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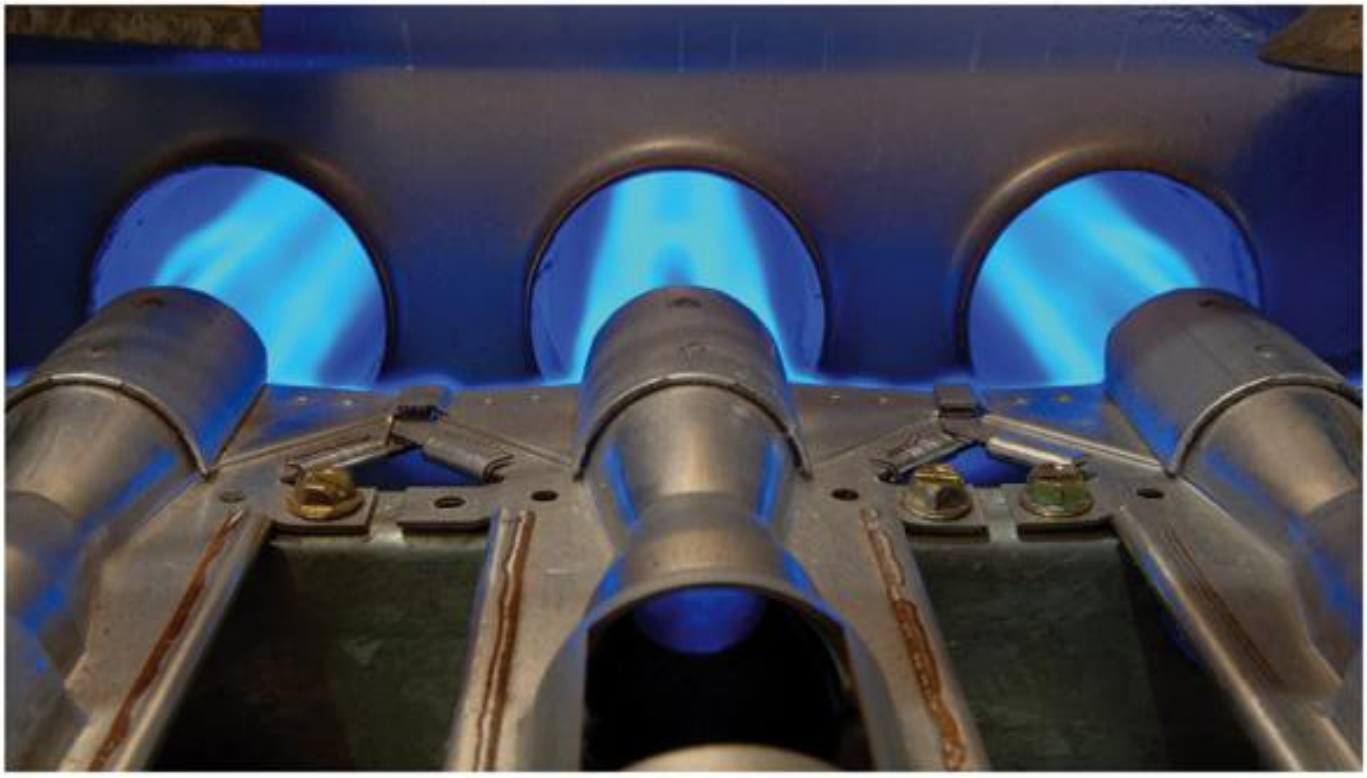
2014 Demand Side Management Program Review

Kerry Shroy
Manager DSM



2014 Demand Side Management Program Review

Introduction

Avista Utilities provides its "2014 Demand Side Management (DSM) Program Review" in response to the Oregon Public Utility Commission (OPUC) expressed interest in energy utilities linking energy efficiency programs, targets and activities to Integrated Resource Planning (IRP), and to the PUC staff's review of the Company's energy efficiency program performance.

Program Summary

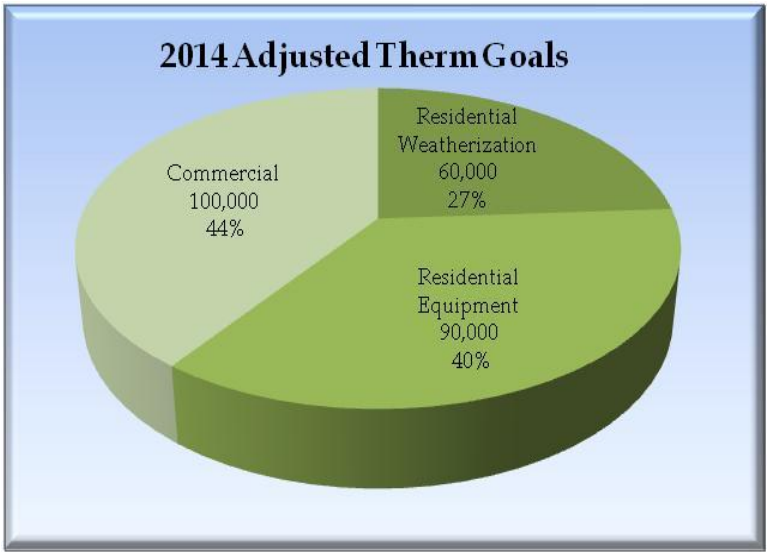
At the end of 2014, Avista provided natural gas service to 98,183 Oregon customers in Jackson, Josephine, Douglas, Klamath, and Union counties which is an increase of 697 customers over 2013 totals. Avista's conservation programs serve all residential customers, general commercial customers as well as light industrial customers. Large Industrial, interruptible, and transport customers do not qualify for the program.

Table 1: 2014 Meter Count

Segment	12-31-2014 Meters
Residential	86,713
Commercial	11,368
Industrial	29
Interruptible	33
Transport	40
Total	**98,183**

The Company's DSM portfolio is divided between three segments; residential weatherization, residential equipment, and commercial. Traditionally each segment represented approximately one-third of the total DSM goal. However, this has changed over the past several years.

Lower utility bills and other economic drivers influenced the mix. Residential weatherization appears to be affected by rates while residential equipment is impacted primarily by gas conversions and growth in new construction. Commercial conservation can vary year to year and is affected by economic conditions as well as the expected return on investment. Residential weatherization results were reduced further in 2014 as a result of the Company using deemed savings for those measures as opposed to higher calculated savings. The use of deemed savings decreased the average claimed savings for weatherization measures by 61%.

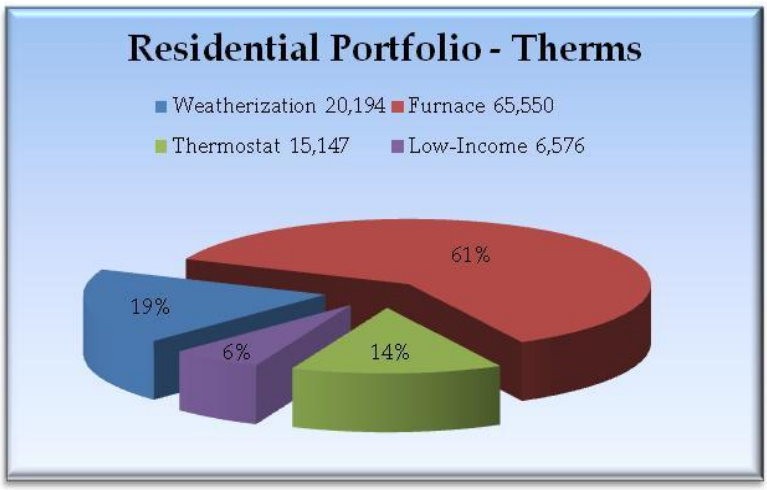


The IRP target for 2014 was 426,000 therms; however, OPUC Order No. 13-159, in Docket LC 55, established a minimum acquisition goal of 250,000 therms. The total portfolio savings for 2014 was 192,955 therms or 77% of the 2014 minimum goal.

