



2017 California Annual Review of Energy Efficiency Programs

January 1, 2017 – December 31, 2017

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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
MW	Megawatt
PAC	Program Administrator Cost
TRL	Technical Reference Library (database of measure assumptions)
TRC	Total Resource Cost
UCT	Utility Cost Test
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 and industrial 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 with the California Public Utilities Commission (“Commission”) requesting authorization to continue offering its programs through 2020. A decision on the application is pending. The Company is currently authorized to continue offering its energy efficiency programs through December 31, 2018.

The Company, on behalf of its customers, invested \$2.0m in energy efficiency information and resource acquisitions to achieve the reported savings during January 1, 2017 through December 31, 2017. The investment yielded approximately 4.8 gigawatt-hours (“GWh”) in first year savings¹ and approximately 0.58 megawatts (“MW”) of capacity reduction.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, 2017 through December 31, 2017. Program results are summarized in Table 1 below.

Table 1
Total Portfolio Performance

2017 Total Portfolio Performance	
Investment	\$2,016,931
kWh-Yr Savings (gross – at generation)	4,864,372
kWh-Yr Savings (gross – at site)	4,372,449
Portfolio Total Resource Cost (TRC) – PacifiCorp Model	0.92
Portfolio TRC – E3 Calculator	1.35

In 2017, the Company transitioned from the Pacific Gas and Electric E3 Calculator to the PacifiCorp cost effectiveness model in response to Commission staff direction. The portfolio was cost effective when using the E3 calculator with a Total Resource Cost test of 1.35 and 2.13 from Program Administrator Cost test. When calculated using the PacifiCorp model, portfolio cost-

¹ The values at generation 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.

effectiveness was 0.92 from the TRC and 1.30 from the PAC. Additional discussion of cost effectiveness is in the Cost Effectiveness Results section.

Overall, total portfolio savings decreased 11 percent from 2016 levels. At a sector level, residential savings increased 18 percent from 2016. Non-residential savings decreased 25 percent compared to 2016. Total portfolio expenditures decreased 11 percent from 2016. At the sector level, residential expenditures increased nine percent, while non-residential expenditures decreased 12 percent compared to 2016. Portfolio results exclude Energy Savings Assistance Program achievements which provides energy savings services to income qualifying customers. The Non-Residential section of this report outlines factors contributing to the decrease in energy savings in the non-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 through newsletters and other program inserts.

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	13
	Upstream/midstream HVAC Retailers	1
	Downstream Retailers	4
	HVAC Trade Allies	14
	Plumbing Trade Allies	1
	Weatherization Trade Allies	2
Commercial and Industrial/ Agricultural	Lighting Trade Allies	7
	HVAC Trade Allies	3
	Motor Trade Allies	3
	Irrigation Trade Allies	1
	Small Business Contractors	2
	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. The Company filed Petition of PacifiCorp to Modify D. 14-04-008 on June 8, 2016, to request authorization to continue to operate approved programs through 2017. The petition was approved by the Commission on September 29, 2016 (D. 16-09-052).

On September 15, 2017, the Company filed an application requesting authorization to continue offering its energy efficiency programs and the surcharge to fund the programs, A.17-09-010 (“Application”). A decision on the Application is pending. 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 (“Petition”). 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 Company filed its 2016 Annual Review of Energy Efficiency Programs with the Commission on March 15, 2017.

