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A VIEW  
FROM ABOVE

**2020**  
**ANNUAL**  
**REPORT**  
DEMAND-SIDE MANAGEMENT

SUPPLEMENT 1: **COST-EFFECTIVENESS**



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## SUPPLEMENT 1: COST-EFFECTIVENESS

### Cost-Effectiveness

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

Prior to the actual implementation of energy efficiency or demand response programs, Idaho Power performs a preliminary analysis to assess whether a potential program design or measure may be cost-effective. Incorporated in these models 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 will look 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 began transitioning 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 to calculate 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 less savings than heat pumps 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 identified to be 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 must demonstrate why a non-cost-effective measure or program was implemented, or continued to be offered, and communicate the steps the company plans to take to improve its cost-effectiveness. This aligns with the expectations of the IPUC and OPUC.

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

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

- A. The measure produces significant non-quantifiable non-energy benefits (NEB)
- B. Inclusion of the measure will increase market acceptance and is expected to lead to reduced cost of the measure
- C. The measure is included for consistency with other 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*; and the *National Action Plan on Demand Response*.

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 2020 dollars. The result of the one-year perspective is shown in Table 3 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.

As part of the public workshops on Case No. IPC-E-13-14, Idaho Power and other stakeholders agreed on a new methodology for valuing demand response. The settlement agreement, as approved in IPUC Order No. 32923 and OPUC Order No. 13-482, defined the annual value of operating the three demand response programs for the maximum allowable 60 hours to be no more than \$16.7 million. The annual value calculation will be updated with each Integrated Resource Plan (IRP) based on changes that include, but are not limited to, need, capital cost, or financial assumptions. This amount was reevaluated in the 2015, 2017, and 2019 Second Amended IRPs to be \$18.5, \$19.8, and \$19.6 million, respectively.

This value is the levelized annual cost of a 170-megawatt (MW) deferred resource over a 20-year life. The demand response value calculation includes this value even in years when the IRP shows no peak-hour capacity deficits. In 2020, the cost of operating the three demand response programs was \$7.7 million. Idaho Power estimates that if the three programs were dispatched for the full 60 hours, the total costs would have been approximately \$10.9 million and would have remained cost-effective.

## Assumptions

Idaho Power relies on research conducted by third-parties 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 *Supplement 1: Cost-Effectiveness*, 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. For instance, because of the rapid changes in the lighting market, the RTF is currently evaluating lighting measures on an annual basis. As the RTF updates these savings and cost assumptions, Idaho Power applies them to current program offerings and assesses the need to make any program changes. Idaho Power staff participates in the RTF by attending monthly meetings and contributing to various sub-committees. Because cost data from the RTF information is in 2012 dollars, measures with costs from the RTF are escalated to 2020 dollars. The costs are escalated by 12.8%, which is the percentage provided by the RTF in workbook RTFStandardInformationWorkbook\_v4\_2.xlsx.

Idaho Power uses a technical reference manual (TRM) developed by ADM Associates, Inc. for the savings and cost assumptions in the Commercial and Industrial (C&I) Energy Efficiency Program's New Construction and Retrofits options. In 2020, the company contracted with a thirty party to update the TRM. The updated TRM will be source for most prescriptive savings values for the New Construction and Retrofits options in 2021 once changes to the C&I Energy Efficiency program have been implemented.

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 code changes, 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 2020 Annual Report*. Generally, the 2020 energy savings reported for most programs will use the assumption set at the beginning of the year.

The remaining inputs used in the cost-effectiveness models are obtained from the IRP process. Idaho Power's 2017 IRP was acknowledged by the IPUC on February 9, 2018 and by the OPUC May 23, 2018 and is the source for the financial assumptions used in cost-effectiveness analysis. *Appendix C—Technical Appendix* of Idaho Power's 2017 IRP contains the DSM alternate costs, discount rate, and escalation rate. DSM alternate 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 alternate 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, AURORAxmp® Electric Market Model. The avoided capital cost of capacity is based on a gas-fired, simple-cycle turbine. In the 2017 IRP, the annual avoided capacity cost is \$122 per kilowatt (kW).

Transmission and distribution (T&D) benefits are also included in the cost-effectiveness analyses. The estimated average value of energy efficiency on T&D deferral is \$3.76/kW per year or \$0.000429/kilowatt-hour (kWh). In compliance with Order No. 33365, this value is escalated and added to the 2017 DSM alternate energy costs and included in the cost-effectiveness analysis for 2020.

Idaho Power's 2019 *Second Amended IRP* was filed on October 2, 2020, with the IPUC under case IPC-E-19-19 and with the OPUC under case LC 74. Because the 2019 *Second Amended IRP* was not acknowledged at the time of the 2020 DSM program planning, the 2017 IRP is the source for all financial assumptions and cost-effectiveness analysis in 2020. Idaho Power plans to begin using the financial assumptions from the 2019 *Second Amended IRP* for program planning once it has been acknowledged by the IPUC and OPUC. Because of this timing, updated DSM alternate costs based on the 2017 IRP were used for 2021 program planning and will be used to evaluate the 2021 cost-effectiveness.

As recommended by the NAPEE's *Understanding Cost-Effectiveness of Energy Efficiency Programs*, Idaho Power's weighted average cost of capital (WACC) of 6.74% is used to discount future benefits and costs to today's dollars. Once the DSM alternate 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 the different 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. Because the customer bill savings is based on Idaho Power's 2020 average customer segment rate and are not escalated, the participant bill savings are discounted using a real discount rate of 4.54%. The 4.54% is based on the 2017 IRP's WACC of 6.74% and an escalation rate of 2.1%. 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 2020 Annual Report* shows the estimated electrical savings at the customer meter level. Cost-effectiveness analyses are based on generation-level energy savings. The demand response program reductions are reported at the generation level with the line losses. The system line-loss factor is 9.6% while the summer peak line-loss factor is 9.7%.

## Conservation Adder

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

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

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

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

Additionally, in IPUC Order No. 32788 in Case No. GNR-E-12-01, "Staff noted that Rocky Mountain Power and Avista use a 10% conservation adder when calculating the cost-effectiveness of all their DSM programs." Staff recommended the utilities have the option to use a 10% adder, and the IPUC agreed with the recommendation to allow utilities to use the 10% adder in the cost-effectiveness analyses for low-income programs.

After reviewing the practices of other utilities in the Pacific Northwest, as well as the OPUC Order No. 94-590 and IPUC Order 32788, Idaho Power applies the 10% conservation adder in all energy

efficiency measure and program cost-effectiveness analyses when calculating the TRC test.

## Net-to-Gross

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

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

Capturing the effects of Idaho Power's energy efficiency efforts on free-ridership and spillover is difficult. Due to the uncertainty surrounding NTG percentages, Idaho Power used an NTG of 100% for nearly all measure and program cost-effectiveness analyses. The Home Energy Reports (HER) Program is an exception.

There is a potential of double counting savings in the HER Program if a customer receives a report and decides to participate in a program such as the Energy Efficient Lighting Program. Idaho Power's third-party consultant estimated that less than 5% of the savings may be double counted. Therefore, a NTG of 95% was applied to the cost-effectiveness analysis.

Sensitivity analyses are also 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 *Supplement 1: Cost-Effectiveness*.

## Results

Idaho Power determines 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-Savings Kits, Educational Distributions, Energy House Calls, Multifamily Energy Savings Program, Small Business Direct Install, Weatherization Assistance for Qualified Customers (WAQC), and Weatherization Solutions for Eligible Customers programs. These programs have few or no participant-related costs. For energy efficiency programs, the cost-effectiveness models do not assume ongoing participant costs.

*Supplement 1: Cost-Effectiveness* contains annual cost-effectiveness metrics for each program using actual information from 2020 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 3.

In 2020, most of Idaho Power's energy efficiency programs were cost-effective from the UCT, except for Energy House Calls; Multifamily Energy Saving Program; Simple Steps, Smart Savings™; and the two weatherization programs for income-qualified customers.

In March 2020, in response to the COVID-19 pandemic restrictions, in-home or on-site activity for several programs was suspended in order to keep contractors and customers safe. Energy House Calls, Multifamily Energy Savings Program, and the two weatherization programs for income-qualified customers were among the programs impacted by the suspension. Because the WAQC program is administered through the state, work resumed in early summer 2020 once Community Action Partnership agencies restarted activity. However, in-home work on the remaining residential programs is still suspended as of early 2021. Once COVID-19 safety protocols allow, Idaho Power will resume in-home work for Energy House Calls, the Multifamily Energy Savings program, and Weatherization Solutions for Eligible Customers.

The company will continue to monitor these programs and will explore opportunities to further improve the programs' cost-effectiveness in 2021.

The Simple Steps, Smart Savings™ program had a TRC of 3.24 and a UCT of 0.78. While overall showerhead sales increased by 31% between 2019 and 2020, savings for showerheads decreased by 51%. This is largely due to increased sales of the 2.0 gpm showerhead which made up 47% of sales in 2019 and 83% in 2020. The savings for the 2.0 gpm showerhead fell by 63% which impacted the overall cost-effectiveness of the program. The RTF reviewed the showerhead savings again in 2020 and decided to deactivate the measure due to the market transformation in the region. Due to this and other changes impacting the lighting portion of the Simple Steps promotion, BPA decided to sunset the offering on September 30, 2020.

WAQC had a TRC of 0.33 and a UCT ratio of 0.20, and Weatherization Solutions for Eligible Customers had a TRC of 0.13 and a UCT ratio of 0.23. The cost-effectiveness ratios for both programs declined in 2020 from both the UCT and TRC perspective due to the adoption of updated third-party informed savings. The updated per-home savings estimates were a result of a weatherization billing analysis of the homes that participated in the programs between 2016 and 2018. The analysis estimated the electric energy savings of the weatherization jobs by comparing whole-home energy usage of the participants, before and after the weatherization jobs, to a matched comparison group. The results of the analysis showed that savings from weatherization jobs are detectable, but the savings are lower relative to the savings reported in previous years, especially in regards to heat pump installations. Weatherization jobs completed in 2019 were not included in the analysis because a full year of post weatherization billing data is required. A copy of this report can be found in *Supplement 2: Evaluation*.

To calculate the cost-effectiveness for the income-qualified weatherization programs, Idaho Power adopted the following IPUC staff recommendations from Case No. GNR E-12-01:

- Applied a 100% NTG.
- Claimed 100% of energy savings for each project.
- Included indirect administrative overhead costs. The overhead costs of 2.378% were calculated from the \$1,202,238 of indirect program expenses divided by the total DSM expenses of \$50,556,303 as shown in Appendix 3 of the *Demand-Side Management 2020 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.

