



Portland General Electric
121 SW Salmon Street · Portland, Ore. 97204

June 21, 2019

Email

puc.filingcenter@state.or.us

Public Utility Commission of Oregon
201 High Street, S.E., Suite 100
P. O. Box 1088
Salem, OR 97308-1088

Attn: Commission Filing Center

Re: UM 1708 PGE's Reauthorization Application for Deferral of Expenses Associated with Two Residential Demand Response Pilots

Enclosed for filing is Portland General Electric Company's (PGE) Application for Reauthorization of Deferral Expenses Associated with Two Residential Demand Response Pilots, with an effective date of June 23, 2019.

PGE received authorization to defer expenses through OPUC Order No. 18-381. A notice regarding this reauthorization application has been provided to the parties on the UM 1708 and the UE 335 service lists.

Thank you for your assistance in this matter. If you have any questions or require further information, please call me at (503) 464-7623.

Please direct all formal correspondence, questions, or requests to the following e-mail address pge.opuc.filings@pgn.com.

Sincerely,

A handwritten signature in blue ink that reads "Alex Tooman". The signature is written in a cursive, flowing style.

Alex Tooman
Regulatory Affairs

Encls

cc: Service Lists: UM 1708 and UE 335

BEFORE THE PUBLIC UTILITY COMMISSION

OF OREGON

UM 1708

In the Matter of the Application of Portland General Electric Company for an Order Approving the Deferral of Expenses Associated with two Residential Demand Response Pilots

Application for Reauthorization of Deferral of Expenses Associated with Two Residential Demand Response Pilots

Pursuant to ORS 757.259 and OAR 860-027-0300, and OPUC Commission Order 18-381, Portland General Electric Company (PGE) hereby requests approval for the continuance of the deferral for two residential demand response (DR) pilots: the Pricing and Behavioral Response pilot (Flex Pricing or Flex) and Direct Load Control Thermostat pilot (DLCT). PGE seeks reauthorization to defer costs effective June 23, 2019 through June 22, 2020. PGE also requests that this deferral continue to be subject to an automatic adjustment clause so that costs can be recovered through PGE Schedule 135, Demand Response Cost Recovery Mechanism, per the conditions stated in Order No. 18-381.

Background

In 2014, PGE proposed two residential pilots that would best inform development of future demand response programs. The Flex Pricing pilot tested combinations of peak-time rebates with time-of-use pricing. The DLCT pilot has been testing enabling technology and PGE's ability to achieve automated load control among residential customers. The Commission approved PGE's initial deferral application via Order No. 15-203 on June 23, 2015, and annually thereafter. PGE seeks reauthorization for deferral of incremental expenses associated with the two pilots for the period beginning June 23, 2019. At this point, the pilots are transitioning to programs, but are still subject to considerable change and uncertain cost levels as described below.

Direct Load Control Thermostats

The DLCT pilot began as a “bring-your-own-thermostat” and was limited to the thermostats from a single manufacturer. The pilot then expanded to allow thermostats from additional manufacturers. More recently, PGE expanded the DLCT pilot to allow the direct installation of residential thermostats. This aspect is focused on residential customers with ducted heat pumps and electric forced air furnaces due to their high DR capacity value.

For the “bring-your-own-thermostat” option, customers with qualifying thermostat and central air conditioners receive a \$25 sign-up incentive and \$25 on-going incentive for each summer season in which they participate. Customers with ducted heat pumps also receive a \$25 sign-up incentive and are eligible for \$25 for each summer and winter season. Customers must meet guidelines requiring them to participate in 50% of the event hours per season to be eligible to receive the incentive.

For the direct installation option, PGE will install thermostats for our residential customers. This incentive is in lieu of the seasonal incentives those customers would receive under the “bring-your-own-thermostat” option. Customers who select the direct installation option agree to participate in the DLCT pilot for 5 years or will have to repay a prorated portion of the thermostat’s installed cost.

Current participation levels for the DLCT pilot are 3,500 customers and we project this to increase to 8,000 customers in the coming year. For the summer 2018 event season, the DLCT pilot provided an average demand savings of 7.6 MW per event-hour.

Flex Pricing

Flex Pricing 1.0 began by testing 12 pricing design options, all aimed at reducing residential peak demand during summer and winter months. The options featured three time-of-use (TOU) rates, three peak time rebate (PTR) incentive levels, behavioral demand response (BDR) options, four hybrid DR treatments (TOU pricing in combination with PTR or BDR) and opt-out (automatically enrolled) and opt-in (choose to enroll) design options. The options offered a range of on-peak/off-peak hours and rates as well as differing PTR incentive levels.

Following an independent evaluation of Flex Pricing 1.0, PGE proposed moving forward by developing Flex Pricing 2.0, as an opt-in, scalable demand response pilot with appropriate TOU prices, PTR, and applicable time periods based on the information and lessons learned to date. PGE updated Schedule 7 to include the Flex 2.0 pricing (Advice filing No. 19-03) and received Commission approval on April 12, 2019. Since then, PGE has been enrolling customers in Flex 2.0, and as of June 7, 2019, we have enrolled approximately 18,000 residential customers with a goal of 55,000 enrollments by year-end 2019. In addition, PGE has been working with Commission Staff to refine its proposed TOU rate design and we plan to file an update to Schedule 7 this summer to include that pricing. A detailed report on Flex 2.0 is provided as Attachment A.

OAR 860-027-0300 Requirements

I. The following is provided pursuant to OAR 860-027-0300(3):

- a. Description of utility expenses for which deferred accounting is requested.

Pursuant to ORS 757.259(2)(e), PGE seeks continued reauthorization for deferred accounting treatment of the incremental costs associated with the two residential DR pilots: Flex Pricing and DLCT. PGE requests reauthorization for the effective period June 23, 2019 through June 22, 2020.

b. Reasons for deferral

See Background above. In addition, the two residential DR pilots will help PGE meet its goal to acquire 77 MW of winter demand response capacity and 69 MW of summer demand response capacity as specified by Commission Order 17-386 (Docket No. LC 66). The granting of this reauthorization will minimize the frequency of rate changes and/or match appropriately the costs borne by and benefits received by customers.

PGE received its most recent approval of reauthorization through Commission Order No. 18-381 for the deferral period beginning June 23, 2018 through June 22, 2019. PGE is filing for this reauthorization for the period beginning June 23, 2019 through June 22, 2020. PGE also proposes that the Flex Pricing and DLCT deferral remain subject to an automatic adjustment clause so that costs can be recovered through PGE Schedule 135, Demand Response Cost Recovery Mechanism, in accordance with the conditions stated in Order No. 18-381.

c. Proposed accounting for recording amounts deferred.

PGE proposes to continue to record the deferred amounts as a regulatory asset in FERC account 182.3, Other Regulatory Assets, with a credit to FERC account 456, Other Revenue. In the absence of Commission reauthorization of the two residential DR pilots and the deferred accounting treatment for their costs, PGE would discontinue the pilots. The costs in this re-authorization request do not include capital costs.

d. Estimate of amounts to be recorded for the next 12 months.

PGE estimates the total incremental costs of the two residential DR pilots to be approximately \$6.2 million in 2019 as listed in Table 1, below.

Table 1
2019 Cost per Pilot
(\$000)

Pilot	2019 Estimate
Flex Pricing	\$2,953
DLCT	\$3,234
Totals	\$6,187

e. Notice

A copy of the notice of application for reauthorization of the deferred accounting treatment and a list of persons served with this Notice are provided as Attachment B.

II. The following is provided pursuant to OAR 860-027-0300(4).

a. Description of deferred account entries.

Please see Sections I (a), (b), and (c) above.

b. The reason for continuing the deferred accounting.

Please see Section I (b) above. PGE seeks to continue to defer incremental expenses associated with the two residential DR pilots pursuant to Commission Order Nos. 15-203, 16-292, 17-244, and 18-381 as described above. Without reauthorization this deferral will expire on June 22, 2019.

III. Summary of filing conditions

a. Earnings review.

