Washington Annual Report on Conservation Acquisition

January 1, 2018 – December 31, 2018

Final

Filed May 31, 2019

PACIFIC POWER
A DIVISION OF PACIFICORP

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List of Abbreviations and Acronyms

BPA	Bonneville Power Administration
CFL	Compact Fluorescent Lighting
DSM	Demand-side Management
Schedule 191	Schedule 191 System Benefits Charge Adjustment
EM&V	Evaluation, Measurement & Verification
GWh	Gigawatt-hour(s)
HVAC	Heating, Ventilation and Air Conditioning
IRP	Integrated Resource Plan
kWh	Kilowatt-hour
LED	Light-emitting Diode
MW	Megawatt
MWh	Megawatt-hour
NEEA	Northwest Energy Efficiency Alliance
NEF	National Energy Foundation
NTG	Net-to-Gross
PCT	Participant Cost Test
PTRC	PacifiCorp Total Resource Cost test
RIM	Ratepayer Impact Measure test
TRC	Total Resource Cost test
UCT	Utility Cost Test
VFD	Variable-Frequency Drive

Executive Summary

PacifiCorp is a multi-jurisdictional electric utility providing retail service to customers in Washington, California, Idaho, Oregon, Utah, and Wyoming. Pacific Power & Light Company (Pacific Power or Company), a division of PacifiCorp, serves approximately 130,000 customers in Washington. The Company works with its customers to reduce the need for investment in supply side resources and infrastructure by reducing energy consumption and peak demand through cost effective energy efficiency programs.

The Company is required to comply with the requirements of the Energy Independence Act (also known as I-937) codified in RCW19.285 and WAC 480-109. This report provides information on the Company's 2018 activities and expenditures related to pursuing all conservation in accordance with the I-937 framework, including Washington Utilities and Transportation Commission (Commission) orders and administrative rules.

In 2018, the Company offered four energy efficiency programs in Washington and received energy savings and market transformation benefits through its affiliation with the Northwest Energy Efficiency Alliance (NEEA). The Company recovers expenditures associated with these programs through the System Benefits Charge Adjustment, Schedule 191.

This report also provides details on Schedule 191 revenue for the performance period from January 1, 2018, through December 31, 2018. The Company, on behalf of its customers, invested $11m in energy efficiency information, services, and incentives during the reporting period. The investment yielded approximately 55 gigawatt-hours (GWh) in first year savings[1] and approximately 9.0 megawatts (MW) of energy efficiency savings related capacity reductions.[2] Net benefits over the life of the individual measures are estimated at $5.1m.[3]

The portfolio was cost effective based on four of the five standard cost effectiveness tests for the reporting period. The ratepayer impact measure test was less than 1.0, indicating near-term upward pressure was placed on the price per kilowatt-hour (kWh) given a reduction in sales. The cost effectiveness of the Company's Washington energy efficiency program portfolio from various perspectives is provided in Table 1 below.

[1] Gross reported savings at the generation.
[2] See Energy Efficiency section for explanation on how the capacity contribution savings values are calculated.
[3] See Appendix 1 – Table 8 - 2018 Total Portfolio Cost Effectiveness Results (including NEEA and NEBs) – Total Resource Cost Test (PTRC) + Conservation Adder.

Table 1
Cost Effectiveness for the Portfolio[4]

Benefit/Cost Test	B/C Ratio with NEEA	B/C Ratio without NEEA
PacifiCorp Total Resource Cost Test (PTRC) plus 10%[5]	1.33	1.30
Total Resource Cost (TRC) Test[6]	1.22	1.19
Utility Cost Test (UCT)[7]	1.67	1.66
Participant Cost Test (PCT)[8]	4.22	3.92
Ratepayer Impact Cost Test (RIM)[9]	0.37	0.37

All cost effectiveness calculations assume a net-to-gross (NTG) of 1.0, consistent with the Northwest Power and Conservation Council's methodology. Portfolio level cost effectiveness includes portfolio costs such as the Process and Impact Evaluations, Class 2 demand-side management (DSM) Potentials Assessment, End Use Load Research and the DSM system database. Consistent with the Northwest Power and Conservation Council's methodology, the Company includes quantifiable non-energy benefits at the portfolio and residential level, as well as the *Home Energy Savings* and *Low Income Weatherization* program levels. *Low Income Weatherization* is not included in the portfolio or sector-level cost effectiveness analysis per WAC 480-109-100(10)(b). Appendix 1 provides 2018 cost effectiveness performance.

[4] Ratios include select quantifiable and directly attributable Non-Energy Impacts, but excludes costs as outlined in the Company's EM&V Framework (e.g. Class 1 & 3 of the potential study).
[5] The PTRC includes the 10 percent conservation benefit and risk adder in addition to quantifiable and directly attributable non-energy benefits. PTRC is consistent with the Northwest Power Council's cost effectiveness methodology and complies with the cost effectiveness definition (RCW 80.52.030(7)).
[6] The TRC compares the total cost of a supply side resource to the total cost of energy efficiency resources, including costs paid by the customer in excess of the program incentives. The test is used to determine if an energy efficiency program is cost effective from a total cost perspective.
[7] The UCT compares the total cost incurred by the utility to the benefits associated with displacing or deferring supply side resources.
[8] The PCT compares the portion of the resource paid directly by participants to the savings realized by the participants.
[9] The RIM examines the impact of energy efficiency expenditures on non-participating ratepayers overall. Unlike supply-side investments, energy efficiency programs reduce energy sales. Reduced energy sales can lower revenue requirements while putting upward pressure on rates as the remaining fixed costs are spread over fewer kilowatt-hours.

Compliance

An external conservation advisory group of stakeholders is required to be maintained and used by the Company to advise it about conservation issues including program designs, incentive levels, third party evaluations, program marketing, and pilots. WAC 480-109-110 provides the scope of issues for the advisory group. The Company refers to its conservation advisory group as the Washington DSM Advisory Group. Meetings are typically held at the Commission offices in Olympia and include a call-in number so stakeholders can participate remotely.

In compliance with I-937, the Company continuously reviews and updates, as appropriate, the conservation programs and portfolio to adapt to changing market conditions. Steps taken to adaptively manage the conservation programs during 2018 are included within program specific sections of this report. In the *Home Energy Savings* program, efforts were made to engage a local contractor to deliver duct sealing services, transition delivery of the new homes offer to NEEA's AXIS platform and develop a focused ductless heat pump offer for manufactured homes customers. In the *wattsmart Business* program, changes were made to improve program cost effectiveness by adding a maximum payback requirement, move lamp replacement incentive offer to mid-market and remove non-cost effective measures from the program.

Pilot projects are implemented when appropriate and are expected to be cost effective within the current or immediately subsequent biennium as long as the overall portfolio remains cost effective. The Company, after consultation with its DSM Advisory Group, offers initiatives or offers within two programs: *Home Energy Savings* and *wattsmart Business*. This focus is administratively efficient and uses existing program awareness—both important considerations in the Company's rural territory. To further leverage other efforts, the Company has linked its pilot efforts with regional work supported by NEEA whenever possible.

Regulatory Activities

During the 2018 reporting period, the Company filed a number of compliance and/or informational reports, updates, and requests with the Commission and Department of Commerce in support of Company DSM programs. The following is a list of those filings:

- January 17, 2018 – Compliance Filing – Order 01 in Docket UE-171092 to revise PacifiCorp's 2018-2019 Biennial Conservation Plan to revise the Biennial Conservation Target.
- February 27, 2018 – Updated 2017 Annual Conservation Plan and 2016 Washington Annual Report on Conservation Acquisition (Docket UE-152072).
- June 1, 2018 – Washington Annual Report on Conservation Acquisition for 2017 (Docket UE 152072. The report provides details on program results and activities.
- June 1, 2018 – 2016-2017 Biennial Conservation Report (Docket UE-152072) including replacement pages submitted July 6, 2018.
- June 1, 2018 - 2016-2017 Conservation Report to Department of Commerce (Docket UE-152072). The report detailed the Company's progress in meeting the targets established in RCW 19.285.040 (EIA requirements).
- June 1, 2018 – Schedule 191-System Benefits Charge adjustment, UE-180493, to decrease Schedule 191 by approximately $1.75 million (from $13.9m to $12.15m).
- November 15, 2018 – PacifiCorp's 2019 Annual Conservation Plan in Docket UE-171092.

Advisory Group Activities

At least four times per year, the Company seeks input regarding its energy efficiency programs from its Washington DSM Advisory Group. This group includes representatives from a variety of constituent organizations. In addition to the DSM Advisory Group meetings, in 2018, the Company participated in seven Statewide Advisory Group (SWAG) meetings. The work involved in these meetings was significant and focused on issues common to all utilities and their stakeholders. During the last half of the year, the Company, after informal discussions with some, but not all members of the DSM Advisory Group, elected to focus resources on the SWAG meetings instead of convening a fourth DSM Advisory Group meeting. The Company collaborated with its DSM Advisory Group throughout 2018 on the following matters:

June 25, 2018

- Review of 2017 performance and 2016-2017 biennial period
- Home Energy Reports evaluation results, delivery transition
- SBW Savings Verification Report
- Pilot updates
- Evaluation update

October 26, 2018

- Draft 2019 Annual Conservation Plan
- 2019 program changes preview

- Ductless Heat Pump wood smoke analysis update
- Production efficiency work plan
- Demand response funding
- Other topics – Yakama Nation Tribal Council resolution
- Other topics – Street lighting upgrades

December 21, 2018

- Communications and outreach plan review
- Home Energy Reports update
- Collection rate/balancing account analysis update
- Street lighting update

Statewide Advisory Group Meetings

In addition to the DSM Advisory Group meetings, the Company participated in seven Statewide Advisory Group (SWAG) meetings.

Topics discussed:

1. Develop a recommendation for the treatment of NEEA Savings in or out of the Energy Independence Act (EIA) target:

   "We accept PSE's calculation of its conservation target, but require the Companies to form a joint advisory group with all stakeholders, including the Department of Commerce, to engage in further discussions about whether NEEA savings should be included in conservation target calculations going forward."[10]

   "(…) those discussions should address whether to include the various subsets of NEEA savings, whether the EIA requires that NEEA savings be included in target calculations, consistency with target setting requirements for consumer-owned utilities, and the degree of control the Companies have over NEEA's execution of its programs."[11]

2. Discuss potential performance incentives:

   "(…) the Company suggests conducting a workshop in a statewide collaborative setting. This may be a useful exercise and Staff proposes a joint advisory group meeting halfway through the biennium to discuss this, as well as any other common issues."[12]

[10] Commission Order 01, Docket UE-171087 [P.7]
[11] Ibid. [P.7]
[12] Commission Staff Comments Regarding Electric Utility Conservation Plans; Dockets: UE-171087, UE-171091, UE- 171092 [P.10]. The utility cited is Puget Sound Energy. The Company was in agreement with the suggestion.

3. Identify areas of improvement to UTC cost-effectiveness methodology by investigating Resource Value Framework (RVF).

   "Staff strongly agrees that the NSPM should be followed in a collaborative process to identify areas of improvement to UTC cost-effectiveness methodology. Staff suggests that any such comprehensive process commence after the conclusion of the Commission's current integrated resource plan (IRP) rulemaking in Docket U-161024."[13]

Meeting dates:

- January 24, 2018
- March 30, 2018
- May 18, 2018
- June 29, 2018
- August 3, 2018
- September 7, 2018
- December 7, 2018

[13] Ibid. [P.10]

DSM Expenditures

System Benefits Charge Balancing Account Summary

DSM activities are funded through Schedule 191, the System Benefits Charge Adjustment collections. Expenditures are charged as incurred and collected through Schedule 191. The balancing account is the mechanism used for managing the revenue collected and expenses incurred in the provision of DSM resources. The balancing account activity for 2018 is outlined in Table 2. The end of year balance in the balancing account, on an accrual basis, was an over-collection of $1,839,248.