Fifty-five out of 281 individual measures in various programs are not cost-effective from either the UCT or TRC perspective. Of the 55 measures, 26 are not cost-effective from the UCT perspective. Eighteen of those measures are associated with the direct-install programs that had in-home activity suspended due to COVID-19 restrictions. These measures have B/C ratios below one due to some administration costs still being incurred to maintain the program while in-home activity was suspended. For most of the measures 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. 2020 non-cost-effective measures

Program	Number of Measures	Number Fail UCT	Notes
Educational Distributions	1	1	Home Energy Reports was not cost-effective due to the additional costs associated with the expansion of the program and savings associated with the expansion reflect a partial year of savings. It is anticipated the offering will be cost-effective in future years.
Energy House Calls	10	10	Program impacted by the COVID-19 restrictions. Measures appear to be not cost-effective due to some administration costs still being incurred while in-home activity was suspended.
Heating & Cooling Efficiency Program	7	2	All measures except heat pump upgrades and smart thermostats pass UCT. All measures pass without the inclusion of administration costs. Cost-effectiveness exception request for ductless heat pumps (DHP) and open-loop water source heat pumps filed with the OPUC under UM-1710. OPUC Order No. 94-590, Section 13. Approved under Order No. 15-200. Exception request for the program and smart thermostats requested and approved with OPUC Advice No. 17-09.

Program	Number of Measures	Number Fail UCT	Notes
Multifamily Energy Savings Program	8	8	Program impacted by the COVID-19 restrictions. Measures appear to be not cost-effective due to some administration costs still being incurred while in-home activity was suspended.
Rebate Advantage	5	0	All measures pass UCT. Measures have a TRC between 0.61 and 0.96. Two measures would be cost-effective with TRC of 1.12 without the inclusion of administration costs. Meets OPUC Order No. 94-590, Section 10. Measure is included to increase savings in a cost-effective program.
Simple Steps, Smart Savings™	4	4	All measures pass TRC. All measures would be cost-effective without the inclusion of administration costs. Program was sponsored by Bonneville Power Administration and was sunsetted on September 30, 2020.
New Construction and Retrofits	7	0	All measures pass UCT. Measures offered in both options. Cost-effectiveness exception request filed and approved with OPUC Advice No. 18-08. OPUC Order No. 94-590, Section 13. Exceptions C and D.
New Construction	1	0	Measure passes UCT. TRC 0.94. Measure is included to increase participation in a cost-effective program.
Retrofits	9	0	All measures pass UCT. TRC ranges from 0.77 to 0.99. Three measures would be cost-effective without the inclusion of administration costs.  Meets OPUC Order No. 94-590, Section 10. Cost-effectiveness exception request filed and approved with OPUC Advice No. 18-08. OPUC Order No. 94-590, Section 13. Exceptions C and D.
Irrigation Efficiency Rewards	3	1	Two measures pass UCT. TRC ranges from 0.67 to 0.87. Cost-effectiveness exception request filed with OPUC under UM-1710. OPUC Order No. 94-590, Section 13. Approved under Order No. 18-476. Exceptions A, C, and D.
<b>Total</b>	<b>55</b>	<b>26</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, 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.

## 2020 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 2020 Annual Report*. These expenses are broken out by funding source major-expense type (labor/administration, materials, other expenses, purchased services, and incentives).

Table 2. 2020 DSM detailed expenses by program (dollars)

Sector/Program	Idaho Rider	Oregon Rider	Idaho Power	Total Program
<b>Energy Efficiency Total</b>	<b>\$ 34,192,205</b>	<b>\$ 1,079,703</b>	<b>\$ 1,541,060</b>	<b>\$ 36,812,968</b>
<b>Residential Total</b>	<b>\$ 7,313,531</b>	<b>\$ 201,629</b>	<b>\$ 1,421,972</b>	<b>\$ 8,937,132</b>
<b>Easy Savings: Low-Income Energy</b>				
<b>Efficiency Education</b> .....	–	–	<b>9,503</b>	<b>9,503</b>
Labor/Administrative Expense .....	–	–	9,503	<b>9,503</b>
<b>Educational Distributions</b> .....	<b>3,912,564</b>	<b>91,912</b>	<b>1,547</b>	<b>4,006,023</b>
Labor/Administrative Expense .....	48,489	2,657	1,547	<b>52,693</b>
Materials and Equipment .....	2,121,135	62,675	–	<b>2,183,810</b>
Other Expense .....	53,605	2,821	–	<b>56,427</b>
Purchased Services .....	1,689,335	23,758	–	<b>1,713,093</b>
<b>Energy Efficient Lighting</b> .....	<b>1,603,129</b>	<b>62,218</b>	<b>1,812</b>	<b>1,667,159</b>
Incentives .....	852,060	30,657	–	<b>882,717</b>
Labor/Administrative Expense .....	56,797	3,101	1,812	<b>61,710</b>
Purchased Services .....	694,272	28,461	–	<b>722,733</b>
<b>Energy House Calls</b> .....	<b>40,492</b>	<b>5,422</b>	<b>438</b>	<b>46,352</b>
Labor/Administrative Expense .....	13,723	768	438	<b>14,929</b>
Materials and Equipment .....	2,067	109	–	<b>2,176</b>
Other Expense .....	5,896	727	–	<b>6,624</b>
Purchased Services .....	18,806	3,818	–	<b>22,624</b>
<b>Heating &amp; Cooling Efficiency Program</b> .....	<b>578,893</b>	<b>23,978</b>	<b>3,689</b>	<b>606,559</b>
Incentives .....	336,715	11,475	–	<b>348,190</b>
Labor/Administrative Expense .....	115,716	6,285	3,689	<b>125,690</b>
Materials and Equipment .....	8,676	(593)	–	<b>8,083</b>
Other Expense .....	41,857	3,499	–	<b>45,356</b>
Purchased Services .....	75,929	3,312	–	<b>79,241</b>
<b>Home Energy Audit</b> .....	<b>128,547</b>	–	<b>1,999</b>	<b>130,546</b>
Labor/Administrative Expense .....	62,713	–	1,999	<b>64,711</b>
Materials and Equipment .....	398	–	–	<b>398</b>
Other Expense .....	42,820	–	–	<b>42,820</b>
Purchased Services .....	22,617	–	–	<b>22,617</b>
<b>Multifamily Energy Savings Program</b> .....	<b>83,951</b>	<b>4,350</b>	<b>1,528</b>	<b>89,829</b>
Labor/Administrative Expense .....	48,204	2,618	1,528	<b>52,349</b>
Materials and Equipment .....	32,015	1,685	–	<b>33,700</b>
Other Expense .....	903	48	–	<b>950</b>
Purchased Services .....	2,830	–	–	<b>2,830</b>
<b>Oregon Residential Weatherization</b> .....	–	<b>5,313</b>	–	<b>5,313</b>
Labor/Administrative Expense .....	–	3,969	–	<b>3,969</b>
Other Expense .....	–	1,344	–	<b>1,344</b>
<b>Rebate Advantage</b> .....	<b>174,670</b>	<b>4,897</b>	<b>855</b>	<b>180,422</b>
Incentives .....	114,000	2,000	–	<b>116,000</b>
Labor/Administrative Expense .....	26,803	1,456	855	<b>29,114</b>
Other Expense .....	11,843	1,040	–	<b>12,883</b>
Purchased Services .....	22,024	401	–	<b>22,425</b>
<b>Residential New Construction Pilot Program</b> .....	<b>471,542</b>	–	<b>1,962</b>	<b>473,504</b>
Incentives .....	389,800	–	–	<b>389,800</b>
Labor/Administrative Expense .....	65,764	–	1,962	<b>67,726</b>
Other Expense .....	15,963	–	–	<b>15,963</b>
Purchased Services .....	15	–	–	<b>15</b>

Sector/Program	Idaho Rider	Oregon Rider	Idaho Power	Total Program
<b>Shade Tree Project</b> .....	<b>27,652</b>	–	<b>838</b>	<b>28,490</b>
Labor/Administrative Expense .....	27,279	–	838	28,118
Other Expense .....	372	–	–	372
<b>Simple Steps, Smart Savings™</b> .....	<b>93,865</b>	<b>3,539</b>	<b>1,737</b>	<b>99,141</b>
Incentives .....	28,887	392	–	29,279
Labor/Administrative Expense .....	54,476	2,999	1,737	59,213
Purchased Services .....	10,502	147	–	10,649
<b>Weatherization Assistance for Qualified Customers</b>	–	–	<b>1,385,577</b>	<b>1,385,577</b>
Labor/Administrative Expense .....	–	–	49,777	49,777
Other Expense .....	–	–	2	2
Purchased Services .....	–	–	1,335,799	1,335,799
<b>Weatherization Solutions for Eligible Customers</b>	<b>198,226</b>	–	<b>10,489</b>	<b>208,715</b>
Labor/Administrative Expense .....	1,112	–	10,489	11,601
Other Expense .....	7,530	–	–	7,530
Purchased Services .....	189,584	–	–	189,584
<b>Commercial/Industrial</b>	<b>\$ 23,713,600</b>	<b>\$ 684,029</b>	<b>\$ 76,534</b>	<b>\$ 24,474,163</b>
<b>Commercial Education Initiative</b> .....	<b>97,645</b>	<b>5,678</b>	<b>355</b>	<b>103,678</b>
Labor/Administrative Expense .....	11,131	610	355	12,097
Materials and Equipment .....	65,641	5,004	–	70,645
Other Expense .....	888	47	–	935
Purchased Services .....	19,985	17	–	20,001
<b>Custom Projects</b> .....	<b>17,533,047</b>	<b>466,632</b>	<b>59,717</b>	<b>18,059,396</b>
Incentives .....	15,252,850	368,995	–	15,621,845
Labor/Administrative Expense .....	617,474	33,552	59,717	710,743
Materials and Equipment .....	2,082	110	–	2,191
Other Expense .....	233,924	5,413	–	239,337
Purchased Services .....	1,426,717	58,562	–	1,485,279
<b>New Construction</b> .....	<b>2,278,454</b>	<b>98,415</b>	<b>7,114</b>	<b>2,383,983</b>
Incentives .....	1,885,293	77,352	–	1,962,645
Labor/Administrative Expense .....	223,328	12,229	7,114	242,671
Other Expense .....	844	44	–	889
Purchased Services .....	168,988	8,790	–	177,778
<b>Retrofits</b> .....	<b>3,481,992</b>	<b>96,323</b>	<b>8,962</b>	<b>3,587,277</b>
Incentives .....	2,546,264	46,307	–	2,592,571
Labor/Administrative Expense .....	278,198	15,139	8,962	302,299
Materials and Equipment .....	1,175	62	–	1,237
Other Expense .....	15,531	817	–	16,349
Purchased Services .....	640,823	33,998	–	674,821
<b>Small Business Direct Install</b> .....	<b>322,463</b>	<b>16,981</b>	<b>386</b>	<b>339,830</b>
Labor/Administrative Expense .....	12,142	680	386	13,208
Other Expense .....	392	21	–	412
Purchased Services .....	309,928	16,280	–	326,209
<b>Irrigation Total</b>	<b>\$ 3,165,075</b>	<b>\$ 194,044</b>	<b>\$ 42,553</b>	<b>\$ 3,401,673</b>
<b>Irrigation Efficiency Rewards</b> .....	<b>3,165,075</b>	<b>194,044</b>	<b>42,553</b>	<b>3,401,673</b>
Incentives .....	2,794,877	173,940	–	2,968,817
Labor/Administrative Expense .....	304,617	16,598	42,431	363,647
Materials and Equipment .....	3,023	159	–	3,182
Other Expense .....	55,993	2,998	122	59,113
Purchased Services .....	6,566	348	–	6,914