Cost recovery of the two DR pilots will be subject to an automatic adjustment clause rate schedule and would not be subject to an earnings test under ORS 757.259.

b. Prudence review.

In accordance with Commission Order No. 18-381, no less than 90 days prior to filing to adjust tariff prices, PGE will submit combined reports on the pilots, which will provide third-party

evaluations, cost summaries, estimated curtailment impacts, and results of customer satisfaction surveys for Commission Staff to review.

c. Sharing.

All prudently incurred costs are to be recoverable by PGE with no sharing mechanism.

d. Rate Spread/Rate Design

The rate spread/rate design will be determined during the proceeding to authorize amortization of the pilots' deferred costs (i.e., Schedule 135 cost recovery).

e. Three percent test (ORS 757.259 (6)).

The amortization of the pilots' deferred costs will be subject to the three-percent test in accordance with ORS 757.259(7) and (8), which limits aggregated deferral amortizations during a 12-month period to no more than three percent of the utility's gross revenues for the preceding year.

IV. PGE Contacts

The authorized addresses to receive notices and communications in respect to this application are:

Douglas C. Tingey
Associate General Counsel
Portland General Electric
1 WTC1301
121 SW Salmon Street
Portland, OR 97204
Phone: 503.464.8926
E-mail: doug.tingey@pgn.com

PGE-OPUC Filings
Rates & Regulatory Affairs
Portland General Electric
1 WTC 0306
121 SW Salmon Street
Portland, OR 97204
Phone: 503.464.7805
E-mail: pge.opuc.filings@pgn.com

In addition to the names and addresses above, the following are to received notices and communications via the e-mail service list:

Alex Tooman, Sr. Regulatory Consultant, Regulatory Affairs
E-mail: Alex.Tooman@pgn.com

V. Conclusion

For the reasons stated above, PGE requests permission to continue to defer for later ratemaking treatment the expenses associated with the two residential DR pilots, effective June 23, 2019 through June 22, 2020.

DATED this 21st day of June 2019.



Alex Tooman
Regulatory Affairs
Portland General Electric Company
121 SW Salmon Street, 1WTC0306
Portland, OR 97204
Telephone: 503.464.7623
E-Mail: pge.opuc.filings@pge.com.

UM 1708

Attachment A

Flex 2.0 – PGE's Flexible Residential Pricing

PGE Advice No. 19-03
Attachment A
Flex 2.0 – Flexible Residential Pricing Program

Flex 2.0 – PGE’s Flexible Residential Pricing Program

February 2019



[This page intentionally left blank]

Table of Contents

Executive Summary	6
Section 1: History of PGE’s Flex 1.0 Pilot & Learnings.....	7
Section 2: Flex 2.0 Program Goals and Design	10
2.1: Program Implementation	11
2.2: Program Enrollment Goals	13
Section 3: Marketing Strategy	14
3.1: DR Awareness and Education.....	14
3.2: Flex 2.0 Program-Specific Marketing Strategy	16
Section 4: Cost Recovery	17
Section 5: Cost Effectiveness.....	18
5.1: Flex 2.0 Program Costs	18
Section 6: Program Benefits	20
6.1: Benefit-Cost Estimates	20
Section 7: Conclusion	21

Tables, Figures, and Charts

Table 1 Cost Summary of Residential Pricing Program Costs (2018\$, \$M)	7
Table 2 Cost Effectiveness Summary: Residential Pricing Program (2018\$, \$M)	7
Table 3 Flex 2.0 TOU Rate Structure.....	11
Table 4 Flex 2.0 Enrollment Targets	13
Table 5 Flex 2.0 Budget	18
Figure 1 Flex 1.0 Pricing Scenarios	8
Figure 2 Flex 1.0 TOU Treatment Rates.....	9
Figure 3 Flex 1.0 Customer Satisfaction vs. CPP Pilot.....	10
Figure 4 Cost Effectiveness Test Details (all values 10-year NPV).....	21

Acronyms

ADR Automated Demand Response
AMI Advanced Metering Infrastructure
BDR Behavioral Demand Response
CPP Critical Peak Pricing
DLC Direct Load Control
DLCT Direct Load Control Thermostat
DR Demand Response
DRMS .. Demand Response Management System
DSM Demand-Side Management
FTE Full-Time Equivalent
IRP Integrated Resource Plan
IT Information Technology
kW Kilowatt
kWh Kilowatt Hour
MW Megawatt
MWa ... Average Megawatt
OPUC... Oregon Public Utility Commission
PAC Program Administration Cost Test
PCT Participant Cost Test
PGE Portland General Electric Company
PTR Peak Time Rebate
RIM Ratepayer Impact Measure Test
SCE Southern California Edison Company
TOU Time-of-Use
TRC Total Resource Cost Test

Key Terms and Concepts

Demand Response (DR) – “Changes in electric usage by end-use customers from their normal consumption patterns in response to changes in the price of electricity over time, or to incentive payments designed to induce lower electricity use at times of high wholesale market prices or when system reliability is jeopardized.”¹

Flexible Load – a more dynamic type of DR identified as a necessary resource in a decarbonization study. It is a dynamic form of demand response capable of providing valuable grid balancing services that are necessary for integrating high levels of renewable or variable energy resources. To supply grid balancing services, these demand side resources must be available to grid operators throughout the day and capable of supplying several different types of energy products beyond peak load shifting.

¹ FERC. “National Assessment & Action Plan on Demand Response.” *Federal Energy Regulatory Commission*, FERC, 1 July 2016, www.ferc.gov/industries/electric/indus-act/demand-response/dr-potential.asp.

Executive Summary

Portland General Electric Company (PGE) is pleased to file this Plan to implement its Flexible Residential Pricing Program (Flex 2.0), which was piloted as Flex 1.0 from 2015-2018 in Oregon Public Utility Commission (OPUC or Commission) Docket No. UM 1708.

In 2016, PGE filed its Integrated Resource Plan (IRP) with the OPUC, outlining a five-year strategy that focuses on energy efficiency and customer-side DR while leaning on dispatchable generation and short-term contracts to replace coal. Included in the plan are more than 200 megawatts (MW) of DR and energy efficiency, part of PGE's path to reach 20% renewables by 2020, and then 50% by 2040. To enable that plan:

- PGE plans to increase production of electricity from variable renewable energy resources to comply with the requirements of Oregon Senate Bill 1547 (2016 Regular Legislative Session).
- PGE will introduce DR programs to help manage system peak loads and to assist with the integration of renewable energy resources.

At least 135 average megawatts (MWa) in energy efficiency will be added within the next four years. Notably, the 2016 IRP also includes up to 77 MW of DR resources of which residential pricing programs will play a significant role.

Section 1 of this Plan describes PGE's research into best-in-class residential DR programs (based on learnings from other utilities) as well as its own residential DR pilots (including Flex 1.0) that leveraged Advanced Metering Infrastructure (AMI), provided insights into PGE's specific residential customer usage patterns and rate preferences, and led to recommendations for the Flex 2.0 program. PGE piloted Flex 1.0 through PGE's Tariff Schedule 6 (Residential Pricing Pilot). Schedule 6 provided twelve pricing options to the pilot participants. For Flex 2.0, PGE will move forward with two of these piloted pricing options:

- Opt-in Peak Time Rebate (PTR) – Customers choose to participate in this option which provides a PTR incentive to customers who use less electricity during critical peak events. Advanced notice will be given to participants prior to an event. After a PTR event, PGE will measure the customer's demand reduction using the customer's usage baseline to determine the amount of hourly kilowatt reduction and the amount of the rebate.
- Time of use (TOU) with PTR – A TOU rate with optional participation in PTR events. A TOU rate is a DR program that segments each billing month into smaller hourly windows each with a separate pricing level related to energy production costs. Participants are provided price signals to reduce load during higher cost hours.

In moving from pilot to program, PGE has revised its residential standard service option (Schedule 7) to include these pricing options, noted in the tariff. Flex 2.0 and its program goals and design are described in more detail in Section 2. To ensure overall program success, in 2019 we will focus on PTR enrollment, specifically from April to June, prior to the summer season kickoff. We are aimed at sufficient enrollment during the first summer season to gauge overall DR value of these participants. PGE will undertake marketing efforts focused on TOU enrollments in the second half of 2019, followed by another burst of PTR marketing efforts in November for the winter season. For more on PGE's marketing strategy, see Section 3.

