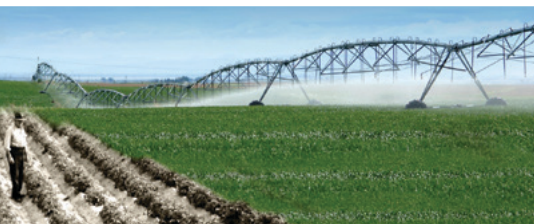


BUILDING OUR FUTURE



MARCH 15 2023

DEMAND-SIDE MANAGEMENT
2022
ANNUAL REPORT
SUPPLEMENT 1: **COST-EFFECTIVENESS**



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SUPPLEMENT 1: COST-EFFECTIVENESS

Cost-Effectiveness

Idaho Power considers cost-effectiveness of primary importance in the design, implementation, and tracking of energy efficiency and demand response programs.

Prior to the actual implementation of energy efficiency or demand response programs, Idaho Power performs a preliminary analysis to assess whether a potential program design or measure may be cost-effective. Incorporated in the analysis are inputs from various sources that use the most current and reliable information available. When possible, Idaho Power leverages the experiences of other utilities in the region and/or throughout the country to help identify specific program parameters. This is accomplished through discussions with other utilities' program managers and researchers. Idaho Power also uses electric industry research organizations, such as E Source, Northwest Energy Efficiency Alliance (NEEA) Regional Emerging Technology Advisory Committee (RETAC), the Consortium for Energy Efficiency (CEE), American Council for an Energy-Efficient Economy (ACEEE), and Advanced Load Control Alliance (ALCA) to identify similar programs and their results. Additionally, Idaho Power relies on the results of program impact evaluations and recommendations from consultants.

Idaho Power's goal is for all programs to have benefit/cost (B/C) ratios greater than one for the utility cost test (UCT) in Idaho, and the total resource cost (TRC) test in Oregon, at the program and measure level. In addition, Idaho Power looks at both the UCT and TRC, as well as the participant cost test (PCT) at the program and measure level, where appropriate. Each cost-effectiveness test provides a different perspective, and Idaho Power believes each test provides value when evaluating program performance. In 2020, Idaho Power transitioned to the UCT as the primary cost-effectiveness test in Idaho as directed by the Idaho Public Utilities Commission (IPUC) in Order Nos. 34469 and 34503. The company will continue calculating the TRC and PCT because each perspective can help inform the company and stakeholders about the effectiveness of a particular program or measure. Additionally, programs and measures offered in Oregon must still use the TRC as the primary cost-effectiveness test as directed by the Public Utility Commission of Oregon (OPUC) in Order No. 94-590.

Idaho Power uses several assumptions when calculating the cost-effectiveness of a given program or measure. For some measures within the programs, savings can vary based on factors, such as participation levels or the participants' locations. For instance, heat pumps installed in the Boise area will have lower savings than those installed in the McCall area because of climate differences. If program participation and savings increase, fixed costs (such as labor and marketing) are distributed more broadly, and the program's cost-effectiveness increases.

When an existing program or measure is not cost-effective from either the UCT perspective in Idaho or the TRC perspective in Oregon, Idaho Power works with the Energy Efficiency Advisory Group (EEAG) to get additional input about next steps. The company demonstrates why the non-cost-effective measures or programs are implemented, or continued to be offered, and communicates the steps the company plans to take to improve its cost-effectiveness. This aligns with the expectations of the IPUC and OPUC.

In OPUC Order No. 94-590, issued in UM 551, the OPUC outlines specific cost-effectiveness guidelines for energy efficiency measures and programs managed by program administrators. It is the expectation of the OPUC that measures and programs offered in Oregon pass the TRC test. If Idaho Power determines a program or measure is not cost-effective but meets one or more of the exceptions set forth by Order No. 94-590, the company files an exceptions request with the OPUC to continue offering the measure or program within its Oregon service area.

Non-cost-effective measures and programs may be offered by a utility if they meet one or more of the following additional conditions specified by Section 13 of OPUC Order No. 94-590:

- A. The measure produces significant non-quantifiable non-energy benefits (NEB)
- B. Inclusion of the measure will increase market acceptance and is expected to lead to reduced cost of the measure
- C. The measure is included for consistency with other demand-side management (DSM) programs in the region
- D. Inclusion of the measure helps increase participation in a cost-effective program
- E. The package of measures cannot be changed frequently, and the measure will be cost-effective during the period the program is offered
- F. The measure or package of measures is included in a pilot or research project intended to be offered to a limited number of customers
- G. The measure is required by law or is consistent with OPUC policy and/or direction

For operational and administrative efficiency, Idaho Power endeavors to offer identical programs in both its Oregon and Idaho jurisdictions; however, due to the different primary cost-effectiveness tests in each state, measures may not be offered in both states.

Methodology

For its cost-effectiveness methodology, Idaho Power relies on the Electric Power Research Institute (EPRI) *End Use Technical Assessment Guide* (TAG); the *California Standard Practice Manual* and its subsequent addendum; the National Action Plan for Energy Efficiency's (NAPEE) *Understanding Cost Effectiveness of Energy Efficiency Programs: Best Practices, Technical Methods, and Emerging Issues for Policy-Makers*.

For energy efficiency programs, each program's cost-effectiveness is reviewed annually from a one-year perspective. The annual energy-savings benefit value is summed over the life of the measure or program and is discounted to reflect 2022 dollars. The result of the one-year perspective is shown in Table 4 and the Cost-Effectiveness Tables by Program section in this supplement.

The goal of demand response programs is to minimize or delay the need to build new supply-side resources. Unlike energy efficiency programs or supply-side resources, demand response programs must acquire and retain participants each year to maintain deployable demand-reduction capacity for the company.

Idaho Power determines cost-effectiveness for its demand response programs using the approved method for valuing demand response under IPUC case IPC-E-21-32 (Order No. 35336) and OPUC Docket No. ADV 1355. The avoided cost calculation for demand response programs is as follows:

$$\frac{(\text{Levelized Fixed Costs} - \text{Additional Benefits}) \times \text{Effective Load Carrying Capacity of Annual DR Capacity}}{\text{Compared to Proxy Resource}} = \$ \text{ per kW year DR Avoided Costs}$$

Each of the three components have been updated:

1. From the *2021 IRP*, the 2022 levelized fixed cost value of a Simple Cycle Combustion Turbine (SCCT) was determined to be \$131.60 per kW per year.
2. From the *2021 IRP*, to determine the additional ancillary benefits provided by the SCCT compared to DR, an analysis was performed where DR was replaced with an equivalent SCCT and the fixed costs of the SCCT were removed from the model. The result of this analysis showed there were no additional benefits associated with the SCCT because the cost of the fuel and SCCT plant O&M required to meet the DR demand.
3. The updated ELCC of approximately 312 MW of DR capacity compared to a SCCT utilizing *2021 IRP* assumptions is 63%.

This results in a value of \$82.91 per kW year as the avoided cost threshold that the existing DR programs need to be under to be considered cost effective. A summary of the dollar per kW year for each DR program can be found in Table 3.

Assumptions

Idaho Power relies on third-party research to obtain savings and cost assumptions for various measures. These assumptions are routinely reviewed internally and with EEAG and updated as new information becomes available. For many of the residential and irrigation measures within this supplement, savings and costs were derived from either the Regional Technical Forum (RTF) or the *Idaho Power Energy Efficiency Potential Study* conducted by Applied Energy Group (AEG).

The RTF regularly reviews, evaluates, and recommends eligible energy efficiency measures and provides the estimated savings and costs associated with those measures. As the RTF updates these savings and cost assumptions, Idaho Power applies them to current program offerings and assesses the need to make any program changes. Idaho Power staff participates in the RTF by attending monthly meetings and contributing to various sub-committees. Because cost data from the RTF information is in 2012 dollars, measures with costs from the RTF are escalated to 2022 dollars. The costs are escalated by

17.0%, which is the percentage provided by the RTF in workbook [RTFStandardInformationWorkbook_v4_7.xlsx](#).

Idaho Power uses a technical reference manual (TRM) developed by ADM Associates, Inc. for the savings and cost assumptions in the Commercial and Industrial (C&I) Energy Efficiency Program's New Construction and Retrofits options. In 2020, the company began the process to update the assumptions in the TRM based on the 2018 International Energy Conservation Code (IECC). The updated TRM is the source for most prescriptive savings values for the New Construction and Retrofits options in the C&I Energy Efficiency program and have been implemented as of mid-2021.

Idaho Power also relies on other sources for savings and cost assumptions, such as the Northwest Power and Conservation Council (NWPCC), Northwest Energy Efficiency Alliance (NEEA), the Database for Energy Efficiency Resources (DEER), the Energy Trust of Oregon (ETO), the Bonneville Power Administration (BPA), third-party consultants, and other regional utilities. Occasionally, Idaho Power will also use internal engineering estimates and calculations for savings and costs based on information gathered from previous projects.

The company freezes savings assumptions when the budgets and goals are established for the next calendar year unless a code changes, a standard changes, or program updates necessitate a need to use updated savings. These assumptions are discussed in more detail in the cost-effectiveness sections for each program in the *Demand-Side Management 2022 Annual Report*. Generally, the 2022 energy savings reported for most programs will use the assumptions set at the beginning of the year.

The remaining inputs used in the cost-effectiveness calculations are obtained from the IRP process. Idaho Power's *2019 Second Amended IRP* was acknowledged by the IPUC under case IPC-E-19-19 on March 16, 2021 and with the OPUC under case LC 74 on June 4, 2021. The *2019 Second Amended IRP* is the source for all financial and cost-effectiveness analysis for the 2022 energy efficiency programs. As noted earlier, the *2021 IRP* is used to determine the cost-effectiveness threshold for the DR programs. Because the *2021 IRP* was not acknowledged at the time of the 2022 DSM energy efficiency program planning, Idaho Power had shared with EEAG its intent to use *2019 Second Amended IRP* for the 2022 program year and the *2021 IRP* for the 2023 program year.

Appendix C—Technical Appendix of Idaho Power's *2019 Second Amended IRP* contains the financial assumptions, such as discount rate, escalation rate and line losses, used in the cost-effectiveness analysis. DSM avoided costs vary by season and time of day and are applied to an end-use load shape to obtain the value of a particular measure or program. DSM avoided energy costs are based on both the projected fuel costs of a peak-load serving resource and forward electricity prices as determined by Idaho Power's power supply model, AURORA[®] Electric Market Model. The avoided capital cost of capacity is based on a gas-fired, simple-cycle turbine. In the 2019 IRP, the annual avoided capacity cost is \$121.19 per kilowatt (kW). Transmission and distribution (T&D) benefits are also included in the cost-effectiveness analyses. In compliance with Order No. 33365, this value is escalated and added to the 2019 DSM avoided energy costs and included in the cost-effectiveness analysis for 2022.

As recommended by the NAPEE's *Understanding Cost-Effectiveness of Energy Efficiency Programs*, Idaho Power's weighted average cost of capital (WACC) of 7.12% is used to discount future benefits and costs to today's dollars. Once the DSM avoided costs and load shapes are applied to the annual kWh savings of a measure or program, the WACC is used to calculate the net present value (NPV) of the annual benefit for the UCT and TRC test B/C ratios. However, determining the appropriate discount rate for participant cost and benefits is difficult because of the variety of potential discount rates that can be used by participants. Because the participant benefit is based on the anticipated bill savings of the customer, Idaho Power believes an alternate discount rate in place of the WACC is appropriate.

The participant bill savings are based on Idaho Power's 2022 average customer segment rate, and are not escalated. The participant bill savings are discounted using a real discount rate of 4.81%. The 4.81% is based on the 2019 *Second Amended IRP's* WACC of 7.12% and an escalation rate of 2.2%. The real discount rate is used to calculate the NPV of any participant benefits or costs for the PCT or ratepayer impact measure (RIM) B/C ratios.

The formula to calculate the real discount rate is as follows:

$$((1 + \text{WACC}) \div (1 + \text{Escalation})) - 1 = \text{Real}$$

Line-loss percentages are applied to the metered-site energy savings to find the energy savings at the generation level. The *Demand-Side Management 2022 Annual Report* shows the estimated electrical savings at the customer meter level. Cost-effectiveness analyses are based on generation-level energy savings. The demand response program reductions are reported at the generation level with the line losses. The system line-loss factor is 9.6% while the summer peak line-loss factor is 9.7%.

Conservation Adder

The *Pacific Northwest Electric Power Planning and Conservation Act* (Northwest Power Act) states the following:

...any conservation or resource shall not be treated as greater than that of any nonconservation measure or resource unless the incremental system cost of such conservation or resource is in excess of 110 per centum of the incremental system cost of the nonconservation measure or resource.

As a result of the Northwest Power Act, most utilities in the Pacific Northwest add a 10% conservation adder in energy efficiency cost-effectiveness analyses. In OPUC Order No. 94-590, the OPUC states:

We support the staff's position that the effect of conservation in reducing uncertainty in meeting load growth is included in the ten percent cost adder and that no separate adjustment is necessary.

Additionally, in IPUC Order No. 32788 in Case No. GNR-E-12-01, "Staff noted that Rocky Mountain

Power and Avista use a 10% conservation adder when calculating the cost-effectiveness of all their DSM programs.” Staff recommended the utilities have the option to use a 10% adder, and the IPUC agreed with the recommendation to allow utilities to use the 10% adder in the cost-effectiveness analyses for low-income programs.

After reviewing the practices of other utilities in the Pacific Northwest, as well as the OPUC Order No. 94-590 and IPUC Order 32788, Idaho Power applies the 10% conservation adder in all energy efficiency measure and program cost-effectiveness analyses when calculating the TRC test.

Net-to-Gross

Net-to-gross (NTG), or net-of-free-ridership (NTFR), is defined by NAPEE’s *Understanding Cost-Effectiveness of Energy Efficiency Programs* as a ratio that does the following:

Adjusts the impacts of the programs so that they only reflect those energy efficiency gains that are the result of the energy efficiency program. Therefore, the NTG deducts energy savings that would have been achieved without the efficiency program (e.g., ‘free-riders’) and increases savings for any ‘spillover’ effect that occurs as an indirect result of the program. Since the NTG attempts to measure what the customers would have done in the absence of the energy efficiency program, it can be difficult to determine precisely.

Capturing the effects of Idaho Power’s energy efficiency efforts on free-ridership and spillover is difficult. Due to the uncertainty surrounding NTG percentages, Idaho Power used an NTG of 100% for nearly all measure and program cost-effectiveness analyses.

Sensitivity analyses are conducted to show what the minimum NTG percentage needs to be for a program to remain (or become) cost-effective from either the TRC or UCT perspective. These NTG percentages are shown in the program cost-effectiveness pages of this supplement.

Results

Idaho Power calculates cost-effectiveness on a program basis and, where relevant, a measure basis. As part of *Supplement 1: Cost-Effectiveness* and where applicable, Idaho Power publishes the cost-effectiveness by measure, the PCT and RIM test at the program level, the assumptions associated with cost-effectiveness, and the sources and dates of metrics used in the cost-effectiveness calculation.

The B/C ratio from the participant cost perspective is not calculated for the Commercial Energy-Saving Kits, Educational Distributions, Energy House Calls, Home Energy Report Program, Multifamily Energy Savings Program, Small Business Direct Install, Weatherization Assistance for Qualified Customers (WAQC), and Weatherization Solutions for Eligible Customers programs. These programs have few or no participant-related costs. For energy efficiency programs, the cost-effectiveness analyses do not assume ongoing participant costs. However, anticipated future costs are used to develop the life-cycle cost-effectiveness analysis for the Home Energy Report Program.

This supplement contains annual cost-effectiveness metrics for each program using actual information from 2022 and includes results of the UCT, TRC, PCT, and RIM. Current customer energy rates are used in the calculation of the B/C ratios from a PCT and RIM perspective. Rate increases are not forecasted or escalated. A summary of the cost-effectiveness by program can be found in Table 4.

In 2022, most of Idaho Power's energy efficiency programs were cost-effective from the UCT perspective, except for Energy House Calls, Heating & Cooling Efficiency, Home Energy Report Program, Multifamily Energy Savings Program, Commercial Energy-Savings Kits, Small Business Direct Install, and the two weatherization programs for income-qualified customers.

For 2022, the Energy House Calls program had a UCT of 0.70 and a TRC of 0.77. The Multifamily Energy Savings Program had a UCT of 0.49 and TRC of 0.68. In 2021 and 2022, Idaho Power shared with EEAG the cost-effectiveness challenges facing the Energy House Calls and Multifamily Energy Savings Program. For both programs, savings associated with the measures were either declining or deactivated by the RTF. The company reviewed the programs internally using updated avoided costs assumption from the IRP. Due to the declining savings as well as the increasing costs associated with offering a free service for program participants, it was determined that the programs would continue to be not cost-effective in its current format. With the support of EEAG, the Energy House Calls program closed on June 30, 2022 and the Multifamily Energy Saving Program closed on December 31, 2022.

Heating & Cooling Efficiency Program had a UCT of 0.98 and TRC of 0.30. The cost-effectiveness ratios include the costs associated with the 2021 process and impact evaluation which was completed in 2022. If the evaluation costs are removed, the UCT and TRC ratios for the program are 1.00 and 0.30, respectively. Due to the changes to federal standards for air-source heat pumps, the program will be modified in 2023 to incorporate the updated savings assumptions, updated measures, and recommendations from the 2021 evaluation.

The Home Energy Report Program has a UCT and TRC of 0.71 and 0.79, respectively. The main drivers contributing to the lower cost-effectiveness ratio for current year are the relatively short measure life of the reports and the application of the avoided costs from the *2019 Second Amended IRP*. Due to the continuous nature of the HER program with costs and savings extending numerous years for the same participants, a program life-cycle cost-effectiveness is utilized to understand the cost-effectiveness of the offering. The program life cost-effectiveness is calculated to have a UCT of 1.17 and TRC of 1.29.

Commercial Energy-Saving Kits (CSK) program has a UCT of 0.78 and TRC of 0.87. Small Business Direct Install has a UCT of 0.95 and TRC of 1.50. Idaho Power shared the cost-effectiveness challenges for the program throughout 2021 and 2022. For CSKs, the 2022 evaluation indicated that the installation rates for the kit items were less than previously estimated. Additionally, the implementation of the Energy Independence and Security Act (EISA) lighting standards means the company will no longer be able to claim savings for the screw-in LED lightbulbs after June 30, 2023. For SBDI, the defined time period for the program offering was based on when the third-party vendor would be able to complete the work throughout the service area. With all savings from the program coming from lighting measures, the implementation of EISA will also impact program savings going forward. Due to declining savings opportunities and cost-effectiveness issues, the programs will be discontinued in 2023.

WAQC had a TRC of 0.32 and a UCT ratio of 0.17, and Weatherization Solutions for Eligible Customers had a TRC of 0.23 and a UCT ratio of 0.15. To calculate the cost-effectiveness for the income-qualified weatherization programs, Idaho Power adopted the following IPUC staff recommendations from Case No. GNR-E-12-01:

- Applied a 100% NTG.
- Claimed 100% of energy savings for each project.
- Included indirect administrative overhead costs. The overhead costs of 3.508% were calculated from the \$1,507,146 of indirect program expenses divided by the total DSM expenses of \$42,963,579 as shown in Appendix 3 of the *Demand-Side Management 2022 Annual Report*.
- Applied the 10% conservation preference adder.
- Amortized evaluation expenses over a three-year period.
- Claimed one dollar of NEBs for each dollar of utility and federal funds invested in health, safety, and repair measures.

While the WAQC and Weatherization Solutions for Eligible Customers remain not cost-effective, unless the Idaho and Oregon commission directs otherwise, Idaho Power will continue to offer the programs to the company's limited-income customers on an ongoing basis. Idaho Power will also continue to consult with EEAG and the weatherization managers at the Community Action Partnerships to look for ways to improve the cost-effectiveness of the programs.

The sector cost-effectiveness ratios include all the benefits and costs associated with programs that produce quantifiable energy savings. The portfolio cost-effectiveness is the sum of all energy efficiency activities, including those that do not have savings associated, such as overhead expenses. For 2022, the commercial and industrial sector had a UCT of 2.71 and TRC of 1.34, and irrigation sector had a UCT of 2.69 and TRC of 2.54. The residential and portfolio cost-effectiveness was calculated with and without the benefits associated with WAQC, which is funded through base rates and not through the energy efficiency rider. While the program provides real savings to customers that would otherwise be unable to afford to weatherize their home, it remains not cost-effective. Presenting the cost-effectiveness of the residential sector with and without WAQC remains consistent with how other Idaho utilities present their sector and portfolio cost-effectiveness results. Without WAQC, the residential sector has a UCT of 1.00 and TRC of 0.76 and the portfolio has a UCT of 2.02 and TRC of 1.43. With WAQC, the residential sector has a UCT of 0.84 and TRC of 0.67 and the portfolio has a UCT of 1.94 and TRC of 1.40.

One hundred nineteen out of 300 individual measures in various programs are not cost-effective from either the UCT or TRC perspective. Of the 119 measures, 42 are not cost-effective from the UCT perspective. Seventeen of those measures are associated with the two direct-install programs that closed in 2022 due to the programs no longer being cost-effective: Energy House Calls and the Multifamily Energy Savings Program. Four measures that failed the UCT are associated with the Commercial Energy-Savings Program that will close in 2023. Of the remaining 21 measures that failed the UCT, 15 are expected to be cost-effective in 2023 with the application of the 2021 IRP avoided costs.

Of the remaining 6 non-cost-effective measures within the Heating & Cooling Efficiency and Retrofits programs, they will be monitored and potentially modified in 2023.

For most of the measures offered in Oregon that fail the TRC, Idaho Power filed cost-effectiveness exception requests with the OPUC in compliance with Order No. 94-590. Measures and programs that do not pass these tests may be offered by the utility if they meet one or more of the additional conditions specified by Section 13 of Order No. 94-590. These exception requests were approved under UM-1710 or with the specific program advice filings. The filings and exception requests are noted in Table 1.

