief' issues:

- Make a New Year's Resolution to Save Energy — Jan. 5, 2015
- Interactive 'Home' Shows Energy-saving Tips — March 23, 2015
- Turning Up Awareness On Energy Efficiency — May 4, 2015
- New Energy Efficiency Guide Available Now — July 20, 2015
- Ways to Save Energy and Money When It's Hot — July 13, 2015
- October is National Energy Awareness Month — October 5, 2015
- 'myAccount' Helps Monitor Holiday Electric Use — November 9, 2015
- Prepare Your Home for Winter — November 23, 2015

2.5.8 'Native Advertisement'

Idaho Power also uses native advertisement to reach and educate customers with energy conservation messaging. Just like stories written by reporters (sometimes triggered by press releases such as 'Newsbrief'), 'native advertisement' are reporter-written-like stories, (e.g. as if by The Idaho Statesman Newspaper), and posted on the media outlets' website as paid advertisement. Native advertisement, though not as cheap as 'Newsbriefs', may also appear authentic and capture viewer attention better than straight advertisement.

2.5.9 '30 Simple Things You Can Do'

'30 Simple Things You Can Do' is a booklet Idaho Power distributes in both hard-copy and online formats. The booklet was first developed 7 years ago to educate customers on how to save energy. The booklet is widely distributed to customers from in-person contacts between customers and Customer Representatives and Community Educational Representatives. There is also an online version of the booklet viewable on the Idaho Power website. The 96-page booklet describes 30 no-cost and low-cost energy efficient measures, along with some more involved energy saving actions. The booklet also includes a chapter on the three "R's" (Reduce, Reuse and Recycle) and a chapter geared for kids. It includes referencing to Idaho Power programs, incentives and supporting tools to assist customers in taking energy saving actions.

Three Community Educational Representatives report good uptake and popularity of the booklet. Two Community Educational Representatives said customers request more copies to distribute through existing establishments and social networks (e.g. home care and housing agencies, Nampa health and welfare department and senior centers).

One Community Educational Representative described the booklet as, "…very useful and popular with customers who are asking many questions and are interested in hearing every suggestion we have to save energy. Also, if a customer has limited knowledge about efficiency it's a wonderful place to start

building a foundation of understanding. It's really nice to have a large amount of information in one place and being able to pass it on to someone who is eager to learn!"

Community Educational Representatives suggested several improvements to the booklet:

- Make the inside pages more visual with added imagery
- Give it fresh new look
- Focus more on the online version rather than paper booklet
- Make online version interactive and customized to the individual energy-related characteristics of customer homes

2.5.10 'myAccount' or 'On-Line Tool'

Idaho Power staff and initiative efforts indicate a strong focus on driving customers to use the 'myAccount' on-line portal located on the Idaho Power website. Here, customers can check on energy use, billing and account information and see links to information, tools, rebates and other resources that aid in understanding their homes energy use and identify strategies to reduce it. Specifically, the 'myAccount' On-Line Portal includes access to smart-metering, where customers can monitor their hourly usage. Idaho Power would like to use this as a behavioral modification tool. To these ends, Idaho Power recently launched a Smart Thermostat incentive program that allows customers to track usage and control thermostats remotely.

One Community Educational Representative characterized 'myAccount' as, "A wonderful tool for customers, positive feedback, very helpful for customers." Another Customer Representative noted that despite their always promoting it, some customers have yet to utilize 'myAccount'. "It's a generational thing, where younger people use it to make sure info [billing, energy use] is up-to-date. Overall, daily login to Idaho Power's customer accounts ('myAccount') have steadily increased over the last 4 and half years, from the low 2,000 per day in the summer of 2012 up to about 5,000 at the start of 2016 (Figure 1 below).

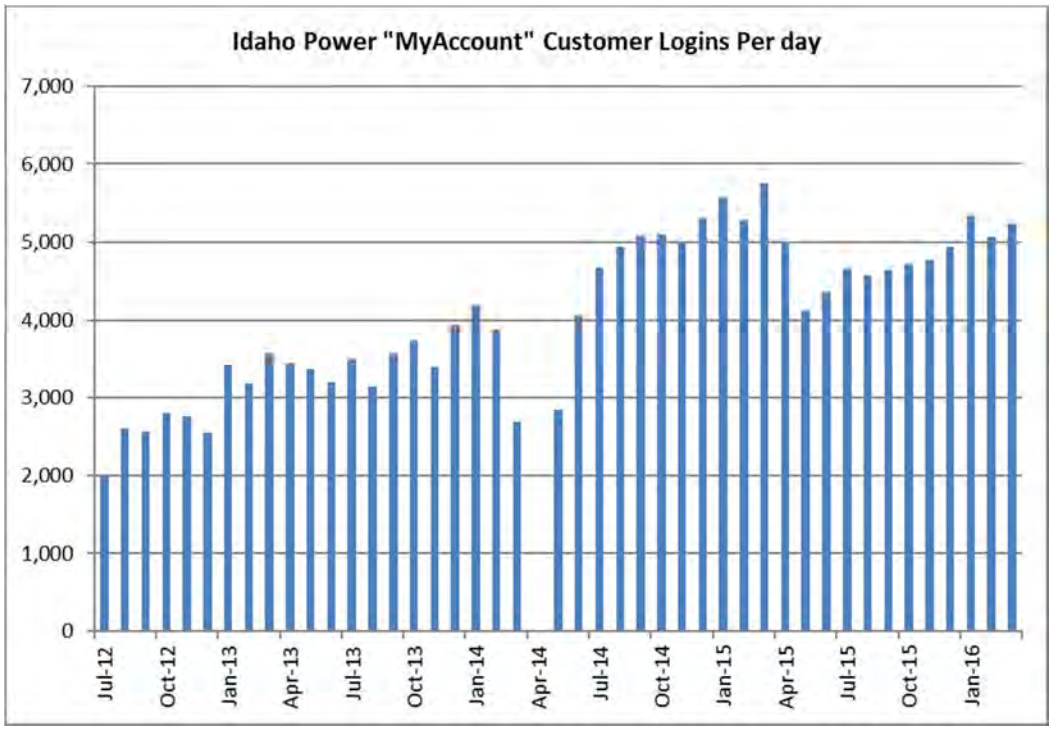

Figure 1. Idaho Power daily website customer traffic volume to 'myAccount' over time

This increasing login traffic to 'myAccount' is driven in large part by the creation of new online customer accounts accumulating over time. Moreover, the number of presumable mostly new 'myAccount' registrations per month is also increasing, from 2,000-4,000 new accounts per month in 2010-2011 up to 3,000-5,000 per month from 2013 to early 2016 (please see Figure 2 below).

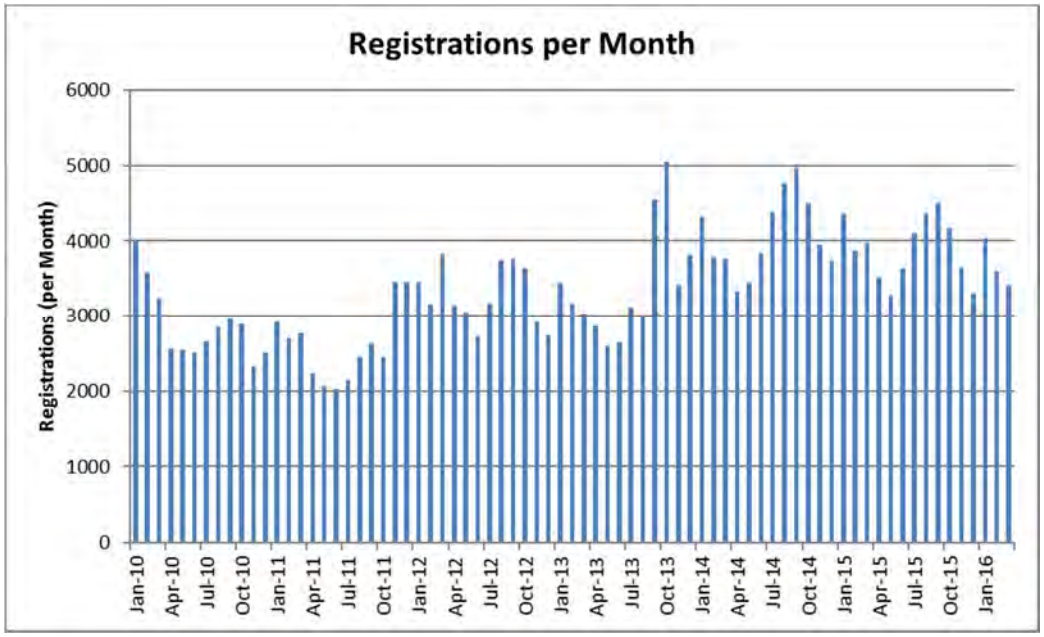

Figure 2. Idaho Power customer new account registrations per month 2010-early 2016

2.5.11 TV Live In-Studio Energy Efficiency Segments

Idaho Power produces monthly live, in-studio television segments at 2 local TV stations (KTVB & KPVI) included for airing in local newscasts. Segments are prepared to appeal to a broad audience, and often focus on program-related information. Aired segments end with a call-to-action to enroll in energy efficient programs and ask viewers to log on to the Idaho Power website. Additionally, Idaho Power purchases TV ads that cover numerous energy efficient actions and end uses in 30 second segments. One Customer Representative noted that, for several customers, the Idaho Power ads remind them of Wal-Mart because both use a smiley face logo.

2.5.12 YouTube Postings "Voices of Customers"

YouTube postings are linked to the Idaho Power website, and reportedly, "...good, easy to pull up on cell phone/computer and show to customers in the field," for one Customer Representative. During a presentation by Idaho Power staff at the Canyon County Fair, willing participants were asked to share in a video recording how they were saving energy. Excerpts from these recordings were later posted on the Idaho Power website. This is a low-cost and effective way to leverage the power of imagery and human interaction to provide authentic peer-group examples to customers. Enabling customers to see and hear live testimonials on how other customers are savings energy is a powerful engagement strategy.

It is recommended that the YouTube postings on Idaho Power websites called "Voices of Customers" be continued with a goal of adding 5 new posting per year. As Customer Representatives and Community Educational Representatives encounter Energy Champions in the field, there may be opportunity to not only produce a YouTube posting with the energy champions discussing how they save energy, but also demonstrate energy savings actions and measure installations.

2.5.13 Smart Saver Pledge with Prizes

With behavioral change in mind, Idaho Power launched a program in the fall of 2016 aimed at getting customers to make energy savings pledges by changing behaviors in their life. For three weeks beginning in early October 2016, Idaho Power asked customers to choose from a list actions of such as:

- "Go into My Account and check your energy usage once per week."
- "Use your BBQ or microwave instead of your stove"
- "Skip TV, have family game night or go out with your family"
- "Wash laundry in cold water and air-dry linens

The logic is to habituate/engrain recurring energy conserving behavioral actions by entering pledging-customers into a contest to win an Energy Star Appliance of their choice. Follow-up surveys are planned to reinforce and to see if customers plan to continue the changed behavior, and if not, why?

One Customer Representative described Smart Saver Pledges as a lifestyle feature for some customers, "…that not many people will do, but those that do are the type of customer that would choose to pay for solar panels." On the other hand, a Community Educational Representative reported that customers at the Boise, ID Home Show said that they would happily pledge and planned on doing "those things" but needed a little extra impetus to act.

2.5.14 *In-Person Event Presentations*

Idaho Power staff conducted and recorded over 590 in-person (or webinar) outreach activities, training sessions and events in the Outreach Tracker (from early 2012 to mid-2016). With an estimated average attendance of 809 people per event, an estimated 477,310 in-person contacts were made during these events with customers and other members of the public in Idaho over a 4-and-half-year period (Table 8). This is probably an underestimate, because despite Idaho Power staff being instructed to record all outreach activities, invariably some events and outreach activities are not recorded. The types of events and organizations that Idaho Power presented included webinars, professional training sessions, trade associations, conventions, faith-based organizations, apartment, condo and homeowner associations, classes, exhibitions, shows, fairs and other major Idaho events. Topics presented by Idaho Power staff covered the full gamut of energy-related issues, users and end-uses.

Table 8. Idaho Power Outreach activities recorded in the Outreach Tracker (2912-2016)

Outreach Activities Recorded in Outreach Tracker	Date Range	Type of Activities	Sponsoring Organization	Venue Location	Average Estimated Attendance	Average Recorded Attendance	Estimated Total Attendance
590	Early 2012 thru Mid-2016	Various	Various	Physical Location or Webinar	806	809	477,310

One Customer Representative reportedly puts on 12 presentations per year. Idaho Power should continue to be judicious and selective in what on-site presentation to do, as this is a particularly time-intensive activity. For example, presentations at small homeowner association meetings may not be worthwhile. However, a heavily attended event where people come expecting to learn about energy might be worthwhile. Both a Customer Representative and Community Educational Representative said the most effective part of in-person presentation is the question and answer (Q/A) period that follows at the end, because this is where customers become most engaged in energy efficiency.

One Community Educational Representative said that customers are always very appreciative of in-person presentations. “Teachers and civic groups express gratitude and appreciation for the opportunity as it’s a fun way to get through a lot of information in a short amount of time!” Some benefits to live presentations include audience responsiveness to analogies/comparisons, ability to adjust/tailor presentations topical depth and breadth to fit audience. However, one Community Educational Representative expressed the need to update the content and visual displays in presentations.

On-site and in-person presentations are labor intensive and sometimes not cost-effective. Data indicates Idaho Power staff already does a yeoman’s job in responding to requests and presenting to numerous groups. It is recommended that Idaho Power note the historical estimated attendance levels already recorded in the outreach activities tracker database and discontinue low-attendance events in the future. Perhaps a rule of thumb would be no more than 1 dozen events per year per outreach field staff person, and only for events attended by 50 or more customers and where participants attend expecting to learn something. However, exceptions might be granted for Community Educational Representatives and Customer Representatives engaged in duties core to their job description.

2.5.15 Liaison with Corp Communications on Energy Efficiency Campaigns & Other Media Needs

The Initiative Manager and Marketing Specialists collaborate with Customer Representatives and Community Educational Representatives on content for energy efficiency awareness campaigns, ideas and script, input for television/radio spots, web re-design and improvements, development/review of social media posts, newsletter articles for Home Owners Association (HOA) and employers. One Customer Representative indicated only little involvement as a liaison with 'corporate communications'.

2.5.16 Giveaways with Strong Energy Efficiency Messaging

Idaho Power conducted giveaways that included items such as; paper fans, clothes drying racks,[11] LED light bulbs and color changing mood pencils, collapsible Frisbees and notepads to capture the attention of kids and adults and engage them in energy efficiency. To deepen engagement and persuade customers, Idaho Power combines energy efficient equipment giveaways with strong energy conservation messaging.

One Community Educational Representative stated, "At any of the events (including senior centers visits) where we give away LED bulbs, people have really showed and shared their appreciation. Many can't believe we are giving them away. It has made a very positive impact on our customers. Many people would never even try LED lighting because of the price. But we are giving them that chance to, and changing their minds about switching over."

2.5.17 Kill-A-Watt Meter Lending Program

Several years ago, Idaho Power purchased and distributed watt meters (e.g. Kill-A-Watt) to public libraries around Idaho. The libraries, in turn, made the watt meters available for check-out to patrons wishing to understand how much electricity the electrical (plug-load) devices in their homes use. One Community Educational Representative senses that the Kill-A-Watt meter lending program builds positive relations and shows customers that Idaho Power cares about customer service. However, a Customer Representative noted that many customers are not aware of the lending program and that Kill-A-Watt meters are down in purchase price to only $20. Given, the low cost of purchasing watt meters, Idaho Power may want to purchase a bulk quantity (at a favorable discount) and use the meters for incentive and prizes that boost participation and customer utilization of the various elements of the REEEI.

2.5.18 Educational Distributions

Idaho Power, through the various elements of the REEEI initiative, provides its customers with educational distributions that are accompanied with energy savings products that have a strong behavioral component. The delivery of these products (e.g. LED bulbs, clothes drying racks, energy savings kits for elementary school pupils,) with educational components increases installation rates to maximize energy savings.

[11] Energy Kits and dryer racks have associated deemed energy savings that is claimed. The REEEI manages these measures, but the savings is claimed under different programs.

Education distributions that include energy saving devices were characterized by one Community Educational Representative as an excellent way to encourage and remind customers [with take-home items] to apply what they learned in their home and build relationships with customers. "I've received numerous comments from customers about the Home Energy Saving Kits and classroom Energy Wise kits. The children always express that they tried everything included with their parents or family members. The adults express that they are happy to have the free materials especially the light bulbs and showerheads." Another Customer Representative observed that the clothes dry-rack program was extremely well received and an effective and, "…cheap way to engage customers in educating and changing how they dry clothing, which complements the Shade Tree Program."

2.5.19 Sponsorship of Sustainable Energy and Sustainable Homes

Idaho Power Community Educational Representatives put on a series regarding sustainable energy in homes in conjunction with the United States Green Building Council (USGBC).[12] The USBGC mission is to transform the building design and construction process consistent with LEED[13] — a top third-party verification system for sustainable structures. USGBC advances buildings that are greener for the environment and healthier for occupants. Idaho Power is a part of USGBC's community network, which collaborates with industry experts, market researchers and LEED professionals.

2.5.20 Student Energy Efficiency Kit (SEEK) Program in Partnership w/Community Education Reps.

For the SEEK program, Idaho Power Community Educational Representative staff coordinate with elementary school teachers and their curriculum and come to classrooms and instruct students on energy resources, it's wise uses, generation and efficiency technologies and how to conserve it. The program includes a kit containing items for hands-on learning and take-home energy efficiency measures for installation that save energy at home.[14]

One Community Educational Representative characterized their partnership with SEEK as, "to build rapport with the schools and students on behalf of Idaho Power so that they see Idaho Power as an energy efficiency and environmental advocate and expert. They work to educate the students and teachers on how they can use energy responsibly and provide specific examples that encourage them to share ideas and try them at home. They encourage the audience to implement what they learned and share the information with their families and friends." A Customer Representative indicated receiving frequent positive feedback about SEEK from parents with school-age children.

Two Community Educational Representatives mentioned numerous positive comments they had received from customers about the Home Energy Saving Kits and classroom Energy Wise kits and noted that this activity builds strong customer-utility relations. One Customer Representative said, "The children always express that they tried everything included [in the kits] with their parents or family members. The adults express that they are happy to have the free materials especially the light bulbs and showerheads." Another Community Educational Representative articulated SEEKs impact, "The teachers cannot thank us enough for this program! From the feed-back I have received, they absolutely

[12] USGBC (United States Green Building Council); http://www.usgbc.org/
[13] LEED (Leadership in Energy & Environmental Design)
[14] Website: IdahoPower.com/Save2Day is website for kits program.

love being able to provide this program and lessons to their students. The students as well, have been very excited about this program and have had a lot of fun learning and being able to bring it into their homes and share with their parents. What a fabulous connection Idaho Power can make with our customers through all these thankful and impressionable students and teachers!!!"

One Community Educational Representative said that Idaho Powers goal was to deliver 6,500 student energy efficiency kits (SEEK) per year and this goal has reportedly been achieved each year. Community Educational Representatives often schedule The Power to Make a Difference presentation to be given at the time that SEEK kits are delivered in the classroom to reinforce the message with hands-on actionable energy efficiency measures. This pairing of Initiative activities aids in and emphasizes the need for efficiency and conservation.