The weatherization program achieved 45% of its adjusted target and the commercial program achieved 85%. The residential equipment program came in at 90% of target. While fewer residential audits were requested in 2014 as compared to 2013, a higher percentage of participants chose to install at least one measure. Residential equipment was flat while commercial DSM was up 20% over 2013 totals.

The graph below shows the cumulative total of therms saved in 2014 as compared to the goal and 2013 results.

There were 104 low-income weatherization jobs completed in 2014 which is an increase of 400% over 2013 completions. The increase is a result of Avista's launch of a dedicated low-income program administered through the Company's partner agencies.



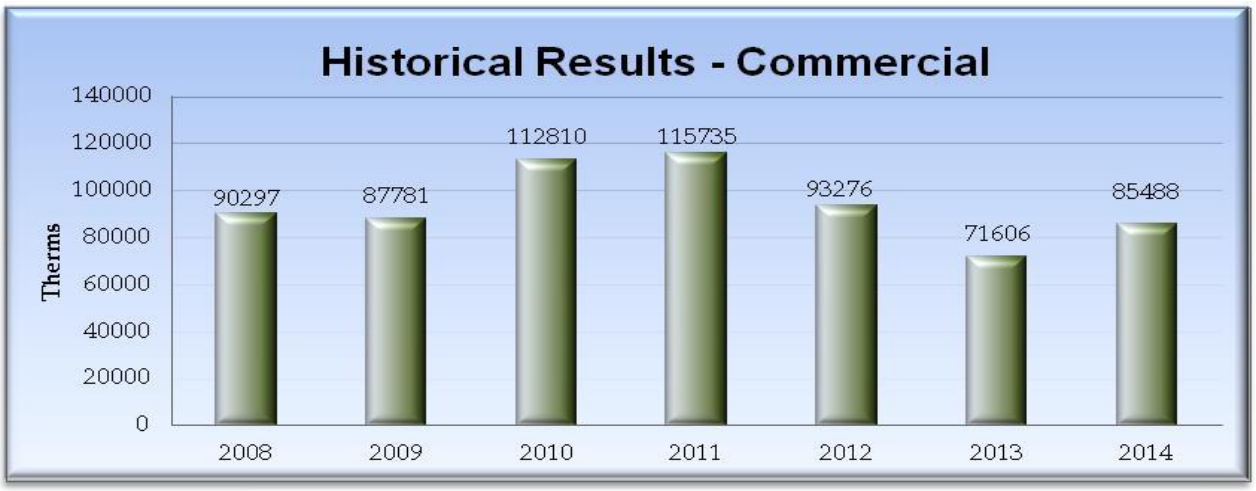
For regular income weatherization, Avista experienced an increased in the "job to audit ratio", a measurement of customers who requested a free audit and then performed at least one measure. Completed jobs as a percentage of audit requests were 29% in 2013 and 37% in 2014.

The chart titled "Residential Portfolio" shows the breakdown of therm savings for the residential programs. Total savings for the residential portfolio is 107,467 therms.

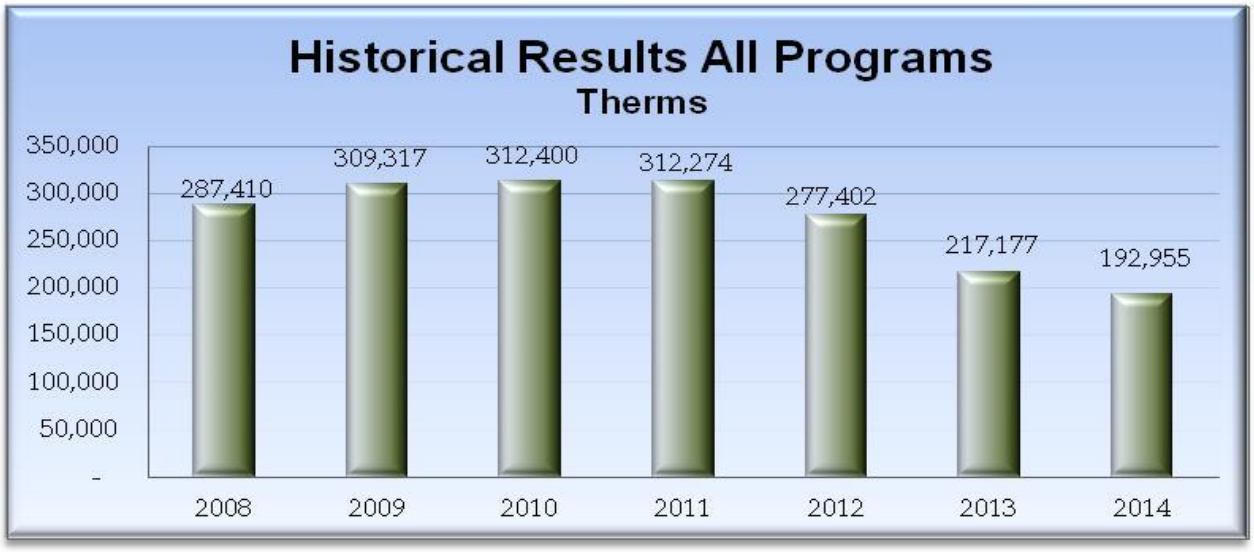
Residential equipment measures are typically a measure of necessity and are driven by new hookups/new construction or the replacement of old or defective equipment. Residential customers will generally wait to install a furnace once the old unit has exceeded its useful life or on burnout. Therm Savings from high-efficiency furnaces has been flat over the past five years

As shown in the Historical Results graph, there has been a decline in program activity since the peak in 2009. The decline in rates represented by the dotted line in the chart below shows a link between prices and program activity. Also reflected in this chart is the switch to deemed savings for weatherization.

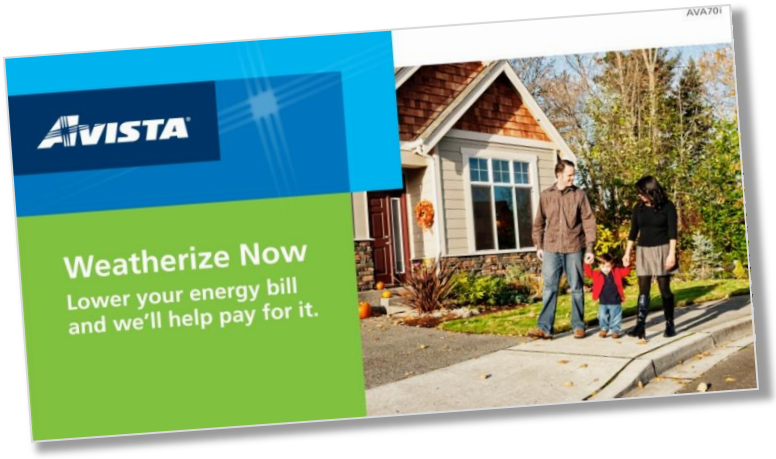
There was a 24% increase in the number of commercial projects as compared to 2013; however, there was a decrease in average project savings of 4%. There were 100 incentives processed in the commercial segment in 2014. Of those, 60 were for projects that saved less than 1,000 therms. Of the other 40 projects, the largest produced an estimated 5,001 therms in savings. This is indicative of Avista's commercial customer base of approximately 11,000 where 63% use less than 2,000 therms a year. All large industrial customers in the Company's Oregon territory are transport customers and are not eligible for incentives.



