



DEMAND-SIDE MANAGEMENT

# 2023

ANNUAL REPORT

SUPPLEMENT 1: **COST-EFFECTIVENESS**



## TABLE OF CONTENTS

Supplement 1: Cost-Effectiveness .....	1
Cost-Effectiveness.....	1
Methodology .....	2
Assumptions .....	3
Conservation Adder.....	5
Net-to-Gross .....	6
Results .....	6
Cost-Effectiveness Tables by Program .....	15
Educational Distributions .....	15
Energy Efficient Lighting .....	17
Heating & Cooling Efficiency Program .....	20
Home Energy Report .....	23
Rebate Advantage .....	24
Residential New Construction Program.....	26
Shade Tree Project.....	28
Weatherization Assistance for Qualified Customers .....	29
Weatherization Solutions for Eligible Customers .....	30
Commercial Energy-Saving Kits .....	31
Custom Projects.....	33
New Construction.....	36
Retrofits .....	41
Small Business Direct Install .....	50
Irrigation Efficiency Rewards .....	51

## LIST OF TABLES

Table 1. 2023 non-cost-effective measures .....	10
Table 2. 2023 DSM detailed expenses by program (dollars).....	11
Table 3. 2023 Demand response program and portfolio \$ per kW year .....	13
Table 4. Cost-effectiveness of 2023 programs by benefit/cost test.....	14

## 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 or is expected to become 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 or end the offering. 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. The OPUC expects 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 2023 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:

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

Each of the three components have been updated:

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1. From the *2021 IRP*, the 2023 levelized fixed cost value of a Simple Cycle Combustion Turbine (SCCT) was determined to be \$134.63 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 316 MW of DR capacity compared to a SCCT using *2021 IRP* assumptions is 62.82%.

This results in a value of \$84.57 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. Depending on the workbook referenced, data from the RTF is in either 2012 or 2016 dollars and must be escalated to 2023 dollars. For costs in 2012 dollars, the cost are escalated by 27.7%. For costs in 2016 dollars, the costs are escalated by 19.7%. These percentages are provided by the RTF in workbook [RTFStandardInformationWorkbook\\_v4\\_8.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 and the Multifamily Energy Efficiency Program. In 2020, the company began the process to update the assumptions in the C&I TRM based on the 2018 International Energy Conservation Code (IECC). The updated C&I 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. In 2023, Idaho Power contracted with ADM Associates to create a Multifamily TRM.

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 2023 Annual Report. Generally, the 2023 energy savings reported for most programs will use the assumptions set at the beginning of the year. One exception was regarding the lighting savings assumption. Because the lighting standards from the *Energy Independence Act of 2007* became fully enforced as of July 1, 2023, Idaho Power references two different lighting workbooks, one for the first half and another for the second half of 2023 for programs that claimed savings from LED lightbulbs.

The remaining inputs used in the cost-effectiveness calculations are obtained from the IRP process. Idaho Power's 2021 IRP was acknowledged by the IPUC under case IPC-E-21-43 on November 18, 2022, and with the OPUC under case LC 78 on January 13, 2023. The 2021 IRP is the source for all financial and cost-effectiveness analysis for the 2023 energy efficiency programs. As noted earlier, the 2021 IRP is also used to determine the cost-effectiveness threshold for the DR programs.

On September 29, 2023, Idaho Power filed its 2023 IRP with the IPUC under case IPC-E-23-23 and with the OPUC under case LC 84. At the EEAG meeting on August 17, 2023, Idaho Power presented its proposal to use avoided costs from the most recently "filed" IRP rather than the most recently "acknowledged" IRP for DSM program planning. The intent of this shift is to reduce lag time between when the avoided costs are updated and used for program planning and cost-effectiveness evaluations. As a result, beginning with the 2024 program year, the company will now use the most current information available for its DSM planning, evaluation, and analyses. Therefore, the 2023 IRP will be the source of the cost-effectiveness inputs for the 2024 program year.

*Appendix C—Technical Appendix of Idaho Power's 2021 IRP* contains the financial assumptions—such as discount rate, escalation rate and line losses—used in the energy efficiency 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<sup>amp</sup> Electric Market Model. The avoided capital cost of capacity is based on a gas-fired, simple-cycle turbine. Transmission and distribution (T&D) benefits are also included in the cost-effectiveness analyses.

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 2023 average customer segment rate and are not escalated. The participant bill savings are discounted using a real discount rate of 4.71%, which is based on the 2021 IRP’s WACC of 7.12% and an escalation rate of 2.3%. 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 2023 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. For the cost-effectiveness calculations of the energy efficiency programs, the system line-loss factor of 9.6% and the summer peak line-loss factor of 9.7% from the 2021 IRP were utilized. The line-loss percentages were re-evaluated in preparation for the 2023 IRP. This study determined that the system and peak line-loss factor is now 7.6%. Since these values were available prior to the summer demand response season, Idaho Power considered it appropriate to apply the updated 7.6% line-loss factor when reporting the generation level capacity for the demand response programs in 2023.

## 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, Home Energy Report 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 2023 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 2023, most of Idaho Power's energy efficiency programs were cost-effective from the UCT perspective, except for Heating & Cooling Efficiency, Rebate Advantage, Shade Tree, Small Business Direct Install, and the two weatherization programs for income-qualified customers.

The Heating & Cooling Efficiency Program had a UCT of 0.94 and TRC of 0.40. The program's overall cost-effectiveness was impacted by the decline in overall savings for measures such as smart thermostats and air-source heat pumps. In November, the company modified the program based on the updated savings and analyzed the program with the newest avoided costs from the *2023 IRP*. With these changes, the program is anticipated to be cost-effective going forward.

Rebate Advantage had a UCT of 0.98 and a TRC of 0.93. Idaho Power used the same savings and assumptions in 2023 as were used in 2022. The decline in UCT cost-effectiveness was due to the application of the avoided costs from the *2021 IRP*. On average the benefit value declined 22% between the previous *2019 Seconded Amended IRP* and the *2021 IRP*. If the avoided costs from the *2023 IRP* are applied, the benefit value increases by approximately 12%. Therefore, the program is anticipated to be cost-effective in the 2024 program year.

Additionally, while both Heating & Cooling Efficiency and Rebate Advantage saw a decline in the UCT cost-effectiveness year over year, the TRC cost-effectiveness improved with the application of the tax credits from the *Inflation Reduction Act of 2022*.

The Shade Tree Project had a UCT of 0.31 and TRC of 0.42. In 2023, Idaho Power contracted with a third-party evaluator to perform an impact evaluation and audit of the trees that were distributed in the past. The evaluation found that while the existing calculator was acceptable for determining energy savings, the mortality rate was higher than previously estimated and that the savings needed to be adjusted for the heating impact shade trees have on electrically heated homes. Idaho Power worked with the evaluator to determine how best to model the future savings of the trees, and the evaluator reviewed Idaho Power's updated savings calculations for the trees distributed in 2023 to ensure the adjustments were applied in accordance with the recommendations outlined in the evaluation. The adjusted savings were then applied in the program's 2023 cost-effectiveness analysis. The increased energy use from electrically heated homes negated much of the cooling savings benefits from the

shade tree. In light of the evaluation results, changes will need to be made to improve the offering's cost-effectiveness. Idaho Power will work with stakeholders to develop a plan for necessary changes to the offering going forward. Finally, the cost-effectiveness ratios include the costs associated with the impact evaluation. If the evaluation costs were removed, the UCT and TRC ratios for the program would be 0.33 and 0.45, respectively.

Small Business Direct Install has a UCT of 0.97 and TRC of 1.48. The cost-effectiveness ratios include the costs associated with the impact evaluation. If the evaluation costs were removed, the UCT and TRC ratios for the program would be 1.08 and 1.64, respectively. In 2022, Idaho Power shared the cost-effectiveness challenges for the program with EEAG. These challenges include the reduced savings potential from screw-in lightbulbs and the increased costs associated with materials and labor. If the cost of this free service were to continue to rise, it would be increasingly difficult for the program to be cost-effective from the UCT perspective. As a result, the offering closed in March 2023.

WAQC had a UCT ratio of 0.14 and a TRC of 0.23, and Weatherization Solutions for Eligible Customers had a UCT ratio of 0.13 and a TRC of 0.19. The WAQC ratios include the savings and costs associated with the re-weatherization efforts. The UCT and TRC for the WAQC-only portion of the overall program are 0.16 and 0.25, respectively. The UCT and TRC for the re-weatherization efforts alone are 0.09 and 0.10, respectively.

To calculate the cost-effectiveness for the income-qualified weatherization programs, Idaho Power adopted the following IPU 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 2.488% were calculated from the \$1,044,428 of indirect program expenses divided by the total DSM expenses of \$41,979,473 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, Idaho Power will continue to offer the programs to the company's limited-income customers on an ongoing basis, unless the Idaho and Oregon commissions direct otherwise. 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 programs' cost-effectiveness.

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 2023, the commercial and industrial sector had a UCT of 2.74 and TRC of 1.48, and irrigation sector had a UCT of 2.06 and TRC of 2.22. 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 1.12 and TRC of 0.95 and the portfolio has a UCT of 2.06 and TRC of 1.51. With WAQC, the residential sector has a UCT of 0.87 and TRC of 0.74 and the portfolio has a UCT of 1.97 and TRC of 1.47.

A total of 82 out of 295 individual measures in various programs are not cost-effective from either the UCT or TRC perspective. Of the 82 measures, 12 are not cost-effective from the UCT perspective. Two measures are no longer being offered, and three measures were modified and incentives reduced to improve cost-effectiveness. Seven measures would be cost-effective without the inclusion of administration expenses.

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. 2023 non-cost-effective measures**

Program	Number of Measures	Number Fail UCT	Notes
Energy Efficient Lighting	1	1	Program closed in 2023 due to the implementation of federal lighting standards.
Heating & Cooling Efficiency	9	4	Of the four measures that fail UCT, one measure was removed from the program and three measures had incentives reduced as of November 1, 2023. All measure fail TRC. Program received a cost-effectiveness exception with Advice No. 23-11 under OPUC Order No. 94-590, Section 13.
Rebate Advantage	6	2	Two measures fail UCT but would be cost-effective with a UCT of 1.29 and 1.60 without the inclusion of administration costs. Four measures fail TRC. Exception request for the program requested and approved with UM-1710, Order No. 23-110.
Residential New Construction	2	2	One measure would be cost-effective with a UCT of 1.29 without the inclusion of administration costs. The measure is expected to be cost-effective in 2024. Idaho only program.
Custom Projects-Energy Management	3	2	Two offerings fail UCT and TRC but would be cost-effective under both tests without administration costs. Meets OPUC Order No. 94-590, Section 10. One cohort offering passes UCT but fails TRC without administration costs; however, participation in the cohort led to capital projects totaling 826,298 kWh paid in 2023 within CIEE.
New Construction and Retrofits	3	0	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.

Program	Number of Measures	Number Fail UCT	Notes
New Construction	16	1	All measures pass UCT. Offered in Idaho only. One measure would be cost-effective with a TRC of 1.00 without inclusion of administration costs.
Retrofits	42	0	All measures offered in Idaho only. All measures pass UCT.
<b>Total</b>	<b>82</b>	<b>12</b>	

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, Shade Tree Project, 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.

## 2023 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 2023 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. 2023 DSM detailed expenses by program (dollars)**

Sector/Program	Idaho Rider	Oregon Rider	Idaho Power	Total Program
<b>Energy Efficiency Total</b>	<b>\$ 21,809,569</b>	<b>\$ 571,837</b>	<b>\$ 1,574,189</b>	<b>\$ 23,955,594</b>
<b>Residential Total</b>	<b>3,560,965</b>	<b>84,083</b>	<b>1,466,565</b>	<b>5,111,613</b>
<b>Easy Savings: Low-Income Energy Efficiency Education...</b>	<b>–</b>	<b>–</b>	<b>146,232</b>	<b>146,232</b>
Labor/Administrative Expense.....	–	–	21,227	21,227
Materials and Equipment .....	–	–	–	–
Other Expense .....	–	–	5	5
Purchased Services.....	–	–	125,000	125,000
<b>Educational Distributions .....</b>	<b>880,568</b>	<b>21,720</b>	<b>–</b>	<b>902,287</b>
Labor/Administrative Expense.....	8,216	434	–	8,650
Materials and Equipment .....	711,365	16,659	–	728,024
Other Expense .....	22,085	1,162	–	23,247
Purchased Services.....	138,902	3,464	–	142,366
<b>Energy Efficient Lighting .....</b>	<b>278,610</b>	<b>15,586</b>	<b>(0)</b>	<b>294,197</b>
Incentives .....	139,391	8,279	–	147,670
Labor/Administrative Expense.....	6,761	357	(0)	7,118
Other Expense .....	13	1	–	14
Purchased Services.....	132,445	6,950	–	139,395
<b>Heating &amp; Cooling Efficiency Program .....</b>	<b>593,407</b>	<b>30,640</b>	<b>–</b>	<b>624,047</b>
Incentives .....	300,454	15,550	–	316,004
Labor/Administrative Expense.....	157,114	8,269	–	165,383

Sector/Program	Idaho Rider	Oregon Rider	Idaho Power	Total Program
Materials and Equipment .....	40	2	–	42
Other Expense .....	11,961	572	–	12,533
Purchased Services .....	123,839	6,247	–	130,085
<b>Home Energy Audit .....</b>	<b>230,011</b>	–	–	<b>230,011</b>
Labor/Administrative Expense .....	85,842	–	–	85,842
Materials and Equipment .....	119	–	–	119
Other Expense .....	45,803	–	–	45,803
Purchased Services .....	98,246	–	–	98,246
<b>Home Energy Report Program</b>	<b>883,505</b>	–	–	<b>883,505</b>
Incentives .....	866,117	–	–	866,117
Labor/Administrative Expense .....	17,388	–	–	17,388
Other Expense .....	(0)	–	–	(0)
<b>Multifamily Energy Efficiency .....</b>	<b>22,758</b>	<b>1,216</b>	–	<b>23,974</b>
Labor/Administrative Expense .....	18,958	1,016	–	19,974
Other Expense .....	3,800	200	–	4,000
<b>Oregon Residential Weatherization .....</b>	–	<b>7,860</b>	–	<b>7,860</b>
Labor/Administrative Expense .....	–	5,029	–	5,029
Other Expense .....	–	1,683	–	1,683
Purchased Services .....	–	1,148	–	1,148
<b>Rebate Advantage .....</b>	<b>130,233</b>	<b>6,867</b>	–	<b>137,100</b>
Incentives .....	75,000	4,000	–	79,000
Labor/Administrative Expense .....	28,320	1,491	–	29,810
Other Expense .....	12,113	576	–	12,690
Purchased Services .....	14,800	800	–	15,600
<b>Residential New Construction Program .....</b>	<b>195,102</b>	<b>194</b>	–	<b>195,296</b>
Incentives .....	109,500	–	–	109,500
Labor/Administrative Expense .....	42,624	–	–	42,624
Other Expense .....	42,979	194	–	43,173
<b>Shade Tree Project .....</b>	<b>262,344</b>	–	–	<b>262,344</b>
Labor/Administrative Expense .....	45,791	–	–	45,791
Materials and Equipment .....	164	–	–	164
Other Expense .....	18,784	–	–	18,784
Purchased Services .....	197,605	–	–	197,605
<b>Weatherization Assistance for Qualified Customers .....</b>	–	–	<b>1,317,041</b>	<b>1,317,041</b>
Labor/Administrative Expense .....	–	–	73,212	73,212
Other Expense .....	–	–	51	51
Purchased Services .....	–	–	1,243,779	1,243,779
<b>Weatherization Solutions for Eligible Customers .....</b>	<b>84,428</b>	–	<b>3,292</b>	<b>87,719</b>
Labor/Administrative Expense .....	277	–	3,292	3,569
Other Expense .....	1,098	–	–	1,098
Purchased Services .....	83,052	–	–	83,052
<b>Commercial/Industrial Total</b>	<b>16,773,863</b>	<b>359,926</b>	<b>1,224</b>	<b>17,135,013</b>
<b>Commercial Energy-Saving Kits .....</b>	<b>53,167</b>	<b>2,397</b>	–	<b>55,563</b>
Labor/Administrative Expense .....	5,219	291	–	5,509
Other Expense .....	1,651	87	–	1,737
Purchased Services .....	46,297	2,019	–	48,317
<b>Custom Projects .....</b>	<b>11,221,008</b>	<b>136,943</b>	<b>1,224</b>	<b>11,359,176</b>
Incentives .....	8,795,637	24,929	–	8,820,565
Labor/Administrative Expense .....	471,661	24,850	1,224	497,735
Materials and Equipment .....	100	5	–	106