Sector/Program	Idaho Rider	Oregon Rider	Idaho Power	Total Program
<b>Market Transformation Total</b>	<b>\$ 2,649,749</b>	<b>\$ 139,460</b>	<b>\$ –</b>	<b>\$ 2,789,210</b>
<b>NEAA</b> .....	<b>2,649,749</b>	<b>139,460</b>	<b>–</b>	<b>2,789,210</b>
Purchased Services .....	2,649,749	139,460	–	2,789,210
<b>Other Program and Activities Total</b>	<b>\$ 1,911,284</b>	<b>\$ 99,756</b>	<b>\$ 25,935</b>	<b>\$ 2,036,975</b>
<b>Commercial/Industrial Energy Efficiency Overhead</b>	<b>393,112</b>	<b>20,994</b>	<b>8,854</b>	<b>422,960</b>
Labor/Administrative Expense .....	285,625	15,542	8,854	310,021
Other Expense .....	82,072	4,180	–	86,253
Purchased Services .....	25,415	1,272	–	26,687
<b>Energy Efficiency Direct Program Overhead</b> .....	<b>322,964</b>	<b>15,228</b>	<b>8,555</b>	<b>346,747</b>
Labor/Administrative Expense .....	268,168	14,591	8,555	291,314
Other Expense .....	54,795	637	–	55,433
<b>Oregon Commercial Audit</b> .....	<b>–</b>	<b>1,374</b>	<b>–</b>	<b>1,374</b>
Labor/Administrative Expense .....	–	489	–	489
Other Expense .....	–	885	–	885
<b>Residential Energy Efficiency Education Initiative</b> .....	<b>209,644</b>	<b>11,192</b>	<b>2,895</b>	<b>223,731</b>
Labor/Administrative Expense .....	116,673	6,321	2,895	125,890
Materials and Equipment .....	2,013	106	–	2,119
Other Expense .....	90,805	4,757	–	95,562
Purchased Services .....	152	8	–	160
<b>Residential Energy Efficiency Overhead</b> .....	<b>985,565</b>	<b>50,967</b>	<b>5,630</b>	<b>1,042,162</b>
Labor/Administrative Expense .....	144,866	7,859	4,491	157,216
Other Expense .....	819,896	42,013	1,140	863,048
Purchased Services .....	20,803	1,095	–	21,898
<b>Indirect Program Expenses Total</b>	<b>\$ 901,712</b>	<b>\$ 49,903</b>	<b>\$ 250,623</b>	<b>\$ 1,202,238</b>
<b>Energy Efficiency Accounting and Analysis</b> .....	<b>929,467</b>	<b>48,680</b>	<b>199,325</b>	<b>1,177,471</b>
Labor/Administrative Expense .....	366,199	19,925	170,189	556,313
Materials and Equipment .....	196	10	–	206
Other Expense .....	5,938	313	29,136	35,386
Purchased Services .....	557,134	28,432	–	585,566
<b>Energy Efficiency Advisory Group</b> .....	<b>4,448</b>	<b>244</b>	<b>130</b>	<b>4,823</b>
Labor/Administrative Expense .....	4,084	225	130	4,439
Other Expense .....	365	19	–	384
<b>Special Accounting Entries</b> .....	<b>(32,203)</b>	<b>979</b>	<b>51,168</b>	<b>19,944</b>
Special Accounting Entry .....	(32,203)	979	51,168	19,944
<b>Demand Response Total</b>	<b>\$ 754,961</b>	<b>\$ 418,131</b>	<b>\$ 6,541,820</b>	<b>\$ 7,714,912</b>
<b>Residential Total</b>	<b>\$ 405,402</b>	<b>\$ 25,200</b>	<b>\$ 334,418</b>	<b>\$ 765,020</b>
<b>A/C Cool Credit</b> .....	<b>405,402</b>	<b>25,200</b>	<b>334,418</b>	<b>765,020</b>
Incentives .....	–	3,989	332,420	336,410
Labor/Administrative Expense .....	64,946	3,568	1,998	70,512
Materials and Equipment .....	(50,664)	(2,667)	–	(53,330)
Other Expense .....	14,190	747	–	14,937
Purchased Services .....	376,929	19,562	–	396,492
<b>Commercial/Industrial Total</b>	<b>\$ 84,716</b>	<b>\$ 207,707</b>	<b>\$ 250,056</b>	<b>\$ 542,480</b>
<b>Flex Peak Program</b> .....	<b>84,716</b>	<b>207,707</b>	<b>250,056</b>	<b>542,480</b>
Incentives .....	–	203,067	247,383	450,450
Labor/Administrative Expense .....	84,650	4,637	2,673	91,961
Purchased Services .....	66	3	–	70



Sector/Program	Idaho Rider	Oregon Rider	Idaho Power	Total Program
<b>Irrigation Total</b>	<b>\$ 264,843</b>	<b>\$ 185,224</b>	<b>\$ 5,957,345</b>	<b>\$ 6,407,412</b>
<b>Irrigation Peak Rewards</b>	<b>264,843</b>	<b>185,224</b>	<b>5,957,345</b>	<b>6,407,412</b>
Incentives	–	171,007	5,953,930	<b>6,124,937</b>
Labor/Administrative Expense	79,705	4,349	3,415	<b>87,469</b>
Materials and Equipment	52,259	2,750	–	<b>55,010</b>
Other Expense	1,133	60	–	<b>1,193</b>
Purchased Services	131,745	7,059	–	<b>138,804</b>
<b>Grand Total</b>	<b>\$ 40,409,911</b>	<b>\$ 1,786,954</b>	<b>\$ 8,359,437</b>	<b>\$ 50,556,303</b>

Table 3. Cost-effectiveness of 2020 programs by B/C test

Program/Sector	UCT	TRC	RIM	PCT
Educational Distributions	1.45	2.19	0.45	N/A
Energy Efficient Lighting	4.56	4.20	0.54	7.77
Energy House Calls	0.63	0.77	0.29	N/A
Heating & Cooling Efficiency Program	1.66	0.81	0.45	1.46
Multifamily Energy Savings Program	0.14	0.28	0.11	N/A
Rebate Advantage	1.69	0.98	0.39	2.17
Residential New Construction Pilot Program	1.54	1.20	0.45	2.26
Shade Tree Project*	N/A	N/A	N/A	N/A
Simple Steps, Smart Savings	0.78	3.24	0.36	13.23
Weatherization Assistance for Qualified Customers	0.20	0.33	0.14	N/A
Weatherization Solutions for Eligible Customers	0.13	0.23	0.10	N/A
<b>Residential Energy Efficiency Sector</b>	<b>1.64</b>	<b>1.91</b>	<b>0.45</b>	<b>6.41</b>
Commercial Energy-Saving Kits	1.24	2.38	0.56	N/A
Custom Projects	3.26	1.61	1.06	1.42
New Construction	3.40	2.63	0.80	3.14
Retrofits	3.25	1.35	0.79	1.56
Small Business Direct Install	1.04	1.61	0.53	N/A
<b>Commercial/Industrial Energy Efficiency Sector**</b>	<b>3.18</b>	<b>1.62</b>	<b>0.97</b>	<b>1.58</b>
Irrigation Efficiency Rewards	4.00	4.09	1.18	3.96
<b>Irrigation Energy Efficiency Sector***</b>	<b>4.01</b>	<b>4.09</b>	<b>1.18</b>	<b>3.96</b>
<b>Energy Efficiency Portfolio</b>	<b>2.71</b>	<b>2.08</b>	<b>0.83</b>	<b>2.45</b>

\*Shade Tree Project tree distributions were suspended in 2020 due to COVID-19, no newly planted trees in 2020 to report energy savings.  
 \*\*Commercial/Industrial Energy Efficiency Sector cost-effectiveness ratios include savings and participant costs from Green Motors Rewinds.  
 \*\*\*Irrigation Energy Efficiency Sector cost-effectiveness ratios include savings and participant costs from Green Motors Rewinds.

## COST-EFFECTIVENESS TABLES BY PROGRAM

### Educational Distributions

Segment: Residential  
2020 Program Results

Cost Inputs		Ref
Program Administration .....	\$ 4,006,023	
Program Incentives.....	-	I
<b>Total UC</b> .....	<b>\$ 4,006,023</b>	P
Measure Equipment and Installation (Incremental Participant Cost).....	\$ -	M

Net Benefit Inputs (NPV)		Ref
<b>Resource Savings</b>		
2020 Annual Gross Energy (kWh).....	19,909,741	
NPV Cumulative Energy (kWh).....	114,912,206	\$ 5,827,739 S
10% Credit (Northwest Power Act).....	582,774	
<b>Total Electric Savings</b> .....	<b>\$ 6,410,513</b>	A
<b>Participant Bill Savings</b>		
NPV Cumulative Participant Bill Savings .....	\$ 8,899,543	B
<b>Other Benefits</b>		
Non-Utility Rebates/Incentives .....	\$ -	NUI
NEBs .....	\$ 2,377,901	NEB

Summary of Cost-Effectiveness Results			
Test	Benefit	Cost	Ratio
UC Test .....	\$ 5,827,739	\$ 4,006,023	1.45
TRC Test .....	8,788,414	4,006,023	2.19
RIM Test .....	5,827,739	12,905,566	0.45
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).....	6.74%
Real ((1 + WACC) / (1 + Escalation)) - 1 .....	4.54%
Escalation Rate .....	2.10%
Net-to-Gross (NTG) .....	100%
Minimum NTG Sensitivity .....	69%
Average Customer Segment Rate/kWh .....	\$0.085
Line Losses .....	9.60%

**Notes:** Energy savings as reported by the Franklin Energy for the 2019 to 2020 student kits.  
 NEBs for giveaway bulbs, welcome kit bulbs, and energy-saving kits include PV of periodic bulb replacement costs.  
 NEBs for student kit and energy-savings kit showerheads include the NPV of water and wastewater savings and, when applicable, gas (therm) savings.  
 No participant costs.  
 2020 cost-effectiveness ratios include evaluation expenses. If evaluation expenses were removed from the program's cost-effectiveness, the UCT and TRC would be 1.48 and 2.23, respectively.