The graph below shows the historical results for all commercial and residential programs.



Annually, Avista notifies its residential customers about the availability of free home energy audits and cost effective weatherization incentives. In addition to the bill insert, the Company piloted a targeted direct mail campaign in late 2014. The goal was to identify characteristics of customers and homes where improvements are most likely to be made. Avista will evaluate the results of this campaign to determine effectiveness and the potential for future use. An approximate 5% response rate was achieved which is considered respectable. Early indicators show that market segmentation can be used to identify those most likely to participate and thereby increasing campaign effectiveness at a reduced cost.



2014 DSM Portfolio Cost Effectiveness and Goals

The avoided costs from the 2012 IRP were used in the analysis. The Company applied the after-tax real weighted cost of capital to the real avoided cost stream. Avista believes that this is a reasonable approach when you consider that taxes are a transfer payment for purposes of the societal test and that the customers return, in the form of reduced energy cost, is in an 'after tax' form for the total resource cost test (TRC) and Participant test.

Table 2 shows the Company's residential, commercial, and overall portfolio TRC and UCT results for 2014.

Weighted Average Cost Effectiveness Portfolio Calculations Using 2012 Avoided Costs					
Portfolio	TRC Levelized $/therm	UCT Levelized $/therm	Comparison Avoided Cost (CEL)	TRC Benefit/Cost Ratio	UCT Benefti/Cost Ratio
Residential DSM Programs	$ 0.68	$ 0.33	$ 0.51	0.72	1.47
Comm./Ind. DSM Programs	$ 0.50	$ 0.28	$ -	0.95	1.71
Overall DSM Portfolio	$ 0.60	$ 0.31	$ 0.50	0.80	1.56

* Customer incremental costs have been reduced by the value of BETC payments received by the customer in accordance with the accepted standard practice TRC test methodology.

** The commercial portfolio is a mix of annual and winter therms. As a result it isn't possible to develop a single comparison avoided cost level using the same methodology applied to the other programs in the portfolio.

Table 3 shows the 2014 therm goal as established by the OPUC versus actual results. The Company acquired 192,955 therms or 77% of the goal. The transition from calculated to deemed savings for residential weatherization along with a reduction in the average savings per commercial job impacted the results.

Table 3: Avista Utilities 2014 Therm Goals and Results

Program	2014 Minimum Goal	Achieved Savings	% Minimum Goal
RESIDENTIAL			
Residential Weatherization (Regular and Low Income)	60,000	26,770	45%
Prescriptive Residential Equipment	90,000	80,697	90%
Residential DSM Portfolio Total	149,999	107,467	72%
COMMERCIAL/INDUSTRIAL			
Commercial/ Light Industrial DSM	100,001	85,488	85%
Portfolio Total	**250,000**	**192,955**	**77%**

Table 4 shows the number of participants, costs, incentives, and therms saved in each program.

Table 4: 2014 Program Summary All Programs

Program Name	Participants	Total Cost	Incentives	Therms Saved
RESIDENTIAL PORTFOLIO				
Mandated Residential Audits	627	$ 192,321	NA	NA
Regular Income Weatherized	231	$ 283,574	$ 241,349	20,194
Low Income Weatherization	104	$ 234,006	$ 198,732	6,576
Residential Equipment Incentives Processed	1,490	$ 238,694	$ 212,510	80,697
Total Residential		**$ 948,595**	**$ 652,591**	**107,467.47**
COMMERCIAL/INDUSTRIAL PORTFOLIO				
Mandated Commercial Audits	58	$ 139,968	NA	NA
Commercial/Industrial DSM Measures Completed	99	$ 298,498	$ 194,246	85,488
Total Commercial/Industrial		**$ 438,466**	**$ 194,246**	**85,488**
Grand Total		**$1,387,060**	**$ 846,837**	**192,955**

Excluding costs associated with the mandated residential and commercial audits, and Business Energy Tax Credits (BETC), 80% of Avista's DSM expenditures were returned to customers in the form of direct incentive payments. Total direct incentive payments for 2014 were $846,837.

The Company made a number of changes made in 2013 that had a positive impact on cost effectiveness. The changes include excluding the costs associated with mandated commercial and residential energy audits, as well as costs associated with low-income weatherization. The Company also increased the measure life used for residential insulation measures from 30 years to 45 years.

Residential Portfolio

Avista's residential portfolio is a combination of site-specific measures, prescriptive measures, and low-income weatherization. Shell measures are the focus of the site-specific and low-income weatherization programs. The prescriptive program includes furnaces, boilers, and controls.

As shown in the graph below, the residential DSM portfolio achieved 72% of its therm savings goal. While total audit requests were down, the percentage of participants who performed at least one recommended measure was up. This shows that the Company's efforts in reducing non-producing audits. The 38,000 therm reduction in claimed savings as compared to 2013 is the result of a slight decrease in completed jobs and an approximate reduction of 2/3 in the estimated therm savings due to the use of deemed savings. The Company believes that low gas rates and the resultant lack of a price signal to the customer, continues to be the main barrier to the regular income weatherization program.

In an effort to increase the percentage of customers performing at least one measure, the Company has increased its messaging to audit recipients. Regular contact with customers who have received an audit is used to remind them of the benefits of weatherization and incentives offered by Avista.

There was a significant increase in the number of low-income weatherization jobs as compared to 2013. The increase was primarily due to Avista's establishment of a dedicated low-income program which is detailed later in this report.

Table 5 shows the breakdown of residential audits performed, jobs completed, and corresponding incentives paid to low and regular income weatherization customers.

Table 5: 2014 Weatherization Program Results

Audits Performed by Segment	# Units	
Single Family	615	
Single Family - Low Income	104	
Multi-Family Units	5	
Multi-Family Units - Low Income	-	
Total Weatherization Audits	**724**	
Incentives Provided	**# Jobs**	**Incentives**
Low Income	104	$ 198,731.70
Regular Income	231	$ 241,349.10
Total Incentives	**335**	**$ 440,080.80**
Weatherization Loans	**# Loans**	**Loan Subsidy**
Low Income	0	0
Regular Income	0	0
Total Loan Subsidies		**$ -**

The Company's residential prescriptive equipment program included two measures focused on space heat. Program activity is limited to the installation of high efficiency forced air furnaces and boilers, as well as programmable thermostats.

The Company's residential furnace program was relatively flat with 929 furnace incentives issued in 2014 as compared to 948 in 2013. Avista also processed 561 thermostat incentives last year compared to 521 in 2013. The main drivers for this segment are new customer growth and new home construction. The residential prescriptive program finished the year at 90% of its goal.