Sector/Program	Idaho Rider	Oregon Rider	Idaho Power	Total Program
Other Expense.....	315,308	28,747	–	344,055
Purchased Services.....	1,638,302	58,413	–	1,696,715
<b>New Construction .....</b>	<b>2,139,603</b>	<b>29,033</b>	–	<b>2,168,636</b>
Incentives .....	1,709,747	11,216	–	1,720,963
Labor/Administrative Expense.....	175,549	9,289	–	184,838
Other Expense .....	6,738	355	–	7,092
Purchased Services.....	247,570	8,174	–	255,743
<b>Retrofits .....</b>	<b>3,002,681</b>	<b>182,283</b>	–	<b>3,184,964</b>
Incentives .....	2,223,999	141,325	–	2,365,324
Labor/Administrative Expense.....	136,777	7,224	–	144,002
Materials and Equipment .....	966	0	–	966
Other Expense .....	9,001	474	–	9,474
Purchased Services.....	631,938	33,260	–	665,198
<b>Small Business Direct Install .....</b>	<b>357,404</b>	<b>9,270</b>	–	<b>366,674</b>
Labor/Administrative Expense.....	5,879	321	–	6,200
Other Expense .....	34,388	1,810	–	36,198
Purchased Services.....	317,137	7,139	–	324,276
<b>Irrigation Total .....</b>	<b>1,474,741</b>	<b>127,827</b>	<b>106,399</b>	<b>1,708,967</b>
<b>Irrigation Efficiency Rewards .....</b>	<b>1,474,741</b>	<b>127,827</b>	<b>106,399</b>	<b>1,708,967</b>
Incentives .....	1,103,512	108,230	–	1,211,742
Labor/Administrative Expense.....	301,459	15,997	106,399	423,854
Materials and Equipment .....	1,717	90	–	1,807
Other Expense .....	67,099	3,467	–	70,566
Purchased Services.....	954	44	–	998
<b>Market Transformation Total .....</b>	<b>2,589,987</b>	<b>136,315</b>	–	<b>2,726,302</b>
<b>NEAA .....</b>	<b>2,589,987</b>	<b>136,315</b>	–	<b>2,726,302</b>
Purchased Services.....	2,589,987	136,315	–	2,726,302
<b>Other Program and Activities Total .....</b>	<b>\$ 2,745,144</b>	<b>\$ 145,761</b>	<b>\$ (1,358)</b>	<b>\$ 2,889,547</b>
<b>Commercial/Industrial Energy Efficiency Overhead .....</b>	<b>890,300</b>	<b>47,055</b>	<b>(1)</b>	<b>937,354</b>
Labor/Administrative Expense.....	780,642	41,558	–	822,200
Other Expense .....	83,299	4,110	(1)	87,408
Purchased Services.....	26,359	1,387	–	27,746
<b>Energy Efficiency Direct Program Overhead .....</b>	<b>290,729</b>	<b>15,317</b>	–	<b>306,046</b>
Labor/Administrative Expense.....	278,971	14,698	–	293,669
Other Expense .....	11,758	619	–	12,376
<b>Oregon Commercial Audit.....</b>	–	<b>6,402</b>	–	<b>6,402</b>
Labor/Administrative Expense.....	–	1,053	–	1,053
Other Expense .....	–	149	–	149
Purchased Services.....	–	5,200	–	5,200
<b>Residential Energy Efficiency Education Initiative .....</b>	<b>359,242</b>	<b>13,430</b>	<b>(1,357)</b>	<b>371,316</b>
Labor/Administrative Expense.....	122,565	6,426	(1,357)	127,634
Materials and Equipment .....	75,626	1,475	–	77,101
Other Expense .....	79,041	3,959	–	83,000
Purchased Services.....	82,011	1,570	–	83,580
<b>Residential Energy Efficiency Overhead .....</b>	<b>1,204,872</b>	<b>63,557</b>	–	<b>1,268,429</b>
Labor/Administrative Expense.....	256,514	14,307	–	270,821
Materials and Equipment .....	–	(119)	–	(119)
Other Expense.....	935,606	48,979	–	984,585
Purchased Services.....	12,752	390	–	13,142



Sector/Program	Idaho Rider	Oregon Rider	Idaho Power	Total Program
<b>Indirect Program Expenses Total</b>	<b>\$ 795,401</b>	<b>\$ 49,410</b>	<b>\$ 199,616</b>	<b>\$ 1,044,428</b>
<b>Energy Efficiency Accounting and Analysis</b>	<b>952,424</b>	<b>48,461</b>	<b>199,616</b>	<b>1,200,501</b>
Labor/Administrative Expense	437,181	23,019	189,352	649,553
Other Expense	37,886	719	10,264	48,869
Purchased Services	477,357	24,722	–	502,079
<b>Energy Efficiency Advisory Group</b>	<b>14,422</b>	<b>769</b>	<b>–</b>	<b>15,191</b>
Labor/Administrative Expense	11,674	624	–	12,298
Other Expense	2,749	145	–	2,894
<b>Special Accounting Entries</b>	<b>(171,445)</b>	<b>180</b>	<b>–</b>	<b>(171,264)</b>
Labor/Administrative Expense	(175,313)	–	–	(175,313)
Special Accounting Entry	3,869	180	–	4,049
<b>Demand Response Total</b>	<b>\$ 2,289,359</b>	<b>\$ 586,078</b>	<b>\$ 8,488,165</b>	<b>\$ 11,363,602</b>
<b>Residential Total</b>	<b>1,536,873</b>	<b>85,060</b>	<b>365,690</b>	<b>1,987,623</b>
<b>A/C Cool Credit</b>	<b>1,536,873</b>	<b>85,060</b>	<b>365,690</b>	<b>1,987,623</b>
Incentives	–	4,115	365,690	369,805
Labor/Administrative Expense	97,273	5,128	–	102,401
Materials and Equipment	920,136	48,887	–	969,023
Other Expense	78,971	3,777	–	82,749
Purchased Services	440,494	23,152	–	463,645
<b>Commercial/Industrial Total</b>	<b>135,731</b>	<b>242,133</b>	<b>698,285</b>	<b>1,076,149</b>
<b>Flex Peak Program</b>	<b>135,731</b>	<b>242,133</b>	<b>698,285</b>	<b>1,076,149</b>
Incentives	–	236,885	694,935	931,819
Labor/Administrative Expense	93,503	4,931	3,350	101,784
Other Expense	5,628	296	–	5,924
Purchased Services	36,600	21	–	36,621
<b>Irrigation Total</b>	<b>616,755</b>	<b>258,884</b>	<b>7,424,190</b>	<b>8,299,830</b>
<b>Irrigation Peak Rewards</b>	<b>616,755</b>	<b>258,884</b>	<b>7,424,190</b>	<b>8,299,830</b>
Incentives	–	231,527	7,394,482	7,626,008
Labor/Administrative Expense	161,748	8,568	29,708	200,024
Materials and Equipment	39,949	2,103	–	42,051
Other Expense	52,794	3,242	–	56,036
Purchased Services	362,264	13,445	–	375,709
<b>Grand Total</b>	<b>\$ 30,229,460</b>	<b>\$ 1,489,400</b>	<b>\$ 10,260,613</b>	<b>\$ 41,979,473</b>

Note: Total does not sum due to rounding.

**Table 3. 2023 Demand response program and portfolio \$ per kW year**

Program	Max Demand Capacity (MW)	Max Demand Capacity (kW)	2023 Expenses	2023 Estimated Max Expenses (60 Hours) <sup>1</sup>	\$ per kW year <sup>2</sup>
A/C Cool Credit	25.3	25,324	\$1,987,623	\$1,617,818	\$29.93
Flex Peak Programs	38.8	38,827	\$1,076,149	\$1,413,398	\$36.40
Irrigation Peak Rewards	252.1	252,066	\$8,299,830	\$2,429,905	\$42.57
<b>Total Demand Response Portfolio</b>	<b>316.2</b>	<b>316,217</b>	<b>\$11,363,602</b>	<b>\$5,461,121</b>	<b>\$40.80</b>

<sup>1</sup> 2023 expenses with estimated variable payments based on maximum 60 hours of operation. A/C Cool Credit Estimated Max Expenses adjusted for demand response units purchased in bulk in 2023 and transferred to overheads in 2024. Total does not sum due to rounding.

<sup>2</sup> \$ per kW year = 2023 Estimated Max Expenses 60 Hours/Max Demand Capacity kW.

Table 4. Cost-effectiveness of 2023 programs by benefit/cost test

Program/Sector	UCT	TRC	RIM	PCT
Educational Distributions .....	1.76	2.07	0.50	N/A
Energy Efficient Lighting <sup>1</sup> .....	1.69	1.51	0.44	4.07
Heating & Cooling Efficiency Program .....	0.94	0.40	0.36	0.88
Home Energy Report Program.....	1.32	1.45	0.49	n/a
Multifamily Energy Efficiency Program <sup>2</sup> .....	n/a	n/a	n/a	n/a
Rebate Advantage .....	0.98	0.93	0.28	4.23
Residential New Construction Program.....	1.05	1.25	0.34	3.85
Shade Tree Project.....	0.31	0.42	0.27	n/a
Weatherization Assistance for Qualified Customers .....	0.14	0.23	0.11	n/a
Weatherization Solutions for Eligible Customers .....	0.13	0.19	0.10	n/a
<b>Residential Energy Efficiency Sector<sup>3</sup>.....</b>	<b>1.12</b>	<b>0.95</b>	<b>0.41</b>	<b>3.38</b>
Commercial and Industrial Energy Efficiency Program				
Custom Projects .....	2.91	1.44	0.95	1.41
New Construction .....	2.78	2.74	0.70	3.81
Retrofits .....	2.35	1.17	0.68	1.53
Commercial Energy-Saving Kits <sup>1</sup> .....	1.02	1.17	0.50	n/a
Small Business Direct Install <sup>4</sup> .....	0.97	1.48	0.47	n/a
<b>Commercial/Industrial Energy Efficiency Sector<sup>5</sup>.....</b>	<b>2.74</b>	<b>1.48</b>	<b>0.85</b>	<b>1.63</b>
Irrigation Efficiency Rewards .....	2.05	2.22	0.84	2.29
<b>Irrigation Energy Efficiency Sector<sup>6</sup>.....</b>	<b>2.06</b>	<b>2.22</b>	<b>0.84</b>	<b>2.29</b>
<b>Energy Efficiency Portfolio<sup>7</sup>.....</b>	<b>2.06</b>	<b>1.51</b>	<b>0.75</b>	<b>1.89</b>

<sup>1</sup> Program closed June 30, 2023.

<sup>2</sup> Program launched on November 1, 2023, and incurred costs, but no savings were realized in 2023.

<sup>3</sup> Residential sector cost-effectiveness excludes WAQC benefits and costs. If included, the UCT, TRC, RIM, and PCT would be 0.87, 0.74, 0.37, and 2.73, respectively.

<sup>4</sup> Program closed March 31, 2023.

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

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

<sup>7</sup> Portfolio cost-effectiveness excludes WAQC benefits and costs. If included, the UCT, TRC, RIM, and PCT would be 1.97, 1.47, 0.73, and 1.88, respectively.

## COST-EFFECTIVENESS TABLES BY PROGRAM

### Educational Distributions

Segment: Residential  
2023 Program Results

Cost Inputs		Ref
Program Administration .....	\$ 902,287	
Program Incentives.....	–	I
<b>Total UC</b> .....	<b>\$ 902,287</b>	P
Measure Equipment and Installation (Incremental Participant Cost) .....	\$ –	M

Net Benefit Inputs (NPV)		Ref
<b>Resource Savings</b>		
2023 Annual Gross Energy (kWh) .....	3,960,690	
NPV Cumulative Energy (kWh) .....	28,454,914	\$ 1,589,536 S
10% Credit (Northwest Power Act).....	158,954	
<b>Total Electric Savings</b> .....	<b>\$ 1,748,489</b>	A
<b>Participant Bill Savings</b>		
NPV Cumulative Participant Bill Savings .....	\$ 2,299,392	B
<b>Other Benefits</b>		
Non-Utility Rebates/Incentives.....	\$ –	NUI
NEBs .....	\$ 116,677	NEB

**Notes:** Energy savings as reported by Tinker for the 2022–2023 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.....	\$	1,589,536	\$ 902,287	1.76
TRC Test .....		1,865,167	902,287	2.07
RIM Test.....		1,589,536	3,201,680	0.50
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 .....	4.71%
Escalation Rate .....	2.30%
Net-to-Gross (NTG).....	100%
Minimum NTG Sensitivity.....	57%
Average Customer Segment Rate/kWh .....	\$0.087
Line Losses.....	9.60%

Year: 2023

Program: Educational Distributions

Market Segment: Residential Program Type: Energy Efficiency

Measure Name	Measure Descriptions	Replacing	Measure Unit	End Use	Measure Life (yrs) <sup>a</sup>	Benefit			Cost			B/C Tests		Source/ Notes
						Gross Energy Savings (kWh/yr) <sup>b</sup>	NPV DSM Avoided Costs <sup>c</sup>	NEB	Incremental Participant Cost <sup>d</sup>	Incentive/ Unit	Admin Cost (\$/kWh) <sup>e</sup>	UCT Ratio <sup>f</sup>	TRC Ratio <sup>g</sup>	
Student Energy Efficiency Kit (SEEK) Program	2022–2023 kit offering. Kits include: high-efficiency showerhead, showertimer, 3 LEDs, FilterTone alarm, digital thermometer, LED nightlight.	No kit	Kit	IPC_Student Kits	10	229.22	\$115.19	\$8.66	–	–	\$0.178	2.83	3.32	1
Welcome Kit Q1-Q2 2023	Four 1,050 to 1,489 lumen general purpose lightbulbs; Two LED night lights	No kit	Kit	IPC_Welcome Kit	10	43.16	\$17.81	\$0.33	–	–	\$0.412	1.00	1.12	2, 3
Welcome Kit Q3-Q4 2023	Four 1,050 to 1,489 lumen general purpose lightbulbs (no savings); Two LED night lights	No kit	Kit	IPC_Welcome Kit	8	24.00	\$7.90				\$0.329	1.00	1.10	3
Nightlight Give away	LED night light	baseline lightbulb	Lamp	ResLightingExterior	8	12.00	\$3.95	–	–	–	\$0.129	2.56	2.82	3

<sup>a</sup> Average measure life.

<sup>b</sup> Estimated kWh savings measured at the customer’s meter, excluding line losses.

<sup>c</sup> 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 2021 *Integrated Resource Plan*. TRC Test Benefit calculation includes 10% conservation adder from the Northwest Power Act

<sup>d</sup> No participant costs.

<sup>e</sup> Average program administration and overhead costs to achieve each kWh of savings for each initiative. Calculated from 2023 actuals.

<sup>f</sup> UCT Ratio = (NPV DSM Avoided Costs) / ((Admin Cost/kWh \* kWh Savings) + Incentives)

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

<sup>1</sup> Tinker. Idaho Power Student Energy Efficiency Kit Program. School Year 2022–2023 Annual Report. 2023.

<sup>2</sup> RTF. ResLighting\_Lightbulbs\_v9\_4.xlsm. 2021.

<sup>3</sup> DNV GL. Idaho Power Educational Distributions Impact and Process Evaluation. 2020.

## Energy Efficient Lighting

Segment: Residential  
2023 Program Results

Cost Inputs			Ref
Program Administration .....	\$	146,527	
Program Incentives.....		147,670	I
<b>Total UC</b> .....	<b>\$</b>	<b>294,197</b>	<b>P</b>
Measure Equipment and Installation (Incremental Participant Cost)	\$	255,996	M

Net Benefit Inputs (NPV)			Ref
<b>Resource Savings</b>			
2023 Annual Gross Energy (kWh) .....		883,491	
NPV Cumulative Energy (kWh) .....	9,670,680	\$	496,956 S
10% Credit (Northwest Power Act).....		49,696	
<b>Total Electric Savings</b> .....	<b>\$</b>	<b>546,652</b>	<b>A</b>
<b>Participant Bill Savings</b>			
NPV Cumulative Participant Bill Savings.....	\$	830,247	B
<b>Other Benefits</b>			
Non-Utility Rebates/Incentives.....	\$	–	NUI
NEBs .....	\$	63,150	NEB

Summary of Cost-Effectiveness Results			
Test	Benefit	Cost	Ratio
UC Test.....	\$ 496,956	\$ 294,197	1.69
TRC Test .....	609,802	402,523	1.51
RIM Test.....	496,956	1,124,444	0.44
PCT .....	1,041,067	255,996	4.07

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 .....	4.71%
Escalation Rate .....	2.30%
Net-to-Gross (NTG) .....	100%
Minimum NTG Sensitivity.....	59%
Average Customer Segment Rate/kWh .....	\$0.087
Line Losses.....	9.60%

Note: NEBs include PV of periodic lightbulb replacement costs.  
Program closed June 30, 2023.

