



2022 IDAHO Energy Efficiency and Peak Reduction Annual Report

Issued 5/1/2023

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EXECUTIVE SUMMARY

Rocky Mountain Power is a multi-jurisdictional electric utility providing retail service to customers in Utah, Idaho, and Wyoming. Rocky Mountain Power, a division of PacifiCorp, serves approximately 86,874 customers in southeastern Idaho. Rocky Mountain Power acquires energy efficiency and peak reduction resources as cost-effective alternatives to the acquisition of supply-side resources.

PacifiCorp develops an integrated resource plan (IRP)¹ as a means of balancing cost, risk, uncertainty, supply reliability/deliverability and long-run public policy goals. The IRP presents a framework of future actions to ensure that Rocky Mountain Power 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.²

Rocky Mountain Power employs external implementers to administer its energy efficiency programs.³ Evaluations for each program are performed by independent external evaluators to validate energy and demand savings derived from Rocky Mountain Power's energy efficiency programs.⁴

Rocky Mountain Power utilizes earned media, customer communications, education, and outreach advertising as well as program specific marketing 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 programs, services, and incentives.⁵

This report provides details on program results, activities, and expenditures of the Customer Efficiency Tariff Rider ("Schedule 191") as of the reporting period from January 1, 2022, through December 31, 2022. Rocky Mountain Power on behalf of its customers, invested \$7.7 million in energy efficiency resource acquisitions during the reporting period. The investment yielded approximately 16 megawatt hours ("MWh") at generator in first-year energy savings, and approximately 3 megawatts ("MW") of capacity reduction from energy efficiency. Net benefits

¹ Information on PacifiCorp's IRP can be found at <https://www.pacificorp.com/energy/integrated-resource-plan.html>.

² Information on PacifiCorp's planning process can be found at <https://www.pacificorp.com/environment/demand-side-management.html> under the "Rocky Mountain Power planning" section.

³ Information on program administration can be found at <https://www.pacificorp.com/environment/demand-side-management.html> under the "Program administration" section.

⁴ Information on program evaluations can be found at <https://www.pacificorp.com/environment/demand-side-management.html> under the "Reports and program evaluations by state" section.

⁵ Information on communications and outreach can be found at <https://www.pacificorp.com/environment/demand-side-management.html> under the "Communications and outreach" section.

based on the projected value of the energy savings over the life of the individual measures is estimated at \$1.4 million.⁶

The energy efficiency portfolio was cost effective based on the Utility Cost Test (UCT), which is the primary cost benefit test observed in Idaho. Cost-effectiveness results are provided in Table 9 and Appendix A.

In 2022, Rocky Mountain Power's DSM portfolio included the following programs:

- **Energy Efficiency Programs:**
 - Wattsmart Homes
 - Home Energy Reports
 - Low Income Weatherization
 - Wattsmart Business
- **Peak Reduction Program:**
 - Irrigation Load Control
 - Wattsmart Batteries

Pursuant to Commission Order No. 32196, the Idaho Irrigation Load Control Program is treated as a system power supply with expenses flowing through base rates in lieu of the Schedule 191 DSM tariff rider. Notwithstanding, information on the Irrigation Load Control Program is provided in this report.

REGULATORY ACTIVITIES

During the 2022 reporting period, the Company filed compliance and/or informational reports, updates, notices, and requests with the Commission in support of Company DSM programs. The following is a list of those activities:

- On January 6, 2022, the Company filed its reply comments in the matter of the Company's application for authority to implement a battery demand response program, Case No. PAC-E-21-16. The Commission issued Order No. 35370 approving the Company's application on April 14, 2022.
- On January 24, 2022, the Company filed an application for authority to revert the Blue-Sky block value to 100 kilowatt hours from 200 kilowatt hours in Case No. PAC-E-22-02. The Commission issued Order No. 35362 approving the Company's application on April 1, 2022.
- On January 24, 2022, the Company filed an application for authority to increase Electric Service Schedule 191 – Customer Efficiency Services Rate in Case No. PAC-E-22-03. The Commission issued Order No. 35363 rejecting the Company's application on April 1, 2022.

⁶ See cost effectiveness Appendix A, UCT Net Benefits exc. LIW.

- On January 24, 2022, consistent with the flexible tariff process, a 45-day notice of changes was posted to the Company website. Changes consisted of adjustments to incentives for heat pumps, HVAC, and engine block heater control offerings.
- On February 3, 2022, the Company circulated the DSM balancing account report for the fourth quarter of 2021.
- On April 22, 2022, the Company submitted a compliance filing in the matter of the Company's application for authority to implement a battery demand response program, Case No. PAC-E-21-16.
- On April 27, 2022, the Company submitted a second compliance filing in the matter of the Company's application for authority to implement a battery demand response program, Case No. PAC-E-21-16.
- On May 2, 2022, pursuant to Order No. 29976, the Company submitted its \$.4M Idaho Energy Efficiency and Peak Reduction Annual Report in Case No. PAC-E-05-10.
- On May 3, 2022, the Company circulated the DSM balancing account report for the first quarter of 2022.
- On July 8, 2022, the Company filed an application for authority to increase Electric Service Schedule 191 – Customer Efficiency Services Rate in Case No. PAC-E-22-10. The Commission issued Order No. 35546 approving the Company's application on September 29, 2022.
- On August 2, 2022, the Company circulated the DSM balancing account report for the second quarter of 2022.
- On August 17, 2022, the Company filed an application requesting a prudence determination on DSM expenditures for years 2020-2021 in Case No. PAC-E-22-12.
- On August 25, 2022, the Company filed an application in Case No. PAC-E-22-13 requesting authority to implement a commercial and industrial demand response program.
- On November 11, 2022, the Company circulated the DSM balancing account report for the third quarter of 2022.
- On December 21, 2022, the Company circulated its 2023 communications plans with Commission Staff.

MEETINGS WITH COMMISSION STAFF

The Company consulted with Idaho Public Utilities Commission Staff throughout 2022, with formal presentations on the following matters:

June 7, 2022

- Discussed the Company's 2021 Idaho Energy Efficiency and Peak Reduction Annual Report.
- Reviewed the 2022 Year-to-Date Status and forecast.
- Reviewed the status of the Schedule 191 balancing account.
- Discussed the Company's Wattsmart Business Demand Response Application; and
- Discussed the new battery demand response program tracking and reporting metrics.

PORTFOLIO OF PROGRAMS

ENERGY EFFICIENCY PROGRAMS

WATTSMART HOMES

Program Description

The Wattsmart Homes program is designed to provide access to incentives for using more efficient products and services installed or received by residential customers in the following housing types:

- New Construction Homes
- Single Family Existing Homes
- Multi-family Housing Units
- Manufactured Homes

The program applies to residential customers under Electrical Service Schedules 1 or 36. Landlords who own rental property where the tenant is billed under Electric Service Schedules 1 or 36 also qualify.

The Wattsmart Homes program passed the UCT cost tests with a benefit cost ratio of 1.32 for 2022.

Program Performance and Major Achievements in 2022

- The Wattsmart Homes program generated 2,728,468 kWh savings at the site.
- Disbursed \$233,033 in incentives.
- The program updated offerings for central air conditioners, smart thermostats, evaporative coolers, ductless heat pumps, air source heat pumps, and engine block heater controls homes.
- The program also discontinued Wattsmart starter kits.

Additional information on the program administration can be found on the Company's website under the Program administration section:

<https://www.pacificorp.com/environment/demand-side-management.html>

Direct Link to Wattsmart Homes program administration:

https://www.pacificorp.com/content/dam/pcorp/documents/en/pacificorp/environment/dsm/idaho/Idaho_Program_Administration_Wattsmart_Homes_22.pdf

HOME ENERGY REPORTS PROGRAM

Program Description

The Home Energy Reports program is a behavioral program designed to decrease participant energy usage by providing comparative energy usage data for similar homes located in the same geographical area. Additionally, the report provides the participants with tips to decrease their energy usage.

The Home Energy Reports program passed the UCT with a cost benefit ratio of 3.65 for 2022.

Program Performance and Major Achievements in 2022

- Total savings for 2022 in MWh was 5,018, which equates to 5,018,450 in kWh savings.
- In 2022 reports were initially provided to approximately 28,000, which was expanded to 41,000 customers in July 2022.
- Report highlights
 - Individual recommendations to save energy
 - Insights on how customers are using energy by appliance type
 - Home characteristics included in report with easy access to update home profile
 - Monthly usage history included in reports
- Online portal was improved to provide greater insights for all residential customers.
- In 2022, only 0.29% of customers (190 customers) have requested to be removed from the program.