Low-Income Weatherization

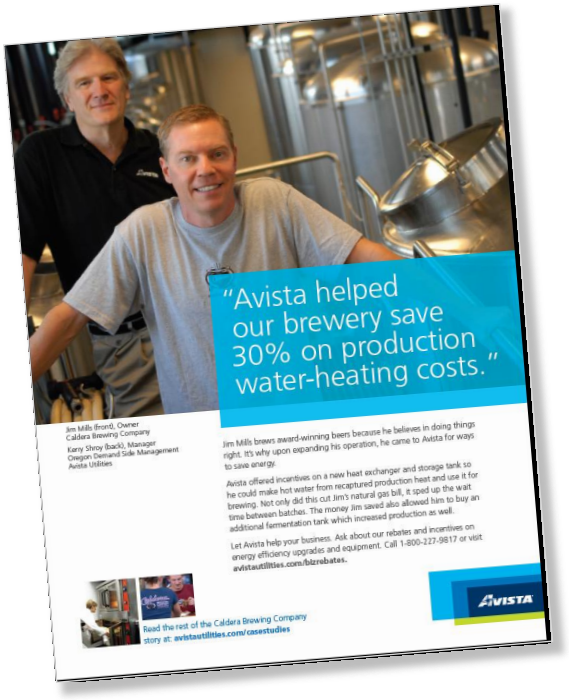
In 2013, the Company began the process of developing a dedicated low-income weatherization program. After meeting with the low income agencies, Avista filed a draft plan with the OPUC in October of 2013 and then filed for tariff approval in January of 2014. The program was approved by the OPUC and with a March 1st, 2014 start date.

The approved plan tripled the Company's budget for low-income weatherization. It also established a goal of 90 low-income weatherization jobs for 2014. A total of 104 low-income jobs were completed which was a significant increase over the 26 jobs completed in 2013.

Avista believes that not only will this move benefit low-income programs by establishing specific goals and stable funding, but will help boost the cost-effectiveness of the regular income weatherization program.

Commercial Portfolio

The commercial portfolio is a combination of site-specific and prescriptive measures. The program serves primarily small to medium commercial gas users. Over half of the qualifying customers use less than 2,000 therms annually. Because of this, results can vary from year to year depending on the number of larger "site specific" projects evaluated and completed in a given year.



Unlike 2013, there were no projects over 10,000 therms with the largest project producing approximately 5,000 therms in savings. The Company saw a 25% increase in the number of incentives issued. However, there was a 7% decrease in the average therms saved per project. As a result, the commercial program finished the year at 86% of the Company's goal.

In the last half of 2013 and again in 2014, the Company launched a print media campaign featuring Caldera Brewing. The goal of the campaign was to build awareness of the potential for energy efficiency in commercial operations.

The campaign included a white paper detailing Caldera's history and the Company's partnership in assisting them to operate more efficiently. Strategically placed ads informed commercial customers of the potential for energy savings and programs through Avista.

Energy Efficiency Target, Budget, and Business Plan for 2015

Table 6 shows the 2015 therm goals and budgets for existing Avista programs as detailed in the Company's most recent IRP accepted and approved by the Oregon Public Utility Commission.

Table 6: 2015 Therm Goals & Budget

Program	2015 Minimum Goal	Budget (Non Labor)
RESIDENTIAL PORTFOLIO		
Mandated Residential Audits	NA	$ 180,000
Weatherization & Prescriptive Equipment Regular Income	75,312	$ 584,000
Weatherization Low Income	5,688	$ 350,000
COMMERCIAL/INDUSTRIAL PORTFOLIO		
Mandated Commercial Audits	NA	$ 125,000
Commercial/Industrial Site Specific and Prescriptive	80,000	$ 280,000
GRAND TOTAL	**161,000**	**1,519,000**

An outcome of Avista's most recent IRP is the establishment of a 161,000 therm goal for 2015. The Company is committed to acquiring as many therms as possible and will continue this approach going forward.

Avista will continue to evaluate additional measures for inclusion in current programs. The Company will use data from internal sources, as well as programs offered by others, in order to assess measures for inclusion in the Company's DSM portfolio.

Avista will also continue to use traditional channels to inform customers of its DSM programs. These channels include:

- Connections Newsletter (sent monthly with the customer's bill)
- Bill Inserts (weatherization and residential equipment)
- Web Site Promotion (www.everylittlebit.com and www.avistautilities.com)
- Home shows, Energy Fairs, and Community Meetings
- Cross-Promotion Between Programs
- Trade Ally Training (HVAC, plumbers, retailers)
- Trade Organizations (home builders, rental associations)
- E-mail
- General Media (radio, TV, print)

As necessary and appropriate, Avista will use general conservation and program specific messaging throughout the year. The Company may also use market segmentation in order to target specific classes of commercial customers in order to drive awareness and activity in those specific segments.

Residential Weatherization

The Residential Weatherization program addresses shell measures only. To qualify for incentives or financing, customers must have a home energy audit performed prior to the start of any efficiency project. A home energy audit is a legislative requirement detailed in ORS 469.633 that must include specific information on energy savings for proposed improvements, estimated costs, simple payback, and incentives if any are available.

Early indications in the first quarter of 2015 show an increase of 23% in audit requests. This is primarily a result of spillover from the 2014 direct mail campaign. Bill inserts will be mailed in the spring with an email campaign planned for the second half of 2015. In addition, Avista is analyzing data related to a direct mail campaign launched in the last quarter of 2014 to determine if such a campaign should be repeated this year. The campaign analyzed past participants in the program in an effort to develop an understanding of customers who are more likely to complete weatherization projects. This information was then used to develop a mailing list of likely participants. Early results show that customer segmentation is a viable way to increase program activity while reducing the cost of promotion and nonproductive audits.

Avista will continue to work on increasing the number of jobs completed as a percentage of audits performed. Traditionally, close to 40% of customers receiving audits will perform at least one recommended measure; however, that number dropped to 30% in 2013 and rebounded to 37% in 2014. Avista will also look for enhancements that will increase the number of measures completed at each site.

At the beginning of 2014, Avista began using CakeSystems, a residential audit program developed by Earth Advantage. The Company believes that by providing audit results faster and that are more user-friendly than what was previously available, that more customers will choose to perform weatherization measures in their homes. Avista is currently evaluating the actual savings on a measure by measure basis and will use this information to determine the accuracy of CakeSystems. Once the evaluation is completed, a decision will be made concerning the continued use of CakeSystems.

The Company signed a cooperative agreement with Clean Energy Works (CEW) in July of 2014 and will continue to work with CEW to promote whole home efficiency retrofits. The agreement allows Avista and CEW to work cooperatively in providing incentives and financing to a broader group of customers. The arrangement will also allow for the cross promotion of Avista's and CEWO programs providing customers with more choices on achieving their energy savings goals.

The agreement also allows CEW to apply the Avista incentive as an offset to the customer's financing. A referral will be made to Avista's program for customers who either do not qualify for financing or who choose not to pursue the whole home approach to conservation.

Residential Prescriptive Programs

Incentives are available for high-efficiency gas forced air furnaces and programmable thermostats. The Company will evaluate new technology for inclusion in the program either as being cost effective or for consistency with other DSM programs in the region. Avista also sees the potential for regional market transformation measures and has entered into an agreement with NEEA in support of a natural gas initiative.

The Company will continue to work with trade allies, including non-traditional allies such as architects, home builder associations, and others to promote its programs. Avista will also leverage its weatherization program to inform customers about the availability of prescriptive equipment measures.