Table 2
System Benefit Charge Balancing Account Summary

Month	Deferred Expenditures	Revenue Collected	Accumulative Balance	Monthly Net Accrued Costs	Accrual Basis Accumulative Balance
Dec-17			$ (1,042,081)	$ 1,133,685	$ 91,604
Jan-18	$ 782,124	$ (1,402,608)	$ (1,662,565)	$ 36,425	$ (492,455)
Feb-18	$ 615,787	$ (1,181,694)	$ (2,228,472)	$ (210,505)	$ (1,268,867)
Mar-18	$ 1,175,327	$ (1,132,853)	$ (2,185,999)	$ (152,348)	$ (1,378,741)
Apr-18	$ 683,461	$ (959,094)	$ (2,461,631)	$ 247,621	$ (1,406,753)
May-18	$ 1,058,053	$ (987,167)	$ (2,390,745)	$ (419,742)	$ (1,755,608)
Jun-18	$ 746,766	$ (982,775)	$ (2,626,754)	$ 100,779	$ (1,890,838)
Jul-18	$ 721,561	$ (1,156,302)	$ (3,061,496)	$ 69,845	$ (2,255,735)
Aug-18	$ 1,097,712	$ (1,226,722)	$ (3,190,506)	$ (151,891)	$ (2,536,636)
Sep-18	$ 853,003	$ (1,020,475)	$ (3,357,978)	$ 147,075	$ (2,557,033)
Oct-18	$ 748,294	$ (895,194)	$ (3,504,877)	$ 146,870	$ (2,557,063)
Nov-18	$ 1,305,631	$ (941,637)	$ (3,140,884)	$ (196,886)	$ (2,389,956)
Dec-18	$ 1,463,386	$ (1,162,219)	$ (2,839,716)	$ 249,540	$ (1,839,248)
TOTAL	**$ 11,251,105**	**$ (13,048,740)**		**$ 1,000,469**	

Note: December 2018 Accrual was $1,000,469.

Column Explanations:

Deferred Expenditures: Monthly expenditures for all program activities posted in 2018, including funding for the Northwest Energy Efficiency Alliance.

Revenue Collected: Revenue collected through Schedule 191, System Benefits Charge Adjustment.

Accumulative Balance: A running total of account activities on a "cash" basis. A negative accumulative balance means cumulative revenue exceeds cumulative expenditures; positive accumulative balance means cumulative expenditures exceed cumulative revenue.

Monthly Net Accrued Costs: Two accrual entries are made each month for expenditures of energy efficiency programs. One estimates the incurred cost not yet processed, and the other reverses the estimate from the previous month. The amount shown here is the net of the two entries.

Accrual Basis Accumulative Balance: Current balance of account including accrued costs.

Planning Process

Integrated Resource Plan

The Company develops a biennial integrated resource plan (IRP) as a means of balancing cost, risk, uncertainty, supply reliability/deliverability and long-run public policy goals.[14] The plan presents a framework of future actions to ensure the Company continues to provide reliable, reasonably priced service to customers. Energy efficiency and peak management opportunities are incorporated into the IRP based on their availability, characteristics and costs.

PacifiCorp divides energy efficiency and peak management resources into four general classes:

- **Class 1 DSM—Resources from fully dispatchable or scheduled firm capacity product offerings/programs—**Class 1 DSM programs are those for which capacity savings occur as a result of active Company control or advanced scheduling. Once customers agree to participate in a Class 1 DSM program, the timing and persistence of the load reduction is involuntary on their part within the agreed upon limits and parameters of the program. Program examples include residential and small commercial central air conditioner load control programs that are dispatchable, and irrigation load management and interruptible or curtailment programs (which may be dispatchable or scheduled firm, depending on the particular program design or event noticing requirements).

- **Class 2 DSM—Resources from non-dispatchable, firm energy and capacity product offerings/programs—**Class 2 DSM programs are those for which sustainable energy and related capacity savings are achieved through facilitation of technological advancements in equipment, appliances, lighting and structures, or repeatable and predictable voluntary actions on a customer's part to manage the energy use at their facility or home. Class 2 DSM programs generally provide financial or service incentives to customers to improve the efficiency of existing or new customer-owned facilities through: (1) the installation of more efficient equipment, such as lighting, motors, air conditioners, or appliances; (2) upgrading building efficiency through improved insulation levels, windows, etc.; or (3) behavioral modifications, such as strategic energy management efforts at business facilities and home energy reports for residential customers. The savings endure (are considered firm) over the life of the improvement or customer action. Program examples include comprehensive commercial and industrial new and retrofit energy efficiency programs, comprehensive home improvement retrofit programs, strategic energy management and home energy reports.

- **Class 3 DSM—Resources from price responsive energy and capacity product offerings/programs—**Class 3 DSM programs seek to achieve short-duration (hour by hour) energy and capacity savings from actions taken by customers voluntarily, based on a financial incentive or signal. Program examples include time-of-use pricing plans, critical peak pricing plans, and inverted block tariff designs.. As a result of their voluntary nature,

[14] Information on the Company's integrated resource planning process can be found at the following address: http://www.pacificorp.com/es/irp.html.

participation tends to be low and savings are less predictable, making Class 3 DSM resources less suitable to incorporate into resource planning, at least until their size and customer behavior profile provide sufficient information for a reliable diversity result (predictable impact) for modeling and planning purposes. Savings typically only endure for the duration of the incentive offering and, in many cases, loads tend to be shifted rather than being avoided. The impacts of Class 3 DSM resources may not be explicitly considered in the resource planning process; however, they are captured naturally in long-term load growth patterns and forecasts.

- **Class 4 DSM—Non-incented behavioral-based savings achieved through broad energy education and communication efforts—**Class 4 DSM programs promote reductions in energy or capacity usage through broad-based energy education and communication efforts. The program objectives are to help customers better understand how to manage their energy usage through no-cost actions such as conservative thermostat settings and turning off appliances, equipment and lights when not in use. The programs are also used to increase customer awareness of additional actions they might take to save energy and the service and financial tools available to assist them. Class 4 DSM programs help foster an understanding and appreciation of why utilities seek customer participation in Classes 1, 2 and 3 DSM programs. Similar to Class 3 DSM resources, the impacts of Class 4 DSM programs may not be explicitly considered in the resource planning process; however, they are captured naturally in long-term load growth patterns and forecasts. Program examples include Company brochures with energy savings tips, customer newsletters focusing on energy efficiency, case studies of customer energy efficiency projects, and public education and awareness programs.

Class 1 and 2 DSM resources are included as resource options in the resource planning process. Class 3 and 4 DSM actions are not considered explicitly in the resource planning process, however, the impacts are captured naturally in long-term load growth patterns and forecasts.

As technical support for the IRP, the Company engages a third-party consultant to conduct a DSM Potential Assessment (Potential Assessment). [15] The study primarily seeks to develop reliable estimates of the magnitude, timing and cost of DSM resources likely available to PacifiCorp over the 20-year planning horizon of the IRP. The main focus of the Potential Assessment is on resources with sufficient reliability characteristics that are anticipated to be technically feasible and considered achievable during the IRP's 20-year planning horizon. By definition, the estimated achievable technical potential is the energy efficiency potential that may be achievable to acquire during the 20-year planning horizon prior to cost-effectiveness screening.

The achievable technical potential of Class 2 (energy efficiency) resources for Washington by sector is shown in Table 3. The 2017 Potential Assessment indicates that approximately nine

[15] PacifiCorp's Demand-side Resource Potential Assessments can be found at http://www.pacificorp.com/es/dsm.html.

percent of the achievable technical potential for the Company, excluding Oregon[16], is available within its Washington service area.[17]

Table 3
Washington Energy Efficiency Achievable Technical Potential by Sector[18]

Sector	Cumulative GWh in 2036	Percent of Baseline Sales
Residential	347	20%
Commercial	403	22%
Industrial	73	13%
Irrigation	14	8%
Street Lighting	5	41%

Demand-side resources vary in their reliability, load reduction and persistence over time. Based on the significant number of measures and resource options reviewed and evaluated in the Potential Assessment, it is impractical to incorporate each as a stand-alone resource in the IRP. To address this issue, Class 2 DSM measures and Class 1 DSM programs are bundled by cost for modeling against competing supply-side resource options which reduces the number of discrete resource options the IRP must consider to a more manageable number.

Cost Effectiveness

The Company evaluates program implementation cost effectiveness (both prospectively and retrospectively) under a variety of tests to identify the relative impact and/or value (*e.g.,* near-term rate impact, program value to participants, etc.) to customers and the Company. Program cost effectiveness is performed using a Company specific modeling tool, created by a third party consultant. The tool is designed to incorporate PacifiCorp data and values such as avoided costs, and assesses the costs and benefits of DSM resource programs from different stakeholder perspectives, including participants and non-participants, based on four tests described in the Standard Practice Manual (TRC, UCT, PCT and RIM) as well as an additional fifth test, PTRC. Washington utilizes the PTRC as the primary cost effectiveness test.

As specified in WAC 480-109-100 (8) "A utility's conservation portfolio must pass a cost effectiveness test consistent with that used in the Northwest Conservation and Electric Power Plan. A utility must evaluate conservation using the cost effectiveness test consistent with those used by the council and as required by the commission except as provided by WAC 480-109-100 (10).

The Northwest Power and Conservation Council's Seventh Power Plan provides information on cost effectiveness on page G-11 of Appendix G. "The Council uses the total resource net levelized cost (TRC net levelized cost) for its analysis of the cost of the conservation measures, which is

[16] Oregon energy efficiency potentials assessments are performed by the Energy Trust of Oregon.
[17] http://www.pacificorp.com/es/dsm/dpssm.html Volume 1, Table 2-1, PacifiCorp Demand-Side Resource Potential Assessment for 2017-2036.
[18] Volume 2, Tables 4-4, 4-6, 4-8, 4-10, 4-11, PacifiCorp Demand-Side Resource Potential Assessment for 2017-2036.

similar to the Societal Cost Test outlined in the National Action Plan for Energy Efficiency[19] and the California Standard Practice Manual."

The National Energy Efficiency Screening project published the National Standard Practice Manual (NSPM)[20] to provide a comprehensive framework for assessing the cost-effectiveness of energy efficiency resources. The NSPM provides guidance that incorporates lessons learned over the past 20 years, responds to current needs, and addresses and takes into account the relevant policies and goals of each jurisdiction undertaking efficiency investments. The NSPM presents an objective and neutral Resource Value Framework that can be used to define a jurisdiction's *primary* cost-effectiveness test, which is referred to as a Resource Value Test.

The PacifiCorp Total Resource Cost (PTRC) test results in the Navigant analysis include the 10 percent Conservation Adder and quantifiable non-energy benefits and is analogous to the Societal Cost Test (SCT) referenced by the Council.