The incremental costs associated with this program are subject to a deferral filing for later recovery. PGE plans to use its Tariff Schedule 135 (Demand Response Cost Recovery Mechanism) for cost recovery, subject to the conditions set forth in Order No. 18-381.² Cost recovery is described in more detail in Section 4. A summary of estimated costs is included below and are described in more detail in Section 5:

Table 1 Cost Summary of Residential Pricing Program Costs (2018\$, \$M)

	2018	2019	2020	2021	2022	2023
Budget	\$0.2	\$3.0	\$5.5	\$6.4	\$6.9	\$7.4
Average annual MW achieved	16.3	38.8	50.3	57.4	64.3	67.7

PGE has estimated cost effectiveness on a total resource cost (TRC), ratepayer impact measure (RIM), program administration cost (PAC), and participant cost (PCT) tests. The summary of the results is provided below and described in more detail in Section 5. The program benefits are described in Section 6.

Table 2 Cost Effectiveness Summary: Residential Pricing Program (2018\$, \$M)

	TRC	RIM	PAC	Participant
Benefits	35.1	34.1	34.1	36.2
Costs	27.5	55.3	45.4	8.3
Net Benefit	7.6	(21.3)	(11.3)	27.8
Benefit/Cost Ratio	1.28	0.62	0.75	4.34

PGE believes that the Flex 2.0 program design will achieve our enrollment targets, deliver our DR value, and cost effectively support PGE’s strategy to decarbonize the grid by meeting our IRP goals for this program.

Section 1: History of PGE’s Flex 1.0 Pilot & Learnings

To support our residential DR goals, PGE identified and researched two residential pilots [Flex 1.0 and Direct Load Control (DLC) Thermostat] that would best inform development of future DR programs. The Flex 2.0 program leverages learnings from these efforts, specifically Flex 1.0, which was a pricing and behavioral demand response (BDR) pilot that tested the load impacts and customer acceptance of various residential rate options.

PGE conducted the Flex 1.0 pilot after Commission approval in OPUC Docket No. UM 1708. The pilot enrolled 14,000 customers and tested 12 pricing design options, described in Figure 1, all aimed at reducing residential peak demand during summer and winter months. The treatments featured three TOU rates, three PTR incentive levels, BDR options, four hybrid DR treatments (TOU pricing in combination with PTR or BDR) and opt-out (automatically enrolled) and opt-in (choose to enroll) design options. Treatments offered a range of on-peak/off-peak hours and rates as well as differing PTR incentive levels.

- TOU: Customers pay less for electricity during certain times of the day. This is a daily savings plan.
- PTR: Customers receive rebates or incentives for shifting energy use during special Event days.
- BDR: Same as PTR but customers don’t receive a financial incentive for their participation.
- Opt-In: Customers choose to participate in the program.

² Oregon Public Utility Commission. *Order No. 18-381*. OPUC Docket No. UM 1708, 11 Oct. 2018, <https://apps.puc.state.or.us/orders/2018ords/18-381.pdf>

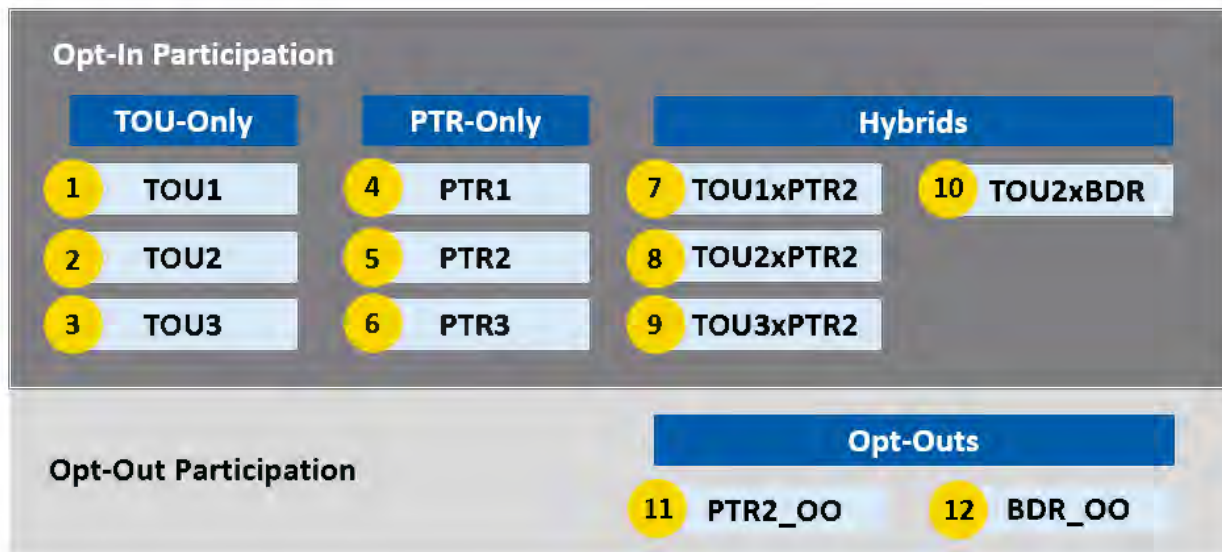
- Opt-Out: Customers are automatically enrolled in the program and must choose to opt-out if they don't want to participate.

Flex 1.0 investigated two types of DR dynamic pricing strategies: enrolling some customers in a TOU rate while others were enrolled in a PTR program. In addition, Flex 1.0 offered a series of pricing alternatives by having nine groups of participants:

- (1) A control group that has standard pricing and receives no additional information;
- (2) A group that has standard pricing and that receives information regarding peak events but no incentives;
- (3) A group on standard pricing and receives information regarding peak events and PTRs;
- (4) A group on Day and Night TOU rates;
- (5) A group on Day and Night TOU rates that receives PTRs;
- (6) A group on Peak-Only TOU;
- (7) A group on Peak-Only TOU that receives PTRs;
- (8) A group on standard TOU rates with on-peak hours constant across the seasons; and
- (9) A group like group 8 but with PTRs.

Participants who were not part of the control group were considered “treatment customers” and were enrolled in one of the twelve pricing scenarios below that included TOU, PTR, BDR, opt-in, and opt-out configurations.

Figure 1 Flex 1.0 Pricing Scenarios



TOU rate scenarios included seasonal changes across rates with varying degrees of complexity and price structures, provided in Figure 2.

Figure 2 Flex 1.0 TOU Treatment Rates

Summer				Winter			
	TOU1	TOU2	TOU3		TOU1	TOU2	TOU3
Off Peak	7.5¢/kWh	8.3¢/kWh	6.9¢/kWh	Off Peak	8.0¢/kWh	8.8¢/kWh	7.4¢/kWh
	10pm - 6am	8pm - 3pm	10pm - 11am		10pm - 6am	8pm - 7am 11am - 3pm	10pm - 7am
Mid Peak			11.9¢/kWh	Mid Peak			12.4¢/kWh
			11am - 3pm				11am - 3pm 8pm - 10pm
On Peak	13.6¢/kWh	17.6¢/kWh	18.0¢/kWh	On Peak	14.1¢/kWh	18.1¢/kWh	18.5¢/kWh
	6am - 10pm	3pm - 8pm	3pm - 8pm		6am - 10pm	7am - 11am 3pm - 8pm	7am - 11am 3pm - 8pm

PGE also tested three tiers of incentives for PTR customers:

- PTR1 \$0.80/kWh;
- PTR2 \$1.55/kWh; and
- PTR3 \$2.25/kWh.

These groups of customer participants helped PGE explore the following key questions based on the types of residential customer load shape profiles:

- What peak reduction can PTR programs deliver?
- How does peak reduction compare between PTR and Critical Peak Pricing (CPP)?
- What is the effect of education alone on behavior?
- Will optimized TOU rates change load shape?