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 2017 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-16			\$ 265,606	\$ 192,606	\$ 458,212
Jan-17	\$ 92,588	\$ (366,338)	\$ (8,144)	\$ (5,979)	\$ 178,483
Feb-17	\$ 84,657	\$ (415,235)	\$ (338,722)	\$ 297,168	\$ 145,073
Mar-17	\$ 195,334	\$ (316,939)	\$ (460,327)	\$ (225,189)	\$ (201,722)
Apr-17	\$ 116,731	\$ (241,604)	\$ (585,201)	\$ 44,128	\$ (282,467)
May-17	\$ 217,073	\$ (268,042)	\$ (636,170)	\$ (69,507)	\$ (402,943)
Jun-17	\$ 141,085	\$ (249,574)	\$ (744,658)	\$ (31,397)	\$ (542,829)
Jul-17	\$ 150,162	\$ (354,057)	\$ (948,554)	\$ 61,663	\$ (685,061)
Aug-17	\$ 212,684	\$ (385,627)	\$ (1,121,497)	\$ (26,934)	\$ (884,938)
Sep-17	\$ 105,312	\$ (269,211)	\$ (1,285,395)	\$ (40,278)	\$ (1,089,115)
Oct-17	\$ 74,718	\$ (289,875)	\$ (1,500,552)	\$ 22,748	\$ (1,281,524)
Nov-17	\$ 113,817	\$ (218,120)	\$ (1,604,855)	\$ 147,486	\$ (1,238,340)
Dec-17	\$ 484,901	\$ (313,560)	\$ (1,433,515)	\$ (108,496)	\$ (1,175,496)
2017 Total	\$ 1,989,061	\$ (3,688,181)		\$ 258,019*	

*December 2017 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** – After a customer agrees 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 seeks 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 be low and savings are less predictable, making Class 3 DSM resources less suitable 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>.

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 education. These efforts seek 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. Similar to Class 3 DSM resources, the impacts of Class 4 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 campaigns.

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”).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 2015 Potential Assessment indicates that approximately 2 percent of the achievable technical potential for PacifiCorp’s territory, excluding Oregon, is available within its California service area.

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

Table 4
California Energy Efficiency Achievable Technical Potential by Sector

Sector	Cumulative GWh by 2034	Percent of Baseline Sales
Residential	93	23%
Commercial	91	29%
Industrial	8	14%
Irrigation	9	10%
Street Lighting	1	32%

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. 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 Manual⁶ as well as an additional fifth test⁷. The Company's analysis assesses the costs and benefits of DSM resource programs from different stakeholder perspectives, including 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 estimated capacity reduction during PacifiCorp's system peak period from the 2017 energy efficiency portfolio is shown in Table 5. An energy-to-capacity conversion factor, developed from Class 2 DSM selections in the 2015 IRP, is used to translate 2017 energy savings to estimated demand reduction during the system peak. The use of this factor in the MW calculation assumes

⁶ Total Resource Cost test ("TRC"), Program Administrator Cost test ("PAC"), Ratepayer Impact ("RIM"), and Participant Cost Test ("PCT").

⁷ PacifiCorp TRC ("PTRC").

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 2015 IRP.

Table 5
Estimated Peak Contribution

Description	Value
First year Energy Efficiency program MWh savings acquired during 2017	4,864
Conversion factor: Coincident MW/MWh	0.00012
Estimated coincident peak MW contribution of 2017 Energy Efficiency acquisitions	0.58

COST EFFECTIVENESS RESULTS

This section provides information on factors affecting cost effectiveness for the 2017 program year. The portfolio was below 1.0 for the TRC when using the PacifiCorp model and is due to a variety of factors including higher administrative costs and a low net-to-gross ratio for the lighting measure category. With 2017 being a transition year, the cost effectiveness results were calculated using both the E3 Calculator and 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	0.92	0.82	1.00
E3 Calculator - TRC	1.35	1.02	1.65
PacifiCorp Model - PAC	1.30	1.08	1.48
E3 Calculator - PAC	2.13	1.73	2.45

Transition from E3 Calculator to PacifiCorp Model

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, Itron⁸. The change resulted in a reduction in the overall benefit cost ratios. The portfolio was cost effective when using the E3 calculator with PG&E inputs, resulting in a TRC of 1.35. However, when calculated using the PacifiCorp model using Company specific inputs, the portfolio TRC was 0.92. The program was cost effective from the PAC. Appendix 5 provides additional cost effectiveness results from multiple perspectives.

Administrative Costs

Residential program administrative costs increased in 2017 and were driven by a combination of:

- Increased new construction of new homes participating in the Whole Home Performance Path offer which used building simulation that was combined with site visits to ensure homes exceeded energy code;
- Increased lighting retailer site visits and promotional campaigns;
- Increased ductless heat pump installations with targeted training and follow-up with a key trade allies;
- A focused energy saving kit campaign using two direct mail flights and engineering/market assessments to support the aforementioned Company Application.