In combination with WAC rules and in approving Pacific Power's 2018-2019 Biennial Conservation Plan,[21] the WUTC has established cost-effectiveness tests for Pacific Power to use in planning for and pursuing conservation resources. Per the definition above from the NSPM, the Total Resource Cost test, as modified by the Northwest Power and Conservation Council, *is* the current RVT for Washington investor-owned utilities.

During 2018, the Statewide Advisory Group considered further areas of improvement to Commission approved cost-effectiveness methodology by investigating updates based on the Resource Value Framework (RVF). The group reviewed current practices and compiled methodologies in order to outline areas of consistency. Commission Staff compiled a list of applicable policy goals based on their review of Washington statutes implemented by the UTC. Utility system costs and benefits were reviewed. The group also discussed non-utility costs and benefits and worked collaboratively to determine which additional non-utility system costs and benefits to potentially include in the RVT. At this time a proposal for RVT is on-hold pending the completion of the IRP Rulemaking in docket U-161024 and the outcome of the current legislative session.

[19] https://www.epa.gov/sites/production/files/2015-08/documents/cost-effectiveness.pdf.
[20] https://nationalefficiencyscreening.org/wp-content/uploads/2017/05/NSPM_May-2017_final.pdf.
[21] Docket UE-171092, Order 01 Attachment A (8) (January 12, 2018).

Energy Efficiency Programs

The Company offered energy efficiency programs to all major customer sectors: residential, commercial, industrial, and agricultural. The Company's energy efficiency portfolio included four programs: *Home Energy Savings,* Schedule 118*; Home Energy Reports; Low Income Weatherization,* Schedule 114*;* and *Non-Residential Energy Efficiency* (*watt*smart Business)*,* Schedule 140. The Company also helps fund NEEA. In addition to the energy efficiency programs, the Company, on behalf of customers, invested in outreach and education for the purpose of promoting the efficient use of electricity and improving program performance. Results for 2018 are provided in Table 4.

Table 4
Washington Results January 1, 2018 – December 31, 2018

Program	kWh/Yr Savings (at site)	kWh/Yr Savings (at generator)	Systems Benefits Charge Expenditures
Low Income Weatherization	182,237	199,859	$ 929,323
Home Energy Savings	6,489,387	7,116,910	$ 2,054,828
Home Energy Reports	9,816,840	10,766,128	$ 334,578
Total Residential Programs	**16,488,464**	**18,082,898**	**$ 3,318,729**
wattsmart Business Agricultural	388,369	425,924	$ 92,248
wattsmart Business Commercial	23,721,991	25,982,934	$ 4,512,840
wattsmart Business Industrial	7,116,153	7,696,902	$ 1,477,305
Total Business Programs	**31,226,512**	**34,105,760**	**$ 6,082,393**
Northwest Energy Efficiency Alliance	2,935,149	3,216,604	$ 859,487
Total	**50,650,125**	**55,405,262**	**$ 10,260,608**
		Process & Impact Evaluation	$ 318,975
		Class 2 Potential Study	$ 102,029
		System Support	$ 26,943
		End Use Load Research	$ 35,082
		School Energy Education	$ 63,679
		Outreach and Communication	$ 224,854
		Total Portfolio Level Expenditures	**$ 771,563**
		Total System Benefits Charge expenditures	**$ 11,032,171**

In 2018, the Company delivered preliminary results of 55,405 MWh in first year energy savings at generation against the 2018 Business Plan, while operating within approximately 99% of forecasted expenditures. Changes in the variance between forecasted and actuals are detailed below.

Key Changes in the Savings Forecast

- Home Energy Savings results were 20% less than forecast. Actual lighting savings were less than forecasted and it continues to decline as fewer replacement lamps are sold and the lamps deliver lower savings. This trend is part of the continued shift to long lasting LED's and an increase in efficient equipment in the current practice baseline used to measure savings. Non-lighting activity was higher than forecasted, primarily as the result of increased ductless heat pump installations and manufactured home duct sealing. Energy savings kits have also declined.

- Home Energy Reports: 2018 savings are approximately 13% higher than those included in the November 2018 Business Plan. These higher savings are based on current information provided by Bidgely, the program implementer. Savings in 2018 reflect actions taken by customers already enrolled in the program at the end of 2017 during two periods; between January through August when customers did not receive reports, and between September and December when customers received the new report which included end use disaggregation. The actual 2018 savings are higher than the 2018 forecast provided in the 2019 Annual Conservation Plan. All reported savings for the 2018 period is based on analysis of billing data by Bidgely.

- *wattsmart* Business: 2018 savings were higher than forecasted and was primarily due to increased lighting savings as business customers increasingly upgrade to LEDs as costs decline.

- NEEA: Revised savings estimates from NEEA (using the same methodology and baselines used to establish the original forecast) indicate that savings are down by approximately 8%. The heat pump water heaters, Certified Refrigeration Energy Specialist, and Commissioning initiatives generated the most significant variances.

Key Changes in the Expenditure Forecast

- Low Income Weatherization: Additional costs were incurred with a recently added community action agency beginning to complete homes in Pacific Power's territory. In addition, a larger number of projects were fully funded by the Company.

- Home Energy Savings: The expenditure is three percent lower than the original forecast which is materially less than the 20% reduction in the energy savings. Incentive costs increased as non-lighting measures like heat pumps and duct sealing replace lower cost measures such as lighting. Delivery costs increased, reflecting the complexity required to deliver the increasing share of non-lighting measures.

- Home Energy Reports: Delivery costs were greater than the forecast in the 2018 Business plan which were based on proposal information available in late 2017.

- wattsmart Business: Actual expenditures were lower in 2018 compared to the 2018 Business Plan. One driver of the reduction was lower program incentive payments due to customer projects being completed with lower costs than originally estimated. Additionally, the program has multiple delivery channels that vary in terms of savings acquisition costs. In the updated forecast, savings from lower cost delivery channels (such as midstream lighting) offset some savings from higher cost delivery channels.

- Program evaluation (and savings verification): Costs are lower based on timing of evaluation activities and recent re-procurement of key program evaluation activities for the biennial period.

Consistent with requirements under WAC 480-109-120 (3)(b)(ii) and (iii), Table 5 provides a comparison of the Company's 2018 Business Plan filed on November 1, 2017, to actual 2018 program performance.

Table 5
Washington 2018 Annual Conservation Plan compared to Actual

	2018 PacifiCorp Washington Annual Conservation Plan			2018 PacifiCorp Washington DSM Actual		
Program	**kWh/Yr Savings (at site)**	**kWh/Yr Savings (at generation)**	**Estimated Systems Benefit Expenditures**	**kWh/Yr Savings (at site)**	**kWh/Yr Savings (at generation)**	**Systems Benefits Charge Expenditures**
Low Income Weatherization	152,592	167,348	$ 709,000	182,237	199,859	$ 929,323
Home Energy Savings	8,098,314	8,881,421	$ 2,118,789	6,489,387	7,116,910	$ 2,054,828
Home Energy Reports	8,700,000	9,541,290	$ 226,390	9,816,840	10,766,128	$ 334,578
Total Residential Programs	**16,950,906**	**18,590,059**	**3,054,179**	**16,488,464**	**18,082,898**	**3,318,729**
wattsmart Business Agricultural	756,049	829,159	$ 183,185	388,369	425,924	$ 92,248
wattsmart Business Commercial	12,720,550	13,932,946	$ 3,200,028	23,721,991	25,982,934	$ 4,512,840
wattsmart Business Industrial	11,734,582	12,692,241	$ 2,762,998	7,116,153	7,696,902	$ 1,477,305
Total Business Programs	**25,211,181**	**27,454,346**	**6,146,211**	**31,226,512**	**34,105,760**	**6,082,393**
Northwest Energy Efficiency Alliance	**3,196,627**	**3,501,840**	**$ 879,488**	**2,935,149**	**3,216,604**	**$ 859,487**
TOTAL	**45,358,714**	**49,546,245**	**$ 10,079,878**	**50,650,125**	**55,405,262**	**$ 10,260,608**
Portfolio Evaluation			$ 446,895			$ 318,975
Portfolio Potential Study			$ 140,540			$ 102,029
Portfolio Support Summary			$ 32,785			$ 26,943
School Energy Education			$ 60,000			$ 63,679
Outreach and Communication			$ 250,000			$ 224,854
End Use Load Research			$ 41,762			$ 35,082
Total System Benefits Charge Expenditures			**$ 11,051,860**			**$ 11,032,171**

Estimated Peak Contributions

The Company estimates its capacity reduction during PacifiCorp's system peak period from the 2018 energy efficiency portfolio. An energy-to-capacity conversion factor, developed from Class 2 DSM selections in the 2017 IRP, is used to translate 2018 energy savings to estimated demand reduction during the system peak. The use of this factor in the MW calculation assumes that the energy efficiency resources acquired through the Company's programs have the same average load profile as those energy efficiency resources selected in the 2017 IRP.

Table 6
Estimated Peak Contribution

Description	Value
First year Energy Efficiency program MWh savings acquired during 2018 (@ Generation)	55,405
Conversion factor: Coincident MW/MWh	0.000161516
Estimated coincident peak MW contribution of 2018 Energy Efficiency acquisitions	8.95

Direct Benefits to Customers

Estimates of direct benefits to customers delivered from 2018 expenditures are provided in Table 7. This additional metric to assess program impacts is consistent with conversations between Commission Staff and the Company that occurred during the preparation of the 2018 annual conservation plan.

Table 7
2018 Direct Benefits to Customers

Prorgam or Initiative	Expenditures	Direct Benefit to Customers	Direct Benefit to Customers
Low Income Weatherization	$ 929,323	$ 789,214	85%
Home Energy Savings	$ 2,054,828	$ 1,151,709	56%
Home Energy Reports	$ 334,578		
Total Residential Programs	**$ 3,318,729**		
wattsmart Business Agricultural	$ 92,248		
wattsmart Business Commercial	$ 4,512,840		
wattsmart Business Industrial	$ 1,477,305		
Total Business Programs	**$ 6,082,393**	$ 3,783,229	62%
Northwest Energy Efficiency Alliance	$ 859,487	$ 586,674	68%
TOTAL	**$ 10,260,608**		
Portfolio Evaluation	$ 318,975		
Portfolio Potential Study	$ 102,029		
Portfolio Support Summary	$ 26,943		
School Energy Education	$ 63,679		
Outreach and Communication	$ 224,854		
End Use Load Research	$ 35,082		
Total System Benefits Charge Expenditures	**$ 11,032,171**	**$ 6,310,825**	**57%**

Notes:

Low Income Weatherization: In 2018 payments to community action agencies for measure installation were classified as incentives. The value can be found in the cost effectiveness tables included in Appendix 1.

Home Energy Savings: Customer incentives, upstream, mid-stream and mail by request buy downs are included in the direct benefit to customer calculation. This information is provided in the incentives column for the Home Energy Savings program in Appendix 1.

wattsmart Business: Customer incentives and expenditures for customer site specific energy engineering and inspections included in the direct benefit to customer calculation. Both amounts are provided in Appendix 1.

NEEA: Company subtracted $21,382 in internal management costs and then applied the 70% estimate provided by staff to NEEA funding to calculate the direct benefit to customers.

Pilot Projects

The Company offers pilot projects to residential and nonresidential sectors. This section briefly describes the pilots underway in the biennial period and key activities that occurred in 2018.