Table 1. 2022 non-cost-effective measures

Program	Number of Measures	Number Fail UCT	Notes
Energy House Calls	6	6	Offering closed in 2022 due to cost-effectiveness.
Heating & Cooling Efficiency	11	5	Program to be modified in 2023 to incorporate updated savings assumptions due to updated federal standards and recommendations from the 2021 evaluation. Cost-effectiveness exception request for ductless heat pump and open-loop water source heat pumps filed with the OPUC under UM-1710. OPUC Order No. 94-590, Section 13. Approved under Order No. 15-200. Exception request for the program and smart thermostats requested and approved with OPUC Advice No. 17-09.
Multifamily Energy Savings Program	11	11	Offering closed in 2022 due to cost-effectiveness.
Rebate Advantage	10	0	All measures pass UCT. One measure would be cost-effective with a TRC 1.11 without the inclusion of administration costs. Meets OPUC Order No. 94-590, Section 10. Exception request for the program requested and approved with UM-1710, Order No. 21-079.
Residential New Construction	2	0	All measures pass UCT. Idaho only program.
Commercial Energy-Savings Kits	4	4	Three kit configurations carried over from 2021 to 2022 from inventory. Single kit configuration offered in 2022. Will monitor in-service rates to update savings. Offering to close in 2023 due to cost-effectiveness.
Custom Projects	3	2	One measure passes UCT and fails TRC. Would be cost-effective with a TRC of 1.02 without the inclusion of administration costs. Meets OPUC Order No. 94-590, Section 10. Two Cohort offering fail UCT and TRC but would be cost-effective without administration costs. Measures expected to be cost-effective in 2023 with the application of the 2021 IRP avoided costs.
New Construction and Retrofits	3	0	All measures pass UCT. Offered in Idaho only. One measure would be cost-effective with a TRC of 1.03 without inclusion of administration cost.
New Construction	20	6	Fourteen measures pass UCT and fail TRC. Offered in Idaho only. Six measures fail UCT with ratios of between 0.82 and 0.97. Measures expected to be cost-effective in 2023 with the application of the 2021 IRP avoided costs.
Retrofits	45	4	Forty-one measures pass UCT and fail TRC. Of those, thirty-six are offered in Idaho only. Of the five measures that are offered in Idaho and Oregon, five measures pass the TRC without the inclusion of admin costs. Meets OPUC Order No. 94-590, Section 10. Of the four measures that fail UCT, three measures expected to be cost-effective in 2023 with the application of the 2021 IRP avoided costs. The remaining non-cost-effective measure that fails both UCT and TRC to be modified or removed from the program in 2023.
Irrigation Efficiency Rewards	4	4	Four measures fail UCT but pass TRC. Measures expected to be cost-effective in 2023 with the application of the 2021 IRP avoided costs.
Total	119	42	

The following tables list the annual program cost-effectiveness results including measure-level cost-effectiveness. Exceptions to the measure-level tables are programs that are analyzed at the project level, such as the Custom Projects option of the C&I Energy Efficiency Program, the Custom Incentive option of Irrigation Efficiency Rewards, Small Business Direct Install, WAQC, and Weatherization Solutions for Eligible Customers.

The measure-level cost-effectiveness includes the following inputs: measure life, energy savings, incremental cost, incentives, program administration cost, and non-energy impacts/benefits.

Program administration costs include all non-incentive costs such as: labor, marketing, training, education, purchased services, and evaluation. Energy and expense data have been rounded to the nearest whole unit.

2022 DSM Detailed Expenses by Program

Included in this supplement is a detailed breakout of program expenses shown in Appendix 2 of the *Demand-Side Management 2022 Annual Report*. These expenses are broken out by funding source and major-expense type (labor/administration, materials, other expenses, purchased services, and incentives).

Table 2. 2022 DSM detailed expenses by program (dollars)

Sector/Program	Idaho Rider	Oregon Rider	Idaho Power	Total Program
Energy Efficiency Total	\$ 23,734,918	\$ 473,587	\$ 1,502,028	\$ 25,710,533
Residential Total	4,144,232	103,384	1,443,223	5,690,839
Easy Savings: Low-Income Energy Efficiency Education...	–	–	152,718	152,718
Labor/Administrative Expense.....	–	–	27,694	27,694
Materials and Equipment	–	–	125,000	125,000
Other Expense	–	–	24	24
Educational Distributions	1,061,898	24,866	49	1,086,813
Labor/Administrative Expense.....	14,681	786	49	15,516
Materials and Equipment	885,521	19,746	–	905,268
Purchased Services	161,696	4,333	–	166,029
Energy Efficient Lighting	505,430	29,475	76	534,982
Incentives	271,966	16,346	–	288,312
Labor/Administrative Expense.....	26,172	1,389	76	27,637
Other Expense	32	2	–	34
Purchased Services	207,260	11,740	–	218,999
Energy House Calls.....	36,734	1,378	51	38,163
Labor/Administrative Expense.....	15,328	815	51	16,193
Materials and Equipment	(2,209)	(116)	–	(2,326)
Other Expense	598	31	–	629
Purchased Services	23,018	648	–	23,666
Heating & Cooling Efficiency Program.....	636,597	28,960	459	666,016
Incentives	351,586	17,425	–	369,011
Labor/Administrative Expense.....	138,470	7,312	459	146,241
Materials and Equipment	–	(3,150)	–	(3,150)

Sector/Program	Idaho Rider	Oregon Rider	Idaho Power	Total Program
Other Expense	42,620	2,243	–	44,863
Purchased Services	103,922	5,130	–	109,052
Home Energy Audit	184,650	–	208	184,858
Labor/Administrative Expense	62,825	–	208	63,034
Materials and Equipment	9,141	–	–	9,141
Other Expense	5,328	–	–	5,328
Purchased Services	107,356	–	–	107,356
Home Energy Report Program	964,709	–	82	964,791
Incentives	911,702	–	–	911,702
Labor/Administrative Expense	24,607	–	82	24,688
Other Expense	28,400	–	–	28,400
Multifamily Energy Savings Program	32,634	1,474	72	34,181
Labor/Administrative Expense	22,592	1,194	72	23,858
Materials and Equipment	1,168	–	–	1,168
Purchased Services	8,875	280	–	9,155
Oregon Residential Weatherization	–	8,825	–	8,825
Labor/Administrative Expense	–	5,597	–	5,597
Other Expense	–	1,773	–	1,773
Purchased Services	–	1,456	–	1,456
Rebate Advantage	157,746	9,762	115	167,622
Incentives	91,000	6,000	–	97,000
Labor/Administrative Expense	34,792	1,838	115	36,745
Other Expense	13,754	724	–	14,478
Purchased Services	18,200	1,200	–	19,400
Residential New Construction Program	236,962	(1,356)	126	235,732
Incentives	170,400	–	–	170,400
Labor/Administrative Expense	43,724	–	126	43,850
Other Expense	17,337	(1,356)	–	15,982
Purchased Services	5,500	–	–	5,500
Shade Tree Project	128,673	–	183	128,856
Labor/Administrative Expense	56,955	–	183	57,138
Materials and Equipment	24	–	–	24
Other Expense	438	–	–	438
Purchased Services	71,256	–	–	71,256
Weatherization Assistance for Qualified Customers	–	–	1,281,495	1,281,495
Labor/Administrative Expense	–	–	68,171	68,171
Other Expense	–	–	46	46
Purchased Services	–	–	1,213,278	1,213,278
Weatherization Solutions for Eligible Customers	198,198	–	7,590	205,788
Labor/Administrative Expense	102	–	7,590	7,691
Other Expense	4	–	–	4
Purchased Services	198,092	–	–	198,092
Commercial/Industrial Total	17,640,565	295,462	3,521	17,939,548
Commercial Energy-Saving Kits	21,604	1,140	25	22,770
Labor/Administrative Expense	7,658	423	25	8,106
Materials and Equipment	935	–	–	935
Other Expense	–	–	–	–
Purchased Services	13,011	717	–	13,729
Custom Projects	8,753,084	164,248	2,595	8,919,927
Incentives	6,921,878	86,520	–	7,008,398
Labor/Administrative Expense	410,241	21,671	2,595	434,507

Sector/Program	Idaho Rider	Oregon Rider	Idaho Power	Total Program
Materials and Equipment	88	5	–	93
Other Expense	349,938	15,492	–	365,430
Purchased Services	1,070,937	40,560	–	1,111,498
New Construction	2,762,412	17,582	513	2,780,507
Incentives	2,338,442	50	–	2,338,492
Labor/Administrative Expense.....	159,690	8,471	513	168,674
Other Expense	51,979	2,736	–	54,715
Purchased Services	212,301	6,325	–	218,626
Retrofits	4,785,645	84,933	337	4,870,916
Incentives	4,067,431	46,763	–	4,114,194
Labor/Administrative Expense.....	102,223	5,432	337	107,992
Materials and Equipment	1,000	–	–	1,000
Other Expense	56,099	2,953	–	59,052
Purchased Services	558,891	29,786	–	588,677
Small Business Direct Install	1,317,820	27,558	51	1,345,429
Labor/Administrative Expense.....	15,649	853	51	16,552
Other Expense	4,322	228	–	4,550
Purchased Services	1,297,849	26,478	–	1,324,327
Irrigation Total	1,950,122	74,622	55,284	2,080,027
Irrigation Efficiency Rewards	1,950,122	74,622	55,284	2,080,027
Incentives	1,612,826	56,718	–	1,669,543
Labor/Administrative Expense.....	303,517	16,150	55,284	374,951
Materials and Equipment	1,824	96	–	1,920
Other Expense	30,685	1,610	–	32,295
Purchased Services	1,270	48	–	1,318
Market Transformation Total	2,650,440	139,497	–	2,789,937
NEAA	2,650,440	139,497	–	2,789,937
Purchased Services	2,650,440	139,497	–	2,789,937
Other Program and Activities Total	\$ 2,939,309	\$ 158,556	\$ 5,689	\$ 3,103,434
Commercial/Industrial Energy Efficiency Overhead	826,911	44,184	2,383	873,477
Labor/Administrative Expense.....	702,043	37,612	2,256	741,911
Other Expense	96,907	5,100	127	102,134
Purchased Services	27,961	1,472	–	29,432
Energy Efficiency Direct Program Overhead	296,204	15,653	895	312,752
Labor/Administrative Expense.....	280,253	14,813	895	295,961
Other Expense	15,951	839	–	16,791
Oregon Commercial Audit	–	7,493	–	7,493
Labor/Administrative Expense.....	–	822	–	822
Other Expense	–	171	–	171
Purchased Services	–	6,500	–	6,500
Residential Energy Efficiency Education Initiative	287,839	10,654	1,682	300,175
Labor/Administrative Expense.....	98,201	5,187	1,682	105,071
Materials and Equipment	33,758	420	–	34,178
Other Expense	69,976	3,470	–	73,446
Purchased Services	85,904	1,576	–	87,481
Residential Energy Efficiency Overhead	1,528,355	80,573	728	1,609,656
Labor/Administrative Expense.....	243,680	12,889	728	257,298
Materials and Equipment	–	119	–	119

Sector/Program	Idaho Rider	Oregon Rider	Idaho Power	Total Program
Other Expense	926,655	48,721	—	975,376
Purchased Services	358,020	18,843	—	376,863
Indirect Program Expenses Total	\$ 1,265,112	\$ 66,148	\$ 175,886	\$ 1,507,146
Energy Efficiency Accounting and Analysis	1,236,470	64,628	175,865	1,476,963
Labor/Administrative Expense.....	455,807	24,135	167,947	647,888
Materials and Equipment	—	—	—	—
Other Expense	83,502	4,395	7,919	95,816
Purchased Services	697,161	36,098	—	733,259
Energy Efficiency Advisory Group.....	15,575	826	20	16,421
Labor/Administrative Expense.....	6,151	330	20	6,501
Other Expense	9,424	496	—	9,920
Special Accounting Entries	13,068	694	—	13,762
Special Accounting Entry	13,068	694	—	13,762
Demand Response Total	\$ 1,083,772	\$ 447,809	\$ 8,320,948	\$ 9,852,529
Residential Total	429,722	24,491	375,558	829,771
A/C Cool Credit	429,722	24,491	375,558	829,771
Incentives	—	4,314	375,320	379,634
Labor/Administrative Expense.....	76,735	4,079	239	81,052
Materials and Equipment	(88,605)	(4,663)	—	(93,268)
Other Expense	67,953	1,577	—	69,529
Purchased Services	373,640	19,185	—	392,825
Commercial/Industrial Total	84,582	151,148	283,888	519,618
Flex Peak Program	84,582	151,148	283,888	519,618
Incentives	—	146,671	283,888	430,322
Labor/Administrative Expense.....	75,959	4,023	237	80,219
Other Expense	8,624	454	—	9,077
Irrigation Total	569,467	272,171	7,661,502	8,503,140
Irrigation Peak Rewards	569,467	272,171	7,661,502	8,503,140
Incentives	—	243,613	7,652,357	7,895,971
Labor/Administrative Expense.....	114,745	6,103	9,145	129,993
Materials and Equipment	111,489	5,868	—	117,356
Other Expense	45,867	2,412	—	48,279
Purchased Services	297,367	14,175	—	311,542
Grand Total	\$ 31,673,550	\$ 1,285,478	\$ 10,004,551	\$ 42,963,579

Note: Total does not sum due to rounding.

Table 3. 2022 Demand response program and portfolio \$ per kW year

Program	Max Demand Capacity (MW)	Max Demand Capacity (kW)	2022 Expenses	2022 Estimated Max Expenses (60 Hours) ¹	\$ per kW year ²
A/C Cool Credit	26.8	26,778	\$829,771	\$829,771	\$30.99
Flex Peak Programs	30.0	30,000	\$519,618	\$700,200	\$23.34
Irrigation Peak Rewards	255.6	255,610	\$8,503,140	\$10,471,121	\$40.97
Total Demand Response Portfolio	312.4	312,388	\$9,852,529	\$12,001,093	\$38.42

¹ 2022 expenses with estimated variable payments based on maximum 60 hours of operation. Total does not sum due to rounding.

² \$ per kW year = 2022 Estimated Max Expenses 60 Hours/Max Demand Capacity kW.

Table 4. Cost-effectiveness of 2022 programs by benefit/cost test

Program/Sector	UCT	TRC	RIM	PCT
Educational Distributions	1.31	1.62	0.38	n/a
Energy Efficient Lighting	1.68	1.52	0.41	4.35
Energy House Calls ¹	0.70	0.77	0.27	n/a
Heating & Cooling Efficiency Program	0.98	0.30	0.34	0.76
Home Energy Report Program ²	0.71	0.79	0.25	n/a
Multifamily Energy Savings Program ³	0.49	0.68	0.25	n/a
Rebate Advantage	1.18	0.54	0.34	1.56
Residential New Construction Program	1.45	0.84	0.41	1.70
Shade Tree Project	1.02	1.21	0.47	n/a
Weatherization Assistance for Qualified Customers	0.17	0.32	0.13	n/a
Weatherization Solutions for Eligible Customers	0.15	0.23	0.11	n/a
Residential Energy Efficiency Sector⁴	1.00	0.76	0.34	2.89
Commercial and Industrial Energy Efficiency Program				
Custom Projects	2.88	1.12	0.88	1.17
New Construction	4.25	3.64	0.68	5.41
Retrofits	2.01	1.11	0.57	1.61
Commercial Energy-Saving Kits	0.78	0.87	0.39	n/a
Small Business Direct Install	0.95	1.50	0.43	n/a
Commercial/Industrial Energy Efficiency Sector⁵	2.71	1.34	0.73	1.71
Irrigation Efficiency Rewards	2.69	2.54	0.79	2.66
Irrigation Energy Efficiency Sector⁶	2.69	2.54	0.79	2.66
Energy Efficiency Portfolio⁷	2.02	1.43	0.64	2.01

¹ Program closed June 30, 2022.

² Cost-effectiveness based on 2022 savings and expenses. Cost-effectiveness ratios also calculated for the program life-cycle. Program life-cycle UCT and TRC 1.17 and 1.29, respectively.

³ Program closed December 31, 2022.

⁴ Residential sector cost-effectiveness excludes WAQC benefits and costs. If included, the UCT, TRC, RIM, and PCT would be 0.84, 0.67, 0.32, and 2.56, respectively.

⁵ Commercial/Industrial Energy Efficiency Sector cost-effectiveness ratios include savings and participant costs from Green Motors Rewinds.

⁶ Irrigation Energy Efficiency Sector cost-effectiveness ratios include savings and participant costs from Green Motors Rewinds.

⁷ Portfolio cost-effectiveness excludes WAQC benefits and costs. If included, the UCT, TRC, RIM, and PCT would be 1.94, 1.40, 0.63, and 2.00, respectively.

COST-EFFECTIVENESS TABLES BY PROGRAM

Educational Distributions

Segment: Residential
2022 Program Results

Cost Inputs			Ref
Program Administration	\$ 1,086,813		
Program Incentives.....	–	I	
Total UC	\$ 1,086,813	P	
Measure Equipment and Installation (Incremental Participant Cost)	\$ –	M	

Net Benefit Inputs (NPV)			Ref
Resource Savings			
2022 Annual Gross Energy (kWh)	3,741,954		
NPV Cumulative Energy (kWh)	31,617,824	\$ 1,427,833	S
10% Credit (Northwest Power Act).....		142,783	
Total Electric Savings	\$ 1,570,616	A	
Participant Bill Savings			
NPV Cumulative Participant Bill Savings	\$ 2,645,631	B	
Other Benefits			
Non-Utility Rebates/Incentives.....	\$ –	NUI	
NEBs	\$ 190,886	NEB	

Notes: Energy savings as reported by Tinker for the 2021–2022 student kits.
NEBs for welcome kit lightbulb, and student kits include PV of periodic lightbulb replacement costs.
NEBs for student kit include the NPV of therm savings.
No participant costs.

Summary of Cost-Effectiveness Results			
Test	Benefit	Cost	Ratio
UC Test.....	\$ 1,427,833	\$ 1,086,813	1.31
TRC Test	1,761,503	1,086,813	1.62
RIM Test.....	1,427,833	\$3,732,444	0.38
PCT	N/A	N/A	N/A

Benefits and Costs Included in Each Test			
UC Test.....	= S * NTG	= P	
TRC Test	= (A + NUI + NEB) * NTG	= P	
RIM Test.....	= S * NTG	= P + (B * NTG)	
PCT	N/A	N/A	

Assumptions for Levelized Calculations	
Discount Rate	
Nominal (WACC)	7.12%
Real ((1 + WACC) / (1 + Escalation)) – 1	4.81%
Escalation Rate	2.20%
Net-to-Gross (NTG)	100%
Minimum NTG Sensitivity.....	76%
Average Customer Segment Rate/kWh	\$0.089
Line Losses.....	9.60%

Supplement 1: Cost-Effectiveness

Year: 2022

Program: Educational Distributions

Market Segment: Residential Program Type: Energy Efficiency

Measure Name	Measure Descriptions	Replacing	Measure Unit	End Use	Measure Life (yrs) ^a	Benefit			Cost			B/C Tests		Source/ Notes
						Gross Energy Savings (kWh/yr) ^b	NPV DSM Avoided Costs ^c	NEB	Incremental Participant Cost ^d	Incentive/ Unit	Admin Cost (\$/kWh) ^e	UCT Ratio ^f	TRC Ratio ^g	
Student Energy Efficiency Kit (SEEK) Program	2021–2022 kit offering. Kits include: high-efficiency showerhead, showertimer, 3 LEDs, FilterTone alarm, digital thermometer, LED nightlight.	No kit	Kit	IPC_Student Kits	10	186.53	\$75.91	\$14.87	–	–	\$0.262	1.55	2.01	1
Welcome Kit (Lightbulb only kit)	Four 1,050 to 1,489 lumen general purpose lightbulbs; Two LED night lights	No kit	Kit	IPC_Welcome Kit	10	43.16	\$15.06	\$0.30	–	–	\$0.348	1.00	1.12	2, 3
Nightlight Give away	LED night light	baseline lightbulb	Lamp	ResLightingExterior	8	12.00	\$3.76	–	–	–	\$0.140	2.24	2.46	3

^a Average measure life.

^b Estimated kWh savings measured at the customer's meter, excluding line losses.

^c NPV of DSM avoided costs. Based on end-use load shape, measure life, savings including line losses, and avoided costs by pricing period as acknowledged in the 2019 Second Amended Integrated Resource Plan. TRC Test Benefit calculation includes 10% conservation adder from the Northwest Power Act

^d No participant costs.

^e Average program administration and overhead costs to achieve each kWh of savings for each initiative. Calculated from 2022 actuals.

^f UCT Ratio = (NPV DSM Avoided Costs) / ((Admin Cost/kWh * kWh Savings) + Incentives)

^g TRC Ratio = ((NPV DSM Avoided Costs * 110%) + NEB) / ((Admin Cost/kWh * kWh Savings) + Incentives + (Incremental Participant Cost - Incentives))

¹ Tinker. Idaho Power Student Energy Efficiency Kit Program. School Year 2021–2022 Annual Report. 2022.

² RTF. ResLighting_Lightbulbs_v9_4.xlsm. 2021.

³ DNV GL. Idaho Power Educational Distributions Impact and Process Evaluation. 2020.

Energy Efficient Lighting

Segment: Residential
2022 Program Results

Cost Inputs		Ref
Program Administration	\$ 246,670	
Program Incentives	288,312	I
Total UC	\$ 534,982	P
Measure Equipment and Installation (Incremental Participant Cost)	\$ 467,775	M

Net Benefit Inputs (NPV)		Ref
Resource Savings		
2022 Annual Gross Energy (kWh)	1,728,352	
NPV Cumulative Energy (kWh)	18,918,527	\$ 896,324 S
10% Credit (Northwest Power Act)	89,632	
Total Electric Savings	\$ 985,956	A
Participant Bill Savings		
NPV Cumulative Participant Bill Savings	\$ 1,648,451	B
Other Benefits		
Non-Utility Rebates/Incentives	\$ —	NUI
NEBs	\$ 98,589	NEB

Summary of Cost-Effectiveness Results			
Test	Benefit	Cost	Ratio
UC Test	\$ 896,324	\$ 534,982	1.68
TRC Test	1,084,546	714,445	1.52
RIM Test	896,324	2,183,433	0.41
PCT	2,035,352	467,775	4.35

Benefits and Costs Included in Each Test		
UC Test	= S * NTG	= P
TRC Test	= (A + NUI + NEB) * NTG	= P + ((M-I) * NTG)
RIM Test	= S * NTG	= P + (B * NTG)
PCT	= B + I + NUI + NEB	= M

Assumptions for Levelized Calculations	
Discount Rate	
Nominal (WACC)	7.12%
Real ((1 + WACC) / (1 + Escalation)) – 1	4.81%
Escalation Rate	2.20%
Net-to-Gross (NTG)	100%
Minimum NTG Sensitivity	60%
Average Customer Segment Rate/kWh	\$0.089
Line Losses	9.60%

Note: NEBs include PV of periodic lightbulb replacement costs.