2.5.21 'The Power to Make a Difference' Presentation

Three Community Educational Representatives described "The Power to Make a Difference" as an extensive presentation for an audience of students and teachers that includes; examples, demonstrations, comparisons and take home/classroom materials. During 'The Power to Make a Difference' presentation students learn about; energy conservation, resources, demands and constraints, electric utility functions and phases-of-operation (generation, transmission, distribution and load), technology changes, the history of electric utilities such as Idaho Power, how energy is converted from one form into another, how electricity flows, peak-loads and the cost and price of energy. Specifically, Idaho Power's 'The Power to Make a Difference' was presented 124 times to 3,359 students in 2015. Also, Idaho Power field staff and customer representatives delivered 204 presentations to a wide array of local and community-based organizations. Two Community Educational Representatives observed that the presentation dovetails nicely into existing classroom curriculum.

2.5.22 Energy-Related Workshops at State Sponsored STEM Institutes

Eighteen high school teachers participated in a 3-day professional development seminar facilitated by the i-STEM Institute[15] and sponsored by Idaho Power. The 18 teachers that participated were from schools throughout southeast Idaho. The workshop was targeted toward grades 9-12, often with teachers from other grades participating as well. The goal was to provide teachers with information and classroom tools to teach students to think critically about energy, including; the science of energy, energy generation and sources, wise energy use and social impacts.

The professional science educators from the i-STEM Institute reported extensive experience in Idaho's public school system. These educators designed the curriculum and facilitated the professional development workshop for high school teachers on behalf of three sponsors; Idaho Power, the US DOE Idaho National Lab (INL), and Intermountain Gas. After this workshop, these 3 sponsors continue to provide ongoing collaboration and energy education support for schools and teachers in Idaho.

In the i-STEM program, teachers enrolled on their own and selected a STEM (Science, Technology, Engineering, Math) track in which they wanted to participate. Next, teachers were trained on and

[15] i-STEM is a coordinated effort by the State Department of Education, Idaho Professional-Technical Education, educators, businesses, and industry to support science, technology, engineering and math (STEM) education in Kindergarten through 12th grade. .http://sde.idaho.gov/academic/istem/

provided extensive curriculum tailored to their individual STEM track during a 3-day professional development workshop. The workshop included an extensive agenda and curriculum detailed in Appendix A.

The program provided teachers with a special energy education toolkit that included; watt meters, LEDs, solar lights, demonstration sized electric generators, various electrical circuit components and sensors, in total, 54 items for classroom hands-on and demonstration items were provided (Please see Appendix A).

This experience was said to be particularly valuable for teachers because of "the hands-on, mind-on nature of the 3-day experience as well as the supplies and equipment they get." The supplies contained in the energy education toolkit allowed teachers to immediately put subject matter curriculum into practice, which has been demonstrated critically important to the comprehension, absorption and retention of knowledge. One Community Educational Representative added that they participate in "Science Day" at elementary schools and at the Idaho After-School Network by presenting a demonstration and lesson on electrical generation and circuits and assist with judging science projects.

2.5.23 Monitoring New Technologies or Programs to Educate Customers

One Customer Representative reported no direct involvement with monitoring of new technologies. Instead, the corporate office of Idaho Power monitors new technologies and programs for possible inclusion in energy efficiency program and educational efforts.

2.6 Other Customer Engagement Strategies

External program managers, SMEs and Idaho Power's Customer Representatives & Community Educational Representatives were asked about other home metering and home energy reporting customer engagement strategies (Table 9). Conventional home energy reports (lacking disaggregated energy use) are generally viewed as only delivering shallow and short-lived energy savings. Fully-enabled smart meters allow for an improvement (and more potential savings) over simple whole house energy reports, but take a more dedicated customer and meter installation.

Table 9. Metering and Home Report - Customer Engagement Strategy

Metering and Home Report Customer Engagement Strategies	External - Program Manager and Subject Matter Experts (SMEs)	Internal - Idaho Power Customer Reps & Community Educational Reps
Home Energy Real-time Feedback	● Very effective way for homeowners to monitor usage. ● Thermostat or other human interfacing device need simple sensory ques (e.g. glowing color coding on thermostat tied to pricing / energy usage. ● Make it simple and independent of computer. ● Smart phones can be notified about weather and pricing events. ● Programmable thermostats (e.g. NEST) is easy way to educate readily approachable technology. ● NEST not right for customers who want to "set it and forget it." Use the more advanced NEST thermostats.	NA
Fully Enabled Smart Electric Meters (AMI)	● Good for home show demonstrations! ● Takes more dedicated customer, but when used can be tied to "My Account." ● Works best if home has smart appliances, so approach is limited to customers with newer technologies.	● If customers check meter regularly, it reminds them to adjust energy use and allows time to change behavior before billing period ends.
Customer Feedback via Comparative Home Energy Reports (e.g. Opower)	● Opower, Tendril and Simple don't bring net benefit to our existing portfolio of energy efficiency programs. ● Paints a broad picture of home energy use. ● Tie home energy reports directly to customer bills. ● Home energy reports are great starting point, but savings drops off. ● OPower leverages history of bad utility billing data and systems that aren't set-up well. ● Make monthly utility bill look more like home energy report. ● Utility bills contain little info, and what's there is not discernable to customer. ● A Southern utilities, Opower programs eliminated - viewed as impolite. ● Decay rate of energy savings is 20-80 once the messaging stops, so if the customer's behavior does not persist after the messaging stops, is it really behavior change? ● Opower achieves only shallow savings for short period of time from a lot of people, and some are offended by comparison to neighbors.	● Customers are always very interested in how their usage compares. Privacy issue with comparing home energy use to neighbors.

External program managers, SMEs and Idaho Power's Customer Representatives & Community Educational Representatives were asked about several other customer engagement strategies (

Table 10). Several respondents suggest more focus on making utility website more user friendly and enticing. The link between energy savings and water savings can be used to reinforce educational messaging. Several respondents said that the most effectively used imagery (to engage customers) shows people performing the actions of installing energy efficient measures and the behaviors of conserving it.

Table 10. Other Customer Engagement Strategies

Other Customer Engagement Strategies	External - Program Manager and Subject Matter Experts (SMEs)	Internal - Idaho Power Customer Reps & Community Educational Reps
Increase customer use of utility website	● Utilities should hire outside web firm to make websites user friendly (like Amazon.com). ● Link utility website to specific contractors/manufacturers. ● Try energy usage spike alerts to customer.	● Market websites ease-of-use and provide video instructions to lure unfamiliar customers to logon.
Water & Energy Savings Nexus	● We have no water initiatives at this time. ● Connection between water and energy via traditional direct install energy savings measures. ● Energy to water tie ins; water-restricted climate/geography, low water-using clothes washers, cold water laundry, low-water lawn and landscaping. ● Time water savings message when water utilities raise rates and when droughts occur.	● Water saving is added benefit of certain energy savings actions. ● School children learn value of conserving resources, so tying water to energy (e.g. energy to pump and heat water) is great way to reinforce what's learned while introducing actions that impact both. ● Water not wasted can be utilized to generate electricity via hydroelectric.
Imagery to engage and educate energy users and change behavior	● Low-cost program simply shows pictures and videos of people installing measures to trigger Do-It-Yourself-ers. ● Use case studies of actual program participants. ● Use imagery to grab initial attention, then switch to content. ● Customer testimonials & case-studies are most compelling for major measures. ● Connects people to their future self (e.g. image of face with accelerated aging)	● Show energy efficiency saving money. Use images of things most relatable to people.
Other Feedback Programs	● Focus behavior-change through traditional programs that educate customer, which is vital to achieve sustained long-term savings. ● Apogee weather app. tells customers, on their telephones, the cost of their electricity for that day. If high, customer can ask for tips - effective because it links weather (which keeps coming anew every day) to behavior change and may lead to lasting savings.	NA

2.7 Best Practice Review

There are four basic types of behavioral change programs and strategies; informational programs, socially interactive approaches, education and training (E&T) and a stacked approach. The latter simply combines multiple programs or strategies from the first three types into a single campaign. The four types of behavioral change strategies are already present in the myriad of Idaho Power REEEI initiative elements described in this report. Information-based programs fall into one of four categories; home energy reports, real-time feedback, audit programs and persuasive messaging. Socially interactive tactics can be categorized as in-person, community-based or as gamification. E&T programs involve either strategic management (mostly non-residential), K-12 and colleges or other 'train-the-trainer and/or customer' E&T programs.

For the secondary research on best practices, this research evaluation looked at programs and efforts that other utilities and organizations are implementing and that have educational and behavioral components. In 2015, Idaho electric utilities spent more (1.75%) on energy efficiency measures than the national median average (1.28%) - as a percentage of statewide electric utility gross revenues.[16] The percentage of this energy efficiency spending devoted to energy education was not broken-out separately.

On October 18th of 2016, ACEEE released a comprehensive synthesis on the status and impacts of behavior change energy efficiency programs throughout North America. It is recommended that the Idaho Power Residential REEEI manager read the 13-page executive summary of this report.[17] (Link: http://aceee.org/research-report/b1601)

2.7.1 External Program Manager Best Practices Interviews

At the same time of this evaluation report, a new publication became available that comprehensively addresses the fundamental research question of best practice regarding residential energy efficiency behavioral programs. It is recommended that Idaho Power staff review the executive summary and tabular displays in this ACEEE study.[18] This study is also included as the first item in the annotated bibliography located in the appendix of this evaluation report (Page 1).

Below are descriptions of four residential behavioral programs located outside of Idaho that were further investigated via in-depth interviews of program managers/SMEs and additional follow-on research. These include a residential disaggregated-energy-report behavioral pilot, a '30-tips for high impact savings' approach, a K-12 SEEK program with professional sports franchise endorsement and a home energy audit program.

Home Energy Analyzer, (Residential Behavioral Pilot –with Disaggregated-Energy-Use Home Energy Reports) -Alameda County, CA

The Alameda County CA program with PG&E was one of the 100 behavioral programs analyzed in the ACEEE study. The program specifically targeting behaviors based on the homes actual energy end uses as a more effective way of changing behavior. In Alameda County, when free programmable smart thermostats were offered to opt-in participants, in conjunction with direct personal appeals to customers by phone and a home energy reports, significant energy savings followed. The Alameda County Home Energy Analyzer (HEA) Program reported 1 year energy savings of 7.4% (electric) and 13% (gas). The home energy report included disaggregated energy use into five categories; base load (plug load/idle current), recurring load (exterior lighting and devices on a timer), variable load (appliances and electronics when in use), cooling and heating loads. This gave utility customers deeper insight into energy savings potentials for their homes. Also, key here was the program's inclusion of extensive contact with customers, including personal phone calls. This trio of behaviorally reinforcing program elements, may have overridden the impoliteness of comparing one's energy use to the neighbors as well

[16] Source: ACEEE 2016 State Energy Efficiency Scorecard, http://database.aceee.org/sites/default/files/docs/spending-savings-tables.pdf

[17] http://aceee.org/research-report/b1601

18 Reuven Sussman & Maxine Chikumbo, "Behavior Change Programs: Status and Impact." American Center for an Energy Efficient Economy (ACEEE) Report# B1601, October 2016, 108 pages. http://aceee.org/research-report/b1601

as deepen the energy savings (once a customer has "bought in" and starts interfacing with the thermostat's energy savings information and "behavioral suggestion").

Three other programs, similar to Alameda County's, show promise at deepening the energy savings beyond the traditional/generic home energy report (Table 11). Many programs now use smart-meter data or data from other sources, to provide tailored home energy reports with energy tips specific to each household's actual energy using characteristics. For example, PG&Es Mountain View Energy Upgrade program also included the use of smart-thermostats and 5-category disaggregated energy use reporting.

Table 11. HEA Reported Energy Savings from Alameda County, CA and Several Other Similar Programs

Program	Participants	Duration	Average kWH reduction	Average therms reduction
Energy Upgrade Mountain View	1239	3 years	5.5%	16.4%
Energy Upgrade Mountain View, top quartile customers	310	3 years	14.5%	32.6%
Alameda County Home Energy Analyzer	299	1 year	7.4%	13.0%
Silicon Valley Energy Watch	85 (low income seniors)	1 year	10.2%	12.2%

Source: http://corp.hea.com/results/

"30-Ways to Save" Program – Wisconsin Investor Owned Utility (IOU)

The Wisconsin-based evaluator of the "30-Ways to Save" Program said its purpose was to reduce customer bills of utility customers who perceived them as high and implement a low cost simple program. In 2011, a Wisconsin utility condensed a booklet of 101 Energy Savings Tips, into 30 tips within three categories, for high-impact savings. The three categories of no cost, low cost and more involved measures were as follows; 1) space heating and cooling no cost behavioral actions related to thermostat settings, fireplaces, blinds, drapes and shade, 2) minor measures such as use of fans over AC, weather-sealing, installation of programmable thermostats and HVAC tune-ups, 3) major higher-cost measures; energy audit and insulation, HVAC replacements, fuel switching and windows.

The program impetus was increased customer satisfaction and goal to reduce residential customer bills that were perceived high. The program was not marketed at all, but enrollment occurs when a customer contacts the utility and complains about perceived high energy bills. It was estimated that several thousand customers have been enrolled since 2011. Some of the behavioral change strategies centered on managing building envelope heat gain and loss, thermostat settings, and fan and fireplace usage.

The SME recently learned in a focus group needs assessment of high energy users and low-income and hard-to-reach customers (whose bills are high in relation to income) that these customer groups want

energy efficient education and recommended actions highly customized to their distinctive households. Moreover, these customer groups want the recommendations to come from the utility on an ongoing basis. Customers perceived that utilities already know their end uses and that utilities should simply give them this tailored feedback on how to save.

K-12 Energy Kits Program (with sports franchise sponsorship) - Oregon Energy Trust

A residential program manager identified Oregon Energy Trust's (ETO's) Living Wise Kit Initiative as a best practice program. The Living Wise Kit Initiative, was implemented by subcontractor CLEAResult as a part of 'Resource Actions Programs' engaged 6th grade school teachers and provided an offering that meets state standards for science and math, energy education curriculum, and classroom tools. The curriculum engaged students by providing them with a take-home energy and water conservation and education kit. The kit includes a suite of; energy savings tools, activities and self-installed energy and water saving devices and is accompanied by materials that reinforce lessons and learning. The contents of the kit reportedly have a retail value of approximately $50. Two years ago, ETO added a Portland Trailblazers co-sponsorship tie-in that engaged students. The Initiative also includes an offering to parents (via kids) of an on-line home energy review (audit).

Forty-percent of parents engaged in the online audit portion after the Trailblazers tie-in was established. Previously, the online audit only achieved a 5% uptake. Sponsorship reportedly made the difference. From an on-line audit, parents viewed pictorial examples and links to other utility rebate programs. The subcontractor did follow-up surveys to measure installation rates of kits. Specifically, the self-installed participants reportedly achieved an installation rate of 40% for high efficiency showerheads, 66% for LED light bulbs, and 37% for bathroom faucet aerators. Student tests scores, regarding energy subject-matter knowledge, improved from 59% pre-program to 78% post program.[19]

The impetus for the program, first launched in 2008, was to drive energy efficiency awareness and savings through elementary the school channel. In the fall semester of 2015, the Living Wise ETO program was implemented by 14,619 teachers, students and families; and another 2,404 in the spring of 2016.[20] Energy savings from self-installed energy savings measures was estimated at 432 kWh and 14 therms per year, with projected lifetime savings of 6,401 kWh and 208 therms.[21]

Each student & teacher received a student guide, student workbook, parent/guardian program introduction letter, student survey form, certificate of achievement and Living-Wise Kit. The kit contained; LED light bulbs, high-efficiency showerhead, kitchen faucet aerator, bathroom faucet aerator, digital thermometer, flow rate test bag, and installation DVD, and website access. Each teacher/classroom received a step-by-step program checklist, lesson plans, State of Oregon and National Academic Standards Chart Extra Activities Teacher Program Evaluation Pre/Post Student Survey and answer keys.[22]

[19] Living Wise with Energy Trust of Oregon: Summary Report, Resource Action Programs, July 2016 page 6.
[20] Living Wise with Energy Trust of Oregon: Summary Report, Resource Action Programs, July 2016 page 5.
[21] Living Wise with Energy Trust of Oregon: Summary Report, Resource Action Programs, July 2016 page 7.
[22] Living Wise with Energy Trust of Oregon: Summary Report, Resource Action Programs, April 2016 page 11.

Home Energy Audit - Ameren Illinois

The manager of the Ameren Illinois Energy Efficiency Program for Income Qualified Home Energy Program identified the program as a success in the residential sector. The program was launched in 2014-2015 and completed 1,300 projects in 2015-2016. The program was marketed to 1) trade allies via webinars, in person training, email blasts, flyers/mailers and 2) utility customers, digital marketing plan, targeted email marketing, targeted posted mail, community events, partnerships with local community organizations, and bill inserts. In addition, non-traditional marketing channels included outreach to low income community and not-for-profit groups already embedded in the low-income segment and outreach to seniors via community groups and exercise programs. The program also sent out email, ads and digital marketing. Customers enrolled through a program ally by participating in a home audit to understand and lower their utility bills. The behavioral change strategy was to entice customers with programmable thermostats and free home energy audits. The program targeted building envelope and behavioral measures.

The offerings within the external best practice programs reviewed above have similarities with Idaho Power's REEEI portfolio, suggesting that REEEI is well-positioned to engage customers in beneficial energy conservation practices with a broad selection of activities and materials. The energy savings reported by these external programs demonstrate the benefits of educational initiatives.

The Alameda County Residential Behavioral Pilot's disaggregated energy use reporting may offer a potential enhancement to Idaho Power's 'myAccount' on-line tool, which already provides nearly real-time whole house energy use feedback to customers. This pilot, along with 3 other similar programs, reported electricity savings among participants from 5.5% to 14.5%. Programmable thermostats are another offering that can facilitate education initiatives and overall program participation, with verifiable ex-ante savings, as the Alameda County Program and Ameren Illinois Income Qualified Home Energy Program demonstrated.

Updating REEEI's "30 Simple Things You Can Do" booklet, as a Wisconsin utility reported doing, may also enhance savings opportunities for Idaho Power customers. REEEI's SEEK program, with "The Power to Make a Difference" presentation, is very similar to ETO's Livings Wise Kit Initiative. Both programs are popular and successful in the schools and with parents. Idaho Power could consider enhancing their REEEI program results by claiming deemed demand and energy savings from kit measures or suggested behavior changes initiated by the student kits already offered. Student kits are often easily and readily associated with deemed ex-ante savings values for efficient replacement lighting, low-flow fixture adaptations, and other simple to install items.

3.0 Recommendations and Conclusion

Recommendations

On-site and in-person presentations are labor intensive and sometimes not cost-effective. Data indicates Idaho Power staff already does a yeoman's job in responding to requests and presenting to numerous groups. It is recommended that Idaho Power review historical estimated attendance levels already recorded in the outreach activities tracker database and discontinue low-attendance events in the future. Limit outreach field staff presentations to one dozen per year to convey educational and training messaging for 50 or more customers. However, exceptions to the event limit might be granted for Community Educational Representatives and Customer Representatives engaged in duties core to their job description.