On-Bill Financing for residential customers

- **Purpose**: Reduce upfront cost barrier to participation in residential energy efficiency programs by offering on-bill financing for 2018-2019. The residential offer complements the third party financing already in place for our business customers.
- **Costs**: Start-up costs of $30,000 will be paid in 2019 and included as a residential program expenses and recovered through the tariff rider. Pacific Power internal on-going loan administration costs were not assessed in 2018. When internal costs are assessed, they will be included as a program expense and recovered through the tariff rider.
- **Size**: Expected to be 150-200 loans for the 2018-2019 period.
- **Implementation**: Build upon experience from Oregon using a specialized firm, Craft3, to operate as funder and loan administrator for Home Energy Savings program participants. Similar to Oregon, Pacific Power will provide on-bill servicing functions. Financing will be available for the net (after incentives) costs of equipment eligible for incentives through HES program. There will not be a utility service disconnect option for collection or security purposes. Partial payments will be applied to the utility bill first giving Pacific Power payment priority.
- **Marketing**: The offer will be marketed primarily through contractors and the Home Energy System program administrator. Craft3 will identify and train contractors. Marketing and screening will be put in place to help insure customers eligible for low income services are directed to the community action agencies instead of participating in the loan offer. Craft3 is exploring whether an offer for customers who own a manufactured home, but rent space from a manufactured home park owner could be designed.
- **2018 activity**: Group and individual training conducted with trade allies and Sustainable Living Center in Walla Walla. Training included information on services for income qualified customers. There were 81 applications received; 59 approved, 51 active loans (funded and billing), 13 applications declined and 6 applications withdrawn. Exploration

of an offer for owned manufactured homes on rented space is on-going and progress will provided in a future 2019 DSM Advisory Group meeting.

Heat pump dryers

- **Purpose:** Increase stocking, sales and incentive applications for heat pump dryers within Pacific Power's territory. Equipment eligibility aligns with NEEA's Qualified Products List (QPL).
- **Costs:** Additional administrative budget of approximately $6,000. Included in Home Energy Savings program delivery costs for the biennial period.
- **Size:** Twelve to 24 units.
- **Implementation:** Home Energy Savings program team in combination with NEEA. The initiative focuses on smaller retailers with faster decision processes and is a continuation of the work started in 2017. Continue the work in partnership with NEEA to secure preferred pricing and expedited shipping.
- **Marketing:** Continue sales training and enhanced outreach to smaller independent retailers. Provide a sales performance incentive fund (SPIF) and pay participating sales associates $50 for every qualifying model sold.
- **2018 report**: loss of NEEA mid-market incentive and loss of retailer interest have materially affected this pilot. Field staff increased outreach to selected retailers who ultimately did not stock any units because of the higher cost and perceived lack of consumer interest. There were no customer incentive requests for this measure in 2018. Increasing the incentive to $600 as part of 2019 program changes is intended to be simple and address the stated objection (from the retailers) to higher costs in a cost sensitive market.

Manufactured Homes Targeted Delivery

- **Purpose:** Increase installation of energy efficiency measures within existing manufactured homes.
- **Costs:** To be determined from Request for Proposal (RFP) responses and cost effectiveness analysis.
- **Size:** To be determined from RFP responses and cost effectiveness analysis.
- **Implementation:** An RFP process was issued within Home Energy Savings program. Proposals were evaluated for cost effectiveness inside proposed (2018-2019) Home Energy Savings program.
- **Marketing:** Third party(s) if selected through RFP process, program administrator, installing contractors and park owners.
- **2018 activity:** Proposal evaluation did not reveal any compelling opportunities beyond what is currently available in the current program. Continued focus on duct sealing. Program field staff engaged with and encouraged HVAC trade allies that offered promotional pricing for ductless heat pump installations in manufactured homes.

Residential Deep Energy Retrofit

- **Purpose:** Increase comprehensive projects (multiple energy using systems) in existing residential homes.
- **Costs:** Up to $20,000 for contractor engagement, project pre-qualification, pre/post modeling and high touch engagement during project including verification/close-out. Included in HES program delivery budgets for the biennial period.
- **Size:** One to four completed projects.
- **Implementation:** Establish a baseline model based on prior metered utility consumption and target improvements that will save 40-60 percent of total usage which translates into approximately 8,800 kWh delivered primarily from heating, cooling and water heating improvements. Add a customer incentive of up to $5,000 to the existing Home Energy Savings program.
- **Marketing:** Work with general contractor to identify existing homes where customers are prepared to make substantial improvements to the systems using or affecting the majority of the energy consumption in the home. The customer incentive is designed to offset a portion of the project costs which are estimated to be $15,000 to $30,000 depending on the size and site conditions of the home.
- **2018 report:** Two serious projects. Make-up air for combustion appliances, especially fireplaces/wood stoves remains challenging. The in process project required some make-up air ducting for an otherwise efficient wood stove that remains as supplemental heat source. The other project is on hold. This customer is acting as his own general contractor and continues to revise the project scope. With the scope in flux, pre-construction energy modeling or support for sub-contractors is not practical. While program support staff remains in contact with the customer, the project is on hold until the scope is refined and finalized.

Geo-Targeted Energy Efficiency

- **Purpose:** Focus on increasing participation in specific geographical area(s) where additional value, such as possible infrastructure investments has been identified. This is a continuation of work begun in 2017.
- **Costs:** Additional administrative costs of approximately $16,000 included in the program delivery budgets for the biennial period.
- **Size:** Approximately 5,800 customers.
- **Implementation:** The effort will focus on the Yakima area and installed projects will be tracked. A kWh to kilowatt (kW) calculator using existing load shapes is planned. This calculator would allow the Company's field engineering team to start looking for hourly capacity impacts of the installed energy efficiency projects.
- **Marketing:** Increase frequency of existing program tactics including direct mail, trade ally engagement and personal selling.
- **2018 activity**:
    - A kWh to kW calculator has been completed and was used to assess 2018 impacts.
    - The 2018 outreach efforts for business customers used utility, customer and third party data analysis to help focus outreach activities. Outreach included "boots on the ground", direct mail and email and an online form for small businesses to sign up for a no cost assessment.

- In 2018, twenty five business projects totaling 2,009,391 kWh in annual savings were completed in the geo-targeted areas with additional projects identified for potential installation in future years. 2018 projects are estimated to provide summer capacity reductions of 263 kW. Winter capacity reductions for these projects are estimated at 193 kW.

- Outreach also targeted residential customers with direct mail and program administrator field staff outreach to multi-family owners. In 2018, 219 projects totaling 129,158 kWh in annual savings were completed. 2018 projects are estimated to provide summer capacity reductions of 17 kW. Winter capacity reductions for these projects are estimated at 32 kW.

Non-Residential Lighting Controls

- **Purpose:** Increase installation of lighting controls as part of business customer lighting retrofit projects.
- **Costs:** Included in program delivery budgets
- **Size:** Up to 15 projects
- **Implementation:** Leverage the Northwest Energy Efficiency Alliance's Luminaire Level Lighting Control (LLLC) initiative including vendor training support. January 2018 program changes adjust incentive levels so that lighting combined with controls provides the highest incentive for lighting projects.
- **Marketing:** NXT Level training and good/better/best communications, continuing and improving lighting controls training for vendors, providing outreach coordinator feedback on lighting controls to approved wattsmart Business Vendors on projects.
- **2018 activity:**
  - **Contractor/Vendor Training:**
    - On March 13 and 14, 2018, Pacific Power hosted the annual vendor trainings in Walla Walla and Yakima. There was a hands-on lighting controls session focusing on the Eaton Wavelinx advanced network lighting control product. Vendors were able to interact with the product and use the app to program and commission the controls. Between the two locations, 57 vendors attended.
    - On June 7, 2018 the DLC hosted a hands-on Advanced Network Lighting Controls course in Kennewick. There were nine Pacific Power trade allies representing seven wattsmart Business Vendors in attendance.
    - Pacific Power committed to co-sponsor and promote a hands-on Advanced Network Lighting Control training to review different manufacturer products on June 5, 2019 in Kennewick. This effort will be in collaboration with NEEA's LLLC Initiative, the Seattle Lighting Design Lab and BPA.
  - **Contractor Incentive**: In 2018, Pacific Power developed a limited time $/fixture Contractor Incentive for Luminaire Level Lighting Control that will be promoted and offered in 2019. Contractors face up-front costs of time and money to obtain manufacturer certification(s) to install LLLC products. A contractor incentive (focused on the vendor's first projects only) along with the vendor support provided by the program could boost LLLC participation.
  - **Savings results:** Approximately 69 completed lighting projects with savings from controls totaling approximately 1.1 million kWh/year. There were no projects

including advanced networked lighting controls or Luminaire Level Lighting Controls.

Manufactured Homes

To support regional efforts in providing information about underserved markets or hard-to-reach segments, the Company has included information about its manufactured homes participation. The information provided below shows its historical manufactured home customers who have participated in the Company's *Low Income Weatherization* and *Home Energy Savings* programs.

Table 8
Participation by Manufactured Home Residents

	2014	2015	2016	2017	2018
Low Income Weatherization homes	40	44	49	45	41
Home Energy Savings participants	256	1,028	403	954	872
Appliances	34	10	10	4	8
Duct Sealing	197	187	12	795	492
Heat Pump	24	26	18	79	90
Heat Pump Water Heater	4	-	1	3	-
Kits	-	817	362	73	282
Lighting	12	17	1		
Lighting buy down	72,646	86,318	54,508	50,953	33,936
Weatherization	30	8	3	1	4

Two contractors were hired by the program administrator to conduct outreach and seal ducts at no cost to manufactured home residents. Home Energy Experts was selected or the Yakima area and Smith Insulation was selected for the Walla Walla area.

Over 1,700 mailers were sent to customers to generate interest and secure appointments, and 486 homes received the direct install offering (477 from Home Energy Experts and 9 from Smith Insulation). Residents in another 14 manufactured homes had their ducts sealed using a contractor they selected and paid.

Heat pump installations in manufactured homes in 2018 increased compared to the prior year. The number of contractors actively engaged in installations has increased to 15. The manufactured home installations include upgrades to more efficient equipment and converting electric furnaces to heat pumps.

Information on all participants except the lighting buy down was compiled by matching customer identifiers (concatenated service location and agreement numbers) of participants with the same information in residential customer accounts bearing the manufactured home dwelling code flag.

Information about the portion of lighting buy down participants who reside in manufactured homes follows the same calculation used in prior years and uses information from the general population survey from the latest evaluation.[22]

The Company also analyzed manufactured home customers who are also participants in the *Home Energy Reports* program. Table 9 below provides information on current 2018 behavioral program (*Home Energy Reports*) participation by manufactured home residents.

Table 9
Home Energy Reports Participation by Manufactured Home Residents

	Recipient	Control	Total
Legacy	1,668	1,607	3,275
Expansion	2,889	921	3,810
Refill	238	258	496

Information on the behavioral program participation was compiled in 2018 in the same manner (matching customer account number information) as described above for energy efficiency program participation.

In addition, the Advisory Group agreed that income data used to help categorize participants would also be useful for the regional efforts described above. Further, providing income information is not a program participation requirement and that available third party data would be used. Accordingly, this information is included in Table 10. The information in Table 10 uses zip code information for all *Home Energy Savings* program participants and those participants residing in manufactured homes as well as income information from the US Census Bureau. This comparison does not illustrate a strong correlation between lower income levels and manufactured home participation. Alternately stated, it appears program participation by manufactured home residents is similar to overall program participation by zip code/income level. Similar information was included in last year's report and 2018 was added for this report.

