



2018 California Annual Review of Energy Efficiency Programs

January 1, 2018 – December 31, 2018

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LIST OF ABBREVIATIONS AND ACRONYMS

Commission	California Public Utilities Commission
DSM	Demand-Side Management
DSM Central	DSM Central (project tracking system)
DSM Tariff Rider	Schedule S-191 Surcharge to Fund Public Purpose Programs
EM&V	Evaluation, Measurement and Verification
GWh	Gigawatt hour
HVAC	Heating, Ventilation and Air Conditioning
IRP	Integrated Resource Plan
kWh	Kilowatt-hour
kW	Kilowatt
LED	Light-emitting diode
PAC	Program Administrator Cost
PCT	Participant Cost Test
RIM	Ratepayer Impact Test
TRL	Technical Reference Library (database of measure assumptions)
TRC	Total Resource Cost
UCT	Utility Cost Test (aka PAC)
WSB	<i>wattsmart</i> Business

EXECUTIVE SUMMARY

PacifiCorp is a multi-jurisdictional electric utility providing retail service to customers in California, Idaho, Oregon, Utah, Washington, and Wyoming. PacifiCorp d/b/a Pacific Power (“Company”) serves approximately 45,000 customers in Shasta, Modoc, Del Norte, and Siskiyou counties in northern California.

The Company offers two energy efficiency programs to customers in California. Home Energy Savings is offered to residential customers and *wattsmart* Business is offered to commercial, industrial and irrigation customers. Costs associated with the energy efficiency programs are recovered through Schedule S-191, Surcharge to Fund Public Purpose Programs, hereafter referred to as Demand Side Management (“DSM”) Tariff Rider. In 2017, PacifiCorp filed an application (Application 17-09-010) with the California Public Utilities Commission (“Commission”) requesting authorization to continue offering its programs through 2020. The Commission issued Decision 18-11-033 on December 6, 2018 approving the Company’s application to continue administering the two programs through 2020 and approving the Company’s request to reduce the DSM Tariff Rider.

The Company, on behalf of its customers, invested \$1.9m in energy efficiency information and resource acquisitions to achieve the reported savings during January 1, 2018 through December 31, 2018. The investment yielded approximately 5.6 gigawatt-hours (“GWh”) in first year energy savings¹ and approximately 971 gross kilowatts (“kW”) of capacity reduction from energy efficiency savings.²

This report provides details on program results, activities, expenditures, and the current status of the DSM Tariff Rider for the period of January 1, 2018 through December 31, 2018. Program results are summarized in Table 1 below.

Table 1
Overall Portfolio Level Metrics

2018 Total Portfolio Performance	
Investment	\$1,914,794
kWh-first year Savings (gross at generation)	5,568,457
kWh-first year Savings (net at generation)	3,278,604
kW of capacity reduction (gross at generation)	971
kW of capacity reduction (net at generation)	572
Portfolio Total Resource Cost (TRC) – PacifiCorp Model with greenhouse gas adder	1.34

¹ The values at generation represent gross ex-ante savings and include line losses between the customer site and the generation source. The Company’s assumed line losses by sector are 11.4% for residential, 11.1% for commercial, 9.9% for industrial and 11.4% for irrigation. These values are based on the Company’s 2009 Transmission and Distribution Loss Study by Management Applications Consulting, Inc. published in November 2011.

² See Planning Section for explanation on how the capacity contribution savings values are calculated.

In comparing to 2017 levels, total portfolio energy savings increased 15%. At a sector level, residential savings decreased 41% whereas non-residential savings increased 58%. While the overall total energy savings increased, the total portfolio expenditures decreased 5% from 2017. At the sector level, residential expenditures decreased 28%, while non-residential expenditures increased only 7%. Portfolio results exclude Energy Savings Assistance Program achievements which provides energy savings services to income qualifying customers. The Residential section of this report outlines factors contributing to the decrease in energy savings in the residential sector.

Since the late 1970's, the Company has provided customers with information on no-cost, low-cost energy efficiency practices through billing inserts and general Company communication and outreach. During the reporting period, no-cost and low-cost energy efficiency tips or information regarding energy efficiency programs were included in customers' bills and through newsletters. Energy saving information is also available on the Company's website.

Additionally, the Company, working with its third-party program delivery administrators,³ collaborated with retailers, contractors and vendors to support the Company's energy efficiency programs in California. Table 2 shows the number of participating retailers, contractors and vendors by measure type.

Table 2
Energy Efficiency Infrastructure

Sector	Type	No.
Residential	Upstream/midstream Lighting Retailers	12
	Upstream/midstream HVAC Retailers	1
	Downstream Retailers	2
	HVAC Trade Allies	12
	Plumbing Trade Allies	0
	Weatherization Trade Allies	1
Commercial and Industrial/ Agricultural	Lighting Trade Allies	9
	HVAC Trade Allies	4
	Motor Trade Allies	4
	Irrigation Trade Allies	1
	Small Business Contractors	3
	Instant Incentive Lighting Distributors	6

³ See program-specific section for background information on third-party administrators.

REGULATORY ACTIVITIES

Energy efficiency programs are funded through a DSM Tariff Rider that is approved by the Commission.

On September 15, 2017, the Company filed Application 17-09-010 requesting authorization to continue offering its energy efficiency programs (through 2020) and the surcharge to fund the programs.

Concurrent with the filing of the Application, PacifiCorp filed a Petition to Modify D.16-09-052 in docket A.13-07-015, requesting authorization to continue PacifiCorp's California energy efficiency programs, the related DSM Tariff Rider that funds the programs, and the advice letter mechanism approved for adjusting the surcharge through June 30, 2018. On November 30, 2017, the Commission issued a decision granting PacifiCorp's Petition and authorized the Company to continue offering its energy efficiency programs through December 31, 2018.

The Commission issued Decision 18-11-033 on December 6, 2018, approving the Company's Application to continue administering its programs through 2020 and approving the Company's request to reduce the DSM Tariff Rider.

Decision 18-11-033 included an order authorizing PacifiCorp to re-calculate the DSM Tariff Rider reduction needed and file a Tier 1 advice letter. Advice 576-E was filed on December 13, 2018, in compliance with Ordering Paragraph 2 of the Decision. The updated amount to be collected through the DSM Tariff Rider annually in 2019 and 2020 is \$920,000 and the reduction (approximately \$3.0 million annually) was effective January 1, 2019.

The Company filed its 2017 Annual Review of Energy Efficiency Programs with the Commission on March 13, 2018.

The DSM balancing account is the mechanism used for managing the DSM Tariff Rider revenues and actual DSM incurred expenditures. The balancing account summary for 2018 is summarized in Table 3 below.