⁸ Additional information regarding PacifiCorp's transition to its company specific cost effectiveness model can be found in Application No. 17-09-010.

The challenge of program administrative cost management in the Company's small California market include: 1) working with smaller retailers with limited product selections rather than larger stores with more extensive offerings; 2) long drive times for any program funded inspections or trade ally engagement; 3) fewer trade allies; and 4) the tendency for small market trade allies to be generalists instead of specialists which limits their ability to promote program eligible equipment. These factors contribute to higher per-unit delivery costs as economies of scale available in larger markets cannot be realized. Additionally, costs for reporting, quality assurance and contractor outreach are all necessary for delivery of comprehensive programs.

Net-to-Gross

The Company specific net-to-gross ("NTG") ratio for lighting is sourced from the recently completed Home Energy Savings program evaluation for program years 2015 – 2016. The value differs from the higher NTG value the Company used in its planning methodology, which is from the E3 calculator. The Company specific NTG was driven by relatively low observed price elasticities at the smaller participating retailers within the territory. The retailer mix in the Company's California service territory is different than larger markets that typically include membership club stores that account for large quantities of efficient lighting sales and show larger observed price elasticities. These locations generate larger data sets correlating with buy downs, selling prices and sales volumes, and higher degrees of price variation which can more easily be used to assess program impacts and free ridership. Low observed price elasticities at small participating retailers suggests less of an effect of program incentives and correlates with higher free ridership estimates. While the NTG for lighting appears lower than expected for a small rural market, no more current alternate data is available at this time; therefore, the Company used these results and incorporated them into the cost effectiveness assessment for the 2017 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 at the Commission.⁹ Accordingly, its program expenditures and programmatic activities are not provided in the 2017 DSM Annual Review of Energy Efficiency Programs report.

Program, sector and portfolio level results for 2017 are provided in Table 7.

Table 7
California Results January 1, 2017 – December 31, 2017

	kWh Savings (at site)	kWh Savings (at generation)	Investment
Home Energy Savings	1,906,852	2,124,861	\$836,253
Total Residential	1,906,852	2,124,861	\$836,253
WSB Commercial	1,459,939	1,622,620	\$644,301
WSB Industrial	245,993	270,388	\$156,975
WSB Irrigation	759,665	846,502	\$218,736
TOTAL wattsmart Business	2,465,597	2,739,511	\$1,020,012
Portfolio - DSM Central			\$10,447
Portfolio - EM&V			\$148,565
Portfolio - TRL			\$1,656
Total Energy Efficiency	4,372,449	4,864,372	\$2,016,931

⁹ See Docket A.15-02-001 et al.

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 2017 is provided in Table 8.

Table 8
Eligible Program Measures

Measure Category	Total kWh/Yr Savings @ Site	Total Incentive	Measure Quantity
Appliances	5,663	\$ 2,200	44
Building Shell	4,768	\$ 2,046	8,855 (sq ft)
Energy Kits	488,993	\$ 15,352	1,267
HVAC	495,399	\$ 188,313	137
Lighting	853,244	\$ 78,332	48,321
Water Heating	14,976	\$ 5,600	9
Whole Home	43,808	\$ 43,808	20 (homes)
Grand Total	1,906,852	\$ 335,650	-

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.

Program Administration

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

- Retailer and trade ally engagement – CLEARResult 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 16 retailers to promote high efficiency light bulbs, fixtures, room air conditioners, and appliances in multiple delivery channels (downstream, midstream and upstream¹⁰). The Company also worked with 16 trade allies in HVAC, plumbing, and weatherization. Appendix 2 provides a listing of all participating retailers and trade allies.