Year: 2023

Program: Energy Efficient Lighting

Market Segment: Residential

Program Type: Energy Efficiency

Measure Name	Measure Descriptions	Replacing	Measure Unit	End Use	Measure Life (yrs) <sup>a</sup>	Benefit			Cost			B/C Tests		Source/ Notes
						Annual Gross Energy Savings (kWh/yr) <sup>b</sup>	NPV DSM Alternate Costs <sup>c</sup>	NEB	Gross Incremental Participant Cost <sup>d</sup>	Incentive/ Unit	Admin Cost (\$/kWh) <sup>e</sup>	UCT Ratio <sup>f</sup>	TRC Ratio <sup>g</sup>	
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	\$2.40	\$0.32	\$1.83	\$1.00	\$0.166	1.36	1.14	1
Globe	Retail_LED_Globe_250 to 1049 lumens	Baseline lightbulb	Fixture	Res Lighting Interior and Exterior	13	3.49	\$1.80	\$0.33	\$2.06	\$0.50	\$0.166	1.67	0.87	1,2
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	\$3.69	\$0.28	\$1.66	\$1.00	\$0.166	1.69	1.52	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	\$3.40	\$0.28	\$1.81	\$1.00	\$0.166	1.62	1.38	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	\$2.32	\$0.26	\$1.61	\$0.50	\$0.166	1.86	1.19	1
Reflectors and Outdoor	Retail_LED_Reflectors and Outdoor_1050 to 1489 lumens	Baseline lightbulb	Fixture	Res Lighting Interior and Exterior	13	4.14	\$2.13	\$0.27	\$0.50	\$1.00	\$0.166	1.26	2.20	1
Reflectors and Outdoor	Retail_LED_Reflectors and Outdoor_1490 to 2600 lumens	Baseline lightbulb	Fixture	Res Lighting Interior and Exterior	13	8.84	\$4.55	\$0.33	\$0.01	\$2.00	\$0.166	1.31	3.62	1
Reflectors and Outdoor	Retail_LED_Reflectors and Outdoor_250 to 1049 lumens	Baseline lightbulb	Fixture	Res Lighting Interior and Exterior	13	4.65	\$2.40	\$0.34	\$0.59	\$1.00	\$0.166	1.35	2.19	1
LED Fixture Retailer	Retail_Bathroom Vanity_1000 to 1999 lumens	Baseline fixture	Fixture	Res Lighting Interior and Exterior	20	5.35	\$3.51	\$0.13	\$2.17	\$1.00	\$0.166	1.86	1.31	3
LED Fixture Retailer	Retail_Bathroom Vanity_2000 to 3999 lumens	Baseline fixture	Fixture	Res Lighting Interior and Exterior	20	10.42	\$6.85	\$0.43	\$4.24	\$2.00	\$0.166	1.84	1.33	3
LED Fixture Retailer	Retail_Ceiling and Wall Flush Mount_500 to 999 lumens	Baseline fixture	Fixture	Res Lighting Interior and Exterior	20	3.33	\$2.19	\$0.13	\$0.93	\$0.50	\$0.166	2.08	1.71	3
LED Fixture Retailer	Retail_Ceiling and Wall Flush Mount_1000 to 1999 lumens	Baseline fixture	Fixture	Res Lighting Interior and Exterior	20	6.13	\$4.03	\$0.13	\$1.70	\$1.00	\$0.166	2.00	1.68	3
LED Fixture Retailer	Retail_Ceiling and Wall Flush Mount_2000 to 3999 lumens	Baseline fixture	Fixture	Res Lighting Interior and Exterior	20	11.93	\$7.84	\$0.56	\$3.32	\$2.00	\$0.166	1.97	1.73	3
LED Fixture Retailer	Ceiling and Wall Flush Mount_4000 to 7999 lumens	Baseline fixture	Fixture	Res Lighting Interior and Exterior	20	22.35	\$14.68	\$0.82	\$6.22	\$3.00	\$0.166	2.19	1.71	3
LED Fixture Retailer	Retail_Downlight Fixture_500 to 999 lumens	Baseline fixture	Fixture	Res Lighting Interior and Exterior	20	2.13	\$1.40	\$0.13	\$0.10	\$1.00	\$0.166	1.03	3.68	3
LED Fixture Retailer	Retail_Downlight Fixture_1000 to 1999 lumens	Baseline fixture	Fixture	Res Lighting Interior and Exterior	20	3.91	\$2.57	\$0.56	\$0.19	\$1.00	\$0.166	1.56	4.04	3
LED Fixture Retailer	Retail_Downlight Fixture_2000 to 3999 lumens	Baseline fixture	Fixture	Res Lighting Interior and Exterior	20	7.62	\$5.01	\$0.82	\$0.38	\$1.00	\$0.166	2.21	3.85	3
LED Fixture Retailer	Retail_Exterior Porch_500 to 999 lumens	Baseline fixture	Fixture	Res Lighting Exterior	20	3.38	\$2.02	\$0.01	\$0.40	\$0.75	\$0.166	1.54	2.33	3
LED Fixture Retailer	Retail_Exterior Porch_1000 to 1999 lumens	Baseline fixture	Fixture	Res Lighting Exterior	20	6.22	\$3.72	\$0.26	\$0.74	\$1.00	\$0.166	1.83	2.46	3

Measure Name	Measure Descriptions	Replacing	Measure Unit	End Use	Measure Life (yrs) <sup>a</sup>	Benefit			Cost			B/C Tests		Source/ Notes
						Annual Gross Energy Savings (kWh/yr) <sup>b</sup>	NPV DSM Alternate Costs <sup>c</sup>	NEB	Gross Incremental Participant Cost <sup>d</sup>	Incentive/ Unit	Admin Cost (\$/kWh) <sup>e</sup>	UCT Ratio <sup>f</sup>	TRC Ratio <sup>g</sup>	
LED Fixture Retailer	Retail_ Exterior Porch_2000 to 3999 lumens	Baseline fixture	Fixture	Res Lighting Exterior	20	12.11	\$7.25	\$0.39	\$1.43	\$3.00	\$0.166	1.45	2.43	3
LED Fixture Retailer	Exterior Porch_4000 to 7999 lumens	Baseline fixture	Fixture	Res Lighting Exterior	20	22.68	\$13.58	\$0.78	\$2.69	\$4.00	\$0.166	1.75	2.44	3

<sup>a</sup> Average measure life.

<sup>b</sup> Estimated kWh savings measured at the customer’s meter, excluding line losses.

<sup>c</sup> 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 2021 IRP. TRC test benefit calculation includes 10% conservation adder from the Northwest Power Act.

<sup>d</sup> Incremental participant cost prior to customer incentives.

<sup>e</sup> Average program administration and overhead costs to achieve each kWh of savings. Calculated from 2023 actuals.

<sup>f</sup> UCT Ratio = (NPV DSM Alternate Costs) / ((Admin Cost/kWh \* kWh Savings) + Incentives)

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

<sup>1</sup> RTF. ResLighting\_Lightbulbs\_v9\_3.xlsm. Modified baseline for grocery, dollar, mass-merchandise, and small hardware stores. 2021.

<sup>2</sup> Measure cost-effective without inclusion of admin costs

<sup>3</sup> RTF. ResLighting\_Lightbulbs\_v9\_3.xlsm. 2021.

## Heating & Cooling Efficiency Program

Segment: Residential  
2023 Program Results

Cost Inputs			Ref
Program Administration .....	\$	308,044	
Program Incentives.....		316,004	I
<b>Total UC</b> .....	<b>\$</b>	<b>624,047</b>	<b>P</b>
Measure Equipment and Installation (Incremental Participant Cost) .....	\$	1,679,147	M
Net Benefit Inputs (NPV)			Ref
<b>Resource Savings</b>			
2023 Annual Gross Energy (kWh) .....		1,040,069	
NPV Cumulative Energy (kWh) .....		11,805,033	\$ 589,238 S
10% Credit (Northwest Power Act).....		58,924	
<b>Total Electric Savings</b> .....	<b>\$</b>	<b>648,162</b>	<b>A</b>
<b>Participant Bill Savings</b>			
NPV Cumulative Participant Bill Savings .....	\$	1,021,593	B
<b>Other Benefits</b>			
Non-Utility Rebates/Incentives.....	\$	–	NUI
NEBs .....	\$	139,308	NEB

Note: Participant costs offset by tax credit available as part of the *Inflation Reduction Act of 2022*.

Summary of Cost-Effectiveness Results			
Test	Benefit	Cost	Ratio
UC Test.....	\$ 589,238	\$ 624,047	0.94
TRC Test .....	787,470	1,987,191	0.40
RIM Test.....	589,238	1,645,641	0.36
PCT .....	1,476,905	1,679,147	0.88

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	
<b>Discount Rate</b>	
Nominal (WACC) .....	7.12%
Real ((1 + WACC) / (1 + Escalation)) – 1 .....	4.71%
Escalation Rate .....	2.30%
Net-to-Gross (NTG).....	100%
Minimum NTG Sensitivity .....	106%
Average Customer Segment Rate/kWh .....	\$0.087
Line Losses.....	9.60%



Year: 2023

Program: Heating & Cooling Efficiency Program

Market Segment: Residential

Program Type: Energy Efficiency

Measure Name	Measure Descriptions	Replacing	Measure Unit	End Use	Measure Life (yrs) <sup>a</sup>	Benefit			Cost			B/C Tests		Source/ Notes
						Annual Gross Energy Savings (kWh/yr) <sup>b</sup>	NPV DSM Avoided Costs <sup>c</sup>	NEB	Gross Incremental Participant Cost <sup>d</sup>	Incentive/ Unit	Admin Cost (\$/kWh) <sup>e</sup>	UCT Ratio <sup>f</sup>	TRC Ratio <sup>g</sup>	
Heat Pump Conversion	Existing and New 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	18	3,573.08	\$2,036.45	–	\$6,016.22	\$800.00	\$0.296	1.10	0.32	1, 2
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	18	151.62	\$86.41	–	\$2,111.29	\$250.00	\$0.296	0.29	0.04	1, 3
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	9,508.67	\$5,724.27	–	\$9,138.43	\$1,000.00	\$0.296	1.50	0.53	2, 4
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	10,540.00	\$6,345.13	–	\$7,282.09	\$3,000.00	\$0.296	1.04	0.67	2, 4
Ductless Heat Pump	Zonal to DHP. (Heating & Cooling Zone Weighted Average)	Zonal Electric	Unit	R-All-HVAC-ERconvertDHP-2023 weighted	15	1,164.07	\$454.10	\$814.67	\$3,088.55	\$750.00	\$0.296	0.41	0.38	5, 6
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	1,705.70	\$946.41	–	\$362.15	\$300.00	\$0.296	1.18	1.20	7
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	56.66	\$95.44	–	\$110.50	\$50.00	\$0.296	1.43	0.82	2, 8
High-Efficiency Air Conditioner	Minimum 17 SEER; minimum 13 EER	Current practice baseline	Unit	R-All-HVAC-CAC-All-All-E	18	196.32	\$330.70	–	\$565.29	\$150.00	\$0.296	1.59	0.58	2, 8
Evaporative Cooler	Evaporative Cooler	Central A/C	Unit	R-All-HVAC-CAC-All-All-E	12	653.12	\$871.54	–	\$220.70	\$150.00	\$0.296	2.54	2.31	9
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	436.00	\$196.89	–	\$526.68	\$350.00	\$0.296	0.41	0.33	6, 10
Electronically Commutated Motor (ECM) Blower Motor	ECM Blower Motor	permanent split capacitor (PSC) motor	Unit	R-All-Bld-Bldg-All-All-R	18	2,318.83	\$1,451.31	–	\$300.00	\$50.00	\$0.296	1.97	1.62	11
Whole-House Fan	Whole-House Fan	Displaced forced air dx cooling	Unit	R-All-HVAC-CAC-All-All-E	18	456.60	\$769.15	–	\$700.00	\$200.00	\$0.296	2.29	1.01	11

Measure Name	Measure Descriptions	Replacing	Measure Unit	End Use	Measure Life (yrs) <sup>a</sup>	Benefit			Cost			B/C Tests		Source/ Notes
						Annual Gross Energy Savings (kWh/yr) <sup>b</sup>	NPV DSM Avoided Costs <sup>c</sup>	NEB	Gross Incremental Participant Cost <sup>d</sup>	Incentive/ Unit	Admin Cost (\$/kWh) <sup>e</sup>	UCT Ratio <sup>f</sup>	TRC Ratio <sup>g</sup>	
Smart Thermostat	Smart Thermostat	Non wi-fi enabled thermostat/no thermostat	Unit	R-All-HVAC-ER-All-All-E	7	301.85	\$67.90	–	\$210.24	\$75.00	\$0.296	0.41	0.25	6, 12

<sup>a</sup> Average measure life.

<sup>b</sup> Estimated kWh savings measured at the customer’s meter, excluding line losses.

<sup>c</sup> 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 2021 IRP. TRC Test Benefit calculation includes 10% conservation adder from the Northwest Power Act.

<sup>d</sup> Incremental participant cost prior to customer incentives. Participant costs include tax credit from the *Inflation Reduction Act of 2022*.

<sup>e</sup> Average program administration and overhead costs to achieve each kWh of savings. Calculated from 2023 actuals.

<sup>f</sup> UCT Ratio = (NPV DSM Avoided Costs) / ((Admin Cost/kWh \* kWh Savings) + Incentives)

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

<sup>1</sup> RTF. ResSF&MHEExistingHVAC\_v6\_1.xlsx. 2022. Weighted average of 2023 participants in heating and cooling zones 1-3.

<sup>2</sup> Measure not cost-effective from TRC perspective.

<sup>3</sup> Measure removed from the offering as of November 1, 2023

<sup>4</sup> RTF. ResGSHP\_v2\_7. 2016. Weighted average of 2023 participants in heating and cooling zones 1-3.

<sup>5</sup> RTF. ResDHPforZonal\_v6\_1.xlsm. 2023. Weighted average of 2023 participants in heating and cooling zones 1-3.

<sup>6</sup> Measure not cost-effective. Offering modified in as of November 1, 2023.

<sup>7</sup> RTF. ResHPWH\_v6\_3.xlsm. 2023. Measure cost-effective without inclusion of admin costs.

<sup>8</sup> RTF. ResEfficientCentralAC\_v2\_2.xlsm. 2023.

<sup>9</sup> New Mexico Technical Resource Manual for the Calculation of Energy Efficiency Savings. Evaporative Cooling. Sante Fe. Discounted by 44.4% for proportion evaporative coolers replacing refrigerated air. 2019.

<sup>10</sup> RTF. ResSFDuctSealing\_v7\_3.xlsm. 2023.

<sup>11</sup> Idaho Power engineering calculations based on Integrated Design Lab inputs. 2015.

<sup>12</sup> RTF. ResConnectedTstats\_v3.1.xlsm. 2023.

# Home Energy Report

Segment: Residential  
2023 Program Results

Cost Inputs			Ref
Program Administration .....	\$	883,505	
Program Incentives.....		–	I
<b>Total UC</b> .....	<b>\$</b>	<b>883,505</b>	<b>P</b>
Measure Equipment and Installation (Incremental Participant Cost) .....	\$	–	M

Net Benefit Inputs (NPV)				Ref
<b>Resource Savings</b>				
2023 Annual Gross Energy (kWh) .....	17,659,087			
NPV Cumulative Energy (kWh) .....	19,355,910	\$	1,161,909	S
10% Credit (Northwest Power Act).....			116,191	
<b>Total Electric Savings</b> .....		<b>\$</b>	<b>1,278,100</b>	<b>A</b>
<b>Participant Bill Savings</b>				
NPV Cumulative Participant Bill Savings.....		\$	1,497,232	B
<b>Other Benefits</b>				
Non-Utility Rebates/Incentives.....		\$	–	NUI
NEBs .....		\$	–	NEB

Summary of Cost-Effectiveness Results				
Test		Benefit	Cost	Ratio
UC Test.....	\$	1,161,909	\$ 883,505	1.32
TRC Test .....		1,278,100	883,505	1.45
RIM Test.....		1,161,909	2,380,737	0.49
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 .....	4.71%
Escalation Rate .....	2.30%
Net-to-Gross (NTG).....	100%
Minimum NTG Sensitivity.....	76%
Average Customer Segment Rate/kWh .....	\$0.087
Line Losses.....	9.60%

**Note :** 2023 savings as reported by Harris Utility Consumer Analytics is 17,737,130 Wh. Idaho Power discounting savings by 0.44% for reporting and analysis as recommended by evaluators to account for potential double-counting of savings. Percentage will be reviewed in future evaluations.