PGE performed customer research and evaluated different TOU rate plans based on customer load profiles and cost of service. The pilot’s TOU rates had different on-, mid-, and off-peak periods, which varied by season. In addition, the TOU rates had PTR and non-PTR versions. PGE maintained control groups to provide comparable baseline data, both with and without additional customer education on DR and energy conservation.

PGE selected the participants in the Flex 1.0 pilot, and a third-party vendor administered the program. The individual rebates were measured as the difference in energy over the peak period and the customer's personalized baseline. This calculation involves complex statistical methods and is much more computationally intensive than simple X of Y methods used in its commercial and industrial programs.

PGE called at least six events per season, but no more than ten. The events lasted up to five hours but were more typically three. The vendor provided customers with energy information and tips on how they could save during peak times via several channels (e.g. email, text, and web).

PGE contracted with Cadmus to evaluate the load impacts and customer satisfaction associated with different pricing and behavioral DR program designs for Flex 1.0. Cadmus’ evaluation report was filed with the Commission in July 2018 and is provided as Appendix A. The Cadmus evaluation reviewed two winter seasons (2016/2017 and 2017/2018) and two summer seasons (2016 and 2017) and involved analysis of randomized control trials for twelve DR treatments including PTR, TOU pricing, BDR, and combinations of these treatments. Cadmus performed the research design, peak demand impact analysis, program staff interviews, and customer surveys.

In June 2018, Cadmus completed its evaluation of Flex 1.0 and confirmed that PGE can obtain customer demand savings through pricing and behavior-based DR programs to manage its system peak demand while delivering a positive customer experience.

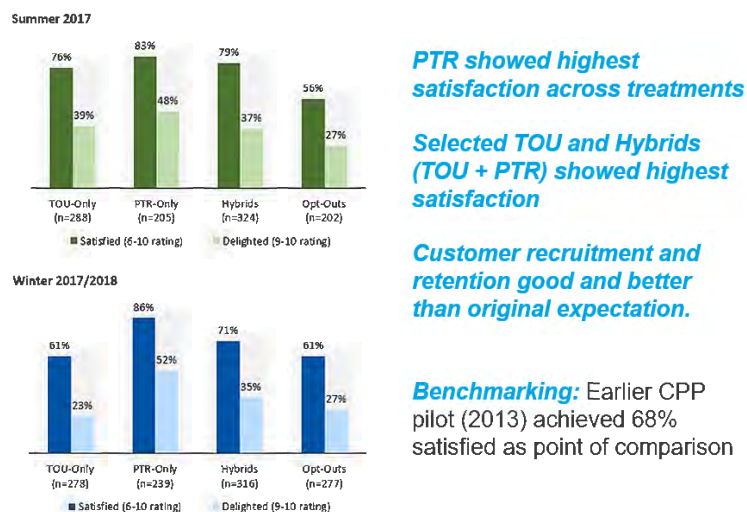
Section 2: Flex 2.0 Program Goals and Design

The program goals for Flex 2.0 are as follows:

- Design and deploy a large-scale DR program that equitably and cost-effectively contributes a substantial DR amount to our IRP goals.
- Offer easy-to-engage-in DR offerings that serve as gateways for adoption of other DLC offerings such as Smart Thermostat.

The Cadmus evaluation revealed that hybrid treatments, which combined TOU pricing with PTR incentives, resulted in the highest demand savings of those scenarios tested in Flex 1.0. Satisfaction was also high for those customers who saved on the hybrid plan, as shown in Figure 3.

Figure 3 Flex 1.0 Customer Satisfaction vs. CPP Pilot



TOU and PTR hybrid customers had lower satisfaction in winter, as demand saving or shifting proved challenging for them in this season and they voiced concern about winter bill increases. PGE conducted a detailed analysis of the TOU structures to see where changes could potentially be made to mitigate issues in winter while maintaining resource value. The Flex 2.0 program design reflects winter TOU changes made because of that analysis.

Based on these learnings, the Flex 2.0 program will include a combination of TOU+PTR offerings that have been proven to achieve high load shift and customer satisfaction. The proposed Flex 2.0 program will include:

- **Opt-in TOU+PTR Hybrid** – Customers can save on their daily energy costs by shifting usage to off-peak times when rates are lower. They also receive notifications asking them to shift energy use during peak-time events (16-20 events per year). As a reward, they receive an on-bill credit based on actual versus expected usage if they had not shifted.
 - A mid-morning peak time during winter season has been eliminated to reduce customer concerns about bill increases and to mitigate un-enrollments during that time.
 - Customers who participated in TOU2+PTR programs demonstrate a larger percentage of savings during PTR events versus TOU alone.
 - The new TOU rate is designed to be revenue neutral – roughly half of PGE’s eligible residential customer base could save money on the plan without making any changes to their usage.

Table 3 Flex 2.0 TOU Rate Structure

Summer		Winter	
Flex 2.0 TOU		Flex 2.0 TOU	
Off Peak	8.4¢/kWh 8 p.m. - 3 p.m.	Off Peak	8.4¢/kWh 8 p.m. - 3 p.m.
Mid Peak		Mid Peak	
On Peak	19.1¢/kWh 3 p.m. - 8 p.m.	On Peak	19.1¢/kWh 3 p.m. - 8 p.m.

- **Opt-in PTR only** – Customers receive notifications asking them to shift energy use during peak-time events (16-20 events per year). As a reward, they receive an on-bill credit based on actual versus expected usage if they had not shifted.
 - This offering delivered the highest DR value, customer satisfaction, and retention scores in the Flex 1.0 pilot.
 - The primary reasons for PTR’s high customer satisfaction are customer perception of monetary benefit for their efforts and that occasional behavior changes on specific days present less of an obstacle to participation than day in, day out changes.

2.1: Program Implementation

To enable the Flex 2.0 program, PGE has engaged two of the industry’s leading DR Management System (DRMS) and data analytics vendors to support our efforts. By merging the strengths of specialized companies and

platforms, we have created a solution that maximizes PGE’s future flexibility while enhancing every element of a multi-year DR/DLC strategy.

2.1.1: TROVE Advanced Data Analytics

Accurate and timely delivery of PTR event measurements are critical to the success of a PTR program. PGE will leverage TROVE’s Data Synthesis Platform (via licensing) which will serve as the backbone of the PTR program, applying predictive data science analytics to measure and forecast individual customer behaviors and loads with precision and at scale.

Using AMI and billing data from PGE, TROVE will estimate customer-specific curtailment and the associated PTR incentives. Trove will calculate rebates by comparing the participating customer’s actual energy use during the PTR event compared to the customer’s baseline energy use, with the baseline calculated using a customer-specific regression analysis. TROVE will:

- *Create Customer-Specific regression models for each PTR customer.*
- *Apply the prevailing customer specific regression coefficients to the actual weather data for the PTR event.* This will serve as the preliminary customer-specific baseline.
- *Compute event-day hour adjustment ratios.*
- *Apply hourly adjustment ratios to the customer specific regression-based hourly kWh for the PTR event day.*
- *Apply a final additive adjustment.* To further align the baseline to the PTR customer’s event day load shape, TROVE will perform an additive adjustment aligning the baseline to the actual load according to the average kWh across the 3 hours prior to the start of the event.
- *Calculate kWh impact.* The delta between the adjusted baseline and actual hourly kWh for PTR event hours will be the event impact, and the settlement payment will be based off the applicable rebate for hour-specific event impacts.
- *PTR ex-ante calculations.* TROVE will provide an annualized software license for ex-post modeling and perform calculations at the customer and aggregate level to forecast impact and DR value of future PTR events.

PGE will continuously evaluate data insights to inform and optimize the Flex 2.0 program design and customer engagement strategy. Ultimately, customer segmentation will inform recruitment campaigns and enable targeted, personalized messaging in recruitment collateral. This is detailed in more detail in the marketing section that follows.

2.1.2: Oracle

Oracle Utilities has a proven track record of operating large-scale residential peak management programs (such as Baltimore Gas and Electric’s Energy Savings Day program with more than one million participants) and will provide the operational and communication support for PGE’s PTR program.