Program Activities

The program was adaptively managed during 2017, however no formal program changes (those that use the program change process specified in the tariff) were implemented during the year. 2017 activities were focused on increasing participation, savings and engagement with trade allies. Efforts to encourage retailers in the Company's service territory to stock light emitting diode (“LED”) lamps that met the new Energy Star 2.0 specification were on-going during the year and resulted in approximately 15 percent increase in units and approximately 30 percent increase in lighting savings compared to 2016. New home completions increased substantially when compared to 2016. New housing results are dominated by one organization as part of a multi-year construction plan designed to increase the supply of housing for members. Local program staff were able to influence the final design and construction specifications for this owner and all the newly constructed units exceeded Title 24 energy code. Energy savings kit uptake and savings increased as a direct result of an outreach campaign in the last half of the year.

During 2017, 223 California customers took the online Home Energy Advisor survey¹¹ 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:

¹⁰ To be considered for participation in upstream buy downs, retailer sales coming from Pacific Power customers must be a significant percentage of total sales.

¹¹ <https://pacificpower.energysavvy.com/>

- Most customers (60%) who completed the survey had electric heat.
- The average home vintage was 1976.
- The oldest home was built in 1881.

In 2017, online mobile phone application submittals from contractors who incented evaporative coolers, heat pumps, ductless heat pumps, and heat pump water heaters increased and paper application submittals experienced a corresponding decline. These trends were consistent with the analysis that supported adding online options for contractors to the program in 2016. The contractor applications complement the online customer applications that were added in the prior year.

NON-RESIDENTIAL PROGRAM

The commercial, industrial and irrigation energy efficiency program is consolidated into a single *Non-Residential Energy Efficiency* program, Schedule A-140¹². 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 include any measures which, when installed in an eligible facility, result in verifiable electric energy efficiency improvements. Program performance is shown in Table 9.

Table 9
Program Performance by Sector

Sector	Total kWh/Yr Savings @ Site	kW Savings	Total Incentive	Total Projects
Commercial	1,459,939	262	\$ 160,962	77
Industrial	245,993	43	\$ 31,069	6
Irrigation	759,665	143	\$ 69,205	34
Grand Total	2,465,597	448	\$ 261,236	117

Program savings results overall were lower than 2016 performance. While savings in the industrial sector increased compared to 2016, savings in the commercial and irrigation sectors decreased. This type of year-to-year fluctuation is normal 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.
- 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.

¹² 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

- 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: Pacific Power teamed with HBC Energy Capital, 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 2017 is provided in Table 10.

Table 10
Installed Program Measures

Measure Category	Total kWh/Yr Savings @ Site	kW Savings	Total Incentive	Total Projects
Energy Management	127,001	-	\$ 2,540	4
Food Service Equipment	16,252	2	\$ 1,185	2
HVAC	28,051	7	\$ 2,670	3
Irrigation	647,807	117	\$ 63,434	26
Lighting	1,479,363	302	\$ 167,817	75
Motors	106,083	18	\$ 15,280	4
Refrigeration	61,040	1	\$ 8,310	3
Grand Total	2,465,597	448	\$ 261,236	117

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.

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 and application processing 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, project facilitation 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.
- 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 two 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. Since the offer was approved in May 2015, Nexant completed the first recruitment and brought two contractors on board.
- 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.¹³ 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, motors and irrigation. This work includes identifying and recruiting trade allies, providing program and technical training and providing sales support on an ongoing basis. In addition, a trade ally performance scorecard was introduced to provide feedback and encourage lighting trade allies to improve.

In March 2017, Pacific Power launched the *wattsmart* Business Vendor Network which replaced the Energy Efficiency Alliance. The new network increased minimum participation requirements, moving beyond participation and reference checks to include industry training and proof of insurance. Increasing participation requirements is intended to improve the quality of trade allies in the network. As a result, the number of trade allies listed with the program is about half of what it was in 2016.

The current lists of the trade allies who have applied and been approved as participating *wattsmart* Business vendors are posted on the Company website¹⁴ and are included as Appendix 3 to this report. In most cases, customers are not required to select a vendor from these lists to receive an incentive.¹⁵

The total number of participating trade allies is currently 13. The counts of participating trade allies by technology are shown in Table 11.

¹³ Regional business managers are responsible for directly working with California commercial and industrial customers.