## Rebate Advantage

Segment: Residential  
2023 Program Results

Cost Inputs			Ref
Program Administration .....	\$	58,100	
Program Incentives.....		79,000	I
<b>Total UC</b> .....	<b>\$</b>	<b>137,100</b>	<b>P</b>
Measure Equipment and Installation (Incremental Participant Cost) .....	\$	101,500	M

Net Benefit Inputs (NPV)				Ref
<b>Resource Savings</b>				
2023 Annual Gross Energy (kWh) .....		214,236		
NPV Cumulative Energy (kWh) .....	3,470,681	\$	134,342	S
10% Credit (Northwest Power Act).....			13,434	
<b>Total Electric Savings</b> .....	<b>\$</b>	<b>147,776</b>		<b>A</b>
<b>Participant Bill Savings</b>				
NPV Cumulative Participant Bill Savings.....	\$	350,437		B
<b>Other Benefits</b>				
Non-Utility Rebates/Incentives.....	\$	–		NUI
NEBs .....	\$	–		NEB

Summary of Cost-Effectiveness Results				
Test		Benefit	Cost	Ratio
UC Test.....	\$	134,342	\$ 137,100	0.98
TRC Test .....		147,776	159,600	0.93
RIM Test.....		134,342	487,536	0.28
PCT .....		429,437	101,500	4.23

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 .....	4.71%
Escalation Rate .....	2.30%
Net-to-Gross (NTG).....	100%
Minimum NTG Sensitivity.....	102%
Average Customer Segment Rate/kWh .....	\$0.087
Line Losses.....	9.60%

Note: Participant costs offset by \$2,500 tax credit available to the home builder as part of the Inflation Reduction Act of 2022, Section 45L Tax Credit for Energy Efficient New Homes.

Year: 2023

Program: Rebate Advantage

Market Segment: Residential

Program Type: Energy Efficiency

Measure Name	Measure Descriptions	Replacing	Measure Unit	End Use	Measure Life (yrs) <sup>a</sup>	Benefit			Cost			B/C Tests		Source/ Notes
						Annual Gross Energy Savings (kWh/yr) <sup>b</sup>	NPV DSM Avoided Costs <sup>c</sup>	NEB	Gross Incremental Participant Cost <sup>d</sup>	Incentive/ Unit	Admin Cost (\$/kWh) <sup>e</sup>	UCT Ratio <sup>f</sup>	TRC Ratio <sup>g</sup>	
ENERGY STAR <sup>h</sup> 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	\$1,287.28	–	\$703.09	\$1,000.00	\$0.271	0.82	1.12	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	\$1,877.50	–	\$703.09	\$1,000.00	\$0.271	1.03	1.36	1
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	\$1,878.65	–	\$703.09	\$1,000.00	\$0.271	1.03	1.36	1
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	\$1,880.35	–	\$703.09	\$1,000.00	\$0.271	1.03	1.36	1
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	\$2,374.10	–	\$703.09	\$1,000.00	\$0.271	1.17	1.50	1
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	\$1,604.21	–	\$2,800.82	\$1,000.00	\$0.271	0.94	0.50	1, 2, 3
NEEM home	NEEM_electric_HZ2_CZ1	Manufactured home built to HUD code.	Home	R-All-HVAC-ER-All-All-E	43	3,733.25	\$2,292.50	–	\$2,800.82	\$1,000.00	\$0.271	1.14	0.66	1, 3
NEEM home	NEEM_electric_HZ2_CZ2	Manufactured home built to HUD code.	Home	R-All-HVAC-ER-All-All-E	43	3,735.67	\$2,293.99	–	\$2,800.82	\$1,000.00	\$0.271	1.14	0.66	1, 3
NEEM home	NEEM_electric_HZ2_CZ3	Manufactured home built to HUD code.	Home	R-All-HVAC-ER-All-All-E	43	3,739.15	\$2,296.13	–	\$2,800.82	\$1,000.00	\$0.271	1.14	0.66	1, 3
NEEM home	NEEM_electric_HZ3_CZ1	Manufactured home built to HUD code.	Home	R-All-HVAC-ER-All-All-E	44	4,679.39	\$2,891.60	–	\$2,800.82	\$1,000.00	\$0.271	1.27	0.78	1, 3

<sup>a</sup> Average measure life.

<sup>b</sup> Estimated kWh savings measured at the customer's meter, excluding line losses.

<sup>c</sup> 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 2021 IRP. TRC Test Benefit calculation includes 10% conservation adder from the Northwest Power Act.

<sup>d</sup> Incremental participant cost prior to customer incentives. Participant costs include tax credit from the Inflation Reduction Act of 2022.

<sup>e</sup> Average program administration and overhead costs to achieve each kWh of savings. Calculated from 2023 actuals.

<sup>f</sup> UCT Ratio = (NPV DSM Avoided Costs) / ((Admin Cost/kWh \* kWh Savings) + Incentives)

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

<sup>h</sup> RTF. NewMHNewHomesandHVAC\_v5\_1.xlsm. 2023.

<sup>i</sup> Measure cost-effective from UCT perspective without the inclusion of admin expenses

<sup>j</sup> Measure not cost-effective from TRC perspective.

## Residential New Construction Program

Segment: Residential  
2023 Program Results

Cost Inputs			Ref
Program Administration .....	\$	85,796	
Program Incentives.....		109,500	I
<b>Total UC</b> .....	<b>\$</b>	<b>195,296</b>	<b>P</b>
Measure Equipment and Installation (Incremental Participant Cost) .....	\$	155,672	M

Net Benefit Inputs (NPV)				Ref
<b>Resource Savings</b>				
2023 Annual Gross Energy (kWh).....		234,945		
NPV Cumulative Energy (kWh) .....	3,926,534	\$	204,177	S
10% Credit (Northwest Power Act).....			20,418	
<b>Total Electric Savings</b> .....		<b>\$</b>	<b>224,595</b>	<b>A</b>
<b>Participant Bill Savings</b>				
NPV Cumulative Participant Savings.....		\$	412,053	B
<b>Other Benefits</b>				
Non-Utility Rebates/Incentives.....		\$	–	NUI
NEBs .....		\$	77,553	NEB

Summary of Cost-Effectiveness Results				
Test		Benefit	Cost	Ratio
UC Test.....	\$	204,177	\$ 195,296	1.05
TRC Test .....		302,149	241,468	1.25
RIM Test.....		204,177	607,349	0.34
PCT .....		599,106	155,672	3.85

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 .....	4.71%
Escalation Rate .....	2.30%
Net-to-Gross (NTG).....	100%
Minimum NTG Sensitivity.....	95%
Average Customer Segment Rate/kWh.....	\$0.087
Line Losses.....	9.60%

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

2023 cost-effectiveness ratios include evaluation expenses. If evaluation expense were removed from the program's cost-effectiveness, the UCT and TRC would be 1.23 and 1.42, respectively.

Participant costs offset by \$2,500 tax credit available to the home builder as part of the Inflation Reduction Act of 2022, Section 45L Tax Credit for Energy Efficient New Homes.

Year: 2023

Program: Residential New Construction Program

Market Segment: Residential Program Type: Energy Efficiency

Measure Name	Measure Descriptions	Replacing	Measure Unit	End Use	Measure Life (yrs) <sup>a</sup>	Benefit			Cost			B/C Tests		Source/ Notes
						Annual Gross Energy Savings (kWh/yr) <sup>b</sup>	NPV DSM Avoided Costs <sup>c</sup>	NEB	Gross Incremental Participant Cost <sup>d</sup>	Incentive/ Unit	Admin Cost (\$/kWh) <sup>e</sup>	UCT Ratio <sup>f</sup>	TRC Ratio <sup>g</sup>	
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	1,186.28	\$1,025.14	\$1,068.51	\$2,886.70	\$1,200.00	\$0.365	0.63	0.66	1, 2
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	59	2,218.83	\$1,933.29	\$1,178.81	\$1,504.36	\$1,500.00	\$0.365	0.84	1.43	1
Next Step Home - 20% or more above code <sup>h</sup>	Next Step Home - average per home savings.	Home built to International Energy Conservation Code 2018 Code. Adopted 2021.	Home	Prog_ ResNewConst	58	5,171.12	\$4,493.93	\$1,286.06	\$2,318.36	\$2,000.00	\$0.365	1.16	1.48	1

<sup>a</sup> Average measure life.

<sup>b</sup> Estimated kWh savings measured at the customer's meter, excluding line losses.

<sup>c</sup> 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 2021 IRP. TRC Test Benefit calculation includes 10% conservation adder from the Northwest Power Act.

<sup>d</sup> Incremental participant cost prior to customer incentives. Participant costs include tax credit from the *Inflation Reduction Act of 2022*.

<sup>e</sup> Average program administration and overhead costs to achieve each kWh of savings. Calculated from 2023 actuals.

<sup>f</sup> UCT Ratio = (NPV DSM Avoided Costs) / ((Admin Cost/kWh \* kWh Savings) + Incentives)

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

<sup>h</sup> NEEA circuit rider code enforcement initiative. 2023 average per home savings. Costs and NEBs from RTF: RESNCMTHouse\_ID\_v3\_1\_.xls. 2019.

<sup>i</sup> Measure not cost-effective. Will be monitored in 2024.

## Shade Tree Project

Segment: Residential  
2023 Program Results

Cost Inputs			Ref
Program Administration .....	\$	262,344	
Program Incentives.....		–	I
<b>Total UC</b> .....	<b>\$</b>	<b>262,344</b>	<b>P</b>
Measure Equipment and Installation (Incremental Participant Cost) .....	\$	–	M
Net Benefit Inputs (NPV)			Ref
<b>Resource Savings</b>			
2023 Annual Gross Energy (kWh) from 2019 plantings.....		11,199	
Cumulative Energy (kWh) from 2023 plantings.....		820,035	
NPV Cumulative Energy (kWh) .....	164,533	\$ 65,919	S
10% Credit (Northwest Power Act).....		6,592	
<b>Total Electric Savings</b> .....	<b>\$</b>	<b>72,510</b>	<b>A</b>
<b>Participant Bill Savings</b>			
NPV Cumulative Participant Bill Savings .....	\$	32,504	B
<b>Other Benefits</b>			
Non-Energy Impacts (Therms).....	\$	(11,466)	NEI
NEBs .....	\$	34,262	NEB

Summary of Cost-Effectiveness Results			
Test	Benefit	Cost	Ratio
UC Test.....	\$ 81,739	\$ 262,344	0.31
TRC Test .....	109,957	262,344	0.42
RIM Test.....	81,739	302,649	0.27
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 .....	4.71%
Escalation Rate .....	2.30%
Net-to-Gross (NTG).....	124%
Minimum NTG Sensitivity .....	396%
Average Customer Segment Rate/kWh .....	\$0.087
Line Losses.....	9.60%

**Note:** Annual Report shows incremental savings from the 2019 planting year. Cost-effectiveness based on the trees distributed in 2023 to coincide with the 2023 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. Non-energy impacts include costs associated with increased home heating energy. Other non-energy benefits associated with air quality, stormwater runoff, and carbon dioxide. 2023 cost-effectiveness ratios include evaluation expenses. If evaluation expense were removed from the program's cost-effectiveness, the UCT and TRC would be 0.33 and 0.45, respectively.



# Weatherization Assistance for Qualified Customers

Segment: Residential  
2023 Program Results

Cost Inputs	WAQC Only	Re-Weatherization	Total	Ref
Program Administration .....	\$ 156,955	32,573	189,528	
Community Action Partnership (CAP) Agency Payments .....	\$ 813,298	325,732	1,139,030	
<b>Total UC</b> .....	<b>\$ 970,253</b>	<b>358,306</b>	<b>\$1,328,558</b>	P
Accruals/Reversal of Carryover Dollars .....	(11,517)	–	(11,517)	
<b>Total Program Expenses</b> .....	<b>958,736</b>	<b>358,306</b>	<b>1,317,041</b>	
Idaho Power Indirect Overhead Expense Allocation—2.488%.....	\$ 24,140	8,915	33,055	OH
Additional State Funding .....	798,227	–	798,227	M
<b>Net Benefit Inputs (NPV)</b>				
Resource Savings	WAQC Only	Re-Weatherization	Total	Ref
2023 Annual Gross Energy (kWh).....	263,060	51,200	314,260	
NPV Cumulative Energy (kWh).....	\$ 3,909,144	760,846	4,669,990	
Avoided Costs .....	\$ 162,992	31,724	194,716	S
10% Credit (Northwest Power Act).....	\$ 16,299	3,172	19,472	
<b>Total Electric Savings</b> .....	<b>\$ 179,292</b>	<b>34,896</b>	<b>214,187</b>	A
<b>Participant Bill Savings</b>				
NPV Cumulative Participant Bill Savings.....	\$ 371,125	72,233	443,358	B
<b>Other Benefits</b>				
Non-Utility Rebates/Incentives.....	\$ –	–	–	NUI
NEBs .....				
Health and Safety .....	\$ 271,167	–	271,167	
Repair .....	4,451	–	4,451	
Other .....	–	–	–	
<b>NEBs Total</b> .....	<b>\$ 275,618</b>	<b>–</b>	<b>275,618</b>	NEB

**Notes:** Savings updated in 2020 and 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.

Summary of Cost-Effectiveness Results			
Test	Benefit	Cost	Ratio
<b>Total</b>			
UC Test.....	\$ 194,716	\$ 1,361,613	0.14
TRC Test .....	489,805	2,159,840	0.23
RIM Test.....	194,716	1,804,971	0.11
PCT .....	N/A	N/A	N/A
<b>WAQC Only</b>			
UC Test.....	\$ 162,992	\$ 994,392	0.16
TRC Test .....	454,910	1,792,619	0.25
RIM Test.....	162,992	1,365,518	0.12
PCT .....	N/A	N/A	N/A
<b>Re-weatherization Only</b>			
UC Test.....	\$ 31,724	\$ 367,220	0.09
TRC Test .....	34,896	367,220	0.10
RIM Test.....	31,724	439,453	0.07
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 .....	4.71%
Escalation Rate .....	2.30%
Net-to-Gross (NTG).....	100%
Minimum NTG Sensitivity.....	699%
Average Customer Segment Rate/kWh .....	\$0.087
Line Losses.....	9.60%

## Weatherization Solutions for Eligible Customers

Segment: Residential  
2023 Program Results

Cost Inputs		Ref
Program Administration .....	\$ 12,644	
Weatherization LLC Payments .....	75,075	
<b>Total Program Expenses</b> .....	<b>\$ 87,719</b>	
<b>Total UC</b> .....	<b>\$ 87,719</b>	P
Idaho Power Indirect Overhead Expense Allocation—2.488%.....	2,182	OH
Additional State Funding .....	–	M

  

Net Benefit Inputs (NPV)		Ref
<b>Resource Savings</b>		
2023 Annual Gross Energy (kWh) .....	18,184	
NPV Cumulative Energy (kWh) .....	270,219	\$ 11,267 S
10% Credit (Northwest Power Act).....	1,127	
<b>Total Electric Savings</b> .....	<b>\$ 12,394</b>	A
<b>Participant Bill Savings</b>		
NPV Cumulative Participant Bill Savings.....	\$ 25,654	B
<b>Other Benefits</b>		
Non-Utility Rebates/Incentives.....	\$ –	NUI
NEBs .....		
Health and Safety .....	1,695	
Repair .....	2,195	
Other .....	809	
<b>NEBs Total</b> .....	<b>\$ 4,699</b>	NEB

**Notes:** Savings updated in 2020 and 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.....	\$ 11,267	\$ 89,902	0.13
TRC Test .....	17,093	89,902	0.19
RIM Test.....	11,267	115,556	0.10
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 .....	4.71%
Escalation Rate .....	2.30%
Net-to-Gross (NTG).....	100%
Minimum NTG Sensitivity .....	798%
Average Customer Segment Rate/kWh .....	\$0.087
Line Losses.....	9.60%

## Commercial Energy-Saving Kits

Segment: Commercial  
2023 Program Results

Cost Inputs			Ref
Program Administration .....	\$	55,563	
Program Incentives.....		–	I
<b>Total UC</b> .....	<b>\$</b>	<b>55,563</b>	<b>P</b>
Measure Equipment and Installation (Incremental Participant Cost) .....	\$	–	M

Net Benefit Inputs (NPV)				Ref
<b>Resource Savings</b>				
2023 Annual Gross Energy (kWh) .....		190,827		
NPV Cumulative Energy (kWh) .....	1,093,906	\$	56,567	S
10% Credit (Northwest Power Act).....		5,657		
<b>Total Electric Savings</b> .....	<b>\$</b>	<b>62,224</b>		<b>A</b>
<b>Participant Bill Savings</b>				
NPV Cumulative Participant Bill Savings.....	\$	58,418		B
<b>Other Benefits</b>				
Non-Utility Rebates/Incentives.....	\$	–		NUI
NEBs .....	\$	3,055		NEB

Summary of Cost-Effectiveness Results				
Test		Benefit	Cost	Ratio
UC Test.....	\$	56,567	\$ 55,563	1.02
TRC Test .....		65,280	55,563	1.17
RIM Test.....		56,567	113,982	0.50
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 .....	4.71%
Escalation Rate .....	2.30%
Net-to-Gross (NTG).....	100%
Minimum NTG Sensitivity.....	98%
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.  
Program closed June 30, 2023.