Additional information on the program administration can be found on the Company's website under the Program administration section:

<https://www.pacificorp.com/environment/demand-side-management.html>

Direct Link to Home Energy Reports program administration:

https://www.pacificorp.com/content/dam/pcorp/documents/en/pacificorp/environment/dsm/idaho/Idaho_Program_Administration_Home_Energy_Reports_22.pdf

LOW INCOME WEATHERIZATION

Program Description

The Low-Income Weatherization program provides energy efficiency services through a partnership between the Company and local non-profit agencies to residential customers who meet the income-eligible guidelines. Services are provided at no cost to the program participants.

The Company contracts with Eastern Idaho Community Action Partnership, Inc. (“EICAP”) and Southeastern Idaho Community Action Agency (“SEICAA”) to provide services. The two agencies receive federal funds allocated to and administered by the Idaho Department of Health and Welfare (“IDHW”). Energy efficiency measures are installed in the homes of income eligible households throughout the Company’s service territory by EICAP and SEICAA. The Company is required to fund 85 percent of the cost of approved measures, pursuant to Commission Order No. 32151. Under Advice No. 19-01 filed with Idaho Public Utilities Commission on January 16, 2019, Commission approved reimbursement of up to 100% of related installed costs of ductless heat pumps, effective March 6, 2019. Agencies cover remaining costs with the funding received by IDHW.

The Low-Income Weatherization program did not pass the PTRC with a cost benefit ratio of 0.95 for 2022. Under direction of Case No. GNR-E12-01, Low Income Weatherization program uses the 10 percent conservation adder to the total resource cost test as its primary cost test. Cost-effectiveness was partially affected by the use a single-family heat pump load profile in lieu of a single-family cooling load profile to value the timing of energy savings. Several measures installed through the program save energy throughout the year and not just the summer months, therefore a heat pump load profile was selected to reflect energy savings in non-summer months.

Program Performance and Major Achievements in 2022

- In 2022, the program achieved savings at site of 31,995
- Number of homes served 27

Low Income Energy Conservation Education

Commission Order No. 32788 authorized the Company to fund the Low-Income Energy Conservation Education with \$25,000 annually. These education services are provided by EICAP and SEICAA and target participants who receive Low Income Home Energy Assistance Program (“LIHEAP”) funds. EICAP received \$16,000 program year (“PY”) 2022 funding by the beginning of their 2022/2023 LIHEAP program year. SEICAA did not request funds in 2022 as they had funds from PY 2019 and PY 2021 to spend. SEICAA did not purchase kits as they had inventory of kits purchased in 2019 to distribute. COVID-19 restrictions in operations slowed the distribution of kits in PY 2020 and PY 2021 and increased in PY 2022

The agencies provided a conservation education curriculum to households and reported the following activities and program specifics for 2022 in Table 1 below.

**Table 1
2022 Conservation Education Activities**

	EICAP		SEICAA	
Annual Funds	\$	16,000.00	\$	0.00
Expenditures	\$	21,674.71	\$	0.00
Balance as of 12/31/22	\$	30,194.04	\$	20,250.00
Households Served		608		45

Distribution

EICAP purchased 500 kits using PY 2022 funds. The new kits include two 9W LED bulbs, a LED night light, a window insulation kit, a wall plate thermometer, a refrigerator thermometer, a freezer thermometer, five foam light switch sealing gaskets, five foam electrical outlet sealing gaskets, a furnace whistle, one 2pk wool dryer balls, a faucet aerator, and one shower timer. As of December 31, 2022, EICAP has 610 kits in their inventory.

EICAP’s program objective was to educate Rocky Mountain Power customers on how to conserve energy through useful tips and tools to help them save year-round. They served Rocky Mountain Power households that received energy assistance and/or requested energy conservation education.

SEICAA did not purchase kits in PY2022 and intends to utilize remaining PY2019 funds combined with the PY2020 and PY2021 funding to purchase new kits as well as reserve some of the funds for postage and professional fees.

Table 2 below provides information regarding the education offered by the agencies.

**Table 2
Additional Information on Conservation Education by Agencies**

	EICAP	SEICAA
Program Design	Educate Rocky Mountain Power customers about how to conserve energy.	Reduce electricity usage and monthly bills for participants of the LIHEAP program.
Target Audience	Rocky Mountain Power customers who receive Low Income Home Energy Assistance Heat (LIHEAP) Heat and Crisis .	LIHEAP recipients who have not received weatherization program services as a priority. Households can also be identified through SEICAA's other programs.

	EICAP	SEICAA
How Company Funds Were Used	Funds used to purchase energy efficiency kits in August 2022 and for shipping of kits.	Plan to utilize funds to purchase kits in PY 2023 and for shipping of kits.

Additional information on the program administration can be found on the Company’s website under the Program administration section:

<https://www.pacificorp.com/environment/demand-side-management.html>

Direct Link to Low Income Weatherization program administration:

<https://www.pacificorp.com/content/dam/pcorp/documents/en/pacificorp/environment/dsm/idaho/Idaho Program Administration Low Income 22.pdf>

WATTSMART BUSINESS PROGRAM

WATTSMART BUSINESS

Program Description

The commercial, industrial, and agricultural energy efficiency program portfolio is offered through a single Non-Residential Energy Efficiency program called Wattsmart Business.

Wattsmart Business is designed to influence new and existing non-residential customers to increase the efficiency of electric energy usage both through the installation of efficient equipment as well as adoption of improved energy management protocols. Qualifying measures include those which produce verifiable electric energy efficiency improvements compared to an established baseline.

Wattsmart Business offerings include:

- Typical Upgrades
- Midstream/Instant incentives
- Custom Analysis
- Energy Management
- Energy Project Manager Co-funding

The Wattsmart Business program passed the UCT with a cost benefit analysis of 1.49.

Program Performance and Major Achievements in 2022

- In 2022, the program achieved gross energy savings at site of 6,940,859 kWh.
- Distributed incentives of \$863,132.
- To foster continued growth and utilization of the Wattsmart Business Vendor Network (WBVN) and to increase customer satisfaction, the Company continued to employ full-time outreach specialist dedicated to Idaho. This staff member provides an outreach and support role to both vendors and customers interested in lighting as well as non-lighting incentives.
- In 2022, participating WBVN vendors continued receiving quarterly vendor performance scorecards to provide timely feedback and encourage vendors to strive to reach “Premium” status, which entitles qualifying vendors to improved visibility and enhanced co-branding with Rocky Mountain Power. In 2022, there were three premium status Wattsmart Business Vendors.
- Several challenges presented themselves in 2022 leading to lower savings in the Wattsmart Business Program than in years past.
 - Significant supply chain disruptions had a negative effect on program energy savings achievements.
 - Due to supply timelines and project lifecycles, there were no large energy savings projects completed in CY 2022 by the largest industrial customers within the utility service territory. The Company expects this to be rectified in 2023 through focused outreach efforts began in 2022.

Additional information on the program administration can be found on the Company’s website under the Program administration section:

<https://www.pacificorp.com/environment/demand-side-management.html>

Direct Link to Wattsmart Business program administration:

https://www.pacificorp.com/content/dam/pcorp/documents/en/pacificorp/environment/dsm/idaho/Idaho_Program_Administration_NonResidential_22.pdf

PEAK REDUCTION PROGRAMS

IRRIGATION LOAD CONTROL

Program Description

The irrigation load control program is offered to irrigation customers receiving electric service on Schedule 10, Irrigation and Soil Drainage Pumping Power Service. Participants enroll in the program with a third-party administrator and allow the curtailment of their electricity usage in exchange for an incentive. Customer incentives are based on the site's average available load during load control program hours, adjusted by optouts or non-participation.

For most participants, their irrigation pumps are set up with a dispatchable two-way control system giving Rocky Mountain Power control over their loads. Participants are notified four hours ahead of control events and have the choice to opt-out of a limited number of dispatch events per season.

The Irrigation Load control program passed the UCT cost test for 2022.

Program Performance and Major Achievements in 2022

- There were 17 load control events initiated in 2022. There were 8 mandatory and 9 voluntary events.
- The available load from the Irrigation Program can be utilized as reserves which provides value to the program and benefits the customer.
- Customers were given a 20% incentive bonus for participation in general.
- Total customers participating in the program are 154, participation sites 1,091.
- Total enrolled MW (Gross -at Gen) in 2022 is 169, maximum realized MW (at Gen) is 137.

Additional information on the program administration can be found on the Company's website under the Program administration section:

<https://www.pacificorp.com/environment/demand-side-management.html>

Direct Link to Irrigation Load Control program administration:

https://www.pacificorp.com/content/dam/pcorp/documents/en/pacificorp/environment/dsm/idaho/Idaho_Program_Administration_Irrigation_Load_Control_22.pdf

WATTSMART BATTERIES

Program Performance and Major Achievements in 2022

- Rocky Mountain Power called upon the batteries for a total of 40 minutes which equates to less than one battery cycle being used by Rocky Mountain Power during 2022.
- All customer batteries enrolled in the program prior to the called events responded. There were no battery communication failures.
- New customer enrollment with batteries and new solar only installs during the same period
- No commercial batteries were enrolled in the program during 2022.
- During 2022 there were 486 new customers interconnected with solar with seven customers completing the enrollment process into the Wattsmart Battery Program. The enrollment application for customer generation versus the enrollment in Wattsmart Batteries is a separate unique process. It is expected many of the solar enrollments will eventually enroll in the battery program.