Table 3
DSM Balancing Account

Month	Expenditures	S-191 Revenue	Cash Basis Accumulative Balance	Net Cost Accrual	Accrual Basis Accumulative Balance
Dec-17			\$ (1,433,515)	\$ 258,018	\$ (1,175,496)
Jan-18	\$ 177,905	\$ (389,687)	\$ (1,645,297)	\$ (92,569)	\$ (1,479,848)
Feb-18	\$ 92,175	\$ (298,189)	\$ (1,851,311)	\$ 76,295	\$ (1,609,567)
Mar-18	\$ 158,856	\$ (297,883)	\$ (1,990,338)	\$ (55,756)	\$ (1,804,350)
Apr-18	\$ 158,159	\$ (296,984)	\$ (2,129,163)	\$ 5,741	\$ (1,937,434)
May-18	\$ 125,150	\$ (247,727)	\$ (2,251,739)	\$ (20,932)	\$ (2,080,943)
Jun-18	\$ 103,931	\$ (267,266)	\$ (2,415,075)	\$ 106,607	\$ (2,137,671)
Jul-18	\$ 174,849	\$ (344,999)	\$ (2,585,224)	\$ (116,900)	\$ (2,424,720)
Aug-18	\$ 147,850	\$ (323,543)	\$ (2,760,917)	\$ 41,849	\$ (2,558,564)
Sep-18	\$ 160,323	\$ (332,019)	\$ (2,932,612)	\$ (8,706)	\$ (2,738,966)
Oct-18	\$ 123,688	\$ (270,079)	\$ (3,079,004)	\$ (15,412)	\$ (2,900,769)
Nov-18	\$ 147,622	\$ (232,986)	\$ (3,164,369)	\$ 134,186	\$ (2,851,948)
Dec-18	\$ 241,783	\$ (282,053)	\$ (3,204,639)	\$ (30,599)	\$ (2,922,818)
2018 Total	\$ 1,812,291	\$ (3,583,414)		\$ 281,821*	

*December 2018 accrual

Column Explanations:

Expenditures: Monthly expenditures for approved energy efficiency programs.

S-191 Revenue: Revenue collected through the DSM Tariff Rider.

Cash Basis Accumulative Balance: Current balance of the account; a running total of account activities, excluding the accrued cost. A positive balance means cumulative expenditures exceeds cumulative revenue; a negative balance means cumulative revenue exceeds cumulative expenditures.

Net Cost Accrual: 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. This accounting principle was applied to the balancing account but would not be included when calculating the carrying charges.

Accrual Basis Accumulative Balance: Current balance of the account including accrued costs. A positive balance means cumulative expenditures exceeds cumulative revenue; a negative balance means cumulative revenue exceeds cumulative expenditures.

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.⁴ 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. As a result of their voluntary nature, participation tends to

⁴ Information on the Company’s integrated resource planning process can be found at the following web address: <http://www.pacificorp.com/es/irp.html>.

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. Program examples include time-of-use pricing plans, critical peak pricing plans, and inverted block tariff designs.

- **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.⁵ 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 California by sector is shown in Table 4. The 2017 Potential Assessment indicates that approximately 2% of the

⁵ PacifiCorp's Demand-side Resource Potential Assessments can be found at <http://www.pacificorp.com/es/dsm.html>.

achievable technical potential for PacifiCorp’s territory, excluding Oregon,⁶ is available within its California service area.⁷

Table 4
California Energy Efficiency Achievable Technical Potential by Sector⁸

Sector	Cumulative GWh by 2036	Percent of Baseline Sales
Residential	97	24%
Commercial	55	26%
Industrial	7	10%
Irrigation	8	8%
Street Lighting	1	39%

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 reducing 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. Based on Decision 18-11-033, PacifiCorp’s model⁹ was revised in 2018 to include a greenhouse gas adder for the incremental value of avoided greenhouse gas emissions. The tool is designed to incorporate PacifiCorp data and values such as avoided costs, and generally follows the methodology specified in California’s Standard Practice Manual. PacifiCorp’s modeling tool conducts cost effectiveness analysis on all four tests described in the Standard Practice Manual¹⁰ as well as an additional fifth test¹¹. The Company’s analysis assesses the costs and benefits of DSM resource programs from different stakeholder perspectives, including

⁶ Oregon energy efficiency potentials assessments are performed by the Energy Trust of Oregon.

⁷ Volume 1, Table 2-1, PacifiCorp Demand-Side Resource Potential Assessment for 2017-2036.

⁸ Volume 2, Tables 4-4, 4-6, 4-8, 4-10, 4-11, PacifiCorp Demand-Side Resource Potential Assessment for 2017-2036.

⁹ In 2017, the Company transitioned from California’s E3 Calculator to the PacifiCorp cost effectiveness model. The change in models was a coordinated effort between the Company, Commission Staff and its third party consultant, Itron. Additional information regarding PacifiCorp’s transition to its company specific cost effectiveness model can be found in Application No. 17-09-010.

¹⁰ Total Resource Cost test (“TRC”), Program Administrator Cost test (“PAC”), Ratepayer Impact (“RIM”), and Participant Cost Test (“PCT”).

¹¹ PacifiCorp TRC (“PTRC”), total resource costs test with an additional 10% added for the non-quantified environmental and non-energy benefits.

participants and non-participants. While all states generally use commonly accepted cost effectiveness tests to evaluate DSM resources, some states require variations in calculating or prioritizing the tests. Where applicable the Company incorporates any state-specific requirements as needed in addition to the general methodology mentioned above.

Estimated Peak Contributions

The reported capacity reduction of 971 kW (at generation) for energy efficiency programs during 2018 represents the estimated kW impact of the energy efficiency portfolio during PacifiCorp's system peak period. 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 kW 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.

Use of this factor in determining the kW contribution of energy efficiency programs is detailed in Table 5.

Table 5
Estimated Peak Contribution

Description	Value
First year Energy Efficiency program kWh savings acquired during 2018	5,568,457
Conversion factor: Coincident kW/kWh	0.00017
Estimated coincident peak kW gross contribution of 2018 Energy Efficiency	971

COST EFFECTIVENESS RESULTS

This section provides information on factors affecting cost effectiveness for the 2018 program year. The portfolio was cost effective for both the TRC and PAC when using the PacifiCorp model. Results are shown in Table 6 below.

Table 6
Portfolio Cost Effectiveness

Cost Effectiveness Test	Portfolio Results	Residential Results	Non-Residential Results
PacifiCorp Model - TRC	1.34	0.91	1.82
PacifiCorp Model - PAC	1.61	1.17	2.18

PacifiCorp Model

Based on Decision 18-11-033, PacifiCorp's model was revised in 2018 to include a greenhouse gas adder for the incremental value of avoided greenhouse gas emissions. The portfolio was cost effective resulting in a TRC of 1.34 and PAC of 1.61. Appendix 5 provides additional cost effectiveness results from multiple perspectives.

Net-to-Gross

The Company used approved net-to-gross ratios from the Database for Energy Efficient Resources (DEER) as of September 20, 2018 in the cost effectiveness assessment for the 2018 program year.

ENERGY EFFICIENCY PROGRAMS

The Company offers energy efficiency programs to all major customer sectors: residential, commercial, industrial and irrigation. The overall energy efficiency portfolio includes two programs: *Home Energy Savings* – Schedule D-118, and *Non-Residential Energy Efficiency (aka wattsmart Business)*, Schedule A-140. The *Energy Savings Assistance Program* is funded separately through Schedule S-192 and reported in a separate process with the Commission.¹² Accordingly, its program expenditures and programmatic activities are not provided in the 2018 DSM Annual Review of Energy Efficiency Programs report.

Program, sector and portfolio level results for 2018 are provided in Table 7.