Year: 2023

Program: Commercial Energy-Saving Kits

Market Segment: Commercial Program Type: Energy Efficiency

Measure Name	Measure Descriptions	Replacing	Measure Unit	End Use	Measure Life (yrs) <sup>a</sup>	Benefit			Cost			B/C Tests		Source/ Notes
						Annual Gross Energy Savings (kWh/yr) <sup>b</sup>	NPV DSM Avoided Costs <sup>c</sup>	NEB	Gross Incremental Participant Cost <sup>d</sup>	Incentive/ Unit	Admin Cost (\$/kWh) <sup>e</sup>	UCT Ratio <sup>f</sup>	TRC Ratio <sup>g</sup>	
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	6	170.84	\$50.64	\$2.74	-	-	\$0.291	1.02	1.17	1

<sup>a</sup> Average measure life.

<sup>b</sup> Estimated kWh savings measured at the customer's meter, excluding line losses.

<sup>c</sup> 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 2021 IRP. TRC Test Benefit calculation includes 10% conservation adder from the Northwest Power Act.

<sup>d</sup> Incremental participant cost prior to customer incentives.

<sup>e</sup> Average program administration and overhead costs to achieve each kWh of savings. Calculated from 2023 actuals.

<sup>f</sup> UCT Ratio = (NPV DSM Avoided Costs) / ((Admin Cost/kWh \* kWh Savings) + Incentives)

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

<sup>h</sup> Estimated savings based on average hours of use by building type and self reported electric water heat saturations. Hours of use from TRM. Installations rates from 2022 evaluation.

## Custom Projects

Segment: Industrial  
2023 Program Results

Cost Inputs			Ref
Program Administration .....	\$	2,538,611	
Program Incentives.....		8,820,565	I
<b>Total UC</b> .....	<b>\$</b>	<b>11,359,176</b>	<b>P</b>
Measure Equipment and Installation (Incremental Participant Cost) .....	\$	23,689,808	M

Net Benefit Inputs (NPV)				Ref
<b>Resource Savings</b>				
2023 Annual Gross Energy (kWh) .....		60,667,088		
NPV Cumulative Energy (kWh) .....		637,787,255	\$ 33,011,082	S
10% Credit (Northwest Power Act).....			3,301,108	
<b>Total Electric Savings</b> .....	<b>\$</b>		<b>36,312,191</b>	<b>A</b>
<b>Participant Bill Savings</b>				
NPV Cumulative Participant Savings.....	\$	23,207,895		B
<b>Other Benefits</b>				
Non-Utility Rebates/Incentives.....	\$	–		NUI
NEBs .....	\$	1,393,885		NEB

Summary of Cost-Effectiveness Results			
Test	Benefit	Cost	Ratio
UC Test.....	\$ 33,011,082	\$ 11,359,176	2.91
TRC Test .....	37,706,076	26,228,419	1.44
RIM Test.....	33,011,082	34,567,071	0.95
PCT .....	\$33,422,345	23,689,808	1.41

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 .....	4.71%
Escalation Rate .....	2.30%
Net-to-Gross (NTG).....	100%
Minimum NTG Sensitivity .....	34%
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.

Year: 2023

Program: Custom Projects

Market Segment: Industrial

Program Type: Energy Efficiency

Measure Name	Measure Descriptions	Replacing	Measure Unit	End Use	Measure Life (yrs) <sup>a</sup>	Benefit			Cost			B/C Tests		Source/ Notes
						Annual Gross Energy Savings (kWh/yr) <sup>b</sup>	NPV DSM Avoided Costs <sup>c</sup>	NEB	Gross Incremental Participant Cost <sup>d</sup>	Incentive/ Unit	Admin Cost (\$/kWh) <sup>e</sup>	UCT Ratio <sup>f</sup>	TRC Ratio <sup>g</sup>	
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	\$183.39	-	\$164.20	\$15.00	\$0.044	4.79	1.08	1
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	\$245.40	-	\$183.19	\$20.00	\$0.044	4.80	1.26	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	\$344.26	-	\$209.31	\$25.00	\$0.044	5.33	1.52	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	\$370.82	-	\$229.88	\$30.00	\$0.044	5.10	1.50	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	\$431.83	-	\$280.92	\$40.00	\$0.044	4.81	1.44	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	\$464.74	-	\$310.99	\$50.00	\$0.044	4.49	1.40	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	\$488.75	-	\$366.78	\$60.00	\$0.044	4.20	1.27	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	\$503.01	-	\$396.46	\$75.00	\$0.044	3.79	1.22	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	\$663.90	-	\$491.81	\$100.00	\$0.044	3.76	1.29	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	\$766.90	-	\$490.22	\$125.00	\$0.044	3.60	1.46	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	\$911.63	-	\$546.05	\$150.00	\$0.044	3.58	1.54	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	\$1,209.20	-	\$657.37	\$200.00	\$0.044	3.57	1.67	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	\$1,463.58	-	\$844.89	\$250.00	\$0.044	3.50	1.59	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	\$1,747.21	-	\$854.01	\$300.00	\$0.044	3.49	1.82	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	\$2,036.92	-	\$895.10	\$350.00	\$0.044	3.49	1.98	1

Measure Name	Measure Descriptions	Replacing	Measure Unit	End Use	Measure Life (yrs) <sup>a</sup>	Benefit			Cost			B/C Tests		Source/ Notes
						Annual Gross Energy Savings (kWh/yr) <sup>b</sup>	NPV DSM Avoided Costs <sup>c</sup>	NEB	Gross Incremental Participant Cost <sup>d</sup>	Incentive/ Unit	Admin Cost (\$/kWh) <sup>e</sup>	UCT Ratio <sup>f</sup>	TRC Ratio <sup>g</sup>	
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	\$2,309.55	–	\$999.75	\$400.00	\$0.044	3.47	2.01	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	\$2,593.89	–	\$1,092.80	\$450.00	\$0.044	3.47	2.05	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	\$2,886.12	–	\$1,180.59	\$500.00	\$0.044	3.47	2.10	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	\$3,905.94	–	\$1,776.70	\$600.00	\$0.044	3.72	1.93	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	\$4,537.58	–	\$1,938.36	\$700.00	\$0.044	3.71	2.03	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	\$5,174.81	–	\$2,150.67	\$800.00	\$0.044	3.71	2.07	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	\$5,809.33	–	\$2,371.02	\$900.00	\$0.044	3.70	2.10	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	\$6,427.53	–	\$2,555.22	\$1,000.00	\$0.044	2.55	1.73	1
Continuous Energy Improvement Cohort for Schools	Strategic energy management offering	No change	Participant	Commercial-School-Misc	1	75,405.00	\$3,556.40	–	\$48,889.00	\$1,885.13	\$0.044	0.68	0.07	2, 3
Water Supply Optimization Cohort	Strategic energy management offering	No change	Participant	I-WaterSupply-Mot-All-All-All-U	1	553,108.00	\$31,472.45	–	\$2,489.75	\$1,742.82	\$0.044	1.20	1.28	2, 4
Find & Fix	Energy management offering	No change	Participant	I-All-SecTotal-All-All-All-E	1	591,263.00	\$33,956.64	–	\$12,375.00	\$11,766.83	\$0.044	0.89	0.97	2, 4
Compressed Air Leak Repairs	Energy management offering	No change	Participant	I-All-SecTotal-All-All-All-E	1	5,190,646.00	\$298,102.36	–	\$114,415.49	\$98,464.44	\$0.044	0.91	0.95	2, 4
Facility Tune up	Energy management offering	No change	Participant	I-All-SecTotal-All-All-All-E	1	1,150,703.00	\$66,085.66	–	\$9,000.00	\$9,000.00	\$0.044	1.10	1.21	2, 4

<sup>a</sup> Average measure life.

<sup>b</sup> Estimated kWh savings measured at the customer's meter, excluding line losses.

<sup>c</sup> 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 2021 IRP. TRC Test Benefit calculation includes 10% conservation adder from the Northwest Power Act.

<sup>d</sup> Incremental participant cost prior to customer incentives.

<sup>e</sup> Average program administration and overhead costs to achieve each kWh of savings. Calculated from 2023 actuals.

<sup>f</sup> UCT Ratio = (NPV DSM Avoided Costs) / ((Admin Cost/kWh \* kWh Savings) + Incentives)

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

<sup>1</sup> RTF. Ind\_and\_Ag\_GreenMotorRewind\_v4\_0.xlsm. 2022.

<sup>2</sup> 2023 total cohort savings.

<sup>3</sup> Offering cost-effective from UCT perspective without inclusion of admin costs. Participation in the cohort lead to capital projects totaling 826,298 kWh paid in 2023 within CIEE.

<sup>4</sup> Offering cost-effective from UCT and TRC perspective without inclusion of admin costs.

## New Construction

Segment: Commercial  
2023 Program Results

Cost Inputs			Ref
Program Administration .....	\$	447,674	
Program Incentives.....		1,720,963	I
<b>Total UC</b> .....	<b>\$</b>	<b>2,168,636</b>	<b>P</b>
Measure Equipment and Installation (Incremental Participant Cost) .....	\$	2,543,260	M
Net Benefit Inputs (NPV)			Ref
<b>Resource Savings</b>			
2023 Annual Gross Energy (kWh) .....		10,642,465	
NPV Cumulative Energy (kWh) .....		111,884,031	
10% Credit (Northwest Power Act).....		603,340	
<b>Total Electric Savings</b> .....	<b>\$</b>	<b>6,636,735</b>	<b>A</b>
<b>Participant Bill Savings</b>			
NPV Cumulative Participant Bill Savings .....	\$	6,413,017	B
<b>Other Benefits</b>			
Non-Utility Rebates/Incentives.....	\$	–	NUI
NEBs .....	\$	1,553,461	NEB

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

Summary of Cost-Effectiveness Results				
Test		Benefit	Cost	Ratio
UC Test.....	\$	6,033,395	\$ 2,168,636	2.78
TRC Test .....		8,190,196	2,990,934	2.74
RIM Test.....		6,033,395	8,581,653	0.70
PCT .....		9,687,440	2,543,260	3.81

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 .....	4.71%
Escalation Rate .....	2.30%
Net-to-Gross (NTG).....	100%
Minimum NTG Sensitivity .....	36%
Average Customer Segment Rate/kWh .....	\$0.058
Line Losses.....	9.60%



Year: 2023

Program: New Construction

Market Segment: Commercial

Program Type: Energy Efficiency

Measure Name	Measure Descriptions	Replacing	Measure Unit	End Use	Measure Life (yrs) <sup>a</sup>	Benefit			Cost			B/C Tests		Source/ Notes
						Annual Gross Energy Savings (kWh/yr) <sup>b</sup>	NPV DSM Avoided Costs <sup>c</sup>	NEB	Gross Incremental Participant Cost <sup>d</sup>	Incentive/ Unit	Admin Cost (\$/kWh) <sup>e</sup>	UCT Ratio <sup>f</sup>	TRC Ratio <sup>g</sup>	
Lighting	Interior Light Load Reduction. Part A: 10-19.9% below code.	Code standards	ft <sup>2</sup>	C-All-Lgt-LPD Int-All-All-E	14	0.43	\$0.24	–	\$0.13	\$0.10	\$0.044	1.99	1.75	1
Lighting	Interior Light Load Reduction. Part B: 20-29.9% below code.	Code standards	ft <sup>2</sup>	C-All-Lgt-LPD Int-All-All-E	14	0.86	\$0.47	–	\$0.25	\$0.20	\$0.044	1.99	1.81	1
Lighting	Interior Light Load Reduction. Part C: Equal to or greater than 30% below code.	Code standards	ft <sup>2</sup>	C-All-Lgt-LPD Int-All-All-E	14	1.95	\$1.07	–	\$0.58	\$0.30	\$0.044	2.78	1.77	1
Lighting	Exterior Light Load Reduction. Minimum of 15% below code.	Code standards	kW	Commercial-Misc. Com-ExtLight	15	4,059.00	\$2,687.55	–	\$287.00	\$200.00	\$0.044	7.07	6.33	1
Lighting	Networked Lighting Controls - Interior	Code standards	kWh	C-All-Lgt-LPD Int-All-All-E	12	1.00	\$0.50	–	\$0.33	\$0.26	\$0.044	1.64	1.45	1
Lighting	Networked Lighting Controls - Exterior	Code standards	kWh	Commercial-Misc. Com-ExtLight	12	1.00	\$0.57	–	\$0.33	\$0.20	\$0.044	2.35	1.67	1
Lighting	Occupancy Sensors	Code standards	Sensor	C-All-Lgt-LPD Int-All-All-E	8	329.00	\$123.23	–	\$134.00	\$25.00	\$0.044	3.11	0.91	1, 2
Lighting	High-Efficiency Exit Signs	Code standards	Sign	IPC_8760	16	28.00	\$16.32	–	\$10.83	\$7.50	\$0.044	1.87	1.49	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	\$38.41	–	\$79.00	\$25.00	\$0.044	1.42	0.52	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	\$71.92	–	\$123.00	\$50.00	\$0.044	1.33	0.62	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	\$58.84	–	\$36.00	\$50.00	\$0.044	1.11	1.65	1
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	\$84.99	–	\$67.00	\$70.00	\$0.044	1.14	1.31	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	\$71.10	–	\$93.00	\$35.00	\$0.044	1.83	0.81	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	\$97.25	–	\$108.00	\$55.00	\$0.044	1.61	0.94	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	\$79.27	–	\$36.00	\$50.00	\$0.044	1.46	2.16	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	\$105.43	–	\$71.00	\$85.00	\$0.044	1.16	1.51	1

Measure Name	Measure Descriptions	Replacing	Measure Unit	End Use	Measure Life (yrs) <sup>a</sup>	Benefit			Cost			B/C Tests		Source/ Notes
						Annual Gross Energy Savings (kWh/yr) <sup>b</sup>	NPV DSM Avoided Costs <sup>c</sup>	NEB	Gross Incremental Participant Cost <sup>d</sup>	Incentive/ Unit	Admin Cost (\$/kWh) <sup>e</sup>	UCT Ratio <sup>f</sup>	TRC Ratio <sup>g</sup>	
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	\$54.76	–	\$225.00	\$40.00	\$0.044	1.27	0.26	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	\$108.70	–	\$370.00	\$100.00	\$0.044	1.03	0.32	1, 2
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	\$104.61	–	\$145.00	\$100.00	\$0.044	0.99	0.76	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	\$97.27	–	\$209.00	\$80.00	\$0.044	1.15	0.50	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	\$58.17	–	\$103.00	\$40.00	\$0.044	1.36	0.61	2, 4
A/C	Airside economizer	IECC 2018 Code standards	Ton of cooling	C-AII-HVAC-CAC-AII-AII-E	15	197.00	\$161.00	–	\$81.36	\$75.00	\$0.044	1.92	1.97	1
A/C	Water-side Economizer	IECC 2018 Code Standard	Combined chiller tonnage	C-AII-HVAC-CAC-AII-AII-E	10	153.00	\$96.46	–	\$725.82	\$50.00	\$0.044	1.70	0.14	1, 2
A/C	Direct evaporative cooler	IECC 2018 Code standards	Tons	C-AII-HVAC-CAC-AII-AII-E	15	315.00	\$257.44	–	\$364.00	\$200.00	\$0.044	1.20	0.75	1, 2
A/C	Indirect evaporative cooler	IECC 2018 Code Standard	Tons	C-AII-HVAC-CAC-AII-AII-E	15	225.00	\$183.88	–	\$1,553.00	\$130.00	\$0.044	1.31	0.13	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	\$51.49	–	\$173.00	\$30.00	\$0.044	1.57	0.32	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	\$89.90	–	\$173.00	\$30.00	\$0.044	2.58	0.56	1, 2
Building Shell	Reflective roof treatment	IECC 2018 Code Standard	ft <sup>2</sup> roof area	C-AII-HVAC-CAC-AII-AII-E	15	0.12	\$0.09	–	\$0.05	\$0.05	\$0.044	1.72	1.89	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	\$129.91	\$19.79	\$162.00	\$60.00	\$0.044	1.85	0.95	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	\$234.07	\$19.79	\$198.00	\$80.00	\$0.044	2.39	1.28	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	\$270.70	\$32.99	\$233.00	\$100.00	\$0.044	2.24	1.30	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	\$324.49	\$69.27	\$269.00	\$120.00	\$0.044	2.24	1.45	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	\$353.11	\$69.27	\$304.00	\$140.00	\$0.044	2.11	1.38	1
Controls	Guest room energy management system	IECC 2018 Code standards	Ton	C-Lod-fan-SGS-AII-AII-S	11	550.00	\$293.76	–	\$57.50	\$50.00	\$0.044	3.95	3.95	1
Controls	Variable speed drive on HVAC system applications	IECC 2018 Code standards	HP	C-AII-HVAC-Vent-AII-AII-E	15	582.00	\$333.08	–	\$153.91	\$125.00	\$0.044	2.21	2.04	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	\$524.94	–	\$264.00	\$250.00	\$0.044	1.73	1.82	1