Commercial Conservation

The main focus of the Commercial Conservation Program is small to medium-sized commercial and light industrial customers. Prescriptive shell, heating, and cooking measures are available to small-business customers using 2,000 therms or less and commercial kitchens.

Avista's North Division provides technical and administrative support for this program. Also included are engineering evaluations, contract assistance, database management, cost effectiveness studies, as well as measurement and verification support.

Alliances with external energy auditors, performance contractors, consultants, and the Oregon Department of Energy, will again be a key strategy in 2015. Avista's plan for commercial conservation includes a proactive approach to finding conservation opportunities using both internal and external resources.

The core of the program will be prescriptive measures primarily for the smallest users. Mid-level users may access the program through a combination of prescriptive measures as well as site-specific evaluations. Large users will be site-specific exclusively.

Avista will use various methods to inform customers about the program, including, direct contact, direct mail campaigns, general messaging, trade allies, and contract audit support services.

In mid-2013, the Company contracted with RHT Energy, a Southern Oregon engineering firm actively involved in efficiency programs throughout the state. The pilot program promoted Avista's commercial site-specific program to its larger qualified customers. The scope of the program was to contact customers and provide a straightforward scoping audit to identify opportunities while gauging interest in improving site efficiency. While the Company has decided not to continue with this initiative, Avista will continue to work closely with RHT Energy as their efforts have produced results in the medium sized commercial sector.

In 2012, Avista launched a campaign that focused on commercial kitchens and again in 2013 with a focus on high water users such as motels and laundries. These efforts required direct contact with owners or managers, offering low-cost ways to cut costs as well as promoting the use of high-efficiency appliances, water heaters, ozone laundry systems and pool covers. Similar to the RHT Energy strategy, the goal is to identify opportunities and interest while building awareness of available incentives. This is another strategy that could be utilized for commercial segments where energy use patterns are similar.

General Program Promotion

Program promotion has traditionally included customer newsletters, bill inserts, home shows, and general efficiency messaging. Bill inserts are restricted to one or two opportunities during the year due to limitations on envelope space. The Company's Connections newsletter is also available and is regularly used to convey program information.

The Company has established a media calendar for the year that will maintain a constant presence in the marketplace. Avista will also use e-mail marketing and earned media.

Also, Avista will participate in home shows, energy fairs, and other events related to home remodel and construction as a means of promoting its programs in the communities it serves.

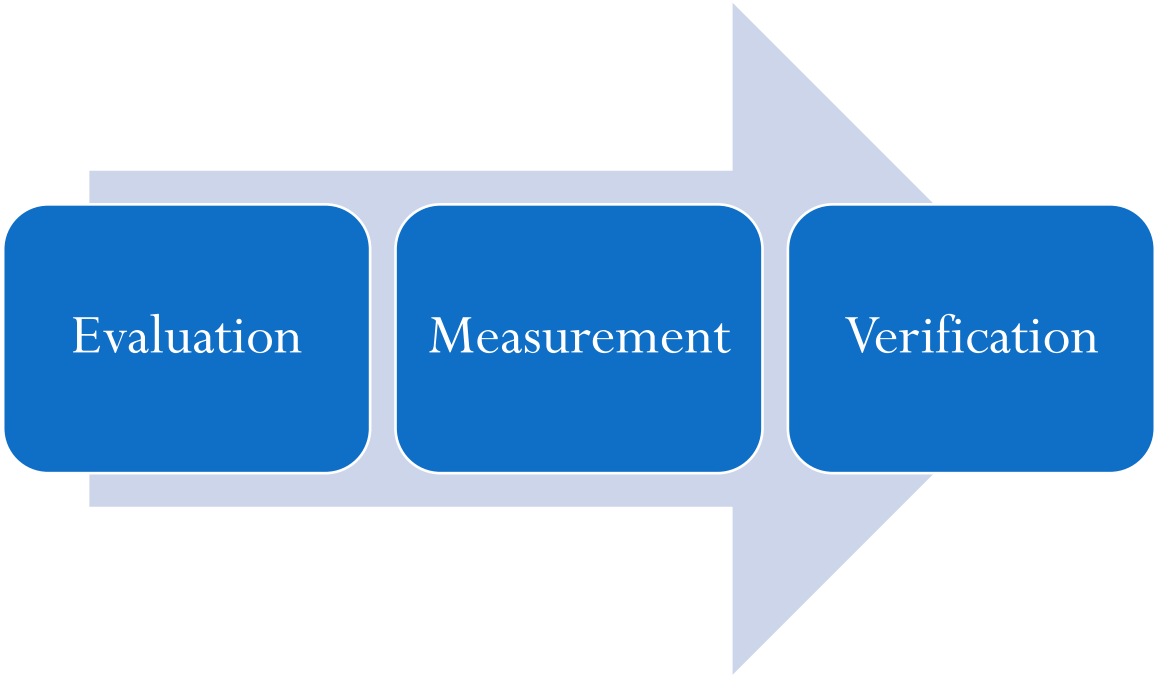
Conclusion

The Company believes that the program optimization as outlined in this report, and as directed in OPUC Order No. 13-159, in Docket LC 55, has improved the overall portfolio cost-effectiveness. While cost effectiveness has improved, the low cost of natural gas continues to constrain the TRC of most prescriptive measures.

As in prior years, enhancements to existing programs, as well the development of new programs will be an ongoing part of the process. Avista will monitor program participation to ensure the Company is meeting customer needs, achieving DSM goals, and will enhance its strategies accordingly.

The Company is committed to maintaining programs that meet customers' needs and fulfill Avista's responsibility to integrated resource planning. Avista will continue to work with the OPUC staff to achieve long-term solutions that will ensure the availability of conservation programs in the future.

AVISTA 2015



REVIEW

Table of Contents

Avista 2015 EM&V Review

I. EXECUTIVE SUMMARY

Avista's Demand-Side Management (DSM) services provide energy efficiency programs to the Company's residential, commercial and industrial natural gas customers throughout Oregon. Residential programs are primarily delivered through prescriptive measures. Commercial and industrial customers are served through both prescriptive and site specific measures.

Monetary incentives for energy efficiency activities are established based on the amount of therm savings relative to established baselines such as recognized Unit Energy Savings (UES) values or Impact Evaluations including consideration of avoided costs.

The established UES therm savings values for the prescriptive measures were last adjusted in late 2013. This review seeks to use regression analysis on the lowest performing programs to help establish guidelines for program entry in future planning periods. The analysis in this document is centered on the 2013 measures because most are weather related and require 12 months of data following the measure installation in order to accurately assess the ex-post savings.

This review is in response and in compliance with Commission Order No's 12-159 and 13-159. The following data is included in this review:

- Provide TRC B/C ratios and UCT B/C ratios for each measure and program which has a TRC or UCT B/C of less than one.
- Provide projected achievable savings for each measure or program which has a TRC or UCT B/C of less than one.
- Recommend which if any measures it is requesting an exception for under Docket No. 551, Order 94-590.
- Participate in NEEA's new Gas Market Transformation initiative and in the next IRP include and note specific gas transformation savings potential that are part of the achievable resource savings potential.
- Show savings and cost effectiveness of the DSM program. Shown in Summary above.
- Show actions taken to reduce delivery costs, including admin costs and audit costs.
- Show actions taken to increase the number of cost effective energy efficiency measures in the portfolio.
- Give an analysis of non- natural gas benefits of existing and proposed DSM measures.
- Give an analysis of measure lives from all measures.