Year: 2020

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 Alternate 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>	
General Purpose LED Give away	Efficient Technology: LED Lamp Type: General Purpose and Dimmable Lumen Category: 250 to 1049 lumens Space Type: ANY	Baseline bulb	Lamp	Residential-All-Lighting-All	13	6.97	\$3.58	\$2.00	-	-	\$0.023	21.93	36.38	1
Nightlight Give away	LED night light	baseline bulb	Lamp	IPC_Outdoor Lighting	10	12.00	\$3.62	-	-	-	\$0.023	12.88	14.16	2
Student Energy Efficiency Kit (SEEK) Program	2019-2020 kit offering. Kits include: high efficiency showerhead, showertimer, 3 LEDs, FilterTone alarm, digital thermometer, LED nightlight.	No kit	Kit	IPC_Student Kits	11	191.79	\$99.38	\$10.59	-	-	\$0.247	2.10	2.53	3
Energy-Saving Kit—weighted average of non-electric and electric kit	9 - 250 to 1049 lumen General Purpose bulbs 1 - LED night light 1 - 1.75 gpm showerhead and thermostatic shower valve combo (electric kit only) 3 - faucet aerators (electric kit only)	No kit	Kit	IPC_Energy-savings Kits (weighted)	11	155.54	\$69.37	\$100.00	-	-	\$0.332	1.34	3.41	4
Energy-Saving Kit (giveaway lightbulb only kit)	9 - 250 to 1049 lumen General Purpose bulbs 1 - LED night light"	No kit	Kit	IPC_Energy-savings Kits (non-electric)	13	74.73	\$35.43	\$18.04	-	-	\$0.332	1.43	2.30	1,2
Welcome Kit (lightbulb only kit)	4 - 250 to 1049 lumen General Purpose bulbs 1 - LED night light	No kit	Kit	IPC_Welcome Kit	13	39.88	\$19.64	\$8.02	-	-	\$0.455	1.08	1.63	1,2
Home Energy Reports	Home energy report	No behavior change	Report	IPC_Residential	1	82.02	\$4.77	-	-	-	\$0.086	0.64	0.71	5

<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 2017 IRP. 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 2020 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\_Bulbs\_v7\_1.xlsm. 2019.

<sup>2</sup> DNV GL. Idaho Power Educational Distributions Impact and Process Evaluation. 2020

<sup>3</sup> Franklin Energy. 2019-2020 Idaho Power Energy Wise Program Summary Report. 2020.

<sup>4</sup> Lightbulbs - RTF\_ResLighting\_Bulbs\_v7\_1.xlsm. Showerhead - RTF\_ThermostaticShowerRestrictionValve\_v3\_1. By Request installation rate reduced from 90% to 58%.Nightlight – DNV GL evaluation.

<sup>5</sup> Idaho Power HER Year 3 Final Program Summary. Aclara. 2020. Offering not cost-effective due to additional costs and savings ramp up related to program's mid-year expansion. Will continue to monitor in 2021.

## Energy Efficient Lighting

Segment: Residential  
2020 Program Results

Cost Inputs		Ref
Program Administration .....	\$ 784,442	
Program Incentives.....	882,717	I
<b>Total UC</b> .....	<b>\$ 1,667,159</b>	P
Measure Equipment and Installation (Incremental Participant Cost)	\$ 2,281,338	M

Net Benefit Inputs (NPV)		Ref
<b>Resource Savings</b>		
2020 Annual Gross Energy (kWh).....	13,942,202	
NPV Cumulative Energy (kWh).....	149,197,560	\$ 7,594,591 S
10% Credit (Northwest Power Act).....	759,459	
<b>Total Electric Savings</b> .....	<b>\$ 8,354,050</b>	A
<b>Participant Bill Savings</b>		
NPV Cumulative Participant Bill Savings .....	\$ 12,333,930	B
<b>Other Benefits</b>		
Non-Utility Rebates/Incentives .....	\$ -	NUI
NEBs .....	\$ 4,514,331	NEB

Summary of Cost-Effectiveness Results			
Test	Benefit	Cost	Ratio
UC Test .....	\$ 7,594,591	\$ 1,667,159	4.56
TRC Test .....	12,868,381	3,065,781	4.20
RIM Test .....	7,594,591	14,001,089	0.54
PCT .....	17,730,977	2,281,338	7.77

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).....	6.74%
Real ((1 + WACC) / (1 + Escalation)) - 1 .....	4.54%
Escalation Rate .....	2.10%
Net-to-Gross (NTG) .....	100%
Minimum NTG Sensitivity .....	22%
Average Customer Segment Rate/kWh .....	\$0.085
Line Losses .....	9.60%

Note: NEBs include PV of periodic bulb replacement costs.

Year: 2020

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 bulb	Fixture	Residential All-Lighting	13	18.16	\$9.32	\$5.68	\$3.73	\$1.08	\$0.056	4.45	3.36	1
General Purpose, Dimmable, and Three-Way	Retail_LED_General Purpose, Dimmable, and Three-Way_250 to 1049 lumens	Baseline bulb	Fixture	Residential All-Lighting	13	9.25	\$4.75	\$2.45	\$1.24	\$0.73	\$0.056	3.80	4.36	1
General Purpose, Dimmable, and Three-Way	Retail_LED_General Purpose, Dimmable, and Three-Way_1050 to 1489 lumens	Baseline bulb	Fixture	Residential All-Lighting	13	26.23	\$13.46	\$7.24	\$7.07	\$1.18	\$0.056	5.08	2.58	1
General Purpose, Dimmable, and Three-Way	Retail_LED_General Purpose, Dimmable, and Three-Way_1490 to 2600 lumens	Baseline bulb	Fixture	Residential All-Lighting	13	13.10	\$6.72	\$3.23	\$3.00	\$1.00	\$0.056	3.88	2.85	1
Globe	Retail_LED_Globe_250 to 1049 lumens	Baseline bulb	Fixture	Residential All-Lighting	13	12.63	\$6.48	\$4.23	\$2.90	\$0.58	\$0.056	5.04	3.15	1
Reflectors and Outdoor	Retail_LED_Reflectors and Outdoor_250 to 1049 lumens	Baseline bulb	Fixture	Residential All-Lighting	13	11.13	\$5.71	\$2.00	\$1.04	\$0.99	\$0.056	3.54	4.98	1
Reflectors and Outdoor	Retail_LED_Reflectors and Outdoor_1050 to 1489 lumens	Baseline bulb	Fixture	Residential All-Lighting	13	10.51	\$5.39	\$2.45	\$1.24	\$1.00	\$0.056	3.40	4.59	1
Reflectors and Outdoor	Retail_LED_Reflectors and Outdoor_1490 to 2600 lumens	Baseline bulb	Fixture	Residential All-Lighting	13	45.24	\$23.22	\$8.46	\$6.77	\$2.00	\$0.056	5.12	3.66	1
LED Fixture Retailer	LED Indoor Fixture	Baseline bulb	Fixture	Residential All-Lighting	20	15.36	\$10.69	\$9.71	\$2.37	\$0.98	\$0.056	5.81	6.65	2
LED Fixture Retailer	LED Outdoor Fixture	Baseline bulb	Fixture	IPC Outdoor Lighting	20	59.80	\$31.58	\$22.42	\$8.73	\$1.70	\$0.056	6.25	4.73	2

<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 2017 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 2020 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\_Bulbs\_v7\_1.xlsm. 2019.

<sup>2</sup> RTF\_ResLighting\_Bulbs\_v7\_1.xlsm. 2019. Weighted average of actual fixture sales.

## Energy House Calls

Segment: Residential  
2020 Program Results

Cost Inputs		Ref
Program Administration .....	\$ 46,352	
Program Incentives.....	–	I
<b>Total UC</b> .....	<b>\$ 46,352</b>	<b>P</b>
Measure Equipment and Installation (Incremental Participant Cost).....	\$ –	M

Net Benefit Inputs (NPV)		Ref
<b>Resource Savings</b>		
2020 Annual Gross Energy (kWh).....	56,944	
NPV Cumulative Energy (kWh).....	659,466	\$ 29,017 S
10% Credit (Northwest Power Act).....	2,902	
<b>Total Electric Savings</b> .....	<b>\$ 31,919</b>	<b>A</b>
<b>Participant Bill Savings</b>		
NPV Cumulative Participant Bill Savings .....	\$ 55,340	B
<b>Other Benefits</b>		
Non-Utility Rebates/Incentives .....	\$ –	NUI
NEBs.....	\$ 3,858	NEB

**Notes:**NEBs include PV of periodic bulb replacement costs for direct-install LED bulbs.  
NEBs for showerheads and faucet aerators include the NPV of water and wastewater savings.  
No participant costs.

Summary of Cost-Effectiveness Results			
Test	Benefit	Cost	Ratio
UC Test .....	\$ 29,017	\$ 46,352	0.63
TRC Test .....	35,776	46,352	0.77
RIM Test.....	29,017	101,692	0.29
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	
<b>Discount Rate</b>	
Nominal (WACC).....	6.74%
Real ((1 + WACC) / (1 + Escalation)) – 1 .....	4.54%
Escalation Rate .....	2.10%
Net-to-Gross (NTG).....	100%
Minimum NTG Sensitivity .....	160%
Average Customer Segment Rate/kWh .....	\$0.085
Line Losses .....	9.60%

Year: 2020

Program: Energy House Calls

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>	
PTCS Duct Sealing	Manufactured Home Prescriptive Duct Sealing - Electric FAF - Heating Zone 1	Pre-existing duct leakage	Home	Residential- Manufactured Home Idaho -Heating-All	18	972.81	\$509.40	\$-	-	-	\$0.814	0.64	0.71	1, 2
PTCS Duct Sealing	Manufactured Home Prescriptive Duct Sealing - Electric FAF - Heating Zone 2 or 3	Pre-existing duct leakage	Home	Residential- Manufactured Home Idaho -Heating-All	18	1,248.19	\$653.60	\$-	-	-	\$0.814	0.64	0.71	1, 2
PTCS Duct Sealing	Manufactured Home Prescriptive Duct Sealing - Heat Pump - Heating Zone 1	Pre-existing duct leakage	Home	Residential- Manufactured Home Idaho -Heating-All	18	615.06	\$322.07	\$-	-	-	\$0.814	0.64	0.71	1, 2
PTCS Duct Sealing	Manufactured Home Prescriptive Duct Sealing - Heat Pump - Heating Zone 2 or 3	Pre-existing duct leakage	Home	Residential- Manufactured Home Idaho -Heating-All	18	875.72	\$458.56	\$-	-	-	\$0.814	0.64	0.71	1, 2
General Purpose LED Direct Install	Direct install - LED_General Purpose, Dimmable, and Three-Way_250 to 1049 lumens (Average High Use and Moderate Use)	baseline bulb	Lamp	Residential-All- Lighting-All	12	30.63	\$14.71	\$5.56	-	-	\$0.814	0.59	0.87	2, 3
Low-flow faucet aerator	Direct install. Kitchen. Manufactured Home. Electric Resistance Hot Water.	non- low flow faucet aerator	Aerator	Residential-All-Water Heating-Water Heater	10	59.38	\$25.33	\$55.73	-	-	\$0.814	0.52	1.73	2, 4
Low-flow faucet aerator	Direct install. Bathroom. Manufactured Home. Electric Resistance Hot Water.	non- low flow faucet aerator	Aerator	Residential-All-Water Heating-Water Heater	10	39.92	\$17.03	\$45.08	-	-	\$0.814	0.52	1.96	2, 4
Low-flow showerheads	Residential Showerhead Replacement_2_00gpm_Any Shower_Electric Water Heating_Direct Install	any showerhead 2.2 gpm or higher	Showerhead	Residential-All-Water Heating-Water Heater	10	93.85	\$40.03	\$32.69	-	-	\$0.814	0.52	1.00	2, 5
Low-flow showerheads	Residential Showerhead Replacement_1_75gpm_Any Shower_Electric Water Heating_Direct Install	any showerhead 2.2 gpm or higher	Showerhead	Residential-All-Water Heating-Water Heater	10	142.24	\$60.67	\$73.85	-	-	\$0.814	0.52	1.21	2, 5
Water heater pipe covers	Up to 6 ft	No existing coverage	Pipe wrap	Residential-All-Water Heating-Water Heater	10	78.02	\$33.28	\$-	-	-	\$0.814	0.52	0.58	2, 6

<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 2017 IRP. 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. Calculated from 2020 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. ResMH PerformanceDuctSeal\_v3\_0.xlsx. 2015.