Idaho Power should continue the production and distribution of the "30 Simple Things You Can Do" booklet by refreshing it with more colorful visuals and added imagery, pointing customers to the online version rather than paper form, and exploring ways to make the online version interactive and customized to the individual energy-related characteristics of customer homes. Idaho Power may also consider creating an abbreviated version of the booklet (4-6 pages) for wider distribution, perhaps as a bill stuffer.

Idaho Power should investigate the cost and logistics of offering home energy reports with disaggregated energy end use derived from existing billing data for their residential customers who opt-in for home energy report information. If deemed cost-effective to make such as offering, a service offering description and link to the 'myAccount' webpage could be added to enroll residential customers.

Idaho Power should engage in discussions with Idaho State Universities and its athletic department (or other popular sports franchises located in the State of Idaho) to explore co-branding or co-sponsoring strategies. The purpose of which would be to enhance the appeal of Idaho Power's existing elementary school K-12 SEEK program and to motivate elementary students to take energy-saving action and encourage parents and guardians to do so also.

Customers that see and hear live testimonials on how other customers are saving energy is a powerful engagement strategy. It is recommended that the YouTube postings on Idaho Power websites called "Voices of Customers" be continued with a goal of adding 5 new postings per year. As Customer Representative and Community Educational Representative staff encounter customer energy champions in the field, there is opportunity to, not only produce a YouTube posting with the energy champions discussing how they save energy, but also physically demonstrating energy-saving actions and measure installations.

Given the low cost ($20 retail) of purchasing watt meters, Idaho Power may want to purchase a bulk quantity (at a favorable discount) and use the meters as incentive and prizes to boost participation and customer utilization of the various elements of the REEEI.

On October 16th 2016, ACEEE published a study that comprehensively addresses a fundamental research question of this evaluation, 'what are the best-practice residential energy efficiency behavioral programs?' It is recommended that Idaho Power staff review the executive summary and tabular displays in this ACEEE study.[23] This study is also included as the first item in the annotated bibliography located in the appendix of this evaluation report (Page 34).

Conclusion

The 23 elements of the REEEI can be grouped into three aspects of behavioral change (informational, interactive, and educational) and mapped to what other utilities are achieving in terms of energy savings.

Informational Aspects of REEEI: IPC's 'On-Line' Tool is accessible to customers via 'myAccount' and allows customers to view energy use in nearly real-time. Idaho Power also recently added a Smart Thermostat Incentive Program that allows customers to track usage and control thermostats remotely. At other utilities, these types of informational tools are reported to save from 1-15% of electricity and gas usage. The range is narrowed to 5-8% in net electric savings for opt-in situations such as IPC's 'On-Line' tool. Home energy audits done on-line and over the phone reportedly save from 1.3%-6.5% in electricity nationally. Home energy reports –save 1.2%-2.2% in electricity for opt-out programs, upwards of 16% for opt-in programs, and 4.2% for opt-out programs with disaggregated energy-end use reporting. IPC's REEEI includes a large suite of persuasive messaging elements, such as; energy guides, customer and employee newsletters, bill inserts, 'Newsbriefs,' native advertisements, TV programming and ads, YouTube postings, sponsorships and other educational distributions and outreach. These types of persuasive messaging increase electricity savings from existing programs (around the U.S.) by 1.2-8.0% and increase the frequency of energy saving behaviors by 10-30%.[24]

Socially Interactive Aspects of REEEI: IPC Customer Representatives, Community Educational Representatives, and other staff engaged in over 590 in-person events reaching an estimated 477,000 people over 4.5 years. The literature indicates that in-person strategies reduce electricity consumption from 4.4% (goal setting) to 27.0% (with public commitment) and increase utility energy efficiency program enrollment upwards of 300%. The REEEI also utilize socially interactive competitions and games via Smart Saver Pledges with prizes and other giveaways with strong energy efficiency messaging. Residential-sector competitions and games, such as the REEEIs, save from 0.7% to 14.0% electricity around the U.S. The REEEI is also engaged in social marketing strategies that include target marketing. The literature puts this in the category of Community-Based Social Marketing (CBSM) and estimates attributable electricity savings in the 0-16% range. [25]

Educational Aspects of REEEI: The REEEI, through the SEEK program, 'Power to Make a Difference' and energy-related workshop at STEM institutions, implements education and training to increase energy

23 Reuven Sussman & Maxine Chikumbo, "Behavior Change Programs: Status and Impact." American Center for an Energy Efficient Economy (ACEEE) Report# B1601, October 2016, 108 pages. http://aceee.org/research-report/b1601

24 http://aceee.org/research-report/b1601, page, 10-11.

25 http://aceee.org/research-report/b1601, page, 12

conservation behaviors. Electricity savings attributable to school programs around the Country is reportedly in the 13-37% range.[26]

IPCs REEEI is comprehensively addressing and implementing a full range of behavioral change strategies for its residential customers. REEEI's depth and breadth of behavioral change efforts appear to be at least on-par with what is seen at other utilities.

26 http://aceee.org/research-report/b1601, page, 13.

APPENDIX A - Annotated Bibliography

The Leidos Evaluation Team performed a literature review of best practice residential energy education programs in North America and beyond. Though 'OPower-like' home energy reporting programs remain prevalent and are becoming more sophisticated, numerous other nuanced programs have been implemented in recent years and are investigated in the literature annotated below.

Reuven Sussman & Maxine Chikumbo, "Behavior Change Programs: Status and Impact." American Center for an Energy Efficient Economy (ACEEE) Report# B1601, October 2016, 108 pages.

Utilities and regulators increasingly rely on behavior change programs as essential parts of their demand-side management portfolios. In 2013, the American Council for an Energy Efficient Economy (ACEEE) published the Field Guide to Utility-Run Behavior Programs, which surveyed and categorized the various programs available at that time.1 In this current report, we update those findings and evaluate the effectiveness of currently available programs, focusing in particular on programs that have been assessed for energy savings. We incorporate research from other recent reviews, as well as our own survey of formal program evaluations, academic peer-reviewed literature, and conference proceedings. We focus on behavior change programs that primarily rely on social-science-based strategies instead of traditional approaches such as incentives, rebates, pricing, or legal and policy strategies. Our objective is to help program administrators choose effective behavior change programs for their specific purposes. We classify programs using a taxonomy derived from previous reviews.

Kira Ashby (Senior Program Manager), "2016 Behavior Program Study." Consortium for Energy Efficiency (CEE), (617) 337-9281, kashby@cee1.org. 2016, Excel Database.

This Excel database covering 140 programs with some element of behavior and contains 197 fields (variables) of data. The purpose of this program summary is to serve as a resource for members and to help facilitate information exchange among the membership. We anticipate that this program summary will aid in the design and implementation of programs with behavior change elements by shedding light on what members consider to be behavior change programs and how members are currently measuring and evaluating these efforts.

Dr. Shahana Samiullah, Southern California Edison, Rosemead, California et al, "Are We There Yet: Building Behavior Programs to Serve a Purposeful Role in DSM Portfolios." International Energy Policy & Programme Evaluation Conference (IEPPEC), Berlin 2014, 9 pages.

A new breed of efficiency initiatives, termed behavior programs, is very much on the minds of program planners and policy makers. Many such programs are in operation in North America. The programs and the policy mandates for inclusion of these programs in DSM portfolios need to first address a myriad of questions, including their purpose, role, cost-effectiveness, and potential savings in DSM resource portfolios. In this paper we articulate some of the hard questions California is asking of such programs. Can behavioral programs be relied on for system planning or addressing grid constraints? Do they have a role as resource acquisition programs or should they be leveraged and serve as a complement to traditional programs? The experience from California includes sharing information about programs designed to fulfill regulatory mandates. In particular, the paper presents experience from one Southern California utility on program design considerations for feedback programs during planning and implementation phases, and on how evaluation was built into those designs to address the hard questions. While there is a variety of feedback programs that fall under an expanded category of behavior programs1, this paper discusses role of these programs with a focus on the recent widespread adoption of home energy reports programs and similar usage feedback programs.

Kathleen Zoonnekindt GDF Suez, Paris, France and CSI, Ecole des Mines de Paris , "Reducing domestic energy thanks to ICT and smart technologies : key factors of social acceptance from the European project SHOWE-IT", International Energy Policy & Programme Evaluation Conference (IEPPEC), Berlin 2014, 8 pages.

This paper presents some key sociological results from the European research project SHOWEIT launched in 2011 for 4 years. This project cofounded by the European Commission in the CIP ICT PSP Program "Projects on ICT for Energy Efficiency" experiments the use of smart metering systems and energy interfaces in real-conditions, by 92 households selected in France, England and Sweden. A series of qualitative interviews made in the three countries on 40 households allowed to understand some key elements expected by tenants for future "smart" energy services. The current "information regime" in energy consumption (mainly the bills) remains too complex and fragmented for tenants, but paradoxically they have a strong knowledge on their daily habits of energy consumption, and a lot of the tenants interviewed have already adopted different kind of energy saving behaviors. This paper will detail some of these savings behaviors as well as tenants' expectations for "User Centered" energy ICTs including simple metering display, budget service and energy management tool.

Carly McClure and Bill Provencher, University of WI-Madison and Navigant Consulting, "Energy Savings Over a 3-year Opt-in Rewards-based Residential Behavioral Program.", International Energy Policy & Programme Evaluation Conference (IEPPEC), Berlin 2014, 9 pages.

This study evaluates savings for a residential behavioral program at Commonwealth Edison (ComEd), a large Midwestern US utility, implemented by C3 Energy and the Illinois Citizens United Board (CUB).1 The program is a web-based, opt-in program designed to generate

energy savings by providing customers with information about their energy usage, tips to reduce energy consumption, and reward points for energy savings. We compare three quasi-experimental methods to estimate savings, with the understanding that finding similar savings from the three methods confers "convergent validity" on the estimates. The first method is the variation-in-adoption (VIA) approach used by Harding and Hsiaw (2013), in which program savings are estimated using only data from program enrollees, with late enrollees serving as controls for early enrollees. The second and third methods are matching methods that draw on the same set of program enrollees and their 1:1 nonprogram matches, but the two are distinguished by the method used to estimate savings. The first is regression with pre-program matching (RPPM) described in Ho et al. (2007) and the second is matching with bias correction (MBC) introduced by Abadie and Imbens (2011). For both of these, matching is based on Euclidean distance in monthly energy use over a 12-month pre-program period. A 2-month pre-program "test window" comparing the average use of program customers and their matches provides a proxy test for selection bias, which is always a concern with opt-in programs. The three methods generate similar estimates for program savings: 3.81%, 3.86%, and 3.57% for the VIA, RPPM, and MCB approaches respectively.

Theodora Seal, Université de Genève, Geneva, Switzerland et al, "Towards a Behavioral Indicator for the Evaluation of Energy Conservation at Work" International Energy Policy & Programme Evaluation Conference (IEPPEC), Berlin 2014, 11 pages.

The purpose of this paper is to present a new behavioral indicator, which is still at an experimental stage, and the results of two experiments making use of it. This indicator could be used to complement traditional impact evaluations of energy efficiency programs. In the framework of its Environmental Management System, the State of Geneva planned to save 2 GWh in 2013 due to five projects of energy efficiency optimization, a part of which focused on the promotion of energy-efficient behavior at work. This was done in collaboration with a demand-side management program, éco21, implemented by the local utility. To evaluate its efficiency, a behavioral indicator, the Environmental Awareness Indicator, based on psychological studies, was designed and tested to complement quantitative results in kWh obtained by the instrumentation of several buildings. First, changes in the energy consumption before and after two energy conservation promotional weeks (called « Energy Weeks ») were measured. Consumption was also measured six months after one of the promotional weeks. Our investigations show that a well-organized Energy Week for a fairly large organization (around 400 employees) has a potential of 20% energy savings immediately after the event, decreasing to a value between 3% and 12% after six months. Second, we made use of the above mentioned indicator to analyse the qualitative behavioral evolution of the two populations studied. The indicator shows that after the Energy Week there is a general shift towards behavioral change, at all stages of the change model, with an increase (13% and 19%) of employees moving towards action. The usefulness of such an indicator is therefore twofold: it permits behavioral monitoring and enables to adapt the implementation of change actions to the behavioral stage of the target.

Anne Dougherty, Illume Advising, LLC, USA et al, "Behavioral Energy Feedback Program Evaluations: A Survey of Current Knowledge and a Call to Action" International Energy Policy & Programme Evaluation Conference (IEPPEC), Berlin 2014, 14 pages.

Behavioral-based energy efficiency programs are those that utilize strategies intended to influence consumer energy use behaviors to achieve energy and/or peak demand savings. These programs typically include outreach, education, competition, rewards, benchmarking and/or feedback elements (Todd et al, 2012). In North America, over 110 investor-owned utilities included behavior programs in 2012 as part of their energy-efficiency portfolios, allocating 0.3 percent to 10 percent of their efficiency portfolio spending to these programs. Emerging plans in Massachusetts allocated as much as 50 percent of first year kWh goals to behavior programs in 2014. Despite the overwhelming growth in spending on these programs, there are many unanswered and important policy questions that must be addressed. This paper argues that the energy industry needs to go further than just assessing energy impacts to address existing gaps in knowledge and find ways to most effectively incorporate these programs into efficiency portfolios. First, the paper presents an overview of behavioral feedback program lessons learned from third-party evaluations across North America. Next, a brief analysis of gaps in industry knowledge of how behavioral programs generate savings is provided. In the last section, policy- and planning-focused research questions that need to be answered as behavioral feedback programs mature are discussed. To date, there has been an overwhelming focus on impact evaluations, and there are many key questions that need to be addressed. Future evaluations must focus on both impact and policy questions by addressing existing gaps in knowledge about how behavioral programs generate energy savings and exploring the most effective ways to integrate these programs into program portfolios.

Mary D Zalesny, Pacific Northwest National Laboratory and Shahana Samiullah, Southern California Edison USA, "Scalability of Successful Behavior Change Programs" International Energy Policy & Programme Evaluation Conference (IEPPEC), Berlin 2014, 12 pages.

Efforts to change energy use behaviors are generally based on behavioral theories, but appear to incorporate elements of the theories selectively. They also focus primarily on the drivers that initiate behavior change rather than also including those associated with the maintenance or persistence of new or changed behaviors. Behavioral change in the short term, while not a sure bet, is relatively easy. Behavioral change for the long term is hard. Studies suggest it takes from three weeks (for a simple habit) to 8 months (for a complex one) to form a new habit (Lally et al. 2010). This paper will explore some widely accepted theories of behavior change (its initiation and persistence) that have been used as the basis for current demand-side management (DSM) programs to affect consumer energy use. In this paper, behavior-based energy efficiency (BBE) programs are defined to influence customer energy use behavior through feedback, comparison, outreach, education, competition and rewards. These programs generally target ongoing, habitual behaviors (e.g., turning off lights in

unoccupied rooms) and one-time behaviors (e.g., installing CFLs, installing energy-efficient windows, and major purchases). The paper considers the scalability of programs that have had some success in the short term (e.g., community based marketing, nudge theory, social norms, etc.). It also addresses individual differences and local conditions necessary for successful scalability to much larger populations and over extended periods of time. The evaluation of programs and approaches that appear to be successful at a local or small scale must consider the likelihood of success on a larger scale.

Ingo Bensch, Evergreen Economics and Ashleigh Keene, Seventhwave, Madison, WI, "Energy Impact from Gamification-Induced Behavior Change" International Energy Program Evaluation Conference (IEPEC), Long Beach, CA 2015, 11 pages.

Behavior programs to influence energy consumption encompass a wide range of interventions. While social norms feedback programs have been studied and evaluated extensively, we know relatively little about the energy impacts of most other behavioral interventions targeting individual and household energy practices. This paper provides results from a behavior change intervention that use gamification. It suggests methodologies for studying the impact of behavioral interventions based on social dynamics and interventions among communities of people where randomized controlled trials are infeasible or impractical. This paper is based on two assessments of Cool Choices sustainability games—one played by employees of a construction firm and one played by families of school-age children. In both cases, billing analyses showed plausible electricity savings in participating households, albeit with wide uncertainty ranges. While noisy consumption data and small sample sizes hinder precise estimates, we argue that a case can be built over time with a series of billing analyses to demonstrate the savings achieved from the game. Furthermore, we found that the triangulation of multiple approaches to estimating energy savings increased our confidence in the results and yielded additional actionable insights that helped the program build on its achievements. Post-intervention participant interviews proved particularly insightful and yielded similar results as the billing analysis when used to estimate energy impacts.

Erin Rose, Oak Ridge National Laboratory, Oak Ridge, Tennessee et al, "Assessing the Potential of Social Networks as a Means for Information Diffusion: Weatherization Experiences" International Energy Program Evaluation Conference (IEPEC), Long Beach, CA 2015, 12 pages.

Oak Ridge National Laboratory recently led two national evaluations of the Weatherization Assistance Program (WAP), as tasked by the U.S. Department of Energy. A component of the evaluation, a social network study, the Weatherization Experiences (WE) Project, explored linkages between individual households, weatherization staff and agencies as nodes within a multi-relational social system. The project goals were to: (1) explore impacts of communication from a trusted source on program participation, household energy consuming behavior and investment in energy efficiency measures; and (2) explore the feasibility of participatory research techniques through structured interviews administered by program recipients and weatherization staff. The interviews sought to answer five overarching questions: (1) who did you tell? (2) what did you say? (3) what did they hear? (4) what did they do? and (5) and why? This approach helps us understand if and what type of weatherization information is being shared (e.g., energy cost savings and health benefits), what core values are in place that might support or hinder adoption of new energy usage behaviors, and the motivating factors contributing to actions taken after information is received from a known, or trusted source. The WE Project sought to identify topics most communicated and to measure the impacts of these shared weatherization experiences on the actions of others. The primary goal of this study was to capture any energy and non-energy impacts resulting from shared communication through social networks as additional benefits attributable to the WAP. The study was fairly extensive with 85 interviewers completing 777 interviews.

Kira Ashby, Consortium for Energy Efficiency et al, "Getting Energy Use Down to a (Social) Science: Combining Behavior Insights and Connected Technologies" International Energy Program Evaluation Conference (IEPEC), Long Beach, CA 2015, 12 pages.

As energy efficiency programs increasingly apply behavioral approaches to maximize savings, the use of two-way communication technologies has emerged as a valuable tool. Connected technologies, e.g., smart thermostats, web portals, and smart phone apps, can open up new opportunities to achieve behavior-based energy savings and can even assist in the evaluation of behavioral efforts. This paper explores the ways in which energy efficiency programs are leveraging new technologies and behavioral approaches to change electricity use behavior in the residential and small commercial sectors. Three pilots serve as examples of what this work looks like in practice and how it is evaluated: Focus on Energy's iCanConserve pilot, Pacific Gas and Electric's Home and Business Area Network Pilot, and the Sacramento Municipal Utility District's In-Home Display Pilot. These pilots have facilitated two-way interaction via different technologies including smart phone apps, web portals that provide detailed electricity use information, and near real-time feedback provided through displays in customers' homes or businesses. These pilots provide actionable information to energy users in a way informed by social science research in order to encourage customer engagement and reduce electricity consumption. This paper focuses on the information provided via these technologies, the behavioral insights leveraged to maximize the impact of this information, and the early lessons learned about appropriate evaluation approaches and related results.

Shannon Kahl, Illume Advising, LLC, Madison, WI et al, "Timing, Longevity, Depth: Investigating Customer Engagement in Residential Behavior Programs" International Energy Program Evaluation Conference (IEPEC), Long Beach, CA 2015, 12 pages.