The gross unverified savings from Avista's Oregon gas programs for 2014 is summarized in the table below:

Table 1: Summary of Program savings

Table 4: 2014 Program Summary All Programs				
Program Name	**Participants**	**Total Cost**	**Incentives**	**Therms Saved**
RESIDENTIAL PORTFOLIO				
Mandated Residential Audits	627	$ 192,321	NA	NA
Regular Income Weatherized	231	$ 283,574	$ 241,349	20,194
Low Income Weatherization	104	$ 234,006	$ 198,732	6,576
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COMMERCIAL/INDUSTRIAL PORTFOLIO				
Mandated Commercial Audits	58	$ 139,968	NA	NA
Commercial/Industrial DSM Measures Completed	99	$ 298,498	$ 194,246	85,488
Total Commercial/Industrial		**$ 438,466**	**$ 194,246**	**85,488**
Grand Total		**$1,387,060**	**$ 846,837**	**192,955**

Table 2: Summary of Portfolio Cost Effectiveness

Weighted Average Cost Effectiveness Portfolio Calculations Using 2012 Avoided Costs					
Portfolio	TRC Levelized $/therm	UCT Levelized $/therm	Comparison Avoided Cost (CEL)	TRC Benefit/Cost Ratio	UCT Benefti/Cost Ratio
Residential DSM Programs	$ 0.68	$ 0.33	$ 0.51	0.72	1.47
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Overall DSM Portfolio	$ 0.60	$ 0.31	$ 0.50	0.80	1.56

* Customer incremental costs have been reduced by the value of BETC payments received by the customer in accordance with the accepted standard practice TRC test methodology.

** The commercial portfolio is a mix of annual and winter therms. As a result it isn't possible to develop a single comparison avoided cost level using the same methodology applied to the other programs in the portfolio.

II. SCOPE OF REVIEW

This Evaluation, Measurement and Verification (EM&V) Review seeks to evaluate the claimed energy savings for all residential and commercial prescriptive DSM programs in the Company's Oregon service territory, which are functioning under a Total Resource (TRC) / Utility Cost Test (UCT) Cost Benefit ratio of 1. This report includes the following geographic areas, both in the cities indicated and in the surrounding territories:

- Southern Oregon Division
  - Klamath Falls District consisting of Keno, Klamath Falls and Malin
  - Medford District consisting of Ashland, Central Point, Eagle Point, Glendale, Gold Hill, Grants Pass, Jacksonville, Medford, Phoenix, Rogue River, Talent, Tolo and White City
  - Roseburg District consisting of Canyonville, Dillard, Myrtle Creek, Oakland, Riddle, Roseburg, Sutherlin and Winston

- Eastern Oregon Division incorporating the La Grande District with cities Alicel, Elgin, Imbler, Island City, La Grande, North Powder and Union

In February of 2015, the Company replaced its customer information and billing system, the challenge for this review has been that the data for customers now exists in two databases which has made the regression analysis difficult across the time frames in those databases. For that purpose, Avista focused on projects that completed between January of 2013 and January of 2014 so we could retrieve the prior two-years of data before the measure was installed from the old database. We have set up a design for analysis for the next two-years bridging the data sets.

The Energy Trust of Oregon, Inc., (ETO) and Cadmus impact reports for Washington and Idaho were used as a supplemental energy informational source. The Regional Technical Forum (RTF) of the Northwest Power and Conservation Council, were also used as references for UES values, measure lives, and non-gas benefit calculations. These sources provide the Reference UES values provided in this review to update UES values for the Oregon energy efficiency measures.

As is standard for Oregon energy efficiency acquisition, values are reported as gross savings, or the total of all savings not adjusted by customers who would have elected to adopt energy efficiency measures in the absence of utility programs.

In recent years, the Company has applied between three and six percent of DSM budgets to EM&V functions within its Washington and Idaho service territories. In consideration of the small DSM portfolio that exists within Oregon, the extension of this approach would likely burden the direct costs of portfolio delivery to the point of programs becoming cost ineffective. This is compounded by the low avoided costs, including the expectation of a continued decrease in avoided costs, associated with natural gas DSM programs. As a result, this EM&V Review approach intends to leverage the information available to the Company to evaluate the programs in a cost-effective manner, with only negligible effects on the cost effectiveness, such as TRC test. This approach also serves to maximize the DSM budget available to customers in the form of future incentives.

III. MEASURES WITH B/C RATIOS UNDER ONE

There are three program areas with TRC or UCT ratios under one. Those are residential weatherization, residential programmable thermostats, and commercial prescriptive HVAC and weatherization. Table 3 below shows the residential weatherization program level savings and B/C ratios. Table 4 shows the residential thermostat measure savings and B/C ratios. Table 5 shows the commercial program level savings and B/C ratios.

Table 3: Residential Weatherization Program (2014)

Weatherization program	Program 2014
Jobs Completed	-
Utility incentive cost	$241,349
Utility non-incentive impl costs	$42,225
Utility Costs	$283,574
Customer Costs	$467,177
Therms Saved	20,194
Utility Levelized Cost	**$0.7321**
TRC Levelized Cost	**$1.3150**
Comparison Levelized Avoided Cost	**$0.5323**
UCT benefit/cost ratio	0.73
TRC benefit/cost ratio	0.40

Weatherization activities typically apply to pre-1980 built homes heated by Avista natural gas. A Home Energy Analysis must be completed prior to the initiation of weatherization activities. Energy efficiency measures that qualify include single glass windows upgraded to low-E double glass with 0.30 U-value in combination with additional insulation in attic spaces, walls or floors. Additionally, insulation installation for attic, floor, duct, steam pipe and water piping can be standalone. Caulking and weather-stripping can also be performed as standalone measures.

In 2013, 268 weatherization jobs were completed resulting in an estimated 25,492 therms saved. This is an average savings claim of 95 therms per site.

A billing data regression analysis was performed to determine the realization rate of the claimed savings listed above. This analysis focused on the customers who completed installation between Jan-1-2013 and Jan-1-2014. As stated in the beginning of this report this time frame was used so there would be enough pre install data to establish a usable baseline. Of the 268 weatherization jobs done 65 met the time period requirements. Of those 65 customers 57 had usable data. Examples of unusable data would be the home being vacant for the 5 years prior to the measure being installed and therefore not having data, or the gas usage being sporadic and low to the point that a useful regression could not be calculated.

A billing regression analysis takes customer monthly billing usage, prior to installed measures, along with the corresponding heating degree days (HDD) and calculates a best line fit equation which can be used to predict how the home will consume therms based on the weather. For this analysis it was assumed that any usage for months with less than 200 HDD is base load, the regression analysis was only done for the months with more than 200 HDD. By removing the base load months the overall accuracy of the best line fit equation was increased.

This type of analysis normalizes the usage and takes into account changes of weather from year to year. This equation is then used to calculate what the home's gas usage would have been if the measures had not been installed. This calculated theoretical usage is then compared to actual gas usage to determine savings.