Table 7¹³
California Results January 1, 2018 – December 31, 2018

	kWh Savings (at site)	kWh Savings (at generation)	Investment
Home Energy Savings	1,128,461	1,257,478	\$602,654
Total Residential	1,128,461	1,257,478	\$602,654
WSB Commercial	2,058,178	2,287,521	\$556,291
WSB Industrial	1,038,314	1,141,284	\$322,678
WSB Irrigation	791,678	882,175	\$213,960
Total wattsmart Business	3,888,170	4,310,979	\$1,092,929
Portfolio - EM&V			\$212,316
Portfolio - DSM Central			\$3,980
Portfolio - TRL			\$2,915
Total Energy Efficiency	5,016,631	5,568,457	\$1,914,794

Decision 18-11-033 included an order to submit an Annual Budget Advice Letter (“ABAL”) starting in September 2019 that includes a breakdown of expenses, including at minimum the following categories: incentive payments, program evaluations, and administrative expenses. PacifiCorp will comply with this Order and start including this breakdown of expenses with the September 2019 ABAL and the 2019 Annual Review of Energy Efficiency report.

¹² See Docket A.15-02-001 et al.

¹³ Gross savings.

Overall Portfolio Level Metrics Reporting

Decision 18-11-033 included an order to conform to ‘Overall Portfolio Level’ metrics requirements as prescribed in Decision 18-05-041. While the Order in the Decision did not apply to 2018 program year reporting, the Company is making a best effort to respond to this Order for 2018.

1. Capturing Energy Savings – Table 8, Table 9 and Table 10 summarize first year annual and lifecycle ex-ante (pre-evaluation) electric and demand savings (gross and net) for 2018.

Table 8
First Year Annual Savings Gross and Net Savings¹⁴

Program	First Year Gross kWh Savings at Site	First Year Net kWh Savings at Site	First Year Gross kWh Savings at Gen	First Year Net kWh Savings at Gen
Home Energy Savings	1,128,461	670,707	1,257,478	747,389
wattsmart Business	3,888,170	2,282,154	4,310,979	2,531,205
Total	5,016,631	2,952,861	5,568,457	3,278,594

Table 9¹⁵
Lifecycle kWh Savings Gross and Net Savings

Program	Lifecycle Gross kWh Savings at Site	Lifecycle Net kWh Savings at Site	Lifecycle Gross kWh Savings at Gen	Lifecycle Net kWh Savings at Gen
Home Energy Savings	15,726,614	9,278,702	17,524,638	10,339,536
wattsmart Business	51,928,824	30,409,519	57,575,691	33,716,325
Total	67,655,438	39,688,222	75,100,329	44,055,861

Table 10
Lifecycle kW Savings Gross and Net Savings¹⁶

Program	Lifecycle Gross kW Savings at Site	Lifecycle Net kW Savings at Site	Lifecycle Gross kW Savings at Gen	Lifecycle Net kW Savings at Gen
Home Energy Savings	197	116	219	129
wattsmart Business	678	397	752	440
Total	875	513	971	570

¹⁴ Net savings include realization rates and NTG ratios.

¹⁵ Lifecycle savings is without discount rate.

¹⁶ kW savings are not additive over the measure life since it is time independent and therefore lifecycle impacts are reported consistent with first year kW savings. Totals may be off due to rounding.

2. Disadvantaged Communities – The Company does not have businesses or homes in disadvantaged communities, as identified by CalEPA pursuant to Health and Safety Code Section 39711¹⁷.
3. Hard-to-Reach Markets – Data for the small business criteria¹⁸ for Hard-to-Reach reporting is available for 2018. Data is not available for residential and non-residential participants for the other criteria for 2018. The Company is revising systems and processes to make this reporting available for 2019. Table 11 below represents the Company’s first year gross savings at site for the Hard-to-Reach market for 2018. In 2019 the Company will provide first year annual and lifecycle ex-ante electric and demand savings (gross and net) in hard-to-reach markets.

Table 11
Hard-to-Reach Small Business
Installed Measures

Measure Category	Total kWh/Yr Savings @ Site	Total Incentive	Total Customers	Total Projects
Building Shell	51	\$ 84	1	1
Irrigation	111,107	\$ 11,693	8	8
Lighting	402,581	\$ 59,760	31	38
Grand Total	513,739	\$ 71,537	40	47

4. Cost per unit saved – Appendix 5, Table 4 provides the levelized cost of energy efficiency per kWh and kW for both TRC and PAC.

¹⁷ <https://www.energy.ca.gov/commission/diversity/definition.html>

¹⁸ Classified as Very Small (customers whose electric demand is less than 20 kW)

RESIDENTIAL PROGRAM

Home Energy Savings

The *Home Energy Savings* program uses the Company's *wattsmart* brand for outreach. The program is designed to provide access to and incentives for more efficient products and services installed or received by customers in new or existing homes, multi-family housing units or manufactured homes.

Program participation by measure category for 2018 is provided in Table 12.

Table 12
Eligible Program Measures

Measure Category	Total kWh/Yr Savings @ Site	Total Incentive	Measure Quantity
Appliances	1,508	\$ 550	11
Building Shell	6,556	\$ 1,613	5,862 (sq ft)
Energy Kits	454,096	\$ 15,328	1,284
HVAC	516,066	\$ 189,760	150
Lighting	144,369	\$ 14,010	13,448
Water Heating	5,866	\$ 4,200	7
Grand Total	1,128,461	\$ 225,461	

Program Management

The program manager who is responsible for the *Home Energy Savings* program in California is also responsible for the *Home Energy Savings* program in Washington. The program manager is responsible for the cost-effectiveness of the program, identifying and contracting with the program administrator through a competitive bid process, establishing and monitoring program performance and compliance, and recommending changes in the terms and conditions set out in the tariff and/or posted on the Company's website.

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 outsourced portion of *wattsmart* 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 Administration

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

- Retailer and trade ally engagement – CLEAResult identifies, recruits and supports retailers to increase the sale of energy efficient lighting, appliances and weatherization. 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. HVAC, plumbing and weatherization 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 1.
- Incentive processing and call-center operations – CLEAResult receives all requests for incentives, determines whether the applications are completed, works directly with customers and trade allies when information is incorrect and/or missing from the application, and processes the application for payment.
- Program specific customer communication and outreach – CLEAResult conducts some communication and outreach on behalf of the Company.

Infrastructure

The Company worked with 15 retailers to promote high efficiency light bulbs, fixtures, room air conditioners, and appliances in multiple delivery channels (downstream, midstream and upstream¹⁹). The Company also worked with 13 trade allies in HVAC and weatherization. Appendix 2 provides a listing of all participating retailers and trade allies.

Program Activities

The program was adaptively managed during 2018, however no formal program changes (those that use the program change process specified in the tariff) were implemented during the year. 2018 activities were focused on maintaining the minimally necessary program activities pending Commission's approval of the application referenced above, including the use of an alternate criteria for cost effectiveness. The Company and CLEAResult were cognizant that many measures would require revision or possibly cancellation, and those decisions were directly influenced by the pending Commission approval process. As a result, 2018 activities were primarily reactive to customer requests. Efforts to encourage retailers in the Company's service territory to stock light emitting diode ("LED") lamps that met both the Energy Star 2.0 specification and the California Efficient Lighting guidelines were on-going during the year. The decrease in sales of the lamps meeting these requirements impacted the energy savings when compared to 2017. No new housing

¹⁹ To be considered for participation in upstream buy downs, retailer sales coming from Pacific Power customers must be a significant percentage of total sales.

projects were started or completed during the year. Ductless heat pump installations (106 units) were comparable to 2017 results and were primarily delivered by three engaged local trade allies.