Supplement 1: Cost-Effectiveness

Year: 2022

Program: Energy Efficient Lighting

Market Segment: Residential

Program Type: Energy Efficiency

Measure Name	Measure Descriptions	Replacing	Measure Unit	End Use	Measure Life (yrs) ^a	Benefit			Cost			B/C Tests		Source/ Notes
						Annual Gross Energy Savings (kWh/yr) ^b	NPV DSM Alternate Costs ^c	NEB	Gross Incremental Participant Cost ^d	Incentive/ Unit	Admin Cost (\$/kWh) ^e	UCT Ratio ^f	TRC Ratio ^g	
Decorative and Mini-Base	Retail_LED_Decorative and Mini-Base_250 to 1049 lumens	Baseline lightbulb	Fixture	Res Lighting Interior and Exterior	13	4.67	\$2.42	\$0.31	–	\$1.00	\$0.143	1.45	1.78	1
Globe	Retail_LED_Globe_250 to 1049 lumens	Baseline lightbulb	Fixture	Res Lighting Interior and Exterior	13	3.49	\$1.81	\$0.32	–	\$0.50	\$0.143	1.81	2.31	1
General Purpose, Dimmable, and Three-Way	Retail_LED_General Purpose, Dimmable, and Three-Way_1050 to 1489 lumens	Baseline lightbulb	Fixture	Res Lighting Interior and Exterior	13	7.17	\$3.72	\$0.27	–	\$1.00	\$0.143	1.84	2.15	1
General Purpose, Dimmable, and Three-Way	Retail_LED_General Purpose, Dimmable, and Three-Way_1490 to 2600 lumens	Baseline lightbulb	Fixture	Res Lighting Interior and Exterior	13	6.60	\$3.42	\$0.27	–	\$1.00	\$0.143	1.76	2.08	1
General Purpose, Dimmable, and Three-Way	Retail_LED_General Purpose, Dimmable, and Three-Way_250 to 1049 lumens	Baseline lightbulb	Fixture	Res Lighting Interior and Exterior	13	4.50	\$2.33	\$0.25	–	\$0.50	\$0.143	2.04	2.46	1
Reflectors and Outdoor	Retail_LED_Reflectors and Outdoor_1050 to 1489 lumens	Baseline lightbulb	Fixture	Res Lighting Interior and Exterior	13	4.14	\$2.14	\$0.26	–	\$1.00	\$0.143	1.35	1.65	1
Reflectors and Outdoor	Retail_LED_Reflectors and Outdoor_1490 to 2600 lumens	Baseline lightbulb	Fixture	Res Lighting Interior and Exterior	13	8.84	\$4.59	\$0.32	–	\$2.00	\$0.143	1.40	1.64	1
Reflectors and Outdoor	Retail_LED_Reflectors and Outdoor_250 to 1049 lumens	Baseline lightbulb	Fixture	Res Lighting Interior and Exterior	13	4.65	\$2.41	\$0.33	–	\$1.00	\$0.143	1.45	1.79	1
LED Fixture Retailer	Retail_Bathroom Vanity_1000 to 1999 lumens	Baseline fixture	Fixture	Res Lighting Interior and Exterior	20	5.35	\$3.89	\$0.13	–	\$1.00	\$0.143	2.20	2.50	2
LED Fixture Retailer	Retail_Bathroom Vanity_2000 to 3999 lumens	Baseline fixture	Fixture	Res Lighting Interior and Exterior	20	10.42	\$7.57	\$0.41	–	\$2.00	\$0.143	2.17	2.50	2
LED Fixture Retailer	Retail_Ceiling and Wall Flush Mount_500 to 999 lumens	Baseline fixture	Fixture	Res Lighting Interior and Exterior	20	3.33	\$2.42	\$0.13	–	\$0.50	\$0.143	2.48	2.86	2
LED Fixture Retailer	Retail_Ceiling and Wall Flush Mount_1000 to 1999 lumens	Baseline fixture	Fixture	Res Lighting Interior and Exterior	20	6.13	\$4.45	\$0.13	–	\$1.00	\$0.143	2.37	2.68	2
LED Fixture Retailer	Retail_Ceiling and Wall Flush Mount_2000 to 3999 lumens	Baseline fixture	Fixture	Res Lighting Interior and Exterior	20	11.93	\$8.67	\$0.54	–	\$2.00	\$0.143	2.34	2.72	2
LED Fixture Retailer	Retail_Ceiling and Wall Flush Mount_4000 to 7999 lumens	Baseline fixture	Fixture	Res Lighting Interior and Exterior	20	22.35	\$16.24	\$0.80	–	\$3.00	\$0.143	2.62	3.01	2
LED Fixture Retailer	Retail_Downlight Fixture_500 to 999 lumens	Baseline fixture	Fixture	Res Lighting Interior and Exterior	20	2.13	\$1.55	\$0.13	–	\$1.00	\$0.143	1.19	1.40	2
LED Fixture Retailer	Retail_Downlight Fixture_1000 to 1999 lumens	Baseline fixture	Fixture	Res Lighting Interior and Exterior	20	3.91	\$2.84	\$0.54	–	\$1.00	\$0.143	1.82	2.35	2
LED Fixture Retailer	Retail_Downlight Fixture_2000 to 3999 lumens	Baseline fixture	Fixture	Res Lighting Interior and Exterior	20	7.62	\$5.54	\$0.80	–	\$1.00	\$0.143	2.65	3.30	2
LED Fixture Retailer	Retail_Exterior Porch_500 to 999 lumens	Baseline fixture	Fixture	Res Lighting Exterior	20	3.38	\$2.41	\$0.01	–	\$0.75	\$0.143	1.95	2.16	2
LED Fixture Retailer	Retail_Exterior Porch_1000 to 1999 lumens	Baseline fixture	Fixture	Res Lighting Exterior	20	6.22	\$4.43	\$0.26	–	\$1.00	\$0.143	2.35	2.72	2

Supplement 1: Cost-Effectiveness

						Benefit			Cost			B/C Tests		Source/ Notes
						Annual Gross Energy Savings (kWh/yr) ^b	NPV DSM Alternate Costs ^c	NEB	Gross Incremental Participant Cost ^d	Incentive/ Unit	Admin Cost (\$/kWh) ^e	UCT Ratio ^f	TRC Ratio ^g	
Measure Name	Measure Descriptions	Replacing	Measure Unit	End Use	Measure Life (yrs) ^a									
LED Fixture Retailer	Retail_ Exterior Porch_2000 to 3999 lumens	Baseline fixture	Fixture	Res Lighting Exterior	20	12.11	\$8.63	\$0.39	–	\$3.00	\$0.143	1.82	2.09	2
LED Fixture Retailer	Exterior Porch_4000 to 7999 lumens	Baseline fixture	Fixture	Res Lighting Exterior	20	22.68	\$16.16	\$0.78	–	\$4.00	\$0.143	2.23	2.56	2

^a Average measure life.

^b Estimated kWh savings measured at the customer's meter, excluding line losses.

^c Sum of NPV of DSM alternate cost. Based on end-use load shape, measure life, savings including line losses, and alternate costs by pricing period as provided in the 2019 Second Amended IRP. TRC test benefit calculation includes 10% conservation adder from the Northwest Power Act.

^d Incremental participant cost prior to customer incentives.

^e Average program administration and overhead costs to achieve each kWh of savings. Calculated from 2022 actuals.

^f UCT Ratio = (NPV DSM Alternate Costs) / ((Admin Cost/kWh * kWh Savings) + Incentives)

^g TRC Ratio = ((NPV DSM Alternate Costs * 110%) + NEB) / ((Admin Cost/kWh * kWh Savings) + Incentives + (Incremental Participant Cost - Incentives))

¹ RTF. ResLighting_Lightbulbs_v9_3.xlsm. Modified baseline for grocery, dollar, mass-merchandise, and small hardware stores. 2021.

² RTF. ResLighting_Lightbulbs_v9_3.xlsm. 2021.

Energy House Calls

Segment: Residential
2022 Program Results

Cost Inputs			Ref
Program Administration	\$ 38,163		
Program Incentives.....	—	I	
Total UC	\$ 38,163	P	
Measure Equipment and Installation (Incremental Participant Cost)	\$ —	M	
Net Benefit Inputs (NPV)			Ref
Resource Savings			
2022 Annual Gross Energy (kWh)	54,516		
NPV Cumulative Energy (kWh)	658,526	\$ 26,561	S
10% Credit (Northwest Power Act).....		2,656	
Total Electric Savings	\$ 29,217	A	
Participant Bill Savings			
NPV Cumulative Participant Bill Savings.....	\$ 58,673	B	
Other Benefits			
Non-Utility Rebates/Incentives.....	\$ —	NUI	
NEBs	\$ 325	NEB	

Notes: NEBs include PV of periodic lightbulb replacement costs for direct-install LED lightbulbs.
No participant costs.

Summary of Cost-Effectiveness Results				
Test		Benefit	Cost	Ratio
UC Test.....	\$	26,561	\$ 38,163	0.70
TRC Test		29,541	38,163	0.77
RIM Test.....		26,561	96,836	0.27
PCT		N/A	N/A	N/A

Benefits and Costs Included in Each Test				
UC Test.....	= S * NTG		= P	
TRC Test	= (A + NUI + NEB) * NTG		= P	
RIM Test.....	= S * NTG		= P + (B * NTG)	
PCT	N/A		N/A	

Assumptions for Levelized Calculations

Discount Rate	
Nominal (WACC)	7.12%
Real ((1 + WACC) / (1 + Escalation)) – 1	4.81%
Escalation Rate	2.20%
Net-to-Gross (NTG)	100%
Minimum NTG Sensitivity.....	143%
Average Customer Segment Rate/kWh	\$0.089
Line Losses.....	9.60%

Supplement 1: Cost-Effectiveness

Year: 2022

Program: Energy House Calls

Market Segment: Residential

Program Type: Energy Efficiency

Measure Name	Measure Descriptions	Replacing	Measure Unit	End Use	Measure Life (yrs) ^a	Benefit			Cost			B/C Tests		Source/ Notes
						Annual Gross Energy Savings (kWh/yr) ^b	NPV DSM Avoided Costs ^c	NEB	Gross Incremental Participant Cost ^d	Incentive/ Unit	Admin Cost (\$/kWh) ^e	UCT Ratio ^f	TRC Ratio ^g	
PTCS Duct Sealing	Manufactured Home Prescriptive Duct Sealing - Electric FAF - Heating Zone 1	Pre-existing duct leakage	Home	R-All-HVAC-ER-All-All-E	18	972.81	\$466.98	–	–	–	\$0.700	0.69	0.75	1, 2
PTCS Duct Sealing	Manufactured Home Prescriptive Duct Sealing - Electric FAF - Heating Zone 2 or 3	Pre-existing duct leakage	Home	R-All-HVAC-ER-All-All-E	18	1,248.19	\$599.18	–	–	–	\$0.700	0.69	0.75	1, 2
PTCS Duct Sealing	Manufactured Home Prescriptive Duct Sealing - Heat Pump - Heating Zone 1	Pre-existing duct leakage	Home	R-All-HVAC-ASHP-All-All-E	18	615.06	\$343.61	–	–	–	\$0.700	0.80	0.88	1, 2
PTCS Duct Sealing	Manufactured Home Prescriptive Duct Sealing - Heat Pump - Heating Zone 2 or 3	Pre-existing duct leakage	Home	R-All-HVAC-ASHP-All-All-E	18	875.72	\$489.23	–	–	–	\$0.700	0.80	0.88	1, 2
General Purpose LED Direct Install	Direct install-LED_General Purpose, Dimmable, and Three-Way 250 to 1049 lumens (Average High Use and Moderate Use)	Baseline lightbulb	Lamp	Res Lighting Interior	12	12.12	\$5.89	\$0.43	–	–	\$0.700	0.69	0.81	2, 3
Water heater pipe covers	Up to 6 feet.	No existing coverage	Pipe wrap	R-All-WH-ERWH-All-All-R	10	74.81	\$30.40	–	–		\$0.700	0.58	0.64	2, 4

^a Average measure life.

^b Estimated kWh savings measured at the customer's meter, excluding line losses.

^c NPV of DSM avoided costs. Based on end-use load shape, measure life, savings including line losses, and avoided costs by pricing period as acknowledged in the 2019 Second Amended IRP. TRC Test Benefit calculation includes 10% conservation adder from the Northwest Power Act.

^d Average program administration and overhead costs to achieve each kWh of savings. Calculated from 2022 actuals.

^e UCT Ratio = (NPV DSM Avoided Costs) / ((Admin Cost/kWh * kWh Savings) + Incentives)

^f TRC Ratio = ((NPV DSM Avoided Costs * 110%) + NEB) / ((Admin Cost/kWh * kWh Savings) + Incentives + (Incremental Participant Cost - Incentives))

^g RTF. ResMH PerformanceDuctSeal_v3_0.xlsm. 2015.

^h Measure not cost-effective. Offering closed in 2022.

ⁱ RTF. ResLighting_Lightbulbs_v9_4.xlsm. 2021.

^j AEG. Potential Study. 2020.

Heating & Cooling Efficiency Program

Segment: Residential
2022 Program Results

Cost Inputs				Ref
Program Administration	\$	297,005		
Program Incentives		369,011	I	
Total UC	\$	666,016	P	
Measure Equipment and Installation (Incremental Participant Cost)	\$	2,117,021	M	
Net Benefit Inputs (NPV)				Ref
Resource Savings				
2022 Annual Gross Energy (kWh)		1,310,260		
NPV Cumulative Energy (kWh)		14,341,985	\$ 655,361	S
10% Credit (Northwest Power Act)			65,536	
Total Electric Savings	\$	720,898	A	
Participant Bill Savings				
NPV Cumulative Participant Bill Savings	\$	1,249,687	B	
Other Benefits				
Non-Utility Rebates/Incentives	\$	—	NUI	
NEBs	\$	—	NEB	

Summary of Cost-Effectiveness Results			
Test	Benefit	Cost	Ratio
UC Test	\$ 655,361	\$ 666,016	0.98
TRC Test	720,898	2,414,026	0.30
RIM Test	655,361	1,915,703	0.34
PCT	1,618,698	2,117,021	0.76

Benefits and Costs Included in Each Test			
UC Test	= S * NTG	= P	
TRC Test	= (A + NUI + NEB) * NTG	= P + ((M-I) * NTG)	
RIM Test	= S * NTG	= P + (B * NTG)	
PCT	= B + I + NUI + NEB	= M	

Assumptions for Levelized Calculations	
Discount Rate	
Nominal (WACC)	7.12%
Real ((1 + WACC) / (1 + Escalation)) – 1	4.81%
Escalation Rate	2.20%
Net-to-Gross (NTG)	100%
Minimum NTG Sensitivity	102%
Average Customer Segment Rate/kWh	\$0.089
Line Losses	9.60%

Note: 2022 cost-effectiveness ratios include evaluation expenses. If evaluation expense were removed from the program's cost-effectiveness, the UCT and TRC would be 1.00 and 0.30, respectively.

Supplement 1: Cost-Effectiveness

Year: 2022

Program: Heating & Cooling Efficiency Program

Market Segment: Residential

Program Type: Energy Efficiency

Measure Name	Measure Descriptions	Replacing	Measure Unit	End Use	Measure Life (yrs) ^a	Benefit			Cost			B/C Tests		Source/ Notes
						Annual Gross Energy Savings (kWh/yr) ^b	NPV DSM Avoided Costs ^c	NEB	Gross Incremental Participant Cost ^d	Incentive/ Unit	Admin Cost (\$/kWh) ^e	UCT Ratio ^f	TRC Ratio ^g	
Heat Pump Conversion	Existing Single Family and Manufactured Home HVAC Conversion to Heat Pump with Commissioning and Sizing (Heating & Cooling Zone Weighted Average)	Conversion to high efficiency heat pump	Unit	R-All-HVAC-ASHP-All-All-E	15	3,885.92	\$1,884.75	–	\$5,831.72	\$800.00	\$0.227	1.12	0.31	1, 2, 3, 4
Heat Pump Upgrade	Existing Single Family and Manufactured Home HVAC Heat Pump Upgrade (Heating & Cooling Zone Weighted Average)	Heat pump to heat pump upgrade	Unit	R-All-HVAC-ASHP-All-All-E	15	707.00	\$342.91	–	\$518.70	\$250.00	\$0.227	0.84	0.56	1, 2, 3, 4, 5
Heat Pump Upgrade	New Construction Single Family and Manufactured Home HVAC Heat Pump Upgrade (Heating & Cooling Zone Weighted Average)	Heat pump to heat pump upgrade	Unit	R-All-HVAC-ASHP-All-All-E	15	662.92	\$321.53	–	\$1,259.27	\$250.00	\$0.227	0.80	0.25	1, 2, 3, 4, 5
Open-Loop Heat Pump	Open loop water source heat pump for new construction - 14.00 EER 3.5 COP (Heating & Cooling Zone Weighted Average)	Electric resistance/ Oil Propane	Unit	R-All-HVAC-ASHP-All-All-E	20	8,352.94	\$5,029.71	–	\$16,286.84	\$1,000.00	\$0.227	1.74	0.30	4, 6
Ground-Source Heat Pump	Ground source heat pump - 3.5 COP (Heating & Cooling Zone Weighted Average)	Electric resistance/Oil Propane	Unit	R-All-HVAC-ASHP-All-All-E	20	9,483.57	\$5,710.51	–	\$9,958.39	\$3,000.00	\$0.227	1.11	0.52	4, 6
Ductless Heat Pump	Zonal to DHP. (Heating & Cooling Zone Weighted Average)	Zonal Electric	Unit	R-All-HVAC-ERconvertDHP-2022 weighted	15	1,389.42	\$575.70	–	\$4,568.26	\$750.00	\$0.227	0.54	0.13	7, 14
Heat Pump Water Heater	Weighted average of tier 2 and tier 3, heating and cooling zone, and indoor, basement, garage install location.	Electric water heater	Unit	R-All-WH-WHConvert-All-All-N	13	1,705.79	\$891.57	–	\$880.68	\$300.00	\$0.227	1.30	0.77	4, 8
High Efficiency Air Conditioner	Minimum 15 SEER but <17 SEER; minimum 12 EER	Current practice baseline	Unit	R-All-HVAC-CAC-All-All-E	18	91.81	\$113.29	–	\$126.70	\$50.00	\$0.227	1.60	0.84	4, 9
Evaporative Cooler	Evaporative Cooler	Central A/C	Unit	R-All-HVAC-CAC-All-All-E	12	653.12	\$572.78	–	\$258.22	\$150.00	\$0.227	1.92	1.55	10
Prescriptive Duct Sealing Single Family	Duct Tightness - PTCS Duct Sealing - Average Heating System. Weighted average of Heating Zones 1-3.	Pre-existing duct leakage	Unit	R-All-HVAC-ER-All-All-E	20	847.72	\$438.66	–	\$738.95	\$350.00	\$0.227	0.81	0.52	4, 5, 11
Electronically Commutated Motor (ECM) Blower Motor	ECM Blower Motor	permanent split capacitor (PSC) motor	Unit	R-All-Bld-Bldg-All-All-R	18	3,168.75	\$1,896.56	–	\$300.00	\$50.00	\$0.227	2.47	2.05	12

Supplement 1: Cost-Effectiveness

Measure Name	Measure Descriptions	Replacing	Measure Unit	End Use	Measure Life (yrs) ^a	Benefit			Cost			B/C Tests		Source/ Notes
						Annual Gross Energy Savings (kWh/yr) ^b	NPV DSM Avoided Costs ^c	NEB	Gross Incremental Participant Cost ^d	Incentive/ Unit	Admin Cost (\$/kWh) ^e	UCT Ratio ^f	TRC Ratio ^g	
Whole-House Fan	Whole-House Fan	Displaced forced air dx cooling	Unit	R-All-HVAC-CAC-All-All-E	18	445.60	\$549.86	—	\$700.00	\$200.00	\$0.227	1.83	0.75	4, 12
Smart Thermostat	Smart Thermostat	Non wi-fi enabled thermostat/no thermostat	Unit	R-All-HVAC-ER-All-All-E	5	474.20	\$71.62	—	\$140.86	\$75.00	\$0.227	0.39	0.32	13, 14

^a Average measure life.

^b Estimated kWh savings measured at the customer's meter, excluding line losses.

^c NPV of DSM avoided costs. Based on end-use load shape, measure life, savings including line losses, and avoided costs by pricing period as acknowledged in the 2019 Second Amended IRP. TRC Test Benefit calculation includes 10% conservation adder from the Northwest Power Act.

^d Incremental participant cost prior to customer incentives.

^e Average program administration and overhead costs to achieve each kWh of savings. Calculated from 2022 actuals.

^f UCT Ratio = (NPV DSM Avoided Costs) / ((Admin Cost/kWh * kWh Savings) + Incentives)

^g TRC Ratio = ((NPV DSM Avoided Costs * 110%) + NEB) / ((Admin Cost/kWh * kWh Savings) + Incentives + (Incremental Participant Cost - Incentives))

¹ RTF. ResSF&MHExistingHVAC_v5_1.xlsx. Weighted average of 2022 participants in heating and cooling zones 1-3.

² RTF. ResHeatingCoolingCommissioningControlsSizingSF_v3_6.xlsx. Weighted average of 2022 participants in heating and cooling zones 1-3.

³ RTF. ResMHHeatingCoolingCommissioningControlsSizing_v3_4.xlsx. Weighted average of 2022 participants in heating and cooling zones 1-3.

⁴ Measure not cost-effective from TRC perspective.

⁵ Measure cost-effective without inclusion of admin costs.

⁶ RTF. ResGSHV_v2_7. 2016. Weighted average of 2021 participants in heating and cooling zones 1-3.

⁷ RTF. ResDHPforZonal_v5_1.xlsx. Weighted average of 2021 participants in heating and cooling zones 1-3.

⁸ RTF. ResHPPfor WH_v5_3.xlsx. 2021. Measure cost-effective without inclusion of admin costs.

⁹ RTF. ResEfficientCentralAC_v1_1.xlsx. 2020. Idaho only measure.

¹⁰ New Mexico Technical Resource Manual for the Calculation of Energy Efficiency Savings. Evaporative Cooling. Santa Fe. Savings discounted by 44.4% for proportion evaporative coolers replacing refrigerated air. 2019.

¹¹ RTF. ResSFDuctSealing_v5_1.xlsx. 2019.

¹² Idaho Power engineering calculations based on Integrated Design Lab inputs. 2015.

¹³ RTF. ResConnectedTstats_v1.3.xlsx. 2018

¹⁴ Measure not cost-effective. Offering will be modified in 2023.

Home Energy Report

Segment: Residential
2022 Program Results

Program Year 2022 Cost Inputs				Ref
Program Administration	\$	964,791		
Program Incentives.....		–	I ₂₀₂₂	
Total UC.....	\$	964,791	P ₂₀₂₂	
Measure Equipment and Installation (Incremental Participant Cost)	\$	–	M ₂₀₂₂	
Program Life Cost Inputs (2020–2026)				Ref
NPV Program Administration	\$	3,362,234		
NPV Program Incentives.....		–	I _{all}	
NPV Total UC.....	\$	3,362,234	P _{all}	
Measure Equipment and Installation (Incremental Participant Cost)	\$	–	M _{all}	
Program Year 2022 Benefit Inputs				Ref
Resource Savings				
2022 Annual Gross Energy (kWh)	20,643,379	\$ 689,660	S ₂₀₂₂	
10% Credit (Northwest Power Act).....		68,966		
Total Electric Savings.....		\$ 758,626	A ₂₀₂₂	
Participant Bill Savings				
NPV Cumulative Participant Bill Savings.....	\$	1,829,603	B ₂₀₂₂	
Other Benefits				
Non-Utility Rebates/Incentives.....	\$	–	NUI ₂₀₂₂	
NEBs	\$	–	NEB ₂₀₂₂	
Net Benefit Inputs (2020–2026)				Ref
Resource Savings				
NPV Cumulative Energy (kWh) 2020–2026	84,190,742	\$ 3,932,816	S _{all}	
10% Credit (Northwest Power Act).....		393,282		
Total Electric Savings.....		\$ 4,326,098	A _{all}	
Participant Bill Savings				
NPV Cumulative Participant Bill Savings.....	\$	7,172,271	B _{all}	
Other Benefits				
Non-Utility Rebates/Incentives.....	\$	–	NUI _{all}	
NEBs	\$	–	NEB _{all}	

Summary of Cost-Effectiveness Results Program Year 2022

Test	Benefit	Cost	Ratio
UC Test.....	\$ 689,660	\$ 964,791	0.71
TRC Test	758,626	964,791	0.79
RIM Test.....	689,660	2,794,394	0.25
PCT	N/A	N/A	N/A

Summary of Cost-Effectiveness Results Program Life (2020–2026)

Test	Benefit	Cost	Ratio
UC Test.....	\$ 3,932,816	\$ 3,362,234	1.17
TRC Test	4,326,098	3,362,234	1.29
RIM Test.....	3,932,816	10,534,505	0.37
PCT	N/A	N/A	N/A

Benefits and Costs Included in Each Test

UC Test.....	= S * NTG	= P
TRC Test	= (A + NUI + NEB) * NTG	= P
RIM Test.....	= S * NTG	= P + (B * NTG)
PCT	N/A	N/A

Assumptions for Levelized Calculations

Discount Rate	
Nominal (WACC)	7.12%
Real ((1 + WACC) / (1 + Escalation)) – 1	4.81%
Escalation Rate	2.20%
Net-to-Gross (NTG).....	100%
Minimum NTG Sensitivity (2022).....	140%
Minimum NTG Sensitivity (2020–2026).....	86%
Average Customer Segment Rate/kWh	\$0.089
Line Losses.....	9.60%

Note: 2022 savings as reported by Aclara is 20,734,611 kWh. Idaho Power discounting savings by 0.44% for reporting and analysis as recommended by evaluators to account for potential double-counting of savings. Percentage reviewed in 2022 evaluation.