Utility-sponsored residential behavior-change programs comprise a growing portion of DSM budgets. From 2010 to 2013, the number of utilities including behavior change programs in their energy efficiency portfolios more than tripled. No longer just a paper report, newer types

of behavior-change programs include a variety of engaging features. These additional program features offer evaluators more opportunities to study the program mechanisms and consumer characteristics that promote and dissuade energy savings. While the impact of behavior change programs on energy usage has been consistently documented at one to two percent of usage, not as much is known about the mechanism of those impacts. Indeed little is known about how customer engagement in program features varies by customer or impacts energy savings. Drawing on longitudinal data from over four years of energy use and participation in an opt-in behavioral program, our paper explores savings by varying levels of engagement and energy usage. Specifically, we report findings from an in-depth examination of customer engagement in the program in three key areas: timing, longevity, and depth. We found clear patterns that customers who are active in the program for longer time periods save more than those active for shorter time periods. Likewise, customers who engage more deeply (based on the number of logins) experience more savings. We also found that customers who engaged in additional program features experienced lower energy savings than those who did not use those features.

Beth Karlin, University of California, Irvine, Irvine, CA, USA et al, "Exploring Deep Savings: A Toolkit for Assessing Behavior-Based Energy Interventions" International Energy Program Evaluation Conference (IEPEC), Long Beach, CA 2015, 12 pages.

While research assessing behavior-based energy interventions shows great promise, results vary widely and much is still unknown about the specific variables that impact program effectiveness. As utilities and regulatory agencies focus more attention on behavior-based energy interventions, it becomes critical to ensure that evaluations of such programs are rigorous and accurate. While the metric used to measure whether these various programs work (kWh) is fairly standard and easy to compare between studies, the metrics used to measure how and for whom they work have been left to individual researchers and evaluators. Standardization of assessment methods is common in related fields such as education and psychology, but has yet to take hold in energy program evaluation. This paper argues for a more systematic and comprehensive approach to the evaluation of behavior-based energy interventions, and describes a preliminary toolkit that is currently being developed and validated in conjunction with the International Energy Agency Demand Side Management Programme (IEA-DSM) Task 24 on Behavior Change as well as two large investor-owned utilities. Our approach is informed by theories and empirical research on behavior change as well as a content analysis of 85 behavior-based energy interventions. It includes questions on: context (demographics), user experience (ease of use, engagement), material culture (what people have), energy practices (what people do), and beliefs around energy use (what people think). Sample items for each construct and suggestions for implementation are presented. Broad use of such an instrument can improve and aggregate our overall knowledge across the countless additional studies expected to be conducted in the coming years.

Linda Dethman, Cadmus, Portland, OR et al, "Integrating Process and Impact Findings to Understand and Measure Behavioral Savings at Work" International Energy Program Evaluation Conference (IEPEC), Chicago, IL 2013, 12 pages.

Energy related behavior-change programs in the workplace, those that focus on changing mostly habitual employee behaviors, are relatively new despite their potential to save substantial amounts of energy—5% or more. One barrier to implementation is that uniform methods for measuring energy savings and evaluating effectiveness do not yet exist. This paper explores the successes and challenges of assessing these types of programs and the lessons learned. At the heart of the discussion, the authors examine their recent experience with evaluating two workplace behavior-change pilot programs in the Northwest. Of particular interest to the authors was how to effectively integrate impact and process evaluation components to provide a better picture of potential program improvements and resulting performance.

Yaw O. Agyeman, Lawrence Berkeley National Laboratory, Berkeley, CA et al, "EVALUATION OF THE "LOSE YOUR EXCUSE" PUBLIC SERVICE ADVERTISING CAMPAIGN FOR TWEENS TO SAVE ENERGY" International Energy Program Evaluation Conference (IEPEC), Chicago, IL 2013, 12 pages.

This study evaluates the 2008-09 "Lose your Excuse" public service advertising (PSA) campaign on energy efficiency targeting 8-12 year olds, intended to increase knowledge, foster proactive attitudes and change energy usage behaviors. Baseline and two follow-up surveys were conducted with online census-representative samples of "tweens." Almost half (46%) recognized at least one ad from the campaign. Ad recognition was positively associated with knowledge, proactive attitudes and energy saving behavior. Propensity score analysis confirmed a small but measureable and statistically significant effect on energy saving behavior. The discussion section compares these results to public health campaigns in terms of ghost awareness, reach, and effect size.

Anna Kim, Research Into Action et al, Portland, OR, "Draw Back the Curtains: What a Residential Economizer Pilot Study Revealed about Home Cooling Behaviors" International Energy Program Evaluation Conference (IEPEC), Chicago, IL 2013, 11 pages.

In the summer of 2011, Idaho Power conducted a pilot study of economizers – a cooling technology – among a small sample of its residential customers. The utility installed residential economizer equipment from two different manufacturers in pilot participants' homes to estimate potential energy savings. A market study of this pilot, which accompanied a monitoring and impact study, contributed to Idaho Power's assessment of whether the pilot results supported the development of a residential economizer incentive program and identified what the utility should consider in designing and deploying such a program. Evaluation staff interviewed installers and participants about their experiences with the equipment installation, use, and performance. Idaho Power used the evaluation results to inform an additional study about the technology's suitability and likely energy savings and to determine the feasibility of offering a residential economizer incentive

program. We discovered that participants had diverse reasons for choosing to participate in the pilot project, and had varying expectations for, and experiences with, the technology. The study reached three unanticipated conclusions: 1) Even though estimating economizer savings was the pilot's principle objective, and not the assessment of possible program designs, the ability to estimate savings were affected by program design considerations, specifically communication among the utility, contractors, and customers. 2) The utility's customers used at least three different strategies to cool their homes, which may affect energy savings. 3) Pilot study evaluations can produce valuable information beyond the study's main objectives that contribute to a deeper understanding of the technology and market.

Erika Kociolek, Energy Trust of Oregon, Portland OR et al, "What Motivates Action on Energy Efficiency?" International Energy Program Evaluation Conference (IEPEC), Chicago, IL 2013, 11 pages.

What strategies are most effective at motivating households to take energy-saving actions? This question is at the heart of an ongoing experiment called Customer Engagement, a collaboration between Energy Trust of Oregon, Hunt Allcott from New York University, and Michael Greenstone from the Massachusetts Institute of Technology. The Customer Engagement experiment is designed to answer two key questions that will inform Energy Trust's approach to program initiatives: 1) Does enhanced customer engagement or increased incentives lead to higher levels of additional program participation, or followthrough? If so, which strategy is more effective? 2) What strategy, if any, leads to more timely followthrough? To answer these questions, from March through December 2012 roughly 2,000 customers who received in-home or phone-based Home Energy Reviews (HERs) were randomly selected into one of three groups which differed in terms of the level and type of follow-up after the HER and the incentive amounts provided for certain measures after the HER. In this paper, we assess the validity of random assignment to treatment and present results from a survey of customers in the experiment, which occurred between six and nine months after their HER. The three groups appear to be well matched, confirming the random assignment of treatment. Customer surveys do not indicate that customers took different actions after their HER based on the treatment received. Additional research is needed to determine if program participation after the HER did in fact vary based on treatment.

Anne Dougherty, Opinion Dynamics, Oakland CA et al, "Impacts of Feedback Programs: Generating Comparable Impacts across Varying Program Design Models" International Energy Program Evaluation Conference (IEPEC), Chicago, IL 2013, 13 pages.

A number of feedback models have become prominent in our industry—from online portals to reward systems to "expert" advising—and most models have advanced far beyond providing paper reports. However, few third-party impact and process evaluations have been conducted on this newer breed of behavioral programs, and there is a dearth of literature and methodological guidance on how to evaluate behavioral program efforts that do not use pure experimental design. In this paper, the authors discuss how we used quasi-experimental evaluation approaches to evaluate feedback programs, with a particular emphasis on developing a rigorous counterfactual to reduce self-selection bias. We begin the discussion by theorizing the forms of self-selection bias present in opt-in feedback programs. We then discuss and augment counterfactual approaches promoted in current protocols, and how each approach does or does not address different forms of self-selection bias present in opt-in energy programs. To conclude, we provide three real-world program examples that have used different counterfactual approaches to estimate savings for the opt-in feedback programs cited above.

Amy Buege, Molly Du and Jean Shelton, Itron Inc., Oakland, CA et al, "Residential Home Energy Surveys: What's the Impact…. Survey Says!" International Energy Program Evaluation Conference (IEPEC), Chicago, IL 2013, 11 pages.

The Home Energy Efficiency Survey (HEES) programs offered by the four California IOUs provide residential customers with customized recommendations regarding cost-effective energy efficiency changes for their homes. These recommendations span multiple end-uses, including measure and energy management practice changes, and provide information on available utility incentives to help offset the cost of implementation. Currently there is debate over the quantification of energy savings resulting from residential audit programs. During the 2010-12 program cycle, 40 million dollars were allocated statewide to the HEES programs, however only one IOU claimed savings from the program due to the difficulty developing accurate, defensible measurements of program savings. A recent evaluation of the California programs found statistically significant electricity savings for all IOUs resulting from implementation of HEES program measure and practice recommendations (outside of those implemented through other utility EE programs) which were not counted as part of any utility EE program claims. The successful implementation of the approach presented in this paper allows utilities to confidently claim independent savings resulting from residential audit programs. This paper describes the research methods (including both quantitative analysis of participant survey self-reports and a billing regression analysis) and extensive data collection and manipulation used to estimate the net program effects from these residential audit programs. The billing analysis was unique from past efforts in that it isolated the HEES program savings through careful development of a non-participant sample (using PSM1 to control for self-selection bias) while accounting for savings attributable to other EE program participation.

Stuart Schare, Navigant, Boulder, CO, "Impact, Process, and Technology Assessment for Smart Meter-Enabled Demand Response" 2012 International Energy Program Evaluation Conference (IEPEC), Rome, Italy 2012, 10 pages.

NSTAR Electric Company, serving the Boston, Massachusetts region, has deployed the first phase of a smart grid pilot program to demonstrate the viability of using home-area networks and customers' broadband internet connections to enable dynamic pricing, two-way direct load

control, and the provision of near real-time customer information. Through the unique experimental design, the pilot will allow for a better understanding of how a variety of rates and technologies interact to generate changes in customer electricity consumption and to influence customer acceptance. The evaluation approach is designed to accurately estimate the reductions in peak load and overall energy consumption, assess customer acceptance, and establish minimum functional requirements for the Smart Grid technologies. The initial feedback from customers participating in the pilot has been positive and an ongoing technical review is assessing whether the pilot system architecture can provide a viable solution to achieve the pilot's interval metering and customer information objectives without a full investment in smart meter infrastructure and capability.

Christine Hammer, Sustainable Design + Behavior et al, "West Village Case Study: Designers and Occupants" American Center for an Energy Efficient Economy (ACEEE) Summer Study on Energy Efficiency in Buildings, 2014, 11 pages.

West Village is one of the largest zero net energy (ZNE) developments in the US. This paper is about the performance of West Village, in particular the role of resident behavior. It explores the assumptions designers and the energy modeler made during design about resident behavior. Comparisons of the energy modeler's assumptions (e.g. default settings) to actual performance by end use reveal a slight mismatch, mostly regarding HVAC. While West Village is close to achieving ZNE, it is not quite there as revealed from the energy modeler assumptions. As a result, an engagement program is necessary to achieve and maintain ZNE at West Village. Various resident engagement strategies have been designed and implemented at West Village. Preliminary results reveal thermostat reprogramming is generating a 16% reduction, a plug load pledge is generating a 7% reduction, and letters to excessive users are also working. The results also suggest interventions are persisting. The wide angle view of this paper, that is design, operations, and resident behavior, provides feedback to the design and ZNE communities on the role of behavior, in particular HVAC behavior, on achieving the state's zero net energy goals for multi-family low-rise developments.

Michael Goldman, Northeast Utilities et al, "Integrating Behavior Programs into Portfolio Plans to Encourage Cross-program Effects" American Center for an Energy Efficient Economy (ACEEE) Summer Study on Energy Efficiency in Buildings, 2014, 12 pages.

Behavioral energy efficiency programs have a clear portfolio benefit: they help to increase participation and savings in other energy programs while raising awareness about energy efficiency. Many argue that it is this effect that can be the most beneficial impact of these programs: increases in installed measures will ensure more persistent savings. However, our current methods to avoid double-counting savings discourage cross-program promotion. The savings associated with driving participation in other programs are removed from the behavior program and, as a result, impact the program's goals and cost-effectiveness. In turn, this may discourage behavioral implementers and program managers from promoting other programs that lift the entire energy efficiency portfolio. In this paper, the authors discuss these challenges from the perspective of a Massachusetts utility implementing behavioral programs. To do so, the authors address the following question: are there alternative evaluation and planning approaches that can be used to diminish or remove this disincentive while also avoiding double-counted savings? The authors will present several scenarios based on a concrete program example to examine these questions and to discuss how alternative-planning approaches may better encourage a portfolio-focus and enhance the overall effectiveness of behavior programs.

Yingjuan (Molly) Du, Dave Hanna, Jean Shelton and Amy Buege, Itron, Inc., "What Behaviors Do Behavior Programs Change" American Center for an Energy Efficient Economy (ACEEE) Summer Study on Energy Efficiency in Buildings, 2014, 12 pages.

Utilities' behavioral programs, such as audits and web-based tools, are designed to change customers' energy consumption behaviors, and when evaluating the impact of such programs, the focus has been on the net energy savings achieved. In two recent evaluations of residential behavioral programs in California, we found that as these programs successfully change residential customers' energy consumption behaviors, and they also increase the rate at which the customers participate in other energy efficiency programs. An analysis of residential participants of the Home Energy Efficiency Survey (HEES) audit program and a matched non-participant control group found that audit participants were significantly more likely to participate in other energy efficiency programs post-audit than the matched non- participants. Similar results were found from an analysis of Southern California Edison's SmartConnect® My Account and Budget Assistant (MA/BA) web presentment tool programs. Our research showed that, within half year after program enrollment, a customer is more likely to participate in energy efficient programs than the matched non-participant control group. In both evaluations, the propensity score matching method was used to select the non-participant samples to match to the participants, so as to mitigate the potential self-selection bias. In both evaluations, the behavioral programs were found to increase future energy efficiency program participation, and the influence was statistically significant. We also found that the magnitude of the impact was much higher in the HEES program than in the MA/BA programs. The reason might be that the audit program actively provided more specific program information, whereas the MA/BA programs were not as focused.

Richard Bull et al, Institute of Energy and Sustainable Development (IESD), "Digitally Engaging and Empowering Employees for Energy Demand Reduction: A New Approach for the Next Generation?" American Center for an Energy Efficient Economy (ACEEE) Summer Study on Energy Efficiency in Buildings, 2014, 13 pages.

Opinion is divided over whether technical solutions or behavioural change strategies offer the best energy savings potential in buildings. Behaviour change initiatives could have impact given current estimates that 30% of energy in buildings is wasted. However, technical solutions epitomised by 'smart' cities and buildings, exhort the role of information and communications technology (IT) and the digital economy as offering significant potential for carbon reduction. Yet both technical and behavioural approaches share the same contested assumption: users are a hurdle to overcome rather than a resource to be utilized. This paper presents an alternative approach, informed by social media and public participation experts, reframing the relationships between energy management personnel and those using the energy. This paper presents new findings from a UK research project funded by the Engineering and Physical Research Council. Working with a local authority energy team and a user-group of building users (from energy managers to 'ordinary' users), Gooddeeds developed and tested digital technologies social media/smartphone tools to engage with, and empower, employees in the reduction of their building's environmental impact. Findings from the first set of focus groups with the user group offer insight into the potential for a more collaborative approach to benefit building users through raising awareness of best practice with regards building energy management. In particular, collaborative approaches have the potential to empower building users with the tools and contacts to resolve issues more quickly. Yet there can be no 'one-size' fits all approach to non-domestic buildings with this research highlighting clear variations of engagement and interest in this approach dependent on building type.

Emily Bailey and Steven Blumenfeld, Opower, "The Multiplier Effect: How the Priming Effect Increases the Effectiveness of Behavioral Efficiency Programs" American Center for an Energy Efficient Economy (ACEEE) Summer Study on Energy Efficiency in Buildings, 2014, 8 pages.

Conventional wisdom suggests that spending on energy efficiency follows the law of diminishing returns, where the lowest-hanging fruit would deliver the greatest and cheapest savings while the marginal effectiveness of each subsequent dollar spent would decrease. Following this principle, one would expect behavioral programs to be less effective in states that spend more on energy efficiency programs. However, there is an opposing view that layering behavior programs on top of existing measures could result in more effective savings. The hypothesis is that priming the market through spending on institutionalized energy efficiency can improve results from behavioral energy efficiency programs. This paper explores the relationship between historic energy efficiency spending and results from behavioral energy efficiency programs. By comparing the results of 152 behavioral energy efficiency programs with varied levels of energy efficiency spending and ACEEE state scorecard rankings, this paper applies a regression analysis to demonstrate that the priming effect has on the efficacy of behavioral energy efficiency programs. Our results indicate that if energy efficiency spend increased one standard deviation from today's average, the efficacy of behavioral efficiency programs would rise by approximately 10%. In addition to presenting this finding, we discuss several theories as to what mechanisms may be pushing this relationship. The results explained herein could have a significant impact on both the size and composition of energy efficiency portfolios going forward. Since priming demonstrates a multiplier effect on the impact of behavioral programs, portfolios managers should consider this increased potential when designing plans to reach their efficiency goals.

Zachery Ambrose, Allegheny County et al, "Energy Saving Behavior Change For The 21st Century" American Center for an Energy Efficient Economy (ACEEE) Summer Study on Energy Efficiency in Buildings, 2014, 13 pages.

Allegheny County's Sustainability Office partnered with GreenNurture and NORESCO to utilize GreenNurture's Purpose Driven™ online social media application and NORESCO's "hands on" Energy Conservation Through Behavior Change® (ECTBC) Program, to change specific employee attitudes and behavior directly related to energy conservation. Just seven months after the program was implemented, Allegheny County saw an improvement of over 20% in energy conserving behaviors. The behavior change program was designed with the ability to work across a multidepartmental structure and the various generations of staff. This utilized the "hands on" aspect with face-to-face interactions involving green teams, energy workshop displays, and printed materials, along with the online application, which provided action tracking, savings tracking, collaborative forums, and other social media tools including a points and badge system. The virtual platform combined with structured education and peer-to-peer development allowed for the implementation of multi-level engagement program, keeping the initiative effective and created quantifiable energy saving results. To keep staff engaged and excited about sustainability, it was vital to design a program that educated employees on the importance of their individual actions, and the collective role these play in day-to-day operations. Positively reinforcing employees to make environmentally conscious decisions cultivates a sense of pride in their workplace, and engaged them in reducing the organization's impact. To maintain effective results, the program was sustainably designed with the ability to adapt and shift within a changing environment.

Beth Hartman and William LeBlanc, E Source, "Smart Meters, Big Data, and Customer Engagement: In Pursuit of the Perfect Portal." American Center for an Energy Efficient Economy (ACEEE) Summer Study on Energy Efficiency in Buildings, 2014, 11 pages.