Measure Name	Measure Descriptions	Replacing	Measure Unit	End Use	Measure Life (yrs) <sup>a</sup>	Benefit			Cost			B/C Tests		Source/ Notes
						Annual Gross Energy Savings (kWh/yr) <sup>b</sup>	NPV DSM Avoided Costs <sup>c</sup>	NEB	Gross Incremental Participant Cost <sup>d</sup>	Incentive/ Unit	Admin Cost (\$/kWh) <sup>e</sup>	UCT Ratio <sup>f</sup>	TRC Ratio <sup>g</sup>	
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	\$2,609.98	–	\$248.00	\$250.00	\$0.044	5.75	6.36	1
Appliances with Electric Dryer	Efficient Laundry Machines (electric dryer)	IECC 2018 Code standards	Unit	Commercial-Misc. Com-Misc	9	814.50	\$320.97	\$2,183.52	\$400.00	\$200.00	\$0.044	1.36	5.82	5
Refrigeration	Efficient Refrigeration Condenser	Code standards	Ton	C-Gro-Ref-All-All-All-E	15	114.00	\$66.47	–	\$192.00	\$40.00	\$0.044	1.48	0.37	1, 2
Automatic High-Speed Doo	Refrigerator to Dock	Code standards	ft <sup>2</sup>	Commercial-Ref. warehouse-Misc	16	360.00	\$211.79	–	\$167.00	\$80.00	\$0.044	2.21	1.27	1
Automatic High-Speed Door	Freezer to Refrigerator	Code standards	ft <sup>2</sup>	Commercial-Ref. warehouse-Misc	16	1,829.00	\$1,076.03	–	\$167.00	\$160.00	\$0.044	4.46	4.77	1
Automatic High-Speed Door	Freezer to Dock	Code standards	ft <sup>2</sup>	Commercial-Ref. warehouse-Misc	16	2,531.00	\$1,489.02	–	\$167.00	\$320.00	\$0.044	3.44	5.87	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	\$9,855.11	–	\$3,185.00	\$2,000.00	\$0.044	3.59	2.76	1
Compressed Air	Air compressor VFD	No existing VFD	HP	Commercial-Misc. Com-Misc	13	949.00	\$480.89	–	\$223.00	\$200.00	\$0.044	1.99	2.00	1
Compressed Air	No-Loss Condensate Drain	Open tube with ball valve	HP	Commercial-Misc. Com-Misc	10	1,970.00	\$837.42	–	\$194.00	\$200.00	\$0.044	2.91	3.27	1
Compressed Air	Low Pressure Drop Filter	Standard filter	HP	Commercial-Misc. Com-Misc	10	44.00	\$18.70	–	\$10.00	\$10.00	\$0.044	1.57	1.72	1
Compressed Air	Refrigerated Compressed Air Dryer	Standard air dryer	CFM	Commercial-Misc. Com-Misc	13	10.62	\$5.38	–	\$6.00	\$3.00	\$0.044	1.55	0.91	1, 2
Compressed Air	Efficient Compress Air Nozzle	Code standards	unit	Commercial-Misc. Com-Misc	15	2,223.00	\$1,229.33	–	\$85.00	\$80.00	\$0.044	6.88	7.37	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	\$1,048.49	–	\$70.00	\$100.00	\$0.044	4.74	6.03	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	\$900.67	–	\$120.00	\$150.00	\$0.044	3.54	4.42	1
Dairy VFD	VFD on milking vacuum pump	No existing VFD	VFD	A-Da-Proc-MilkingSchedule-All-All-S	10	548.00	\$274.58	–	\$273.00	\$170.00	\$0.044	1.41	1.02	1, 2
Dairy VFD	VFD on milking transfer pump	No existing VFD	VFD	A-Da-Proc-MilkingSchedule-All-All-S	10	7,687.00	\$3,851.67	–	\$1,469.00	\$1,500.00	\$0.044	2.09	2.34	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	\$423.53	–	\$239.00	\$200.00	\$0.044	1.70	1.62	1
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	\$954.67	–	\$573.00	\$350.00	\$0.044	2.07	1.54	1

Measure Name	Measure Descriptions	Replacing	Measure Unit	End Use	Measure Life (yrs) <sup>a</sup>	Benefit			Cost			B/C Tests		Source/ Notes
						Annual Gross Energy Savings (kWh/yr) <sup>b</sup>	NPV DSM Avoided Costs <sup>c</sup>	NEB	Gross Incremental Participant Cost <sup>d</sup>	Incentive/ Unit	Admin Cost (\$/kWh) <sup>e</sup>	UCT Ratio <sup>f</sup>	TRC Ratio <sup>g</sup>	
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	\$1,679.19	–	\$573.00	\$500.00	\$0.044	2.42	2.41	1
Ice Machines	ENERGY STAR Ice Machine <200 lbs per day	non ENERGY STAR ice machine	unit	C-All-Ref-Refrig-All-All-C	9	285.00	\$116.90	–	\$311.00	\$100.00	\$0.044	1.04	0.40	1, 2
Ice Machines	ENERGY STAR Ice Machine >= 200 lbs per day	non ENERGY STAR ice machine	unit	C-All-Ref-Refrig-All-All-C	9	2,608.00	\$1,069.78	–	\$311.00	\$300.00	\$0.044	2.57	2.76	1
High-Efficiency Battery Chargers	High-Efficiency Battery Chargers - Single or Three Phase	Code standards	unit	Commercial-Fleet_EV_Charger	15	3,337.00	\$1,778.68	–	\$400.00	\$200.00	\$0.044	5.11	3.57	1
Indoor Pool Cover	No pool cover	Code standards	per sq ft	Residential-Spa Heater	10	23.50	\$12.64	–	\$4.99	\$2.00	\$0.044	4.15	2.30	7

<sup>a</sup> Average measure life.

<sup>b</sup> Estimated kWh savings measured at the customer’s meter, excluding line losses.

<sup>c</sup> 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 2021 IRP. TRC Test Benefit calculation includes 10% conservation adder from the Northwest Power Act.

<sup>d</sup> Incremental participant cost prior to customer incentives.

<sup>e</sup> Average program administration and overhead costs to achieve each kWh of savings. Calculated from 2023 actuals.

<sup>f</sup> UCT Ratio = (NPV DSM Avoided Costs) / ((Admin Cost/kWh \* kWh Savings) + Incentives)

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

<sup>1</sup> Idaho Power TRM prepared by ADM Associates, Inc. 2021.

<sup>2</sup> Idaho only measure.

<sup>3</sup> Idaho Power TRM prepared by ADM Associates, Inc. 2021. Averaged air-cooled chillers.

<sup>4</sup> Idaho Power TRM prepared by ADM Associates, Inc. 2021. Averaged water-cooled chillers.

<sup>5</sup> Idaho Power TRM prepared by ADM Associates, Inc. 2021. NEBs from water savings from RTF. ComClothesWashers\_v7\_1.xlsm. Simple average. 2023.

<sup>6</sup> Measure not cost-effective. Measure cost-effective without inclusion of admin costs.

<sup>7</sup> Idaho Power Multifamily TRM prepared by ADM Associates, Inc. 2023.

## Retrofits

Segment: Commercial  
2023 Program Results

Cost Inputs		Ref
Program Administration .....	\$ 819,640	
Program Incentives.....	2,365,324	I
<b>Total UC.....</b>	<b>\$ 3,184,964</b>	<b>P</b>
Measure Equipment and Installation (Incremental Participant Cost) .....	\$ 8,193,082	M

  

Net Benefit Inputs (NPV)		Ref
<b>Resource Savings</b>		
2023 Annual Gross Energy (kWh) .....	14,457,180	
NPV Cumulative Energy (kWh) .....	138,096,375	\$ 7,478,245 S
10% Credit (Northwest Power Act).....	747,825	
<b>Total Electric Savings.....</b>	<b>\$ 8,226,070</b>	<b>A</b>
<b>Participant Bill Savings</b>		
NPV Cumulative Participant Savings.....	\$ 7,783,397	B
<b>Other Benefits</b>		
Non-Utility Rebates/Incentives.....	\$ -	NUI
NEBs .....	\$ 2,353,461	NEB

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.

Summary of Cost-Effectiveness Results			
Test	Benefit	Cost	Ratio
UC Test.....	\$ 7,478,245	\$ 3,184,964	2.35
TRC Test .....	10,579,531	9,012,722	1.17
RIM Test.....	7,478,245	10,968,361	0.68
PCT .....	12,502,182	8,193,082	1.53

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	
<b>Discount Rate</b>	
Nominal (WACC) .....	7.12%
Real ((1 + WACC) / (1 + Escalation)) - 1 .....	4.71%
Escalation Rate .....	2.30%
Net-to-Gross (NTG).....	100%
Minimum NTG Sensitivity.....	43%
Average Customer Segment Rate/kWh .....	\$0.058
Line Losses.....	9.60%

Year: 2023

Program: Retrofits

Market Segment: Commercial

Program Type: Energy Efficiency

Measure Name	Measure Descriptions	Replacing	Measure unit	End Use	Measure Life (yrs) <sup>a</sup>	Benefit			Cost			B/C Tests		Source/ Notes
						Annual Gross Energy Savings (kWh/yr) <sup>b</sup>	NPV DSM Avoided Costs <sup>c</sup>	NEB	Gross Incremental Participant Cost <sup>d</sup>	Incentive/ Unit	Admin Cost (\$/kWh) <sup>e</sup>	UCT Ratio <sup>f</sup>	TRC Ratio <sup>g</sup>	
Permanent Fixture Removal	Permanent Fixture Removal		fixture	C-All-Lgt-LPD Int-All-All-E	2	873.61	\$99.04	-	\$29.08	\$22.69	\$0.044	1.61	1.61	1
LEDs	Pin-based LED	Pin-base lamp using higher wattage	fixture	C-All-Lgt-LPD Int-All-All-E	5	125.30	\$31.69	-	\$23.02	\$4.30	\$0.044	3.22	1.22	1
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	\$321.59	-	\$104.82	\$49.23	\$0.044	4.09	2.64	1
LEDs	LED Tubes (type A, B & DM)	fixture using higher wattage	fixture	C-All-Lgt-LPD Int-All-All-E	12	203.00	\$98.51	-	\$41.20	\$18.29	\$0.044	3.61	2.16	1
LEDs	LED Tubes (type C)	fixture using higher wattage	fixture	C-All-Lgt-LPD Int-All-All-E	12	310.10	\$150.48	-	\$99.04	\$31.01	\$0.044	3.36	1.47	1
LEDs	LED Level 1 Retrofit Kit	fixture using higher wattage	fixture	Commercial-All Com-IntLight	12	309.75	\$150.31	-	\$75.17	\$43.37	\$0.044	2.63	1.86	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	\$140.45	-	\$127.38	\$49.20	\$0.044	2.26	1.10	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	\$199.30	-	\$140.40	\$78.03	\$0.044	2.07	1.38	1
LEDs	LED Level 1 retrofit kit with networked/luminaire level lighting control strategy	fixture using higher wattage	fixture	C-All-Lgt-LPD Int-All-All-E	12	455.35	\$220.97	-	\$142.98	\$100.42	\$0.044	1.83	1.49	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	\$213.74	-	\$178.93	\$96.90	\$0.044	1.84	1.18	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	\$251.53	-	\$203.25	\$129.58	\$0.044	1.65	1.22	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	631.13	\$306.27	-	\$282.13	\$170.40	\$0.044	1.54	1.09	1
LEDs	LED fixture or LED Level 2 retrofit kit with networked/luminaire level lighting control strategy	fixture using higher wattage	fixture	C-All-Lgt-LPD Int-All-All-E	12	733.88	\$356.13	-	\$347.57	\$223.34	\$0.044	1.39	1.03	1
LED Exit Sign	LED Exit Sign	fixture using higher wattage	sign	IPC_8760	12	230.68	\$112.41	-	\$63.77	\$40.00	\$0.044	2.24	1.67	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	\$207.26	-	\$161.34	\$85.42	\$0.044	1.99	1.26	1
Lighting Controls (Idaho)	Lighting Controls	Manual controls	controls	C-All-Lgt-LPD Int-All-All-E	10	163.59	\$70.19	-	\$71.73	\$27.31	\$0.044	2.03	0.98	1, 3
Refrigeration Case Lighting	Refrigeration Case Lighting	fixture using higher wattage	lamp	C-All-Lgt-LPD Int-All-All-E	7	365.73	\$124.14	-	\$107.23	\$52.26	\$0.044	1.81	1.11	1, 3
Permanent Fixture Removal	Permanent Fixture Removal		fixture	Commercial-Misc. Com-ExtLight	2	1,013.14	\$126.89	-	\$28.00	\$22.69	\$0.044	1.88	1.91	1
LEDs	Pin-based LED	Pin-base lamp using higher wattage	fixture	Commercial-Misc. Com-ExtLight	5	141.25	\$39.77	-	\$25.74	\$4.18	\$0.044	3.81	1.37	1

Measure Name	Measure Descriptions	Replacing	Measure unit	End Use	Measure Life (yrs) <sup>a</sup>	Benefit			Cost			B/C Tests		Source/ Notes
						Annual Gross Energy Savings (kWh/yr) <sup>b</sup>	NPV DSM Avoided Costs <sup>c</sup>	NEB	Gross Incremental Participant Cost <sup>d</sup>	Incentive/ Unit	Admin Cost (\$/kWh) <sup>e</sup>	UCT Ratio <sup>f</sup>	TRC Ratio <sup>g</sup>	
LEDs	HID LED screw-in replacement lamp	Existing HID lamp using > input watts	fixture	Commercial-Misc. Com-ExtLight	12	743.75	\$410.71	-	\$110.38	\$47.64	\$0.044	5.09	3.15	1
LEDs	LED Tubes (type A, B & DM)	fixture using higher wattage	fixture	Commercial-Misc. Com-ExtLight	12	287.20	\$158.59	-	\$63.89	\$18.12	\$0.044	5.14	2.28	1
LEDs	LED Tubes (type C)	fixture using higher wattage	fixture	Commercial-Misc. Com-ExtLight	12	297.93	\$164.52	-	\$113.66	\$29.79	\$0.044	3.83	1.43	1
LEDs	LED Level 1 Retrofit Kit	fixture using higher wattage	fixture	Commercial-All Com-ExtLight	12	661.62	\$365.35	-	\$132.28	\$92.63	\$0.044	3.00	2.49	1
LEDs	LED Level 1 retrofit kit with single control strategy	fixture using higher wattage	fixture	Commercial-Misc. Com-ExtLight	12	646.59	\$357.05	-	\$167.32	\$109.92	\$0.044	2.58	2.00	1
LEDs	LED Level 1 retrofit kit with multiple control strategy	fixture using higher wattage	fixture	Commercial-Misc. Com-ExtLight	12	850.79	\$469.81	-	\$202.36	\$161.55	\$0.044	2.36	2.15	1
LEDs	LED Level 1 retrofit kit with networked control strategy	fixture using higher wattage	fixture	Commercial-Misc. Com-ExtLight	12	933.44	\$515.45	-	\$218.51	\$205.68	\$0.044	2.09	2.18	1
LEDs	LED fixture or LED Level 2 retrofit kit	fixture using higher wattage	fixture	Commercial-Misc. Com-ExtLight	12	912.48	\$503.88	-	\$279.77	\$200.74	\$0.044	2.09	1.73	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	\$525.64	-	\$310.73	\$237.97	\$0.044	1.88	1.64	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	\$416.05	-	\$248.13	\$170.40	\$0.044	2.04	1.63	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	\$903.69	-	\$524.84	\$491.91	\$0.044	1.60	1.66	1
LED sign lighting retrofit kit	LED sign lighting retrofit kit	fixture using higher wattage	fixture	Commercial-Misc. Com-ExtLight	12	487.27	\$269.07	-	\$172.05	\$97.45	\$0.044	2.26	1.53	1
Lighting Controls	Lighting Controls	Manual controls	controls	Commercial-Misc. Com-ExtLight	10	366.19	\$177.84	-	\$109.09	\$30.12	\$0.044	3.84	1.56	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	\$124.22	-	\$940.00	\$85.00	\$0.044	1.35	0.14	3, 4
AC Units	Base to CEE Tier 2	working pre-existing system	tons	C-All-HVAC-CAC-All-All-E	15	193.00	\$157.73	-	\$984.00	\$110.00	\$0.044	1.33	0.17	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	\$131.58	-	\$1,093.00	\$100.00	\$0.044	1.23	0.13	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	\$105.43	-	\$1,078.00	\$75.00	\$0.044	1.31	0.11	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	\$106.24	-	\$1,237.00	\$75.00	\$0.044	1.32	0.09	3, 4
AC Units	Air-conditioning Tune Up		ton	C-All-HVAC-CAC-All-All-E	10	99.50	\$62.73	-	\$35.00	\$25.00	\$0.044	2.13	1.75	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	\$152.83	-	\$888.00	\$110.00	\$0.044	1.29	0.19	3, 4