[22] In 2018, manufactured home customers purchased approximately fourteen percent of the units receiving incentives in the buy down channel. This is the same percentage as used in prior years. The methodology is included in this footnote. Lighting buy down information was compiled from survey information from the 2015-2016 Home Energy Savings evaluation. Customer prior year purchases for both CFLs and LEDs were added to arrive at a per-home purchase that was assumed to apply equally to all manufactured homes (approximately 15,300) and calculate an estimate of total purchases for manufactured homes. Manufactured home customers purchased approximately fourteen percent of the units receiving incentives in the buy down channel.

Table 10
Manufactured Home Income Data

ZIP Code	Median Household Income - US Census Bureau American Community Survey	Project Count - All DSM Projects 2014 - 2018	% Total DSM Projects	Project Count - MANUFACTURED Projects 2014 - 2018	% Total Manufactured Projects
98948	$41,169	281	1%	26	1%
98932	$44,783	275	1%	17	0%
98944	$46,366	1,118	5%	139	3%
98947	$46,997	228	1%	39	1%
98901	$47,816	1,773	8%	308	8%
98951	$48,503	527	2%	61	2%
98930	$48,523	897	4%	210	5%
98902	$49,023	3,143	14%	205	5%
98603	$51,552	2	0%	0	0%
98935	$51,768	133	1%	19	0%
98952	$52,747	34	0%	9	0%
98938	$53,951	81	0%	13	0%
99347	$55,066	223	1%	25	1%
99343	$55,279	0	0%	0	0%
98933	$56,091	43	0%	11	0%
99328	$59,055	450	2%	48	1%
98953	$59,580	470	2%	79	2%
98923	$60,717	82	0%	14	0%
99350	$61,829	6	0%	2	0%
98903	$61,831	1,551	7%	545	13%
99348	$62,510	161	1%	36	1%
98937	$62,580	496	2%	68	2%
99301	$63,663	0	0%	0	0%
98936	$66,016	448	2%	131	3%
98942	$67,363	1,450	6%	214	5%
99324	$69,535	1,005	4%	360	9%
99362	$70,035	3,896	17%	519	13%
99361	$72,569	255	1%	88	2%
98908	$73,702	3,267	14%	471	12%
99360	$77,753	119	1%	35	1%
99323	$80,315	441	2%	313	8%
98921	data not available	34	0%	9	0%
99329	data not available	20	0%	9	0%
98950	data not available	3	0%	0	0%
98939	data not available	11	0%	1	0%

ZIP Code	Median Household Income - US Census Bureau American Community Survey	Project Count - All DSM Projects 2014 - 2018	% Total DSM Projects	Project Count - MANUFACTURED Projects 2014 - 2018	% Total Manufactured Projects
99363	data not available	20	0%	16	0%
98920	data not available	1	0%	1	0%

Residential Programs

The residential energy efficiency portfolio is comprised of four programs: *Home Energy Savings, Home Energy Reports, Low Income Weatherization,* and *NEEA*. As shown in Table 11, the residential portfolio was cost effective based on four of the five standard cost effectiveness tests for the reporting period. The ratepayer impact test was less than 1.0 indicating that there is near term upward pressure placed on the price per kilowatt-hour given a reduction in sales.

Table 11
Cost Effectiveness for Residential Portfolio[23]

Benefit/Cost Test	B/C Ratio with NEEA	B/C Ratio without NEEA
PTRC	1.43	1.39
TRC	1.34	1.31
UCT	1.23	1.16
PCT	4.55	3.93
RIM	0.32	0.31

Individual program performance, program management and program infrastructure is provided on the following pages.

[23] Excludes *Low Income Weatherization* and includes select quantifiable and directly attributable non-energy benefits.

Home Energy Savings

The *Home Energy Savings* program provides access to and incentives for more efficient products and services installed or received by customers residing in newly constructed homes, existing homes, multi-family housing units or manufactured homes. The program was cost effective as shown in Table 12.

Table 12
Cost Effectiveness for Home Energy Savings[24]

Benefit/Cost Test	B/C Ratio
PTRC	1.34
TRC	1.27
UCT	1.07
PCT	3.26
RIM	0.31

Program participation by measure category is provided in Table 13.

Table 13
Eligible Program Measures (Units)

Measure Category	Total kWh/Yr Savings @ Site	Total Incentive	Total Quantity
Appliances	15,244	$5,400	108
Building Shell	52,629	$38,135	147,551 (sq ft)
Electronics	630	$130	3
Energy Kits	1,085,949	$33,570	2,905
HVAC	1,949,011	$716,104	1,037
Lighting	3,220,974	$280,299	242,401
Water Heating	54,358	$20,400	33
Whole Home	110,592	$57,672	33
Total	**6,489,387**	**$1,151,709**	

Program Management

The Company program manager who is responsible for the program in Washington is also responsible for the *Home Energy Savings* program in California and *Home Energy Reports* program in Washington. For each program and in each state the program manager is responsible for the cost effectiveness of the program, contracting with the program administrator monitoring program performance and compliance, and recommending changes in measures, incentives, or delivery requirements as set out in the tariff and/or posted on the Company's website.

[24] Includes quantifiable and directly attributable non-energy impacts.

Program Administration

The *Home Energy Savings* program is administered by CLEAResult. CLEAResult is responsible for the following:

- Retailer and trade ally engagement – CLEAResult identifies, recruits, supports, and assists retailers to increase the sale of energy efficient lighting, appliances and electronics. CLEAResult enters into promotion agreements with each lighting manufacturer and retailer for the promotion of discounted lighting equipment. The agreements include specific retail locations, lighting products receiving incentives and not-to-exceed annual budgets. Weatherization and HVAC trade allies engaged with the program are provided with program materials, training, and regular updates.

- Inspections – CLEAResult recruits and hires inspectors to verify on an on-going basis the installation of measures. A summary of the inspection process is in Appendix 2.

- Incentive processing and call-center operations – CLEAResult receives all requests for incentives, determines whether the applications are completed, works directly with customers when information is incorrect or missing from the application and processes the application for payment.

- Program specific customer communication and outreach – A summary of the communication and outreach is outlined in the Communication, Outreach and Education section.

In 2018, the Company issued a Request for Proposal to re-procure services for *Home Energy Savings* program in California and Washington. The Request for Proposal also included an outsourced portion of *watts*mart Business currently performed by Nexant and Cascade to allow for potential economies of a single contractor delivering for both programs. Selection and contracting will be complete in 2019.

Program Changes

Planned changes went into effect January 1, 2018 as part of the adaptive management strategy for aligning the Home Energy Savings program during the 2018-2019 biennium with updated planning assumptions, market conditions and pilot expectations. Namely:

- Updated unit energy savings and equipment eligibility to align with Regional Technical Forum (RTF) information available as of July 31, 2017.

- Added mid/upstream as an available delivery method for applicable appliance, HVAC, weatherization, and plumbing measures to enhance the Program's ability to align with other programs.

- Added options for who may receive an incentive. Provide added flexibility to allocate incentives to either the customer or a clearly specified market partner (e.g. dealer,

manufacturer, builder, rater and/or trade ally) and react to required implementation changes in a timely manner. Incentives may be split between the customer and a measure-specific market partner. The sum of the incentive payments per unit will clearly be displayed on the Program website with applicable dates. The customer portion of the incentive may be changed by the Company using the program change process.

- Added specific offerings for manufactured homes and multifamily properties with housing type-specific UES values. Specific offers improve marketing and savings reporting accuracy and will further improve targeted delivery in the manufactured home sector.

- Aligned new home offer with the most recent NEEA and Bonneville Power Administration offers for new construction and available savings beyond the latest version of the Washington State Energy Code. Focus the market on whole home design and performance and away from prescriptive measures, some of which are now required by code.

- Added deep energy retrofit offer to increase comprehensive residential weatherization project activity and scope of individual projects. Establish a baseline model based on prior metered utility consumption and target improvements of at least 40% of total usage.

- Added on-bill financing for incentive-eligible equipment or materials installed in existing homes. The offer utilizes Craft3, a third party vendor, for loan funding and servicing functions. Craft3 will work closely with the program administrator to inform trade allies and customers of the offer. Financing will be available for the net (after incentives deducted) costs of equipment eligible for incentives through the Program. Marketing and screening will be put in place to help ensure customers eligible for low income weatherization services are directed to the community action agencies instead of participating in this loan offer.

Adaptive Management

The Company made substantial changes through an adaptive management approach which included the following 2018 activities:

- In preparation for the manufactured homes duct sealing work, numerous efforts were made to engage with local contractors and recruit them to perform these services. The Program trained local trade ally, Smith Insulation, on participating in the manufactured homes direct install program in hopes to have more of a local presence with this offering in the Walla Walla area. Unfortunately, Smith was unable to complete the 50 units originally slated for them due to lower than expected demand in Walla Walla. Several local parks have had extensive work completed in past years both with our direct install effort as well as work completed through the low-income weatherization program administered by Blue Mountain Action Council. Smith Insulation also experienced a labor shortage along with a backlog of weatherization projects that resulted in an inability to complete as many units as they would have liked. The Program supported Smith Insulation with their efforts, leaving program fliers with the management office of parks in the Walla Walla area and sending out several batches of customer mailers. In total, Smith Insulation completed 8 units during the 2018 reporting year.

- The Program began implementing New Home Whole Home Performance Path application submittals through the NEEA's AXIS platform and the Program spent time this year improving relationships with both contractors and approved Raters.

- In an effort to continue promoting work in manufactured homes, the Program partnered with distributor, Thermal Supply, and Craft3 to develop a campaign promoting on-bill financing for Heat Pumps and Ductless Heat Pumps in manufactured homes for customers who own their own land.

Infrastructure

Multiple retailers and trade allies help deliver energy efficient products on behalf of the Company. The list of participating and non-participating retailers and trade allies by delivery channel and measure is provided in Appendix 3.

Evaluation

In 2018, ADM, the third party evaluator hired by the Company, began collecting data to support a process and impact evaluation for program years 2017-2018. The Company anticipates the report to be published by end of 2019.

Home Energy Reports

The *Home Energy Reports* program is a behavioral program designed to decrease participant energy usage by providing comparative energy usage data for similar homes located in the same geographical area. Additionally, the report provides the participant with information on how to decrease their energy usage. Equipped with this information, participants can modify behavior or make structural equipment, lighting, or appliance modifications to reduce their overall electric energy consumption.

Reports were initially provided to approximately 13,500 customers (referred to as "legacy" group). The number of participants decreased over time due to customer attrition from general customer churn (customer move-outs)[25] and customers requesting to be removed from the program. In 2014, the program was expanded to 38,500 additional customers (referred to as "expansion" group).[26] Another group of customers (referred to as "legacy refill" group) were added in January 2015 to offset attrition and lower energy savings than expected from the initial legacy group.[27]

Monthly reports are mailed to all new program participants for the initial three months to build program awareness. Following this initial three-month period, report frequency is moved to a bi-

[25] At the end of 2018 approximately 8,200 customers in the legacy group were still participating and receiving home energy reports.
[26] At the end of 2018, approximately 23,000 customers in the expansion group were still participating and receiving home energy reports.
[27] At the end of 2018, approximately 3,200 customers in the legacy refill group were still participating and receiving home energy reports.

monthly schedule for the remainder of the program. All participants may request an electronic version delivered via email and have access to a web portal containing the same information about their usage and past usage provided in the report. The web portal also contains other functions such as a home energy audit tool, the ability for customers to update their home profile (for more accurate comparisons) and suggestions on more ways to save energy around their home.