<sup>2</sup> Program and measures not cost-effective due to some administration costs incurred while the in-home activity was suspended due to COVID-19 restrictions. Will continue to monitor in 2021.

<sup>3</sup> RTF. ResLighting\_Bulbs\_v7\_1.xlsx. 2019.

<sup>4</sup> RTF. Aerators\_v1\_1.xlsx. 2018.

<sup>5</sup> RTF. Showerheads\_v4\_3.xlsx. 2019.

<sup>6</sup> AEG. Potential Study. 2018.

## Heating & Cooling Efficiency Program

Segment: Residential  
2020 Program Results

Cost Inputs			Ref
Program Administration .....	\$	258,370	
Program Incentives.....		348,190	I
<b>Total UC</b> .....	<b>\$</b>	<b>606,559</b>	<b>P</b>
Measure Equipment and Installation (Incremental Participant Cost).....	\$	1,653,423	M

Net Benefit Inputs (NPV)				Ref
<b>Resource Savings</b>				
2020 Annual Gross Energy (kWh).....		1,839,068		
NPV Cumulative Energy (kWh).....	19,680,187	\$	1,009,479	S
10% Credit (Northwest Power Act).....			100,948	
<b>Total Electric Savings</b> .....		<b>\$</b>	<b>1,110,427</b>	<b>A</b>
<b>Participant Bill Savings</b>				
NPV Cumulative Participant Bill Savings .....		\$	1,626,927	B
<b>Other Benefits</b>				
Non-Utility Rebates/Incentives .....		\$	–	NUI
NEBs .....		\$	446,692	NEB

Summary of Cost-Effectiveness Results				
Test		Benefit	Cost	Ratio
UC Test .....	\$	1,009,479	\$ 606,559	1.66
TRC Test .....		1,557,119	1,911,792	0.81
RIM Test.....		1,009,479	2,233,486	0.45
PCT .....		2,421,808	1,653,423	1.46

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).....	6.74%
Real ((1 + WACC) / (1 + Escalation)) – 1 .....	4.54%
Escalation Rate .....	2.10%
Net-to-Gross (NTG) .....	100%
Minimum NTG Sensitivity .....	240%
Average Customer Segment Rate/kWh .....	\$0.085
Line Losses .....	9.60%

Note: NEBs include NPV of RTF values for annual operation and maintenance (O&M) savings and monetized comfort savings.



Year: 2020

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 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>	
Heat Pump Conversion	Existing Single Family and Manufactured Home HVAC Conversion to Heat Pump with Commissioning and Sizing (Heating & Cooling Zone Weighted Average)	Conversion to high efficiency heat pump	Unit	Residential-All-Heating-Air-Source Heat Pump	15	7,446.54	\$4,156.31	1,412.47	\$4,297.50	\$800.00	\$0.140	2.26	1.12	1, 2, 3, 4
Heat Pump Upgrade	Existing Single Family and Manufactured Home HVAC Heat Pump Upgrade (Heating & Cooling Zone Weighted Average)	Heat pump to heat pump upgrade	Unit	Residential-All-Heating-Air-Source Heat Pump	15	536.45	\$299.42	\$18.79	\$136.32	\$250.00	\$0.140	0.92	1.65	1, 2, 3, 4, 13
Heat Pump Upgrade	New Construction Single Family and Manufactured Home HVAC Heat Pump Upgrade (Heating & Cooling Zone Weighted Average)	Heat pump to heat pump upgrade	Unit	Residential-All-Heating-Air-Source Heat Pump	15	745.11	\$415.89	\$19.02	\$153.30	\$250.00	\$0.140	1.17	1.85	1, 2, 3, 4
Open-Loop Heat Pump	Open loop water source heat pump for existing construction - 14.00 EER 3.5 COP (Heating & Cooling Zone Weighted Average)	Electric resistance/ Oil Propane	Unit	Residential-All-Heating-Air-Source Heat Pump	20	7,054.24	\$4,780.05	\$-	\$10,729.38	\$1,000.00	\$0.140	2.40	0.45	5, 6
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	Residential-All-Heating-Air-Source Heat Pump	20	7,814.67	\$5,295.33	\$-	\$14,970.17	\$1,000.00	\$0.140	2.53	0.36	5, 6
Ductless Heat Pump	Zonal to DHP. (Heating & Cooling Zone Weighted Average)	Zonal Electric	Unit	Residential-All-Heating-Air-Source Heat Pump	15	2,279.83	\$1,272.49	\$1,062.51	\$3,994.51	\$750.00	\$0.140	1.19	0.57	1, 5
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	Residential-All-Water Heating-Heat Pump Water Heater	13	1,568.00	\$775.05	\$-	\$706.80	\$300.00	\$0.140	1.49	0.92	7
Evaporative Cooler	Evaporative Cooler	Central Air Conditioning	Unit	Residential-Single Family Idaho-Cooling-All	12	1,471.00	\$1,965.42	\$-	\$248.91	\$150.00	\$0.140	5.52	4.75	8
Prescriptive Duct Sealing	Duct Tightness - PTCS Duct Sealing - Average Heating System. Weighted average of Heating Zones 1-3.	Pre-existing duct leakage	Unit	Residential-Single Family Idaho -Heating-All	20	847.72	\$495.44	\$-	\$712.30	\$350.00	\$0.140	1.06	0.66	5,9
Electronically Commutated Motor (ECM) Blower Motor	ECM Blower Motor	permanent split capacitor (PSC) motor	Unit	IPC_ECM	18	2,861.20	\$1,759.44	\$-	\$300.00	\$50.00	\$0.140	3.90	2.76	10

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>	
Whole-House Fan	Whole-House Fan	Displaced forced air dx cooling	Unit	Residential-Single Family Idaho-Cooling-All	18	445.60	\$774.85	\$-	\$700.00	\$200.00	\$0.140	2.95	1.12	10
Smart Thermostat	Smart Thermostat	non wi-fi enabled thermostat/no thermostat	Unit	Residential-Single Family Idaho -Heating-All	5	579.76	\$101.72	\$-	\$315.53	\$75.00	\$0.140	0.65	0.28	11, 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> 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 2017 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 2020 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. ResSFExistingHVAC\_v4\_1.xlsx. Weighted average of 2020 participants in heating and cooling zones 1-3.

<sup>2</sup> RTF. ResHeatingCoolingCommissioningControlsSizingSF\_v3\_6.xlsm. Weighted average of 2020 participants in heating and cooling zones 1-3.

<sup>3</sup> RTF. ResMHExistingHVAC\_v3\_3.xlsx. Weighted average of 2020 participants in heating and cooling zones 1-3.

<sup>4</sup> RTF. ResMHHeatingCoolingCommissioningControlsSizing\_v3\_3.xlsx. Weighted average of 2020 participants in heating and cooling zones 1-3.

<sup>5</sup> Measure not cost-effective from TRC perspective.

<sup>6</sup> RTF. ResGSHP\_v2\_7. 2016. Weighted average of 2020 participants in heating and cooling zones 1-3.

<sup>7</sup> RTF. ResHPWH\_v4\_2.xlsm. 2020. Measure cost-effective without inclusion of admin costs.

<sup>8</sup> New Mexico Technical Resource Manual for the Calculation of Energy Efficiency Savings. Evaporative Cooling. Santa Fe. 2019.

<sup>9</sup> RTF. ResSFDuctSealing\_v5\_1.xlsm. 2019.

<sup>10</sup> Idaho Power engineering calculations based on Integrated Design Lab inputs. 2015.

<sup>11</sup> RTF. ResConnectedTstats\_v1.3.xlsm. 2018

<sup>12</sup> Measure not cost-effective. Measure is being piloted and will be monitored in 2021.

<sup>13</sup> Measure not cost-effective. Measure cost-effective without inclusion of admin costs.

## Multifamily Energy Savings Program

Segment: Residential  
2020 Program Results

Cost Inputs		Ref
Program Administration .....	\$ 89,829	
Program Incentives.....	–	I
<b>Total UC</b> .....	<b>\$ 89,829</b>	<b>P</b>
Measure Equipment and Installation (Incremental Participant Cost).....	\$ –	M

Net Benefit Inputs (NPV)		Ref
<b>Resource Savings</b>		
2020 Annual Gross Energy (kWh).....	28,041	
NPV Cumulative Energy (kWh).....	256,460	\$ 12,318 S
10% Credit (Northwest Power Act).....		1,232
<b>Total Electric Savings</b> .....	<b>\$ 13,550</b>	<b>A</b>
<b>Participant Bill Savings</b>		
NPV Cumulative Participant Bill Savings .....	\$ 20,707	B
<b>Other Benefits</b>		
Non-Utility Rebates/Incentives .....	\$ –	NUI
NEBs .....	\$ 11,486	NEB

**Notes:** NEBs include PV of periodic bulb replacement costs for direct-install LED lightbulbs.  
NEBS for showerheads and faucet aerators include the NPV of water and waste water savings.  
No participant costs.