Nearly 1 in 3 homes now have smart meters collecting data every 5 to 15 minutes instead of the once per month collection we've seen for the past 100 years, yet most people don't even know if they have a smart meter or not, much less how the data can help them save energy and money (Tweed 2012). Presenting this information to customers in a way that allows them to easily take advantage of these savings opportunities is critical for justifying the billions of dollars that utilities have invested in these meters. Without customer engagement in smart meter data, this investment represents little beyond a slightly more accurate and efficient billing system. With customer engagement, however, this data is the key to fulfilling the true promise of the smart grid, enabling behavioral demand response, dynamic pricing, and more. The key to customer engagement in smart meter data is presenting this information effectively, using website portals that are compelling, actionable, and available to people on the communications channels they prefer to use. With the increasing prevalence of industry-wide standardized formats

for data such as the Green Button initiative, creating portals that can easily integrate with smart meter data should be a more streamlined process than ever before (Green Button Initiative, 2014). While it is still too early in the existence of these portals to definitively determine which elements are most important to drive energy savings, we have created a framework for comparison of the many different components that are currently being used in several "best practice" interfaces designed by third parties, utilities, and NGOs. These elements can include energy use patterns, disaggregated use by appliance, comparisons over a variety of time periods, energy savings goal settings, alerts when energy use is high, comparisons with peers, entry into contests and sweepstakes, and even gaming.

Christine Donovan, Sean Bleything, and Shawn Enterline1, Vermont Energy Investment Corporation, "Increasing Energy Efficiency in Buildings through Smart-Grid Enabled Residential Programs." American Center for an Energy Efficient Economy (ACEEE) Summer Study on Energy Efficiency in Buildings, 2014, 11 pages.

Utilities are investing billions of dollars in developing the smart grid, and millions of customers now have automated meters that enable two-way communication between the customer and the utility that could greatly enhance future residential energy efficiency program design. With this opportunity in mind, two pilot programs in Vermont are exploring the role of automated metering infrastructure (AMI), in home displays (IHD), web presentment of energy savings information, energy efficiency coaching provided through Proactive Customer Service (PCS), and variable peak pricing on reducing energy use in residential buildings. One pilot is a Consumer Behavior Study (CBS) funded by the U.S. Department of Energy (DOE) through the federal Smart Grid Investment Grant (SGIG) program, which began in 2011 and is ongoing through 2014. A companion pilot also started in 2012 and completed in 2013 focused on residential low income customers with funding from a U.S. DOE Weatherization Innovation Pilot Program (WIPP) Grant. This paper reports results thus far from the Consumer Behavior Studies, with a focus on explaining the use of hourly energy information, web presentment, "proactive" (rather than "reactive") marketing and customer service messages, and variable peak pricing to increase energy efficiency and conservation-based behavior in residential buildings. Key findings from the pilots are provided as well as lessons learned and implications for future residential energy efficiency programs are discussed.

Z. Todd Taylor and Vrushali Mendon, Pacific Northwest National Laboratory, "The Marriage of Residential Energy Codes and Rating Systems: Conflict Resolution or Just Conflict?" American Center for an Energy Efficient Economy (ACEEE) Summer Study on Energy Efficiency in Buildings, 2014, 13 pages.

After three decades of coexistence at a distance, model residential energy codes and residential energy rating systems have come together in the 2015 International Energy Conservation Code. At the October, 2013, International Code Council's Public Comment Hearing, a new compliance path based on an Energy Rating Index was added to the IECC. Although not specifically named in the code, RESNET's HERS rating system is the likely candidate Index for most jurisdictions. While HERS has been a mainstay in various beyond-code programs for many years, its direct incorporation into the most popular model energy code raises questions about the equivalence of a HERS-based compliance path and the traditional IECC performance compliance path, especially because the two approaches use different efficiency metrics, are governed by different simulation rules, and have different scopes with regard to energy impacting house features. A detailed simulation analysis of almost 15,000 house configurations reveals a very large range of HERS Index values that achieve compliance equivalence with the IECC's performance path. In this paper we summarize the results of that analysis and, by evaluating those results against the specific Energy Rating Index values required by the 2015 IECC, find those ERIs to be very similar to the conservative (lower) end of the range of HERS values identified as corresponding to compliance with the traditional performance path, suggesting that many if not most homes built to the new ERI path's requirements would have better energy performance than if built to the traditional performance compliance path. Finally, based on the home characteristics most likely to result in disparities between HERS-based compliance and performance path compliance, potential impacts on the compliance process, state and local adoption of the new code, energy efficiency in the next generation of homes subject to this new code, and future evolution of model code formats are discussed.

Jeff Erickson, Summit Blue Consulting, Verona, WI et al, "Residential Time-of-Use with Critical Peak Pricing Pilot Program: Comparing Customer Response between Educate-Only and Technology-Assisted Pilot Segments" International Energy Program Evaluation Conference (IEPEC), Chicago, IL 2007, 10 pages.

In 2006 and 2007 PSE&G offered residential customers in two selected municipalities an opportunity to participate in a residential time-of-use (TOU) pilot program. The TOU rate incorporated fixed low, medium and high-cost time periods with an "extra high" cost period, called the " Critical Peak Price" (CPP) that was utilized on an as-needed basis. There were two TOU segments included in the pilot program. The first, myPower Sense, was designed to test how well customers would respond to TOU pricing and reduce demand during CPP events when given advance warning and educational information only. PSE&G used e-mail and telephone calls to notify participants the night before a CPP event. The second segment, myPower Connection, offered customers the same TOU/CPP rate and advanced warning of CPP events, but also provided customers with a free programmable thermostat that received price signals from PSE&G and could be programmed to adjust air conditioning set points in response changes in the TOU/CPP price signals. The educate-only segment, myPower Sense, required participants to take explicit self-imposed actions on peak price days (or else pay a significant price). The technology-enabled segment, myPower Connection, should, in theory, have produced greater demand reduction from customers, since they had the ability to pre-program their thermostat to automatically respond to higher priced time periods. This paper compares the two segments on program recruitment issues, participant satisfaction, and demand impacts, as well as other factors.

Anne Dougherty, Opinion Dynamics Corporation et al, "Moving Beyond Econometrics to Examine the Behavioral Changes behind Impacts" International Energy Program Evaluation Conference (IEPEC), Chicago, IL 2011, 10 pages.

Evaluations of information-driven social norm messaging programs have demonstrated that behavioral programs can generate quantifiable energy savings. However, few evaluations have successfully documented the behavioral drivers that lead to increases in energy savings. Past evaluations of behavior-based conservation programs rarely move beyond the "black box" of estimating reductions in kWh to provide insight into exactly how program participants are saving energy. Without this knowledge, implementers are deprived of the insight necessary to create increasingly innovative program interventions. The Opinion Dynamics Team, with subcontractor Navigant Consulting, conducted an evaluation on behalf of multiple utilities in Massachusetts to assess the impact, value, and scalability of behavioral programs (including OPOWER, Tendril, and Efficiency 2.0) in current and future statewide behavioral program efforts. This paper will detail how our team paired market research techniques with econometrics analysis to examine the behavior changes that drive energy savings for one of these programs, OPOWER. Specifically, we will describe the methods and findings from a statewide evaluation of prominent behavioral programs that draws on multiple market research techniques. The goal of this evaluation was to address the following researchable questions: (1) how are the behavioral program interventions generating changes in energy saving installations and practices among those who are touched by the program?; (2) what are the unique behaviors that contribute to energy savings, including but not limited to measure installation and conservation behaviors?; and (3) how, if at all, are these behaviors persisting over time?

Dr. Michael Coleman, De Montfort University, Leicester, UK eta, "Evaluating Personalised Energy Feedback Information for Behaviour Change in Commercial Buildings" International Energy Program Evaluation Conference (IEPEC), Rome, Italy, 2012, 12 pages.

A growing body of research indicates that the improved feedback of energy information to building users can encourage more efficient use of energy. However, the majority of previous research studies into energy feedback have focused on electricity use in homes, with little research undertaken in commercial buildings. This paper discusses the use of energy feedback in the commercial setting, in the context of a UK study that is currently investigating the development and application of wireless behaviour information (Wi-be) systems that utilise low power wireless sensors and networks for monitoring personal energy use, patterns of occupancy, and delivering personalised energy feedback information. Central to the "Wi-be" approach is the provision of accurate disaggregated feedback, so that individual energy users can assess the impact of their behaviour. The paper describes the study‟s methodology suggesting how behaviour change and energy savings can be evaluated. Both the positive and negative aspects of the technology are considered from technical and user perspectives. Results from initial interviews provide some support for the use of personalised feedback in commercial buildings. They also highlight the need to address the control of communal energy end-uses and the potentially counterproductive ethical issues associated with energy monitoring and tracking; including privacy, surveillance and the misuse of data.

Sharyn Barata, Itron, Liberty Lake, WA et al, "Can Smart Meters Make Smarter Customers? Evaluating the Impact of Smart Meters on Consumer Energy Efficiency Behaviors." International Energy Program Evaluation Conference (IEPEC), Rome, Italy, 2012, 9 pages.

Combining a smart meter with an educated consumer can lead to smarter energy use, but the key to understanding, or quantifying, how much energy was saved depends on blending the appropriate amount of new network functionality with tested evaluation techniques. This paper will explore various ways that smart meter technologies and feedback mechanisms are being deployed in North America, and how this is likely to impact the types of "new" energy efficiency programs and efforts to produce credible estimates of energy savings. In addition, the paper will also describe how the pursuit of these new savings opportunities help support the business case for smart grid and is likely to transform the way that utilities design, implement and evaluate energy efficiency programs. This paper will explore customer perceptions and experience with smart feedback technologies. Various examples of how utilities can use the smart grid platform to change the way customers use electricity will be presented. Recent examples of how these programs are being evaluated across North America, including incorporation of newly established experimental design techniques, will also be discussed.

Kevin Monte de Ramos, KMDR Research, Toronto, ON, "Exploring Behavioral Change Theory." International Energy Program Evaluation Conference (IEPEC), Rome, Italy, 2012, 11 pages.

This paper explores human behavior change from two constructs. The first is a staged transformational approach called the Trans theoretical Model of Behavioral Change (TTM). Under the TTM, individuals wishing to initiate and maintain a new set of behaviors move through five stages of change. The second approach employs a CSB (Cognitive-Structural-Behavior) Construct which suggests cognitive and structural outcomes result in behavioral change. The TTM has been applied within the health and social sciences industry. Applying the TTM model to energy programs can identify both limitations in current program designs and opportunities for potential future improvements. The CSB

Construct evolved from the application of the TTM to energy efficiency programming. The CSB Construct has also been used to simplify logic models relating to planned market transformation. Given the applicability of the CSB Construct to support program theory development across a wide range of energy efficiency offerings, the resulting logic models have been embedded in the EM&V Protocols and Requirements of Ontario. By better understanding the process of self change, program managers and regulators can draft policies that allow participation from individuals not yet ready to adopt energy efficiency behaviors. Furthermore, evaluators employing the CSB constructs can establish metrics that track cognitive, structural, and behavioral outcomes towards the realization and attribution of desired programmatic impacts.

Jane Hummer, Navigant Consulting, Boulder, CO et al, "The Time for (Behavior) Change is Now: Applying Social Marketing Principles to Residential Energy Efficiency Programs." International Energy Program Evaluation Conference (IEPEC), Chicago, Il, 2011, 14 pages.

Utilities and governments across the U.S. are starting to realize that their technology-centric energy efficiency programs can benefit from a more thorough understanding of the social and behavioral aspects of energy use. This paper presents the results of a meta-analysis of successful behavior change programs in the energy industry as well as in other fields. Navigant Consulting conducted a study for the Northwest Energy Efficiency Taskforce Regional Marketing Coordinating Council with the goal of developing a comprehensive understanding of strategies that can be used to make residential energy-efficient behaviors as commonplace as recycling. National potential studies indicate that U.S. households can reduce their energy consumption by roughly 30% (approximately 11% of total U.S. energy consumption) with no sacrifice of quality of life and little to no economic hardship through changes in their purchases and use of household and vehicle technologies. Yet the cost-effectiveness appeal traditionally employed by utilities and governments promoting energy efficiency does not seem to be effective in convincing American consumers to adopt energy-efficient practices and purchasing behaviors. There is a growing body of evidence—summarized in this paper—that social incentives can be more effective than financial ones in promoting energy-efficient behaviors and purchase decisions.

David Juri Freeman, Skumatz Economic Research Associates Inc., Superior, CO, "Widgets versus Actions: Measuring the Role of Behavior Change in DSM Programs." International Energy Program Evaluation Conference (IEPEC), Rome, Italy, 2012, 12 pages.

The protocols for the evaluation of widget-based approaches to energy efficiency are well designed, documented, and for the most part, agreed upon in the industry. On the other hand, though many US and international organizations have touted the potential energy savings from behavior modification programs, the evaluation of these is still in its early stages. This research paper shares both a review of the current best practices in the measurement of behavior change found in the literature as well a hands-on case study measuring behavior modification impacts. The authors discuss the state of current practices in determining how an evaluator can identify what needs to be measured as well as the myriad of options to complete the measurement. The paper also addresses a host of other issues such as behavior retention, persistence, impacts compared to other approaches, and what is currently undervalued in behavior evaluation. Finally, the paper reviews recent projects completed by the authors, showing how the techniques discussed can be applied in the 'real world.'

Carmen Barker Lemay, Ph.D., Integrative Growth, Inc., Jean Bardeaux, Xcel Energy, Inc. and Cheryl Winch, The Cadmus Group. "MEASURING THE IMPACT OF SOCIAL MARKETING AND OUTREACH." International Energy Program Evaluation Conference (IEPEC), Chicago, Il, 2011, 5 pages.

By design and practice energy conservation, efficiency and renewable programs aim to change behavior. There are often rigorous protocols used to evaluate the process the programs follow as well as their impact in energy savings.

Activities like outreach and education on the other hand, are often dismissed as indirect and deemed too hard to measure. In this work, we'll share a case study including design, implementation and results of a feedback program that directly measures the impact of a social marketing and outreach program that moves participants along a hierarchy or continuum, ultimately ending in behavioral change.

Unlike mainstream marketing, which is designed to promote the purchase of a specific product or service, social marketing often has invisible or intangible benefits. The techniques of social marketing (the use of marketing tools to achieve specific behavioral goals for a social good) offer the means to motivate customers to make long-term commitment to change. Social marketing has been used to educate consumers that they can make a difference.

Our efforts will investigate the role and effectiveness of social marketing within the energy conservation, efficiency and renewable fuels dialogue. We will compare different messages, venues and follow-up communication processes to determine what has resulted in behavioral change.

Marjorie McRae, Research Into Action, Inc., Portland, OR et al, "Information at a Click: Assessing Efficiency Educational Websites." International Energy Program Evaluation Conference (IEPEC), Portland, OR, 2009, 12 pages.

As program administrators seek to promote more comprehensive energy efficiency behaviors, they increasingly are developing websites to stimulate customers' interest and inform and expand their views of the possible and desirable, deliver programmatic and related information, and facilitate communication among site users. The authors developed criteria for assessing efficiency program websites based on a comprehensive review, analysis, synthesis, and simplification of website evaluation criteria used by: the Association for Library Service to Children, a division of the American Library Association, to select its Great Web Sites for Kids; the Arizona Technology in Education Alliance for

its Exemplary Web Site Awards; the National Endowment for the Humanities for its EDSITEment website selection; and Oracle Education Foundation for its 2009 ThinkQuest Website Competition. The ten website evaluation categories include: program presentation; efficiency program information and content; organization; presentation; media use; technical aspects; written language mechanics; responsiveness to the needs of the audience; sensitivity to human diversity; and originality. As with any set of evaluation criteria, not all will apply in every situation. Specialized websites might be quite effective, even though satisfying only some of these criteria. The evaluators selected this set of criteria to cover a broad swath of possible attributes and provide a lens by which they could compare websites across programs. This paper discusses these criteria and gives examples of their use in evaluating two educational websites.

Jennifer Fagan, Itron, Inc. et al, "Energy Efficiency Best Practices: What's New? The Latest from the Current Phase of Work for the National Programmatic Energy Efficiency Best Practices Study." International Energy Program Evaluation Conference (IEPEC), Chicago, Il, 2007, 11 pages.

This paper will present selected results and insights from the third phase of the national programmatic Energy Efficiency Best Practices study. The overall goal of the Best Practices Study is to identify and communicate excellent programmatic practices in order to enhance the design of energy efficiency programs in California and throughout the country. The first two phases of the study evaluated energy efficiency programs by program type, and type of program activity (e.g., marketing, tracking, implementation, management, etc.). They assessed applicable best practices for each program element, and delivered the analysis and data online via the project website (www.eebestpractices.com). This study has enjoyed widespread use by many energy efficiency providers and practitioners around the U.S. A key objective of the third phase of the study, currently underway, is to extend the assessment of Best Practices to include two new areas: (1) Energy Efficiency (EE) Portfolios and (2) Nonresidential Education and Training Programs; This paper will report on our research methods and high-level findings to-date for each of these areas. A second project objective is to selectively update findings from the previous study via a "What's New" white paper This updated information refreshes the data contained in our project website for changes experienced since the study was first done in 2004. Also included are findings from our research on new program delivery strategies and technology trends, based on in-depth interviews with national energy efficiency experts from around the country. The paper will describe our research approach and present selected findings and recommendations based on the results. A third key project objective is to disseminate information from the previous study phases to managers of Local and Third Party programs in California. This is being done via a combination of a training workshop and a tool to help program managers self-benchmark their own programs against the relevant best practices. The self-benchmarking tool is briefly described.

Monica Pianosi, De Montfort University, Leicester, UK et al, "Enhancing Environmental Citizenship and Reducing Energy Consumption through Creative Engagement with Building Users." International Energy Program Evaluation Conference (IEPEC), Rome, Italy, 2012, 14 pages.

This paper reports on research which focuses on the impact that users` behaviour has on the energy consumption of buildings and how to effectively engage users in energy reduction strategies. The research seeks to understand how work-based communities engage with energy and evaluates the impact that building-users can have on workplace energy reduction. The work is being conducted in De Montfort University, UK, and it addresses the need to lower UK Higher Education sector emissions. The awareness that our life-styles are damaging the environment has raised questions about who should take responsibility for preventative action. Many attempts at `pro-environmental change` rely upon individualistic and rationalist assumptions. Alternatively, public participation is increasingly considered to be an important aspect in the success of behaviour-change processes. It is widely accepted that if people have the opportunity to participate in decision-making processes, they will be more likely to adopt the outcome of the decisions. This principle has been successfully applied in the context of waste management and landscape planning, but has less of a track record of application in the context of energy use. Using an action research methodology, the aim is to evaluate the use of social media as a tool to engage users in the workplace environment and then to monitor subsequent behaviours. The research, currently in its initial stages, will provide insights into how social media can be used in large organisations for facilitating communication, the exchange of pro-environmental information and the impact on behavioural change.

Susan E. Stein, Midwest Renewable Energy Association, Amherst, WI et al, "EVALUATION OF THE WISCONSIN ENERGY CYCLE EDUCATION PROGRAM." International Energy Program Evaluation Conference (IEPEC), Chicago, Il, 1997, 8 pages.

The overall goal of the project described in this paper was to evaluate the effectiveness of the Energy Cycle Education Program lesson plan in promoting participants' awareness, positive attitudes and behavioral intentions regarding energy resources and conservation practices.