Program Description

The Wattsmart Batteries program promotes and incentivizes the installation of qualified individual batteries for system-wide integration and use for overall electric grid management. Leveraging batteries has created an opportunity to maximize renewable energy for advancing a sustainable electric grid. The batteries may be used for frequency response, peak load management, transmission relief, daily load cycling, and other smart grid applications.

Batteries participating in the Wattsmart Battery Program are integrated within PacifiCorp's Energy Management System to provide real-time grid benefits

Eligible customers who participate in the program receive an enrollment incentive based on the kW size of their battery and participation commitment, and ongoing annual incentives for continued participation.

The battery program passed the UCT test using a 20-year NPV because the net benefits exceeded the program costs, however, did not pass using the 1-year NPV. This is primarily due to the program having high upfront incentives and limited participation during the first year of the program.

Program enrollment information can be found on the Company's website:

www.rockymountainpower.net/battery

EXPENDITURES

TOTAL ENERGY EFFICIENCY PORTFOLIO SAVINGS AND EXPENDITURES

Table 3
Program Results for January 1, 2022– December 31, 2022⁷

Energy Efficiency Programs	kWh/Yr. Savings (at site)	kWh/Yr. Savings (at gen)	Program Expenditures
Low Income Weatherization	31,995	34,894	\$ 147,975
Home Energy Reporting	5,018,450	5,473,172	\$ 87,603
Wattsmart Homes	2,728,468	2,975,695	\$ 808,104
Total Residential	7,778,913	8,483,761	\$ 1,043,682
Total Wattsmart Business	6,940,859	7,533,097	\$ 2,678,130
Total Energy Efficiency	14,719,772	16,016,858	\$ 3,721,812
Other Portfolio Expenditures			
	Commercial & Industrial Evaluation Costs		\$ 160,361
	Residential Evaluation Costs		\$ 49,508
	Outreach & Communications		\$ 119,099
	Potential Study		\$ 88,184
	System Support		\$ 12,643
	Total Other Portfolio Expenditures		\$ 429,795
Total Idaho Energy Efficiency Portfolio Expenditures⁸			\$ 4,151,607

GROSS SAVINGS BY MEASURE CATEGORY

Table 4
2022 Annual Savings by Wattsmart Homes

Measure Category	Total kWh (at Site)	Total Incentive	Total Measure Quantity
Appliances	2,591	\$ 1,205	39
Building Shell	14,124	\$ 5,505	9,520
Electronics	1,159	\$ 285	34
Energy Kits	51,135	\$ 2,579	408
HVAC	209,605	\$ 37,713	187
Lighting	3,777	\$ 611	11

⁷ The energy efficiency reported savings are gross, ex-ante. The values at generation include line losses between the customer site and the generation source.

⁸ The total energy efficiency system benefit expenditures does not include the irrigation load control expenditures (schedule 72 and 72a)

Measure Category	Total kWh (at Site)	Total Incentive	Total Measure Quantity
Water Heating	26,359	\$ 8,700	15
Whole Building	66,610	\$ 20,625	67
Transportation	2,353,107	\$ 155,819	1,527
Grand Total	2,768,468	\$ 233,033	

Table 5
Low Income Homes Served and Measures Installed

Measure Type	Installed
Air Sealed/Infiltration	24
Insulation	65
Attic Ventilation	12
Lighting CFL/LED	27
Furnace Repair or Replacement	14
Duct Sealing and/or Insulation	2
Ductless Heat Pump	0
Thermal Doors and/or Window Replacement	28
Water Heater Repair	14
Total Number of Homes Served	27
Total kWh Savings @ Site	31,995

Table 6
Wattsmart Business Savings by Sector

Sector	Total kWh (at Site)	Total Incentive
Commercial	4,403,907	\$ 572,708
Industrial	663,671	\$ 29,071
Irrigation	1,874,091	\$ 261,352
Grand Total	6,940,859	\$ 863,132

Table 7
2022 Annual Net Savings by Wattsmart Business

Measure Category	Total kWh (at Site)	Total Incentive	Total Projects
Building Shell	11,946	\$ 2,830	2
Compressed Air	433,569	\$ 35,279	2
Energy Management	536,431	\$ 10,729	3
HVAC	912,310	\$ 176,169	25
Irrigation	2,279,371	\$ 302,636	146
Lighting	1,957,959	\$ 245,851	276
Motors	392,413	\$ 18,139	1
Refrigeration	91,384	\$ 3,127	3
Wastewater	325,477	\$ 48,822	1
Energy Project Manager Co-Funding	-	\$ 19,551	1
Grand Total	6,940,859	\$ 863,132	460

LOAD CONTROL EVENTS

Table 8
Irrigation Load Control Events⁹

Date	Event	Event Times	Estimated Load Reduction at Gen (MW)
7/7/2022	1	7:00 PM - 9:00 PM MDT	136
7/8/2022	2	5:00 PM - 9:00 PM MDT	121
7/28/2022	3	5:00 PM - 9:00 PM MDT	97
7/29/2022	4	5:00 PM - 8:00 PM MDT	89
8/15/2022	5	5:00 PM - 9:00 PM MDT	48
8/16/2022	6	7:00 PM - 9:00 PM MDT	61
8/17/2022	7	7:00 PM - 9:00 PM MDT	66
8/18/2022	8	7:00 PM - 9:00 PM MDT	66
8/30/2022	9	7:00 PM - 9:00 PM MDT	47
8/31/2022	10	6:00 PM - 9:00 PM MDT	29
9/1/2022	11	6:00 PM - 9:00 PM MDT	69
9/2/2022	12	6:00 PM - 9:00 PM MDT	66
9/3/2022	13	6:00 PM - 9:00 PM MDT	27
9/4/2022	14	6:00 PM - 9:00 PM MDT	29
9/5/2022	15	6:00 PM - 9:00 PM MDT	26
9/6/2022	16	6:00 PM - 9:00 PM MDT	56
9/7/2022	17	6:00 PM - 9:00 PM MDT	60

Table 9
Irrigation Load Program Performance

Total Enrolled MW (Gross – at Gen)	169 MW
Average Realized Load MW (at Gen)	64 MW
Maximum Realized Load MW (at Gen)	137 MW
Participation Customers	154
Participation (Sites)	1,091

Table 10
Battery Control Events

Event Date	Mountain Time Event Start/End Time	kW achieved	Residential or Commercial	Reason for Event
August 22, 2022	5:29 PM to 5:34 PM	11	Residential	Frequency Response
August 25, 2022	4:52 PM to 4:57 PM	14	Residential	Frequency Response
September 2, 2022	5:08 PM to 5:13 PM	14	Residential	Frequency Response
September 18, 2022	12:07 PM to 12:12 PM	19	Residential	Frequency Response
September 20, 2022	2:25 PM to 2:30 PM	19	Residential	Frequency Response
October 10, 2022	9:16 AM to 9:21 AM	19	Residential	Frequency Response
October 29, 2022	9:24 PM to 9:29 PM	24	Residential	Frequency Response
October 31, 2022	9:52 PM to 9:57 PM	24	Residential	Frequency Response

⁹ (v) = voluntary events

COST EFFECTIVENESS

TOTAL COST EFFECTIVENESS RESULTS BY PORTFOLIO AND PROGRAM

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. The analysis assesses the costs and benefits of DSM resource programs from different stakeholder perspectives, including participants and non-participants, based on four tests described in the Standard Practice Manual (TRC, UCT, PCT and RIM) as well as an additional fifth test, PTRC.

Each of the cost-effectiveness tests for Rocky Mountain Power's programs is outlined below. The primary cost/benefit test observed in Idaho is the UCT for all programs other than the Low-Income Weatherization program, which uses the PTRC.¹⁰

- PacifiCorp Total Resource Test (PTRC) is the total resource cost test with an additional 10% added to the net benefit side of the benefit/cost formula to account for non-quantified environmental and non-energy benefits of conservation resources over supply side alternatives.
- Total Resource Cost (TRC) Test considers the benefits and costs from the perspective of all utility customers, comparing the total costs and benefits from both the utility and utility customer perspectives.
- Utility Cost (UCT) Test also called the program administrator cost test, provides a benefit to cost perspective from the utility only. The test compares the total utility cost incurred to the benefit/value of the energy and capacity saved and contains no customer costs or benefits in calculation of the ratio.
- Participant Cost Test (PCT) compares the portion of the resource paid directly by participants to the savings realized by the participants.
- Ratepayer Impact Cost Test (RIM) examines the impact of energy efficiency expenditures on non-participating ratepayers overall. Unlike supply-side investments, energy efficiency programs reduce energy sales. Reduced sales typically lower revenue requirements while putting near-term upward pressure on the rates remaining fixed costs are spread over fewer kilowatt-hours.