During 2018, 233 California customers took the online Home Energy Advisor survey ²⁰ that was added to the program website in 2016. This five-minute survey asks customers about their home characteristics and provides recommended actions to make their home more energy efficient. The online tool is a configured version of the platform provided by EnergySavvy. A few statistics include:

- Half of the customers (50%) who completed the survey had electric heat.
- The average home vintage was 1972.
- The oldest home was built in 1879.

²⁰ <https://pacificpower.energysavvy.com/>

NON-RESIDENTIAL PROGRAM

The commercial, industrial and irrigation energy efficiency program is consolidated into a single *Non-Residential Energy Efficiency* program, Schedule A-140²¹. The *Non-Residential Energy Efficiency* program is promoted to the Company's customers as *wattsmart Business*.

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

Program performance is shown in Table 13.

Table 13
Program Performance by Sector²²

Sector	Total kWh/Yr Savings @ Site	Total Incentive	Total Projects
Commercial	2,058,178	\$ 235,757	99
Industrial	1,038,314	\$ 160,196	3
Irrigation	791,678	\$ 73,987	23
Grand Total	3,888,170	\$ 469,940	125

Program savings results overall were higher than 2017 performance and each sector saw an increase in savings relative to 2017. The measure category with the largest increase was lighting due in part to a large project. Note - year-to-year fluctuation is expected given the small size of the Company's service territory and the relatively small number of customers served who have the potential for larger projects.

Services and incentives offered through the *wattsmart Business* program include:

- Typical Upgrades: Incentives for lighting, HVAC, irrigation, compressed air and other equipment upgrades that increase electrical energy efficiency and exceed energy code requirements.

²¹ Program details such as incentive tables and program definitions are available on our website at https://www.pacificpower.net/content/dam/pacific_power/doc/Business/Save_Energy_Money/CA_wattsmartBusiness_Definitions_Incentive_Tables_Information.pdf.

The program brochure is available at

https://www.pacificpower.net/content/dam/pacific_power/doc/Business/Save_Energy_Money/CA_wattsmartBusiness_Brochure.pdf

²² Irrigation savings includes one agricultural dairy project for a total savings of kWh savings of 9,577.

- 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 *wattsmart* Small Business Contractor at an eligible existing small business customer facility.
- Midstream/Lighting Instant Incentive: Provides instant, point-of-purchase incentives for qualifying lamps sold through participating distributors. Customers who purchased 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: PacifiCorp is teamed with HBC Energy Capital²³, 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.

Program participation and savings by measure category for 2018 in total is provided in Table 14.

Table 14
Installed Program Measures

Measure Category	Total kWh/Yr Savings @ Site	Total Incentive	Total Projects
Building Shell	51	\$ 84	1
Energy Management	204,404	\$ 4,088	1
Food Service Equipment	1,475	\$ 80	1
HVAC	281,818	\$ 13,938	2
Irrigation	577,697	\$ 68,486	21
Lighting	2,822,725	\$ 383,265	99
Grand Total	3,888,170	\$ 469,941	125

Program Management

The program manager overseeing program activity in California is also responsible for delivery of the *wattsmart* Business program in Washington. For each state, the program manager is responsible for managing 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.

²³ HBC Energy Capital is a division of the National Energy Improvement Fund (NEIF)

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

Program Administration

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

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. A summary of the inspection process is provided in Appendix 1 to this report.

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.
- 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 provided in Appendix 1 to this report.

Midstream/Lighting Instant Incentive Offer

In this channel, the program is 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 1 to this report.

Project Manager

In this channel, the Company's internal 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.²⁴ 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 supports trade ally networks for lighting, HVAC and motors. This work includes identifying and recruiting trade allies, providing program and technical training and providing sales support on an ongoing basis. In addition, trade ally performance scorecards provide feedback and encourage lighting trade allies to improve.

Participating vendors sign a *wattsmart* Business participation agreement and are listed as *wattsmart* Business Vendors in the Find a Vendor search tool 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.

The current searchable list of the trade allies who have applied and been approved as participating *wattsmart* Business vendors is available on the Company website²⁵ and included as Appendix 3 to

²⁴ Regional business managers are responsible for directly working with California commercial and industrial customers.

²⁵ 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/jsp/Contractor_Search/ContractorSearch.jsp

this report. In most cases, customers are not required to select a vendor from these lists to receive an incentive.²⁶

The total number of participating trade allies is currently 10. The counts of participating trade allies by technology are shown in Table 15.

Table 15
Participating Trade Allies²⁷

Lighting Trade Allies	HVAC Trade Allies	Motors Trade Allies	Irrigation Trade Allies	Small Business - Approved Contractors	Lighting Instant Incentive Distributors
9	4	4	1	3	6

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 16 lists the engineering firms currently under contract with the Company.

Table 16
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

Program Changes

The program was adaptively managed during 2018, however no program changes (those that use the program change process²⁸) were implemented during the year as the Company awaited the

²⁶ For the *wattsmart* Small Business enhanced incentives, customers are required to choose one of the approved contractors for this offer.

²⁷ Some trade allies may participate in more than one technology. The count of unique participating firms is less than the total count provided above.

²⁸ The *wattsmart* Business program is administered through a process that allows for program changes after any stakeholder comments are addressed. After consultation with Commission staff on the program

Commission's decision on its Application. Work began in 2018 to define program changes for 2019.

Program Activities

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 PacifiCorp and intends to use them as onboarding tools for the vendors. An advanced network lighting control course will also be launched soon. *wattsmart* Business vendors can also take advantage of the courses to train their personnel.

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 which resulted in several new project starts. This initiative also includes additional opportunities for co-branded marketing materials and PacifiCorp *wattsmart* Business Vendor co-branded shirts that will be made available in 2019. The shirts help promote vendor credibility with small business customers.

Advanced Rooftop Unit Controls - In November 2018, the program introduced a trade ally promotion focused on Advanced Rooftop Unit Controls ("ARC"). This limited-time offer is for completed ARC projects in PacifiCorp territory installed and submitted to *wattsmart* Business by April 1, 2019. A gift card will be awarded for each installed ARC unit. Up to five gift cards will be awarded while supplies last. A single vendor may earn up to three gift cards maximum. *wattsmart* Business Vendors in good standing are eligible to participate. As of December 31, 2018 one vendor has been identified who is capable of promoting the measure.

changes, they are posted to the program website and become effective 45 days thereafter. This program change process was requested in Advice Letter 518-E and approved on April 30, 2015.

COMMUNICATIONS, OUTREACH AND EDUCATION

The Company uses earned media, customer communications, paid media, and program-specific media to communicate the value of energy efficiency, provide information regarding low-cost, no-cost energy efficiency measures and to educate customers on the availability of technical assistance, services and incentives. The overall goal is to engage customers to reduce their energy usage through behavioral changes as well as changes in equipment, appliances, and structures.