Summary of Cost-Effectiveness Results			
Test	Benefit	Cost	Ratio
UC Test .....	\$ 12,318	\$ 89,829	0.14
TRC Test .....	25,035	89,829	0.28
RIM Test.....	12,318	110,536	0.11
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	
<b>Discount Rate</b>	
Nominal (WACC).....	6.74%
Real ((1 + WACC) / (1 + Escalation)) – 1 .....	4.54%
Escalation Rate .....	2.10%
Net-to-Gross (NTG) .....	100%
Minimum NTG Sensitivity .....	729%
Average Customer Segment Rate/kWh .....	\$0.085
Line Losses .....	9.60%

Year: 2020

Program: Multifamily Energy Savings 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 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>	
General Purpose LED Direct Install	Efficient Technology: LED Lamp Type: General Purpose and Dimmable Lumen Category: 250 to 1049 lumens Space Type: Average of Moderate and High-Use Interior	Baseline bulb	Lamp	Residential-All-Lighting-All	12	30.63	\$14.71	\$5.56	-	-	\$3.203	0.15	0.22	1, 2
General Purpose LED Direct Install	Efficient Technology: LED Lamp Type: General Purpose and Dimmable Lumen Category: 1490 to 2600 lumens Space Type: Exterior	Baseline bulb	Lamp	IPC_Outdoor Lighting	12	83.87	\$29.93	\$12.06	-	-	\$3.203	0.11	0.17	1, 2
Globe LED Direct Install	Efficient Technology: LED Lamp Type: Globe Lumen Category: 250 to 1049 lumens Space Type: Moderate Use Interior	Baseline bulb	Lamp	Residential-All-Lighting-All	12	16.17	\$7.76	\$5.04	-	-	\$3.203	0.15	0.26	1, 2
Decorative LED Direct Install	Efficient Technology: LED Lamp Type: Decorative or Minibase Lumen Category: 250 to 1049 lumens Space Type: Average of Moderate and High Use Interior	Baseline bulb	Lamp	Residential-All-Lighting-All	12	18.98	\$9.11	\$5.04	-	-	\$3.203	0.15	0.25	1, 2
Low-flow faucet aerator	Direct install. Kitchen. Multifamily Home. Electric Resistance Hot Water.	non- low flow faucet aerator	Aerator	Residential-All-Water Heating-Water Heater	10	43.94	\$18.74	\$41.25	-	-	\$3.203	0.13	0.44	2, 3
Low-flow faucet aerator	Direct install. Bathroom. Multifamily Home. Electric Resistance Hot Water.	non- low flow faucet aerator	Aerator	Residential-All-Water Heating-Water Heater	10	47.54	\$20.28	\$53.64	-	-	\$3.203	0.13	0.50	2, 3
Low-flow showerheads and thermostatic shower valve combination unit	Residential_Direct install_Valve and 1.75 gpm showerhead_Electric resistance DHW	Any showerhead 2.2 gpm or higher	Showerhead	Residential-All-Water Heating-Water Heater	10	197.80	\$84.37	\$139.96	-	-	\$3.203	0.13	0.37	2, 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 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>	
Water heater pipe covers	up to 6 feet	No existing coverage	Pipe wrap	Residential-All-Water Heating-Water Heater	10	74.70	\$31.86	\$-	-	-	\$3.203	0.13	0.15	2, 5

<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 2017 IRP. 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. Calculated from 2020 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\_Bulbs\_v7\_1.xlsm. 2019.

<sup>2</sup> Program and measures not cost-effective due to some administration costs incurred while the in-home activity was suspended due to COVID-19 restrictions. Will continue to monitor in 2021.

<sup>3</sup> RTF. Aerators\_v1\_1.xlsm. 2018

<sup>4</sup> RTF. ResThermostaicShowerRestrictionValve\_v3\_1.xlsm. 2019.

<sup>5</sup> AEG. Potential Study. 2018..

## Rebate Advantage

Segment: Residential  
2020 Program Results

Cost Inputs			Ref
Program Administration .....	\$	64,422	
Program Incentives.....		116,000	I
<b>Total UC</b> .....	<b>\$</b>	<b>180,422</b>	<b>P</b>
Measure Equipment and Installation (Incremental Participant Cost).....	\$	372,841	M

Net Benefit Inputs (NPV)				Ref
<b>Resource Savings</b>				
2020 Annual Gross Energy (kWh).....		366,678		
NPV Cumulative Energy (kWh).....	6,189,330	\$	304,047	S
10% Credit (Northwest Power Act).....			30,405	
<b>Total Electric Savings</b> .....		<b>\$</b>	<b>334,452</b>	<b>A</b>
<b>Participant Bill Savings</b>				
NPV Cumulative Participant Bill Savings .....		\$	601,162	B
<b>Other Benefits</b>				
Non-Utility Rebates/Incentives .....		\$	-	NUI
NEBs .....		\$	92,043	NEB

Summary of Cost-Effectiveness Results				
Test		Benefit	Cost	Ratio
UC Test .....	\$	304,047	\$ 180,422	1.69
TRC Test .....		426,495	437,263	0.98
RIM Test.....		304,047	781,584	0.39
PCT .....		809,205	372,841	2.17

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

Assumptions for Levelized Calculations	
<b>Discount Rate</b>	
Nominal (WACC).....	6.74%
Real ((1 + WACC) / (1 + Escalation)) - 1 .....	4.54%
Escalation Rate .....	2.10%
Net-to-Gross (NTG) .....	100%
Minimum NTG Sensitivity .....	106%
Average Customer Segment Rate/kWh .....	\$0.085
Line Losses .....	9.60%

Notes: 2020 cost-effectiveness ratios include evaluation expenses. If evaluation expenses were removed from the program's cost-effectiveness, the UCT and TRC would be 1.73 and 0.99, respectively..

Year: 2020

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 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>	
ENERGY STAR <sup>®</sup> manufactured home	Estar_electric_Heating Zone (HZ) 1_Cooling Zone (CZ) 3	Manufactured home built to Housing and Urban Development (HUD) code.	Home	Residential-Manufactured Home Idaho -Heating-All	44	2,304.76	\$1,911.10	\$371.26	\$2,708.26	\$1,000.00	\$0.176	1.36	0.79	1,2
ENERGY STAR manufactured home	Estar_electric_HZ2_CZ1	Manufactured home built to Housing and Urban Development (HUD) code.	Home	Residential-Manufactured Home Idaho -Heating-All	45	3,311.66	\$2,766.08	\$1,270.55	\$2,708.26	\$1,000.00	\$0.176	1.75	1.31	1
ENERGY STAR manufactured home	Estar_electric_HZ2_CZ2	Manufactured home built to HUD code.	Home	Residential-Manufactured Home Idaho -Heating-All	45	3,312.82	\$2,767.05	\$1,115.40	\$2,708.26	\$1,000.00	\$0.176	1.75	1.26	1
ENERGY STAR manufactured home	Estar_electric_HZ2_CZ3	Manufactured home built to HUD code.	Home	Residential-Manufactured Home Idaho -Heating-All	45	3,314.53	\$2,768.48	\$1,115.40	\$2,708.26	\$1,000.00	\$0.176	1.75	1.26	1
ENERGY STAR manufactured home	Estar_electric_HZ3_CZ1	Manufactured home built to HUD code.	Home	Residential-Manufactured Home Idaho -Heating-All	45	4,142.05	\$3,459.67	\$1,398.70	\$2,708.26	\$1,000.00	\$0.176	2.00	1.51	1
EcoRated manufactured home	EcoRated_electric_HZ1_CZ3	Manufactured home built to HUD code.	Home	Residential-Manufactured Home Idaho -Heating-All	42	2,521.36	\$2,058.01	\$370.72	\$2,980.16	\$1,000.00	\$0.176	1.43	0.77	1, 2
Northwest Energy Efficient Manufactured (NEEM) home	NEEM_electric_HZ1_CZ3	Manufactured home built to HUD code.	Home	Residential-Manufactured Home Idaho -Heating-All	41	2,981.20	\$2,412.69	\$423.60	\$4,501.68	\$1,000.00	\$0.176	1.58	0.61	1, 2
NEEM home	NEEM_electric_HZ2_CZ2	Manufactured home built to HUD code.	Home	Residential-Manufactured Home Idaho -Heating-All	42	4,172.51	\$3,405.74	\$1,278.65	\$4,501.68	\$1,000.00	\$0.176	1.96	0.96	1, 2, 3
NEEM home	NEEM_electric_HZ2_CZ3	Manufactured home built to HUD code.	Home	Residential-Manufactured Home Idaho -Heating-All	42	4,174.68	\$3,407.51	\$1,278.65	\$4,501.68	\$1,000.00	\$0.176	1.96	0.96	1, 2, 3
NEEM home	NEEM_electric_HZ3_CZ1	Manufactured home built to HUD code.	Home	Residential-Manufactured Home Idaho -Heating-All	43	5,155.10	\$4,241.92	\$1,619.89	\$4,501.68	\$1,000.00	\$0.176	2.22	1.16	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> 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 2017 IRP. TRC test benefit 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 2020 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. NewMHNewHomesandHVAC\_v3\_4.xlsm. 2017.

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

<sup>3</sup> Measure cost-effective without inclusion of admin costs.

## Residential New Construction Pilot Program

Segment: Residential  
2020 Program Results

Cost Inputs			Ref
Program Administration .....	\$	83,704	
Program Incentives.....		389,800	I
<b>Total UC</b> .....	<b>\$</b>	<b>473,504</b>	<b>P</b>
Measure Equipment and Installation (Incremental Participant Cost).....	\$	782,285	M

Net Benefit Inputs (NPV)				Ref
<b>Resource Savings</b>				
2020 Annual Gross Energy (kWh).....		649,522		
NPV Cumulative Energy (kWh).....	11,359,554	\$	731,230	S
10% Credit (Northwest Power Act).....			73,123	
<b>Total Electric Savings</b> .....		<b>\$</b>	<b>804,353</b>	<b>A</b>
<b>Participant Bill Savings</b>				
NPV Cumulative Participant Savings .....		\$	1,146,182	B
<b>Other Benefits</b>				
Non-Utility Rebates/Incentives .....		\$	–	NUI
NEBs .....		\$	235,730	NEB

Notes: 2012 International Energy Conservation Code (IECC) with amendments adopted in Idaho in 2014.

Summary of Cost-Effectiveness Results			
Test	Benefit	Cost	Ratio
UC Test .....	\$ 731,230	\$ 473,504	1.54
TRC Test .....	1,040,084	865,989	1.20
RIM Test .....	731,230	1,619,686	0.45
PCT .....	1,771,712	782,285	2.26

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).....	6.74%
Real ((1 + WACC) / (1 + Escalation)) – 1 .....	4.54%
Escalation Rate .....	2.10%
Net-to-Gross (NTG).....	100%
Minimum NTG Sensitivity .....	73%
Average Customer Segment Rate/kWh .....	\$0.085
Line Losses .....	9.60%



Year: 2020 Program: Residential New Construction Pilot 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 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>	
Next Step Home	Next Step Home - average per home savings.	Home built to International Energy Conservation Code 2012 Code. Adopted 2014.	Home	Residential-All-Heating-Air-Source Heat Pump	58	2,619.04	\$2,948.51	\$950.47	\$3,154.94	\$1,571.77	\$0.129	1.54	1.20	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> 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 2017 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 2020 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>h</sup> NEEA circuit rider code enforcement initiative. 2020 average per home savings. Costs and NEBs from RTF. RESNCMTHouse\_ID\_v3\_1\_1\_.xism. 2019.