¹⁰ Under direction of Case No. GNR-E-12-01, *Low Income Weatherization* program uses the 10 percent energy conservation adder to the total resource cost test.

Table 11
2022 Cost-Effectiveness Results by Program¹¹

Program	Benefit/Cost Test ¹²				
	PTRC	TRC	UCT	PCT	RIM
Irrigation Load Control Program ¹³	PASS	PASS	PASS	PASS	PASS
Battery Control Program (1-year NPV) ¹⁴	FAIL	FAIL	FAIL	FAIL	FAIL
Battery Control Program (20-year NPV)	PASS	PASS	PASS	PASS	PASS
Energy Efficiency Portfolio	1.07	0.97	1.31	3.19	0.42
Energy Efficiency Portfolio (exc. LIW)	1.07	0.97	1.35	3.27	0.43
Non-Residential Energy Efficiency Portfolio	1.14	1.03	1.49	2.83	0.47
Residential Energy Efficiency Portfolio (inc. NEI)	1.21	1.11	1.36	4.31	0.36
Residential Energy Efficiency Portfolio (exc. NEI)	1.10	1.00	1.36	4.26	0.36
Low Income Weatherization ¹⁵	0.95	0.93	0.20	1.30	0.16
Home Energy Reporting	4.02	3.65	3.65	n/a	0.58
Wattsmart Homes	1.03	0.94	1.32	4.15	0.34
Wattsmart Business	1.14	1.03	1.19	2.83	0.47

Portfolio-level cost effectiveness includes portfolio costs, such as the Potential Assessment and DSM system database¹⁶. Sector-level cost effectiveness, reported in the Residential and Non-Residential sections of this report, includes sector-specific evaluation, measurement, and verification expenditures.

The Company includes quantifiable non-energy impacts at the portfolio and residential level, as well as the Wattsmart Homes and Low-Income Weatherization program level.

¹¹ Cost-effectiveness memo detail is provided in Appendix A.

¹² The Low-Income Weatherization and Wattsmart Homes programs include non-energy impacts.

¹³ A "Pass" designation equates to a benefit cost ratio of 1.0 or better.

¹⁴ A "Fail" designation equates to a benefit cost ration of 1.0 or below.

¹⁵ Low-Income Weatherization conservation education funding is excluded from the program level cost-effectiveness testing but is included in the portfolio and residential sector cost-effectiveness.

¹⁶ All portfolio level cost-effectiveness is excluding the Low-Income Program

APPENDIX

Appendix A: Cost-effectiveness Results¹

¹ Cost-effectiveness results were generated by Applied Energy Group (AEG) using the approved Cost-effectiveness methodologies.



MEMORANDUM

To: Alesha Mander, PacifiCorp
From: Andrew Cottrell, Andy Hudson, Elizabeth Applegate, AEG
Date: April 21, 2023
Re: PacifiCorp Idaho Portfolio and Sector Level Cost-Effectiveness Results (including Low-Income) – PY2022

AEG estimated the cost-effectiveness of PacifiCorp's overall energy efficiency portfolio in the state of Idaho based on Program Year (PY) 2022 costs and savings estimates provided by PacifiCorp. This memo provides cost-effectiveness results at the portfolio and sector levels. The portfolio (including NEBs) passes the PacifiCorp Total Resource Cost Test (PTRC), Utility Cost Test (UCT), and the Participant Cost Test (PCT).

This memo provides analysis inputs and results in the following tables:

- Table 1: Cost-Effectiveness Analysis Inputs
- Table 2: Portfolio Level Costs, Nominal - PY2022
- Table 3: Benefit/Cost Ratios by Portfolio Type
- Table 4: 2022 Total Portfolio Cost-Effectiveness Results (Including NEBs)
- Table 5: 2022 Total Portfolio Cost-Effectiveness Results (Without NEBs)
- Table 6: 2022 C&I Energy Efficiency Sector Cost-Effectiveness Results
- Table 7: 2022 Residential Energy Efficiency Sector Cost-Effectiveness Results (Including NEBs)
- Table 8: 2022 Residential Energy Efficiency Sector Cost-Effectiveness Results (Without NEBs)
- Table 9: 2022 Low Income NEBs
- Table 10: 2022 Home Energy Savings NEBs by Measure

The following assumptions were utilized in the analysis:

- **Avoided Costs:** Hourly values provided by PacifiCorp based on the 2021 Integrated Resource Plan (IRP) Preferred Portfolio, converted into annual values using Idaho load shapes from the same IRP.
- **Modeling Inputs:** measure savings, costs, measure lives, incentive levels, and portfolio costs were based on estimates provided by PacifiCorp.
- **Other Economic Assumptions:** Discount rate, line loss, retail rate, and inflation rate values were provided by PacifiCorp and are presented in Table 1 below.



Tables 1 and 2 below summarize cost-effectiveness assumptions for the PacifiCorp Idaho energy efficiency portfolio. All costs and impacts are presented at the portfolio level.

Table 1: Cost-Effectiveness Analysis Inputs

Parameter	Value
Discount Rate	6.88%
Residential Line Loss	9.06%
Commercial Line Loss	8.59%
Industrial Line Loss	3.83%
Irrigation Line Loss	9.05%
Residential Energy Rate* (\$/kWh)	\$0.10
Commercial Energy Rate* (\$/kWh)	\$0.09
Industrial Energy Rate* (\$/kWh)	\$0.07
Irrigation Energy Rate* (\$/kWh)	\$0.09
Inflation Rate	2.16%

Table 2: Portfolio Level Costs, Nominal - PY2022¹

Category	PY2022
C&I Evaluation Costs	\$160,361
Residential Evaluation Costs	\$49,508
Low Income Energy Conservation Education	\$0
Outreach & Communications	\$119,099
Potential Study	\$88,184
System Support	\$12,643
Total	\$429,795

Tables 3 through 8 present the cost-effectiveness results at the portfolio and sector levels. Tables 9 and 10 present NEBs impacts for the low income and HES programs.

¹ To align with annual budget expectations, cost-effectiveness inputs are presented in nominal dollars.



Table 3: Benefit/Cost Ratios by Portfolio Type

Program	PTRC	TRC	UCT	PCT	RIM
Total Portfolio (Including NEBs)	1.07	0.97	1.31	3.19	0.42
Total Portfolio	1.04	0.95	1.31	3.18	0.42
Commercial & Industrial	1.14	1.03	1.49	2.83	0.47
Residential (Including NEBs)	1.21	1.11	1.36	4.31	0.36
Residential	1.10	1.00	1.36	4.26	0.36

Table 4: 2022 Total Portfolio Cost-Effectiveness Results (Including NEBs)

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.06	\$5,723,386	\$6,110,602	\$387,216	1.07
Total Resource Cost Test (TRC) No Adder	\$0.06	\$5,723,386	\$5,569,203	(\$154,183)	0.97
Utility Cost Test (UCT)	\$0.05	\$4,151,607	\$5,422,114	\$1,270,508	1.31
Participant Cost Test (PCT)		\$3,115,004	\$9,941,112	\$6,826,108	3.19
Rate Impact Test (RIM)		\$12,832,197	\$5,422,114	(\$7,410,083)	0.42
Lifecycle Revenue Impacts (\$/kWh)					0.00034
Discounted Participant Payback (years)					2.51

Table 5: 2022 Total Portfolio Cost-Effectiveness Results (Without NEBs)

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.06	\$5,723,386	\$5,955,388	\$232,002	1.04
Total Resource Cost Test (TRC) No Adder	\$0.06	\$5,723,386	\$5,413,989	(\$309,397)	0.95
Utility Cost Test (UCT)	\$0.05	\$4,151,607	\$5,422,114	\$1,270,508	1.31
Participant Cost Test (PCT)		\$3,115,004	\$9,897,549	\$6,782,545	3.18
Rate Impact Test (RIM)		\$12,832,197	\$5,422,114	(\$7,410,083)	0.42
Lifecycle Revenue Impacts (\$/kWh)					0.00034
Discounted Participant Payback (years)					2.51



Table 6: 2022 C&I Energy Efficiency Sector Cost-Effectiveness Results

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.06	\$3,876,580	\$4,403,018	\$526,438	1.14
Total Resource Cost Test (TRC) No Adder	\$0.06	\$3,876,580	\$4,002,744	\$126,164	1.03
Utility Cost Test (UCT)	\$0.04	\$2,678,130	\$4,002,744	\$1,324,614	1.49
Participant Cost Test (PCT)		\$2,357,332	\$6,672,963	\$4,315,631	2.83
Rate Impact Test (RIM)		\$8,487,961	\$4,002,744	(\$4,485,218)	0.47
Lifecycle Revenue Impacts (\$/kWh)					0.00034
Discounted Participant Payback (years)					4.58