Results are shown in Table 14.

Table 14
Cost Effectiveness for *Home Energy Reports*

Benefit/Cost Test	Benefit/Cost Ratio	Benefit/Cost Ratio without Startup Fees
PTRC	1.90	3.45
TRC	1.73	3.13
UCT	1.73	3.13
PCT	N/A	N/A
RIM	0.28	0.30

Program savings by group is provided in Table 15.

Table 15
Program Savings

Home Energy Reports Group	Total kWh/Yr Savings @ Site
Expansion	4,626,270
Legacy + Refill	5,190,570
Grand Total	**9,816,840**

Consistent with planning assumptions used to establish the conservation target and business plan a two year measure life is used to assess costs effectiveness. The Home Energy Reports savings included in the table above are first year reported savings achieved. Any incremental savings for 2019 will be included in the 2018-2019 Biennial Conservation Report.

Program Management

The Company program manager overseeing program activity in Washington is also responsible for *the Home Energy Savings* program in California and Washington. For each program in each state, the program manager is responsible for the cost effectiveness of the program, contracting with the program administrator, monitoring program performance and compliance, and recommending changes measures, incentives or delivery requirements as set in the tariff or posted on the Company's website.

Program Administration

The *Home Energy Reports* program is administered by Bidgely who replaced the prior provider, OPower in early 2018. Bidgely's software creates individualized energy reports for utility customers that analyze their energy usage, disaggregates energy use into end uses and offers recommendations on how to save energy and money by making small changes to their energy consumption. Bidgely is using the same treatment and control groups used by OPower during the prior contract period. Similar to the prior contract, Bidgely's contract is turnkey and includes providing software services, report delivery (both email and print) to customers and reported energy savings.

During the transition between providers in 2018, there was a hiatus in delivering reports to customers as the OPower contract ended in the first quarter and Bidgely uploaded data into their model, tested the outputs and completed customization of their product (including end use disaggregation) for the Washington customers with delivery commencing in August. During the hiatus the Company continued to provide usage data for control and treatment groups to Bidgely who uploaded it into their model and estimated savings. Assessing customer savings when reports were not being sent provided the opportunity to test savings persistence (i.e, do customers continue to take actions to minimize energy consumption absent regular communications). Reported savings for 2018 are a combination of savings reported during the hiatus period and saving reported during the last portion of the year when customers were receiving reports.

Evaluation

A process and impact evaluation for program years 2016-2017 was published in May 2018. Notable findings include:

- For the Legacy wave, savings has begun to demonstrate some degradation of its control group. Expansion and Refill waves demonstrated a consistent improvement in energy savings.
- Refill respondents indicated higher satisfaction with the program than the Legacy or Expansion waves. Longer program tenure is correlated with an increased likelihood to indicate no longer wanting to receive reports.
- The program was cost effective from all perspectives except the RIM test.

The results of the evaluation can be viewed at www.pacificorp.com/es/dsm/washington.html.

Low Income Weatherization

The *Low Income Weatherization* program provides energy efficiency services through a partnership between the Company and local non-profit agencies to residential customers who meet income-eligible guidelines. Services are provided at no cost to the program participants. Cost effectiveness for the *Low Income Weatherization* program was not included in the portfolio or sector-level analysis per WAC 480-109-100 (10)(b).

In 2018, 108 homes were treated, saving 182,237 kWh (at site). Total homes treated, as well as the type and frequency of specific energy efficiency measures installed in each home, is provided in Table 16.

Table 16
Eligible Program Measures (Units)

Participation – Total # of Completed/Treated Homes	**108**
Number of Homes Receiving Specific Measures	
Aerators	57
Attic Ventilation	89
Caulk/Weather-stripping	81
Ceiling Insulation	71
Ductless Heat Pump	13
Duct Insulation	56
Floor Insulation	86
LED Light Fixtures	2
LED Light Bulbs	92
Ground Cover	55
Infiltration	96
Repairs	58
Replacement Refrigerators	9
Showerheads	52
Thermal Doors	6
Timed Thermostat	2
Wall Insulation	21
Water Heater Blankets	11
Water Heater Replacement	14
Water Pipe Insulation and Sealing	87
Windows	8

Program Management

The Company program manager overseeing program activity in Washington is also responsible for the *Low Income Weatherization* programs in California, Idaho, Utah, and Wyoming; the bill discount programs[28] ; and energy assistance programs[29] . For each program in each state, the program manager is responsible for the cost effectiveness of the energy efficiency programs, partnerships, and agreements in place with local agencies that serve income eligible households, establishing and monitoring program performance and compliance, and recommending changes in the terms and conditions set out in the tariff.

[28] The following Bill Discount programs provide reduced rate to income eligible households and program criteria varies by each state tariff: Low Income Bill Program (LIBA) in Washington; Home Energy Lifeline Program (HELP) in Utah; California Alternate Rates for Energy (CARE) in California.

[29] The federally funded Low Income Home Energy Assistance Program (LIHEAP) helps low income households with heating costs. Programs are administered by state agencies through designated local agencies in Washington, California, Idaho, Oregon, Utah and Wyoming. PacifiCorp offers a donation program and matches every dollar donated 2 to 1. Collected funds are sent to designated local agencies that provide energy assistance in Washington, California, Idaho, Oregon, Utah, and Wyoming.

Program Administration

The Company has long-term partnerships in place with three local non-profit agencies to provide weatherization services to income-qualifying households throughout its Washington service territory. These agencies include Blue Mountain Action Council located in Walla Walla, Northwest Community Action Center in Toppenish, and Opportunities Industrialization Center of Washington in Yakima. The Company entered into an agreement for these services with the Yakama Nation Housing Authority in July 2018. The leveraging of Company funding along with Washington Match Maker Program funds allows the agencies to provide these energy efficiency services to more households at no cost to participating customers. The Company provides rebates to partnering agencies for 50 percent of the cost of services while Match Maker funds are available, and will cover 100 percent of costs when these state funds are depleted. In 2018, 69 homes were funded at 50% and 39 at 100%. Match Maker funding was approved by the state legislature in mid-2017, but monies were not released until early 2018, resulting in the significant number of completions covered at the 100% level. Participants qualify if they are homeowners or renters residing in single-family homes, manufactured homes, or apartments. Over 7,700 homes have been completed with Pacific Power funding since the program's inception in the mid-1980s.

By contract with the Company, the agencies are responsible for the following:

- Income Verification – Agencies determine participant income eligibility based on Washington Department of Commerce guidelines. Households interested in obtaining weatherization services apply through the agencies. The income guidelines can be viewed on the Washington Department of Commerce website[30].
- Energy Audit – Agencies use a U.S. Department of Energy approved audit tool or priority list to determine the cost effective measures to install in the participant's homes (audit results must indicate a savings to investment ratio of 1.0 or greater).
- Installation of Measures – Agencies install the energy efficiency measures.
- Post Inspections – Agencies inspect 100 percent of completed homes. A sample of 5 -10 percent are inspected by a Pacific Power inspector. See Appendix 2 for verification summary.
- Billing Notification – Agencies are required to submit a billing to Company within 90 days after job completion. A homeowner agreement and invoice form indicating the measures installed and associated cost is submitted on each completed home.

Evaluation

A process and impact evaluation for program years 2013-2015 was published in January 2018. Notable findings include:

- An overall realization rate was 69 percent which was lower than the previous evaluation. Lower savings could be a result of a variety of factors including mix of measures installed.

[30] http://www.commerce.wa.gov/wp-content/uploads/2018/03/v.1.1-2018WALowIncomeEligibilityGuidelines.pdf

- The program was cost effective with an overall PTRC of 2.22.
- Average annual net energy savings per participant was estimated at 1,122 kWh.
- Participants continue to be highly satisfied with the Program.

The results of the evaluation can be viewed at www.pacificorp.com/es/dsm/washington.html.

Northwest Energy Efficiency Alliance

The Northwest Energy Efficiency Alliance (NEEA) is a non-profit corporation that works collaboratively with its funders and other strategic market partners to accelerate the innovation and adoption of energy-efficient products, services, and practices. NEEA is supported by BPA, Energy Trust of Oregon, and more than 100 Northwest utilities, including Pacific Power.

Program performance for 2018 is being reported based on NEEA's results for Pacific Power of 2,935 MWh (at site). Consistent with the reporting convention approved in Docket UE-132047 the savings represent Pacific Power's portion of Total Regional Savings less the Company's local program savings

Program Administration

The Company has a representative on the NEEA board of directors as well as representatives on each of the sector advisory committees, residential, commercial and industrial. The Company also has representation on NEEA's broader Regional Portfolio Advisory Committee and participates in relevant Northwest Research Group meetings. Collectively the representatives work collaboratively with the other funders, advisory group members, and NEEA to direct the efforts of NEEA in the best interest of the region in the achievement of the region's market transformation objectives.

Non-Residential Program

The Non-Residential Energy Efficiency program is promoted to the Company's commercial, industrial and agricultural customers as *watt*smart Business.

The *watt*smart Business program[31] is intended to maximize the efficient use of electricity for new and existing non-residential customers through the installation of energy efficiency measures and energy management protocols. Qualifying measures are any measures which, when implemented in an eligible facility, result in verifiable electric energy efficiency improvements.

The program was cost effective in 2018 as shown in Table 17 below.

Table 17
Cost Effectiveness for *watt*smart Business

Benefit/Cost Test	Benefit/Cost Ratio
PTRC	1.36
TRC	1.24
UCT	2.07
PCT	3.92
RIM	0.40

Sector level performance is provided in Table 18.

Table 18
Program Performance by Sector

Sector	Total kWh/Yr Savings @ Site	Total Incentive	Total kW Savings @ Site	Total Projects
Commercial	23,721,991	$2,483,198	2,295	373
Industrial	7,116,153	$701,657	652	52
Irrigation	388,369	$43,245	93	17
Total	**31,226,512**	**$3,228,100**	**3,039**	**442**

[31] The program brochure is available at https://www.pacificpower.net/content/dam/pacific_power/doc/Business/Save_Energy_Money/WA_wattsmartBusiness_Brochure.pdf . Program detail (in addition to the program tariff, Schedule 140) maintained on the Company website is available at https://www.pacificpower.net/content/dam/pacific_power/doc/Business/Save_Energy_Money/WA_wattsmartBusiness_Incentive_tables_information.pdf.

Program performance by measure category is provided in Table 19.