## Simple Steps, Smart Savings™

Segment: Residential  
2020 Program Results

Cost Inputs			Ref
Program Administration .....	\$	69,862	
Program Incentives.....		29,279	I
<b>Total UC</b> .....	<b>\$</b>	<b>99,141</b>	<b>P</b>
Measure Equipment and Installation (Incremental Participant Cost).....	\$	28,767	M

Net Benefit Inputs (NPV)				Ref
<b>Resource Savings</b>				
2020 Annual Gross Energy (kWh).....		148,404		
NPV Cumulative Energy (kWh).....	1,439,314	\$	77,481	S
10% Credit (Northwest Power Act).....			7,748	
<b>Total Electric Savings</b> .....	<b>\$</b>	<b>85,229</b>		<b>A</b>
<b>Participant Bill Savings</b>				
NPV Cumulative Participant Bill Savings .....	\$	117,145		B
<b>Other Benefits</b>				
Non-Utility Rebates/Incentives .....	\$	-		NUI
NEBs .....	\$	234,281		NEB

Note: NEBs include the NPV of water savings from low-flow showerheads and clothes washers.

Summary of Cost-Effectiveness Results				
Test		Benefit	Cost	Ratio
UC Test .....	\$	77,481	\$ 99,141	0.78
TRC Test .....		319,510	98,629	3.24
RIM Test.....		77,481	216,285	0.36
PCT .....		380,705	28,767	13.23

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	
<b>Discount Rate</b>	
Nominal (WACC).....	6.74%
Real ((1 + WACC) / (1 + Escalation)) - 1 .....	4.54%
Escalation Rate .....	2.10%
Net-to-Gross (NTG) .....	100%
Minimum NTG Sensitivity .....	128%
Average Customer Segment Rate/kWh .....	\$0.085
Line Losses .....	9.60%

Year: 2020

Program: Simple Steps, Smart Savings

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>	
Clothes Washer	ENERGY STAR® clothes washer—Any	Baseline clothes washers	Clothes washer	Residential-All-Appliances-Clothes Washer	14	142.29	\$89.42	\$206.53	\$-	\$25.00	\$0.471	0.97	3.31	1, 2, 3
Low-Flow Showerhead	Low-flow showerhead 2.0 gpm Any shower any water Heating Retail	Showerhead 2.2 gpm or higher	Showerhead	Residential-All-Water Heating-Water Heater	10	5.55	\$2.37	\$9.45	\$-	\$2.00	\$0.471	0.51	2.61	3, 4
Low-Flow Showerhead	Low-flow showerhead 1.75 gpm Any shower any water Heating Retail	Showerhead 2.2 gpm or higher	Showerhead	Residential-All-Water Heating-Water Heater	10	30.95	\$13.20	\$52.77	\$-	\$5.00	\$0.471	0.67	3.44	3, 4
Low-Flow Showerhead	Low-flow showerhead 1.5 gpm Any shower any water Heating Retail	Showerhead 2.2 gpm or higher	Showerhead	Residential-All-Water Heating-Water Heater	10	69.05	\$29.45	\$117.78	\$-	\$6.00	\$0.471	0.76	3.90	3, 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> 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 2017 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 2020 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> BPA. UES\_Measures\_List.xlsx. 2019.

<sup>2</sup> NEBs from RTF. ResClothesWashers\_v6\_1.xlsm. 2018. Adjusted savings by changing Electric Water Heating saturation from 61% to 49% to match IPC mix.

<sup>3</sup> Offering sunsetted by Bonneville Power Administration on September 30, 2020.

<sup>4</sup> RTF. ResShowerheads\_v4\_3.xlsm. 2019. Adjusted savings by changing Electric Water Heating saturation from 60% to 49% to match IPC mix.

## Weatherization Assistance for Qualified Customers

Segment: Residential  
2020 Program Results

Cost Inputs		Ref
Program Administration .....	\$ 115,524	
Community Action Partnership (CAP) Agency Payments.....	654,961	
<b>Total UC</b> .....	<b>\$ 770,485</b>	P
Accruals/Reversal of Carryover Dollars.....	615,092	
<b>Total Program Expenses</b> .....	<b>1,385,577</b>	
Idaho Power Indirect Overhead Expense Allocation—2.378%.....	\$ 32,949	OH
Additional State Funding .....	342,716	M
Net Benefit Inputs (NPV)		Ref
<b>Resource Savings</b>		
2020 Annual Gross Energy (kWh).....	218,611	
NPV Cumulative Energy (kWh).....	3,358,364	\$ 160,708 S
10% Credit (Northwest Power Act).....	16,071	
<b>Total Electric Savings</b> .....	<b>\$ 176,779</b>	A
<b>Participant Bill Savings</b>		
NPV Cumulative Participant Bill Savings .....	\$ 307,429	B
<b>Other Benefits</b>		
Non-Utility Rebates/Incentives .....	\$ -	NUI
NEBs .....		
Health and Safety .....	\$ 152,189	
Repair .....	48	
Other.....	44,628	
<b>NEBs Total</b> .....	<b>\$ 196,865</b>	NEB

Summary of Cost-Effectiveness Results			
Test	Benefit	Cost	Ratio
UC Test .....	\$ 160,708	\$ 803,434	0.20
TRC Test .....	373,644	1,146,150	0.33
RIM Test.....	160,708	1,110,863	0.14
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	
<b>Discount Rate</b>	
Nominal (WACC).....	6.74%
Real ((1 + WACC) / (1 + Escalation)) - 1 .....	4.54%
Escalation Rate .....	2.10%
Net-to-Gross (NTG).....	100%
Minimum NTG Sensitivity .....	500%
Average Customer Segment Rate/kWh .....	\$0.085
Line Losses .....	9.60%

**Notes:** Savings updated in 2020 based on a billing analysis of the 2016-2018 weatherization projects. Program cost-effectiveness incorporated IPUC staff recommendations from case GNR-E-12-01. Recommendations include: Claimed 100% of savings; increased NTG to 100%; added a 10% conservation preference adder; health, safety, and repair NEBs; and allocation of indirect overhead expenses. No customer participant costs. Costs shown are from the DOE state weatherization assistance program.

## Weatherization Solutions for Eligible Customers

Segment: Residential  
2020 Program Results

Cost Inputs		Ref
Program Administration .....	\$ 36,561	
Weatherization LLC Payments .....	172,154	
<b>Total Program Expenses/Total UC .....</b>	<b>\$ 208,715</b>	P
Idaho Power Indirect Overhead Expense Allocation—2.378%.....	\$ 4,963	OH
Additional State Funding .....	–	M
Net Benefit Inputs (NPV)		Ref
<b>Resource Savings</b>		
2020 Annual Gross Energy (kWh).....	47,360	
NPV Cumulative Energy (kWh).....	658,102	\$ 28,385 S
10% Credit (Northwest Power Act).....	2,839	
<b>Total Electric Savings .....</b>	<b>\$ 31,224</b>	A
<b>Participant Bill Savings</b>		
NPV Cumulative Participant Bill Savings .....	\$ 57,901	B
<b>Other Benefits</b>		
Non-Utility Rebates/Incentives .....	\$ –	NUI
NEBs .....		
Health and Safety .....	11,239	
Repair .....	1,026	
Other .....	6,184	
NEBs Total .....	\$ 18,449	NEB

Summary of Cost-Effectiveness Results			
Test	Benefit	Cost	Ratio
UC Test .....	\$ 28,385	\$ 213,678	0.13
TRC Test .....	49,673	213,678	0.23
RIM Test.....	28,385	271,579	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).....	6.74%
Real ((1 + WACC) / (1 + Escalation)) – 1 .....	4.54%
Escalation Rate .....	2.10%
Net-to-Gross (NTG).....	100%
Minimum NTG Sensitivity .....	753%
Average Customer Segment Rate/kWh .....	\$0.085
Line Losses .....	9.60%

**Notes:** Savings updated in 2020 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.

## Commercial Energy-Saving Kits

Segment: Commercial  
2020 Program Results

Cost Inputs			Ref
Program Administration .....	\$	103,678	
Program Incentives.....		–	I
<b>Total UC</b> .....	<b>\$</b>	<b>103,678</b>	<b>P</b>
Measure Equipment and Installation (Incremental Participant Cost).....	\$	–	M

Net Benefit Inputs (NPV)				Ref
<b>Resource Savings</b>				
2020 Annual Gross Energy (kWh).....		258,368		
NPV Cumulative Energy (kWh).....		2,363,048	\$	128,900
10% Credit (Northwest Power Act).....				12,890
<b>Total Electric Savings</b> .....	<b>\$</b>			<b>141,790</b>
				A
<b>Participant Bill Savings</b>				
NPV Cumulative Participant Bill Savings .....	\$	128,443		B
<b>Other Benefits</b>				
Non-Utility Rebates/Incentives .....	\$	–		NUI
NEBs .....	\$	104,672		NEB

Summary of Cost-Effectiveness Results					
Test		Benefit	Cost	Ratio	
UC Test .....	\$	128,900	\$	103,678	1.24
TRC Test .....		246,463		103,678	2.38
RIM Test.....		128,900		232,121	0.56
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	
<b>Discount Rate</b>	
Nominal (WACC).....	6.74%
Real ((1 + WACC) / (1 + Escalation)) – 1 .....	4.54%
Escalation Rate .....	2.10%
Net-to-Gross (NTG) .....	100%
Minimum NTG Sensitivity .....	80%
Average Customer Segment Rate/kWh .....	\$0.057
Line Losses .....	9.60%

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

Year: 2020

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 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>	
Restaurant Commercial Kit	3-9W LEDs, 2-bathroom aerators, 2-kitchen aerators, 2-exit sign retrofit, 1-pre-rinse spray valve.	no kit	kit	IPC_Commercial Kit Restaurant	10	258.66	\$123.03	\$424.10	-	-	\$0.401	1.19	5.39	1
Retail Commercial Kit	2-9W LEDs, 2-8W LED BR30s, 1-bathroom aerator, 2-exit sign retrofit	no kit	kit	IPC_Commercial Kit Retail	10	239.62	\$115.72	\$7.37	-	-	\$0.401	1.20	1.40	1
Office Commercial Kit	2-9W LEDs, 2-bathroom aerators, 1-kitchen aerator, 2-exit sign retrofit, 1-advance power strip	no kit	kit	IPC_Commercial Kit Office	12	158.52	\$83.07	\$9.87	-	-	\$0.401	1.31	1.59	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> 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 2017 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 2020 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>h</sup> IPC analysis based on average hours of use by building type and varying electric water heat saturations. Hours of use from TRM. Electric water heat saturation from 2018 potential study.