Table 7: 2022 Residential Energy Efficiency Sector Cost-Effectiveness Results (Including NEBs)

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.05	\$1,417,012	\$1,707,584	\$290,573	1.21
Total Resource Cost Test (TRC) No Adder	\$0.05	\$1,417,012	\$1,566,460	\$149,448	1.11
Utility Cost Test (UCT)	\$0.04	\$1,043,682	\$1,419,371	\$375,689	1.36
Participant Cost Test (PCT)		\$757,672	\$3,268,148	\$2,510,476	4.31
Rate Impact Test (RIM)		\$3,914,441	\$1,419,371	(\$2,495,070)	0.36
Lifecycle Revenue Impacts (\$/kWh)					0.00010
Discounted Participant Payback (years)					1.04

Table 8: 2022 Residential Energy Efficiency Sector Cost-Effectiveness Results (Without NEBs)

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.05	\$1,417,012	\$1,552,370	\$135,359	1.10
Total Resource Cost Test (TRC) No Adder	\$0.05	\$1,417,012	\$1,411,246	(\$5,766)	1.00
Utility Cost Test (UCT)	\$0.04	\$1,043,682	\$1,419,371	\$375,689	1.36
Participant Cost Test (PCT)		\$757,672	\$3,224,586	\$2,466,914	4.26
Rate Impact Test (RIM)		\$3,914,441	\$1,419,371	(\$2,495,070)	0.36
Lifecycle Revenue Impacts (\$/kWh)					0.00010
Discounted Participant Payback (years)					1.04



Table 9: 2022 Low Income NEBs

Non-Energy Benefit	Program Impact	Perspective Adjusted
Total NEBs	\$117,288	PTRC, TRC

Table 10: 2022 Home Energy Savings NEBs by Measure

Measure Name	Total NEBs (\$/yr)	Quantity	Measure Life	Discount Rate	Total NPV Benefits
Appliances	\$283	39	13.52	6.88%	\$2,343
Energy Kits	\$5,073	408	10.26	6.88%	\$35,583



MEMORANDUM

To: Alesha Mander, PacifiCorp
From: Andrew Cottrell, Andy Hudson, Elizabeth Applegate, AEG
Date: April 21, 2023
Re: PacifiCorp Idaho Portfolio and Sector Level Cost-Effectiveness Results (without Low-Income) – PY2022

AEG estimated the cost-effectiveness of PacifiCorp's overall energy efficiency portfolio in the state of Idaho based on Program Year (PY) 2022 costs and savings estimates provided by PacifiCorp. This memo provides cost-effectiveness results at the portfolio and sector levels. The portfolio (including NEBs) passes the PacifiCorp Total Resource Cost Test (PTRC), Utility Cost Test (UCT) and the Participant Cost Test (PCT).

This memo provides analysis inputs and results in the following tables:

- Table 1: Cost-Effectiveness Analysis Inputs
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- Table 8: 2022 Residential Energy Efficiency Sector Cost-Effectiveness Results (Without NEBs)
- Table 9: 2022 Home Energy Savings NEBs by Measure

The following assumptions were utilized in the analysis:

- **Avoided Costs:** Hourly values provided by PacifiCorp based on the 2021 Integrated Resource Plan (IRP) Preferred Portfolio, converted into annual values using Idaho load shapes from the same IRP.
- **Modeling Inputs:** measure savings, costs, measure lives, incentive levels, and portfolio costs were based on estimates provided by PacifiCorp.
- **Other Economic Assumptions:** Discount rate, line loss, retail rate, and inflation rate values were provided by PacifiCorp and are presented in Table 1 below.



Tables 1 and 2 below summarize cost-effectiveness assumptions for the PacifiCorp Idaho energy efficiency portfolio. All costs and impacts are presented at the portfolio level.

Table 1: Cost-Effectiveness Analysis Inputs

Parameter	Value
Discount Rate	6.88%
Residential Line Loss	9.06%
Commercial Line Loss	8.59%
Industrial Line Loss	3.83%
Irrigation Line Loss	9.05%
Residential Energy Rate* (\$/kWh)	\$0.10
Commercial Energy Rate* (\$/kWh)	\$0.09
Industrial Energy Rate* (\$/kWh)	\$0.07
Irrigation Energy Rate* (\$/kWh)	\$0.09
Inflation Rate	2.16%

Table 2: Portfolio Level Costs, Nominal - PY2022¹

Category	PY2022
C&I Evaluation Costs	\$160,361
Residential Evaluation Costs	\$49,508
Low Income Energy Conservation Education	\$0
Outreach & Communications	\$119,099
Potential Study	\$88,184
System Support	\$12,643
Total	\$429,795

Tables 3 through 8 present the cost-effectiveness results at the portfolio and sector levels. Table 9 presents the NEBs impacts for the Home Energy Savings program.

Table 3: Benefit/Cost Ratios by Portfolio Type

Program	PTRC	TRC	UCT	PCT	RIM
Total Portfolio (Including NEBs)	1.07	0.97	1.35	3.27	0.43
Total Portfolio	1.06	0.97	1.35	3.25	0.43
Commercial & Industrial	1.14	1.03	1.49	2.83	0.47
Residential (Including NEBs)	1.24	1.13	1.55	4.89	0.37
Residential	1.21	1.10	1.55	4.82	0.37

¹ To align with annual budget expectations, cost-effectiveness inputs are presented in nominal dollars.



Table 4: 2022 Total Portfolio Cost-Effectiveness Results (Including NEBs)

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.06	\$5,575,411	\$5,970,483	\$395,073	1.07
Total Resource Cost Test (TRC) No Adder	\$0.06	\$5,575,411	\$5,431,160	(\$144,251)	0.97
Utility Cost Test (UCT)	\$0.05	\$4,003,631	\$5,393,234	\$1,389,603	1.35
Participant Cost Test (PCT)		\$2,994,220	\$9,784,587	\$6,790,367	3.27
Rate Impact Test (RIM)		\$12,648,481	\$5,393,234	(\$7,255,247)	0.43
Lifecycle Revenue Impacts (\$/kWh)					0.00033
Discounted Participant Payback (years)					2.43

Table 5: 2022 Total Portfolio Cost-Effectiveness Results (Without NEBs)

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.06	\$5,575,411	\$5,932,557	\$357,146	1.06
Total Resource Cost Test (TRC) No Adder	\$0.06	\$5,575,411	\$5,393,234	(\$182,177)	0.97
Utility Cost Test (UCT)	\$0.05	\$4,003,631	\$5,393,234	\$1,389,603	1.35
Participant Cost Test (PCT)		\$2,994,220	\$9,741,024	\$6,746,804	3.25
Rate Impact Test (RIM)		\$12,648,481	\$5,393,234	(\$7,255,247)	0.43
Lifecycle Revenue Impacts (\$/kWh)					0.00033
Discounted Participant Payback (years)					2.43

Table 6: 2022 C&I Energy Efficiency Sector Cost-Effectiveness Results

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.09	\$2,750,562	\$2,092,100	(\$658,462)	0.76
Total Resource Cost Test (TRC) No Adder	\$0.09	\$2,750,562	\$1,901,909	(\$848,653)	0.69
Utility Cost Test (UCT)	\$0.07	\$2,322,076	\$1,901,909	(\$420,167)	0.82
Participant Cost Test (PCT)		\$1,165,466	\$3,782,827	\$2,617,360	3.25
Rate Impact Test (RIM)		\$5,597,825	\$1,901,909	(\$3,695,916)	0.34
Lifecycle Revenue Impacts (\$/kWh)					0.00023
Discounted Participant Payback (years)					4.05



Table 7: 2022 Residential Energy Efficiency Sector Cost-Effectiveness Results (Including NEBs)

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.05	\$1,269,036	\$1,567,466	\$298,429	1.24
Total Resource Cost Test (TRC) No Adder	\$0.05	\$1,269,036	\$1,428,417	\$159,380	1.13
Utility Cost Test (UCT)	\$0.03	\$895,707	\$1,390,490	\$494,784	1.55
Participant Cost Test (PCT)		\$636,888	\$3,111,623	\$2,474,735	4.89
Rate Impact Test (RIM)		\$3,730,725	\$1,390,490	(\$2,340,234)	0.37
Lifecycle Revenue Impacts (\$/kWh)					0.00010
Discounted Participant Payback (years)					0.88

Table 8: 2022 Residential Energy Efficiency Sector Cost-Effectiveness Results (Without NEBs)

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.05	\$1,269,036	\$1,529,539	\$260,503	1.21
Total Resource Cost Test (TRC) No Adder	\$0.05	\$1,269,036	\$1,390,490	\$121,454	1.10
Utility Cost Test (UCT)	\$0.03	\$895,707	\$1,390,490	\$494,784	1.55
Participant Cost Test (PCT)		\$636,888	\$3,068,061	\$2,431,173	4.82
Rate Impact Test (RIM)		\$3,730,725	\$1,390,490	(\$2,340,234)	0.37
Lifecycle Revenue Impacts (\$/kWh)					0.00010
Discounted Participant Payback (years)					0.88

Table 9: 2022 Home Energy Savings NEBs by Measure

Measure Name	Total NEBs (\$/yr)	Quantity	Measure Life	Discount Rate	Total NPV Benefits
Appliances	\$283	39	13.52	6.88%	\$2,343
Energy Kits	\$5,073	408	10.26	6.88%	\$35,583



MEMORANDUM

To: Alesha Mander, PacifiCorp
From: Andrew Cottrell, Andy Hudson, Elizabeth Applegate, AEG
Date: April 21, 2023
Re: PacifiCorp Idaho Wattsmart Homes Cost-Effectiveness Results – PY2022

AEG estimated the cost-effectiveness of PacifiCorp's overall energy efficiency portfolio in the state of Idaho based on Program Year (PY) 2022 costs and savings estimates provided by PacifiCorp. This memo provides cost-effectiveness results for the Wattsmart Homes (WSH) program. The program (including NEBs) passes the PacifiCorp Total Resource Cost Test (PTRC), Utility Cost Test (UCT) and the Participant Cost Test (PCT).