The regression analyses performed do not represent a statistically significant sample of the overall weatherization projects completed. Therefore the results from this study can only give a rough idea of the programs performance. We can, however, make several suggestions on how to improve the overall effectiveness of the weatherization program based on our findings:

- It is recommended that qualification parameters be set for the insulation program. Any home with R-15 or less existing insulation will qualify for incentives, any home with more than R-15 will not qualify. The current threshold is R-10 or less.
- It is recommended that the window program be continued, but to no longer use customer supplied costs. In many cases customers spend more than necessary for efficient windows due to aesthetics and other non-energy savings related reasons. A cost of $12/sf should be used when calculating benefit to cost ratios going forward, this cost is the average for energy efficient vinyl framed units. The exception would be if the customer supplied cost is less than the $12/sf average. The costs used in the 2013 study were adjusted to match the above stated criteria.
- In accordance with OPUC Division 30 Rules, "Residential and Commercial Energy Conservation", the main heating system is verified prior to the site visit for the energy audit. However, some customers may choose to use other forms of heat such as wood or electric space heaters in addition to or in place of their main heating system. The regression study found 24 customers who had negative gas savings; it is more than likely that two thirds of those can be attributed to secondary fuel sources being abandoned in favor of gas once the installed measures reduced the heating needs of the home. The remaining one third can be attributed to the customers who only have base load usage. It is recommended that if a review of the customer's gas usage history shows only base load usage, that a reasonable attempt be made to verify that the customer intends to use of their main heat source after the work is completed and before incentives are awarded.
- It is recommended that the wall and floor insulation programs be discontinued in their current form. The floor insulation program currently claims 0.04 Therms of saving per square foot of insulated floor, the attic and walls claim a deemed 0.05 Therms per square foot. While adding wall and floor insulation will generate gas savings, the savings will be significantly less than those seen by adding insulation to the attic. In addition the cost to add wall and floor insulation is considerably higher than adding attic insulation, which causes a lower B/C ratio.

Table 4: Residential Thermostat Program (2014)

Programmable t-stat	Program 2014
Jobs Completed	561
Direct costs	$28,110
Implementation costs	$4,364
Utility Costs	$32,474
Customer Costs	$70,125
Therms Saved	15,147
Utility Levelized Cost	**$0.2350**
TRC Levelized Cost	**$0.5390**
Comparison Levelized Avoided Cost	**$0.4714**
UCT benefit/cost ratio	2.01
TRC benefit/cost ratio	0.87

- It is recommended that the program be changed from a programmable thermostat to a smart thermostat program using wifi connected technology. Avista has a smart thermostat program operating in the Washington and Idaho service territories and this program may be duplicated.

Table 5: Commercial Program Summary (2014)

Commercial Energy Efficiency	Program 2014
Jobs Completed	100
Direct costs	$194,246
Implementation costs	$104,251
Utility Costs	$298,498
Customer Costs	$432,121
Therms Saved	85,488
Utility Levelized Cost	**$0.2771**
TRC Levelized Cost	**$0.4979**
Comparison Levelized Avoided Cost	**$0.0000**
UCT benefit/cost ratio	1.71
TRC benefit/cost ratio	0.95

Incentives through the commercial prescriptive program were offered to customers on rate schedules 420 and 424. During the course of 2014, a total of 100 projects were processed through the prescriptive commercial program resulting in $194,246 of incentive dollars for an estimated 85,488 therm savings. Measures included commercial food service equipment, heating equipment and building shells. While the B/C ratios for these projects ranged from 0.49 to 0.95, the overall program yielded an average of B/C ratio of 0.86 from the 2014 projects. However, each project's B/C ratio may not truly account for any additional non-Avista fuel benefits (e.g. cooling savings).

In order to make considerations for future planning periods, all commercial prescriptive projects with installation dates prior to Jan 2014 were selected for an evaluation through regression analysis. A regression analysis allowed us to compare realization rates vs. the program's claimed UES therm savings for heating equipment and shell measures.

This analysis focused only on weather dependent HVAC and shell projects completed between January of 2013 and January of 2014. Again this time frame was used so we could ideally get 2 years of data prior to the measure being installed from the old database and enough post data with a constant source of HDD. Of the 29 HVAC and shell projects, only 17 customers met the time period requirements and had usable data. Examples of unusable data may include a commercial facility with multiple metered accounts, a facility being vacant prior to the measure being installed and therefore having no gas consumption, and/or the gas usage being sporadic and low to the point that a useful regression could not be calculated since a correlation between gas usage and HDD would not be apparent.

A billing regression analysis takes customer monthly billing usage, prior to installed measures, along with the corresponding heating degree days (HDD) and calculates a best line fit equation that can then be used to predict how much the facility would have consumed based on the post measure HDDs. While it is typical for a weather dependant regression analysis to assume that any usage for months with less than 200 HDD is base load, the HDD threshold for the heating load vs. base load was specific to each customer's energy consumption. By removing the base load months the overall accuracy of the best line fit equation was increased. This calculated theoretical usage is then compared to actual gas usage to determine savings.

The regression analyses performed do not represent a statistically significant sample of the overall commercial prescriptive projects completed. Therefore the results from this study can only give a rough idea of the program's performance. This does however allow us to make suggestions on how to improve the overall effectiveness of the commercial prescriptive program based on our findings:

- It is recommended that qualification parameters around the existing baseline R-values be set for the shell measures. Currently there is no requirement set for the maximum allowable R-value for the baseline. Doing so would ensure that there is enough of a heat load to justify the addition of insulation without being affected by diminishing returns of the additional insulation levels.
- It is recommended that measures with the least energy savings like floor insulation be eliminated from the commercial prescriptive program portfolio in order to increase the overall program B/C ratio.
- It is recommended that a usage history threshold for commercial customer based on facility size be determined for any furnace measure. Doing so would ensure that there is a consistent heating load during the heating season to justify whether the measure can qualify for an incentive.
-

IV. PROJECTED ACHIEVABLE SAVINGS FOR MEASURES WITH B/C RATIOS UNDER ONE

Weatherization

If the suggested changes listed above are made for the weatherization programs Avista projects that the achievable savings can reach a TRC of 0.9.

Programmable thermostats

If the program is changed to smart thermostats from programmable, the opportunity for savings may increase enough to give a cost effective home heating control program.

Commercial weatherization

Since the commercial TRC is just slightly below 1.0, the recommended changes should move the future savings into a cost effective value over 1.0.

V. RECOMMENDATIONS FOR MEASURES REQUESTING EXEMPTION

The following are measures for which we request exemption and the reason.

Order 94-590 in UM 551:

A. The measure produces significant non-quantifiable non-energy benefits. In this case, the incentive payment should be set at no greater than the cost-effective limit (defined

as present value of avoided costs plus 10 percent) less the perceived value of bill savings, e.g., two years of bill savings

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 to 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

Measures that we request exemption by UM 551 G are:

Residential auditing, weather stripping and caulking

Measures that we request exemption by UM 551 B and C are:

Residential Smart thermostats in place of programmable thermostats

Residential windows with changes in incremental costs to reflect base cost efficient vinyl windows

Measures that we request exemption by UM 551 D and E

Two of eighteen commercial kitchen measures – fryers and convection ovens

VI. NEEA GAS MARKET TRANSFORMATION REPORT

Dan Johnson, the Director of Avista's DSM group is on NEEA's new Gas Market Transformation group has supplied the following information for the new NEEA offering.

- 5 year Regional Market Transformation Program, $18.3 MM delivering 280M therms annually
- Funders-Avista, Cascade-WA, ETO – (Cascade OR, NW Natural – WA/OR), Puget Sound Energy
- Avista's 5 yr Budget - $2.8 M, 2015 -$245k
- 2015-2019 NEEA Business Plan portfolio focuses on 5 new residential/commercial initiatives, scanning, codes & standards, research & evaluation, a mid cycle revaluation, and new Natural Gas Advisory Committee.