Multifamily Energy Savings Program

Segment: Residential

2022 Program Results

Cost Inputs			Ref
Program Administration	\$	34,181	
Program Incentives.....		—	I
Total UC	\$	34,181	P
Measure Equipment and Installation (Incremental Participant Cost)	\$	—	M
Net Benefit Inputs (NPV)			Ref
Resource Savings			
2022 Annual Gross Energy (kWh)	41,959		
NPV Cumulative Energy (kWh)	378,457	\$	16,629 S
10% Credit (Northwest Power Act).....		1,663	
Total Electric Savings	\$	18,292	A
Participant Bill Savings			
NPV Cumulative Participant Bill Savings	\$	31,936	B
Other Benefits			
Non-Utility Rebates/Incentives.....	\$	—	NUI
NEBs	\$	5,122	NEB

Notes: NEBs include PV of periodic lightbulb replacement costs for direct-install LED lightbulb.
 No participant costs.
 Program closed December 31, 2022.

Summary of Cost-Effectiveness Results			
Test	Benefit	Cost	Ratio
UC Test.....	\$ 16,629	\$ 34,181	0.49
TRC Test	23,413	34,181	0.68
RIM Test	16,629	66,116	0.25
PCT	N/A	N/A	N/A
Benefits and Costs Included in Each Test			
UC Test.....	= S * NTG	= P	
TRC Test	= (A + NUI + NEB) * NTG	= P	
RIM Test	= S * NTG	= P + (B * NTG)	
PCT	N/A	N/A	
Assumptions for Levelized Calculations			
Discount Rate			
Nominal (WACC)			7.12%
Real ((1 + WACC) / (1 + Escalation)) – 1			4.81%
Escalation Rate			2.20%
Net-to-Gross (NTG)			100%
Minimum NTG Sensitivity			205%
Average Customer Segment Rate/kWh			\$0.089
Line Losses			9.60%

Supplement 1: Cost-Effectiveness

Year: 2022

Program: Multifamily Energy Savings Program

Market Segment: Residential

Program Type: Energy Efficiency

Measure Name	Measure Descriptions	Replacing	Measure Unit	End Use	Measure Life (yrs) ^a	Benefit			Cost			B/C Tests		Source/ Notes
						Annual Gross Energy Savings (kWh/yr) ^b	NPV DSM Alternate Costs ^c	NEB	Gross Incremental Participant Cost ^d	Incentive/ Unit	Admin Cost (\$/kWh) ^e	UCT Ratio ^f	TRC Ratio ^g	
General Purpose LED Direct Install	Efficient Technology: LED Lamp Type: General Purpose and Dimmable Lumen Category: 250 to 1049 lumens Space Type: High-Use Interior	Baseline lightbulb	Lamp	ResLighting Interior	12	13.98	\$6.79	\$0.72	–	–	\$0.815	0.60	0.72	1, 2
Reflector LED Direct Install	Efficient Technology: LED Lamp Type: Reflectors and Outdoor Lumen Category: 250 to 1049 lumens Space Type: High-Use Interior	Baseline lightbulb	Lamp	ResLighting Interior	12	9.44	\$4.59	\$0.66	–	–	\$0.815	0.60	0.74	1, 2
General Purpose LED Direct Install	Efficient Technology: LED Lamp Type: General Purpose and Dimmable Lumen Category: 250 to 1049 lumens Space Type: Moderate-Use Interior	Baseline lightbulb	Lamp	ResLighting Interior	12	10.26	\$4.98	\$0.54	–	–	\$0.815	0.60	0.72	1, 2
Reflector LED Direct Install	Efficient Technology: LED Lamp Type: Reflectors and Outdoor Lumen Category: 250 to 1049 lumens Space Type: Moderate-Use Interior	Baseline lightbulb	Lamp	ResLighting Interior	12	6.02	\$2.92	\$0.57	–	–	\$0.815	0.60	0.77	1, 2
Globe LED Direct Install	Efficient Technology: LED Lamp Type: Globe Lumen Category: 250 to 1049 lumens Space Type: Moderate-Use Interior	Baseline lightbulb	Lamp	ResLighting Interior	12	4.73	\$2.30	\$0.50	–	–	\$0.815	0.60	0.79	1, 2
General Purpose LED Direct Install	Efficient Technology: LED Lamp Type: General Purpose and Dimmable Lumen Category: 250 to 1049 lumens Space Type: Exterior	Baseline lightbulb	Lamp	ResLighting Exterior	12	15.40	\$7.27	\$0.81	–	–	\$0.815	0.58	0.70	1, 2
Reflector LED Direct Install	Efficient Technology: LED Lamp Type: Reflectors and Outdoor Lumen Category: 250 to 1049 lumens Space Type: Exterior	Baseline lightbulb	Lamp	ResLighting Exterior	12	7.88	\$3.72	\$0.54	–	–	\$0.815	0.58	0.72	1, 2
General Purpose LED Direct Install	Efficient Technology: LED Lamp Type: General Purpose and Dimmable Lumen Category: 1490 to 2600 lumens Space Type: Exterior	Baseline lightbulb	Lamp	ResLighting Exterior	12	35.36	\$16.70	\$0.91	–	–	\$0.815	0.58	0.67	1, 2
General Purpose LED Direct Install	Efficient Technology: LED Lamp Type: Reflectors and Outdoor Lumen Category: 250 to 1049 lumens Space Type: Common areas - Calculated	Baseline lightbulb	Lamp	ResLighting Interior	1	251.83	\$8.53	\$0.47	–	–	\$0.815	0.04	0.05	2, 3

Supplement 1: Cost-Effectiveness

Measure Name	Measure Descriptions	Replacing	Measure Unit	End Use	Measure Life (yrs) ^a	Benefit			Cost			B/C Tests		Source/ Notes
						Annual Gross Energy Savings (kWh/yr) ^b	NPV DSM Alternate Costs ^c	NEB	Gross Incremental Participant Cost ^d	Incentive/ Unit	Admin Cost (\$/kWh) ^e	UCT Ratio ^f	TRC Ratio ^g	
Low-flow showerheads and thermostatic shower valve combination unit	Residential_Direct install_Valve and 1.75 gpm showerhead_Electric resistance DHW	Any showerhead 2.2 gpm or higher	Showerhead	R-All-WH-ERWH-All-All-R	10	49.94	\$20.29	\$49.56	–	–	\$0.815	0.50	1.77	2, 4
Water heater pipe covers	Up to 6 feet	No existing coverage	Pipe wrap	R-All-WH-ERWH-All-All-R	10	75.93	\$30.85	–	–	–	\$0.815	0.50	0.55	2, 5

^a Average measure life.

^b Estimated kWh savings measured at the customer's meter, excluding line losses.

^c Sum of NPV of DSM alternate cost. Based on end-use load shape, measure life, savings including line losses, and alternate costs by pricing period as provided in the 2019 Second Amended IRP. TRC test benefit calculation includes 10% conservation adder from the Northwest Power Act.

^d No participant costs.

^e Average program administration and overhead costs to achieve each kWh of savings. Calculated from 2022 actuals.

^f UCT Ratio = (NPV DSM Alternate Costs) / ((Admin Cost/kWh * kWh Savings) + Incentives)

^g TRC Ratio = ((NPV DSM Alternate Costs * 110%) + NEB) / ((Admin Cost/kWh * kWh Savings) + Incentives + (Incremental Participant Cost - Incentives))

¹ RTF. ResLighting_Lightbulbs_v9_4.xlsm. 2021.

² Measure not cost-effective. Offering closed in 2022.

³ Savings calculated based on wattage difference between the existing and replacement lightbulb and average hours of use for common areas.

⁴ RTF. ResThermostaicShowerRestrictionValve_v3_1.xlsm. 2019.

⁵ AEG. Potential Study. 2020.

Rebate Advantage

Segment: Residential
2022 Program Results

Cost Inputs				Ref
Program Administration	\$	70,622		
Program Incentives		97,000	I	
Total UC	\$	167,622	P	
Measure Equipment and Installation (Incremental Participant Cost)	\$	332,027	M	
Net Benefit Inputs (NPV)				Ref
Resource Savings				
2022 Annual Gross Energy (kWh)		255,541		
NPV Cumulative Energy (kWh)	4,139,829	\$	197,702	S
10% Credit (Northwest Power Act)		19,770		
Total Electric Savings	\$	217,472	A	
Participant Bill Savings				
NPV Cumulative Participant Bill Savings	\$	420,800	B	
Other Benefits				
Non-Utility Rebates/Incentives	\$	—	NUI	
NEBs	\$	—	NEB	

Summary of Cost-Effectiveness Results

Test	Benefit	Cost	Ratio
UC Test	\$ 197,702	\$ 167,622	1.18
TRC Test	217,472	402,649	0.54
RIM Test	197,702	588,422	0.34
PCT	517,800	332,027	1.56

Benefits and Costs Included in Each Test

UC Test	= S * NTG	= P
TRC Test	= (A + NUI + NEB) * NTG	= P + ((M-I) * NTG)
RIM Test	= S * NTG	= P + (B * NTG)
PCT	= B + I + NUI + NEB	= M

Assumptions for Levelized Calculations

Discount Rate	
Nominal (WACC)	7.12%
Real ((1 + WACC) / (1 + Escalation)) – 1	4.81%
Escalation Rate	2.20%
Net-to-Gross (NTG)	100%
Minimum NTG Sensitivity	85%
Average Customer Segment Rate/kWh	\$0.089
Line Losses	9.60%

Supplement 1: Cost-Effectiveness

Year: 2022

Program: Rebate Advantage

Market Segment: Residential

Program Type: Energy Efficiency

Measure Name	Measure Descriptions	Replacing	Measure Unit	End Use	Measure Life (yrs) ^a	Benefit			Cost			B/C Tests		Source/ Notes
						Annual Gross Energy Savings (kWh/yr) ^b	NPV DSM Avoided Costs ^c	NEB	Gross Incremental Participant Cost ^d	Incentive/ Unit	Admin Cost (\$/kWh) ^e	UCT Ratio ^f	TRC Ratio ^g	
ENERGY STAR ^h manufactured home	Estar_electric_Heating Zone (HZ) 1_Cooling Zone (CZ) 3	Manufactured home built to Housing and Urban Development (HUD) code.	Home	R-All-HVAC-ER-All-All-E	45	2,070.80	\$1,613.73	–	\$2,941.47	\$1,000.00	\$0.276	1.03	0.51	1,2
ENERGY STAR manufactured home	Estar_electric_HZ2_CZ1	Manufactured home built to HUD code.	Home	R-All-HVAC-ER-All-All-E	45	3,020.26	\$2,353.62	–	\$2,941.47	\$1,000.00	\$0.276	1.28	0.69	1,2
ENERGY STAR manufactured home	Estar_electric_HZ2_CZ2	Manufactured home built to HUD code.	Home	R-All-HVAC-ER-All-All-E	45	3,022.11	\$2,355.06	–	\$2,941.47	\$1,000.00	\$0.276	1.28	0.69	1,2
ENERGY STAR manufactured home	Estar_electric_HZ2_CZ3	Manufactured home built to HUD code.	Home	R-All-HVAC-ER-All-All-E	45	3,024.85	\$2,357.20	–	\$2,941.47	\$1,000.00	\$0.276	1.28	0.69	1,2
ENERGY STAR manufactured home	Estar_electric_HZ3_CZ1	Manufactured home built to HUD code.	Home	R-All-HVAC-ER-All-All-E	45	3,819.13	\$2,976.16	–	\$2,941.47	\$1,000.00	\$0.276	1.45	0.82	1,2
Northwest Energy Efficient Manufactured (NEEM) home	NEEM_electric_HZ1_CZ3	Manufactured home built to HUD code.	Home	R-All-HVAC-ER-All-All-E	43	2,612.39	\$2,005.73	–	\$4,809.64	\$1,000.00	\$0.276	1.17	0.40	1,2
NEEM home	NEEM_electric_HZ2_CZ1	Manufactured home built to HUD code.	Home	R-All-HVAC-ER-All-All-E	43	3,733.25	\$2,866.30	–	\$4,809.64	\$1,000.00	\$0.276	1.41	0.54	1,2
NEEM home	NEEM_electric_HZ2_CZ2	Manufactured home built to HUD code.	Home	R-All-HVAC-ER-All-All-E	43	3,735.67	\$2,868.16	–	\$4,809.64	\$1,000.00	\$0.276	1.41	0.54	1,2
NEEM home	NEEM_electric_HZ2_CZ3	Manufactured home built to HUD code.	Home	R-All-HVAC-ER-All-All-E	43	3,739.15	\$2,870.83	–	\$4,809.64	\$1,000.00	\$0.276	1.41	0.54	1,2
NEEM home	NEEM_electric_HZ3_CZ1	Manufactured home built to HUD code.	Home	R-All-HVAC-ER-All-All-E	44	4,679.39	\$3,620.26	–	\$4,809.64	\$1,000.00	\$0.276	1.58	0.65	1,2

^a Average measure life.

^b Estimated kWh savings measured at the customer's meter, excluding line losses.

^c NPV of DSM avoided costs. Based on end-use load shape, measure life, savings including line losses, and avoided costs by pricing period as acknowledged in the 2019 Second Amended IRP. TRC Test Benefit calculation includes 10% conservation adder from the Northwest Power Act.

^d Incremental participant cost prior to customer incentives.

^e Average program administration and overhead costs to achieve each kWh of savings. Calculated from 2022 actuals.

^f UCT Ratio = (NPV DSM Avoided Costs) / ((Admin Cost/kWh * kWh Savings) + Incentives)

^g TRC Ratio = ((NPV DSM Avoided Costs * 110%) + NEB) / ((Admin Cost/kWh * kWh Savings) + Incentives + (Incremental Participant Cost - Incentives))

^h RTF. NewMHNHomesandHVAC_v4_2.xlsm. 2021.

ⁱ Measure not cost-effective from TRC perspective.

Residential New Construction Program

Segment: Residential
2022 Program Results

Cost Inputs				Ref
Program Administration	\$	65,332		
Program Incentives.....		170,400	I	
Total UC.....	\$	235,732	P	
Measure Equipment and Installation (Incremental Participant Cost)	\$	513,591	M	
Net Benefit Inputs (NPV)				Ref
Resource Savings				
2022 Annual Gross Energy (kWh).....		337,562		
NPV Cumulative Energy (kWh)	5,641,587	\$	342,237	S
10% Credit (Northwest Power Act).....			34,224	
Total Electric Savings.....	\$	376,460	A	
Participant Bill Savings				
NPV Cumulative Participant Savings.....	\$	594,628	B	
Other Benefits				
Non-Utility Rebates/Incentives.....	\$	—	NUI	
NEBs	\$	107,937	NEB	

Notes: 2018 International Energy Conservation Code (IECC) with amendments adopted in Idaho in 2021.

Summary of Cost-Effectiveness Results				
Test		Benefit	Cost	Ratio
UC Test.....	\$	342,237	\$ 235,732	1.45
TRC Test		484,397	578,922	0.84
RIM Test.....		342,237	830,360	0.41
PCT		872,965	513,591	1.70
Benefits and Costs Included in Each Test				
UC Test.....	= S * NTG		= P	
TRC Test	= (A + NUI + NEB) * NTG		= P + ((M-I) * NTG)	
RIM Test.....	= S * NTG		= P + (B * NTG)	
PCT	= B + I + NUI + NEB		= M	
Assumptions for Levelized Calculations				
Discount Rate				
Nominal (WACC).....				7.12%
Real ((1 + WACC) / (1 + Escalation)) – 1				4.81%
Escalation Rate				2.20%
Net-to-Gross (NTG).....				100%
Minimum NTG Sensitivity.....				69%
Average Customer Segment Rate/kWh.....				\$0.089
Line Losses.....				9.60%

Supplement 1: Cost-Effectiveness

Year: 2022

Program: Residential New Construction Program

Market Segment: Residential

Program Type: Energy Efficiency

Measure Name	Measure Descriptions	Replacing	Measure Unit	End Use	Measure Life (yrs) ^a	Benefit			Cost			B/C Tests		Source/ Notes
						Annual Gross Energy Savings (kWh/yr) ^b	NPV DSM Avoided Costs ^c	NEB	Gross Incremental Participant Cost ^d	Incentive/ Unit	Admin Cost (\$/kWh) ^e	UCT Ratio ^f	TRC Ratio ^g	
Next Step Home - 10% to 14.99% above code	Next Step Home - average per home savings.	Home built to International Energy Conservation Code 2018 Code. Adopted 2021.	Home	Prog_ ResNewConst	56	1,489.81	\$1,500.02	\$879.18	\$4,050.31	\$1,200.00	\$0.194	1.01	0.58	1
Next Step Home - 15% to 19.99% above code	Next Step Home - average per home savings.	Home built to International Energy Conservation Code 2018 Code. Adopted 2021.	Home	Prog_ ResNewConst	56	2,181.19	\$2,196.14	\$976.17	\$5,117.07	\$1,500.00	\$0.194	1.14	0.61	1
Next Step Home - 20% or more above code ^h	Next Step Home - average per home savings.	Home built to International Energy Conservation Code 2018 Code. Adopted 2021.	Home	Prog_ ResNewConst	59	5,876.23	\$5,976.73	\$1,105.33	\$4,813.03	\$2,000.00	\$0.194	1.90	1.29	1

^a Average measure life.

^b Estimated kWh savings measured at the customer's meter, excluding line losses.

^c NPV of DSM avoided costs. Based on end-use load shape, measure life, savings including line losses, and avoided costs by pricing period as acknowledged in the 2019 Second Amended IRP. TRC Test Benefit calculation includes 10% conservation adder from the Northwest Power Act.

^d Incremental participant cost prior to customer incentives.

^e Average program administration and overhead costs to achieve each kWh of savings. Calculated from 2022 actuals.

^f UCT Ratio = (NPV DSM Avoided Costs) / ((Admin Cost/kWh * kWh Savings) + Incentives)

^g TRC Ratio = ((NPV DSM Avoided Costs * 110%) + NEB) / ((Admin Cost/kWh * kWh Savings) + Incentives + (Incremental Participant Cost - Incentives))

^h NEEA circuit rider code enforcement initiative. 2022 average per home savings. Costs and NEBs from RTF. RESNCMTHouse_ID_v3_1_.xlsx. 2019.

Shade Tree Project

Segment: Residential
2022 Program Results

Cost Inputs				Ref
Program Administration	\$	128,856		
Program Incentives.....		–	I	
Total UC.....	\$	128,856	P	
Measure Equipment and Installation (Incremental Participant Cost)	\$	–	M	
Net Benefit Inputs (NPV)				Ref
Resource Savings				
2022 Annual Gross Energy (kWh) from 2013–2018 plantings...	39,595			
Cumulative Energy (kWh) from 2022 plantings.....	3,040,832			
NPV Cumulative Energy (kWh)	714,268	\$	106,159	S
10% Credit (Northwest Power Act).....			10,616	
Total Electric Savings.....	\$	116,774	A	
Participant Bill Savings				
NPV Cumulative Participant Bill Savings	\$	121,438	B	
Other Benefits				
Non-Energy Impacts (Therms).....	\$	(22,289)	NEI	
NEBs	\$	39,296	NEB	

Summary of Cost-Effectiveness Results			
Test	Benefit	Cost	Ratio
UC Test.....	\$ 131,637	\$ 128,856	1.02
TRC Test	156,458	128,856	1.21
RIM Test	131,637	279,439	0.47
PCT	N/A	N/A	N/A

Benefits and Costs Included in Each Test			
UC Test.....	= S * NTG	= P	
TRC Test	= ((A + NEI) * NTG)+NEB	= P	
RIM Test	= S * NTG	= P + (B * NTG)	
PCT	N/A	N/A	

Assumptions for Levelized Calculations

Discount Rate	
Nominal (WACC)	7.12%
Real ((1 + WACC) / (1 + Escalation)) – 1	4.81%
Escalation Rate	2.20%
Net-to-Gross (NTG)	124%
Minimum NTG Sensitivity	121%
Average Customer Segment Rate/kWh	\$0.089
Line Losses.....	9.60%

Note: Annual report shows incremental savings from the 2013 - 2018 planting years. Cost-effectiveness based on the trees distributed in 2022 to coincide with the 2022 financials.
Net-to-gross factor of 124% applied to energy savings and therm impacts to account for trees shading neighboring homes per evaluator's recommendation.
Trees distributed in 2022 via the mail are approximately 1 year younger than trees distributed at in person events. Expected savings impact shifted out one year to account for the smaller trees.
NEIs include costs associated with increased home heating energy. Other NEBs associated with air quality, stormwater runoff, and carbon dioxide.

Weatherization Assistance for Qualified Customers

Segment: Residential
2022 Program Results

Cost Inputs			Ref
Program Administration	\$ 153,926		
Community Action Partnership (CAP) Agency Payments	849,650		
Total UC	\$ 1,003,576	P	
Accruals/Reversal of Carryover Dollars	277,919		
Total Program Expenses	1,281,495		
Idaho Power Indirect Overhead Expense Allocation—3.508%	\$ 35,205	OH	
Additional State Funding	747,018	M	
Net Benefit Inputs (NPV)			Ref
Resource Savings			
2022 Annual Gross Energy (kWh)	272,647		
NPV Cumulative Energy (kWh)	4,051,556	\$ 179,852	S
10% Credit (Northwest Power Act)	17,985		
Total Electric Savings	\$ 197,837	A	
Participant Bill Savings			
NPV Cumulative Participant Bill Savings	\$ 388,497	B	
Other Benefits			
Non-Utility Rebates/Incentives	\$ —	NUI	
NEBs			
Health and Safety	\$ 344,408		
Repair	9,125		
Other	19,022		
NEBs Total	\$ 372,554	NEB	

Summary of Cost-Effectiveness Results			
Test	Benefit	Cost	Ratio
UC Test	\$ 179,852	\$ 1,038,781	0.17
TRC Test	570,391	1,785,799	0.32
RIM Test	179,852	1,427,279	0.13
PCT	N/A	N/A	N/A

Benefits and Costs Included in Each Test			
UC Test	= S * NTG	= P + OH	
TRC Test	= (A + NUI + NEB) * NTG	= P + OH + M	
RIM Test	= S * NTG	= P + OH + (B * NTG)	
PCT	N/A	N/A	

Assumptions for Levelized Calculations	
Discount Rate	
Nominal (WACC)	7.12%
Real ((1 + WACC) / (1 + Escalation)) – 1	4.81%
Escalation Rate	2.20%
Net-to-Gross (NTG)	100%
Minimum NTG Sensitivity	575%
Average Customer Segment Rate/kWh	\$0.089
Line Losses	9.60%

Notes: Savings based on a billing analysis of the 2016–2018 weatherization projects.

Program cost-effectiveness incorporated IPUC staff recommendations from case GNR-E-12-01. Recommendations include: Claimed 100% of savings; increased NTG to 100%; added a 10% conservation preference adder; health, safety, and repair NEBs; and allocation of indirect overhead expenses.

No customer participant costs. Costs shown are from the DOE state weatherization assistance program.