¹⁴ 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

¹⁵ For the *wattsmart* Small Business enhanced incentives, customers are required to choose one of the approved contractors for this offer.

Table 11
Participating Trade Allies¹⁶

Lighting Trade Allies	HVAC Trade Allies	Motors Trade Allies	Irrigation Trade Allies	Small Business - Approved Contractors	Lighting Instant Incentive Distributors
7	3	3	1	2	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. Eleven engineering firms are currently under contract with the Company.

Program Changes

Effective May 1, 2017, changes were made to:

- Restructure and align lighting retrofit incentives to reflect the market shift to LED lighting technology.
- Update lighting and HVAC “typical” measures to align with the California state energy code change effective January 1, 2017.
- Add new measures to the incentive tables, update some existing measures.
- Add new measures to the small business offer, including additional LED lighting measures and non-lighting measures.
- Add new streamlined incentives to help encourage customers purchasing lamps as part of maintenance activities to move to a more efficient lamp rather than purchasing a matching replacement lamp.

¹⁶ Some trade allies may participate in more than one technology. The count of unique participating firms is less than the total count provided above.

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 all customer classes that promote energy efficiency tips, programs and incentives. Bill inserts and 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

Home Energy Savings

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

In January 2017, the Company sent a bill insert to customers promoting its online Home Energy Advisor tool for customers to get personalized energy-saving recommendations.



Program communications from June through October promoted free *wattsmart* Starter Kits through a direct mail piece and emails to targeted California residents.

Any home can be a
wattsmart home.



All you have to do is order a free **wattsmart** Starter Kit.

Print and digital newsletter articles throughout the year included information on ductless heat pumps, heat pump water heaters, *wattsmart* Starter Kits, LED bulbs and the online Home Energy Advisor tool. In addition, a press release with the kit offer was sent to local media and posted online¹⁷.

A summary of outreach is displayed in table 12.

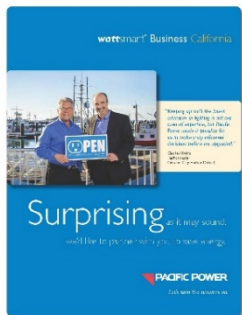
¹⁷ <https://www.pacificpower.net/about/nr/nr2017/wattsmart-starter-kit.html>

Table 12
Home Energy Savings Communication Impressions

Communications Channel	2017
Bill insert	32,000
Direct mail	350
Email #1	3,587
Email #2	4,943
Total	40,880

wattsmart Business

Customer communications and outreach in support used print advertising, radio ads, digital search, direct mail, email, articles in Company newsletters 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 2017, communications encouraged energy efficiency upgrades by featuring participating customer case studies in print ads and newsletter articles. Targeted outreach such as email, direct mail, and a community event was aimed at small business customers to generate interest in lighting incentives. Direct mail was also used to target irrigation customers in the spring and fall to encourage energy-saving retrofits.

Emails were focused on available incentives and also targeted vertical markets, such as grocery and convenience stores. An email was also sent to customers inviting them to a free webinar regarding a new optional finance tool available for energy efficiency projects.



In 2017, the program garnered 600,105 media impressions. A breakdown of impressions by media type are shown in Table 13.

Table 13
wattsmart Business Communication Impressions

Communications Channel	2017
Radio	508,800
Newspaper	75,032
Digital Search	10,080
Irrigation Direct Mail	1,395
Small Business Direct Mail	1,877
Small Business Email	1,331
Emails	1,046
Invitations to events	534
Total	600,105

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 2017 is summarized in Table 14 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 14
Program Evaluations

Program	Years Evaluated	Evaluator	Progress Status
Home Energy Savings	2015 – 2016	Cadmus	Completed
wattsmart Business	2016 – 2017	Cadmus	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 13 lighting retailers in 2017 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
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	x
Solano's Alpine Hardware	Mt Shasta	CA	x	x
Solano's, Inc.	Weed	CA	x	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 2017 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**

Four 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		X				
Home Depot #8524	Crescent City	CA	X					X	X
Sears #3998	Yreka	CA	X						
Solano's Alpine Hardware	Mt. Shasta	CA	X						