New initiatives include the following:

- Gas-Fired Heat Pump Water Heaters
- Combined Space and Water Heating Systems
- Hearth Products
- High- Efficiency Gas Dryers
- Rooftop HVAC

VII. ACTIONS TAKEN TO REDUCE DELIVERY COSTS

The Company believes that as a mandated requirement that energy audits to be provided to its customers, that costs associated with the audits should not burden incentives, and, therefore, those costs are not included in the TRC calculations. In 2014, excluding costs associated with the mandated residential and commercial audits, 80% of Avista's DSM funding was returned to customers in the form of direct incentives.

The Company has worked to streamline the incentive process in order to minimize as much administration cost as possible. Most of the cost associated with incentive processing is related to verification of installed measures and data collection.

Greater reliance has been placed on trade allies to provide more detail on the work performed thus reducing the time needed to verify completed jobs. The Company has also centralized data collection into a single database for greater efficiency in program analysis and reporting. Avista also believes that its new Customer Care and Billing system will provide additional efficiency in the area of payment processing and reporting.

The Company has instituted a number of changes to the mandated energy audits while maintaining the requirements of ORS 469.631 and 469.633. Avista continues to meet its obligation to inform customers of the availability of free energy audits, however, the Company continues to work to increase the number of completed weatherization jobs as a percentage of completed audits. One method used is to limit audits to homes built prior to the 1980 building code changes. An option for no-cost/low-cost energy savings tips is available for customers with newer homes and those not ready to weatherize.

The Company is also utilizing its extensive collection of past field audits as a means of mitigating the need for assigning audit requests to field auditors where usable audits are on file. A simple update of the previous audit not only saves on audit costs, it also provides the customer with faster service.

Avista has also looked at ways to identify customers with a greater likely hood of completing weatherization work once the audit is done. Early indications from a recent market segmentation test indicate that it is possible to improve participation through identifiable characteristics shared by those who tend to weatherize.

In 2014, the Company started using CakeSystems as its main auditing tool. CakeSystems allows for a more efficient audit process, faster response times to the customer's request, as well as additional information on the non-gas benefits of weatherizing their home. Since there are some added costs associated with the use of CakeSystems, Avista will perform an evaluation by the end of 2015 on the effectiveness of the software in increasing follow through.

VIII. ACTIONS TAKEN TO INCREASE COST EFFECTIVE MEASURES IN THE PORTFOLIO

The Company continuously evaluates existing and new technologies for inclusion in its DSM program. By its nature, the commercial DSM program considers all gas measures that are not prescriptive on a site specific basis and incentivizes those that are cost effective. However, low avoided costs render many measures non-cost effective, particularly in the residential sector.

The Company is currently evaluating smart thermostats through a pilot program in its Washington territory. The Company may seek approval for a similar program in Oregon depending on the outcome of the pilot. Residential showerheads are another measure that might prove to be viable at this time.

IX. ANALYSIS OF NON-NATURAL GAS BENEFITS OF DSM MEASURES

Residential programs: Regression of 2013 residential weatherization measure found that over 30% of the measures that correlated well with weather gave negative savings. This means that one of several issues have occurred before or after the measure was implemented:

1. The customer was not using only gas as a heating source before the measure. – This was borne out in the audit reports showing secondary fuels, but only was found in the audit in less than 10% of the homes.
2. The customer's behaviors changed during the pre and post regression period. – A change in family structure or living conditions could account for some negative savings.
3. The customer used more because they had a more efficient system, take back. – This could be a possibility in some of the samples.
4. The customer's measures were not large enough to be predicted well in the regression.

The non-energy benefits that were not in place for these customers were the A/C savings from weatherization. With a large percent of customers using at least some cooling, we used SEEM modeling and RTF values to estimate what the A/C benefits could have been. In the case of the overall program, it would raise the TRC by almost six one-hundredths. The following are the percentage of customers by region who were identified as having A/C during their audits.

Southern Oregon – 61%

Roseburg Area – 36%

Klamath Falls – 13%

La Grande - 5%

The RTF has reviewed the health effects of wood smoke and has been encouraged by the Washington State commission staff to give a monetary value to wood smoke and if that is implemented, we could use that value for non-energy benefits.

We have not taken into consideration the carbon cost in our non-gas benefits and could do so if we could find a value that was supported by the regulating bodies.

Commercial Programs: Data from the prescriptive commercial programs show very little use of non-gas benefits. As with residential, shell measures could use A/C benefits based on the RTF's small business weatherization numbers. The commercial programs also showed a high number of negative savings from regression with a relatively good weather correlation. This can come from electric space heating and we recommend a study to see how much secondary fuel is used for the commercial sector. For those who have some electric or non-gas heat, we could calculate the non-gas benefits in dollars for the shell measure.

X. ANALYSIS OF MEASURE LIVES

The residential measures are as follows with our measure life compared with the life in the DEER database or RTF:

2014 Program Measure Life Comparisons

Program Name	Avista	RTF	ETO	CA. DEER
Residential Portfolio / Measure	(yrs)	(yrs)	(yrs)	(yrs)
Attic Insulation, 0-19	30	45	45	20
Attic Insulation, 20-30	30	45	45	20
Wall Insulation	30	45	45	20
Floor Insulation	30	45	45	20
Windows	25	45	45	20
Ducts	30	20	20	18
Furnace	25	na	18	18
Tstat	15	15	-	12

Program Name	Avista	RTF	ETO	CA. DEER
Commercial Portfolio / Measure	(yrs)	(yrs)	(yrs)	(yrs)
Gas Fryer	12	8	8	12
Gas Griddle	12	8	12	12
Dbl Rack Oven	12	20	12	15
Convection Oven	12	20	12	15
Combi Oven	12	20	12	15
Sngl Rack Oven	12	20	12	15
3 Pan Steamer	12	9	10	15
DISH WASHER (DW) Door Hi Temp	10	-	-	5
DW Door Low Temp	10	-	-	5
DW Sngl Tank Conv. High Temp	10	-	-	5
DW Sngl Tank Conv. Low Temp	10	-	-	5
DW Multi Tank Conv. High Temp	10	-	-	5
DW Under Counter High Temp	10	-	-	5
Attic R11 (per Sq/Ft)	30	20	45	20
Attic R19 (per Sq/Ft)	30	20	45	20
Wall Insulation	30	20	45	20
Floor Insulation	30	20	-	20
Refrigeration Display Case Night Curtains	10	-	-	5
Coffin Freezer Night Curtains	10	-	-	5

Commercial and Residential measure lives of the Avista programs are planned to remain mostly as stated but with changes to our weatherization measures from 30 years to 45 years and potential changes to commercial kitchen appliance measures 12 years to 20 years. We plan to

re-evaluate the “oven" and "3 pan steamer" measure lives to ensure we are in alignment with industry standards.

XI. PREPARED BY

Energy Solutions Engineering Supervisor: Tom Lienhard, PE, CMVP

Energy Solutions Engineers: Bryce Eschenbacher, PE, CMVP
Carlos Limón, EIT, CMVP
Andy Paul, PE, CMVP

Energy Solutions Engineering Tech: Ron Welch