Weatherization Solutions for Eligible Customers

Segment: Residential
2022 Program Results

Cost Inputs			Ref
Program Administration	\$	26,932	
Weatherization LLC Payments		178,856	
Total Program Expenses	\$	205,788	
Total UC	\$	205,788	P
Idaho Power Indirect Overhead Expense Allocation—3.508%		7,219	OH
Additional State Funding		—	M
Net Benefit Inputs (NPV)			Ref
Resource Savings			
2022 Annual Gross Energy (kWh)		48,233	
NPV Cumulative Energy (kWh)	716,746	\$ 31,817	S
10% Credit (Northwest Power Act)		3,182	
Total Electric Savings	\$	34,999	A
Participant Bill Savings			
NPV Cumulative Participant Bill Savings	\$	68,728	B
Other Benefits			
Non-Utility Rebates/Incentives	\$	—	NUI
NEBs			
Health and Safety		8,480	
Repair		3,115	
Other		1,946	
NEBs Total	\$	13,541	NEB

Notes: Savings based on a billing analysis of the 2016–2018 weatherization projects.

Program cost-effectiveness incorporated IPUC staff recommendations from case GNR-E-12-01. Recommendations include: Claimed 100% of savings; increased NTG to 100%; added a 10% conservation preference adder; health, safety, and repair NEBs; and allocation of indirect overhead expenses.

No customer participant costs.

Summary of Cost-Effectiveness Results			
Test	Benefit	Cost	Ratio
UC Test	\$ 31,817	\$ 213,007	0.15
TRC Test	48,539	213,007	0.23
RIM Test	31,817	281,735	0.11
PCT	N/A	N/A	N/A

Benefits and Costs Included in Each Test			
UC Test	= S * NTG		= P + OH
TRC Test	= (A + NUI + NEB) * NTG		= P + OH + M
RIM Test	= S * NTG		= P + OH + (B * NTG)
PCT	N/A		N/A

Assumptions for Levelized Calculations	
Discount Rate	
Nominal (WACC)	7.12%
Real ((1 + WACC) / (1 + Escalation)) – 1	4.81%
Escalation Rate	2.20%
Net-to-Gross (NTG)	100%
Minimum NTG Sensitivity	667%
Average Customer Segment Rate/kWh	\$0.089
Line Losses	9.60%

Commercial Energy-Saving Kits

Segment: Commercial
2022 Program Results

Cost Inputs			Ref
Program Administration	\$	22,770	
Program Incentives		—	I
Total UC	\$	22,770	P
Measure Equipment and Installation (Incremental Participant Cost)	\$	—	M

Net Benefit Inputs (NPV)				Ref
Resource Savings				
2022 Annual Gross Energy (kWh)	48,758			
NPV Cumulative Energy (kWh)	411,974	\$	17,649	S
10% Credit (Northwest Power Act)			1,765	
Total Electric Savings		\$	19,414	A
Participant Bill Savings				
NPV Cumulative Participant Bill Savings		\$	22,597	B
Other Benefits				
Non-Utility Rebates/Incentives		\$	—	NUI
NEBs		\$	314	NEB

Summary of Cost-Effectiveness Results

Test		Benefit	Cost	Ratio
UC Test	\$	17,649	\$ 22,770	0.78
TRC Test		19,728	22,770	0.87
RIM Test		17,649	45,367	0.39
PCT		N/A	N/A	N/A

Benefits and Costs Included in Each Test

UC Test	= S * NTG	= P
TRC Test	= (A + NUI + NEB) * NTG	= P
RIM Test	= S * NTG	= P + (B * NTG)
PCT	N/A	N/A

Assumptions for Levelized Calculations

Discount Rate	
Nominal (WACC)	7.12%
Real ((1 + WACC) / (1 + Escalation)) – 1	4.81%
Escalation Rate	2.20%
Net-to-Gross (NTG)	100%
Minimum NTG Sensitivity	129%
Average Customer Segment Rate/kWh	\$0.058
Line Losses	9.60%

Notes: NEBs include PV of periodic lightbulb replacement costs for direct-install LED lightbulbs and water, waste water, and therm savings from water-saving devices.

Supplement 1: Cost-Effectiveness

Year: 2022

Program: Commercial Energy-Saving Kits

Market Segment: Commercial

Program Type: Energy Efficiency

Measure Name						Benefit			Cost			B/C Tests		Source/Notes
						Annual Gross Energy Savings (kWh/yr) ^a	NPV DSM Avoided Costs ^c	NEB	Gross Incremental Participant Cost ^d	Incentive/Unit	Admin Cost (\$/kWh) ^e	UCT Ratio ^f	TRC Ratio ^g	
Restaurant Commercial Kit	3-9W LEDs, 2-bathroom aerators, 2-kitchen aerators, 2-exit sign retrofit, 1-pre-rinse spray valve.	No kit	Kit	IPC_Commercial Kit Restaurant	10	191.68	\$71.10	\$73.85	–	–	\$0.467	0.79	1.70	1, 2
Retail Commercial Kit	2-9W LEDs, 2-8W LED BR30s, 1-bathroom aerator, 2-exit sign retrofit	No kit	Kit	IPC_Commercial Kit Retail	5	208.42	\$36.19	\$0.33	–	–	\$0.467	0.37	0.41	1, 2
Office Commercial Kit	2-9W LEDs, 2-bathroom aerators, 1-kitchen aerator, 2-exit sign retrofit, 1-advance power strip	No kit	Kit	IPC_Commercial Kit Office	9	56.17	\$17.94	\$5.39	–	–	\$0.467	0.68	0.96	1, 2
Commercial ESK	2-9W LEDs, 2-8W LED BR30s, 1-bathroom aerator, 1-kitchen aerator, 1-exit sign retrofit	No kit	Kit	IPC_CSK_All	10	147.78	\$53.41	\$(1.60)	–	–	\$0.467	0.77	0.83	1, 3

^a Average measure life.

^b Estimated kWh savings measured at the customer's meter, excluding line losses.

^c NPV of DSM avoided costs. Based on end-use load shape, measure life, savings including line losses, and avoided costs by pricing period as acknowledged in the 2019 Second Amended IRP. TRC Test Benefit calculation includes 10% conservation adder from the Northwest Power Act.

^d Incremental participant cost prior to customer incentives.

^e Average program administration and overhead costs to achieve each kWh of savings. Calculated from 2022 actuals.

^f UCT Ratio = (NPV DSM Avoided Costs) / ((Admin Cost/kWh * kWh Savings) + Incentives)

^g TRC Ratio = ((NPV DSM Avoided Costs * 110%) + NEB) / ((Admin Cost/kWh * kWh Savings) + Incentives + (Incremental Participant Cost - Incentives))

¹ ADM evaluation. Estimated savings average hours of use by building type and varying electric water heat saturations. Hours of use from TRM. Electric water heat saturation from 2022 evaluation survey results.

² Measure not cost-effective. Business specific kit removed from offering in 2022. Kits remaining in inventory distributed in 2022.

³ Measure not cost-effective. Offering to close in 2023.

Custom Projects

Segment: Industrial
2022 Program Results

Cost Inputs				Ref
Program Administration	\$	1,911,528		
Program Incentives.....		7,008,398	I	
Total UC.....	\$	8,919,927	P	
Measure Equipment and Installation (Incremental Participant Cost)	\$	23,803,939	M	
Net Benefit Inputs (NPV)				Ref
Resource Savings				
2022 Annual Gross Energy (kWh)		56,157,060		
NPV Cumulative Energy (kWh)		564,320,823	\$	25,695,351 S
10% Credit (Northwest Power Act).....		2,569,535		
Total Electric Savings.....	\$	28,264,886		A
Participant Bill Savings				
NPV Cumulative Participant Savings.....	\$	20,381,079		B
Other Benefits				
Non-Utility Rebates/Incentives.....	\$	—		NUI
NEBs	\$	519,417		NEB

Summary of Cost-Effectiveness Results			
Test	Benefit	Cost	Ratio
UC Test.....	\$ 25,695,351	\$ 8,919,927	2.88
TRC Test	28,784,302	25,715,468	1.12
RIM Test.....	25,695,351	29,301,006	0.88
PCT	27,908,894	23,803,939	1.17

Benefits and Costs Included in Each Test			
UC Test.....	= S * NTG		= P
TRC Test	= (A + NUI + NEB) * NTG		= P + ((M-I) * NTG)
RIM Test.....	= S * NTG		= P + (B * NTG)
PCT	= B + I + NUI + NEB		= M

Assumptions for Levelized Calculations

Discount Rate	
Nominal (WACC)	7.12%
Real ((1 + WACC) / (1 + Escalation)) – 1	4.81%
Escalation Rate	2.20%
Net-to-Gross (NTG).....	100%
Minimum NTG Sensitivity	35%
Average Customer Segment Rate/kWh	\$0.037
Line Losses.....	9.60%

Notes: Energy savings are unique by project and are reviewed by Idaho Power engineering staff or third-party consultants. Each project must complete a certification inspection.
Green Rewind initiative is available to agricultural, commercial, and industrial customers. Commercial and industrial motor rewinds are paid under Custom Projects, but the savings are not included in the program cost-effectiveness.
Green Rewind savings are included in the sector cost-effectiveness.
NEB/impacts on a \$/kWh for each end-use. Based on 2019 impact evaluation of other C&I programs.

Supplement 1: Cost-Effectiveness

Year: 2022

Program: Custom Projects

Market Segment: Industrial

Program Type: Energy Efficiency

Measure Name	Measure Descriptions	Replacing	Measure Unit	End Use	Measure Life (yrs) ^a	Benefit			Cost			B/C Tests		Source/ Notes
						Annual Gross Energy Savings (kWh/yr) ^b	NPV DSM Avoided Costs ^c	NEB	Gross Incremental Participant Cost ^d	Incentive/ Unit	Admin Cost (\$/kWh) ^e	UCT Ratio ^f	TRC Ratio ^g	
Green Motors Program Rewind: Motor size 15 HP	Green Motors Program Rewind: Motor size 15 HP	Standard rewind practice	Motor	I-All-Other-Shift2-All-All-S	7	525.20	\$135.50	–	\$146.33	\$15.00	\$0.029	4.48	0.92	1, 2
Green Motors Program Rewind: Motor size 20 HP	Green Motors Program Rewind: Motor size 20 HP	Standard rewind practice	Motor	I-All-Other-Shift2-All-All-S	7	702.77	\$181.32	–	\$163.26	\$20.00	\$0.029	4.49	1.09	1
Green Motors Program Rewind: Motor size 25 HP	Green Motors Program Rewind: Motor size 25 HP	Standard rewind practice	Motor	I-All-Other-Shift2-All-All-S	8	893.48	\$267.25	–	\$186.53	\$25.00	\$0.029	5.25	1.38	1
Green Motors Program Rewind: Motor size 30 HP	Green Motors Program Rewind: Motor size 30 HP	Standard rewind practice	Motor	I-All-Other-Shift2-All-All-S	8	962.42	\$287.87	–	\$204.87	\$30.00	\$0.029	4.97	1.36	1
Green Motors Program Rewind: Motor size 40 HP	Green Motors Program Rewind: Motor size 40 HP	Standard rewind practice	Motor	I-All-Other-Shift2-All-All-S	8	1,120.77	\$335.23	–	\$250.36	\$40.00	\$0.029	4.62	1.30	1
Green Motors Program Rewind: Motor size 50 HP	Green Motors Program Rewind: Motor size 50 HP	Standard rewind practice	Motor	I-All-Other-Shift2-All-All-S	8	1,206.18	\$360.78	–	\$277.15	\$50.00	\$0.029	4.25	1.27	1
Green Motors Program Rewind: Motor size 60 HP	Green Motors Program Rewind: Motor size 60 HP	Standard rewind practice	Motor	I-All-Other-Shift2-All-All-S	8	1,268.50	\$379.42	–	\$326.87	\$60.00	\$0.029	3.92	1.15	1
Green Motors Program Rewind: Motor size 75 HP	Green Motors Program Rewind: Motor size 75 HP	Standard rewind practice	Motor	I-All-Other-Shift2-All-All-S	8	1,305.49	\$390.48	–	\$353.32	\$75.00	\$0.029	3.46	1.10	1
Green Motors Program Rewind: Motor size 100 HP	Green Motors Program Rewind: Motor size 100 HP	Standard rewind practice	Motor	I-All-Other-Shift2-All-All-S	8	1,723.08	\$515.38	–	\$438.29	\$100.00	\$0.029	3.44	1.16	1
Green Motors Program Rewind: Motor size 125 HP	Green Motors Program Rewind: Motor size 125 HP	Standard rewind practice	Motor	I-All-Other-Shift2-All-All-S	8	1,990.39	\$595.34	–	\$436.88	\$125.00	\$0.029	3.26	1.32	1
Green Motors Program Rewind: Motor size 150 HP	Green Motors Program Rewind: Motor size 150 HP	Standard rewind practice	Motor	I-All-Other-Shift2-All-All-S	8	2,366.02	\$707.69	–	\$486.64	\$150.00	\$0.029	3.24	1.40	1
Green Motors Program Rewind: Motor size 200 HP	Green Motors Program Rewind: Motor size 200 HP	Standard rewind practice	Motor	I-All-Other-Shift2-All-All-S	8	3,138.34	\$938.70	–	\$585.84	\$200.00	\$0.029	3.23	1.53	1
Green Motors Program Rewind: Motor size 250 HP	Green Motors Program Rewind: Motor size 250 HP	Standard rewind practice	Motor	I-All-Other-Shift2-All-All-S	8	3,798.53	\$1,136.16	–	\$752.95	\$250.00	\$0.029	3.15	1.45	1
Green Motors Program Rewind: Motor size 300 HP	Green Motors Program Rewind: Motor size 300 HP	Standard rewind practice	Motor	I-All-Other-Shift2-All-All-S	8	4,534.67	\$1,356.35	–	\$761.09	\$300.00	\$0.029	3.14	1.67	1
Green Motors Program Rewind: Motor size 350 HP	Green Motors Program Rewind: Motor size 350 HP	Standard rewind practice	Motor	I-All-Other-Shift2-All-All-S	8	5,286.56	\$1,581.24	–	\$797.71	\$350.00	\$0.029	3.14	1.83	1

Supplement 1: Cost-Effectiveness

Measure Name	Measure Descriptions	Replacing	Measure Unit	End Use	Measure Life (yrs) ^a	Benefit			Cost			B/C Tests		Source/ Notes
						Annual Gross Energy Savings (kWh/yr) ^b	NPV DSM Avoided Costs ^c	NEB	Gross Incremental Participant Cost ^d	Incentive/ Unit	Admin Cost (\$/kWh) ^e	UCT Ratio ^f	TRC Ratio ^g	
Green Motors Program Rewind: Motor size 400 HP	Green Motors Program Rewind: Motor size 400 HP	Standard rewind practice	Motor	I-All-Other-Shift2-All-All-S	8	5,994.15	\$1,792.89	–	\$890.97	\$400.00	\$0.029	3.12	1.85	1
Green Motors Program Rewind: Motor size 450 HP	Green Motors Program Rewind: Motor size 450 HP	Standard rewind practice	Motor	I-All-Other-Shift2-All-All-S	8	6,732.12	\$2,013.62	–	\$973.90	\$450.00	\$0.029	3.12	1.89	1
Green Motors Program Rewind: Motor size 500 HP	Green Motors Program Rewind: Motor size 500 HP	Standard rewind practice	Motor	I-All-Other-Shift2-All-All-S	8	7,490.56	\$2,240.47	–	\$1,052.13	\$500.00	\$0.029	3.12	1.94	1
Green Motors Program Rewind: Motor size 600 HP	Green Motors Program Rewind: Motor size 600 HP	Standard rewind practice	Motor	I-All-Other-Shift2-All-All-S	8	10,137.37	\$3,032.15	–	\$1,583.37	\$600.00	\$0.029	3.39	1.78	1
Green Motors Program Rewind: Motor size 700 HP	Green Motors Program Rewind: Motor size 700 HP	Standard rewind practice	Motor	I-All-Other-Shift2-All-All-S	8	11,776.73	\$3,522.49	–	\$1,727.45	\$700.00	\$0.029	3.38	1.87	1
Green Motors Program Rewind: Motor size 800 HP	Green Motors Program Rewind: Motor size 800 HP	Standard rewind practice	Motor	I-All-Other-Shift2-All-All-S	8	13,430.58	\$4,017.17	–	\$1,916.66	\$800.00	\$0.029	3.38	1.92	1
Green Motors Program Rewind: Motor size 900 HP	Green Motors Program Rewind: Motor size 900 HP	Standard rewind practice	Motor	I-All-Other-Shift2-All-All-S	8	15,077.39	\$4,509.74	–	\$2,113.02	\$900.00	\$0.029	3.37	1.95	1
Green Motors Program Rewind: Motor size 1,000 HP	Green Motors Program Rewind: Motor size 1,000 HP	Standard rewind practice	Motor	I-All-Other-Shift2-All-All-S	8	16,681.86	\$4,989.64	–	\$2,277.19	\$1,000.00	\$0.029	2.32	1.60	1
Continuous Energy Improvement Cohort for Schools	Cohort workshop training	No change	Offering	Commercial-School-Misc	1	7,380,223.00	\$237,393.79	–	\$150,127.15	\$129,397.90	\$0.029	0.69	0.72	3, 4
Water Supply Optimization Cohort	Cohort workshop training	No change	Offering	I-WaterSupply-Mot-All-All-All-U	1	727,247.00	\$23,452.69	–	\$8,064.84	\$5,645.38	\$0.029	0.88	0.88	3, 4

^a Average measure life.

^b Estimated kWh savings measured at the customer's meter, excluding line losses.

^c NPV of DSM avoided costs. Based on end-use load shape, measure life, savings including line losses, and avoided costs by pricing period as acknowledged in the 2019 Second Amended IRP. TRC Test Benefit calculation includes 10% conservation adder from the Northwest Power Act.

^d Incremental participant cost prior to customer incentives.

^e Average program administration and overhead costs to achieve each kWh of savings. Calculated from 2022 actuals.

^f UCT Ratio = (NPV DSM Avoided Costs) / ((Admin Cost/kWh * kWh Savings) + Incentives)

^g TRC Ratio = ((NPV DSM Avoided Costs * 110%) + NEB) / ((Admin Cost/kWh * kWh Savings) + Incentives + (Incremental Participant Cost - Incentives))

^h RTF: Ind_and_Ag_GreenMotorRewind_v3_1.xlsm. 2017.

ⁱ Offering cost-effective without inclusion of admin costs.

^j 2023 total cohort savings.

^k Offering cost-effective without inclusion of admin costs.

New Construction

Segment: Commercial
2022 Program Results

Cost Inputs			Ref
Program Administration	\$	442,015	
Program Incentives		2,338,492	I
Total UC	\$	2,780,507	P
Measure Equipment and Installation (Incremental Participant Cost)	\$	3,199,915	M
Net Benefit Inputs (NPV)			Ref
Resource Savings			
2022 Annual Gross Energy (kWh)		27,615,777	
NPV Cumulative Energy (kWh)		263,785,420	
10% Credit (Northwest Power Act)		1,182,117	S
Total Electric Savings	\$	13,003,282	A
Participant Bill Savings			
NPV Cumulative Participant Bill Savings	\$	14,712,291	B
Other Benefits			
Non-Utility Rebates/Incentives	\$	—	NUI
NEBs	\$	266,047	NEB

Summary of Cost-Effectiveness Results				
Test		Benefit	Cost	Ratio
UC Test.....	\$	11,821,165	\$ 2,780,507	4.25
TRC Test		13,269,329	3,641,930	3.64
RIM Test.....		11,821,165	17,492,798	0.68
PCT		17,316,829	3,199,915	5.41
Benefits and Costs Included in Each Test				
UC Test.....	= S * NTG		= P	
TRC Test	= (A + NUI + NEB) * NTG		= P + ((M-I) * NTG)	
RIM Test.....	= S * NTG		= P + (B * NTG)	
PCT	= B + I + NUI + NEB		= M	
Assumptions for Levelized Calculations				
Discount Rate				
Nominal (WACC)				7.12%
Real ((1 + WACC) / (1 + Escalation)) – 1				4.81%
Escalation Rate				2.20%
Net-to-Gross (NTG)				100%
Minimum NTG Sensitivity.....				24%
Average Customer Segment Rate/kWh				\$0.058
Line Losses.....				9.60%

Notes: Non-energy benefits/impacts on a \$/kWh for each end-use. Based on 2019 impact evaluation.

2022 cost-effectiveness ratios include evaluation expenses. If evaluation expense were removed from the program's cost-effectiveness, the UCT and TRC would be 4.34 and 3.70, respectively.