Eight 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
Home of the Future Appliance & TV	Medford	OR	x						
Lowe's #248	Medford	OR	X				X		
Lowe's of Redding	Redding	CA	X						
Sears #2179	Medford	OR	X						
Sears #3489	Harbor	OR	X						
The Home Depot #4019	Klamath Falls	OR					X		
The Home Depot, Inc.	Atlanta	GA					X		
West Coast Appliance & Furn.	Central Point	OR	x						

**Table 4
HVAC Trade Ally**

The Company worked with 14 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
All Trade Services	Mount Shasta	CA						X	X
Chimney Kraft	Crescent City	CA						X	X
Coastal Heating, LLC.	Brookings	OR						X	X
Crystal Air	Weaverville	CA						X	
Downey Heating & Cooling	Fort Jones	CA	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	X
Harbor View Windows, Heating and Air	Brookings	OR						X	X
Metal Masters Inc.	Medford	OR						X	
Meyer & Son's Heating, Plumbing & AC	Dunsmuir	CA						X	X
Mike Brown Heating and A.C	Yreka	CA							X
Mountain Air Heating & Cooling Inc.	Yreka	CA						X	X
Ray-Mac Mechanical, Inc.	Mt. Shasta	CA						X	X
SVM Plumbing, Heating & Air	Yreka	CA		X				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
Frank's Heating and Refrigeration	Crescent City	CA	x

Table 6
Weatherization Trade Ally

Table 6 lists two weatherization trade allies 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	
Red Sky Roofing	Crescent City	CA	x	

Table 7
Applications by Customer City and Measure Category

Customer City	% of All Applications	% of Appliance & Fixture Applications	% of HVAC Applications	% of Manufactured Homes Applications	% of Kits Applications
ALTURAS	0.64%	0.00%	1.49%	0.00%	5.05%
CALLAHAN	0.04%	0.00%	0.00%	0.00%	0.32%
CASTELLA	0.05%	0.00%	0.00%	0.00%	0.39%
CEDARVILLE	0.07%	0.00%	0.00%	0.00%	0.55%
CRESCENT CITY	31.56%	29.55%	50.75%	20.00%	27.47%
DORRIS	0.11%	0.00%	0.00%	0.00%	0.87%
DUNSMUIR	0.41%	0.00%	0.75%	0.00%	3.24%
ETNA	0.45%	4.55%	1.49%	0.00%	3.39%
FORT DICK	0.03%	4.55%	0.00%	0.00%	0.08%
FORT JONES	0.44%	11.36%	2.24%	3.33%	2.84%
GARDEN GROVE	0.01%	0.00%	0.00%	0.00%	0.08%
GASQUET	5.03%	0.00%	2.24%	0.00%	1.34%
GAZELLE	0.11%	2.27%	0.00%	0.00%	0.79%
GREENVIEW	0.10%	4.55%	0.00%	0.00%	0.63%
GRENADA	0.13%	2.27%	1.49%	0.00%	0.79%
Happy Camp	0.20%	0.00%	0.00%	3.33%	1.58%
HORNBROOK	0.24%	4.55%	2.24%	0.00%	1.58%
HORSE CREEK	0.04%	0.00%	0.00%	0.00%	0.32%
KLAMATH	0.10%	0.00%	0.75%	0.00%	0.71%
KLAMATH RIVER	0.06%	0.00%	0.00%	0.00%	0.47%
LAKEHEAD	0.01%	0.00%	0.00%	0.00%	0.08%
MACDOEL	0.08%	0.00%	0.00%	0.00%	0.63%
MCCLLOUD	0.20%	0.00%	1.49%	0.00%	1.50%
MONTAGUE	0.68%	6.82%	3.73%	3.33%	4.81%
MOUNT SHASTA	1.73%	4.55%	8.96%	3.33%	12.94%
MT HEBRON	0.01%	0.00%	0.00%	0.00%	0.08%
NEW PINE CRK	0.02%	0.00%	0.00%	0.00%	0.16%
SCOTT BAR	0.02%	0.00%	0.00%	0.00%	0.16%
SEIAD VALLEY	0.04%	0.00%	0.00%	0.00%	0.32%
SMITH RIVER	0.38%	0.00%	1.49%	0.00%	2.92%
TULELAKE	0.24%	0.00%	0.00%	0.00%	1.97%
WEED	1.32%	9.09%	2.99%	0.00%	10.10%
Yreka	55.48%	15.91%	17.91%	66.67%	11.84%