Tami Buhr, Opinion Dynamics Corporation, Waltham, MA et al, "Education and Training Programs: An Evaluation of the Energy Benefits." International Energy Program Evaluation Conference (IEPEC), Portland, OR, 2009, 12 pages.

The purpose of this evaluation is to assess the indirect impacts of the California Statewide Energy Efficiency Education and Training Program and its primary program effort, nine Energy Centers. Historically, the performance metrics of the California IOU Education and Training Programs focused on the number of participants and similar frequency of use measures. A program was considered successful if it was well-attended regardless of whether it led to changes in behaviors and attitudes. This evaluation takes a different approach by assessing the impact of the Centers on program participants' attitudes, awareness and knowledge of energy saving behaviors. In addition, the evaluation estimates net energy savings resulting from actions taken due to participation in the courses. We conducted surveys with a sample of 2,864 people who

took courses at the Centers between January 2006 and June 2007. The results provide a profile of course participants and the impact the courses had on their attitudes and behavior. The study indicates that there is a substantial positive impact of these centers in energy savings that is not being captured by impact evaluations of the incentive programs. Course participants gained knowledge and changed their way of thinking about energy efficiency opportunities they could take advantage of at their home or work. Many took energy saving action or changed their work practices as a result of taking the course. In addition, a large majority shared what they learned with others, potentially extending the influence of the courses beyond the individual participants.

US DOE EERE, "U.S. Department of Education Green Ribbon Schools Media Coverage and Highlights from 2016 honorees." May 2016, 4 pages and 15 pages.

Describes the programs and efforts at approx. 100 schools and colleges receiving Green Ribbon award.

Ray Yun et al, Carnegie Mellon University, "Towards the Design of a Dashboard to Promote Environmentally Sustainable Behavior among Office Workers," Persuasive Technology, 7822, pages 246-252, 2013.

In the United States, over three billion dollars are spent due to office equipment being left on when not in use during the weekend and at night. There is very little incentive for office workers to save energy because utility bills are not directly their responsibility. Our goal is to find ways to reduce the negative impacts of this pervasive phenomenon by applying persuasive technologies to create awareness and encourage office workers towards more environmentally sustainable behavior. To this end, we conducted a literature review to investigate the persuasive methods appropriate to the field of building controls. We then proceeded to develop "dashboard-controllers" that enable office workers to control energy-using components with expert feedback to save energy.

STEMazing Professional Educator Interview Guide

Idaho Power Company (IPC) Energy Efficiency Education Initiative – STEMazing/iSTEM Project Facilitators – Interview Guide

***Target audience**: The iSTEM facilitators that held a 3-day professional development seminar for 18 K-12 teachers on energy-efficiency education. The teachers, in turn, implemented curriculum on energy conservation for their K-12 students.*

***Key objective:** Obtain, analysis and summarize the curriculum used during seminar. Discover innovative and best practices and how they are working. Learn about programs and initiative that change participant energy using behaviors, increase utility customer usage of ''myAccount'' and existing utility programs and service offerings. Ask which marketing channels are best and how to effectively use them.*

Introduction: Hello my name is Jeff Riggert calling on behalf of Denise Humphreys of Idaho Power's Energy Efficiency Residential Education Initiative. The initiative is being evaluated in terms of how it is advancing energy efficiency and conservation behaviors. It's my understanding that you played a role in a 3-day professional development seminar for 18 K-12 teachers? Would you be willing to talk about what you are doing to advance energy conservation with the STEMAZing Project and iSTEM? Is now a good time to talk?

Ms. DaNel L. Hogan
Director of The STEMAZing Project
200 N. Stone Avenue
Tucson, AZ 85701
(520) 724-8395

Attempt #	Date	Time	Result

Introduction

1) What is your job title?

2) What is your roll and responsibility at work?

External Program/Initiative Description

3) What is/are the name(s) of your residential energy education program(s) or initiative?

4) What was the impetus for the program/initiative?

5) When was the program first launched?

6) What are the goals of the program/project?

7) What kind of marketing and outreach does the program use?

8) What sort of traditional and non-traditional media channels are employed to reach people/participants?

9) How are participants (teachers/students) enrolled in the program?

10) Why do customers decide to participate?

11) How many participants have enrolled in program?

12) What sort of behavioral change strategies do you employ to save energy?

13) Which energy efficiency measures or end uses are you targeting?

14) Are there any estimates of energy savings associated with the program?

15) What other kinds of data are being collected or tracked with this program?

16) Has there been any evaluations of the program?

17) If so, can I obtain a copy of the evaluation report or summary of findings?

Traditional Marketing Channels

Please rate the following marketing channels for effectiveness at reaching people to educate them about energy conservation. Please use a 1-10 scale, where 1 is poor and 10 is excellent. Let's start with some traditional marketing channels….

18) …TV, Radio and print media Rating (1-10) ____
19) Topically focused energy guide mailers Rating (1-10) ____
20) Utility customer newsletters Rating (1-10) ____
21) News briefs / press releases Rating (1-10) ____
22) Native advertisement / reporter written stories Rating (1-10) ____
23) Celebrity endorsements Rating (1-10) ____
24) Sports, music, other forms of live entertainment. If so, please specify __ Rating (1-10) ____
25) Institutional and business sponsorships Rating (1-10) ____
26) Local or municipal government Rating (1-10) ____
27) K-12 students and schools Rating (1-10) ____
28) University or college student, faculty and staff Rating (1-10) ____
29) Neighborhood associations Rating (1-10) ____
30) Public or community events via canvassing and booths *(Probe for well attended events, where people expect to learn things like energy conservation)*
(For scores above 5) Please specify and rate _____ Rating (1-10) ____
31) Competitions with prizes (e.g. raffles or other rewards).
(For scores above 5) If so, what kind of prizes _____ Rating (1-10) ____
32) Other gamification based reward systems. If so, please specify _____ Rating (1-10) ____
33) Other situations where strong in-group social identity exists *(e.g. club members).*
If so, please specify_____ Rating (1-10) ____

Internet Age / Social Marketing Channels

Now let's rate some newer marketing channels, starting with…

34) Facebook Rating (1-10) ____
35) Twitter Rating (1-10) ____
36) Instagram (photos and imagery) Rating (1-10) ____
37) LinkedIn Rating (1-10) ____
38) Next Door (neighborhood network) Rating (1-10) ____
39) Other free private social networks. Please specify _____ Rating (1-10) ____
40) E-mails Rating (1-10) ____
41) Text messages Rating (1-10) ____
42) Opt-in on-line groups such as yahoo or google Rating (1-10) ____
43) Blogs Rating (1-10) ____
44) Online customer utility accounts (used to pay bills and monitor energy use) Rating (1-10) ____
45) Online energy dashboards Rating (1-10) ____
46) Smart meters and real-time feedback on energy usage Rating (1-10) ____

47) Other technology-enabled human-interfaced energy-use feedback mechanisms Rating (1-10)
Please specify: _____
48) Meet-ups or Crowd sourcing strategies Rating (1-10) ____
49) Energy pledges for behavioral change with follow-up social accountability. Rating (1-10) ____
*(Probe for How to best implement and apply follow-up accountability?)*_____

50) Other types of behavior change strategies. Please specify _____ Rating (1-10) ____

Other Customer Engagement Strategies

51) How can we best use photos and imagery to engage educate energy users and change behavior?

52) How do we get more tie-ins to (and usage of) utility accounts to educate and change behavior of utility customers?

53) Real time feedback on automobile driving behavior (and its impacts on gas mileage and fuel range) are dashboard displays on some new automobiles. How could this be used at home to lower electricity usage?

54) Fully enabled smart electric (AMI) meters enable utility customers to monitor their home's hourly energy usage from an online portal. How could this technology best be used to reduce energy use?

55) Customer feedback mechanisms, such as OPower, provide homeowner with feedback on their energy use by comparing it to similar homes. Evaluations have shown OPower typically reduces energy use by several percentage point and the savings persists for several years. What do you think about this strategy?

56) What are the best ways to achieve energy behavioral change via feedback programs?

57) What about the water-energy nexus? Are you targeting or emphasizing energy efficiency measures or energy conservation behaviors that also save water? If so, please specify _____

Customer Motivational Drivers

Energy efficiency and conservation are typically NOT top-of-mind for people. What sort of non-energy benefits, associated with saving energy, make it to top-of-mind?

58) Now I would like to get your perspective on what motivates customers to change energy using behaviors. Using a 1-10 scale, where 1 is Not at all important and 10 is Very important, how would you rate the importance of the following factors in participant's decisions to ACT to save energy. Starting with…
- Improved comfort Importance, 1-10 scale ____

- Saving money Importance, 1-10 scale ____
- Home improvement Importance, 1-10 scale ____
- Convenience and time saving Importance, 1-10 scale ____
- Improved health and safety Importance, 1-10 scale ____
- Reduced impact on the environment Importance, 1-10 scale ____
- Economic prosperity Importance, 1-10 scale ____
- National Security Importance, 1-10 scale ____
- Other factors? Please specify_____ Importance, 1-10 scale ____

Conclusion

59) Do you know of any other programs or people that are implementing residential-sector energy conservation behavioral change efforts at utilities or other organizations?

60) More broadly, can you think of anyone else we should talk to that is doing something new or innovative with residential-sector energy conservation programs in general?

61) Is there anything else that you would like to share or suggest regarding residential-sector energy efficiency efforts?

Thank you for your time and valuable insight!

Energy For Future Citizens i-STEM Institute 2016

Sponsored by Idaho Power, Intermountain Gas, and Idaho National Laboratory

SCHEDULE

Monday – June 27

7:30 a.m.	Check In & Registration
8:00	Breakfast / Welcome & Introductions
8:15	Welcome from **Bert Glandon, CWI President**
8:30	General Session: Cassidy Hall (technology)
10:00	**Energy for Future Citizens Strand Time (2 hours)**

Welcome, Intro,
Pre-Test (15 min)
Triangles System Activity (15 min) dh
Global Trading Game (1 hour 15 min) dh
Digestion Time (5 min silent, 10 min share out)

12:00 p.m.	Lunch: STEM Action Center
1:00	**Energy for Future Citizens Strand Time (3.5 hours)**

Science of Energy & Energy 101 (15 min) mw
Hands-on Science of Energy (30 min) mw
IDC (Independent, Dependent, and Control) (15 min) dh
Energy Enigma (45 min) dh
Break (10 min)
Primary Sources and Sectors Jigsaw (30 min) dh
High level for teachers, but show lower level
High Voltage Table (Russ Weadon) (45 min)
Digestion Time (5 min silent, 10 min share out)
Energy for Future Presidents Homework (What is energy?) (5 min)

4:30	General Session: credit Requirements

5:00 Close of Day

Tuesday – June 28

7:30 a.m. Breakfast
8:00 General Session: Carla Hester-Croff
9:30 **Energy for Future Citizens Strand Time (2.5 hours)**
- Homework Review (15 min) mw
- Conservation and Efficiency 101 (15 min) dh
- TED "How Behavioral Science Can Lower Your Power Bill" (15 min) mw
- Hands-on Energy Audit (30 min) dh
- Energy Bike (15 min) mw
- Energy Calculations (30 min) dh
- TED: Paper Beats Plastic: How to rethink environmental folklore mw
- Digestion Time (5 min silent, 10 min share out)

12:00 p.m. Lunch
1:00 **Energy for Future Citizens Strand Time (2 hours)**
- Power Generation and E&M 101 (15 min) mw
- Electromagnetism Labs (1 hr) dh
  - Electromagnetism with Compass
  - Nuts and Bolts of Music
  - Hand Generator Flashlights
  - Homopolar motor
  - Eddy Current Tube
  - Simple (violin) Generators
  - Ammeter Movement
- PhET Simulations (20 min) mw
  - Faraday's Electromagnetic Lab
  - AC/DC Circuits
- Digestion Time (5 min silent, 10 min share out)
- Energy for Future Presidents Homework (Fukushima and Gulf Oil Spill) (10 min)

3:00 General Session: Meet The Pros – This can be used as family STEM night
5:00 Close of Day

Wednesday – June 29 FIELD TRIP DAY

7:30 a.m. Breakfast
8:00 General Session: Matt Bertasso

9:30 **Energy for Future Citizens Strand Time (2.5 hours)**
Field Trip to Langley Gulch
12:00 p.m. Lunch on the bus
1:00 **Energy for Future Citizens Strand Time (4 hours)**
Energy for Future Presidents Homework Review (15 min)
Intermountain Gas (30 min)
Theory Cubes and Nature of Science (45 min) mw
Break (15 minutes)
Intermountain Gas (45 min)
Solar Light Deconstruction (45 min) dh
Intermountain Gas (30 min)
Digestion Time (5 min silent, 10 min share out)
Energy for Future Presidents Homework (your choice) dh
5:00 Close of Day

Thursday – June 30

7:30 a.m. Breakfast
8:00 **Energy for Future Citizens Strand Time (4 hours)**
Homework Review (15 min)
Nuclear 101 (15 min) dh
Nuclear Activities (45 min) dh
Irradiated Salt Demo
M&M half-life/ Licorice half life (jigsaw)
Critical Mass mw
Break (10 min)
Wind 101 (15 min) dh
Tower Construction (5 min) dh
Hands-on Wind Turbine Activities (1 hour 15 min) dh
Blade Angle
Blade Number
Blade Mass
State of Energy with Infographics (1 hour) dh
Digestion Time (5 min silent, 10 min share out)
12:00 Lunch: Discussion of where to find funding and grants for projects
1:00 p.m. General Session: Peter DeWitt
2:30 **Energy for Future Citizens Strand Time (1.5 hours)**
Solar 101 (15 min) dh
Hands-on Photovoltaic Activities (45 min) mw

Angle
Series and Parallel
Digestion Time (5 min silent, 10 min share out)
Post Test (Kahoot) and Evaluation (15 min)

4:00 General Session: Finishing comments

5:00 Institute Close

iSTEM Idaho Power Energy for the Future Citizens Strand Kit

Idaho Power Energy for Future Citizens Strand Kit - 2016 i-STEM Institute			
Item Description	**Kit Number**	**Curriculum**	**Supplier**
Energy for Future Presidents	1	Everything	Amazon
Nitinol Memory Wire (10 ft pack)	1	Science of Energy	Educational Innovations
Bulk UV Beads - 3000 Beads Assorted Colors	150	Solar	Educational Innovations
Magnets(pk 25)	5	Violin Generators	Educational Innovations
Cen-Tech 18" Low Voltage Multi-Colored Test Leads pkg of 10	2	Wind/Solar	Harbor Freight
7 Function Multimeter	5	Science of Energy	Harbor Freight
Pack of 2 Dynamo LED Flashlights	1	Science of Energy	Harbor Freight
Irradiated Marbles	1	Nuclear	Health Physics Society/PSU
Irradiated Salt from PSU		Nuclear	Health Physics Society/PSU
Solar Garden Lights	10	Solar	Dollar Tree
Ear Buds	1	E&M	Dollar Tree
Salt/Pepper Shakers	1	Nuclear	Dollar Tree
Copper Tube (10' length cut to 2' sections)	1	Electromagnetism	Home Depot
Drywall S Crews for homopolar motors	15	Homopolar Motors	Home Depot
Rayovac D Cell Batteries (12 pack)	3	Homopolar Motors	Home Depot
10 ft 3/4" Sch 40 PVC (cut down for generators)	1	Violin Generators	Home Depot
3/4" Cap	1	Violin Generators	Home Depot
3/8" Hardwood Dowel (cut down for generators)	1	Violin Generators	Home Depot
15 ft. 15-Gauge Primary Wire - Green (cut into sections)	2	Electromagnetism	Home Depot
Peg Board with the holes		Violin Generators	Home Depot
Calcium Chloride (damp rid)	1	Science of Energy	Home Depot
Large Nut	1	Nuts and Bolts of Music	Home Depot
65 ft 20/2 Bell Wire (cut into 5" sections) + 30 feet (cut 3" sections for Nut Music)	15	Homopolar Motors	Home Depot
A serious but not ponderous book about Nuclear Energy	1	Nuclear	Idaho National Lab
Education Resources Booklet	1	Science of Energy	Idaho Power
Idaho Energy Primer	1	Science of Energy	Idaho Power
Single Phantom Switches	1	Efficiency/Conservati	Idaho Power

		on	
30 Ways to Save Booklet	1	Efficiency/Conservation	Idaho Power
Metal Coffee Mugs with Idaho Power Logo	1	Efficiency/Conservation	Idaho Power
Neodymium Rare Earth Magnets - 1/4"x1/4" axially magnetized	20	Homopolar Motors	Amazing Magnets
PVC pipe 1" x 10' schedule 40	various	Wind	Lowe's
PVC straight connectors		Wind	Lowe's
PVC LASCO 1" Tee	3	Wind	Lowe's
Student Compasses (10pk)	10	Electromagnetism	MiniScience
10 lamp-5Base set (1.5V 0.3 amp)	10/5	Electromagnetism	MiniScience
Radiometer	1	Science of Energy	NADA Scientific, Ltd.
Compound Bar	1	Science of Energy	NADA Scientific, Ltd.
Happy/Sad Balls	1	Science of Energy	NADA Scientific, Ltd.
Kill-A-Watt meter	1	Efficiency/Conservation	P3 International
30 AWG Magnet Wire	1	Violin Generators	RadioShack
LED	1	Violin Generators	AllElectronic.com
2 Tongs	2	Science of Energy	The NEED Project
DC micro ammeter	1	Science of Energy	The NEED Project
Set of 10 Student Thermometers	2	Science of Energy	The NEED Project
Physics Trick	1	Physics	DaNel Hogan
Kidwind DIY Basic Kit	10	Wind	Vernier
Big Tub	20	Tub for Everything	Walmart or similar
Ziploc Large Rectangular Containers (2 pack)	#REF!	Global Trading Game	Walmart or similar
Powering the Future with a New Era of Science Posters	1		Department of Energy
M&Ms		Nuclear	
Licorice		Nuclear	
Marbles	30	Global Trading Game	

Idaho Power Residential REEEI Manager and Marketing Specialist Interview Guide

Program: Residential Energy Education Efficiency Initiative (REEEI)

Date: July 7th, 2016, 11am MST
Name: Denise Humphreys (Program Lead) and Gary Grayson

Date: July 8th 2016, 11am MST
Name: Tracey Burtsch (Marketing Specialist)
Title:
Phone:
Email:
Interviewers: Jeff, KLS

Objective: Obtain key information and data about the Program to complete EM&V Work Plan.

A. Staff Role/Responsibilities
    a. What is your role and responsibilities for the Program? Who else is involved in the administering or delivering the Program and what are their responsibilities? (Obtain Organization Chart, if available)
B. Program Description for the EM&V Work Plan (these questions may be answered by Program documentation or other references)
    a. When was the Program first launched?
    b. What is the key target market(s) for the program in terms of types of homes, facilities, businesses and end-use equipment? What is the size of that market?
    c. What are the major measures being offered through the Program? What other products and services (technical support, financing, etc.) are available from the Program?
    d. What is the rebate or incentive levels or rebate structures for the Program?
    e. Does the Program have any program partners or market actors involved in promoting and delivering the Program?
    f. What is the budget for the Program?
C. Program Goals and Progress Towards Meeting Goals
    a. What are the major goals for the program?
        i. Any long-term goals?
    b. What were the Program goals for 2015?
        i. Estimated contribution level to overall portfolio?
    c. How well did the Program do in meeting participation and savings goals for 2015? (Obtain final data on benchmarks and participants)
D. Program Delivery and Implementation Process
    a. Is there a Program logic model available?
    b. Who is implementing the Program?
    c. Please walk me through how a typical project progresses from start to finish. (How a measure becomes a claim)

E. Data Tracking & Reporting
    a. What data are currently collected for the Program and for individual projects? How is this data stored and organized?
    b. Are there are sources of data for individual projects? What type of data is stored in these documents and where do they reside?