Supplement 1: Cost-Effectiveness

Year: 2022

Program: New Construction

Market Segment: Commercial

Program Type: Energy Efficiency

Measure Name	Measure Descriptions	Replacing	Measure Unit	End Use	Measure Life (yrs) ^a	Benefit			Cost			B/C Tests		Source/ Notes
						Annual Gross Energy Savings (kWh/yr) ^b	NPV DSM Avoided Costs ^c	NEB	Gross Incremental Participant Cost ^d	Incentive/ Unit	Admin Cost (\$/kWh) ^e	UCT Ratio ^f	TRC Ratio ^g	
Lighting	Interior Light Load Reduction. Part A: 10-19.9% below code.	Code standards	ft ²	C-All-Lgt-LPD Int-All-All-E	14	0.43	\$0.21	–	\$0.13	\$0.10	\$0.029	1.91	1.66	1
Lighting	Interior Light Load Reduction. Part B: 20-29.9% below code.	Code standards	ft ²	C-All-Lgt-LPD Int-All-All-E	14	0.86	\$0.43	–	\$0.25	\$0.20	\$0.029	1.91	1.72	1
Lighting	Interior Light Load Reduction. Part C: Equal to or greater than 30% below code.	Code standards	ft ²	C-All-Lgt-LPD Int-All-All-E	14	1.95	\$0.97	–	\$0.58	\$0.30	\$0.029	2.73	1.68	1
Lighting	Exterior Light Load Reduction. Minimum of 15% below code.	Code standards	kW	Commercial-Misc. Com-ExtLight	15	4,059.00	\$2,268.08	–	\$287.00	\$200.00	\$0.029	7.14	6.16	1
Lighting	Networked Lighting Controls - Interior	Code standards	kWh	C-All-Lgt-LPD Int-All-All-E	12	1.00	\$0.44	–	\$0.33	\$0.26	\$0.029	1.51	1.33	1
Lighting	Networked Lighting Controls - Exterior	Code standards	kWh	Commercial-Misc. Com-ExtLight	12	1.00	\$0.46	–	\$0.33	\$0.20	\$0.029	2.01	1.40	1
Lighting	Occupancy Sensors	Code standards	Sensor	C-All-Lgt-LPD Int-All-All-E	8	329.00	\$96.76	–	\$134.00	\$25.00	\$0.029	2.80	0.74	1, 2
Lighting	High-Efficiency Exit Signs	Code standards	Sign	IPC_8760	16	28.00	\$15.18	–	\$10.83	\$7.50	\$0.029	1.83	1.43	1
A/C	Unitary Commercial Air Conditioners, Air Cooled (Cooling Mode). Split system & single package. Part A: Base to CEE Tier 1	IECC 2018 Code Standard	Tons	C-All-HVAC-CAC-All-All-E	15	47.00	\$31.25	–	\$79.00	\$25.00	\$0.029	1.19	0.43	1, 2
A/C	Unitary Commercial Air Conditioners, Air Cooled (Cooling Mode). Split system & single package. Part B: Base to CEE Tier 2	IECC 2018 Code Standard	Tons	C-All-HVAC-CAC-All-All-E	15	88.00	\$58.50	–	\$123.00	\$50.00	\$0.029	1.11	0.51	1, 2
Heat Pump	Heat Pumps, Air Cooled (Cooling Mode). Split system & single package. Part A: Base to CEE Tier 1	IECC 2018 Code Standard	Tons	C-All-HVAC-CAC-All-All-E	15	72.00	\$47.87	–	\$36.00	\$50.00	\$0.029	0.92	1.38	1, 6, 7
Heat Pump	Heat Pumps, Air Cooled (Cooling Mode). <= 5 tons. Split system & single package. Part B: Base to CEE Tier 2	IECC 2018 Code Standard	Tons	C-All-HVAC-CAC-All-All-E	15	104.00	\$69.14	–	\$67.00	\$70.00	\$0.029	0.95	1.09	1
VRF AC	Variable Refrigerant Flow Units. Air Conditioner. Part B: Base to CEE Tier 1	IECC 2018 Air Cooled AC Code Standard	Tons	C-All-HVAC-CAC-All-All-E	15	87.00	\$57.84	–	\$93.00	\$35.00	\$0.029	1.54	0.67	1, 2
VRF AC	Variable Refrigerant Flow Units. <= 5 tons. A/C. Part C: Base to CEE Tier 2	IECC 2018 Air Cooled AC Code Standard	Tons	C-All-HVAC-CAC-All-All-E	15	119.00	\$79.11	–	\$108.00	\$55.00	\$0.029	1.35	0.78	1, 2
VRF Heat Pump	Variable Refrigerant Flow Units. Heat Pump. Part B: Base to CEE Tier 1	IECC 2018 Air Cooled AC Code Standard	Tons	C-All-HVAC-CAC-All-All-E	15	97.00	\$64.49	–	\$36.00	\$50.00	\$0.029	1.22	1.83	1
VRF Heat Pump	Variable Refrigerant Flow Units. <= 5 tons. Heat Pump. Part C: Base to CEE Tier 2	IECC 2018 Air Cooled AC Code Standard	Tons	C-All-HVAC-CAC-All-All-E	15	129.00	\$85.76	–	\$71.00	\$85.00	\$0.029	0.97	1.26	1, 7

Supplement 1: Cost-Effectiveness

Measure Name	Measure Descriptions	Replacing	Measure Unit	End Use	Measure Life (yrs) ^a	Benefit			Cost			B/C Tests		Source/ Notes
						Annual Gross Energy Savings (kWh/yr) ^b	NPV DSM Avoided Costs ^c	NEB	Gross Incremental Participant Cost ^d	Incentive/ Unit	Admin Cost (\$/kWh) ^e	UCT Ratio ^f	TRC Ratio ^g	
A/C	Air Conditioners, Water Cooled Any Size	IECC 2018 Air Cooled AC Code Standard	Ton	C-AII-HVAC-CAC-AII-AII-E	15	67.00	\$44.54	–	\$225.00	\$40.00	\$0.029	1.06	0.22	1, 2
HP	Heat Pumps, Water Cooled Any Size	IECC 2018 Air Cooled AC Code Standard	Ton	C-AII-HVAC-CAC-AII-AII-E	15	133.00	\$88.42	–	\$370.00	\$100.00	\$0.029	0.85	0.26	1, 2, 6
VRF HP	Variable Refrigerant Flow, Water Cooled Heat Pump <= 64 Tons Base to CEE Tier 1	IECC 2018 Air Cooled AC Code Standard	Ton	C-AII-HVAC-CAC-AII-AII-E	15	128.00	\$85.10	–	\$145.00	\$100.00	\$0.029	0.82	0.63	1, 2, 6
A/C	Air-cooled chiller condenser, IPLV 14.0 EER or higher	IECC 2018 Code standards	Tons	C-AII-HVAC-CAC-AII-AII-E	20	102.00	\$84.12	–	\$209.00	\$80.00	\$0.029	1.01	0.44	2, 3
A/C	Water-cooled chiller electronically operated, reciprocating and positive displacement	IECC 2018 Code standards	Tons	C-AII-HVAC-CAC-AII-AII-E	20	61.00	\$50.31	–	\$103.00	\$40.00	\$0.029	1.20	0.53	2, 4
A/C	Airside economizer	IECC 2018 Code standards	Ton of cooling	C-AII-HVAC-CAC-AII-AII-E	15	197.00	\$130.97	–	\$81.36	\$75.00	\$0.029	1.62	1.65	1
A/C	Water-side Economizer	IECC 2018 Code Standard	Combined chiller tonnage	C-AII-HVAC-CAC-AII-AII-E	10	153.00	\$70.07	–	\$725.82	\$50.00	\$0.029	1.29	0.11	1, 2
A/C	Direct evaporative cooler	IECC 2018 Code standards	Tons	C-AII-HVAC-CAC-AII-AII-E	15	315.00	\$209.41	–	\$364.00	\$200.00	\$0.029	1.00	0.62	1, 2
A/C	Indirect evaporative cooler	IECC 2018 Code Standard	Tons	C-AII-HVAC-CAC-AII-AII-E	15	225.00	\$149.58	–	\$1,553.00	\$130.00	\$0.029	1.10	0.11	1, 2
A/C	Evaporative Pre-Cooler on Air-Cooled Chillers	air-cooled condenser coil	Tons	C-AII-HVAC-CAC-AII-AII-E	15	63.00	\$41.88	–	\$173.00	\$30.00	\$0.029	1.32	0.26	1, 2
A/C	Evaporative Pre-Cooler on Air-Cooled Refrigeration Systems	air-cooled condenser coil	Tons	C-AII-HVAC-CAC-AII-AII-E	15	110.00	\$73.13	–	\$173.00	\$30.00	\$0.029	2.20	0.46	1, 2
Building Shell	Reflective roof treatment	IECC 2018 Code Standard	ft ² roof area	C-AII-HVAC-CAC-AII-AII-E	15	0.12	\$0.08	–	\$0.05	\$0.05	\$0.029	1.45	1.59	1
Controls	Energy Management System (EMS) controls. Part A: 1 strategy	IECC 2018 Code standards	Tons of cooling	C-AII-HVAC-Vent-AII-AII-E	15	227.00	\$120.22	\$34.09	\$162.00	\$60.00	\$0.029	1.81	0.99	1, 2
Controls	Energy Management System (EMS) controls. Part B: 2 strategies	IECC 2018 Code standards	Tons of cooling	C-AII-HVAC-Vent-AII-AII-E	15	409.00	\$216.60	\$34.09	\$198.00	\$80.00	\$0.029	2.36	1.30	1
Controls	EMS controls. Part C: 3 strategies	IECC 2018 Code standards	Tons of cooling	C-AII-HVAC-Vent-AII-AII-E	15	473.00	\$250.49	\$56.82	\$233.00	\$100.00	\$0.029	2.20	1.35	1
Controls	EMS controls. Part D: 4 strategies	IECC 2018 Code Standard	Tons of cooling	C-AII-HVAC-Vent-AII-AII-E	15	567.00	\$300.27	\$119.32	\$269.00	\$120.00	\$0.029	2.20	1.58	1
Controls	EMS controls. Part E: 5 strategies	IECC 2018 Code standards	Tons of cooling	C-AII-HVAC-Vent-AII-AII-E	15	617.00	\$326.75	\$119.32	\$304.00	\$140.00	\$0.029	2.07	1.49	1
Controls	Guest room energy management system	IECC 2018 Code standards	Ton	C-Lod-fan-SGS-AII-AII-S	11	550.00	\$237.82	–	\$57.50	\$50.00	\$0.029	3.61	3.56	1
Controls	Variable speed drive on HVAC system applications	IECC 2018 Code standards	HP	C-AII-HVAC-Vent-AII-AII-E	15	582.00	\$308.22	–	\$153.91	\$125.00	\$0.029	2.17	1.99	1
Controls	Part C: Variable speed drive on Potato/Onion Storage Shed Ventilation	No VFD	HP	C-AII-HVAC-Vent-AII-AII-E	10	1,193.00	\$439.92	–	\$264.00	\$250.00	\$0.029	1.55	1.62	1

Supplement 1: Cost-Effectiveness

Measure Name	Measure Descriptions	Replacing	Measure Unit	End Use	Measure Life (yrs) ^a	Benefit			Cost			B/C Tests		Source/ Notes
						Annual Gross Energy Savings (kWh/yr) ^b	NPV DSM Avoided Costs ^c	NEB	Gross Incremental Participant Cost ^d	Incentive/ Unit	Admin Cost (\$/kWh) ^e	UCT Ratio ^f	TRC Ratio ^g	
Controls	Demand Controlled Kitchen Ventilation Exhaust Hood	Kitchen hood with constant speed ventilation motor	HP	C-All-Food-Cook-All-All-C	15	4,590.00	\$2,427.68	–	\$248.00	\$250.00	\$0.029	6.34	7.01	1
Appliances with Electric Dryer	Efficient Laundry Machines (electric dryer)	IECC 2018 Code standards	Unit	Commercial-Misc. Com-Misc	9	814.50	\$265.32	\$1,179.74	\$400.00	\$200.00	\$0.029	1.19	3.47	5
Refrigeration	Efficient Refrigeration Condenser	Code standards	Ton	C-Gro-Ref-All-All-All-E	15	114.00	\$59.98	–	\$192.00	\$40.00	\$0.029	1.39	0.34	1, 2
Automatic High-Speed Doo	Refrigerator to Dock	Code standards	ft ²	Commercial-Ref. warehouse-Misc	16	360.00	\$197.91	–	\$167.00	\$80.00	\$0.029	2.19	1.23	1
Automatic High-Speed Door	Freezer to Refrigerator	Code standards	ft ²	Commercial-Ref. warehouse-Misc	16	1,829.00	\$1,005.51	–	\$167.00	\$160.00	\$0.029	4.72	5.03	1
Automatic High-Speed Door	Freezer to Dock	Code standards	ft ²	Commercial-Ref. warehouse-Misc	16	2,531.00	\$1,391.44	–	\$167.00	\$320.00	\$0.029	3.54	6.37	1
High-Volume, Low-Speed Fan	High-Volume, Low-Speed Fan	Standard high-speed fan	Fan	I-All-Other-Shift2-All-All-S	15	16,733.00	\$9,019.95	–	\$3,185.00	\$2,000.00	\$0.029	3.63	2.70	1
Compressed Air	Air compressor VFD	No existing VFD	HP	Commercial-Misc. Com-Misc	13	949.00	\$435.97	–	\$223.00	\$200.00	\$0.029	1.92	1.91	1
Compressed Air	No-Loss Condensate Drain	Open tube with ball valve	HP	Commercial-Misc. Com-Misc	10	1,970.00	\$711.54	–	\$194.00	\$200.00	\$0.029	2.77	3.12	1
Compressed Air	Low Pressure Drop Filter	Standard filter	HP	Commercial-Misc. Com-Misc	10	44.00	\$15.89	–	\$10.00	\$10.00	\$0.029	1.41	1.55	1
Compressed Air	Refrigerated Compressed Air Dryer	Standard air dryer	CFM	Commercial-Misc. Com-Misc	13	10.62	\$4.88	–	\$6.00	\$3.00	\$0.029	1.47	0.85	1, 2
Compressed Air	Efficient Compress Air Nozzle	Code standards	unit	Commercial-Misc. Com-Misc	15	2,223.00	\$1,152.08	–	\$85.00	\$80.00	\$0.029	7.97	8.48	1
Engine Block Heater Control	Wall-mounted engine block heater	Standard engine block heater without controls	Unit	C-All-HVAC-ER-All-All-E	15	2,738.00	\$1,172.96	–	\$70.00	\$100.00	\$0.029	6.54	8.64	1
Engine Block Heater Controls	Engine-mounted engine block heater	Standard engine block heater without controls	Unit	C-All-HVAC-ER-All-All-E	15	2,352.00	\$1,007.59	–	\$120.00	\$150.00	\$0.029	4.62	5.89	1
Dairy VFD	VFD on milking vacuum pump	No existing VFD	VFD	A-Da-Proc-MilkingSchedule-All-All-S	10	548.00	\$215.76	–	\$273.00	\$170.00	\$0.029	1.16	0.82	1, 2
Dairy VFD	VFD on milking transfer pump	No existing VFD	VFD	A-Da-Proc-MilkingSchedule-All-All-S	10	7,687.00	\$3,026.53	–	\$1,469.00	\$1,500.00	\$0.029	1.76	1.97	1
Engine block heater	Stationary pump-driven circulating block heater	Circulating Block Heater on a Backup Generator <200 kW	per unit	C-All-HVAC-ER-All-All-E	15	1,106.00	\$473.81	–	\$239.00	\$200.00	\$0.029	2.04	1.92	1

Supplement 1: Cost-Effectiveness

Measure Name	Measure Descriptions	Replacing	Measure Unit	End Use	Measure Life (yrs) ^a	Benefit			Cost			B/C Tests		Source/ Notes
						Annual Gross Energy Savings (kWh/yr) ^b	NPV DSM Avoided Costs ^c	NEB	Gross Incremental Participant Cost ^d	Incentive/ Unit	Admin Cost (\$/kWh) ^e	UCT Ratio ^f	TRC Ratio ^g	
Engine block heater	Stationary pump-driven circulating block heater	Circulating Block Heater on a Backup Generator 201-500 kW	per unit	C-All-HVAC-ER-All-All-E	15	2,493.00	\$1,068.00	–	\$573.00	\$350.00	\$0.029	2.53	1.82	1
Engine block heater	Stationary pump-driven circulating block heater	Circulating Block Heater on a Backup Generator 501-1000 kW	per unit	C-All-HVAC-ER-All-All-E	15	4,385.00	\$1,878.53	–	\$573.00	\$500.00	\$0.029	3.00	2.95	1
Ice Machines	ENERGY STAR Ice Machine <200 lbs per day	non ENERGY STAR ice machine	unit	Commercial-Misc. Com-Misc	9	285.00	\$92.84	–	\$311.00	\$100.00	\$0.029	0.86	0.32	1, 2, 6
Ice Machines	ENERGY STAR Ice Machine >= 200 lbs per day	non ENERGY STAR ice machine	unit	Commercial-Misc. Com-Misc	9	2,608.00	\$849.54	–	\$311.00	\$300.00	\$0.029	2.26	2.42	1
High-Efficiency Battery Chargers	High-Efficiency Battery Chargers - Single or Three Phase	Code standards	unit	Commercial-Fleet_ EV_Charger	15	3,337.00	\$1,625.69	–	\$400.00	\$200.00	\$0.029	5.48	3.60	1

^a Average measure life.

^b Estimated kWh savings measured at the customer's meter, excluding line losses.

^c NPV of DSM avoided costs. Based on end-use load shape, measure life, savings including line losses, and avoided costs by pricing period as acknowledged in the 2019 Second Amended IRP. TRC Test Benefit calculation includes 10% conservation adder from the Northwest Power Act.

^d Incremental participant cost prior to customer incentives.

^e Average program administration and overhead costs to achieve each kWh of savings. Calculated from 2022 actuals.

^f UCT Ratio = (NPV DSM Avoided Costs) / ((Admin Cost/kWh * kWh Savings) + Incentives)

^g TRC Ratio = ((NPV DSM Avoided Costs * 110%) + NEB) / ((Admin Cost/kWh * kWh Savings) + Incentives + (Incremental Participant Cost - Incentives))

¹ Idaho Power TRM prepared by ADM Associates, Inc. 2022.

² Idaho only measure.

³ Idaho Power TRM prepared by ADM Associates, Inc. 2022. Averaged air-cooled chillers.

⁴ Idaho Power TRM prepared by ADM Associates, Inc. 2022. Averaged water-cooled chillers.

⁵ Idaho Power TRM prepared by ADM Associates, Inc. 2022. NEBs from water savings from RTF. ComClothesWashers_v5_1.xlsm. Simple average. 2018.

⁶ Measure not cost-effective from UCT perspective. Will continue to monitor in 2023.

⁷ Measure not cost-effective. Measure cost-effective without inclusion of admin costs.

Retrofits

Segment: Commercial
2022 Program Results

Cost Inputs			Ref
Program Administration	\$	756,722	
Program Incentives		4,114,194	I
Total UC	\$	4,870,916	P
Measure Equipment and Installation (Incremental Participant Cost)	\$	12,645,295	M

Net Benefit Inputs (NPV)			Ref
Resource Savings			
2022 Annual Gross Energy (kWh)	22,890,678		
NPV Cumulative Energy (kWh)	218,651,361	\$	9,798,547 S
10% Credit (Northwest Power Act)		979,855	
Total Electric Savings	\$	10,778,402	A
Participant Bill Savings			
NPV Cumulative Participant Savings	\$	12,194,997	B
Other Benefits			
Non-Utility Rebates/Incentives	\$	–	NUI
NEBs	\$	4,042,380	NEB

Summary of Cost-Effectiveness Results			
Test	Benefit	Cost	Ratio
UC Test	\$ 9,798,547	\$ 4,870,916	2.01
TRC Test	14,820,782	13,402,016	1.11
RIM Test	9,798,547	17,065,912	0.57
PCT	20,351,571	12,645,295	1.61

Benefits and Costs Included in Each Test			
UC Test	= S * NTG	= P	
TRC Test	= (A + NUI + NEB) * NTG	= P + ((M-I) * NTG)	
RIM Test	= S * NTG	= P + (B * NTG)	
PCT	= B + I + NUI + NEB	= M	

Assumptions for Levelized Calculations

Discount Rate	
Nominal (WACC)	7.12%
Real ((1 + WACC) / (1 + Escalation)) – 1	4.81%
Escalation Rate	2.20%
Net-to-Gross (NTG)	100%
Minimum NTG Sensitivity	50%
Average Customer Segment Rate/kWh	\$0.058
Line Losses	9.60%

Note: Measure inputs from Evergreen Consulting Group or the TRM prepared by ADM Associates, Inc., unless otherwise noted.

NEB/impacts on a \$/kWh for each end-use. Based on 2019 impact evaluation.

2022 cost-effectiveness ratios include evaluation expenses. If evaluation expense were removed from the program's cost-effectiveness, the UTC and TRC would be 2.03 and 1.11, respectively

Supplement 1: Cost-Effectiveness

Year: 2022

Program: Retrofits

Market Segment: Commercial

Program Type: Energy Efficiency

Measure Name	Measure Descriptions	Replacing	Measure unit	End Use	Measure Life (yrs) ^a	Benefit			Cost			B/C Tests		Source/ Notes
						Annual Gross Energy Savings (kWh/yr) ^b	NPV DSM Avoided Costs ^c	NEB	Gross Incremental Participant Cost ^d	Incentive/ Unit	Admin Cost (\$/kWh) ^e	UCT Ratio ^f	TRC Ratio ^g	
Permanent Fixture Removal	Permanent Fixture Removal		fixture	C-All-Lgt-LPD Int-All-All-E	6	873.61	\$186.78	–	\$29.08	\$22.69	\$0.029	3.89	3.78	1
LEDs	Screw-in or pin-based LED	Screw-in or pin-base lamp using higher wattage	fixture	C-All-Lgt-LPD Int-All-All-E	1	138.06	\$4.56	–	\$22.80	\$4.73	\$0.029	0.52	0.19	1, 15
LEDs	HID LED screw-in replacement lamp	Existing HID lamp using > input watts	fixture	C-All-Lgt-LPD Int-All-All-E	12	662.71	\$289.50	–	\$107.70	\$49.23	\$0.029	4.23	2.51	1
LEDs	LED Tubes (type A, B & DM)	fixture using higher wattage	fixture	C-All-Lgt-LPD Int-All-All-E	12	203.00	\$88.68	–	\$42.86	\$12.47	\$0.029	4.83	2.00	1
LEDs	LED Tubes (type C) or LED Level 1 Retrofit Kit	fixture using higher wattage	fixture	C-All-Lgt-LPD Int-All-All-E	12	309.96	\$135.40	–	\$85.80	\$33.55	\$0.029	3.18	1.57	1
LEDs	LED Level 1 retrofit kit with single control strategy	fixture using higher wattage	fixture	C-All-Lgt-LPD Int-All-All-E	12	289.43	\$126.43	–	\$127.38	\$40.52	\$0.029	2.58	1.02	1
LEDs	LED Level 1 retrofit kit with multiple control strategy	fixture using higher wattage	fixture	C-All-Lgt-LPD Int-All-All-E	12	410.70	\$179.41	–	\$140.40	\$65.71	\$0.029	2.31	1.30	1
LEDs	LED Level 1 retrofit kit with networked control strategy	fixture using higher wattage	fixture	C-All-Lgt-LPD Int-All-All-E	12	455.35	\$198.91	–	\$142.98	\$81.96	\$0.029	2.09	1.40	1
LEDs	LED fixture or LED Level 2 retrofit kit	fixture using higher wattage	fixture	C-All-Lgt-LPD Int-All-All-E	12	440.45	\$192.41	–	\$178.93	\$83.69	\$0.029	1.99	1.10	1
LEDs	LED fixture or LED Level 2 retrofit kit with single control strategy	fixture using higher wattage	fixture	C-All-Lgt-LPD Int-All-All-E	12	518.33	\$226.43	–	\$203.25	\$108.85	\$0.029	1.83	1.14	1
LEDs	LED fixture or LED Level 2 retrofit kit with multiple control strategy	fixture using higher wattage	fixture	C-All-Lgt-LPD Int-All-All-E	12	599.94	\$262.08	–	\$282.13	\$143.99	\$0.029	1.62	0.96	1, 2
LEDs	LED fixture or LED Level 2 retrofit kit with networked control strategy	fixture using higher wattage	fixture	C-All-Lgt-LPD Int-All-All-E	12	722.45	\$315.59	–	\$348.50	\$187.84	\$0.029	1.51	0.94	1, 2
LED Exit Sign	LED Exit Sign	fixture using higher wattage	sign	IPC_8760	12	230.68	\$98.04	–	\$61.89	\$40.00	\$0.029	2.10	1.57	1
LED sign lighting retrofit kit	LED sign lighting retrofit kit	fixture using higher wattage	fixture	C-All-Lgt-LPD Int-All-All-E	12	427.11	\$186.58	–	\$161.34	\$76.68	\$0.029	2.09	1.18	1
Lighting Controls (Idaho)	Lighting Controls	Manual controls	controls	C-All-Lgt-LPD Int-All-All-E	10	159.70	\$58.82	–	\$85.47	\$27.31	\$0.029	1.84	0.72	1, 3
Lighting Controls (Oregon)	Lighting Controls	Manual controls	controls	C-All-Lgt-LPD Int-All-All-E	10	139.18	\$51.27	–	\$75.47	\$25.00	\$0.029	1.77	0.71	1, 15
Refrigeration Case Lighting	Refrigeration Case Lighting	fixture using higher wattage	lamp	C-All-Lgt-LPD Int-All-All-E	7	365.73	\$92.88	–	\$107.23	\$52.26	\$0.029	1.48	0.87	1, 3
Permanent Fixture Removal	Permanent Fixture Removal		fixture	Commercial-Misc. Com-ExtLight	6	1,013.14	\$221.25	–	\$39.44	\$17.69	\$0.029	4.70	3.54	1
LEDs	Screw-in or pin-based LED	Screw-in or pin-base lamp using higher wattage	fixture	Commercial-Misc. Com-ExtLight	1	156.95	\$5.08	–	\$36.02	\$3.09	\$0.029	0.66	0.14	1, 15
LEDs	HID LED screw-in replacement lamp	Existing HID lamp using > input watts	fixture	Commercial-Misc. Com-ExtLight	12	743.75	\$341.91	–	\$106.32	\$43.98	\$0.029	5.22	2.94	1