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:

Specialties

[Appliances, Building envelope, Compressed air, Controls, 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

Search Results: 8 record(s) found

Company name	Contact information	Specialty	Projects completed	Distance (miles)
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@alltradeelectrical.com	HVAC - evaporative, HVAC - unitary, Lighting, Other Specialty, Small business lighting	0	
FGI Address: 733 Lake Street South, 1A Kirkland, WA 98033 Website: http://www.forevergreenindoors.com	Phone: 509-951-2290 Name: Kathleen Sullivan Email: ksullivan@forevergreenindoors.com	Lighting		
Green Light National Address: 2 S Leavitt St. #204 Chicago, IL 60612 Website: http://www.greenlightnational.com	Phone: 801-722-8677 Name: John Murphy Email: chrisk@greenlightnational.com	Controls, Lighting		
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		

wattsmart® Business Vendor Network



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, Food service, HVAC - evaporative, HVAC - unitary, Lighting, Motors and VFDs, Office equipment, Other Specialty
McCombs Electric Inc. Address: HC 3 box 329 Alturas, CA 96101 Website:	Phone: 530-233-5397 Name: Dane McCombs Email: dam24@frontiernet.net	Controls, Irrigation, Lighting, Motors and VFDs, Small business lighting
Pacific Energy Concepts, LLC Address: 210 W 3rd St Vancouver, WA 98660 Website: http://www.pacificenergyconcepts.com/	Phone: Name: Victoria Marchenko Email: incentives@pecnw.com	Controls, Lighting
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 - unitary, Motors and VFDs

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

© 2017 Pacific Power CA effective 05/01/2017, v. 05/01/2017 wattsmart is registered in U.S. Patent and Trademark Office.

*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 2017 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 2017, 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
Home Energy Savings	2015 - 2016	Cadmus

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

Table 1
Home Energy Savings Evaluation Recommendations

Evaluation Recommendations	Pacific Power Action Plan
For <i>wattsmart</i> kits, have the program administrator collect kit participant phone numbers and e-mail addresses for kit program survey data collection activities. This information was not available during the evaluation.	As of April 18, 2017, the kit vendor, Energy Federation, Inc. (EFI) requires participant contact information in order to fulfill a kit request.
To quantify the lift of upstream lighting point-of-sale data, track dates and locations for all merchandising and product placement the program is responsible for. Providing model numbers, store locations, dates, and display types (e.g., end caps, pallet displays) allows more precise estimates of program-generated sales lift.	In 2017, the program administrator updated processes for tracking merchandising and product placement information. A Promotion and Activity Tracker was generated to keep tabs on precisely when SKUs have promotional activity and the data points recommended in the evaluation.
Expand marketing and outreach efforts for LED lighting. Some customers avoid LEDs as they believe the bulbs are cost-prohibitive.	Sharp downward trends in LED prices have improved customer acceptance and purchases. In 2015, approximately 24, 000

Evaluation Recommendations	Pacific Power Action Plan
<p>Expand such efforts through bill inserts, websites, and media, focusing on benefits, cost savings, and appropriate applications for LEDs, and through driving customers to in-store events presented by Pacific Power. Partner with participating retailers to schedule regular in-store events that demonstrate LEDs' applications and proper installation, and, through such events, increase word-of-mouth marketing.</p>	<p>LEDs were purchased. In 2017, lighting equipment (almost entirely LED's) increased to approximately 48,000 units. This steep increase in activity mitigates the need for most of the tactics included in this recommendation.</p>



Appendix 5

California Cost Effectiveness



Memorandum

To: Nikki Karpavich, PacifiCorp/Rocky Mountain Power
From: David Basak, Navigant
Date: March 5, 2018
Re: Cost-Effectiveness Results Comparison of E3 Calculator and PacifiCorp Model
- California