Measure Name	Measure Descriptions	Replacing	Measure unit	End Use	Measure Life (yrs) <sup>a</sup>	Benefit			Cost			B/C Tests		Source/ Notes
						Annual Gross Energy Savings (kWh/yr) <sup>b</sup>	NPV DSM Avoided Costs <sup>c</sup>	NEB	Gross Incremental Participant Cost <sup>d</sup>	Incentive/ Unit	Admin Cost (\$/kWh) <sup>e</sup>	UCT Ratio <sup>f</sup>	TRC Ratio <sup>g</sup>	
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	\$178.98	-	\$919.00	\$130.00	\$0.044	1.28	0.21	3, 4
HP Units	Water-cooled HP that meets CEE Tier 1	working pre-existing system	tons	C-All-HVAC-CAC-All-All-E	15	129.00	\$105.43	-	\$971.00	\$75.00	\$0.044	1.31	0.12	3, 4
HP Units	<= 5 ton Air-cooled VRF. Base to CEE Tier 2	working pre-existing system	tons	C-All-HVAC-CAC-All-All-E	15	175.00	\$143.02	-	\$1,034.00	\$110.00	\$0.044	1.21	0.15	3, 4
HP Units	Air-cooled VRF. Base to CEE Tier 1	working pre-existing system	tons	C-All-HVAC-CAC-All-All-E	15	143.00	\$116.87	-	\$999.00	\$90.00	\$0.044	1.21	0.13	3, 4
HP Units	Water-cooled VRF that meets CEE Tier 1	working pre-existing system	tons	C-All-HVAC-CAC-All-All-E	15	75.00	\$61.29	-	\$1,187.00	\$45.00	\$0.044	1.27	0.06	3, 4
Chiller Units	Air-cooled chiller, IPLV 14.0 EER or higher	working pre-existing system	tons	C-All-HVAC-CAC-All-All-E	20	154.00	\$146.86	-	\$784.00	\$110.00	\$0.044	1.26	0.20	3, 5
Chiller Units	Water-cooled chiller electronically operated, reciprocating and positive displacement	working pre-existing system	tons	C-All-HVAC-CAC-All-All-E	20	91.00	\$86.78	-	\$596.00	\$60.00	\$0.044	1.36	0.16	3, 6
Economizers	Air-side economizer control addition	No prior control	Ton of cooling	C-All-HVAC-CAC-All-All-E	15	279.00	\$228.02	-	\$155.01	\$100.00	\$0.044	2.03	1.50	4
Economizers	Air-side economizer control repair	Non-functional economizer	Ton of cooling	C-All-HVAC-CAC-All-All-E	15	279.00	\$228.02	-	\$73.65	\$50.00	\$0.044	3.66	2.92	4
Economizers	Water-side economizer control addition	No prior control	Combined chiller tonnage	C-All-HVAC-CAC-All-All-E	10	153.00	\$96.46	-	\$725.82	\$50.00	\$0.044	1.70	0.14	3, 4
Evaporative Coolers	Direct evaporative cooler	Replacing standard AC unit	Ton	C-All-HVAC-CAC-All-All-E	15	350.00	\$286.04	-	\$1,178.00	\$200.00	\$0.044	1.33	0.26	3, 4
Evaporative Coolers	Indirect evaporative cooler	Replacing standard AC unit	ton	C-All-HVAC-CAC-All-All-E	15	250.00	\$204.31	-	\$2,367.00	\$130.00	\$0.044	1.45	0.09	3, 4
Evaporative Pre-Cooler on Air-Cooled Chillers	Evaporative Pre-Cooler on Air-Cooled Chillers	existing air-cooled condenser coil	ton	C-All-HVAC-CAC-All-All-E	15	63.00	\$51.49	-	\$173.00	\$30.00	\$0.044	1.57	0.32	3, 4
Package Terminal Air Conditioner (PTAC)	PTAC 13.2-14.3 EER	existing ptac	ton	C-All-HVAC-CAC-All-All-E	15	231.30	\$189.03	-	\$1,571.18	\$50.00	\$0.044	3.14	0.13	3, 4
PTAC	PTAC >=14.4 EER	existing ptac	ton	C-All-HVAC-CAC-All-All-E	15	279.49	\$228.42	-	\$1,735.62	\$75.00	\$0.044	2.61	0.14	3, 4
Package Terminal Heat Pump (PTHP)	PTHP 13.2-14.3 EER	existing pthp	ton	C-All-HVAC-Vent-All-All-E	15	436.45	\$249.78	-	\$918.00	\$50.00	\$0.044	3.60	0.29	3, 4
PTHP	PTHP >=14.4 EER	existing pthp	ton	C-All-HVAC-Vent-All-All-E	15	560.12	\$320.56	-	\$999.00	\$75.00	\$0.044	3.21	0.34	3, 4
Connected Thermostat	No existing connected (web-enabled) thermostat	No existing connected (web-enabled) thermostat	unit	C-All-HVAC-Vent-All-All-E	5	1,588.35	\$411.72	-	\$300.00	\$150.00	\$0.044	1.87	1.22	3, 15



Measure Name	Measure Descriptions	Replacing	Measure unit	End Use	Measure Life (yrs) <sup>a</sup>	Benefit			Cost			B/C Tests		Source/ Notes
						Annual Gross Energy Savings (kWh/yr) <sup>b</sup>	NPV DSM Avoided Costs <sup>c</sup>	NEB	Gross Incremental Participant Cost <sup>d</sup>	Incentive/ Unit	Admin Cost (\$/kWh) <sup>e</sup>	UCT Ratio <sup>f</sup>	TRC Ratio <sup>g</sup>	
Automated Control Systems	Energy Management System (EMS) controls with 1 strategy	Proposed strategy not existing (retrofit system)	tons of cooling	C-All-HVAC-Vent-All-All-E	15	372.00	\$212.90	\$26.39	\$198.00	\$100.00	\$0.044	1.83	1.21	4
Automated Control Systems	EMS controls with 2 strategies	Proposed strategy not existing (retrofit system)	tons of cooling	C-All-HVAC-Vent-All-All-E	15	622.00	\$355.97	\$19.79	\$233.00	\$150.00	\$0.044	2.00	1.58	4
Automated Control Systems	EMS controls with 3 strategies	Proposed strategy not existing (retrofit system)	tons of cooling	C-All-HVAC-Vent-All-All-E	15	811.00	\$464.14	\$59.38	\$269.00	\$175.00	\$0.044	2.20	1.87	4
Automated Control Systems	EMS controls with 4 strategies	Proposed strategy not existing (retrofit system)	tons of cooling	C-All-HVAC-Vent-All-All-E	15	1,728.00	\$988.93	\$316.68	\$304.00	\$200.00	\$0.044	3.58	3.69	4
Automated Control Systems	EMS controls with 5 strategies	Proposed strategy not existing (retrofit system)	tons of cooling	C-All-HVAC-Vent-All-All-E	15	1,796.00	\$1,027.85	\$319.98	\$340.00	\$225.00	\$0.044	3.37	3.46	4
Automated Control Systems	EMS controls with 1 strategy	Proposed strategy not existing (new system)	tons of cooling	C-All-HVAC-Vent-All-All-E	15	227.00	\$129.91	\$19.79	\$162.00	\$60.00	\$0.044	1.85	0.95	3, 4
Automated Control Systems	EMS controls with 2 strategies	Proposed strategy not existing (new system)	tons of cooling	C-All-HVAC-Vent-All-All-E	15	409.00	\$234.07	\$19.79	\$198.00	\$80.00	\$0.044	2.39	1.28	4
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	\$270.70	\$32.99	\$233.00	\$100.00	\$0.044	2.24	1.30	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	\$324.49	\$69.27	\$269.00	\$120.00	\$0.044	2.24	1.45	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	\$353.11	\$69.27	\$304.00	\$140.00	\$0.044	2.11	1.38	4
Automated Control Systems	Lodging room occupancy controls	Manual controls	Unit	C-Lod-fan-SGS-All-All-S	11	643.00	\$343.43	-	\$150.61	\$75.00	\$0.044	3.32	2.11	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	\$5,044.97	-	\$239.50	\$200.00	\$0.044	8.54	8.80	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	\$5.45	-	\$22.08	\$2.50	\$0.044	1.88	0.27	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	\$0.09	-	\$0.05	\$0.05	\$0.044	1.72	1.89	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	\$0.23	-	\$1.45	\$0.20	\$0.044	1.07	0.17	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	\$1.71	-	\$0.64	\$0.40	\$0.044	3.25	2.46	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	\$1.91	-	\$0.85	\$0.55	\$0.044	2.77	2.13	4
Laundry Machines	High efficiency washer	Standard washer, electric dryer	Machine	Commercial-Misc. Com-Misc	9	814.50	\$320.97	\$2,183.52	\$400.00	\$200.00	\$0.044	1.36	5.82	4, 7

Measure Name	Measure Descriptions	Replacing	Measure unit	End Use	Measure Life (yrs) <sup>a</sup>	Benefit			Cost			B/C Tests		Source/ Notes
						Annual Gross Energy Savings (kWh/yr) <sup>b</sup>	NPV DSM Avoided Costs <sup>c</sup>	NEB	Gross Incremental Participant Cost <sup>d</sup>	Incentive/ Unit	Admin Cost (\$/kWh) <sup>e</sup>	UCT Ratio <sup>f</sup>	TRC Ratio <sup>g</sup>	
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	\$17.99	-	\$4.40	\$5.00	\$0.044	2.07	2.45	4
HVAC Fan Motor Belts	Synchronous belt	Standard fan belt	HP	C-All-HVAC-Vent-All-All-E	4	213.00	\$46.18	-	\$67.00	\$25.00	\$0.044	1.34	0.66	3, 4
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	\$423.53	-	\$1,268.00	\$200.00	\$0.044	1.70	0.35	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	\$954.67	-	\$2,152.00	\$350.00	\$0.044	2.07	0.46	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	\$1,679.19	-	\$2,645.00	\$500.00	\$0.044	2.42	0.65	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	\$1,048.49	-	\$120.00	\$100.00	\$0.044	4.74	4.78	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	\$900.67	-	\$170.00	\$150.00	\$0.044	3.54	3.61	4
High Efficiency Battery Chargers	High Efficiency Battery Chargers	Standard battery charger	unit	Commercial-Fleet_EV_Charger	15	3,337.00	\$1,778.68	-	\$400.00	\$200.00	\$0.044	5.11	3.57	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	\$9,855.11	-	\$4,185.00	\$2,000.00	\$0.044	3.59	2.20	4
Compressed Air	VFD on air compressor	No existing VFD	HP	Commercial-Misc. Com-Misc	13	949.00	\$480.89	-	\$223.00	\$200.00	\$0.044	1.99	2.00	4
Compressed Air	Low Pressure Filter	Standard filter	HP	Commercial-Misc. Com-Misc	10	44.00	\$18.70	-	\$10.00	\$10.00	\$0.044	1.57	1.72	4
Compressed Air	No-Loss Condensate Drain	Open tube with ball valve	Unit	Commercial-Misc. Com-Misc	10	1,970.00	\$837.42	-	\$244.00	\$200.00	\$0.044	2.91	2.78	4
Compressed Air	Efficient Compress Air Nozzle	Standard air nozzle	Unit	Commercial-Misc. Com-Misc	15	2,223.00	\$1,229.33	-	\$85.00	\$80.00	\$0.044	6.88	7.37	4
Compressed Air	Efficient Refrigerated Compressed Air Dryer	Standard air dryer	CFM	Commercial-Misc. Com-Misc	13	10.62	\$5.38	-	\$6.00	\$3.00	\$0.044	1.55	0.91	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	\$950.95	-	\$736.00	\$400.00	\$0.044	1.86	1.23	4
Refrigeration	Install auto-closer - reach-in	Damaged auto-closer, low temp	Door	C-Gro-Ref-All-All-All-E	8	326.00	\$123.56	-	\$736.00	\$75.00	\$0.044	1.38	0.18	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	\$213.01	-	\$736.00	\$135.00	\$0.044	1.33	0.31	3, 4
Refrigeration	Install auto-closer - reach-in	Damaged auto-closer, med. Temp	Door	C-Gro-Ref-All-All-All-E	8	243.00	\$92.10	-	\$736.00	\$55.00	\$0.044	1.40	0.14	3, 4
Refrigeration	Anti-sweat heat controls	Low temp case without controls	Linear ft	C-Gro-Ref-All-All-All-E	8	292.00	\$110.67	-	\$77.26	\$50.00	\$0.044	1.76	1.35	3, 4

Measure Name	Measure Descriptions	Replacing	Measure unit	End Use	Measure Life (yrs) <sup>a</sup>	Benefit			Cost			B/C Tests		Source/ Notes
						Annual Gross Energy Savings (kWh/yr) <sup>b</sup>	NPV DSM Avoided Costs <sup>c</sup>	NEB	Gross Incremental Participant Cost <sup>d</sup>	Incentive/ Unit	Admin Cost (\$/kWh) <sup>e</sup>	UCT Ratio <sup>f</sup>	TRC Ratio <sup>g</sup>	
Refrigeration	Anti-sweat heat controls	Med.temp case without controls	Linear ft	C-Gro-Ref-All-All-All-E	8	220.00	\$83.38		\$77.26	\$50.00	\$0.044	1.40	1.05	3, 4
Refrigeration	Refrigerated case doors - med temp	No existing case door or barrier	Linear ft	C-Gro-Ref-All-All-All-E	15	700.00	\$408.14		\$342.73	\$130.00	\$0.044	2.53	1.20	2
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	\$63.59	-	\$173.00	\$30.00	\$0.044	1.82	0.39	3, 4
Refrigeration	No-heat glass door	commercial glass door	door	C-Gro-Ref-All-All-All-E	12	779.00	\$394.25	-	\$664.00	\$200.00	\$0.044	1.68	0.62	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	\$87.29	-	\$500.00	\$50.00	\$0.044	1.49	0.19	3, 4
Automatic high speed doors	Freezer to Dock	manual or electric warehouse door	sq ft	Commercial-Ref. warehouse-Misc	16	2,812.00	\$1,654.34	-	\$188.00	\$320.00	\$0.044	3.72	5.82	4
Automatic high speed doors	Freezer to Refrigerator	manual or electric warehouse door	sq ft	Commercial-Ref. warehouse-Misc	16	2,032.00	\$1,195.46	-	\$188.00	\$160.00	\$0.044	4.78	4.73	4
Automatic high speed doors	Refrigerator to Dock	manual or electric warehouse door	sq ft	Commercial-Ref. warehouse-Misc	16	400.00	\$235.33	-	\$188.00	\$80.00	\$0.044	2.41	1.26	4
Strip Curtain	For walk-in freezers	no protective barrier	sq ft	C-Gro-Ref-All-All-All-E	4	210.00	\$45.87	-	\$9.00	\$5.00	\$0.044	3.20	2.76	4
Strip Curtain	For walk-in refrigerators	no protective barrier	sq ft	C-Gro-Ref-All-All-All-E	4	78.00	\$17.04	-	\$9.00	\$5.00	\$0.044	2.01	1.50	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	\$201.51	-	\$228.08	\$100.00	\$0.044	1.75	0.91	3, 4
Floating Head/Suction Pressures	Head pressure controller	Standard head pressure control	HP	C-Gro-Ref-All-All-All-E	16	440.00	\$266.27	-	\$311.90	\$160.00	\$0.044	1.48	0.88	3, 4
Floating Head/Suction Pressures	Suction pressure controller	Standard suction pressure control	HP	C-Gro-Ref-All-All-All-E	16	104.00	\$62.94	-	\$86.91	\$40.00	\$0.044	1.41	0.76	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	\$2,609.98	-	\$469.00	\$250.00	\$0.044	5.75	4.27	4
Ice Machines	Ice Machines (<200 lbs/day)	code	per unit	C-All-Ref-Refrig-All-All-C	9	285.00	\$116.90	-	\$311.00	\$100.00	\$0.044	1.04	0.40	3, 4
Ice Machines	Ice Machines (>200 lbs/day)	code	per unit	C-All-Ref-Refrig-All-All-C	9	2,608.00	\$1,069.78	-	\$311.00	\$300.00	\$0.044	2.57	2.76	4
Commercial Kitchen Equipment	Efficient Hot Food Holding Cabinet (Half Size)	Standard hot food holding cabinet	per unit	C-All-Food-Cook-All-All-C	7	1,373.07	\$463.48	-	\$883.13	\$200.00	\$0.044	1.78	0.54	3, 8