Supplement 1: Cost-Effectiveness

Measure Name	Measure Descriptions	Replacing	Measure unit	End Use	Measure Life (yrs) ^a	Benefit			Cost			B/C Tests		Source/ Notes
						Annual Gross Energy Savings (kWh/yr) ^b	NPV DSM Avoided Costs ^c	NEB	Gross Incremental Participant Cost ^d	Incentive/ Unit	Admin Cost (\$/kWh) ^e	UCT Ratio ^f	TRC Ratio ^g	
LEDs	LED Tubes (type A, B & DM)	fixture using higher wattage	fixture	Commercial-Misc. Com-ExtLight	12	287.20	\$132.03	–	\$63.89	\$12.24	\$0.029	6.42	2.01	1
LEDs	LED Tubes (type C) or LED Level 1 Retrofit Kit	fixture using higher wattage	fixture	Commercial-Misc. Com-ExtLight	12	526.92	\$242.23	–	\$125.38	\$37.74	\$0.029	4.57	1.89	1
LEDs	LED Level 1 retrofit kit with single control strategy	fixture using higher wattage	fixture	Commercial-Misc. Com-ExtLight	12	646.59	\$297.24	–	\$167.32	\$77.59	\$0.029	3.09	1.76	1
LEDs	LED Level 1 retrofit kit with multiple control strategy	fixture using higher wattage	fixture	Commercial-Misc. Com-ExtLight	12	850.79	\$391.11	–	\$202.36	\$119.11	\$0.029	2.72	1.89	1
LEDs	LED Level 1 retrofit kit with networked control strategy	fixture using higher wattage	fixture	Commercial-Misc. Com-ExtLight	12	933.44	\$429.11	–	\$218.51	\$149.35	\$0.029	2.43	1.92	1
LEDs	LED fixture or LED Level 2 retrofit kit	fixture using higher wattage	fixture	Commercial-Misc. Com-ExtLight	12	912.48	\$419.47	–	\$279.77	\$127.75	\$0.029	2.72	1.51	1
LEDs	LED fixture or LED Level 2 retrofit kit with single control strategy	fixture using higher wattage	fixture	Commercial-Misc. Com-ExtLight	12	951.89	\$437.59	–	\$341.84	\$152.30	\$0.029	2.43	1.30	1
LEDs	LED fixture or LED Level 2 retrofit kit with multiple control strategy	fixture using higher wattage	fixture	Commercial-Misc. Com-ExtLight	12	753.43	\$346.36	–	\$269.49	\$135.62	\$0.029	2.20	1.31	1
LEDs	LED fixture or LED Level 2 retrofit kit with networked control strategy	fixture using higher wattage	fixture	Commercial-Misc. Com-ExtLight	12	1,636.51	\$752.31	–	\$556.48	\$327.30	\$0.029	2.01	1.37	1
LED sign lighting retrofit kit	LED sign lighting retrofit kit	fixture using higher wattage	fixture	Commercial-Misc. Com-ExtLight	12	487.27	\$224.00	–	\$172.05	\$68.22	\$0.029	2.72	1.32	1
Lighting Controls (Idaho)	Lighting Controls	Manual controls	controls	Commercial-Misc. Com-ExtLight	10	295.20	\$113.89	–	\$103.41	\$19.82	\$0.029	4.01	1.12	1
Lighting Controls (Oregon)	Lighting Controls	Manual controls	controls	Commercial-Misc. Com-ExtLight	10	366.20	\$141.28	–	\$110.26	\$20.12	\$0.029	4.60	1.29	1
Air Conditioning (AC) Units	Base to CEE Tier 1	working pre-existing system	tons	C-All-HVAC-CAC-All-All-E	15	152.00	\$101.05	–	\$940.00	\$85.00	\$0.029	1.13	0.12	3, 4
AC Units	Base to CEE Tier 2	working pre-existing system	tons	C-All-HVAC-CAC-All-All-E	15	193.00	\$128.31	–	\$984.00	\$110.00	\$0.029	1.11	0.14	3, 4
AC Units	<= 5 ton VRF. Base to CEE Tier 2	working pre-existing system	tons	C-All-HVAC-CAC-All-All-E	15	161.00	\$107.03	–	\$1,093.00	\$100.00	\$0.029	1.02	0.11	3, 4
AC Units	VRF. Base to CEE Tier 1	working pre-existing system	tons	C-All-HVAC-CAC-All-All-E	15	129.00	\$85.76	–	\$1,078.00	\$75.00	\$0.029	1.09	0.09	3, 4
AC Units	Water-cooled AC that meets CEE Tier 1	working pre-existing system	tons	C-All-HVAC-CAC-All-All-E	15	130.00	\$86.42	–	\$1,237.00	\$75.00	\$0.029	1.10	0.08	3, 4
AC Units	Air-conditioning Tune Up		ton	C-All-HVAC-CAC-All-All-E	10	99.50	\$45.57	–	\$35.00	\$25.00	\$0.029	1.63	1.32	4
Heat Pump (HP) Units	Air Cooled HP Base to CEE Tier 1	working pre-existing system	tons	C-All-HVAC-CAC-All-All-E	15	187.00	\$124.32	–	\$888.00	\$110.00	\$0.029	1.08	0.15	3, 4
HP Units	<= 5 ton HP Unit. Base to CEE Tier 2	working pre-existing system	tons	C-All-HVAC-CAC-All-All-E	15	219.00	\$145.59	–	\$919.00	\$130.00	\$0.029	1.07	0.17	3, 4

Supplement 1: Cost-Effectiveness

Measure Name	Measure Descriptions	Replacing	Measure unit	End Use	Measure Life (yrs) ^a	Benefit			Cost			B/C Tests		Source/ Notes
						Annual Gross Energy Savings (kWh/yr) ^b	NPV DSM Avoided Costs ^c	NEB	Gross Incremental Participant Cost ^d	Incentive/ Unit	Admin Cost (\$/kWh) ^e	UCT Ratio ^f	TRC Ratio ^g	
HP Units	Water-cooled HP that meets CEE Tier 1	working pre-existing system	tons	C-AII-HVAC-CAC-AII-AII-E	15	129.00	\$85.76	–	\$971.00	\$75.00	\$0.029	1.09	0.10	3, 4
HP Units	<= 5 ton Air-cooled VRF. Base to CEE Tier 2	working pre-existing system	tons	C-AII-HVAC-CAC-AII-AII-E	15	175.00	\$116.34	–	\$1,034.00	\$110.00	\$0.029	1.01	0.12	3, 4
HP Units	Air-cooled VRF. Base to CEE Tier 1	working pre-existing system	tons	C-AII-HVAC-CAC-AII-AII-E	15	143.00	\$95.07	–	\$999.00	\$90.00	\$0.029	1.01	0.10	3, 4
HP Units	Water-cooled VRF that meets CEE Tier 1	working pre-existing system	tons	C-AII-HVAC-CAC-AII-AII-E	15	75.00	\$49.86	–	\$1,187.00	\$45.00	\$0.029	1.06	0.05	3, 4
Chiller Units	Air-cooled chiller, IPLV 14.0 EER or higher	working pre-existing system	tons	C-AII-HVAC-CAC-AII-AII-E	20	154.00	\$127.00	–	\$784.00	\$110.00	\$0.029	1.11	0.18	3, 5
Chiller Units	Water-cooled chiller electronically operated, reciprocating and positive displacement	working pre-existing system	tons	C-AII-HVAC-CAC-AII-AII-E	20	91.00	\$75.05	–	\$596.00	\$60.00	\$0.029	1.20	0.14	3, 6
Economizers	Air-side economizer control addition	No prior control	Ton of cooling	C-AII-HVAC-CAC-AII-AII-E	15	279.00	\$185.48	–	\$155.01	\$100.00	\$0.029	1.72	1.25	4
Economizers	Air-side economizer control repair	Non-functional economizer	Ton of cooling	C-AII-HVAC-CAC-AII-AII-E	15	279.00	\$185.48	–	\$73.65	\$50.00	\$0.029	3.19	2.50	4
Economizers	Water-side economizer control addition	No prior control	Combined chiller tonnage	C-AII-HVAC-CAC-AII-AII-E	10	153.00	\$70.07	–	\$725.82	\$50.00	\$0.029	1.29	0.11	3, 4
Evaporative Coolers	Direct evaporative cooler	Replacing standard AC unit	Ton	C-AII-HVAC-CAC-AII-AII-E	15	350.00	\$232.68	–	\$1,178.00	\$200.00	\$0.029	1.11	0.22	3, 4
Evaporative Coolers	Indirect evaporative cooler	Replacing standard AC unit	ton	C-AII-HVAC-CAC-AII-AII-E	15	250.00	\$166.20	–	\$2,367.00	\$130.00	\$0.029	1.21	0.08	3, 4
Evaporative Pre-Cooler on Air-Cooled Chillers	Evaporative Pre-Cooler on Air-Cooled Chillers	existing air-cooled condenser coil	ton	C-AII-HVAC-CAC-AII-AII-E	15	63.00	\$41.88	–	\$173.00	\$30.00	\$0.029	1.32	0.26	3, 4
Automated Control Systems	Energy Management System (EMS) controls with 1 strategy	Proposed strategy not existing (retrofit system)	tons of cooling	C-AII-HVAC-Vent-AII-AII-E	15	372.00	\$197.00	\$45.46	\$198.00	\$100.00	\$0.029	1.78	1.26	4
Automated Control Systems	EMS controls with 2 strategies	Proposed strategy not existing (retrofit system)	tons of cooling	C-AII-HVAC-Vent-AII-AII-E	15	622.00	\$329.40	\$34.09	\$233.00	\$150.00	\$0.029	1.96	1.58	4
Automated Control Systems	EMS controls with 3 strategies	Proposed strategy not existing (retrofit system)	tons of cooling	C-AII-HVAC-Vent-AII-AII-E	15	811.00	\$429.49	\$102.28	\$269.00	\$175.00	\$0.029	2.16	1.96	4
Automated Control Systems	EMS controls with 4 strategies	Proposed strategy not existing (retrofit system)	tons of cooling	C-AII-HVAC-Vent-AII-AII-E	15	1,728.00	\$915.12	\$545.47	\$304.00	\$200.00	\$0.029	3.66	4.38	4
Automated Control Systems	EMS controls with 5 strategies	Proposed strategy not existing (retrofit system)	tons of cooling	C-AII-HVAC-Vent-AII-AII-E	15	1,796.00	\$951.13	\$551.15	\$340.00	\$225.00	\$0.029	3.43	4.07	4
Automated Control Systems	EMS controls with 1 strategy	Proposed strategy not existing (new system)	tons of cooling	C-AII-HVAC-Vent-AII-AII-E	15	227.00	\$120.22	\$34.09	\$162.00	\$60.00	\$0.029	1.81	0.99	3, 4
Automated Control Systems	EMS controls with 2 strategies	Proposed strategy not existing (new system)	tons of cooling	C-AII-HVAC-Vent-AII-AII-E	15	409.00	\$216.60	\$34.09	\$198.00	\$80.00	\$0.029	2.36	1.30	4

Supplement 1: Cost-Effectiveness

Measure Name	Measure Descriptions	Replacing	Measure unit	End Use	Measure Life (yrs) ^a	Benefit			Cost			B/C Tests		Source/ Notes
						Annual Gross Energy Savings (kWh/yr) ^b	NPV DSM Avoided Costs ^c	NEB	Gross Incremental Participant Cost ^d	Incentive/ Unit	Admin Cost (\$/kWh) ^e	UCT Ratio ^f	TRC Ratio ^g	
Automated Control Systems	EMS controls with 3 strategies	Proposed strategy not existing (new system)	tons of cooling	C-All-HVAC-Vent-All-All-E	15	473.00	\$250.49	\$56.82	\$233.00	\$100.00	\$0.029	2.20	1.35	4
Automated Control Systems	EMS controls with 4 strategies	Proposed strategy not existing (new system)	tons of cooling	C-All-HVAC-Vent-All-All-E	15	567.00	\$300.27	\$119.32	\$269.00	\$120.00	\$0.029	2.20	1.58	4
Automated Control Systems	EMS controls with 5 strategies	Proposed strategy not existing (new system)	tons of cooling	C-All-HVAC-Vent-All-All-E	15	617.00	\$326.75	\$119.32	\$304.00	\$140.00	\$0.029	2.07	1.49	4
Automated Control Systems	Lodging room occupancy controls	Manual controls	Unit	C-Lod-fan-SGS-All-All-S	11	643.00	\$278.03	–	\$150.61	\$75.00	\$0.029	2.97	1.81	4
Electronically Commutated Motor (ECM)	ECM/PMSM motor in HVAC applications.	Shaded pole or permanent split capacitor motor	HP	C-All-HVAC-Vent-All-All-E	15	8,815.25	\$4,668.40	–	\$239.50	\$200.00	\$0.029	10.25	10.37	4
Premium Windows	Low U-value, U-factor of .30 or less	Standard window	sq ft window area	C-All-HVAC-ER-All-All-C	25	9.00	\$5.91	–	\$22.08	\$2.50	\$0.029	2.14	0.29	3, 4
Reflective roofing	Adding reflective roof treatment	non-reflective low pitch roof	ft2 roof area	C-All-HVAC-CAC-All-All-E	15	0.12	\$0.08	–	\$0.05	\$0.05	\$0.029	1.45	1.59	4
Ceiling Insulation	Increase to R38 min. insulation.	Insulation level, R11 or less	sq ft	C-All-HVAC-ER-All-All-C	25	0.38	\$0.25	–	\$1.45	\$0.20	\$0.029	1.19	0.19	3, 4
Wall Insulation	Increase to R11 min. insulation.	Insulation level, R2.5 or less	sq ft wall area	C-All-HVAC-ER-All-All-C	25	2.82	\$1.85	–	\$0.64	\$0.40	\$0.029	3.84	2.82	4
Wall Insulation	Increase to R19 min. insulation.	Insulation level, R2.5 or less	sq ft wall area	C-All-HVAC-ER-All-All-C	25	3.16	\$2.07	–	\$0.85	\$0.55	\$0.029	3.23	2.42	4
Laundry Machines	High efficiency washer	Standard washer, electric dryer	Machine	Commercial-Misc. Com-Misc	9	814.50	\$265.32	\$1,179.74	\$400.00	\$200.00	\$0.029	1.19	3.47	4, 7
HVAC Fan Motor Belts	Type AX notched V-belt Type BX notched V-belt	Type A solid V-belt Type B solid V-belt	HP	C-All-HVAC-Vent-All-All-E	4	83.00	\$10.90	–	\$4.40	\$5.00	\$0.029	1.47	1.76	4
HVAC Fan Motor Belts	Synchronous belt	Standard fan belt	HP	C-All-HVAC-Vent-All-All-E	4	213.00	\$27.97	–	\$67.00	\$25.00	\$0.029	0.90	0.42	3, 8
Engine block heater	Stationary pump-driven circulating block heater	Circulating Block Heater on a Backup Generator <200 kW	unit	C-All-HVAC-ER-All-All-E	15	1,106.00	\$473.81	–	\$1,268.00	\$200.00	\$0.029	2.04	0.40	3, 4
Engine block heater	Stationary pump-driven circulating block heater	Circulating Block Heater on a Backup Generator 201-500 kW	unit	C-All-HVAC-ER-All-All-E	15	2,493.00	\$1,068.00	–	\$2,152.00	\$350.00	\$0.029	2.53	0.53	3, 4
Engine block heater	Stationary pump-driven circulating block heater	Circulating Block Heater on a Backup Generator 501-1000 kW	unit	C-All-HVAC-ER-All-All-E	15	4,385.00	\$1,878.53	–	\$2,645.00	\$500.00	\$0.029	3.00	0.75	3, 4
Engine block heater	Wall mounted engine block heater	standard engine block heater without controls	Unit	C-All-HVAC-ER-All-All-E	15	2,738.00	\$1,172.96	–	\$120.00	\$100.00	\$0.029	6.54	6.47	4
Engine block heater	Engine-mounted engine block heater	standard engine block heater without controls	Unit	C-All-HVAC-ER-All-All-E	15	2,352.00	\$1,007.59	–	\$170.00	\$150.00	\$0.029	4.62	4.65	4

Supplement 1: Cost-Effectiveness

Measure Name	Measure Descriptions	Replacing	Measure unit	End Use	Measure Life (yrs) ^a	Benefit			Cost			B/C Tests		Source/ Notes
						Annual Gross Energy Savings (kWh/yr) ^b	NPV DSM Avoided Costs ^c	NEB	Gross Incremental Participant Cost ^d	Incentive/ Unit	Admin Cost (\$/kWh) ^e	UCT Ratio ^f	TRC Ratio ^g	
High Efficiency Battery Chargers	High Efficiency Battery Chargers	Standard battery charger	unit	Commercial-Fleet_EV_Charger	15	3,337.00	\$1,625.69	–	\$400.00	\$200.00	\$0.029	5.48	3.60	4
High Volume Low Speed Fan	High Volume Low Speed Fan	Standard high-speed fan	Fan	I-All-Other-Shift2-All-All-S	15	16,733.00	\$9,019.95	–	\$4,185.00	\$2,000.00	\$0.029	3.63	2.12	4
Compressed Air	VFD on air compressor	No existing VFD	HP	Commercial-Misc. Com-Misc	13	949.00	\$435.97	–	\$223.00	\$200.00	\$0.029	1.92	1.91	4
Compressed Air	Low Pressure Filter	Standard filter	HP	Commercial-Misc. Com-Misc	10	44.00	\$15.89	–	\$10.00	\$10.00	\$0.029	1.41	1.55	4
Compressed Air	No-Loss Condensate Drain	Open tube with ball valve	Unit	Commercial-Misc. Com-Misc	10	1,970.00	\$711.54	–	\$244.00	\$200.00	\$0.029	2.77	2.60	4
Compressed Air	Efficient Compress Air Nozzle	Standard air nozzle	Unit	Commercial-Misc. Com-Misc	15	2,223.00	\$1,152.08	–	\$85.00	\$80.00	\$0.029	7.97	8.48	4
Compressed Air	Efficient Refrigerated Compressed Air Dryer	Standard air dryer	CFM	Commercial-Misc. Com-Misc	13	10.62	\$4.88	–	\$6.00	\$3.00	\$0.029	1.47	0.85	3, 4
Refrigeration	Install auto-closer - walk-in	no/damaged auto-closer, low temp	Door	C-Gro-Ref-All-All-All-E	8	2,509.00	\$730.64	–	\$736.00	\$400.00	\$0.029	1.55	0.99	2, 4
Refrigeration	Install auto-closer - reach-in	Damaged auto-closer, low temp	Door	C-Gro-Ref-All-All-All-E	8	326.00	\$94.93	–	\$736.00	\$75.00	\$0.029	1.12	0.14	3, 4
Refrigeration	Install auto-closer - walk-in	No/damaged auto-closer, med. Temp	Door	C-Gro-Ref-All-All-All-E	8	562.00	\$163.66	–	\$736.00	\$135.00	\$0.029	1.08	0.24	3, 4
Refrigeration	Install auto-closer - reach-in	Damaged auto-closer, med. Temp	Door	C-Gro-Ref-All-All-All-E	8	243.00	\$70.76	–	\$736.00	\$55.00	\$0.029	1.14	0.10	3, 4
Refrigeration	Anti-sweat heat controls	Low/med.temp case without controls	Linear ft	C-Gro-Ref-All-All-All-E	8	256.00	\$74.55	–	\$77.26	\$50.00	\$0.029	1.30	0.97	3, 4
Evaporative Pre-Cooler on Air-Cooled Refrigeration Systems	Evaporative Pre-Cooler on Air-Cooled Refrigeration Systems	existing air-cooled condenser coil	ton	C-All-Ref-Refrig-All-All-C	15	110.00	\$57.65	–	\$173.00	\$30.00	\$0.029	1.74	0.36	3, 4
Refrigeration	No-heat glass door	commercial glass door	door	C-Gro-Ref-All-All-All-E	12	779.00	\$338.03	–	\$664.00	\$200.00	\$0.029	1.52	0.54	3, 4
Defrost Coil Control	Defrost Coil Control - Cooler or Freezer	no evaporative coil defrost control	per fan	C-Gro-Ref-All-All-All-E	10	195.50	\$71.44	–	\$500.00	\$50.00	\$0.029	1.28	0.16	3, 4
Automatic high speed doors	Freezer to Dock	manual or electric warehouse door	sq ft	Commercial-Ref. warehouse-Misc	16	2,812.00	\$1,545.92	–	\$188.00	\$320.00	\$0.029	3.85	6.31	4
Automatic high speed doors	Freezer to Refrigerator	manual or electric warehouse door	sq ft	Commercial-Ref. warehouse-Misc	16	2,032.00	\$1,117.11	–	\$188.00	\$160.00	\$0.029	5.10	4.98	4
Automatic high speed doors	Refrigerator to Dock	manual or electric warehouse door	sq ft	Commercial-Ref. warehouse-Misc	16	400.00	\$219.90	–	\$188.00	\$80.00	\$0.029	2.40	1.21	4
Strip Curtain	For walk-in freezers	no protective barrier	sq ft	C-Gro-Ref-All-All-All-E	4	210.00	\$27.13	–	\$9.00	\$5.00	\$0.029	2.45	1.98	4