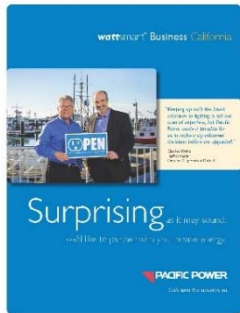
Customer Communications

As part of the Company's regular communications to its customers, newsletters are delivered to residential customers that promote energy efficiency tips, programs and incentives. Outer envelopes that feature energy efficiency messages are consistently used. The Company also uses its website and social media, such as Twitter and Facebook, to communicate and engage customers on DSM offers and incentives.

Program Specific Communications

wattsmart Business

Customer communications and outreach to support energy efficiency for businesses included print and radio advertising, digital search, direct mail, email, and content on the Company's website.



Collateral material for *wattsmart Business* was used for direct customer contact by the Company's project managers, regional business managers, and its trade allies.

During 2018, communications encouraged energy efficient LED lighting upgrades with control strategies and focused on the money saving features of these technologies. Targeted direct mail was aimed at small business customers to generate interest in lighting upgrades and incentives. Direct mail was also used in the spring and fall to target irrigation customers and to encourage energy-saving retrofits.

In 2018, the program garnered 453,540 media impressions. A breakdown of impressions by media type are shown in Table 17.

Table 17
wattsmart Business Communication Impressions

Communications Channel	2018
Radio	381,600
Newspaper	56,274
Digital Search	11,578
Irrigation Direct Mail	1,400
Small Business Direct Mail	15
Emails	2,673
Total	453,540

EVALUATIONS

Evaluations are performed by independent external evaluators to validate energy and demand savings derived from the Company's energy efficiency programs. The Company adopts industry best practices 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 efforts 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 1.

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 Table 18 below. Summaries of the recommendations are provided in Appendix 4. The evaluation report is available at <http://www.pacificorp.com/es/dsm/california.html>.

Table 18
Program Evaluations

Program	Years Evaluated	Evaluator	Progress Status
<i>wattsmart Business</i>	2016 – 2017	Cadmus	Completed
<i>Home Energy Savings</i>	2017 – 2018	ADM	In progress



Appendix 1

California Measure Installation Verifications

California Measure Installation Verifications

Home Energy Savings

Site inspections by Program Administrator staff for the following retrofit and/or new homes measures. Inspections are performed on ≥ 5 percent of single family homes, ≥ 5 percent of manufactured homes, 100 percent of multifamily projects, and 20 percent of new homes projects.

- Air sealing
- Duct sealing
- Duct sealing and insulation
- Ductless heat pumps
- Central Air Conditioning Best Practice Installation and Sizing
- Heat Pumps
- Heat pump water heaters
- Insulation
- Whole Homes Performance Path (WHPP)

No site inspections are conducted for the following measures. However, all post-purchase incented measures undergo a quality assurance review prior to the issuance of the customer/dealer incentive and recording of savings (e.g. proof of purchase receipt review) and eligible equipment review. Additionally, customer account and customer address are checked to ensure the Company does not double pay for the same measure or double count measure savings.

- Central air conditioners
- Clothes washers
- Evaporative coolers
- Refrigerators
- Windows

No site inspections are conducted for the following measures, which are delivered via an upstream, manufacturer buy-down model. Promotion agreement contracts are signed with manufacturers and retailers to set incentive levels, final product prices, and limits to the total number of units that can be purchased per customer. Program Administrator verifies measures for product eligibility and correct pricing. Pricing is also verified by Program Administrator field visits to retail locations.

- LED bulbs
- Light fixtures
- Room air conditioners
- Advanced power strips

Customer eligibility for wattsmart Starter Kits is verified using the customer's account number and last name and cross-verifying with the current customer database.

wattsmart Business

Lighting projects

- Retrofits - 100 percent post-site inspections by program administrator of all projects with incentives over a specified dollar amount. Project cost documentation reviewed for all projects.
- New construction - 100 percent post-installation site inspections by program administrator of all projects with incentives over a specified dollar amount.
- A percent of post-site inspections by program administrator of projects with incentives under a specified dollar amount.
- Small Business Lighting - Post-site inspections by program administrator for a minimum of a specified percentage of projects.
- Midmarket/Instant Incentive - Third party program administrator will conduct regular spot checks on a sampling of approved projects after incentive processing. Inspections will include both phone and on-site inspections. All projects with customer incentives over a specified incentive threshold will receive an on-site inspection. A minimum percent of all remaining projects will be selected for phone inspections or on-site inspections.

Non-lighting projects (typical upgrades where savings reported based on Unit Energy Savings values)

- 100 percent of applications with incentives that exceeds a specified amount will be post-inspected, either in person or via telephone interview, by program administrator.
- A minimum of a specified percent of remaining non-lighting applications will be post-inspected, either in person or via telephone interview, by program administrator.

Non-lighting projects (typical upgrades/listed measures where savings is determined using a simplified analysis tool)

- 100 percent of applications with savings that exceeds a specified amount will be inspected, either in person or via telephone interview, by program administrator.
- A minimum of a specified percent of remaining non-lighting applications will be inspected, either in person or via telephone interview, by program administrator.

Non-lighting projects (custom measures)

- 100 percent pre/post-installation inspections, invoice reconciled to inspection results. On-site pre/post inspections are required for projects with savings over a specified threshold. For projects with savings below the threshold, inspection information may be collected by phone or email.
- No pre-inspection for new construction.
- Inspections are conducted by third party energy engineering firms for the in-house project manager/consultant delivery channel.
- Inspections are conducted by program administrator for projects delivered by outsourced program delivery teams.



Appendix 2

Home Energy Savings Retailers

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Table 1¹
Participating Upstream/Midstream Lighting Retailers and Redemptions

The Company worked with 12 lighting retailers in 2018 to promote efficient lighting. Table 1 lists the retailer and the type of redemption(s) provided.

Retailer	City	State	LEDs	Fixtures
Ace Hardware #1134	Mt Shasta	CA	x	x
Ace Hardware #7646	Crescent City	CA	x	x
Ace Hardware #8207	Yreka	CA	x	x
Dollar Tree #1251	Yreka	CA	x	
Dollar Tree #1990	Crescent City	CA	x	
Eller's Fort Dick Market	Crescent City	CA	x	
Four Seasons Supply Center #4523	Alturas	CA	x	x
Home Depot #8524	Crescent City	CA	x	x
Luke's Yreka Drug #1	Yreka	CA	x	
True Value Hardware - Dunsmuir	Dunsmuir	CA	x	
Wal-Mart #1630	Yreka	CA	x	x
Wal-Mart #1910	Crescent City	CA	x	x

Table 2
Participating Upstream/Midstream Retailers and Redemptions

Table 2 provides the list of 2018 participating Upstream/Midstream retailers and the product types that were redeemed at each location.

Retailer	City	State	Room Air Conditioners
Black's Appliance Audio & Video	Yreka	CA	x

¹ To be considered as a participating retailer for discounted lighting products, the retailer's sales coming from Pacific Power customers must be a significant majority of their total sales.

Table 3
Downstream Retailers

Two participating retailers provided redemptions for downstream clothes washers, refrigerators, attic insulation, and wall insulation.