Customer engagement and customer satisfaction are at the core of Oracle Utilities’ approach to Peak Management. In post-season surveys, more than 85% of participants reported that they had a higher awareness of peak savings, and 75%-85% of customers indicated that they were highly satisfied with the program. In another key indicator of satisfaction, an average less than 1% of participants choose to opt-out of a typical Oracle peak management program.

Additionally, Oracle will provide personalized TOU rate comparison information for our residential customers (comparing what a customer uses on the Basic Rate plan to what a customer would pay on the new TOU rate) which will be used to help customers select the plan that is best for them. Again, this is discussed in more detail in the marketing section that follows.

2.2: Program Enrollment Goals

PGE has considered other utility programs as well as our own Flex 1.0 pilot in setting enrollment targets. Enrollment across treatments in the Flex 1.0 pilot ranged from 3% to 6% with restricted marketing efforts given the nature of the pilot. Other utilities, such as Sacramento Municipal Utility District achieved enrollment targets as high as 16% for its TOU program. In setting enrollment targets, PGE used a conservative adoption rate of 7% year 1 (2019), with 9% growth in year 2 (2020), 4% growth in year 3 (2021) and a more modest 3% growth year-over-year thereafter.

Enrollment goals are also designed to support our IRP goal of 38 MW of residential DR by end of year 2020 with more aggressive marketing occurring in the first two years of the program to support that DR goal. To ensure continued cost effectiveness, PGE will monitor enrollment for its PTR program and reassess incentive costs once 110,000 customers have enrolled in the PTR program.

Table 4 Flex 2.0 Enrollment Targets

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
TOU + PTR	19,000	43,000	57,000	66,000	75,000	80,000	84,000	88,000	93,000	97,000
PTR	36,000	87,000	111,000	125,000	139,000	146,000	152,000	159,000	166,000	172,000
Total	55,000	130,000	168,000	191,000	214,000	226,000	236,000	247,000	259,000	269,000
AAGR		136%	29%	14%	12%	6%	4%	5%	5%	4%
% of Res Accounts	7%	16%	20%	23%	26%	27%	28%	29%	30%	31%
MW Impact	16.3	38.8	50.3	57.4	64.3	67.7	71.0	74.3	77.6	80.9

After initial DR education and awareness, PGE will communicate information about TOU+PTR and encourage customers to stay on the incentive program or move to a DLC program, specifically the Smart Thermostat program. DLC programs capture larger DR loads and are automated, which presents fewer hurdles to event participation, a more streamlined customer experience, and have energy efficiency benefits. Therefore, transitioning customers to DLC will be key to prove the resource capability of DR. DR initiatives such as PTR, TOU and BDR - with relatively low barriers to entry for customers - can serve as a launching point for drawing residential customers into deeper DR engagement over time.

Section 3: Marketing Strategy

Marketing provides important outreach and education for customers to learn about and participate in these DR options. In addition to using the Cadmus findings and recommendations to inform PGE’s target participants, PGE conducted further segmentation to profile the following customers: customers who could benefit most from the TOU rate plan, customers with a neutral impact, and customers who could be negatively impacted. As part of PGE’s proposal, PGE’s marketing efforts will target those customers who are most likely to benefit from the program.

The marketing strategy is to align customer value propositions with highly targeted residential segmentation to educate, engage and enroll customers in PGE’s PTR and TOU programs to be part of Oregon’s clean energy future. Based on a JD Power “Residential Customer Satisfaction Study”³ below are nine key learnings on customer behavior that will influence PTR and TOU marketing strategy:

1. **The customer is going to measure PGE by others** – no industry is an island and expectations are the same whether customers are interacting with their banks, favorite retailer or utility.
2. **Every customer is mobile** – even the customer who doesn’t identify as mobile, is mobile.
3. **Customers today expect that PGE knows them** – this applies to every communication point of contact and transaction (i.e. knowing who they are and account history).
4. **If PGE makes a promise, keep it** – customers do not like problems but have less tolerance for broken promises on services or messaging.
5. **Work backwards from the customer** – listen to what they have to say and put it into practice.
6. **Customers love convenience** – you must be on all channels, not just the ones easiest for you.
7. **Consistent customer messaging** – customers want communication across channels to connect and expect consistency in messaging.
8. **An aware customer, is a happy customer** – if customers know your programs from the details down, consumer satisfaction increases.
9. **All customers respond to one phrase** – a satisfaction boost comes from the oldest adage, take the time to say, “thank you.”

3.1: DR Awareness and Education

PGE’s DR research findings have shown that at this time there is little awareness among its customers of the economic significance of when electricity is used or the meaning of DR; the “why” of DR and load control are not common concepts generally understood by customers. While many customers think they are already doing everything possible in terms of energy efficiency, our findings indicate there are customers looking for more choices regarding their energy use. Research specific to DR also demonstrates that messaging and how PGE educates customers about DR opportunities shapes their understanding of its value and thus their willingness to participate.

In its final pilot evaluation, filed in UM 1708, Cadmus recommended PGE offer more education to TOU participants on how to save energy and would like to better understand how PGE will improve its customer

³ J.D. Power. *Electric Utility Residential Customer Satisfaction Study*. J.D. Power, 2018.

education. To address this, the first step in customer engagement must be around awareness and education of the following:

- **DR Concepts:** Educating customers about DR needs to be tactfully undertaken. Even the term “DR” is energy company-centric. The lexicon relied on by system operators needs to be redeveloped for communicating the value proposition to the customer. Additionally, most customers do not think much about or understand how energy is generated and transmitted and take electric service for granted. Our education and outreach efforts will focus on the concept of DR and how it fits within an energy ecosystem that includes other DSM options and how this new resource can help control costs and address climate change.
- **Effect Upon the Customer Bill:** Whether as a pricing mechanism or an incentive program DR participation can reduce customers’ overall energy costs. TOU pricing can also reduce a customer’s monthly bill but requires knowledge and consistent daily behavioral changes. Incentive programs for DLC, such as a smart thermostat offering or a smart water heater offering, can assist customers with their overall energy costs by providing an incentive for participation or the technology required for participation. Hybrid programs, such as PTR, familiarize the customer with the concept of beneficial behavioral change for a series of DR events. PTR programs operate by providing the customers an incentive for responding to DR events while holding those harmless who cannot, or choose not, to respond to an event.
- **Beneficial Effect on Future Customer Rates:** Part of the customer value proposition to be communicated is that DR is a customer-controlled resource that has the capability of offsetting larger, long-term investments in new fossil fuel generation. By offsetting these investments, the individual customers are helping to keep rates lower to meet a limited number of hours of high energy needs that would otherwise need to be met by investments in fast-ramping resources (traditionally single cycle gas plants with long investment terms).
- **Environmental Implications:** Using DR instead of fossil fuel-fired generation to address energy can help with capacity gaps. The customer and the community will also be presented with the environmental benefits of DR. Offsetting investments in fossil fuel presents its own implicit environmental value proposition. In addition to established efficiency and renewable options, enabled by advances in Information Technology (IT) and grid operations, the distribution system can now be leveraged as a resource to meet customers’ energy needs, grid service’s needs, and as part of a tool set to lower the carbon content of the electric system. Supported by PGE’s decarbonization study, PGE will need nearly 900 MW of customer sited resources. DR is the first of these resources.
- **Community Effort:** Enabling the customer and the energy company to use DR can be a community effort with broader and immediate implications. In related customer messaging, PGE will present a community benefit beyond assisting with customer bills and putting downward pressure on energy rates. Many customers consider community-level messaging and action a significant incentive. Messaging to these customers will promote the community value of DR to empower and enable the customer to control energy costs and address environmental considerations (also applicable to DERs). Investments by customers who can afford early adoption of technologies, such as roof-top solar, energy storage, or EVs, can be leveraged to assist the community. Residential customers’ investments in DER can help spur additional

renewables, help mitigate rate increases, and provide both locally-sourced energy services during normal grid operations and resiliency services during emergencies.