Supplement 1: Cost-Effectiveness

Measure Name	Measure Descriptions	Replacing	Measure unit	End Use	Measure Life (yrs) ^a	Benefit			Cost			B/C Tests		Source/ Notes
						Annual Gross Energy Savings (kWh/yr) ^b	NPV DSM Avoided Costs ^c	NEB	Gross Incremental Participant Cost ^d	Incentive/ Unit	Admin Cost (\$/kWh) ^e	UCT Ratio ^f	TRC Ratio ^g	
Strip Curtain	For walk-in refrigerators	no protective barrier	sq ft	C-Gro-Ref-All-All-All-E	4	78.00	\$10.08	–	\$9.00	\$5.00	\$0.029	1.39	0.98	2, 4
Compressor Head Fan Motor to ECM	Compressor Head Fan Motor to ECM	SP or PSC with motors less than or equal to existing motor size	unit	C-Gro-Ref-All-All-All-E	15	345.61	\$181.84	–	\$228.08	\$100.00	\$0.029	1.65	0.84	3, 4
Floating Head/Suction Pressures	Head pressure controller	Standard head pressure control	HP	C-Gro-Ref-All-All-All-E	16	440.00	\$243.77	–	\$311.90	\$160.00	\$0.029	1.41	0.83	3, 4
Floating Head/Suction Pressures	Suction pressure controller	Standard suction pressure control	HP	C-Gro-Ref-All-All-All-E	16	104.00	\$57.62	–	\$86.91	\$40.00	\$0.029	1.34	0.70	3, 4
Demand Controlled Kitchen Ventilation Exhaust Hood	VFD installed on kitchen exhaust and/or makeup air fan	Kitchen hood with constant speed ventilation motor	HP	C-All-Food-Cook-All-All-C	15	4,590.00	\$2,427.68	–	\$469.00	\$250.00	\$0.029	6.34	4.44	4
Ice Machines	Ice Machines (<200 lbs/day)	code	per unit	C-All-Ref-Refrig-All-All-C	9	285.00	\$93.49	–	\$311.00	\$100.00	\$0.029	0.86	0.32	3, 4, 8
Ice Machines	Ice Machines (>200 lbs/day)	code	per unit	C-All-Ref-Refrig-All-All-C	9	2,608.00	\$855.47	–	\$311.00	\$300.00	\$0.029	2.28	2.43	4
Commercial Kitchen Equipment	Efficient Hot Food Holding Cabinet (Half Size)		per unit	C-All-Food-Cook-All-All-C	10	1,605.05	\$591.38	–	\$315.94	\$200.00	\$0.029	2.40	1.79	9
Commercial Kitchen Equipment	Efficient Hot Food Holding Cabinet (Full Size)		per unit	C-All-Food-Cook-All-All-C	10	2,839.99	\$1,046.38	–	\$672.68	\$400.00	\$0.029	2.17	1.52	9
Commercial Kitchen Equipment	Efficient Hot Food Holding Cabinet (Double Size)		per unit	C-All-Food-Cook-All-All-C	10	5,238.05	\$1,929.94	–	\$2,838.36	\$800.00	\$0.029	2.03	0.71	3, 9
New On-Demand Overwrapper	New On-Demand Overwrapper		per unit	Commercial-Grocery-Process	10	1,583.68	\$600.88	–	\$345.19	\$100.00	\$0.029	4.12	1.69	10
Commercial Kitchen Equipment	ENERGY STAR listed electric combination oven (5-15 pans)	Standard electric oven	oven	C-All-Food-Cook-All-All-C	7	5,106.65	\$1,298.43	–	\$989.08	\$800.00	\$0.029	1.37	1.26	11
Commercial Kitchen Equipment	ENERGY STAR listed electric combination oven (16-20 pans)	Standard electric oven	oven	C-All-Food-Cook-All-All-C	7	5,528.10	\$1,405.59	–	\$555.21	\$300.00	\$0.029	3.05	2.16	11
Commercial Kitchen Equipment	ENERGY STAR listed electric convection oven	Standard electric oven	oven	C-All-Food-Cook-All-All-C	8	736.40	\$216.77	–	\$439.97	\$180.00	\$0.029	1.08	0.52	3, 12
Commercial Kitchen Equipment	ENERGY STAR listed electric fryer	Standard fryer	fryer	C-All-Food-Cook-All-All-C	6	883.76	\$189.28	–	\$1,296.18	\$150.00	\$0.029	1.08	0.16	3, 13

Supplement 1: Cost-Effectiveness

Measure Name	Measure Descriptions	Replacing	Measure unit	End Use	Measure Life (yrs) ^a	Benefit			Cost			B/C Tests		Source/ Notes
						Annual Gross Energy Savings (kWh/yr) ^b	NPV DSM Avoided Costs ^c	NEB	Gross Incremental Participant Cost ^d	Incentive/ Unit	Admin Cost (\$/kWh) ^e	UCT Ratio ^f	TRC Ratio ^g	
Commercial Kitchen Equipment	ENERGY STAR listed electric steamer -Any Size	Standard steamer	pan	C-All-Food-Cook-All-All-C	7	2,995.49	\$761.64	\$883.21	\$73.15	\$30.00	\$0.029	6.52	10.76	14
Variable Speed Controls	Variable speed drive on HVAC system application	single speed HVAC system fan/ump	HP	C-All-HVAC-Vent-All-All-E	15	622.00	\$329.40	–	\$184.55	\$125.00	\$0.029	2.30	1.79	4
Variable Speed Controls	Variable speed drive on potato and onion storage shed ventilation	no existing VFD	HP	A-SpudOnionVFD	10	1,193.00	\$361.35	–	\$264.00	\$250.00	\$0.029	1.27	1.33	4
Variable Speed Controls	VFD on milking vacuum pump	no existing VFD	HP	A-Da-Proc-MilkingSchedule-All-All-S	10	3,084.00	\$1,214.24	–	\$356.00	\$250.00	\$0.029	3.58	3.00	4
Variable Speed Controls	VFD on milking transfer pump	no existing VFD	HP	A-Da-Proc-MilkingSchedule-All-All-S	10	11,777.00	\$4,636.85	–	\$2,052.00	\$1,500.00	\$0.029	2.52	2.13	4

^a Average measure life.

^b Estimated kWh savings measured at the customer's meter, excluding line losses.

^c NPV of DSM avoided costs. Based on end use load shape, measure life, savings including line losses, and avoided costs by pricing period as acknowledged in the 2019 Second Amended IRP. Total Resource Cost Test Benefit calculation includes 10% conservation adder from the Northwest Power Act.

^d Incremental participant cost prior to customer incentives.

^e Average program administration and overhead costs to achieve each kWh of savings. Calculated from 2022 actuals.

^f UCT Ratio = (NPV DSM Avoided Costs) / ((Admin Cost/kWh * kWh Savings) + Incentives)

^g TRC Ratio = ((NPV DSM Avoided Costs * 110%) + NEB) / ((Admin Cost/kWh * kWh Savings) + Incentives + (Incremental Participant Cost - Incentives))

^h Evergreen Consulting Group, LLC. Idaho Power Lighting Tool. 2022.

ⁱ Measure not cost-effective from TRC perspective. Measure cost-effective without inclusion of admin costs.

^j Idaho only measure.

^k Idaho Power TRM prepared by ADM Associates, Inc. 2022.

^l Idaho Power TRM prepared by ADM Associates, Inc. 2022. Averaged air-cooled chillers.

^m Idaho Power TRM prepared by ADM Associates, Inc. 2022. Averaged water-cooled chillers.

ⁿ Idaho Power TRM prepared by ADM Associates, Inc. 2022. NEBs from water savings from RTF. ComClothesWashers_v5_1.xlsm. Simple average. 2018.

^o Measure not cost-effective from UCT perspective. Will continue to monitor in 2023.

^p RTF. ComCookingHotFoodCabinet_v3_2. 2020.

^q RTF. ComOnDemandOverwrappers_v1_1. 2018.

^r RTF. ComCookingCombinationOven_v3_1. 2019.

^s RTF. ComCookingConvectionOven_v3_1. Simple average of Half Size Oven savings. 2018.

^t RTF. ComCookingFryer_v3_3. 2020.

^u RTF. ComCookingSteamer_v3_1. Calculated per pan savings using Any size savings divided by average steamer size of 6 pans. 2019.

^v Measure not cost-effective. Will be modified in 2023.

Supplement 1: Cost-Effectiveness

Small Business Direct Install

Segment: Commercial

2022 Program Results

Cost Inputs				Ref
Program Administration	\$	1,345,429		
Program Incentives.....		—	I	
Total UC	\$	1,345,429	P	
Measure Equipment and Installation (Incremental Participant Cost)	\$	—	M	
Net Benefit Inputs (NPV)				Ref
Resource Savings				
2022 Annual Gross Energy (kWh)		3,228,365		
NPV Cumulative Energy (kWh)	29,118,685	\$	1,280,686	S
10% Credit (Northwest Power Act).....		128,069		
Total Electric Savings.....	\$	1,408,755	A	
Participant Bill Savings				
NPV Cumulative Participant Bill Savings.....	\$	1,610,688	B	
Other Benefits				
Non-Utility Rebates/Incentives.....	\$	—	NUI	
NEBs	\$	609,181	NEB	

Notes: NEB/impacts on a \$/kWh for each end-use. Based on 2019 impact evaluation of other C&I programs

Summary of Cost-Effectiveness Results			
Test	Benefit	Cost	Ratio
UC Test.....	\$ 1,280,686	\$ 1,345,429	0.95
TRC Test	2,017,935	1,345,429	1.50
RIM Test.....	1,280,686	2,956,117	0.43
PCT	N/A	N/A	N/A
Benefits and Costs Included in Each Test			
UC Test.....	= S * NTG	= P	
TRC Test	= (A + NUI + NEB) * NTG	= P + ((M-I) * NTG)	
RIM Test.....	= S * NTG	= P + (B * NTG)	
PCT	N/A	N/A	
Assumptions for Levelized Calculations			
Discount Rate			
Nominal (WACC)			7.12%
Real ((1 + WACC) / (1 + Escalation)) – 1			4.81%
Escalation Rate			2.20%
Net-to-Gross (NTG).....			100%
Minimum NTG Sensitivity			105%
Average Customer Segment Rate/kWh			\$0.058
Line Losses.....			9.60%

Irrigation Efficiency Rewards

Segment: Irrigation
2022 Program Results

Cost Inputs			Ref
Program Administration	\$	410,484	
Program Incentives		1,669,543	I
Total UC	\$	2,080,027	P
Measure Equipment and Installation (Incremental Participant Cost)	\$	13,666,743	M

Net Benefit Inputs (NPV)			Ref
Resource Savings			
2022 Annual Gross Energy (kWh)	6,937,855		
NPV Cumulative Energy (kWh)	83,817,664	\$ 5,585,689	S
10% Credit (Northwest Power Act)		558,569	
Total Electric Savings		\$ 6,144,257	A
Participant Bill Savings			
NPV Cumulative Participant Bill Savings	\$	4,978,988	B
Other Benefits			
Non-Utility Rebates/Incentives	\$	–	NUI
NEBs	\$	29,659,742	NEB

Summary of Cost-Effectiveness Results			
Test	Benefit	Cost	Ratio
UC Test	\$ 5,585,689	\$ 2,080,027	2.69
TRC Test	35,804,000	14,083,686	2.54
RIM Test	5,585,689	7,059,015	0.79
PCT	36,308,273	13,666,743	2.66

Benefits and Costs Included in Each Test			
UC Test	= S * NTG	= P	
TRC Test	= (A + NUI + NEB) * NTG	= P + ((M-I) * NTG)	
RIM Test	= S * NTG	= P + (B * NTG)	
PCT	= B + I + NUI + NEB	= M	

Assumptions for Levelized Calculations	
Discount Rate	
Nominal (WACC)	7.12%
Real ((1 + WACC) / (1 + Escalation)) – 1	4.81%
Escalation Rate	2.20%
Net-to-Gross (NTG)	100%
Minimum NTG Sensitivity	38%
Average Customer Segment Rate/kWh	\$0.059
Line Losses	9.60%

Notes: Energy savings are combined for projects under the Custom and Menu program. Savings under each Custom project is unique and individually calculated and assessed.

For Custom option, NEBs including yield, labor, and other benefits reported by the customer. For Menu option, NEBs from RTF.

Green Rewind initiative is available to agricultural, commercial, and industrial customers. Agricultural motor rewinds are paid under Irrigation Efficiency Rewards, but the savings are not included in the program cost-effectiveness.

Green Rewind savings are included in the sector cost-effectiveness.

Supplement 1: Cost-Effectiveness

Year: 2022

Program: Irrigation Efficiency Rewards

Market Segment: Irrigation

Program Type: Energy Efficiency

Measure Name ^a	Measure Descriptions	Replacing	Measure Unit	End Use	Measure Life (yrs) ^b	Benefit			Cost			B/C Tests		Sources/Notes
						Annual Gross Energy Savings (kWh/yr) ^c	NPV DSM Avoided Costs ^d	NEB	Gross Incremental Participant Cost ^e	Incentive/Unit	Admin Cost (\$/kWh) ^f	UCT Ratio ^g	TRC Ratio ^h	
Nozzle Replacement	New flow-control-type nozzles replacing existing brass nozzles or worn out flow control nozzles of same flow rate or less	Brass nozzles or worn out flow control nozzles of same flow rate or less	Unit	A-Irr-Irr-Irrigation-All-All-E	6	21.46	\$5.62	\$3.06	\$7.04	\$2.50	\$0.060	1.48	1.11	1
Nozzle Replacement	New nozzles replacing existing worn nozzles of same flow rate or less	Worn nozzle of same flow rate or less	Unit	A-Irr-Irr-Irrigation-All-All-E	6	21.46	\$5.62	\$3.06	\$0.70	\$0.35	\$0.060	3.43	4.65	1
Sprinklers	Rebuilt or new brass impact sprinklers	Worn sprinkler	Unit	A-Irr-Irr-Irrigation-All-All-E	6	1.90	\$0.50	\$14.50	\$11.85	\$0.50	\$0.060	0.81	1.26	1, 2
Levelers	Rebuilt or new wheel line levelers	Worn wheel line leveler	Unit	A-Irr-Irr-Irrigation-All-All-E	7	3.62	\$1.16	\$7.82	\$4.70	\$1.00	\$0.060	0.95	1.85	1, 2
Sprinklers	Center pivot/linear move: Install new sprinkler package on an existing system	Worn sprinkler system	Unit	A-Irr-Irr-Irrigation-All-All-E	6	26.04	\$6.82	\$23.42	\$27.83	\$8.00	\$0.060	0.71	1.05	1, 3
Gasket Replacement	New gaskets for hand lines, wheel lines, or portable mainline	Worn gasket	Unit	A-Irr-Irr-Irrigation-All-All-E	6	13.33	\$3.49	\$4.16	\$2.24	\$1.00	\$0.060	1.94	2.63	1
Drain Replacement	New drains, hand lines, wheel lines, or portable mainline	Worn drain	Unit	A-Irr-Irr-Irrigation-All-All-E	6	9.79	\$2.56	\$5.87	\$5.94	\$3.00	\$0.060	0.71	1.33	1, 3

^a Available measures in the Irrigation Efficiency Rewards Menu Incentive Option. For the Custom Incentive Option, projects are thoroughly reviewed by Idaho Power staff.

^b Average measure life.

^c Estimated peak demand reduction measured at the customer's meter, excluding line losses.

^d NPV of DSM avoided costs. Based on end use load shape, measure life, savings including line losses, and avoided costs by pricing period as acknowledged in the 2019 Second Amended IRP. TRC Test Benefit calculation includes 10% conservation adder from the Northwest Power Act.

^e Incremental participant cost prior to customer incentives.

^f Average program administration and overhead costs to achieve each kWh of savings. Calculated from 2022 actuals.

^g UCT Ratio = (NPV DSM Avoided Costs) / ((Admin Cost/kWh * kWh Savings) + Incentives)

^h TRC Ratio = ((NPV DSM Avoided Costs * 110%) + NEB) / ((Admin Cost/kWh * kWh Savings) + Incentives + (Incremental Participant Cost - Incentives))

ⁱ RTF. AgIrrigationHardware_v5_2.xlsm. 2021. Weighted average of Western Idaho (11.62%), Eastern Washington & Oregon (2.73%), and Eastern & Southern Idaho (85.65%).

² Measure not cost-effective. Measure cost-effective without inclusion of admin costs.

³ Measure not cost-effective from UCT perspective. Will continue to monitor in 2023.

Supplement 1: Cost-Effectiveness

Year: 2022

Program: Irrigation Efficiency Rewards—Green Motors

Market Segment: Irrigation

Program Type: Energy Efficiency

Measure Name	Measure Descriptions	Replacing	Measure Unit	End Use	Measure Life (yrs) ^a	Benefit			Cost			B/C Tests		Source/ Notes
						Annual Gross Energy Savings (kWh/yr) ^b	NPV DSM Avoided Costs ^c	NEB	Gross Incremental Participant Cost ^d	Incentive/ Unit	Admin Cost (\$/kWh) ^e	UCT Ratio ^f	TRC Ratio ^g	
Green Motors Program Rewind: Motor size 15 HP	Green Motors Program Rewind: Motor size 15 HP	Standard rewind practice	Motor	A-Irr-Irr-Irrigation-All-Ail-E	18	222.19	\$178.89	–	\$134.57	\$15.00	\$0.060	6.31	1.33	1
Green Motors Program Rewind: Motor size 20 HP	Green Motors Program Rewind: Motor size 20 HP	Standard rewind practice	Motor	A-Irr-Irr-Irrigation-All-Ail-E	18	297.32	\$239.37	–	\$150.13	\$20.00	\$0.060	6.33	1.57	1
Green Motors Program Rewind: Motor size 25 HP	Green Motors Program Rewind: Motor size 25 HP	Standard rewind practice	Motor	A-Irr-Irr-Irrigation-All-Ail-E	17	447.57	\$345.30	–	\$171.53	\$25.00	\$0.060	6.66	1.91	1
Green Motors Program Rewind: Motor size 30 HP	Green Motors Program Rewind: Motor size 30 HP	Standard rewind practice	Motor	A-Irr-Irr-Irrigation-All-Ail-E	17	482.11	\$371.95	–	\$188.39	\$30.00	\$0.060	6.31	1.88	1
Green Motors Program Rewind: Motor size 40 HP	Green Motors Program Rewind: Motor size 40 HP	Standard rewind practice	Motor	A-Irr-Irr-Irrigation-All-Ail-E	17	561.43	\$433.14	–	\$230.22	\$40.00	\$0.060	5.88	1.81	1
Green Motors Program Rewind: Motor size 50 HP	Green Motors Program Rewind: Motor size 50 HP	Standard rewind practice	Motor	A-Irr-Irr-Irrigation-All-Ail-E	17	604.21	\$466.15	–	\$254.87	\$50.00	\$0.060	5.40	1.76	1
Green Motors Program Rewind: Motor size 60 HP	Green Motors Program Rewind: Motor size 60 HP	Standard rewind practice	Motor	A-Irr-Irr-Irrigation-All-Ail-E	21	553.16	\$495.58	–	\$300.58	\$60.00	\$0.060	5.32	1.63	1
Green Motors Program Rewind: Motor size 75 HP	Green Motors Program Rewind: Motor size 75 HP	Standard rewind practice	Motor	A-Irr-Irr-Irrigation-All-Ail-E	21	569.29	\$510.03	–	\$324.91	\$75.00	\$0.060	4.67	1.56	1
Green Motors Program Rewind: Motor size 100 HP	Green Motors Program Rewind: Motor size 100 HP	Standard rewind practice	Motor	A-Irr-Irr-Irrigation-All-Ail-E	21	751.39	\$673.17	–	\$403.05	\$100.00	\$0.060	4.64	1.65	1
Green Motors Program Rewind: Motor size 125 HP	Green Motors Program Rewind: Motor size 125 HP	Standard rewind practice	Motor	A-Irr-Irr-Irrigation-All-Ail-E	23	555.70	\$527.02	–	\$291.81	\$125.00	\$0.060	3.33	1.78	1
Green Motors Program Rewind: Motor size 150 HP	Green Motors Program Rewind: Motor size 150 HP	Standard rewind practice	Motor	A-Irr-Irr-Irrigation-All-Ail-E	23	660.58	\$626.49	–	\$325.04	\$150.00	\$0.060	3.30	1.89	1
Green Motors Program Rewind: Motor size 200 HP	Green Motors Program Rewind: Motor size 200 HP	Standard rewind practice	Motor	A-Irr-Irr-Irrigation-All-Ail-E	23	876.20	\$830.98	–	\$391.31	\$200.00	\$0.060	3.29	2.06	1
Green Motors Program Rewind: Motor size 250 HP	Green Motors Program Rewind: Motor size 250 HP	Standard rewind practice	Motor	A-Irr-Irr-Irrigation-All-Ail-E	19	1,357.04	\$1,135.74	–	\$502.92	\$250.00	\$0.060	3.43	2.14	1
Green Motors Program Rewind: Motor size 300 HP	Green Motors Program Rewind: Motor size 300 HP	Standard rewind practice	Motor	A-Irr-Irr-Irrigation-All-Ail-E	19	1,620.02	\$1,355.83	–	\$508.37	\$300.00	\$0.060	3.41	2.46	1
Green Motors Program Rewind: Motor size 350 HP	Green Motors Program Rewind: Motor size 350 HP	Standard rewind practice	Motor	A-Irr-Irr-Irrigation-All-Ail-E	19	1,888.64	\$1,580.64	–	\$532.82	\$350.00	\$0.060	3.41	2.69	1
Green Motors Program Rewind: Motor size 400 HP	Green Motors Program Rewind: Motor size 400 HP	Standard rewind practice	Motor	A-Irr-Irr-Irrigation-All-Ail-E	19	2,141.43	\$1,792.21	–	\$595.11	\$400.00	\$0.060	3.39	2.72	1
Green Motors Program Rewind: Motor size 450 HP	Green Motors Program Rewind: Motor size 450 HP	Standard rewind practice	Motor	A-Irr-Irr-Irrigation-All-Ail-E	19	2,405.07	\$2,012.86	–	\$650.51	\$450.00	\$0.060	3.39	2.79	1
Green Motors Program Rewind: Motor size 500 HP	Green Motors Program Rewind: Motor size 500 HP	Standard rewind practice	Motor	A-Irr-Irr-Irrigation-All-Ail-E	19	2,676.03	\$2,239.63	–	\$702.76	\$500.00	\$0.060	3.39	2.85	1
Green Motors Program Rewind: Motor size 600 HP	Green Motors Program Rewind: Motor size 600 HP	Standard rewind practice	Motor	A-Irr-Irr-Irrigation-All-Ail-E	24	4,113.93	\$4,001.37	–	\$1,388.11	\$600.00	\$0.060	4.73	2.69	1
Green Motors Program Rewind: Motor size 700 HP	Green Motors Program Rewind: Motor size 700 HP	Standard rewind practice	Motor	A-Irr-Irr-Irrigation-All-Ail-E	24	4,779.22	\$4,648.46	–	\$1,514.42	\$700.00	\$0.060	4.71	2.84	1
Green Motors Program Rewind: Motor size 800 HP	Green Motors Program Rewind: Motor size 800 HP	Standard rewind practice	Motor	A-Irr-Irr-Irrigation-All-Ail-E	24	5,450.38	\$5,301.25	–	\$1,680.30	\$800.00	\$0.060	4.70	2.91	1

Supplement 1: Cost-Effectiveness

Measure Name	Measure Descriptions	Replacing	Measure Unit	End Use	Measure Life (yrs) ^a	Benefit			Cost			B/C Tests		Source/ Notes
						Annual Gross Energy Savings (kWh/yr) ^b	NPV DSM Avoided Costs ^c	NEB	Gross Incremental Participant Cost ^d	Incentive/ Unit	Admin Cost (\$/kWh) ^e	UCT Ratio ^f	TRC Ratio ^g	
Green Motors Program Rewind: Motor size 900 HP	Green Motors Program Rewind: Motor size 900 HP	Standard rewind practice	Motor	A-Irr-Irr-Irrigation-All-All-E	24	6,118.68	\$5,951.27	–	\$1,852.45	\$900.00	\$0.060	4.70	2.95	1
Green Motors Program Rewind: Motor size 2000 HP	Green Motors Program Rewind: Motor size 2000 HP	Standard rewind practice	Motor	A-Irr-Irr-Irrigation-All-All-E	24	11,137.11	\$10,832.39	\$-	\$3,497.64	\$2,000.00	\$0.060	3.25	2.47	1

^a Average measure life.

^b Estimated kWh savings measured at the customer's meter, excluding line losses.

^c NPV of DSM avoided costs. Based on end use load shape, measure life, savings including line losses, and avoided costs by pricing period as acknowledged in the 2019 Second Amended IRP. TRC Test Benefit calculation includes 10% conservation adder from the Northwest Power Act

^d Incremental participant cost prior to customer incentives.

^e Average program administration and overhead costs to achieve each kWh of savings. Calculated from 2022 actuals.

^f UCT Ratio = (NPV DSM Avoided Costs) / ((Admin Cost/kWh * kWh Savings) + Incentives)

^g TRC Ratio = ((NPV DSM Avoided Costs * 110%) + NEB) / ((Admin Cost/kWh * kWh Savings) + Incentives + (Incremental Participant Cost - Incentives))

^h RTF: Ind_and_Ag_GreenMotorRewind_v3_1.xlsm. 2017.