Table 19
Program Performance by Measure Category

Measure Category	Total kWh/Yr Savings @ Site	Total Incentive	Total kW Savings @ Site	Total Projects
Additional Measures	537,363	$53,271	34	3
Building Shell	40,611	$21,525	0	7
Compressed Air	1,353,235	$168,519	67	4
Energy Management	2,539,217	$50,784	139	8
Farm & Dairy	206,242	$20,765	10	4
HVAC	343,286	$33,301	20	8
Irrigation	417,195	$52,295	103	17
Lighting	16,520,907	$1,629,515	1,947	347
Motors	350,297	$42,279	54	9
Refrigeration	8,918,159	$1,155,847	664	35
Total	**31,226,512**	**$3,228,100**	**3,039**	**442**

Services and incentives offered through the *watt*smart Business program include:

- Typical Upgrades: Incentives for lighting, HVAC, irrigation and other equipment upgrades that increase electrical energy efficiency and exceed energy code requirements.
- Custom analysis: Offers energy analysis studies, services and incentives for more complex projects.
- Energy Management: Provides expert facility and process analysis and incentives to help lower energy costs by optimizing customer's energy use.
- Enhanced incentives for small businesses: Provides enhanced incentives for lighting upgrades installed by an approved *watt*smart Small Business Contractor at an eligible existing small business customer facility.
- Midstream/Lighting Instant Incentive: Provides instant, point-of-purchase incentive for qualifying LED lamps sold through participating distributors. Customers purchasing lamps from non-participating suppliers can apply for incentives after purchase.
- Energy Project Manager Co-funding: Available to customers who commit to an annual goal of completing energy projects resulting in at least 1,000,000 kWh/year in energy savings.
- Project Financing: Pacific Power is teamed with HBC Energy Capital[32], an energy efficiency project financing firm, to provide customers with access to third party financing options for instances where funds for project implementation are not available from within the customer's organization.

32 HBC Energy Capital is a division of the National Energy Improvement Fund (NEIF).

Program Management

The Company program manager overseeing program activity in Washington is also responsible for the *watt*smart Business program in California. For each state the program manager is responsible for the cost effectiveness of the program, identifying, and contracting with the program administrators through a competitive bid process, program marketing, establishing and monitoring program performance and compliance, and recommending changes in the terms and conditions of the program set out in the tariff and/or posted on the Company's website.

Program Administration

The program includes several delivery channels, including Trade Ally, Small Business Enhanced Incentive Offer, Midstream/Lighting Instant Incentive, and Project Manager.

Trade Ally
In this channel, the program is primarily marketed through local trade allies who receive support from one of two program administrators. The Company contracts with Nexant, Inc. (Nexant) and Cascade Energy (Cascade) for trade ally coordination, training, application processing and project facilitation services for commercial measures and industrial/agricultural measures, respectively.

Nexant and Cascade are responsible for the following:

- Trade ally engagement – identify, recruit, train, support and assist trade allies to increase sales and installation of energy efficient equipment at qualifying business customer facilities.
- Incentive processing and administrative support – handle incoming inquiries as assigned, process incentive applications, develop and maintain simplified analysis tools and provide program design services, evaluation and regulatory support upon request.
- Direct customer outreach and project facilitation for smaller customer projects.
- Inspections – verify on an on-going basis the installation of measures.[33] A summary of the inspection process is in Appendix 2.

Small Business Enhanced Incentive Offer
In this channel, the program is primarily marketed through local contractors approved specifically for this offer who receive support from the program administrator, Nexant. Nexant is responsible for the following:

- Management of approved contractors – identify, recruit, contract with, train, support, and assist contractors to increase sales and installation of energy efficient lighting equipment at qualifying small business customer facilities.

[33] The Company contracts with firms from the energy engineering consultant list to perform required pre- and post-installation inspections for lighting retrofit and new construction/major renovation projects.

- Incentive processing and administrative support – handle incoming inquiries as assigned, process incentive applications, develop and maintain simplified analysis tool and provide program design services, evaluation and regulatory support upon request.
- Inspections – verify on an on-going basis the installation of measures. A summary of the inspection process is in Appendix 2 to this report.

Midstream/Instant Incentive Offer
In this channel, the program is primarily marketed through distributors approved specifically for this offer who receive support from the program administrator, Nexant. The program is also marketed through installation contractors, who also receive support from Nexant. Nexant is responsible for the following:

- Management of approved distributors – identify, recruit, contract with, train, support, and assist distributors to increase sales of energy efficient lighting equipment at qualifying business customer facilities.
- Incentive processing and administrative support – handle incoming inquiries as assigned, process incentive applications, and provide program design services, evaluation and regulatory support upon request.
- Inspections – verify on an on-going basis the installation of measures at eligible customer facilities. A summary of the inspection process is in Appendix 2 to this report.

Project Manager
In this channel, the Company's project manager manages a subset of more complex projects. The project manager works directly with the customer or through the Company's regional business managers.[34] The project manager provides customers with program services and incentives using a pre-contracted group of energy engineering consultants. A current list of these consultants is included in the Infrastructure section below.

Infrastructure

To help increase and improve the supplier and installation contractor infrastructure for typical energy efficient equipment and services, the Company established and continues to develop and support trade ally networks for lighting, HVAC and motors/VFDs. This work includes identifying and recruiting trade allies, providing program and technical training and providing sales support on an ongoing basis.

Participating vendors sign a wattsmart Business participation agreement and are listed as wattsmart Business Vendors in the Find a Vendor search on the Company's website. In addition to the formal wattsmart Business vendor networks, other trade allies such as irrigation vendors are identified and supported on an ongoing basis.

[34] Regional business managers are responsible for directly working with Washington commercial and industrial/ag customers.

The current searchable list of trade allies who have applied and been approved as participating *watt*smart Business vendors is available on the Company website[35] and included as Appendix 4 to this report. In most cases, customers are not required to select a vendor from these lists to receive an incentive.[36]

The total number of participating trade allies is currently 30. The current count of participating trade allies by technology are in Table 20.

Table 20
Participating Trade Allies[37]

Lighting	HVAC	Motors and VFD	Irrigation	Small Business – approved contractors	LED Instant Incentive – approved distributors, e-commerce retailers
24	4	13	1	3	6 distributors, 14 branch locations and 4 e-commerce retailers

For the project manager delivery channel supporting larger customers, a pre-approved, pre-contracted group of engineering firms can be used to perform facility specific energy efficiency analysis, quality assurance and verification. Table 21 lists the engineering firms currently under contract with the Company.

Table 21
Energy Engineering Firms

Engineering Firm	Main Office Location
Cascade Energy	Portland, OR
Compression Engineering Corp	Beaverton, OR
EMP2, Inc.	Richland, WA
Energy 350	Portland, OR
Energy Resources Integration, LLC	Sausalito, CA
4Sight Energy Group, LLC	Post Falls, ID
Evergreen Consulting Group	Portland, OR
kW Engineering, Inc.	Oakland, CA
Lincus Inc.	Emeryville, CA
Nexant, Inc.	Portland, OR
Solarc Energy Group	Eugene, OR

[35] Searchable participating vendor lists are available from the Company website. Direct link to the "Find a Vendor" search tool: http://pacificpower-tradeally.energyefficiencyalliance.net/tradeally/jspx/Contractor_Search/ContractorSearch.jspx.
[36] For the *watt*smart Small Business enhanced incentives, customers are required to choose one of the approved contractors for this offer.
[37] Some trade allies may participate in more than one technology so the count of unique participating firms is less than the total count provided.

Program Changes

The Company made programmatic changes on two separate dates. Effective January 1, 2018, changes were made to:

- Improve program cost effectiveness in light of the new, lower avoided costs/decrement values from PacifiCorp's 2017 Integrated Resource Plan;
- Restructure lighting retrofit offerings for continuous improvement as the lighting market evolves;
- Adjust LED case lighting and other measures to align with current RTF analysis;
- Restructure Enhanced Incentives for Small Business customers;
- Add new measures and revise existing measures receiving instant incentives from qualifying distributors;
- Remove non cost effective measures and measures with low/no participation; and
- Make other minor administrative changes.

Effective July 1, 2018, changes were made to:

- Adjust capping requirements for the instant incentive offerings.
- Make other minor administrative changes.

Adaptive Management

The Company made substantial changes through an adaptive management approach. The following bullets summarize the changes.

- **Cost effectiveness improvement** - Due to the 2017 IRP's new lower decrement values, work continued in 2018 to identify ways to improve program cost effectiveness. Several improvements went into the Business Plan for 2018-2019 and were effective January 1, 2018:

    1. Added a maximum simple payback threshold at the project level to incentive eligibility requirements. Allow projects that exceed the threshold to be eligible for incentives if the project passes the Commission approved test (i.e. the TRC Test as modified by the Northwest Power and Conservation Council).
    2. Removed TLED, T8 and T5 Relamp measures and add Lamp Replacement category at the same incentive levels as the mid-market offer. This improves cost-effectiveness by moving most lamp replacement-only measures to mid-market, which has lower administrative costs.
    3. Removed some measures from the program that were not cost effective, had low participation, or both.

    An additional key improvement identified in 2018 was effective January 1, 2019: adopting the RTF non-residential lighting protocol's dual baseline savings and cost calculation methodology for lighting retrofits and small business lighting. Work on the revised lighting tool was substantially complete in 2018 and launched in January 2019.

- **New eLearning Platform** - In June 2018, the program introduced a new eLearning platform for wattsmart Business vendors. Currently available courses include:

  1. Intro to LED Dimming
  2. The Latest in Stand-Alone Lighting Controls: Wall Switch Sensors
  3. Facility Audits: Preparation and Toolkit
  4. Facility Audits: Fundamentals of Linear Fluorescent Lamps
  5. Facility Audits: T12, T8 and T5 Fluorescent Lamps
  6. Facility Audits: Retrofitting Linear Fluorescent Lamps

  The eLearning Platform will soon have two new wattsmart Business specific courses for Pacific Power and intends to use them as onboarding tools for the vendors. An advanced network lighting control course will also be launched soon. Program vendors can also take advantage of the courses to train their personnel.

  In Washington, there are 18 registered users on the platform with 12 course completions and 33 users with assigned courses or in process courses.

- **Advanced Rooftop Control (ARC) Unit Vendor Incentive** – In November 2018, the network offered an additional incentive[38] aimed at mechanical wattsmart Business vendors to promote and install the ARC measure at Pacific Power businesses. An eblast was sent out to the wattsmart Business Vendor network on November 20 and field staff promoted the incentive in their regular outreach. In December, two staff members at Young's Heating and Cooling in Walla Walla became certified by Transformative Wave to install the ARC measure. In 2018, they completed a total of four retrofit installs on existing roof top units at a business in Walla Walla. They received three $100 Amazon gift cards. This project is generating interest within the community and Young's continues to promote the ARC measure with other customers. Program field staff is working with another vendor, Campbell and Co., to promote the ARC measure and the vendor is working to find an interested customer.

- **Targeted Small Business Campaign** – Added provision to provide approved wattsmart Small Business Vendors who signed a Non-Disclosure agreement (in addition to the vendor participation agreement already on file) with refined customer lists (containing business name, address, phone number only) to more effectively connect with customers eligible for the small business enhanced incentives. Prior to providing the lists, postcards are mailed to each customer on the list to introduce them to the program and let them know a contractor will be contacting them. The intent of this initiative is to improve the efficiency of approved vendor's sales processes and boost small business participation. The first postcards were sent and lists were provided in December 2018 and resulted in several new project starts. This initiative also includes additional opportunities for cobranded marketing materials and Pacific Power wattsmart Business Vendor co-branded shirts that will be made available in 2019. The shirts help promote vendor credibility with small business customers.

[38] $100 Amazon gift card per ARC installed for first five units installed, limit of three gift cards per approved vendor.