Participating Retailers (Retailers who are actively enrolled in the program)	City	State	Clothes Washer	Clothes Dryer	Refrigerator	Evaporative Cooler - Tier 2	Heat Pump Water Heater, Self-installed	Insulation-Attic	Insulation-Wall
Black's Appliances Audio & Video	Yreka	CA	x						
Home Depot #8524	Crescent City	CA	x				x	x	x

Seven non-participating retailers provided redemptions for downstream clothes washers and heat pump water heaters. Some retailers are located outside Pacific Power's service territory. However, the customer resides with the service territory.

Redemptions from Non-Participating Retailer's (*Retailer may not be located in the service territory)	City	State	Clothes Washer	Clothes Dryer	Refrigerator	Evaporative Cooler - Tier 2	Heat Pump Water Heater, Self-installed	Insulation-Attic	Insulation-Wall
Ace Rental Place	Alturas	CA				x			
The Home Depot Inc.	Atlanta	GA					x		
Home Depot	Baton Rouge	LA						x	
Home Depot #8557	Phoenix	OR					x	x	x
Lowes #248	Medford	OR					x		
Sears	Ann Arbor	MI	x						
Sears #3489	Harbor	OR	x						

**Table 4
HVAC Trade Ally**

The Company worked with 12 HVAC trade allies. Some trade allies are located outside Pacific Power’s service territory. However, the customer resides within the service territory.

Trade Ally (Trade ally may be located outside of the territory)	City	State	Electric System to Heat Pump Conversion - Tier 1	Electric System to Heat Pump Conversion - Tier 2	Evaporative Cooler - Tier 2	Heat Pump to Heat Pump Upgrade - Tier 1	Heat Pump to Heat Pump Upgrade - Tier 2	Heat Pump, Multi-Head, Ductless	Heat Pump, Single-Head, Ductless	New Homes Ductless Heat Pump
All Trade Services	Mount Shasta	CA						x	x	
Chimney Kraft	Crescent City	CA						x	x	x
Coastal Heating & Air Conditioning	Brookings	OR						x		
Downey Heating & Cooling	Fort Jones	CA	x	x		x	x	x	x	
Dressler Heating and AC	Yreka	CA						x	x	
Frank's Heating and Refrigeration	Crescent City	CA	x	x			x	x	x	
Harbor View Windows Heating and Air	Brookings	OR						x	x	
Meyer & Son's Heating, Plumbing & AC	Dunsmuir	CA						x	x	
Mike Brown Heating and AC	Yreka	CA						x	x	
Mountain Air Heating & Cooling Inc.	Yreka	CA						x	x	x
Ray-Mac Mechanical, Inc.	Mount Shasta	CA	x	x		x	x		x	
SVM Plumbing, Heating & Air	Yreka	CA						x	x	

**Table 5
Plumbing Trade Ally**

Table 5 lists one plumbing trade ally the Company worked with to promote efficient plumbing technologies.

Trade Ally Name (Trade ally may be located outside of the territory)	City	State	Heat Pump Water Heaters
No plumbing measures completed by Trade Allies. All HPWH’s were installed by homeowners.			

Table 6
Weatherization Trade Ally

Table 6 lists one weatherization trade ally the Company worked with.

Trade Ally Name (Trade ally may be located outside of the territory)	City	State	Insulation-Attic	Insulation-Wall
Meek's Building Center	Redding	CA		x

Table 7
Applications by Customer City and Measure Category

Customer City	% of All Applications	% of Appliance Applications	% of HVAC Applications	% of Manufactured Homes Applications	% of Kits Applications
ALTURAS	4.22%	0.00%	0.70%	0.00%	4.67%
CALLAHAN	0.35%	0.00%	0.00%	0.00%	0.39%
CASTELLA	0.42%	0.00%	0.00%	0.00%	0.47%
CEDARVILLE	1.04%	0.00%	0.00%	0.00%	1.17%
Crescent City	25.66%	36.36%	45.77%	0.00%	23.29%
DORRIS	1.73%	0.00%	0.00%	0.00%	1.95%
DUNSMUIR	4.01%	0.00%	2.11%	0.00%	4.28%
ETNA	3.39%	0.00%	2.82%	0.00%	3.27%
FORT DICK	0.14%	0.00%	0.00%	0.00%	0.16%
FORT JONES	3.04%	9.09%	0.00%	0.00%	3.35%
GASQUET	1.59%	18.18%	1.41%	0.00%	1.48%
GAZELLE	0.42%	0.00%	0.00%	0.00%	0.47%
GREENVIEW	0.42%	0.00%	0.70%	0.00%	0.39%
GRENADA	1.25%	0.00%	0.70%	0.00%	1.32%
HAPPY CAMP	2.63%	0.00%	0.70%	0.00%	2.88%
HORN BROOK	1.59%	0.00%	0.70%	0.00%	1.71%
HORSE CREEK	0.28%	0.00%	0.00%	0.00%	0.31%
KLAMATH	0.90%	0.00%	0.70%	0.00%	0.93%
KLAMATH RIVER	0.55%	0.00%	0.70%	0.00%	0.55%
LAKEHEAD	0.21%	0.00%	0.00%	0.00%	0.23%
MACDOEL	0.21%	0.00%	0.00%	0.00%	0.23%
MC CLOUD	1.18%	0.00%	0.70%	0.00%	1.25%
MONTAGUE	4.84%	0.00%	12.68%	0.00%	4.05%
MOUNT SHASTA	12.80%	0.00%	6.34%	0.00%	13.71%
SCOTT BAR	0.28%	0.00%	0.70%	0.00%	0.23%
SEIAD VALLEY	0.21%	0.00%	0.00%	0.00%	0.23%
SMITH RIVER	3.18%	18.18%	4.23%	0.00%	2.96%
TULELAKE	1.87%	0.00%	0.00%	0.00%	2.10%
Weed	8.23%	0.00%	4.93%	0.00%	8.64%
YREKA	13.40%	18.18%	13.38%	0.00%	13.32%



Appendix 3

California *wattsmart* Business Vendors

wattsmart® Business Vendor Network



The following is a list of contractors, distributors, manufacturers and other vendors participating in Pacific Power's wattsmart® Business Vendor Network displayed in random order (unless sorted by the user) based on the search criteria selected. This listing is provided solely as a convenience to our customers. Pacific Power does not warrant or guarantee the work performed by these participating vendors. You are solely responsible for any contract with a participating vendor and the performance of any vendor you have chosen.

Search Criteria:

State(s) [California]
Program(s) [Commercial]
Specialties [Small business lighting]
Service Address
Business Name

Search Results: 3 record(s) found

About Us	Service Areas	Company Name	Contact Information	Specialty	Business Type	Projects Completed	Distance (miles)
	California	McCombs Electric Inc. Address: HC 3 box 329 Alturas, CA 96101 Website:	Phone: 530-233-5397 Name: Dane Mccombs Email: dam24@frontiernet.net	Controls – Lighting, Irrigation, Lighting, Motors and VFDs, Small business lighting	Contractor	8	
	California	DBA All Trade Mechanical and Electric Address: 101 East Alma St. STE 100C Mount Shasta, CA 96067 Website: http://www.alltradeservices.com	Phone: 530-918-5547 Name: Jacob Pritchard Email: admin@alltradeelectric.com	HVAC - evaporative, HVAC - unitary, Lighting, Other Specialty, Small business lighting	Contractor	4	

wattsmart® Business Vendor Network



California	Big Dog Electric Address: PO Box 535 Alturas, CA 96101 Website:	Phone: 530-640-1915 Name: Aaron Teuscher Email: bigdodgelectric2017@g mail.com	Lighting, Small business lighting	Contractor	1
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wattsmart® Business Vendor Network



The following is a list of contractors, distributors, manufacturers and other vendors participating in Pacific Power's wattsmart® Business Vendor Network displayed in random order (unless sorted by the user) based on the search criteria selected. This listing is provided solely as a convenience to our customers. Pacific Power does not warrant or guarantee the work performed by these participating vendors. You are solely responsible for any contract with a participating vendor and the performance of any vendor you have chosen.