Customers will have several options for participating in DR programs and one of the results of our marketing strategy is to help guide them to their best option. When customers have choices for product or services that align with their core values and see a real benefit to them or to their community, engagement and satisfaction tend to follow. PGE wants its customers to clearly understand the value of being a part of DR and the contribution they will make.

3.2: Flex 2.0 Program-Specific Marketing Strategy

The Flex 2.0 program will directly benefit from the education, engagement and enrollment marketing efforts of the DR campaign that will position PGE's strength as a trusted utility that introduces new products and services to provide a smarter, sustainable energy future.

Incorporating the learnings from PGE's Flex 1.0 pilot, we will target Flex 2.0 marketing to those customers who will directly benefit from PTR and TOU by providing smarter choices with the long-term goal of building a deeper relationship with all our customers.

TOU and PTR are two distinct DR programs with unique customer enrollment and load shift goals. Driving awareness, consideration and active enrollment in PTR and TOU programs will involve delivering on the value proposition of each program utilizing learnings and strategies around education, engagement, and enrollment.

3.2.1: Awareness and Education

- Educating and engaging PGE's Customer Service Call Center on PTR and TOU programs and how they can use personalization tools they will have at their fingertips, to recommend and enroll customers in smarter energy choices to further load control.
- A smarter self-service model will allow PGE customers to discover and understand the benefits of PTR and TOU participation without having to contact PGE's call center as our customer's demand convenience and easy access to personalized recommendations based on their energy use.
- Personalization to identify and educate customers on their energy usage and potential saving opportunities, which offers a targeted value proposition specific to consumer segments based on new analytic capabilities from Trove.
- Building a robust online web experience to educate customers on PTR and TOU programs and make it easy to understand and enroll in programs utilizing omni-channel messaging to keep customers engaged, offer personalized savings tips and aware of upcoming program events.
- Providing printed PTR and TOU marketing materials that will also be translated into Spanish and Russian to ensure we educate customers in the cases where English isn't their primary language.

3.2.2: Engagement

- Continue to refine customer value propositions and relevant recommendations for load control opportunities that we know that will benefit our customers (based on incentivized personalization) as a direct result of Trove analytics and insights.

- Driving PTR and TOU adoption through PGE’s portfolio channel of DLC programs and products designed to interact with smart technologies and reduce energy load during seasonal events, i.e., air conditioning cycling, heat pumps or thermostats.
- Promote rewards of participation in PTR and TOU in terms of community and economic incentives and the expected impact of shifting energy usage to further drive adoption and opt-in.
- Engaging with lower income audiences through outreach programs and partnering with community agencies to promote access to these new programs, specifically the benefits of the “win-only” PTR program through education and messaging specific to this customer.
- An omni-channel approach to engage customers along their PTR and TOU journey from awareness, interest and enrollment, knowing we want to empower our customers to feel ownership in their participation and share their testimonials/personal stories to highlight positive experiences regarding monthly bill savings and the overall impact to community.
- Public relations and advertising initiatives that engage with media (print, digital, social) partners, seek sponsorship opportunities and influencers to promote PTR and TOU education and enrollment with the additional benefit of DR that will drive awareness in PGE’s smarter energy use programs.

3.2.3: Targeted Messaging and Enrollment

- Extensive digital A/B testing and message refinement (i.e. Trove) will continually improve marketing omni-channel PTR and TOU strategy at key consumer touch points along the journey to achieve enrollment and load control metrics.
- Increase in-marketing efforts prior to key seasonal opportunities, for example understanding that summer based on learnings from other utilities, has the highest potential to impact load control for PTR and TOU.
- Building awareness and enrolling customers at planned PGE sponsored events throughout the season, these highly attended grass roots celebrations can vary from festivals to safety education but reflect PGE’s core values in serving its community and being a great neighbor.
- Personalization to enroll customers based on their energy usage and potential saving opportunities, which offers a targeted value proposition specific to consumer segments based on new analytic capabilities (i.e. Trove).
- Optimize online digital enrollment PTR and TOU process to simplify enrollment on PGE’s web site for desktop and mobile users as well as enhance customer account summary section to include personalization components that will allow cross-promotion of DLC programs and products.

It is our hope that the Flex 2.0 program can become a powerful foundation of a broad and robust DR portfolio that can drive system efficiency and optimization for PGE now and into the future

Section 4: Cost Recovery

As stated in PGE’s 2019 Deferral Reauthorization Application and authorized in Commission Order No. 18-381, filed in OPUC Docket No. UM 1708, PGE plans to file for amortization of costs associated with Flex 2.0 using PGE Tariff Schedule 135 (Demand Response Cost Recovery Mechanism).

On February 23, 2011, PGE filed Advice No. 10-29 to establish Schedule 135,, a mechanism to recover Automated Demand Response (ADR) program costs to implement and operate, on a pilot basis.⁴ Schedule 135 supports the peak capacity objectives described in Order No. 08-245 (Docket UE 189 AMI) and Section 4.2 of PGE’s Commission-acknowledged 2009 IRP. This Schedule has two components:

1. It includes rates based on the forecasted costs of DR programs over a 12-month period; and
2. It includes amortization of the deferred variance between forecasted costs and actual costs for the previous 12-month period.

Schedule 135 is updated annually when PGE adjusts the rates to update forecasted costs and amortize the deferred variance between forecasted and actual costs for the previous 12-month period.

Section 5: Cost Effectiveness

Cost effectiveness considers both the costs and benefits associated with an investment.

5.1: Flex 2.0 Program Costs

The forecast of Flex 2.0 program annual costs through 2023 are outlined in Table 5, below.

Table 5 Flex 2.0 Budget

Budget Component	2018	2019	2020	2021	2022	2023
PTR Rebates	\$0	\$540,000	\$1,850,000	\$3,060,000	\$3,760,000	\$4,330,000
Marketing + communications	\$60,000	\$1,050,000	\$1,120,000	\$980,000	\$790,000	\$670,000
Program Operations						
Vendor implementors	\$0	\$770,000	\$890,000	\$850,000	\$920,000	\$920,000
Program management	\$120,000	\$117,000	\$106,000	\$108,000	\$110,000	\$112,000
Data analytics	\$0	\$158,000	\$158,000	\$162,000	\$165,000	\$168,000
Program evaluation	\$0	\$120,000	\$180,000	\$184,000	\$188,000	\$191,000
Check processing	\$0	\$169,000	\$0	\$0	\$0	\$0
Misc dispersed support	\$2,000	\$24,000	\$0	\$0	\$0	\$0
	\$122,000	\$1,358,000	\$1,334,000	\$1,304,000	\$1,383,000	\$1,391,000
IT capital investment	\$0	\$0	\$940,000	\$880,000	\$810,000	\$740,000
Total	\$182,000	\$2,948,000	\$5,244,000	\$6,224,000	\$6,743,000	\$7,131,000
Average annual MW achieved	16.3	38.8	50.3	57.4	64.3	67.7

5.1.1: Rebates

Rebate costs grow with program subscribers. By 2021 rebates comprise half the program costs. The PTR rebate is modeled at \$1.00/kWh. Pilot results reported that PTR1 participants average annual rebate amount was \$16.09; this was increased by 25% to reflect the higher per kWh rebate within the proposed program structure (\$1.00/kWh proposed vs. \$0.80/kWh provided in PTR1 pilot). Rebates for TOU-PTR subscribers are modeled at a lower amount, per pilot results (\$16.58). This reflects the significant load decrease that TOU-PTR participants

⁴ Schedule 135 was authorized in Order No. 11-182 regarding the deferral and recovery of costs related to PGE's ADR Pilot Programs.

evidenced during all peak hours; the additional reduction during PTR events was relatively lower than for subscribers enrolled in PTR only.

Note that the reduction in energy sales associated with TOU is not treated as a cost to the utility. This revenue reduction is assumed to be compensated in the short-term by PGE's decoupling mechanism, which adjusts rates to account for difference between forecasted and actual energy usage.