This memo provides analysis inputs and results in the following tables:

- Table 1: Cost-Effectiveness Analysis Inputs
- Table 2: WSH Annual Program Costs, Nominal - PY2022
- Table 3: 2022 Home Energy Savings kWh Savings by Measure Category
- Table 4: 2022 Benefit/Cost Ratios by Measure Category
- Table 5: 2022 WSH Program Cost-Effectiveness Results (Without NEBs)
- Table 6: 2022 Appliances Cost-Effectiveness Results (Without NEBs) - (Load Shape - Residential_ERWH_7P)
- Table 7: 2022 Building Shell Cost-Effectiveness Results (Without NEBs) - (Load Shape - ID_Single_Family_Heat_pump)
- Table 8: 2022 Electronics Cost-Effectiveness Results (Without NEBs) - (Load Shape - ID_Single Family_Plug)
- Table 9: 2022 Home Energy Kits Cost-Effectiveness Results (Without NEBs) - (Load Shape - Residential_LIGHTING_7P)
- Table 10: 2022 HVAC Cost-Effectiveness Results (Without NEBs) - (Load Shape - ID_Single_Family_Heat_pump)
- Table 11: 2022 Lighting Cost-Effectiveness Results (Without NEBs) - (Load Shape - Residential_LIGHTING_7P)



- Table 12: 2022 Water Heating Cost-Effectiveness Results (Without NEBs) - (Load Shape - Residential_ERWH_7P)
- Table 13: 2022 Whole Building Cost-Effectiveness Results (Without NEBs) - (Load Shape - ID_Single_Family_Heat_pump)
- Table 14: 2022 Transportation Cost-Effectiveness Results (Without NEBs) - (Load Shape - ID_Single_Family_Heating)
- Table 15: Home Energy Savings NEBs by Measure - PY2022
- Table 16: 2022 WSH Program Cost-Effectiveness Results (Including NEBs)
- Table 17: Appliances Cost-Effectiveness Results (with NEBs) - PY2022 (Load Shape - Residential_ERWH_7P)
- Table 18: Home Energy Kit Cost-Effectiveness Results (with NEBs) - PY2022 (Load Shape - Residential_LIGHTING_7P)

The following assumptions were utilized in the analysis:

- **Avoided Costs:** Hourly values provided by PacifiCorp based on the 2021 Integrated Resource Plan (IRP) Preferred Portfolio, converted into annual values using Idaho load shapes from the same IRP.
- **Modeling Inputs:** measure savings, costs, measure lives, incentive levels, and portfolio costs were based on estimates provided by PacifiCorp.
- **Other Economic Assumptions:** Discount rate, line loss, retail rate, and inflation rate values were provided by PacifiCorp and are presented in Table 1 below.

Tables 1 and 2 below summarize cost-effectiveness assumptions for the Home Energy Savings program. All costs and impacts are presented at the program and measure category level.

Table 1: Cost-Effectiveness Analysis Inputs

Parameter	Value
Discount Rate	6.88%
Residential Line Loss	9.06%
Residential Energy Rate (\$/kWh)	\$0.10
Inflation Rate ¹	2.16%

Tables 3 through 15 present the savings and cost-effectiveness results at the program and measure category levels. Tables 16 and 19 present the NEBs impacts for the WSH program and the cost-effectiveness results including NEBs at the program and measure category levels.



Table 2: WSH Annual Program Costs, Nominal - PY2022¹

Measure Category	Program Delivery	Utility Admin	Program Development	Incentives	Total Utility Budget	Gross Customer Costs
Appliances	\$377	\$13	\$129	\$1,205	\$1,723	\$3,160
Building Shell	\$2,052	\$69	\$704	\$5,505	\$8,331	\$12,707
Electronics	\$168	\$6	\$58	\$285	\$517	\$462
Energy Kits	\$4,566	\$251	\$2,550	\$2,579	\$9,945	\$2,244
HVAC	\$30,460	\$1,029	\$10,451	\$37,713	\$79,653	\$131,665
Lighting	\$32,539	\$19	\$188	\$611	\$33,357	\$1,294
Water Heating	\$3,830	\$129	\$1,314	\$8,700	\$13,974	\$11,728
Whole Building	\$9,680	\$327	\$3,321	\$20,625	\$33,953	\$83,727
Transportation	\$341,954	\$11,555	\$117,321	\$155,819	\$626,649	\$359,386
Total Program	\$425,627	\$13,398	\$136,036	\$233,043	\$808,104	\$606,372

Table 3: 2022 Home Energy Savings kWh Savings by Measure Category

Measure Category	Gross kWh Savings at Site	Realization Rate	Adjusted Gross kWh Savings at Site	Net to Gross Ratio	Net kWh Savings at Site	Measure Life
Appliances	2,591	80%	2,073	88%	1,824	14
Building Shell	14,124	61%	8,615	88%	7,582	45
Electronics	1,159	52%	603	97%	585	5
Energy Kits	51,135	55%	28,125	87%	24,468	10
HVAC	209,605	100%	209,605	89%	186,549	13
Lighting	3,777	57%	2,153	87%	1,873	16
Water Heating	26,359	61%	16,079	99%	15,918	13
Whole Building	66,610	100%	66,610	88%	58,617	40
Transportation	2,353,107	100%	2,353,107	100%	2,353,107	10
Total Program	2,728,468	98%	2,686,970	99%	2,650,523	11

¹ To align with annual budget expectations, cost-effectiveness inputs are presented in nominal dollars.



Table 4: 2022 Benefit/Cost Ratios by Measure Category

Measure Category	PTRC	TRC	UCT	PCT	RIM
Appliances	0.31	0.28	0.60	0.96	0.26
Appliances (with NEIs)	0.95	0.92	0.60	1.70	0.26
Building Shell	0.62	0.56	1.05	1.57	0.34
Building Shell (with NEIs)	0.62	0.56	1.05	1.57	0.34
Electronics	0.24	0.22	0.29	1.19	0.19
Electronics (with NEIs)	0.24	0.22	0.29	1.19	0.19
Energy Kits	1.44	1.31	1.27	10.79	0.36
Energy Kits (with NEIs)	5.14	5.01	1.27	26.65	0.36
HVAC	0.64	0.58	1.26	1.70	0.34
HVAC (with NEIs)	0.64	0.58	1.26	1.70	0.34
Lighting	0.04	0.04	0.04	2.12	0.03
Lighting (with NEIs)	0.04	0.04	0.04	2.12	0.03
Water Heating	0.56	0.51	0.62	2.12	0.28
Water Heating (with NEIs)	0.56	0.51	0.62	2.12	0.28
Water Heating	0.56	0.51	0.62	2.12	0.28
Water Heating (with NEIs)	0.56	0.51	0.62	2.12	0.28
Total	1.00	0.91	1.32	4.08	0.34
Total with NEBs	1.03	0.94	1.32	4.15	0.34

Table 5: 2022 WSH Program Cost-Effectiveness Results (Without NEBs)

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.05	\$1,181,433	\$1,177,662	(\$3,772)	1.00
Total Resource Cost Test (TRC) No Adder	\$0.05	\$1,181,433	\$1,070,601	(\$110,832)	0.91
Utility Cost Test (UCT)	\$0.04	\$808,104	\$1,070,601	\$262,498	1.32
Participant Cost Test (PCT)		\$636,888	\$2,600,361	\$1,963,473	4.08
Rate Impact Test (RIM)		\$3,175,422	\$1,070,601	(\$2,104,821)	0.34
Lifecycle Revenue Impacts (\$/kWh)					0.00008
Discounted Participant Payback (years)					2.57



Table 6: 2022 Appliances Cost-Effectiveness Results (Without NEBs) - (Load Shape - Residential_ERWH_7P)