Search Criteria:

State(s) [California]
Program(s) [Commercial]
Specialties [Appliances, Building envelope, Compressed air, Controls – HVAC, Controls – Lighting, Farm and dairy, Food service, HVAC - evaporative, HVAC - unitary, Irrigation, Lighting, Lighting instant incentives, Motors and VFDs, Office equipment, Other Specialty, Small business lighting]
Service Address
Business Name

Search Results: 10 record(s) found

About Us	Service Areas	Company Name	Contact Information	Specialty	Business Type	Projects Completed	Distance (miles)
	California, Washington	BidEnergy Inc. Address: 1628 JFK Blvd, Ste 2100 Philadelphia, PA 19103 Website: http://bidenergy.com	Phone: 215-732-4480 Name: Timothy Mayo Email: tim.mayo@bidenergy.com	Appliances, Building envelope, Controls – Lighting, Food service, HVAC - evaporative, HVAC - unitary, Lighting, Motors and VFDs, Office equipment	Other	1	
	California	Big Dog Electric Address: PO Box 535 Alturas, CA 96101 Website:	Phone: 530-640-1915 Name: Aaron Teuscher Email: bigdodgelectric2017@gmail.com	Lighting, Small business lighting	Contractor	1	

wattsmart® Business Vendor Network



California	CED - 6084 Address: 3985 Old 44Dr. Redding, CA 96003 Website:	Phone: 530-221-5233 Name: Rich Friebel Email: rfriebel@cedrdg.com	Lighting	Distributor	
California	DBA All Trade Mechanical and Electric Address: 101 East Alma St. STE 100C Mount Shasta, CA 96067 Website: http://www.alltradeservices.com	Phone: 530-918-5547 Name: Jacob Pritchard Email: admin@alltradeelectric.al.com	HVAC - evaporative, HVAC - unitary, Lighting, Other Specialty, Small business lighting	Contractor	4
California, Washington	Forever Green Indoors Address: 1314 S Grand Blvd, Ste 2, #127 Spokane, WA 99202 Website: http://www.forevergreenindoors.com	Phone: 800-630-7345 Name: Kathleen Sullivan Email: ksullivan@forevergreenindoors.com	Lighting	Distributor, Manufacturer - Rep	1
California	LED Concepts, USA Address: 2936 Churn Creek Road Redding, CA 96002 Website: http://www.ledconceptsusa.com	Phone: 530-708-0220 Name: Jeff Dennis Email: jeff@ledconceptsusa.com	Lighting, Lighting instant incentives	Distributor	7
California, Washington	Leidos Engineering, LLC. Address: 301 Plainfield Rd. Suite 310 Syracuse, NY 13212 Website: https://energy.leidos.com/	Phone: 855-926-7543 Name: Christopher Piechuta Email: AMPLIFY@Leidos.com	Appliances, Compressed air, Controls – Lighting, Food service, HVAC - evaporative, HVAC - unitary, Lighting, Motors and VFDs, Office equipment, Other Specialty	Engineering Firm	2
California	McCombs Electric Inc. Address: HC 3 box 329 Alturas, CA 96101 Website:	Phone: 530-233-5397 Name: Dane McCombs Email: dam24@frontiernet.net	Controls – Lighting, Irrigation, Lighting, Motors and VFDs, Small business lighting	Contractor	

wattsmart® Business Vendor Network

California, Washington	Pacific Energy Concepts, LLC Address: 210 W 3rd St Vancouver, WA 98660 Website: http://www.pacificenergyconcepts.com/	Phone: 360-768-8011 Name: Victoria Varanita Email: incentives@pecnw.com	Controls – Lighting, Lighting	Distributor
California, Washington	Transformative Wave Address: 1012 Central Ave S Kent, WA 98032 Website: http://transformativewave.com/	Phone: 253-867-2333 Name: Joe Schmutzler Email: joe.s@twavetech.com	Controls – HVAC, HVAC - unitary, Motors and VFDs	Distributor

Instant Incentives for Lighting – Approved Distributors

wattsmart Business instant incentives for lighting

Instant incentives make the investment in energy-efficient technology easy. We’re offering wattsmart Business instant incentives for LED and low-wattage fluorescent lighting that fit in many existing lighting fixtures. Speak to your lighting distributor about the right kind of lamps for your fixtures.

Below is a list of approved lighting distributors that can assist you through the lamp selection, incentive and purchase process. Please visit bewattsmart.com for more information.

Distributor name	Branch address	Phone number	Website
Campton Electric Supply (CED)	485 E Hoover Ave. Crescent City, CA 95531	707-465-6446	www.camptoncrescentcity.shopced.com
Consolidated Electrical Supply (CED)	4606 Table Rock Rd. Central Point, OR 97502	541-665-2332	www.cedmedford.shopced.com
LED Concepts	2936 Churn Creek Rd. Redding, CA 96002	530-708-0220	www.ledconceptsusa.com
North Coast Electric	801 S. Grape St. Medford, OR	541-772-7131	www.northcoastelectric.com
	1075 S. 5th St. Coos Bay, OR	541-267-2145	
	911 Market St. Klamath Falls, OR	541-884-4171	
North Valley Distributing	3081 Crossroads Dr. Redding, CA 96003	530-222-1500	www.northvalleydistributing.com
LED Light Source, LLC	2800 Crosby Ave. Klamath Falls, OR 97603	541-661-5761	www.ledlight-source.com

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*The Approved Distributor list is subject to change. If you have questions about the Instant Incentives or require assistance finding an Approved Distributor in your area please contact 1-800-222-4335.

**Pacific Power does not warrant the performance of qualifying purchased equipment or the quality of the product sold by the Approved Distributor.





Appendix 4

California Program Evaluation Recommendations and Responses

California 2018 Evaluations

Program Evaluation Recommendations and Company Responses

Evaluation reports provide detailed information on the process and impact evaluations performed on each program, summarizing the methodology used to calculate the evaluated savings as well as providing recommendations for the Company to consider for improving the process or impact of the program, as well as customer satisfaction.

Outlined below is a list of the programs, the years that were evaluated during 2018, and the third party evaluator who completed the evaluation. Program evaluations are available for review at <http://www.pacificorp.com/es/dsm/california.html>

Program	Years Evaluated	Evaluator
<i>wattsmart</i> Business	2016 - 2017	Cadmus

The third party evaluator’s recommendations and Company’s responses are provided in the table below.