Navigant estimated the cost-effectiveness for the overall energy efficiency portfolio and component sectors, based on 2017 costs and savings estimates provided by PacifiCorp. For the state of California, the evaluation team ran cost-effectiveness results using two methods:

1. E3 Calculator – Following E3’s development of an avoided cost calculation methodology in R.04-04-025, E3 developed the “Calculator”, used by all California investor-owned utilities to compute the cost-effectiveness of energy efficiency programs. The evaluation team used the pre-developed PG-E¹ model due to proximity to the PacifiCorp territory.
2. PacifiCorp Model – These models align with the methodologies and Excel based models that are used throughout PacifiCorp’s territory to value cost-effectiveness.

This memo provides a comparison of the results using both methods. The memo consists of the following tables.

Table 1 – 2017 Total Portfolio Cost-Effectiveness Comparison (E3 vs. PacifiCorp Model)

Table 2 – 2017 C&I Portfolio Cost-Effectiveness Comparison (E3 vs. PacifiCorp Model)

Table 3 – 2017 Residential Portfolio Cost-Effectiveness Comparison (E3 vs. PacifiCorp Model)

¹ The model can be found at the following link https://www.ethree.com/public_proceedings/energy-efficiency-calculator/

Table 1 – 2017 Total Portfolio Cost-Effectiveness Comparison (E3 vs. PacifiCorp Model)

Benefit/Cost Test	Model	Evaluated Costs	Evaluated Benefits	Net Benefits	B/C Ratio
Total Resource Cost Test (TRC)	E3 Calculator	\$3,169,237	\$4,272,877	\$1,103,640	1.35
	PacifiCorp Model	\$2,829,342	\$2,616,415	-\$212,926	0.92
Utility Cost Test (UCT)	E3 Calculator	\$2,007,156	\$4,272,877	\$2,265,722	2.13
	PacifiCorp Model	\$2,016,931	\$2,616,415	\$599,484	1.30
Rate Impact Test (RIM)	E3 Calculator	\$6,949,746	\$4,272,877	-\$2,676,869	0.61
	PacifiCorp Model	\$7,067,054	\$2,616,415	-\$4,450,639	0.37

Table 2 – 2017 C&I Portfolio Cost-Effectiveness Comparison (E3 vs. PacifiCorp Model)

Benefit/Cost Test	Model	Evaluated Costs	Evaluated Benefits	Net Benefits	B/C Ratio
Total Resource Cost Test (TRC)	E3 Calculator	\$1,647,729	\$2,714,844	\$1,067,114	1.65
	PacifiCorp Model	\$1,632,345	\$1,639,450	\$7,106	1.00
Utility Cost Test (UCT)	E3 Calculator	\$1,106,332	\$2,714,844	\$1,608,511	2.45
	PacifiCorp Model	\$1,110,611	\$1,639,450	\$528,840	1.48
Rate Impact Test (RIM)	E3 Calculator	\$4,221,822	\$2,714,844	-\$1,506,978	0.64
	PacifiCorp Model	\$4,285,358	\$1,639,450	-\$2,645,907	0.38

Table 3 – 2017 Residential Portfolio Cost-Effectiveness Comparison (E3 vs. PacifiCorp Model)

Benefit/Cost Test	Model	Evaluated Costs	Evaluated Benefits	Net Benefits	B/C Ratio
Total Resource Cost Test (TRC)	E3 Calculator	\$1,521,507	\$1,558,034	\$36,526	1.02
	PacifiCorp Model	\$1,196,997	\$976,965	-\$220,032	0.82
Utility Cost Test (UCT)	E3 Calculator	\$900,823	\$1,558,034	\$657,210	1.73
	PacifiCorp Model	\$906,320	\$976,965	\$70,645	1.08
Rate Impact Test (RIM)	E3 Calculator	\$2,727,924	\$1,558,034	-\$1,169,891	0.57
	PacifiCorp Model	\$2,781,696	\$976,965	-\$1,804,731	0.35