F. Calculation of Energy Savings and Other Benchmark or Impacts
    a. How are the energy and demand savings calculated for projects and individual measures? What specific sources of information and tools are used?
    b. (If applicable) Are there custom measure protocols in place for savings estimates?
    c. What program benchmarks are used in determining the success of the program?
    d. (if applicable) Is there M&V conducted for individual projects to confirm savings estimates? Who does the M&V?
    e. Is data collected and analyzed for the market effect of the program? If so, please describe that process.

G. Conclusion of Interview
    a. Is there anything else that we need to know about the Program or any other documents or data that we should be aware of?
    b. What key questions about the Program, if any, are you looking to explore in developing the EM&V Work Plan for the Program?
    c. Is it okay if I get back to you with any clarifying questions? I would also like to provide a copy of my notes for your review to make sure we have characterized the information correctly that you provided and have not omitted any key information.

Thank you so much for your assistance!

Idaho Power Customer Rep and Community Education Rep Interview Guide

Idaho Power Company Energy Efficiency Education Initiative –

Internal Customer and Educational Representatives – Interview Guide

Program Description: *The Residential Energy Efficiency Education Initiative promotes energy efficiency to the residential sector in order to create behavioral change and customer demand for, and satisfaction with, its programs. The company achieves this by creating and delivering educational materials and programs that result in wise and informed choices regarding energy use and encourage participation in Idaho Power's energy efficiency programs. Goals:*

- *Empower families to make wise choices about when and how they use electricity*
- *Increase awareness of energy efficiency behaviors and programs*
- *Reinforce the company's image as a trusted energy advisor through a variety of channels by providing accurate, up-to-date information about energy use and ways to save*

Target audience*: 5 Community Education Representatives and 4 Customer Representatives in regards to their role in residential energy education programs IPC.*

Key objective: *Understand what they do, how it is working and where they are going. Learn about how the Initiative is changing customer energy using behaviors, increasing utility customer usage of ''myAccount'' and cross-market existing utility programs and service offerings. Ask which marketing channels are best and how to effectively use them.*

Introduction: Hello my name is Jeff Riggert calling on behalf of Idaho Power's Energy Efficiency Residential Education Initiative and its' manager Denise Humphrey. As an evaluator of this initiative, I'd like to get your feedback and insights. Would you be willing to talk about what you are doing to advance energy conservation in the residential sector what you've learned? Is now a good time to talk?

Person Name	
Organization Name	
Phone	
E-mail	
Program Name(s)	
Notes	
Notes	
Notes	

Attempt #	**Date**	**Time**	**Result**

Introduction

1) What is your job title?

2) What is your role and responsibility at work?

Program Goals, strategies and tactics

3) How would you characterize the goals of the Residential Energy Education Initiative?

4) Now let's talk specifics on what is being done to raise awareness of energy efficiency (EE) behaviors and practices. *(For each item, probe for: strengths, weaknesses, opportunities, insights, effectiveness)*

- Semi-annual Energy Efficiency Guides for broad-based distribution (newspapers, handouts, etc.).
- Energy-efficiency focused topics/articles for customer newsletter "Connections"
- Monthly bill inserts
- Weekly "Newsbriefs" to pitch story ideas to local media
- "30 Simple Things You Can Do"
- ''myAccount'' & "Online Tool" (to understand energy usage and ID savings strategies)
- TV monthly live in-studio EE segments at 2 stations
- YouTube Postings (aka. "Voices of Customers") linked to IPC website
- Smart Saver Pledge with prizes
- In-person Event presentations
- Role as liaison with Corp Communications on EE campaigns and other media EE needs *(Probe for: Collaborate on content for EE awareness campaign, Ideas and s Cript input for television/radio EE spots, Web re-design and improvements to EE pages, development/review of social media posts, newsletter articles for HOA groups, employers, etc.)*
- Giveaways with strong EE messaging, i.e. custom packaging for LED bulbs, etc.
- Kill-A-Watt meter lending program with the public libraries
- Educational distributions (products with some energy savings and strong behavioral component and/or need to be delivered with education to maximize savings potential, (i.e. LED bulbs, drying racks, kits,)

- Sponsorship of Sustainable Energy, Sustainable Homes series in conjunction with Community Ed and USGBC
- Are there any other opportunity you use to engage with IPC About EE.? *(Probe for: non-program specific EE questions that come in via web, EE staff and EE-related messages and activities.)*

5) How are you cross-promoting existing IPC programs through the activities just discussed? *(Probe for message-relevant program information included with Energy Efficiency guides, handouts, other materials, events presentations)*

6) Now let's talk about K-12 education. What's going on with….
   - Student Energy Efficiency Kit Program in partnership with Community Education Reps.
   - "The Power to Make A Difference" presentation
   - Energy-related workshops at state-sponsored STEM Institutes.
   - Work with boards of the Idaho Environmental Education Association and Idaho Science and Math Teachers to provide guidance and input related to their energy efficiency and sustainability initiatives

7) Are you involved with monitoring new technologies or programs to educate customers of relevant trends in industry? *(Probe for: Program Planning Group, "Conduit," E-Source).*

Traditional Marketing Channels

Please rate the following marketing channels for effectiveness at reaching people to educate them about energy conservation. Please use a 1-10 scale, where 1 is poor and 10 is excellent. Let's start with some traditional marketing channels….

8) …TV, Radio and print media Rating (1-10) ____
9) Topically focused energy guide mailers Rating (1-10) ____
10) Utility customer newsletters Rating (1-10) ____
11) News briefs / press releases Rating (1-10) ____
12) Native advertisement / reporter written stories Rating (1-10) ____
13) Celebrity endorsements Rating (1-10) ____
14) Sports, music, other forms of live entertainment. If so, please specify __ Rating (1-10) ____
15) Institutional and business sponsorships Rating (1-10) ____
16) Local or municipal government Rating (1-10) ____
17) K-12 students and schools Rating (1-10) ____
18) University or college student, faculty and staff Rating (1-10) ____
19) Neighborhood associations Rating (1-10) ____
20) Public or community events via canvassing and booths *(Probe for well attended events, where people expect to learn things like energy conservation)*
    (For scores above 5) Please specify and rate _____ Rating (1-10) ____
21) Competitions with prizes (e.g. raffles or other rewards).
    (For scores above 5) If so, what kind of prizes _____ Rating (1-10) ____

22) Other gamification based reward systems. If so, please specify _____ Rating (1-10) ____
23) Other situations where strong in-group social identity exists *(e.g. club members).*
If so, please specify_____ Rating (1-10) ____

Internet Age / Social Marketing Channels

Now let's rate some newer marketing channels, starting with…

24) Facebook Rating (1-10) ____
25) Twitter Rating (1-10) ____
26) Instagram (photos and imagery) Rating (1-10) ____
27) LinkedIn Rating (1-10) ____
28) Next Door (neighborhood network) Rating (1-10) ____
29) Other free private social networks. Please specify _____ Rating (1-10) ____
30) E-mails Rating (1-10) ____
31) Text messages Rating (1-10) ____
32) Opt-in on-line groups such as yahoo or google Rating (1-10) ____
33) Blogs Rating (1-10) ____
34) Online customer utility accounts (used to pay bills and monitor energy use) Rating (1-10) ____
35) Online energy dashboards Rating (1-10) ____
36) Smart meters and real-time feedback on energy usage Rating (1-10) ____
37) Other technology-enabled human-interfaced energy-use feedback mechanisms Rating (1-10)
Please specify: _____
38) Meet-ups or crowd sourcing strategies Rating (1-10) ____
39) Energy pledges for behavioral change with follow-up social accountability. Rating (1-10) ____
*(Probe for How to best implement and apply follow-up accountability?)*_____

40) Other types of behavior change strategies. Please specify _____ Rating (1-10) ____

Other Customer Engagement Strategies

41) How can we best use photos and imagery to engage educate energy users and change behavior?

42) How do we get more tie-ins to (and usage of) utility accounts to educate and change behavior of utility customers?

43) Real time feedback on automobile driving behavior (and it's impacts on gas mileage and fuel range) are dashboard displays on some new automobiles. How could this be used at home to lower electricity usage?

44) Fully enabled smart electric (AMI) meters enable utility customers to monitor their home's hourly energy usage from an online portal. How could this technology best be used to reduce energy use?

45) Customer feedback mechanisms, such as OPower, provide homeowner with feedback on their energy use by comparing it to similar homes. Evaluations have shown OPower typically reduces

energy use by several percentage point and the savings persists for several years. What do you think about this strategy?

46) What are the best ways to achieve energy behavioral change via feedback programs?

47) What about the water-energy nexus? Are you targeting or emphasizing energy efficiency measures or energy conservation behaviors that also save water? If so, please specify _____

Customer Motivational Drivers

Energy efficiency and conservation are typically NOT top-of-mind for people. What sort of non-energy benefits, associated with saving energy, make it to top-of-mind?

48) Now I would like to get your perspective on what motivates customers to change energy using behaviors. Using a 1-10 scale, where 1 is Not at all important and 10 is Very important, how would you rate the importance of the following factors in customer decisions to take action to save energy. Starting with…

- Improved comfort — Importance, 1-10 scale ____
- Saving money — Importance, 1-10 scale ____
- Home improvement — Importance, 1-10 scale ____
- Convenience and time saving — Importance, 1-10 scale ____
- Improved health and safety — Importance, 1-10 scale ____
- Reduced impact on the environment — Importance, 1-10 scale ____
- Economic prosperity — Importance, 1-10 scale ____
- National Security — Importance, 1-10 scale ____
- Being/Feeling "Green" — Importance, 1-10 scale ____
- Other factors? Please specify_____ — Importance, 1-10 scale ____

Conclusion

49) Do you know of any other programs or people that are implementing residential energy conservation behavioral change efforts at utilities or other organizations?

50) More broadly, can you think of anyone else we should talk to that is doing something new or innovative with residential energy conservation programs in general?

51) Is there anything else that you would like to share or suggest regarding residential energy efficiency efforts?

Thank you for your time and valuable insight!

External Program Manager and Subject Matter Expert (SME) Interview Guide

Idaho Power Company (IPC) Energy Efficiency Education Initiative – External Program Managers & Subject Matter Experts – Interview Guide

***Target audience**: 4-8 program managers of residential energy education programs at other utilities, along with Subject Matter Experts (SMEs) from government, NGOs and consulting firms who implement design or evaluate residential energy education programs.*

***Key objective:** Discover innovative and best practices and how they are working. Learn about programs and initiative that change customer energy using behaviors, increase utility customer usage of ''myAccount'' and cross-market existing utility programs and service offerings. Ask which marketing channels are best and how to most effectively use them.*

Introduction: Hello my name is Jeff Riggert calling on behalf of Idaho Power's Energy Efficiency Residential Education Initiative. The initiative is looking towards what other utilities and organizations are doing to advance residential energy efficiency and in particular, behavioral change endeavors. Would you be willing to talk to me about what you are doing to advance energy conservation in the residential sector and what you know or have learned from what others are doing? Is now a good time to talk?

Person Name	
Organization Name	
Phone	
E-mail	
Program Name(s)	
Notes	
Notes	
Notes	

Find out who else to interview or other organizations

Attempt #	**Date**	**Time**	**Result**

Introduction

1) What is your job title?

2) What is your roll and responsibility at work?

If more than one relevant program/initiative, repeat questions 3-19.

External Program/Initiative Description

3) What is/are the name(s) of your residential energy education program(s) or initiative?

4) What was the impetus for the program/initiative?

5) When was the program first launched?

6) What are the goals of the program?

7) What kind of marketing and outreach does the program use?

8) What sort of traditional and non-traditional media channels are employed to reach people/customers?

9) How are customers enrolled in the program?

10) Why do customers decide to participate?

11) How many participants have enrolled in program?

12) What sort of behavioral change strategies do you employ to save energy?

13) Which energy efficiency measures or end uses are you targeting?

14) Are there any estimates of energy savings associated with the program?

15) What other kinds of data are being collected or tracked with this program?

16) Has there been any evaluations of the program?

17) If so, can I obtain a copy of the evaluation report or summary of findings?

Traditional Marketing Channels

Please rate the following marketing channels for effectiveness at reaching people to educate them about energy conservation. Please use a 1-10 scale, where 1 is poor and 10 is excellent. Let's start with some traditional marketing channels….

18) …TV, Radio and print media Rating (1-10) ____
19) Topically focused energy guide mailers Rating (1-10) ____
20) Utility customer newsletters Rating (1-10) ____
21) News briefs / press releases Rating (1-10) ____
22) Native advertisement / reporter written stories Rating (1-10) ____
23) Celebrity endorsements Rating (1-10) ____
24) Sports, music, other forms of live entertainment. If so, please specify __ Rating (1-10) ____
25) Institutional and business sponsorships Rating (1-10) ____
26) Local or municipal government Rating (1-10) ____
27) K-12 students and schools Rating (1-10) ____
28) University or college student, faculty and staff Rating (1-10) ____
29) Neighborhood associations Rating (1-10) ____
30) Public or community events via canvassing and booths *(Probe for well attended events, where people expect to learn things like energy conservation)*
(For scores above 5) Please specify and rate _____ Rating (1-10) ____
31) Competitions with prizes (e.g. raffles or other rewards).
(For scores above 5) If so, what kind of prizes _____ Rating (1-10) ____
32) Other gamification based reward systems. If so, please specify _____ Rating (1-10) ____
33) Other situations where strong in-group social identity exists *(e.g. club members).*
If so, please specify_____ Rating (1-10) ____

Internet Age / Social Marketing Channels

Now let's rate some newer marketing channels, starting with…

34) Facebook Rating (1-10) ____
35) Twitter Rating (1-10) ____
36) Instagram (photos and imagery) Rating (1-10) ____
37) LinkedIn Rating (1-10) ____
38) Next Door (neighborhood network) Rating (1-10) ____
39) Other free private social networks. Please specify _____ Rating (1-10) __
40) E-mails Rating (1-10) ____
41) Text messages Rating (1-10) ____
42) Opt-in on-line groups such as yahoo or google Rating (1-10) ____
43) Blogs Rating (1-10) ____
44) Online customer utility accounts (used to pay bills and monitor energy use) Rating (1-10)
45) Online energy dashboards Rating (1-10) ____
46) Smart meters and real-time feedback on energy usage Rating (1-10) ____

47) Other technology-enabled human-interfaced energy-use feedback mechanisms Rating (1-10)
Please specify: _____

48) Meet-ups or crowd sourcing strategies Rating (1-10) ____

49) Energy pledges for behavioral change with follow-up social accountability. Rating (1-10) ____
*(Probe for How to best implement and apply follow-up accountability?)*_____

50) Other types of behavior change strategies. Please specify _____ Rating (1-10) ____

Other Customer Engagement Strategies

51) How can we best use photos and imagery to engage educate energy users and change behavior?

52) How do we get more tie-ins to (and usage of) utility accounts to educate and change behavior of utility customers?

53) Real time feedback on automobile driving behavior (and its impacts on gas mileage and fuel range) are dashboard displays on some new automobiles. How could this be used at home to lower electricity usage?

54) Fully enabled smart electric (AMI) meters enable utility customers to monitor their home's hourly energy usage from an online portal. How could this technology best be used to reduce energy use?

55) Customer feedback mechanisms, such as OPower, provide homeowner with feedback on their energy use by comparing it to similar homes. Evaluations have shown OPower typically reduces energy use by several percentage point and the savings persists for several years. What do you think about this strategy?

56) What are the best ways to achieve energy behavioral change via feedback programs?

57) What about the water-energy nexus? Are you targeting or emphasizing energy efficiency measures or energy conservation behaviors that also save water? If so, please specify _____

Customer Motivational Drivers

Energy efficiency and conservation are typically NOT top-of-mind for people. What sort of non-energy benefits, associated with saving energy, make it to top-of-mind?

58) Now I would like to get your perspective on what motivates customers to change energy using behaviors. Using a 1-10 scale, where 1 is Not at all important and 10 is Very important, how would you rate the importance of the following factors in customer decisions to take action to save energy. Starting with…
- Improved comfort Importance, 1-10 scale ____

- Saving money Importance, 1-10 scale ____
- Home improvement Importance, 1-10 scale ____
- Convenience and time saving Importance, 1-10 scale ____
- Improved health and safety Importance, 1-10 scale ____
- Reduced impact on the environment Importance, 1-10 scale ____
- Economic prosperity Importance, 1-10 scale ____
- National Security Importance, 1-10 scale ____
- Other factors? Please specify_____ Importance, 1-10 scale ____

Conclusion

59) Do you know of any other programs or people that are implementing residential energy conservation behavioral change efforts at utilities or other organizations?

60) More broadly, can you think of anyone else we should talk to that is doing something new or innovative with residential energy conservation programs in general?

61) Is there anything else that you would like to share or suggest regarding residential energy efficiency efforts?

Thank you for your time and valuable insight!

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WEATHERIZATION ASSISTANCE FOR QUALIFIED CUSTOMERS 2015 ANNUAL REPORT

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IDAHO POWER®
An IDACORP Company

Weatherization Assistance
for Qualified Customers

2015 Annual Report
April 1, 2016

2015

Printed on recycled paper

TABLE OF CONTENTS

LIST OF TABLES

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DESCRIPTION

The Weatherization Assistance for Qualified Customers (WAQC) program provides financial assistance to regional Community Action Partnership (CAP) agencies in Idaho Power's service area. This assistance helps fund weatherization costs of electrically heated homes occupied by qualified customers who have limited incomes. The WAQC program also provides a limited pool of funds for the weatherization of buildings occupied by non-profit organizations serving primarily special-needs populations, regardless of heating source, with priority given to buildings with electric heat. Weatherization improvements enable residents to maintain a more comfortable, safe, and energy-efficient home while reducing their monthly electricity consumption. Improvements are available at no cost to qualified customers who own or rent their homes. These customers also receive educational materials and ideas on using energy wisely in their homes. Local CAP agencies determine participant eligibility according to federal and state guidelines.

BACKGROUND

In 1989, Idaho Power began offering weatherization assistance in conjunction with the State of Idaho Weatherization Assistance Program (WAP). In Oregon, Idaho Power offers weatherization assistance in conjunction with the State of Oregon WAP. Through the WAQC program, Idaho Power provides supplementary funding to state-designated CAP agencies for the weatherization of electrically heated homes occupied by qualified customers and buildings occupied by non-profit organizations that serve special-needs populations. This allows CAP agencies to leverage their federal Low Income Home Energy Assistance Program (LIHEAP) weatherization funds and serve more customers with special needs.

Idaho Power has an agreement with each CAP agency for the WAQC program. The agreement specifies the funding allotment, billing requirements, and program guidelines. Currently, Idaho Power oversees the program in Idaho through five regional CAP agencies. The five regional CAP agencies include CCOA—Aging, Weatherization and Human Services (CCOA), Eastern Idaho Community Action Partnership (EICAP), El Ada Community Action Partnership (EL ADA), South Central Community Action Partnership (SCCAP), and Southeastern Idaho Community Action Agency (SEICAA). In Oregon, Community Connection of Northeast Oregon, Inc. (CCNO), and Community in Action (CINA) provide weatherization services for qualified customers in Idaho Power's service area.