Table 1
wattsmart Business Evaluation Recommendations

Evaluation Recommendations	Pacific Power Action Plan
<p>Savings: Consider revising the deemed savings for LED case lighting to match DEER. DEER recommends savings as 102.9 kWh per five-foot door for medium case lighting and 232.5 kWh per five foot door for low temperature case lighting. This change will reduce the claimed energy savings for LED case lighting.</p>	<p>To be implemented. The Company has reviewed the recommendation and the most current measure information available and will be adopting the recommended approach with the next program update in 2019.</p>
<p>Marketing: Consider the following opportunities and incorporate those that can be done cost effectively.</p>	<p>Due to cost-effectiveness considerations, some (but not all) of the recommendations can be implemented. See the responses below for each item.</p>
<p>Include California-specific language in electronic communications directed exclusively to California customers.</p>	<p>Implemented. The Company will take this recommendation under consideration and implement it where appropriate.</p>

Evaluation Recommendations	Pacific Power Action Plan
Increase the use of case studies.	The Company will aim to complete a fresh case study for California.
If budget will allow, develop and incorporate messaging to support Pacific Power’s goal to appeal to customers based on energy efficiency as good for the environment and the state of California. Calendarize this message with specific campaign efforts throughout the year.	This recommendation cannot be implemented due to cost-effectiveness limitations. The focus of messaging will continue to be on saving money, which is a key driver for our customers.
Communicate program changes that impact the customers’ incentive or program experience, close to when the changes take effect. This could be done via email.	Implemented. The Company posts notices prominently on its website 45 days in advance of program changes taking effect and communicates the changes via email to trade allies. These communications include a redlined document showing the incentive changes and explanations for the changes.
Increase presence in town events through town chambers of commerce if budget allows.	The Company hopes to implement this recommendation in 2019, if budget allows.
If budget and resources allow, increase the frequency of email throughout the year, rather than only to coincide with marketing events.	The Company will take this recommendation under consideration and look for cost effective options.
Nonparticipants: Increase efforts to build awareness of the program and its benefits through regular email marketing and business-to-business outreach. Target nonparticipants with case studies highlighting actual energy cost savings achieved by other small businesses. Continue growing the program approved trade ally network and lighting distributor participation, to extend Pacific Power’s outreach to customers, beyond its own marketing efforts.	The Company aims to reach nonparticipants in our marketing efforts with email, direct mail and paid advertising. The Company aims to add at least one new case study. Growing the program approved trade ally network and distributor participation is an ongoing effort as is continuing to improve the participation of trade allies.



Appendix 5

California Cost Effectiveness



Memorandum

To: Esther Giezendanner and Brian Ludwig, PacifiCorp
From: David Basak, Navigant
Date: February 26, 2019
Re: Cost-Effectiveness Results for the Portfolio and Sector Level - California

Navigant estimated the cost-effectiveness for the overall energy efficiency portfolio and component sectors, based on 2018 costs and savings estimates provided by PacifiCorp. This memo provides the cost-effectiveness results for the overall energy efficiency portfolio and the two sector components. The portfolio passes the cost-effectiveness for all cost tests except the RIM test. The memo consists of the following tables.

Table 1 - Utility Inputs
Table 2 – Portfolio Level Costs 2018
Table 3 - Benefit/Cost Ratios by Portfolio Type
Table 4 – 2018 Total Portfolio Cost-Effectiveness Results
Table 5 – 2018 C&I Energy Efficiency Portfolio Cost-Effectiveness Results
Table 6 – 2018 Residential Energy Efficiency Portfolio Cost-Effectiveness Results

Table 1 - Utility Inputs

Parameter	Value
Discount Rate	6.57%
Residential Line Loss	11.43%
Commercial Line Loss	11.14%
Industrial Line Loss	9.92%
Irrigation Line Loss	11.43%
Residential Energy Rate ¹ (\$/kWh)	\$0.1319
Commercial Energy Rate ¹ (\$/kWh)	\$0.1487
Industrial Energy Rate ¹ (\$/kWh)	\$0.1128
Irrigation Energy Rate ¹ (\$/kWh)	\$0.1497
Energy-to-Capacity Conversion Factor	0.000174387
Inflation Rate	2.20%

¹ Future rates determined using a 2.20% annual escalator.

Table 2 – Portfolio Level Costs 2018

Portfolio Level Expense	Cost
Portfolio - EM&V	\$212,316
Portfolio - DSM Central	\$3,980
Portfolio - TRL	\$2,915
Total Costs	\$219,211

Table 3 - Benefit/Cost Ratios by Portfolio Type

Program Year	PTRC	TRC	UCT	RIM	PCT
Total Portfolio	1.47	1.34	1.61	0.49	4.30
C&I Programs	2.00	1.82	2.18	0.53	5.28
Residential Programs	1.00	0.91	1.17	0.45	2.69

Table 4 – 2018 Total Portfolio Cost-Effectiveness Results

Cost-Effectiveness Test	Levelized \$/kWh	Levelized \$/kW	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0783	\$448.76	\$2,306,238	\$3,397,485	\$1,091,247	1.47
Total Resource Cost Test (TRC) No Adder	\$0.0783	\$448.76	\$2,306,238	\$3,088,623	\$782,385	1.34
Utility Cost Test (UCT)	\$0.0650	\$372.59	\$1,914,794	\$3,088,623	\$1,173,829	1.61
Rate Impact Test (RIM)			\$6,267,190	\$3,088,623	-\$3,178,567	0.49
Participant Cost Test (PCT)			\$1,818,988	\$7,824,660	\$6,005,672	4.30
Lifecycle Revenue Impacts (\$/kWh)						\$0.0000216843
Discounted Participant Payback (years)						2.80

Table 5 – 2018 C&I Energy Efficiency Portfolio Cost-Effectiveness Results

Cost-Effectiveness Test	Levelized \$/kWh	Levelized \$/kW	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0580	\$332.84	\$1,312,134	\$2,622,538	\$1,310,405	2.00
Total Resource Cost Test (TRC) No Adder	\$0.0580	\$332.84	\$1,312,134	\$2,384,126	\$1,071,992	1.82
Utility Cost Test (UCT)	\$0.0483	\$277.24	\$1,092,929	\$2,384,126	\$1,291,197	2.18
Rate Impact Test (RIM)			\$4,474,515	\$2,384,126	-\$2,090,389	0.53
Participant Cost Test (PCT)			\$1,129,606	\$5,969,802	\$4,840,195	5.28
Lifecycle Revenue Impacts (\$/kWh)						\$0.0000378230
Discounted Participant Payback (years)						2.06

Table 6 – 2018 Residential Energy Efficiency Portfolio Cost-Effectiveness Results

Cost-Effectiveness Test	Levelized \$/kWh	Levelized \$/kW	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.1129	\$647.41	\$774,893	\$774,947	\$54	1.00
Total Resource Cost Test (TRC) No Adder	\$0.1129	\$647.41	\$774,893	\$704,497	-\$70,396	0.91
Utility Cost Test (UCT)	\$0.0878	\$503.51	\$602,654	\$704,497	\$101,843	1.17
Rate Impact Test (RIM)			\$1,573,464	\$704,497	-\$868,967	0.45
Participant Cost Test (PCT)			\$689,382	\$1,854,859	\$1,165,476	2.69
Lifecycle Revenue Impacts (\$/kWh)						\$0.0000095160
Discounted Participant Payback (years)						5.65