5.1.2: Marketing

As noted above, PGE plans to aggressively promote both TOU+PTR and PTR-only enrollment in 2019 and 2020 to achieve the critical mass needed to support our IRP DR goals. Budgeting for Flex 2.0 in 2020 will increase 9% with a reduction in budget of 15% in 2021 and 24% in 2022 respectively. To support ongoing marketing, PGE has budgeted for 1.5 full-time equivalent (FTE) employees in the marketing line.

5.1.3: Vendor

As discussed above, two vendors will implement the Flex 2.0 program. Oracle will manage PTR events communications and TOU customer engagement, and TROVE will provide predicate data analytics to identify target customers for Flex 2.0 programs and calculate individual customer baselines and rebates (PTR performance summaries). Vendor setup and launch services will be capitalized and are a component of the IT capital investment line item.

5.1.4: Staffing

In addition to the 1.5 FTE in marketing and communications, the Flex 2.0 budget includes 1.0 full-time project manager, and 1.5 FTE on internal analytics to support vendor integrations and customer segmentation (used in marketing and communication efforts). The total incremental FTE addition is four.

5.1.1: Data Analytics

The data analytics performed will assess meters prior to customer enrollment to determine the percent of interval data that is successfully transmitting, resolve exceptions that relate to billing to ensure billing accuracy, and validate meter readings to flag results that are not in line with trends.

5.1.2: Program Evaluation

An external consultant will assess the program including load impact, customer satisfaction, and seasonal performance trends to inform PGE's management of its system peak demand. This evaluation will occur on an ongoing basis during each calendar year and will provide feedback at the end of each event season.

5.1.3: Check Processing

This cost accounts for the potential delay in bill rebate functionality and represents the cost of issuing checks to participants for the program's first season of operations. Given the recent transition to a new Customer Care & Billing system, which will allow for on-bill crediting of PTR rebates, this cost is not expected, but is included as a conservative assumption.

5.1.4: IT Capital Investment

This line item describes the annual income statement impact of a \$2.9 million capital investment to develop the integrations and framework required for PGE's DRMS as well as to augment PGE's existing data analytics platforms. This cost is not part of the deferral application⁵ and will be covered through PGE's existing IT capital budget.

Section 6: Program Benefits

DR programs are undertaken for the capacity they provide. As most programs shift rather than reduce energy consumption, energy savings are minimal. Because Oregon does not have a capacity market, PGE values capacity based upon the cost to build the least expensive capacity resource. PGE's 2016 IRP update established this as a simple cycle combustion turbine, with real levelized fixed costs of \$126.33 per kW-year in 2019. This cost/value is then discounted, or de-rated, to reflect the ways in which DR varies from a dispatchable thermal capacity resource. PTR is significantly de-rated (to 45% of the value of an SCCT) due to its limited availability and the notice that participants receive. TOU, in contrast, is always available; peak load reductions demonstrated by TOU participants receive full capacity value. The incremental load reduction that TOU participants provide during a PTR event is de-rated at the PTR value.

Capacity value reflects the de-rated value of the program (associated with the program's design), the load impact per participant, and the number of participants. The value of Flex 2.0 would increase with expanded availability, increased load impact per event, and more participants.

6.1: Benefit-Cost Estimates

PGE's DR cost effectiveness modeling includes four distinct tests and is based on PGE's 'A Proposed Cost-Effectiveness Approach for DR,' submitted to the OPUC in 2016 and based upon California protocols.⁶

As implementation and administration supports both programs, PTR and PTR/TOU hybrid are combined into a single benefit/cost ratio. All tests compare the net present value of costs and benefits over a 10-year horizon. A ratio greater than 1.0 indicates that the program's benefits exceed its costs.

⁵ Oregon Public Utility Commission. *UM 1708 PGE's Reauthorization Application for Deferral of Expenses Associated with Two Residential Demand Response Pilots*. OPUC Docket No. UM 1708, 4 May 2018, <https://edocs.puc.state.or.us/efdocs/HAQ/um1708haq142741.pdf>

⁶ Portland General Electric Company. "A Proposed Cost-Effectiveness Approach for DR." OPUC Docket No. UM 1708, 28 Apr. 2016, <https://edocs.puc.state.or.us/efdocs/HAD/um1708had113843.pdf>

Figure 4 Cost Effectiveness Test Details (all values 10-year NPV)

Total Resource Cost Test

Cost/Benefit Category	Costs	Benefit
Administrative costs	\$16,060,000	
Avoided costs of supplying electricity		\$34,050,000
Bill Reductions		
Capital costs to utility	\$3,120,000	
Environmental benefits		\$1,020,000
Incentives paid		
Revenue loss from reduced sales		
Transaction costs to participant	\$0	
Value of service lost	\$8,320,000	
	\$27,500,000	\$35,070,000

Benefit Cost Ratio 1.28

Program Administrator Cost Test

Cost/Benefit Category	Cost	Benefit
Administrative costs	\$16,060,000	
Avoided costs of supplying electricity		\$34,050,000
Bill Reductions		
Capital costs to utility	\$3,120,000	
Environmental benefits		
Incentives paid	\$26,180,000	
Revenue loss from reduced sales		
Transaction costs to participant		
Value of service lost		
	\$45,360,000	\$34,050,000

0.75

Ratepayer Impact Measure Test

Cost/Benefit Category	Cost	Benefit
Administrative costs	\$16,060,000	
Avoided costs of supplying electricity		\$34,050,000
Bill Reductions		
Capital costs to utility	\$3,120,000	
Environmental benefits		
Incentives paid	\$26,180,000	
Revenue loss from reduced sales	\$9,970,000	
Transaction costs to participant		
Value of service lost		
	\$55,330,000	\$34,050,000

0.62

Participant Cost Test

Cost/Benefit Category	Costs	Benefit
Administrative costs		
Avoided costs of supplying electricity		
Bill Reductions		\$9,970,000
Capital costs to utility		
Environmental benefits		
Incentives paid		\$26,180,000
Revenue loss from reduced sales		
Transaction costs to participant	\$0	
Value of service lost	\$8,320,000	
	\$8,320,000	\$36,150,000

4.34

The document PGE filed in 2016 proposed that the TRC Test serve as the primary measure of cost effectiveness. Flex 2.0 reports a 1.28 on this test, shown in Figure 4. The TRC is the ‘all parties’ perspective. It includes all program costs other than incentives (which are considered a transfer between the utility and the participant). Participant costs are included: transaction costs (purchases required; this does not apply to Flex 2.0) and value of service lost. Value of service lost approximates the nuisance factor the participant realizes and is calculated as a percentage of the incentive received. For Flex 2.0, the value of service lost was equated to the share of participants who reported a post-participation satisfaction rating of less than ‘satisfied.’ This was 18% for PTR and 28% for the hybrid program. When program assumptions are varied, test results vary.

Section 7: Conclusion

An important source of future DR capacity for PGE will come from residential customers. These customers contribute to PGE’s system peak demand through weather-driven increases in demand for air conditioning in summer and demand for space heating in winter. By deploying DR programs such as Flex 2.0 to residential customers, PGE can manage its peak system loads and reduce its costs of electricity supply.



Portland General Electric Company
121 S.W. Salmon Street | Portland, Oregon 97204
PortlandGeneral.com



UM 1708

Attachment B

**Notice of Application for Reauthorization of Deferral of Expenses
Associated with Two Residential Demand Response Pilots**

**BEFORE THE PUBLIC UTILITY COMMISSION
OF OREGON
UM 1708**

In the Matter of the Application of Portland General Electric Company for an Order Approving the Deferral of Expenses Associated with Two Residential Demand Response Pilots

Notice of Application for Reauthorization of Deferral of Expenses Associated with Two Residential Demand Response Pilots

On June 21, 2019, Portland General Electric Company (“PGE”) filed an Application for Reauthorization of Deferral of Expenses Associated with Two Residential Demand Response Pilots with the Public Utility Commission of Oregon (the “Commission”).

Approval of PGE’s reauthorization application as proposed will support the use of an automatic adjustment clause rate schedule, which will provide for changes in rates reflecting incremental costs associated with the pilot.

Persons who wish to obtain a copy of PGE’s application will be able to access it on the OPUC website.