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.20	\$3,678	\$1,140	(\$2,538)	0.31
Total Resource Cost Test (TRC) No Adder	\$0.20	\$3,678	\$1,037	(\$2,642)	0.28
Utility Cost Test (UCT)	\$0.09	\$1,723	\$1,037	(\$687)	0.60
Participant Cost Test (PCT)		\$3,590	\$3,433	(\$158)	0.96
Rate Impact Test (RIM)		\$3,951	\$1,037	(\$2,915)	0.26
Lifecycle Revenue Impacts (\$/kWh)					0.00000
Discounted Participant Payback (years)					14.14

Table 7: 2022 Building Shell Cost-Effectiveness Results (Without NEBs) - (Load Shape - ID_Single_Family_Heat_pump)

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.13	\$15,533	\$9,638	(\$5,895)	0.62
Total Resource Cost Test (TRC) No Adder	\$0.13	\$15,533	\$8,762	(\$6,771)	0.56
Utility Cost Test (UCT)	\$0.07	\$8,331	\$8,762	\$431	1.05
Participant Cost Test (PCT)		\$14,439	\$22,666	\$8,227	1.57
Rate Impact Test (RIM)		\$25,492	\$8,762	(\$16,730)	0.34
Lifecycle Revenue Impacts (\$/kWh)					0.00000
Discounted Participant Payback (years)					28.67

Table 8: 2022 Electronics Cost-Effectiveness Results (Without NEBs) - (Load Shape - ID_Single Family_Plug)

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.25	\$694	\$165	(\$528)	0.24
Total Resource Cost Test (TRC) No Adder	\$0.25	\$694	\$150	(\$543)	0.22
Utility Cost Test (UCT)	\$0.18	\$517	\$150	(\$366)	0.29
Participant Cost Test (PCT)		\$476	\$564	\$88	1.19
Rate Impact Test (RIM)		\$796	\$150	(\$646)	0.19
Lifecycle Revenue Impacts (\$/kWh)					0.00000
Discounted Participant Payback (years)					4.22



Table 9: 2022 Home Energy Kits Cost-Effectiveness Results (Without NEBs) - (Load Shape - Residential_LIGHTING_7P)

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.04	\$9,610	\$13,846	\$4,236	1.44
Total Resource Cost Test (TRC) No Adder	\$0.04	\$9,610	\$12,588	\$2,978	1.31
Utility Cost Test (UCT)	\$0.05	\$9,945	\$12,588	\$2,642	1.27
Participant Cost Test (PCT)		\$2,579	\$27,833	\$25,254	10.79
Rate Impact Test (RIM)		\$35,199	\$12,588	(\$22,612)	0.36
Lifecycle Revenue Impacts (\$/kWh)					0.00000
Discounted Participant Payback (years)					0.95

Table 10: 2022 HVAC Cost-Effectiveness Results (Without NEBs) - (Load Shape - ID_Single_Family_Heat_pump)

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.09	\$173,605	\$110,736	(\$62,869)	0.64
Total Resource Cost Test (TRC) No Adder	\$0.09	\$173,605	\$100,669	(\$72,936)	0.58
Utility Cost Test (UCT)	\$0.04	\$79,653	\$100,669	\$21,016	1.26
Participant Cost Test (PCT)		\$147,938	\$251,181	\$103,242	1.70
Rate Impact Test (RIM)		\$293,120	\$100,669	(\$192,452)	0.34
Lifecycle Revenue Impacts (\$/kWh)					0.00001
Discounted Participant Payback (years)					8

Table 11: 2022 Lighting Cost-Effectiveness Results (Without NEBs) - (Load Shape - Residential_LIGHTING_7P)

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$1.64	\$34,040	\$1,359	(\$32,682)	0.04
Total Resource Cost Test (TRC) No Adder	\$1.64	\$34,040	\$1,235	(\$32,805)	0.04
Utility Cost Test (UCT)	\$1.60	\$33,357	\$1,235	(\$32,122)	0.04
Participant Cost Test (PCT)		\$1,488	\$3,152	\$1,664	2.12
Rate Impact Test (RIM)		\$35,898	\$1,235	(\$34,663)	0.03
Lifecycle Revenue Impacts (\$/kWh)					0.00000
Discounted Participant Payback (years)					7



Table 12: 2022 Water Heating Cost-Effectiveness Results (Without NEBs) - (Load Shape - Residential_ERWH_7P)

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.11	\$17,002	\$9,487	(\$7,515)	0.56
Total Resource Cost Test (TRC) No Adder	\$0.11	\$17,002	\$8,625	(\$8,378)	0.51
Utility Cost Test (UCT)	\$0.09	\$13,974	\$8,625	(\$5,350)	0.62
Participant Cost Test (PCT)		\$11,847	\$25,075	\$13,228	2.12
Rate Impact Test (RIM)		\$30,349	\$8,625	(\$21,725)	0.28
Lifecycle Revenue Impacts (\$/kWh)					0.00000
Discounted Participant Payback (years)					6

Table 13: 2022 Whole Building Cost-Effectiveness Results (Without NEBs) - (Load Shape - ID_Single_Family_Heat_pump)

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.10	\$97,055	\$72,718	(\$24,337)	0.75
Total Resource Cost Test (TRC) No Adder	\$0.10	\$97,055	\$66,107	(\$30,948)	0.68
Utility Cost Test (UCT)	\$0.04	\$33,953	\$66,107	\$32,154	1.95
Participant Cost Test (PCT)		\$95,144	\$149,349	\$54,205	1.57
Rate Impact Test (RIM)		\$162,677	\$66,107	(\$96,570)	0.41
Lifecycle Revenue Impacts (\$/kWh)					0.00000
Discounted Participant Payback (years)					26

Table 14: 2022 Transportation Cost-Effectiveness Results (Without NEBs) - (Load Shape - ID_Single_Family_Heating)

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.04	\$830,217	\$958,573	\$128,356	1.15
Total Resource Cost Test (TRC) No Adder	\$0.04	\$830,217	\$871,430	\$41,213	1.05
Utility Cost Test (UCT)	\$0.03	\$626,649	\$871,430	\$244,781	1.39
Participant Cost Test (PCT)		\$359,386	\$2,117,108	\$1,757,722	5.89
Rate Impact Test (RIM)		\$2,587,939	\$871,430	(\$1,716,509)	0.34
Lifecycle Revenue Impacts (\$/kWh)					0.00014
Discounted Participant Payback (years)					1.64



Table 15: Home Energy Savings NEBs by Measure - PY2022

Measure Name	Total NEBs (\$/yr)	Quantity	Measure Life	Discount Rate	Total NPV Benefits
Appliances	\$283	39	13.52	6.88%	\$2,343
Energy Kits	\$5,073	408	10.26	6.88%	\$35,583

Table 16: 2022 WSH Program Cost-Effectiveness Results (Including NEBs)

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.05	\$1,181,433	\$1,215,588	\$34,154	1.03
Total Resource Cost Test (TRC) No Adder	\$0.05	\$1,181,433	\$1,108,528	(\$72,906)	0.94
Utility Cost Test (UCT)	\$0.04	\$808,104	\$1,070,601	\$262,498	1.32
Participant Cost Test (PCT)		\$636,888	\$2,643,924	\$2,007,036	4.15
Rate Impact Test (RIM)		\$3,175,422	\$1,070,601	(\$2,104,821)	0.34
Lifecycle Revenue Impacts (\$/kWh)					0.00008
Discounted Participant Payback (years)					3

Table 17: Appliances Cost-Effectiveness Results (with NEBs) - PY2022 (Load Shape - Residential_ERWH_7P)

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.20	\$3,678	\$3,483	(\$195)	0.95
Total Resource Cost Test (TRC) No Adder	\$0.20	\$3,678	\$3,379	(\$299)	0.92
Utility Cost Test (UCT)	\$0.09	\$1,723	\$1,037	(\$687)	0.60
Participant Cost Test (PCT)		\$3,590	\$6,095	\$2,505	1.70
Rate Impact Test (RIM)		\$3,951	\$1,037	(\$2,915)	0.26
Lifecycle Revenue Impacts (\$/kWh)					0.00000
Discounted Participant Payback (years)					8



Table 18: Home Energy Kit Cost-Effectiveness Results (with NEBs) - PY2022 (Load Shape - Residential_LIGHTING_7P)

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.04	\$9,610	\$49,430	\$39,820	5.14
Total Resource Cost Test (TRC) No Adder	\$0.04	\$9,610	\$48,171	\$38,561	5.01
Utility Cost Test (UCT)	\$0.05	\$9,945	\$12,588	\$2,642	1.27
Participant Cost Test (PCT)		\$2,579	\$68,734	\$66,155	26.65
Rate Impact Test (RIM)		\$35,199	\$12,588	(\$22,612)	0.36
Lifecycle Revenue Impacts (\$/kWh)					0.00000
Discounted Participant Payback (years)					0.38



MEMORANDUM

To: Alesha Mander, PacifiCorp
From: Andrew Cottrell, Andy Hudson, Elizabeth Applegate, AEG
Date: April 21, 2023
Re: PacifiCorp Idaho Home Energy Reporting Cost-Effectiveness Results – PY2022

AEG estimated the cost-effectiveness of PacifiCorp's overall energy efficiency portfolio in the state of Idaho based on Program Year (PY) 2022 costs and savings estimates provided by PacifiCorp. This memo provides cost-effectiveness results for the Home Energy Reporting program. The program passes all cost effectiveness tests.