Idaho Power provides this *Weatherization Assistance for Qualified Customers 2015 Annual Report* in compliance with the Idaho Public Utilities Commission's (IPUC) Order No. 29505. This report includes the following topics:

- Review of weatherized homes and non-profit buildings by county
- Review of measures installed
- Overall cost-effectiveness
- Customer education and satisfaction
- Plans for 2016

REVIEW OF WEATHERIZED HOMES AND NON-PROFIT BUILDINGS BY COUNTY

In 2015, Idaho Power made available a total of $1,325,070 to Idaho CAP agencies. Of the funds provided, $1,286,911 were paid to Idaho CAP agencies in 2015, while $38,159 were accrued for future funding. Of the funds paid in 2015, $1,084,710 directly funded audits, energy efficiency measures, and health and safety measures for qualified customers' homes (production costs) in Idaho, and $108,471 funded administration costs to Idaho CAP agencies for those homes weatherized. Idaho Power funding provided for the weatherization of 225 Idaho homes and 8 Idaho non-profit buildings in 2015. The production cost of the non-profit building weatherization measures was $85,208, while $8,521 in administrative costs were paid for the Idaho non-profit building weatherization jobs. In Oregon, Idaho Power paid $30,884 in production costs for 10 qualified homes and $3,088 in CAP agency administrative costs for homes in Malheur County. Table 1 shows each CAP agency, the number of homes weatherized, production costs, the average cost per home, administration payments, and total payments per county made by Idaho Power.

Table 1
2015 WAQC activities and Idaho Power expenditures by agency and county

Agency	County	Number of Homes	Production Cost	Average Cost[1]	Administration Payment to Agency	Total Payment
Idaho						
CCOA	Adams	1	$ 7,394	$ 7,394	$ 739	$ 8,133
	Canyon	32	182,874	5,715	18,287	201,162
	Gem	2	12,112	6,056	1,211	13,323
	Payette	5	24,966	4,993	2,497	27,463
	Valley	4	29,952	7,488	2,995	32,947
	Washington	3	18,517	6,172	1,852	20,369
	Agency Total	**47**	**$ 275,815**	**$ 5,868**	**$ 27,581**	**$ 303,396**
EICAP	Lemhi	3	11,625	3,875	1,163	12,788
	Agency Total	**3**	**$ 11,625**	**$ 3,875**	**$ 1,163**	**$ 12,788**
EL ADA	Ada	93	435,011	4,678	43,501	478,512
	Elmore	10	60,839	6,084	6,084	66,922
	Owyhee	4	20,950	5,237	2,095	23,045
	Agency Total	**107**	**$ 516,799**	**$ 4,830**	**$ 51,680**	**$ 568,479**
SCCAP	Blaine	2	9,253	4,626	925	10,178
	Gooding	4	21,196	5,299	2,120	23,315
	Jerome	8	27,347	3,418	2,735	30,082
	Twin Falls	22	104,370	4,744	10,437	114,807
	Agency Total	**36**	**$ 162,165**	**$ 4,505**	**$ 16,216**	**$ 178,381**
SEICAA	Bannock	20	68,204	3,410	6,820	75,025
	Bingham	8	33,396	4,174	3,340	36,736
	Power	4	16,706	4,176	1,671	18,376
	Agency Total	**32**	**$ 118,306**	**$ 3,697**	**$ 11,831**	**$ 130,137**
Total Idaho Homes		**225**	**$ 1,084,710**	**$ 4,821**	**$ 108,471**	**$ 1,193,181**
Idaho Non-Profit Buildings	Ada	2	16,314	–	1,631	17,945
	Bannock	1	1,465	–	147	1,612
	Bingham	1	9,761	–	976	10,737
	Canyon	1	17,607	–	1,761	19,368
	Owyhee	2	26,416	–	2,642	29,058
	Twin Falls	1	13,645	–	1,364	15,009
Total Idaho Non-Profit Buildings		**8**	**$ 85,208**	**$ 10,651**	**$ 8,521**	**$ 93,729**
Total Idaho		**233**	**$ 1,169,918**		**$ 116,992**	**$ 1,286,910**

Table 1 (continued)

Agency	County	Number of Homes	Production Cost	Average Cost[1]	Administration Payment to Agency	Total Payment
Oregon						
CCNO	Baker	0	–	–	–	–
	Agency Total	**0**	**–**	**–**	**–**	**–**
CINA	Malheur	10	$ 30,884	$ 3,088	$ 3,088	$ 33,973
	Agency Total	**10**	**$ 30,884**	**$ 3,088**	**$ 3,088**	**$ 33,973**
Total Oregon homes		**10**	**$ 30,884**	**$ 3,088**	**$ 3,088**	**$ 33,973**
Total Program		**243**	**$ 1,200,803**		**$ 120,080**	**$ 1,320,883**

[1] Average cost is equal to the production cost divided by the number of homes.
Note: Dollars are rounded.

The base funding for Idaho CAP agencies is $1,212,534 annually, which does not include any carryover from the previous year. Idaho Power's agreements with CAP agencies include a provision that identifies a maximum annual average cost per home up to a dollar amount specified in the agreement between the CAP agency and Idaho Power. The intent of the maximum annual average cost is to allow CAP agency flexibility to service some homes with greater or fewer weatherization needs. It also provides a monitoring tool for Idaho Power to forecast year-end outcomes. The average cost per home weatherized is calculated by dividing the total annual Idaho Power production cost of homes weatherized per CAP agency by the total number of homes weatherized that the CAP agency billed to Idaho Power during the year. The maximum annual average cost per home the CAP agencies were allowed under the 2015 agreement was $6,000. In 2015, Idaho CAP agencies had a combined average cost per home weatherized of $4,821. In Oregon, the average was $3,088 per home weatherized.

There is no maximum annual average cost for the weatherization of buildings occupied by non-profit agencies.

CAP agency administration fees are equal to 10 percent of Idaho Power's per-job production costs. The average administration cost paid to agencies per Idaho home weatherized in 2015 was $482, and the average administration cost paid to Oregon agencies per Oregon home weatherized during the same period was $309. Not included in this report's tables are additional Idaho Power staff labor, marketing, home verification, and support costs for the WAQC program totaling approximately $58,000 for 2015. These expenses were in addition to the WAQC program funding requirements in Idaho specified in IPUC Order No. 29505.

In compliance with IPUC Order No. 29505, WAQC program funds are tracked separately, with unspent funds carried over and made available to CAP agencies in the following year. In 2015, $112,536 in unspent funds from 2014 were made available for expenditures in Idaho. Table 2 details the funding base and available funds from 2014 and the total amount of 2015 spending.

Table 2
2015 WAQC base funding and unspent funds made available

Agency	2015 Base Funding	Available Funds from 2014	Total 2015 Allotment	Total 2015 Spending
Idaho				
CCOA	$ 302,259	$ 1,138	$ 303,397	$ 303,397
EICAP	12,788	–	12,788	12,788
EL ADA	568,479	–	568,479	568,479
SCCAP	167,405	56,406	223,811	178,381
SEICAA	111,603	$ 21,792	133,395	130,137
Non-profit buildings	50,000	33,200	83,200	93,729
Idaho Total	**$ 1,212,534**	**$ 112,536**	**$ 1,325,070**	**$ 1,286,911**
Oregon				
CCNO	$ 6,750	$ 5,572	$ 12,322	$ 0
CINA	38,250	–	38,250	33,973
Oregon Total	**$ 45,000**	**$ 5,572**	**$ 50,572**	**$ 33,973**

Note: Dollars are rounded.

REVIEW OF MEASURES INSTALLED

Table 3 details home counts for which Idaho Power paid all or a portion of the measure costs during 2015. The Home Counts column represents the number of times any percentage of that measure was billed to Idaho Power during the year. If totaled, measure counts would be higher than total homes weatherized because the number of measures installed in each home varies. For example, Table 3 shows 59 homes in Idaho received a compact fluorescent lamps (CFL) measure. Each home received more than one bulb. Consistent with the Idaho WAP, the WAQC program offers several measures that have costs but do not necessarily save energy or for which the savings cannot be measured. Included in this category are health and safety measures, vents, furnace repairs, other, and home energy audits. Health and safety measures are necessary to ensure weatherization activities do not cause unsafe situations in a customer's home or compromise a home's existing indoor air quality. Other non-energy-saving measures are allowed under this program because of their interaction with the energy-saving measures. Examples of items included in the "other" measure category include vapor barriers, dryer vent hoods, and necessary electrical upgrades. The EA5 energy audit program (EA5) is a software program approved for use by the United States (US) Department of Energy (DOE). The Idaho Department of Health and Welfare (IDHW) uses the EA5 for the Idaho WAP and therefore, the Idaho CAP agency weatherization managers use the EA5. The EA5 includes material costs, labor costs for installation, agency and contractor support costs, and estimated savings for individual measures.

Table 3
2015 WAQC review of measures installed

	Home Counts	Production Costs
Idaho Home and Non-Profit Measures		
Windows	142	$ 182,997
Doors	94	62,568
Wall insulation	17	4,762
Ceiling insulation	103	75,123
Vents	17	1,136
Floor insulation	85	85,086
Infiltration	127	30,138
Ducts	52	24,687
Health and safety	44	16,650
Other	44	13,118
Water heater	7	6,431
Pipes	58	3,271
Refrigerator	10	7,948
Furnace tune	2	791
Furnace repair	21	17,203
Furnace replace	160	622,001
CFL	59	3,269
Audit	126	12,740
Total Idaho Homes and Non-Profit Measures		**$ 1,169,918**
Oregon Home Measures		
Windows	4	$ 5,914
Doors	3	1,216
Ceiling insulation	5	6,904
Vents	5	2,048
Floor insulation	4	7,152
Infiltration	10	2,188
Ducts	4	2,664
Health and safety	7	2,323
Pipes	1	57
CFL	4	419
Total Oregon Homes Measures		**$ 30,884**

Note: Dollars are rounded.

Annually, Idaho Power physically verifies approximately 10 percent of the homes weatherized under the WAQC program. This is done through two methods. The first method includes the Idaho Power program specialist participating in Idaho's and Oregon's state monitoring process that reviews weatherized homes. The process involves utility representatives; weatherization personnel from the CAP agencies; Community Action Partnership Association of Idaho, Inc. (CAPAI); and representatives from the IDHW or Oregon Housing and Community Services (OHCS) reviewing homes weatherized by each of the CAP agencies.

The second method involves Idaho Power contracting with two companies—The Energy Auditor, Inc. (The Energy Auditor), and Momentum, LLC (Momentum)—that employ certified building performance specialists to verify installed measures in customer homes. The Energy Auditor verifies homes weatherized for the WAQC program in Idaho Power's eastern and southern Idaho regions. The owner of The Energy Auditor is certified by Performance Tested Comfort Systems and is an ENERGY STAR® home performance specialist. Momentum verifies weatherization services provided through the WAQC program in the Capital and Canyon regions of Idaho and in the company's Oregon service area. The owner of Momentum is a Residential Energy Services Network (RESNET®) certified home energy rater. After these companies verify installed measures, any required follow-up is done by the CAP agency personnel.

OVERALL COST-EFFECTIVENESS

In customer homes, the Idaho CAP agency weatherization auditor uses the EA5 to conduct the initial audit of potential energy savings for a home. The EA5 compares the efficiency of the home prior to weatherization to the efficiency after the proposed improvements and calculates the value of the efficiency change into a savings-to-investment ratio (SIR). The output of the

EA5 SIR is similar to the participant cost test (PCT) ratio. If the EA5 computes an SIR of 1.0 or higher, the CAP agency is authorized to complete the proposed measures. The weatherization manager then is able to split production costs between Idaho Power and WAP with a maximum charge of 85 percent of production costs to Idaho Power.

The program was not cost-effective in 2015, with a total utility cost (UC) benefit-cost (BC) ratio of 0.54 and a BC ratio from the total resource cost (TRC) perspective of 0.43. In 2015, Idaho Power claimed an average of 2,263 kilowatt-hour (kWh) per-home or project, which provides real and substantial savings on a per-unit basis and provides measurable benefits for the residents. However, due to the costs of comprehensive whole-house weatherization, it is difficult for the value of the savings to outweigh the costs. WAQC offers several measures that have costs but do not save energy or for which savings cannot be measured.

In 2014, Idaho Power conducted a billing analysis on 2012 participants' actual usage data and applied these results to report savings for 2015 program year projects. The company conducted the data analysis to increase Idaho Power's understanding of savings resulting from the program and to update billing savings provided by a third-party impact evaluation completed in 2012 using 2011 projects. The total claimed estimated savings for 2015 projects were 550,021 kWh, with 139,590 kWh from single-family homes and 372,360 kWh from manufactured homes. An additional 38,071 kWh savings resulted from weatherization projects at non-profit sites.

Idaho Power used savings of 1.03 kWh per-square-foot of weatherized heated space for the eight WAQC non-profit projects in 2015, based on the average decrease in annual energy intensity from the 2012 single-family homes billing analysis. Conducting a billing analysis on

non-profit projects is not applicable due to the small number of projects and their lack of homogeny.

The company plans to continue monitoring realized energy savings from WAQC through periodic billing analyses. Idaho Power began a new billing analysis in 2015 for completion in 2016. The new analysis will assess current program savings impacts related to increased use of furnace replacements with heat pumps during the 2013 to 2014 program years. Idaho Power will use the results for possible program improvement and to understand how different measure combinations may impact overall household savings.

The Regional Technical Forum (RTF) conducted a billing analysis in 2015 on Idaho Power's manufactured-home weatherization projects from 2011 to 2012, and their analysis validated Idaho Power's internal analysis completed in 2012. The RTF analysis led to increased collaboration of statistical software programming and data cleaning recommendations between RTF contract analyst staff and Idaho Power.

The following recommendations from the IPUC staff's report and IPUC Order No. 32788 were used for the 2015 cost-effectiveness analysis:

- Applying a 100-percent net-to-gross (NTG) value to reflect the likelihood that WAQC weatherization projects would not be initiated without the presence of a program
- Claiming 100 percent of project savings
- Including an allocated portion of the indirect overhead costs
- Applying the 10-percent conservation preference adder

- Claiming $1 of benefits for each dollar invested in health, safety, and repair measures
- Amortizing evaluation expenses over a three-year period

CUSTOMER EDUCATION AND SATISFACTION

Idaho Power provides materials to each CAP agency to help educate qualified customers who receive weatherization assistance on using energy efficiently. Included in the materials are copies of the Idaho Power booklet *30 Simple Things You Can Do to Save Energy* and *Energy Saving Tips*, which describes energy conservation tips for the heating and cooling seasons, and a pamphlet that describes the energy-saving benefits of using CFL, light-emitting diodes (LED) lamps, and other tips for choosing the right bulb. Idaho Power actively informs customers about WAQC through energy and resource fairs and other customer contacts. Idaho Power's Customer Service Center regularly informs customers about the program.

To stay current with new programs and services, Idaho Power attends state and federal energy assistance/weatherization meetings and other weatherization-specific conferences. Idaho Power is also active in the Policy Advisory Council, helping advise and direct Idaho's state weatherization application for funding to the US DOE.

Idaho Power uses independent, third-party verification companies. Home verifiers ensure the stated measures were installed in the homes of participating customers and discuss the program with these customers. Home verifiers visited 28 homes, requesting feedback about the program in 2015. When asked how much customers learned about saving electricity, 22 customers answered they learned "a lot" or "some." When asked how many ways they tried to save electricity, 25 customers responded "a lot" or "some."

As recommended by Johnson Consulting in the 2013 process evaluation, a customer survey was again used to assess major indicators of customers' satisfaction throughout the service area. The 2015 Weatherization Programs Customer Survey was provided to all program participants in all regions upon completion of weatherization in their homes. Survey questions gathered information about how customers learned of the program, reasons for participating, how much customers learned about saving energy in their homes, and the likelihood of household members changing behaviors to use energy wisely.

Idaho Power received survey results from 211 of the 235 households weatherized by the program in 2015. Of the 211 surveys received back from customers, 201 were from Idaho customers and 10 were from Oregon customers. Some highlights include the following:

- Almost 46 percent of respondents learned of the program from a friend or relative, and another almost 22 percent learned of the program from an agency flyer. Nearly five percent learned about the weatherization program by receiving a letter in the mail.

- Over 86 percent of the respondents reported that their primary reason for participating in the weatherization program was to reduce utility bills, and over 44 percent wanted to improve the comfort of their home.

- Almost 82 percent reported they learned how air leaks affect energy usage, and just over 68 percent indicated they learned how insulation affects energy usage during the weatherization process. Over 54 percent of respondents said they learned how to use energy wisely.

- Over 83 percent reported they were very likely to change habits to save energy, and just over 82 percent reported they have shared all of the information about energy use with members of their household.

- Over 93 percent of the respondents reported they think the weatherization they received will significantly affect the comfort of their home and over 98 percent said they were very satisfied with the program.

- Over 85 percent of the respondents reported the habit they were most likely to change was turning off lights when not in use and nearly 65 percent said that washing full loads of clothes was a habit they were likely to change to save energy. Turning the thermostat up in the summer was reported by over 51 percent and turning the thermostat down in the winter was reported by over 66 percent as a habit they and members of the household were most likely to change to save energy.

A summary of the report is included in the *Demand-Side Management 2015 Annual Report Supplement 2: Evaluation* available online at idahopower.com/EnergyEfficiency/reports.cfm.

PLANS FOR 2016

As in previous years, unless directed otherwise, Idaho Power will continue to provide financial assistance to CAP agencies while exploring changes to improve program delivery and continue to provide the most benefit possible to special-needs customers while working with Idaho and Oregon WAP personnel.

Idaho Power will continue to participate in the Idaho and Oregon state monitoring process of weatherized homes and will continue to verify approximately 10 percent of the homes weatherized under the WAQC program via certified home-verification companies.

Idaho Power will continue its involvement with the State of Idaho's Policy Advisory Council that serves as an oversight group for weatherization activities in Idaho as well as review state grant applications for federal funding.

Idaho Power plans to selectively market the WAQC program throughout 2016. The program is to be promoted at resource fairs, community special-needs populations' service-provider meetings, and CAP agency functions to reach customers who may benefit from the program. Additional marketing for this program will be conducted in cooperation with weatherization managers.

Idaho Power will continue working in partnership with the IDHW, OHCS, CAPAI, and individual CAP agency personnel to maintain the targets and guidelines and improve the overall WAQC program.

In 2016, Idaho Power will support the whole-house philosophy of the WAQC program and the Idaho and Oregon WAP by continuing to contract a $6,000 annual maximum average per-home cost. Based on the required funding, Idaho Power estimates 192 homes in Idaho and Oregon and approximately 4 non-profit buildings in Idaho will be weatherized in 2016. In Idaho during 2016, Idaho Power expects to fund the base amount plus available funds from 2015 to total approximately $1,251,000 in weatherization measures and agency administration fees. Of this amount, approximately $39,500 will be provided to the non-profit pooled fund to weatherize buildings housing non-profit agencies that primarily serve qualified customers in Idaho.

Service-area wide, Idaho Power will provide the WAQC program approximately $1,313,000 in funding in 2016 for the weatherization of homes and buildings of non-profit agencies serving qualified customers.