Any person who wishes to submit written comments to the Commission on PGE’s application must do so no later than July 22, 2019.

Dated: June 21, 2019.



Alex Tooman
Regulatory Affairs
Portland General Electric Company
121 SW Salmon Street, 1WTC0306
Portland, OR 97204
Telephone: 503.464.7623
E-Mail: pge.opuc.filings@pgn.com

Certificate of Service

I hereby certify that I have this day caused the foregoing **Notice of Application for Reauthorization of Deferral of Expenses Associated with Two Residential Demand Response Pilots** to be served by electronic mail to those parties whose e-mail addresses appear on the attached service list for OPUC Dockets No. UE 335 and UM 1708.

Dated at Portland, Oregon, this 21st day of June 2019.



Alex Tooman
Regulatory Affairs
Portland General Electric Company
121 SW Salmon Street, 1WTC0306
Portland, OR 97204
Telephone: 503-464-7623
E-Mail: pge.opuc.filings@pgn.com

SERVICE LIST
OPUC DOCKET NO. UE 335

ALBERTSONS

BRIAN BETHKE
11555 DUBLIN CANYON ROAD

250 PARKCENTER BLVD
BOISE ID 83706
brian.bethke@albertsons.com

CHRIS ISHIZU
ALBERTSONS COMPANIES, INC.

250 PARKCENTER BLVD
BOISE ID 83706
chris.ishizu@albertsons.com

GEORGE WAIDELICH
ALBERTSONS COMPANIES' INC.

11555 DUBLIN CANYON ROAD
PLEASANTON OR 94588
george.waidelich@albertsons.com

AWEC UE 335

BRADLEY MULLINS (C)
MOUNTAIN WEST ANALYTICS

1750 SW HARBOR WAY STE 450
PORTLAND OR 97201
brmullins@mwanalytics.com

TYLER C PEPPE (C)
DAVISON VAN CLEVE, PC

1750 SW HARBOR WAY STE 450
PORTLAND OR 97201
tcp@dvclaw.com

ROBERT SWEETIN (C)
DAVISON VAN CLEVE, P.C.

185 E. RENO AVE, SUITE B8C
LAS VEGAS NV 89119
rds@dvclaw.com

CALPINE SOLUTIONS

GREGORY M. ADAMS (C)
RICHARDSON ADAMS, PLLC

PO BOX 7218
BOISE ID 83702
greg@richardsonadams.com

GREG BASS
CALPINE ENERGY SOLUTIONS, LLC

401 WEST A ST, STE 500
SAN DIEGO CA 92101
greg.bass@calpinesolutions.com

KEVIN HIGGINS (C)
ENERGY STRATEGIES LLC

215 STATE ST - STE 200
SALT LAKE CITY UT 84111-2322
khiggins@energystrat.com

FRED MEYER

KURT J BOEHM (C)
BOEHM KURTZ & LOWRY

36 E SEVENTH ST - STE 1510
CINCINNATI OH 45202
kboehm@bkllawfirm.com

JODY KYLER COHN (C)
BOEHM, KURTZ & LOWRY

36 E SEVENTH ST STE 1510
CINCINNATI OH 45202
jkylercohn@bkllawfirm.com

NIPPC

ROBERT D KAHN
NORTHWEST & INTERMOUNTAIN POWER
PRODUCERS COALITION

PO BOX 504
MERCER ISLAND WA 98040
rkahn@nippc.org

IRION A SANGER (C)
SANGER LAW PC

1117 SE 53RD AVE
PORTLAND OR 97215
irion@sanger-law.com

MARK R THOMPSON (C)
SANGER LAW PC

1117 SE 53RD AVE
PORTLAND OR 97215
mark@sanger-law.com

OREGON CITIZENS UTILITY BOARD

OREGON CITIZENS' UTILITY BOARD

610 SW BROADWAY, STE 400
PORTLAND OR 97205
dockets@oregoncub.org

MICHAEL GOETZ (C)
OREGON CITIZENS' UTILITY BOARD

610 SW BROADWAY STE 400
PORTLAND OR 97205
mike@oregoncub.org

ROBERT JENKS (C)
OREGON CITIZENS' UTILITY BOARD

610 SW BROADWAY, STE 400
PORTLAND OR 97205
bob@oregoncub.org

PACIFICORP

PACIFICORP, DBA PACIFIC POWER

825 NE MULTNOMAH ST, STE 2000
PORTLAND OR 97232
oregondockets@pacificorp.com

MATTHEW MCVEE
PACIFICORP

825 NE MULTNOMAH
PORTLAND OR 97232
matthew.mcvee@pacificorp.com

PORTLAND GENERAL ELECTRIC

PGE RATES & REGULATORY AFFAIRS

PORTLAND GENERAL ELECTRIC COMPANY
121 SW SALMON STREET, 1WTC0306
PORTLAND OR 97204
pge.opuc.filings@pgn.com

STEFAN BROWN (C)
PORTLAND GENERAL ELECTRIC

121 SW SALMON ST, 1WTC0306
PORTLAND OR 97204
stefan.brown@pgn.com; pge.opuc.filings@pgn.com

DOUGLAS C TINGEY (C)
PORTLAND GENERAL ELECTRIC

121 SW SALMON 1WTC1301
PORTLAND OR 97204
doug.tingey@pgn.com

SBUA

JAMES BIRKELUND
SMALL BUSINESS UTILITY ADVOCATES

548 MARKET ST STE 11200
SAN FRANCISCO CA 94104
james@utilityadvocates.org

DIANE HENKELS (C)
CLEANTECH LAW PARTNERS PC

420 SW WASHINGTON ST STE 400
PORTLAND OR 97204
dhenkels@actionnet.net

STAFF

STEPHANIE S ANDRUS (C)
PUC STAFF--DEPARTMENT OF JUSTICE

BUSINESS ACTIVITIES SECTION
1162 COURT ST NE
SALEM OR 97301-4096
stephanie.andrus@state.or.us

MARIANNE GARDNER (C)
PUBLIC UTILITY COMMISSION OF OREGON

PO BOX 1088
SALEM OR 97308-1088
marianne.gardner@state.or.us

SOMMER MOSER (C)
PUC STAFF - DEPARTMENT OF JUSTICE

1162 COURT ST NE
SALEM OR 97301
sommer.moser@doj.state.or.us

WALMART

VICKI M BALDWIN (C)
PARSONS BEHLE & LATIMER

201 S MAIN ST STE 1800
SALT LAKE CITY UT 84111
vbaldwin@parsonsbehle.com

STEVE W CHRISS (C)
WAL-MART STORES, INC.

2001 SE 10TH ST
BENTONVILLE AR 72716-0550
stephen.chriss@wal-mart.com

SERVICE LIST
OPUC DOCKET NO. UM 1708

CITIZENS' UTILITY BOARD OF OREGON

610 SW BROADWAY, STE 400
PORTLAND OR 97205
dockets@oregoncub.org

STEPHANIE S ANDRUS (C)
PUC STAFF--DEPARTMENT OF JUSTICE

BUSINESS ACTIVITIES SECTION
1162 COURT ST NE
SALEM OR 97301-4096
stephanie.andrus@state.or.us

ROBERT JENKS (C)
CITIZENS' UTILITY BOARD OF OREGON

610 SW BROADWAY, STE 400
PORTLAND OR 97205
bob@oregoncub.org

MITCH MOORE (C)
PUBLIC UTILITY COMMISSION OF OREGON

PO BOX 1088
SALEM OR 97308-1088
mitch.moore@state.or.us

DOUGLAS C TINGEY
PORTLAND GENERAL ELECTRIC

121 SW SALMON, 1WTC1301
PORTLAND OR 97204
doug.tingey@pgn.com

JAY TINKER
PORTLAND GENERAL ELECTRIC

121 SW SALMON ST 1WTC-0306
PORTLAND OR 97204
pge.opuc.filings@pgn.com

ALEX TOOMAN
PORTLAND GENERAL ELECTRIC

121 SW SALMON ST - 1WTC-0306
PORTLAND OR 97204
alex.tooman@pgn.com