This memo provides analysis inputs and results in the following tables:

- Table 1: Cost-Effectiveness Analysis Inputs
- Table 2: Home Energy Reporting Annual Program Costs, Nominal - PY2022
- Table 3: 2022 Home Energy Reporting kWh Savings by Measure Category
- Table 4: 2022 Home Energy Reporting Program Cost-Effectiveness Results - (Load Shape - ID_Single_Family_Heat_pump)

The following assumptions were utilized in the analysis:

- **Avoided Costs:** Hourly values provided by PacifiCorp based on the 2021 Integrated Resource Plan (IRP) Preferred Portfolio, converted into annual values using Idaho load shapes from the same IRP.
- **Modeling Inputs:** measure savings, costs, measure lives, incentive levels, and portfolio costs were based on estimates provided by PacifiCorp.
- **Other Economic Assumptions:** Discount rate, line loss, retail rate, and inflation rate values were provided by PacifiCorp and are presented in Table 1 below.

Tables 1 and 2 below summarize cost-effectiveness assumptions for the Home Energy Reporting program. All costs and impacts are presented at the program level.



Table 1: Cost-Effectiveness Analysis Inputs

Parameter	Value
Discount Rate	6.88%
Residential Line Loss	9.06%
Residential Energy Rate (\$/kWh)	\$0.10
Inflation Rate ¹	2.16%

Table 2: Home Energy Reporting Annual Program Costs, Nominal - PY2022¹

Program Year	Program Delivery	Utility Admin	Program Development	Incentives	Total Utility Budget
Home Energy Reports	\$63,000	\$4,603	\$20,000	\$0	\$87,603
Total Program	\$63,000	\$4,603	\$20,000	\$0	\$87,603

Tables 3 and 4 present the savings and cost-effectiveness results at the program and measure category levels.

Table 3: 2022 Home Energy Reporting kWh Savings by Measure Category

Program Year	Gross kWh Savings at Site	Realization Rate	Adjusted Gross kWh Savings at Site	Net to Gross Ratio	Net kWh Savings at Site	Measure Life
Home Energy Reports	5,018,450	92%	4,616,974	100%	4,616,974	1
Total Program	5,018,450	92%	4,616,974	100%	4,616,974	1

Table 4: 2022 Home Energy Reporting Program Cost-Effectiveness Results - (Load Shape - ID_Single_Family_Heat_pump)

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.02	\$87,603	\$351,878	\$264,275	4.02
Total Resource Cost Test (TRC) No Adder	\$0.02	\$87,603	\$319,889	\$232,286	3.65
Utility Cost Test (UCT)	\$0.02	\$87,603	\$319,889	\$232,286	3.65
Participant Cost Test (PCT)		\$0	\$467,699	\$467,699	n/a
Rate Impact Test (RIM)		\$555,303	\$319,889	(\$235,414)	0.58
Lifecycle Revenue Impacts (\$/kWh)					0.00024

¹ To align with annual budget expectations, cost-effectiveness inputs are presented in nominal dollars.



MEMORANDUM

To: Alesha Mander, PacifiCorp
From: Andrew Cottrell, Andy Hudson, Elizabeth Applegate, AEG
Date: April 21, 2023
Re: PacifiCorp Idaho Low-Income Weatherization Cost-Effectiveness Results – PY2022

AEG estimated the cost-effectiveness of PacifiCorp's overall energy efficiency portfolio in the state of Idaho based on Program Year (PY) 2022 costs and savings estimates provided by PacifiCorp. This memo provides cost-effectiveness results for the Low-Income Weatherization program. The program does not pass any of the cost effectiveness tests.

This memo provides analysis inputs and results in the following tables:

- Table 1: Cost-Effectiveness Analysis Inputs
- Table 2: Low Income Weatherization Annual Program Costs, Nominal - PY2022
- Table 3: 2022 Low Income Weatherization kWh Savings by Measure Category
- Table 4: 2022 Low Income Weatherization Benefit/Cost Ratios by Measure Category
- Table 5: 2022 Low Income Weatherization Program Cost-Effectiveness Results (without NEBs) - (Load Shape - ID_Single_Family_Heat_pump)
- Table 6: 2022 Low Income Weatherization NEBs
- Table 7: 2022 Low Income Weatherization Program Cost-Effectiveness Results (Including NEBs) - (Load Shape - ID_Single_Family_Heat_pump)

The following assumptions were utilized in the analysis:

- **Avoided Costs:** Hourly values provided by PacifiCorp based on the 2021 Integrated Resource Plan (IRP) Preferred Portfolio, converted into annual values using Idaho load shapes from the same IRP.
- **Modeling Inputs:** measure savings, costs, measure lives, incentive levels, and portfolio costs were based on estimates provided by PacifiCorp.
- **Other Economic Assumptions:** Discount rate, line loss, retail rate, and inflation rate values were provided by PacifiCorp and are presented in Table 1 below.



Tables 1 and 2 below summarize cost-effectiveness assumptions for the Low Income Weatherization program. All costs and impacts are presented at the program and measure category level.

Table 1: Cost-Effectiveness Analysis Inputs

Parameter	Value
Discount Rate	6.88%
Residential Line Loss	9.06%
Residential Energy Rate (\$/kWh)	\$0.10
Inflation Rate ¹	2.16%

Table 2: Low Income Weatherization Annual Program Costs, Nominal - PY2022¹

Program Year	Program Delivery	Utility Admin	Program Development	Incentives	Total Utility Budget	Gross Customer Costs
Low Income Weatherization	\$8,503	\$2,516	\$16,172	\$120,784	\$147,975	\$120,784
Total Program	\$8,503	\$2,516	\$16,172	\$120,784	\$147,975	\$120,784

Tables 3 through 5 present the savings and cost-effectiveness results at the program and measure category levels. Tables 6 and 7 present the NEB impacts for the Low-Income Weatherization program and the cost-effectiveness results including NEBs at the program level.

Table 3: 2022 Low Income Weatherization kWh Savings by Measure Category

Program Year	Gross kWh Savings at Site	Realization Rate	Adjusted Gross kWh Savings at Site	Net to Gross Ratio	Net kWh Savings at Site	Measure Life
Home Energy Reports	31,995	72%	23,036	100%	23,036	25
Total Program	31,995	72%	23,036	100%	23,036	25

¹ To align with annual budget expectations, cost-effectiveness inputs are presented in nominal dollars.



Table 4: 2022 Low Income Weatherization Benefit/Cost Ratios by Measure Category

Program Year	PTRC	TRC	UCT	RIM	PCT
Low Income Weatherization with NEBs	0.95	0.93	0.20	0.16	n/a
Low Income Weatherization	0.15	0.14	0.20	0.16	n/a

Table 5: 2022 Low Income Weatherization Program Cost-Effectiveness Results (without NEBs) - (Load Shape - ID_Single_Family_Heat_pump)

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.47	\$147,975	\$22,831	(\$125,144)	0.15
Total Resource Cost Test (TRC) No Adder	\$0.47	\$147,975	\$20,755	(\$127,220)	0.14
Utility Cost Test (UCT)	\$0.47	\$147,975	\$28,880	(\$119,095)	0.20
Participant Cost Test (PCT)		\$120,784	\$156,525	\$35,741	1.30
Rate Impact Test (RIM)		\$183,716	\$28,880	(\$154,836)	0.16
Lifecycle Revenue Impacts (\$/kWh)					0.00001

Table 6: 2022 Low Income Weatherization NEBs

Non-Energy Benefit	Program Impact	Perspective Adjusted
Total NEBs	\$117,288	PTRC, TRC

Table 7: 2022 Low Income Weatherization Program Cost-Effectiveness Results (Including NEBs) - (Load Shape - ID_Single_Family_Heat_pump)

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.47	\$147,975	\$140,119	(\$7,856)	0.95
Total Resource Cost Test (TRC) No Adder	\$0.47	\$147,975	\$138,043	(\$9,932)	0.93
Utility Cost Test (UCT)	\$0.47	\$147,975	\$28,880	(\$119,095)	0.20
Participant Cost Test (PCT)		\$120,784	\$156,525	\$35,741	1.30
Rate Impact Test (RIM)		\$183,716	\$28,880	(\$154,836)	0.16
Lifecycle Revenue Impacts (\$/kWh)					0.00001