- **Premium Tier** – In early 2018, the first two trade allies qualified for the Premium status tier for the wattsmart Business lighting vendor network. Since January 2018, Stusser Electric in Yakima and Consolidated Electric Supply in Sunnyside have been recognized as Pacific Power's wattsmart Business Premium Vendors. Vendor performance is assessed on a quarterly basis in the Vendor Snapshot which also informs the trade ally if they qualified for Premium status. To be considered for Premium status, an approved *watt*smart Business Vendor has to complete a minimum number of projects in the past twelve months and hold a lighting credential such as the NEEA's NXT Level 1 Designation for both the company and an employee. Pacific Power established performance categories that align with program objectives to assess and rank lighting trade ally performance. In addition to project count and credentials, lighting vendors are also selected based on customer satisfaction, program satisfaction and project submission quality. The Premium Vendors come up first in the online Find-A-Vendor search results and their listing is highlighted in green so they stand out when someone searches for a lighting vendor. They are also given the opportunity to provide expanded information about their company in their online listing. The premium vendor list/flier as of winter 2018 is included in the appendix with the vendor lists.

- **Formal feedback** - A trade ally performance snapshot report called the Vendor Snapshot was introduced in 2017 to provide feedback on a quarterly basis to each approved lighting vendor performing work in the typical lighting program. Scorecards were provided to approved lighting vendors each quarter in 2018 and program coordinators followed up to review the snapshots with each vendor. The main purpose is to provide vendors with a summary of their performance, help them with continuous improvement and inform them of positive customer comments received from customer surveys. Program coordinators work with individual vendors to address any negative comments. The Vendor Snapshot includes total number of projects, savings, incentives, and the vendor's standing in comparison to other vendors.

- **Financing**[39]
  - Promoted the financing offer to wattsmart Business vendors
    i) Hosted two webinars for trade allies on the financing offer and how to integrate it into their sales process.
    ii) Articles in each 2018 quarterly Trade Ally newsletter promoted the finance offer and its benefits.
  - A new case study was created to showcase a Yakima small business customer who leveraged the financing offer for energy efficient lighting and air conditioner project (https://www.pacificpower.net/bus/se/tr/ccs/yakima-bindery-success-story.html).
  - In 2018, four Washington trade allies, including two small business contractors, leveraged the financing offer as a sales tool. Sixteen indicative financing offers were issued for eleven *watt*smart Business projects in 2018.

[39] https://www.pacificpower.net/bus/se/washington/project_financing.html.

Evaluation

A process and impact evaluation for program years 2016-2017 was performed and published in November 2018. Notable findings include:

- Overall realization rate of 92.3 percent.
- The program was cost effective over the two-year period with a PTRC of 1.84.
- Majority of participants reported high levels of satisfaction.

The results of the evaluation can be viewed at www.pacificorp.com/es/dsm/washington.html.

Communications, Outreach and Education

The Company uses earned media, customer communications, paid media, and program specific media to communicate the value of energy efficiency, and provide information regarding low-cost and no-cost energy efficiency measures. The Company endeavors to educate customers on the availability of technical assistance, services, and incentives with the overall goal to engage customers in reducing their energy usage.

Earned Media

Earned media is managed by the Company's external communications department in cooperation with the regional business managers located in Washington. "Earned media" generally refers to favorable television, radio, newspaper, or internet news coverage gained through press releases, media events, opinion pieces, story pitches, or other communication with news editors and reporters.

Customer Communications

As part of the Company's regular communications to its customers, newsletters promote energy efficiency initiatives. Inserts and outer envelopes featuring energy efficiency messages have also been used on a consistent basis. The Company uses its website and social media, such as Twitter and Facebook, to communicate and engage customers on DSM offers and incentives.

Paid Media/wattsmart campaign

In 2018, the Company deployed a *watt*smart advertising campaign in English and Spanish to inform and educate residential customers about the benefits energy efficiency contributes to the greater good in addition to saving money. The overall paid media objective is to effectively reach our customers through a multi-faceted campaign with programs aimed at specific customer groups and the unifying theme "Being wattsmart saves me money, and it's good for Washington." This communication campaign aims to create awareness of the importance and benefits of being energy efficient, and to help increase participation in the Company's DSM programs.

Key strategies include:

- Implement an advertising campaign that features wattsmart energy efficiency messaging and connect it to benefits for Washington.
- Promote customer conservation (behavioral changes) and increase participation and savings through the Company's wattsmart DSM programs.
- Motivate customers in Washington to reduce consumption independently or to do so by participating in the Company's wattsmart DSM programs.
- Educate customers on how these programs can help them save money on their utility bills, reduce energy consumption and to help Washington thrive.

- Demonstrate by example how business customers are saving energy and enjoying the benefits of being wattsmart.

General Key Messages:

- Using energy wisely at home and in your business saves you money, and it's good for Washington.
- Surprising as it sounds, Pacific Power wants to help you use less energy.
- Pacific Power is your energy partner
  - We want to help you keep your costs down.
  - We offer wattsmart programs and cash incentives to help you save money and energy in your home or business.
  - Being wattsmart is good for your wallet, and for Washington, now and into the future.

To reach residential customers, the Company used TV, radio, social, and digital. Large-scale typography along with beautiful scenic images of Washington was combined with footage of people taking smalls steps (changing lighting to LED lamps, adjusting smart thermostat setting) to save energy and money and to make a big difference for Washington and the environment, now and into the future.

To reach business customers a multi-media mix of TV, radio, print, social and digital were used to reach as many customers as possible with the greatest frequency. Table 22 outlines the Washington media channels used, the value of each channel, and the impressions achieved.

Table 22
2018 Media Channels

Communication Channel	Value to Communication Portfolio	2018 Placements
Television	Television has the broadest reach and works as the most effective media channel	759,000 residential impressions 1,099,000business impressions
Radio	Given the cost relative to television, radio builds on communications delivered via television while providing for increased frequency of messages	400,000 residential impressions 530,000 business impressions
Newspaper/Magazine	Supports broadcast messages and guarantees coverage in areas harder to reach with broadcast	192,600 residential impressions 72,400 business impressions
Online advertising	Digital display and Google Search	985,098 residential impressions and 17,496 search impressions 1682,013 business impressions and 3,743 search impressions
Social Advertising	Advertising on Facebook, Hulu, YouTube and Pandora	1,025,254 residential impressions

Communication Channel	Value to Communication Portfolio	2018 Placements
		872,693 business impressions
Twitter @PacificPower_WA	Awareness for early adopters regarding energy efficiency tips Tweets posted on a weekly basis	980 followers through December 2018
Facebook www.facebook.com/pacificpower	Awareness for early adopters regarding energy efficiency tips and a location to share information	21,186 fans through December 2018 (for all Pacific Power states)

The total number of impressions for the campaign in 2018 was 7,643,297.

Links to the Company's current portfolio of advertisements are included in Appendix 5. The audiences for these messages were prioritized as follows:

- Primary - Small and large business in Pacific Power's service area.
- Secondary - Households in Pacific Power's service area.

Program Specific

All energy efficiency program communications are branded under the *watt*smart umbrella to reinforce the campaign and to link changes in behavior to actions customers can take by participating in specific programs. Separate marketing activities administered by and specific to the programs ran in conjunction with the *watt*smart campaign in 2018.

Home Energy Savings

Information on the *Home Energy Savings* program is communicated to customers, retailers and trade allies through a variety of channels including newsletters, emails, website and social media.

Promotional efforts in 2018 focused primarily on smart thermostats. With seasonally relevant messages, the program continued to build awareness about the benefits and the affordability (incentives, manufacturer discounts) of these sophisticated home devices.

A summary of outreach is displayed in Table 23.

Table 23
Home Energy Savings Communication Impressions

Communications Channel	2018
September smart thermostat emails	8,052
Black Friday smart thermostat emails	15,939
Holiday discounts/December smart thermostat emails	15,867
Total	**39,858**

Home Energy Reports

In 2018, the Company transitioned the Home Energy Reports from Oracle to Bidgely. To help with the transition, an email was sent to 13,246 customers in advance of receiving their first Bidgely report to let them know about the new Home Energy Reports.

With the Bidgely platform, customers receive two emails each month: (1) a monthly summary with an itemized lists of home energy costs by appliance, and (2) a similar homes comparison.

As a new feature, customers can easily use their Pacific Power login credentials to access their usage data, appliance breakdown and recommendations on the Bidgely platform.

*watt*smart Business

In 2018, customer communications and outreach supported *watt*smart Business using radio, print, paid digital display and search advertising, direct mail, email and social media. This was in addition to customer direct contact by Company project managers and regional community managers, as well as trade ally partners and content on the Company's website.

During 2018, the Company used radio and print advertising to encourage customers to inquire about incentives for lighting and lighting controls, Eblasts and digital search ads directed viewers to the Company's website[40]. Targeted direct mail was also sent to irrigation customers in the spring and fall to encourage energy-saving retrofits, Emails encouraged customers to reach out for free energy assessments for lighting. Repeated email communications focused on the benefits and incentives for HVAC assessments. Targeted direct mail was aimed at small business customers to generate interest in lighting upgrades and incentives.

One customer was recognized as *watt*smart Business Partners of the year, presented with a trophy, and announced in a press release. In 2018, the program garnered 1,672,875 impressions. A breakdown of impressions by media type is shown in Table 24.

Table 24
*watt*smart Business

Communications Channel	2018 Impressions
Radio	1,202,000
Newspaper	241,350
Magazine	137,900
Digital Display	77,661
Google Search	3,885
Eblasts	5,098
Irrigation Direct Mail	4,966
Small Business Direct Mail	15

[40] www.pacificpower.net/wasave.

Energy Education in Schools

The Company offers a *watt*smart Schools education program through the National Energy Foundation (NEF). The program is designed to develop a culture of energy efficiency among teachers, students, and families. The centerpiece is a series of one hour presentations with educational and entertaining video components as well as hands-on, large group activities for 4th and 5th grade students. Teachers are provided instructional materials for use in their classrooms, and students are sent home with a Home Energy Worksheet to explore energy use in their homes and to encourage efficient behaviors.

In 2018, NEF conducted presentations in Washington schools in the fall. Between October 1 and the first week of November 2018, the program met its outreach goals of reaching 3,647 students and 150 teachers with 55 school presentations and 60 percent of "Home Energy Worksheets", which are used as part of a home energy audit activity, completed, and returned. The NEF 2018 Report can be found in Appendix 5.

Evaluations

Evaluations are performed by independent external evaluators to validate energy and demand savings derived from the Company's energy efficiency programs. Industry best practices are adopted by the Company with regards to principles of operation, methodologies, evaluation methods, definitions of terms, and protocols including those outlined in the National Action Plan for Energy Efficiency Program Impact Evaluation and the California Evaluation Framework guides.

A component of the overall evaluation effort is aimed at the reasonable verification of installations of energy efficient measures and associated documentation through review of documentation, surveys and/or ongoing onsite inspections.

Verification of the potential to achieve savings involves regular inspection and commissioning of equipment. The Company engages in programmatic verification activities, including inspections, quality assurance reviews, and tracking checks and balances as part of routine program implementation and may rely upon these practices in the verification of installation information for the purposes of savings verifications in advance of more formal impact evaluation results. A summary of the inspection process is included in Appendix 2.

Evaluation, measurement and verification tasks are segregated within the Company to ensure they are performed and managed by personnel who are not directly responsible for program management.

Information on evaluation activities completed or in progress during 2018 is summarized in the chart below. Summary of the recommendations are provided in Appendix 6. The evaluation reports are available at www.pacificorp.com/es/dsm/washington.html.

Program / Activities	Years Evaluated	Evaluator	Progress Status
Low Income Weatherization	2013-2015	Opinion Dynamics	Completed
Home Energy Reports	2016-2017	ADM	Completed
*watt*smart Business	2016-2017	Cadmus	Completed
Home Energy Savings	2017-2018	ADM	In progress