Measure Name	Measure Descriptions	Replacing	Measure unit	End Use	Measure Life (yrs) <sup>a</sup>	Benefit			Cost			B/C Tests		Source/ Notes
						Annual Gross Energy Savings (kWh/yr) <sup>b</sup>	NPV DSM Avoided Costs <sup>c</sup>	NEB	Gross Incremental Participant Cost <sup>d</sup>	Incentive/ Unit	Admin Cost (\$/kWh) <sup>e</sup>	UCT Ratio <sup>f</sup>	TRC Ratio <sup>g</sup>	
Commercial Kitchen Equipment	Efficient Hot Food Holding Cabinet (Full Size)	Standard hot food holding cabinet	per unit	C-All-Food-Cook-All-All-C	7	2,602.55	\$878.48	-	\$3,184.56	\$400.00	\$0.044	1.70	0.29	3, 8
Commercial Kitchen Equipment	Efficient Hot Food Holding Cabinet (Double Size)	Standard hot food holding cabinet	per unit	C-All-Food-Cook-All-All-C	7	4,473.47	\$1,510.01	-	\$3,587.61	\$800.00	\$0.044	1.51	0.44	3, 8
New On-Demand Overwrapper	New On-Demand Overwrapper	Standard overwrapper	per unit	Commercial-Grocery-Process	10	1,270.77	\$585.73	-	\$294.33	\$100.00	\$0.044	3.75	1.84	9
Commercial Kitchen Equipment	ENERGY STAR listed electric combination oven (3-4 pans)	Standard electric oven	oven	C-All-Food-Cook-All-All-C	10	1,306.90	\$571.80	-	\$1,027.82	\$300.00	\$0.044	1.60	0.58	3, 10
Commercial Kitchen Equipment	ENERGY STAR listed electric combination oven (5-14 pans)	Standard electric oven	oven	C-All-Food-Cook-All-All-C	10	6,428.11	\$2,812.46	-	\$1,027.82	\$800.00	\$0.044	2.59	2.36	10
Commercial Kitchen Equipment	ENERGY STAR listed electric combination oven (15-28 pans)	Standard electric oven	oven	C-All-Food-Cook-All-All-C	10	5,640.26	\$2,467.75	-	\$1,027.82	\$800.00	\$0.044	2.35	2.12	10
Commercial Kitchen Equipment	ENERGY STAR listed electric combination oven (29-40 pans)	Standard electric oven	oven	C-All-Food-Cook-All-All-C	10	11,633.69	\$5,090.03	-	\$1,027.82	\$800.00	\$0.044	3.87	3.63	10
Commercial Kitchen Equipment	ENERGY STAR listed electric convection oven	Standard electric oven	oven	C-All-Food-Cook-All-All-C	12	1,206.40	\$596.79	-	\$553.07	\$180.00	\$0.044	2.56	1.08	3, 11
Commercial Kitchen Equipment	ENERGY STAR listed electric fryer	Standard fryer	fryer	C-All-Food-Cook-All-All-C	9	953.15	\$386.68	-	\$1,439.43	\$150.00	\$0.044	2.01	0.29	3, 12
Commercial Kitchen Equipment	ENERGY STAR listed electric steamer -Any Size	Standard steamer	pan	C-All-Food-Cook-All-All-C	8	1,689.45	\$628.98	-	\$-	\$30.00	\$0.044	6.00	6.59	13
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	\$355.97	-	\$184.55	\$125.00	\$0.044	2.33	1.85	4
Variable Speed Controls	Variable speed drive on potato and onion storage shed ventilation	no existing VFD	HP	A-SpudOnionVFD	10	1,193.00	\$372.74	-	\$264.00	\$250.00	\$0.044	1.23	1.29	4
Variable Speed Controls	VFD on milking vacuum pump	no existing VFD	HP	A-Da-Proc-MilkingSchedule-All-All-S	10	3,084.00	\$1,545.28	-	\$356.00	\$250.00	\$0.044	4.00	3.45	4
Variable Speed Controls	VFD on milking transfer pump	no existing VFD	HP	A-Da-Proc-MilkingSchedule-All-All-S	10	11,777.00	\$5,901.02	-	\$2,052.00	\$1,500.00	\$0.044	2.92	2.52	4
Indoor/Outdoor pool cover	No pool cover	No pool cover	per sq ft	Residential-Spa Heater	10	34.75	\$18.69	-	\$4.99	\$2.00	\$0.044	5.28	3.15	14

<sup>a</sup> Average measure life.

<sup>b</sup> Estimated kWh savings measured at the customer's meter, excluding line losses.

<sup>c</sup> 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 2021 IRP. Total Resource Cost Test Benefit calculation includes 10% conservation adder from the Northwest Power Act.

<sup>d</sup> Incremental participant cost prior to customer incentives.

<sup>e</sup> Average program administration and overhead costs to achieve each kWh of savings. Calculated from 2023 actuals.

<sup>f</sup> UCT Ratio = (NPV DSM Avoided Costs) / ((Admin Cost/kWh \* kWh Savings) + Incentives)

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

<sup>h</sup> Evergreen Consulting Group, LLC. Idaho Power Lighting Tool. 2023.

<sup>i</sup> Idaho Power engineering calculations..

<sup>j</sup> Idaho only measure.

<sup>k</sup> Idaho Power TRM prepared by ADM Associates, Inc. 2021.

<sup>l</sup> Idaho Power TRM prepared by ADM Associates, Inc. 2021. Averaged air-cooled chillers.

<sup>m</sup> Idaho Power TRM prepared by ADM Associates, Inc. 2021. Averaged water-cooled chillers.

<sup>n</sup> Idaho Power TRM prepared by ADM Associates, Inc. 2021. NEBs from water savings from RTF. ComClothesWashers\_v7\_1.xlsm. Simple average. 2023.

<sup>o</sup> RTF. ComCookingHotFoodCabinet\_v5\_1. 2023.

<sup>p</sup> RTF. ComOnDemandOverwrappers\_v3\_2. 2023.

<sup>q</sup> RTF. ComCookingCombinationOven\_v5\_0. 2023

<sup>r</sup> RTF. ComCookingConventionOven\_v5\_1. 2023

<sup>s</sup> RTF. ComCookingFryer\_v5\_1. 2023

<sup>t</sup> RTF. ComCookingSteamer\_v5\_1. Calculated per pan savings. 2023.

<sup>u</sup> Idaho Power Multifamily TRM prepared by ADM Associates, Inc. 2023.

<sup>v</sup> RTF. ComConnectedThermostat\_2\_1.xlsm. 2023. Savings shown based on average of 15 cooling tons.

## Small Business Direct Install

Segment: Commercial  
2023 Program Results

Cost Inputs		Ref
Program Administration .....	\$ 366,674	
Program Incentives.....	–	I
<b>Total UC.....</b>	<b>\$ 366,674</b>	<b>P</b>
Measure Equipment and Installation (Incremental Participant Cost) .....	\$ –	M

  

Net Benefit Inputs (NPV)		Ref
<b>Resource Savings</b>		
2023 Annual Gross Energy (kWh) .....	791,512	
NPV Cumulative Energy (kWh) .....	7,139,147	\$ 357,277 S
10% Credit (Northwest Power Act).....	35,728	
<b>Total Electric Savings.....</b>	<b>\$ 393,005</b>	<b>A</b>
<b>Participant Bill Savings</b>		
NPV Cumulative Participant Bill Savings.....	\$ 398,909	B
<b>Other Benefits</b>		
Non-Utility Rebates/Incentives.....	\$ –	NUI
NEBs .....	\$ 150,093	NEB

Summary of Cost-Effectiveness Results			
Test	Benefit	Cost	Ratio
UC Test.....	\$ 357,277	\$ 366,674	0.97
TRC Test .....	543,097	366,674	1.48
RIM Test.....	357,277	765,583	0.47
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 .....	4.71%
Escalation Rate .....	2.30%
Net-to-Gross (NTG).....	100%
Minimum NTG Sensitivity.....	103%
Average Customer Segment Rate/kWh .....	\$0.058
Line Losses.....	9.60%

Notes: NEB/impacts on a \$/kWh for each end-use. Based on 2019 impact evaluation of other C&I programs  
2023 cost-effectiveness ratios include evaluation expenses. If evaluation expense were removed from the program's cost-effectiveness, the UCT and TRC would be 1.08 and 1.64, respectively.  
Program closed March 31, 2023.

## Irrigation Efficiency Rewards

Segment: Irrigation  
2023 Program Results

Cost Inputs		Ref
Program Administration .....	\$ 497,225	
Program Incentives.....	1,211,742	I
<b>Total UC.....</b>	<b>\$ 1,708,967</b>	<b>P</b>
Measure Equipment and Installation (Incremental Participant Cost) .....	\$ 14,247,153	M

  

Net Benefit Inputs (NPV)		Ref
<b>Resource Savings</b>		
2023 Annual Gross Energy (kWh) .....	4,558,425	
NPV Cumulative Energy (kWh) .....	43,546,172	\$ 3,511,270 S
10% Credit (Northwest Power Act).....	351,127	
<b>Total Electric Savings.....</b>	<b>\$ 3,862,398</b>	<b>A</b>
<b>Participant Bill Savings</b>		
NPV Cumulative Participant Bill Savings .....	\$ 2,487,893	B
<b>Other Benefits</b>		
Non-Utility Rebates/Incentives.....	\$ -	NUI
NEBs .....	\$ 28,916,763	NEB

Summary of Cost-Effectiveness Results			
Test	Benefit	Cost	Ratio
UC Test.....	\$ 3,511,270	\$ 1,708,967	2.05
TRC Test .....	32,779,161	14,744,378	2.22
RIM Test.....	3,511,270	4,196,861	0.84
PCT .....	32,616,398	14,247,153	2.29

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 .....	4.71%
Escalation Rate .....	2.30%
Net-to-Gross (NTG).....	100%
Minimum NTG Sensitivity .....	49%
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.

2023 cost-effectiveness ratios include evaluation expenses. If evaluation expense were removed from the program's cost-effectiveness, the UCT and TRC would be 2.11 and 2.23, respectively.

Year: 2023

Program: Irrigation Efficiency Rewards

Market Segment: Irrigation

Program Type: Energy Efficiency

Measure Name <sup>a</sup>	Measure Descriptions	Replacing	Measure Unit	End Use	Measure Life (yrs) <sup>b</sup>	Benefit			Cost			B/C Tests		Sources/ Notes
						Annual Gross Energy Savings (kWh/yr) <sup>c</sup>	NPV DSM Avoided Costs <sup>d</sup>	NEB	Gross Incremental Participant Cost <sup>e</sup>	Incentive/ Unit	Admin Cost (\$/kWh) <sup>f</sup>	UCT Ratio <sup>g</sup>	TRC Ratio <sup>h</sup>	
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	21.64	\$10.04	\$3.55	\$7.59	\$2.50	\$0.109	2.07	1.47	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	21.64	\$10.04	\$3.55	\$1.29	\$0.35	\$0.109	3.71	4.00	1
Sprinklers	Rebuilt or new brass impact sprinklers	Worn sprinkler	Unit	A-Irr-Irr-Irrigation-All-All-E	6	1.92	\$0.89	\$16.80	\$14.10	\$0.50	\$0.109	1.26	1.24	1
Levelers	Rebuilt or new wheel line levelers	Worn wheel line leveler	Unit	A-Irr-Irr-Irrigation-All-All-E	7	3.65	\$1.92	\$9.09	\$4.57	\$1.00	\$0.109	1.37	2.25	1
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	26.09	\$12.11	\$27.18	\$28.48	\$8.00	\$0.109	1.12	1.29	1
Gasket Replacement	New gaskets for hand lines, wheel lines, or portable mainline	Worn gasket	Unit	A-Irr-Irr-Irrigation-All-All-E	6	13.44	\$6.24	\$4.89	\$2.48	\$1.00	\$0.109	2.53	2.98	1
Drain Replacement	New drains, hand lines, wheel lines, or portable mainline	Worn drain	Unit	A-Irr-Irr-Irrigation-All-All-E	6	9.87	\$4.58	\$6.83	\$5.29	\$3.00	\$0.109	1.12	1.86	1

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

<sup>b</sup> Average measure life.

<sup>c</sup> Estimated peak demand reduction measured at the customer's meter, excluding line losses.

<sup>d</sup> 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 2021 IRP. TRC Test Benefit calculation includes 10% conservation adder from the Northwest Power Act.

<sup>e</sup> Incremental participant cost prior to customer incentives. Based on customer reported three-year average. 2021–2023.

<sup>f</sup> Average program administration and overhead costs to achieve each kWh of savings. Calculated from 2023 actuals.

<sup>g</sup> UCT Ratio = (NPV DSM Avoided Costs) / ((Admin Cost/kWh \* kWh Savings) + Incentives)

<sup>h</sup> TRC Ratio = ((NPV DSM Avoided Costs \* 110%) + NEB) / ((Admin Cost/kWh \* kWh Savings) + Incentives)

<sup>i</sup> RTF. AgIrrigationHardware\_v6\_1.xlsm. 2023. Weighted average of Western Idaho (17.84%), Eastern Washington & Oregon (1.94%), and Eastern & Southern Idaho (80.22%).



Year: 2023

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) <sup>a</sup>	Benefit			Cost			B/C Tests		Source/ Notes
						Annual Gross Energy Savings (kWh/yr) <sup>b</sup>	NPV DSM Avoided Costs <sup>c</sup>	NEB	Gross Incremental Participant Cost <sup>d</sup>	Incentive/ Unit	Admin Cost (\$/kWh) <sup>e</sup>	UCT Ratio <sup>f</sup>	TRC Ratio <sup>g</sup>	
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-All-E	18	222.19	\$217.05	–	\$151.00	\$15.00	\$0.109	5.54	1.36	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-All-E	18	297.32	\$290.44	–	\$168.47	\$20.00	\$0.109	5.54	1.59	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-All-E	17	447.57	\$424.05	–	\$192.48	\$25.00	\$0.109	5.75	1.93	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-All-E	17	482.11	\$456.77	–	\$211.40	\$30.00	\$0.109	5.53	1.90	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-All-E	17	561.43	\$531.93	–	\$258.34	\$40.00	\$0.109	5.26	1.83	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-All-E	17	604.21	\$572.46	–	\$285.99	\$50.00	\$0.109	4.94	1.79	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-All-E	21	553.16	\$584.07	–	\$337.29	\$60.00	\$0.109	4.86	1.62	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-All-E	21	569.29	\$601.10	–	\$364.58	\$75.00	\$0.109	4.39	1.55	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-All-E	21	751.39	\$793.38	–	\$452.26	\$100.00	\$0.109	4.36	1.63	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-All-E	23	555.70	\$612.06	–	\$327.44	\$125.00	\$0.109	3.30	1.74	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-All-E	23	660.58	\$727.58	–	\$364.73	\$150.00	\$0.109	3.28	1.83	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-All-E	23	876.20	\$965.07	–	\$439.08	\$200.00	\$0.109	3.27	1.99	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-All-E	19	1,357.04	\$1,363.62	–	\$564.34	\$250.00	\$0.109	3.43	2.11	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-All-E	19	1,620.02	\$1,627.87	–	\$570.43	\$300.00	\$0.109	3.42	2.40	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-All-E	19	1,888.64	\$1,897.79	–	\$597.88	\$350.00	\$0.109	3.41	2.60	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-All-E	19	2,141.43	\$2,151.81	–	\$667.77	\$400.00	\$0.109	3.40	2.63	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-All-E	19	2,405.07	\$2,416.73	–	\$729.93	\$450.00	\$0.109	3.39	2.68	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-All-E	19	2,676.03	\$2,689.00	–	\$788.57	\$500.00	\$0.109	3.40	2.74	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-All-E	24	4,113.93	\$4,617.22	–	\$1,557.60	\$600.00	\$0.109	4.40	2.53	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-All-E	24	4,779.22	\$5,363.90	–	\$1,699.33	\$700.00	\$0.109	4.39	2.66	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-All-E	24	5,450.38	\$6,117.17	–	\$1,885.45	\$800.00	\$0.109	4.39	2.71	1

Measure Name	Measure Descriptions	Replacing	Measure Unit	End Use	Measure Life (yrs) <sup>a</sup>	Benefit			Cost			B/C Tests		Source/ Notes
						Annual Gross Energy Savings (kWh/yr) <sup>b</sup>	NPV DSM Avoided Costs <sup>c</sup>	NEB	Gross Incremental Participant Cost <sup>d</sup>	Incentive/ Unit	Admin Cost (\$/kWh) <sup>e</sup>	UCT Ratio <sup>f</sup>	TRC Ratio <sup>g</sup>	
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	\$6,867.22	-	\$2,078.63	\$900.00	\$0.109	4.38	2.75	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	\$12,499.59	-\$-	\$3,924.70	\$2,000.00	\$0.109	3.11	2.31	1

<sup>a</sup> Average measure life.

<sup>b</sup> Estimated kWh savings measured at the customer's meter, excluding line losses.

<sup>c</sup> 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 2021 IRP. TRC Test Benefit calculation includes 10% conservation adder from the Northwest Power Act

<sup>d</sup> Incremental participant cost prior to customer incentives.

<sup>e</sup> Average program administration and overhead costs to achieve each kWh of savings. Calculated from 2023 actuals.

<sup>f</sup> UCT Ratio = (NPV DSM Avoided Costs) / ((Admin Cost/kWh \* kWh Savings) + Incentives)

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

<sup>h</sup> RTF. Ind\_and\_Ag\_GreenMotorRewind\_v4\_0.xlsm. 2022.