## Custom Projects

Segment: Industrial  
2020 Program Results

Cost Inputs		Ref
Program Administration .....	\$ 2,437,551	
Program Incentives.....	15,621,845	I
<b>Total UC</b> .....	<b>\$ 18,059,396</b>	P
Measure Equipment and Installation (Incremental Participant Cost).....	\$ 39,166,900	M

Net Benefit Inputs (NPV)		Ref
<b>Resource Savings</b>		
2020 Annual Gross Energy (kWh).....	94,006,717	
NPV Cumulative Energy (kWh).....	1,048,711,046	\$ 58,874,100 S
10% Credit (Northwest Power Act).....	5,887,410	
<b>Total Electric Savings</b> .....	<b>\$ 64,761,510</b>	A
<b>Participant Bill Savings</b>		
NPV Cumulative Participant Savings.....	\$ 37,669,495	B
<b>Other Benefits</b>		
Non-Utility Rebates/Incentives .....	\$ -	NUI
NEBs .....	\$ 2,310,595	NEB

Summary of Cost-Effectiveness Results			
Test	Benefit	Cost	Ratio
UC Test .....	\$ 58,874,100	\$ 18,059,396	3.26
TRC Test .....	67,072,105	41,604,451	1.61
RIM Test.....	58,874,100	55,728,891	1.06
PCT .....	55,601,935	39,166,900	1.42

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).....	6.74%
Real ((1 + WACC) / (1 + Escalation)) - 1 .....	4.54%
Escalation Rate .....	2.10%
Net-to-Gross (NTG) .....	100%
Minimum NTG Sensitivity .....	41%
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: 2020

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 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>	
Green Motors Program Rewind: Motor size 15 HP	Green Motors Program Rewind: Motor size 15 HP	Standard rewind practice	Motor	MF_Motors	7	525.20	\$179.86	\$-	\$141.08	\$15.00	\$0.030	5.85	1.26	1
Green Motors Program Rewind: Motor size 20 HP	Green Motors Program Rewind: Motor size 20 HP	Standard rewind practice	Motor	MF_Motors	7	702.77	\$240.67	\$-	\$157.40	\$20.00	\$0.030	5.86	1.48	1
Green Motors Program Rewind: Motor size 25 HP	Green Motors Program Rewind: Motor size 25 HP	Standard rewind practice	Motor	MF_Motors	8	893.48	\$344.69	\$-	\$179.84	\$25.00	\$0.030	6.65	1.83	1
Green Motors Program Rewind: Motor size 30 HP	Green Motors Program Rewind: Motor size 30 HP	Standard rewind practice	Motor	MF_Motors	8	962.42	\$371.29	\$-	\$197.51	\$30.00	\$0.030	6.31	1.80	1
Green Motors Program Rewind: Motor size 40 HP	Green Motors Program Rewind: Motor size 40 HP	Standard rewind practice	Motor	MF_Motors	8	1,120.77	\$432.37	\$-	\$241.37	\$40.00	\$0.030	5.87	1.73	1
Green Motors Program Rewind: Motor size 50 HP	Green Motors Program Rewind: Motor size 50 HP	Standard rewind practice	Motor	MF_Motors	8	1,206.18	\$465.32	\$-	\$267.20	\$50.00	\$0.030	5.40	1.69	1
Green Motors Program Rewind: Motor size 60 HP	Green Motors Program Rewind: Motor size 60 HP	Standard rewind practice	Motor	MF_Motors	8	1,268.50	\$489.37	\$-	\$315.14	\$60.00	\$0.030	4.99	1.52	1
Green Motors Program Rewind: Motor size 75 HP	Green Motors Program Rewind: Motor size 75 HP	Standard rewind practice	Motor	MF_Motors	8	1,305.49	\$503.64	\$-	\$340.63	\$75.00	\$0.030	4.41	1.46	1
Green Motors Program Rewind: Motor size 100 HP	Green Motors Program Rewind: Motor size 100 HP	Standard rewind practice	Motor	MF_Motors	8	1,723.08	\$664.74	\$-	\$422.56	\$100.00	\$0.030	4.38	1.54	1
Green Motors Program Rewind: Motor size 125 HP	Green Motors Program Rewind: Motor size 125 HP	Standard rewind practice	Motor	MF_Motors	8	1,990.39	\$767.86	\$-	\$421.20	\$125.00	\$0.030	4.16	1.76	1
Green Motors Program Rewind: Motor size 150 HP	Green Motors Program Rewind: Motor size 150 HP	Standard rewind practice	Motor	MF_Motors	8	2,366.02	\$912.77	\$-	\$469.17	\$150.00	\$0.030	4.13	1.86	1
Green Motors Program Rewind: Motor size 200 HP	Green Motors Program Rewind: Motor size 200 HP	Standard rewind practice	Motor	MF_Motors	8	3,138.34	\$1,210.72	\$-	\$564.81	\$200.00	\$0.030	4.12	2.02	1
Green Motors Program Rewind: Motor size 250 HP	Green Motors Program Rewind: Motor size 250 HP	Standard rewind practice	Motor	MF_Motors	8	3,798.53	\$1,465.41	\$-	\$725.92	\$250.00	\$0.030	4.03	1.92	1
Green Motors Program Rewind: Motor size 300 HP	Green Motors Program Rewind: Motor size 300 HP	Standard rewind practice	Motor	MF_Motors	8	4,534.67	\$1,749.40	\$-	\$733.76	\$300.00	\$0.030	4.01	2.21	1
Green Motors Program Rewind: Motor size 350 HP	Green Motors Program Rewind: Motor size 350 HP	Standard rewind practice	Motor	MF_Motors	8	5,286.56	\$2,039.47	\$-	\$769.07	\$350.00	\$0.030	4.01	2.42	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 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>	
Green Motors Program Rewind: Motor size 400 HP	Green Motors Program Rewind: Motor size 400 HP	Standard rewind practice	Motor	MF_Motors	8	5,994.15	\$2,312.44	\$-	\$858.98	\$400.00	\$0.030	3.99	2.45	1
Green Motors Program Rewind: Motor size 450 HP	Green Motors Program Rewind: Motor size 450 HP	Standard rewind practice	Motor	MF_Motors	8	6,732.12	\$2,597.14	\$-	\$938.94	\$450.00	\$0.030	3.98	2.50	1
Green Motors Program Rewind: Motor size 500 HP	Green Motors Program Rewind: Motor size 500 HP	Standard rewind practice	Motor	MF_Motors	8	7,490.56	\$2,889.73	\$-	\$1,014.37	\$500.00	\$0.030	3.99	2.57	1
Green Motors Program Rewind: Motor size 600 HP	Green Motors Program Rewind: Motor size 600 HP	Standard rewind practice	Motor	MF_Motors	8	10,137.37	\$3,910.83	\$-	\$1,526.53	\$600.00	\$0.030	4.33	2.35	1
Green Motors Program Rewind: Motor size 700 HP	Green Motors Program Rewind: Motor size 700 HP	Standard rewind practice	Motor	MF_Motors	8	11,776.73	\$4,543.27	\$-	\$1,665.44	\$700.00	\$0.030	4.31	2.48	1
Green Motors Program Rewind: Motor size 800 HP	Green Motors Program Rewind: Motor size 800 HP	Standard rewind practice	Motor	MF_Motors	8	13,430.58	\$5,181.29	\$-	\$1,847.86	\$800.00	\$0.030	4.31	2.53	1
Green Motors Program Rewind: Motor size 900 HP	Green Motors Program Rewind: Motor size 900 HP	Standard rewind practice	Motor	MF_Motors	8	15,077.39	\$5,816.61	\$-	\$2,037.17	\$900.00	\$0.030	4.30	2.57	1
Green Motors Program Rewind: Motor size 1,000 HP	Green Motors Program Rewind: Motor size 1,000 HP	Standard rewind practice	Motor	MF_Motors	8	16,681.86	\$6,435.58	\$-	\$2,195.45	\$1,000.00	\$0.030	2.96	2.10	1
Wastewater Energy Efficiency Cohort	Cohort workshop training	No change	Participant	Industrial-Water & Wastewater-All-All	1	150,148.60	\$9,210.83	\$-	\$2,353.51	\$1,647.45	\$0.030	1.50	1.48	2
Water Supply Optimization Cohort	Cohort workshop training	No change	Participant	Industrial-Water & Wastewater-All-All	1	701,335.00	\$43,023.22	\$-	\$2,720.00	\$1,904.00	\$0.030	1.88	1.99	2

<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 2017 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 2019 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: Ind\_and\_Ag\_GreenMotorRewind\_v3\_1.xlsm. 2017.  
<sup>2</sup> 2020 average savings per cohort participant.

## New Construction

Segment: Commercial  
2020 Program Results

Cost Inputs		Ref
Program Administration .....	\$ 421,337	
Program Incentives.....	1,962,645	I
<b>Total UC</b> .....	<b>\$ 2,383,983</b>	P
Measure Equipment and Installation (Incremental Participant Cost).....	\$ 3,754,274	M

Net Benefit Inputs (NPV)		Ref
<b>Resource Savings</b>		
2020 Annual Gross Energy (kWh).....	14,565,936	
NPV Cumulative Energy (kWh).....	141,271,009	\$ 8,097,676 S
10% Credit (Northwest Power Act).....	809,768	
<b>Total Electric Savings</b> .....	<b>\$ 8,907,444</b>	A
<b>Participant Bill Savings</b>		
NPV Cumulative Participant Bill Savings .....	\$ 7,740,477	B
<b>Other Benefits</b>		
Non-Utility Rebates/Incentives .....	\$ -	NUI
NEBs .....	\$ 2,082,587	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 .....	\$ 8,097,676	\$ 2,383,983	3.40
TRC Test .....	10,990,031	4,175,611	2.63
RIM Test.....	8,097,676	10,124,459	0.80
PCT .....	11,785,709	3,754,274	3.14

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).....	6.74%
Real ((1 + WACC) / (1 + Escalation)) - 1 .....	4.54%
Escalation Rate .....	2.10%
Net-to-Gross (NTG) .....	100%
Minimum NTG Sensitivity .....	29%
Average Customer Segment Rate/kWh .....	\$0.057
Line Losses .....	9.60%

Year: 2020

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 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>	
Lighting	Interior Light Load Reduction. Part A: 10-19.9% below code.	Code standards	ft <sup>2</sup>	Commercial-Miscellaneous-Interior Lighting-All	14	0.44	\$0.28	-	\$0.14	\$0.10	\$0.030	2.45	1.99	1
Lighting	Interior Light Load Reduction. Part B: 20-29.9% below code.	Code standards	ft <sup>2</sup>	Commercial-Miscellaneous-Interior Lighting-All	14	0.88	\$0.56	-	\$0.28	\$0.20	\$0.030	2.45	1.99	1
Lighting	Interior Light Load Reduction. Part C: Equal to or greater than 30% below code.	Code standards	ft <sup>2</sup>	Commercial-Miscellaneous-Interior Lighting-All	14	2.00	\$1.26	-	\$0.65	\$0.30	\$0.030	3.51	1.96	1
Lighting	Exterior Light Load Reduction. Minimum of 15% below code.	Code standards	kW	IPC_Outdoor Lighting	15	4,059.00	\$1,751.69	-	\$287.00	\$200.00	\$0.030	5.44	4.71	1
Lighting	Daylight Photo Controls	Code standards	ft <sup>2</sup>	Commercial-Miscellaneous-Interior Lighting-All	14	1.97	\$1.24	-	\$0.46	\$0.25	\$0.030	4.02	2.64	1
Lighting	Occupancy Sensors	Code standards	Sensor	Commercial-Miscellaneous-Interior Lighting-All	8	387.00	\$152.10	-	\$134.22	\$25.00	\$0.030	4.15	1.15	1
Lighting	High-Efficiency Exit Signs	Code standards	Sign	IPC_8760	16	28.00	\$17.85	-	\$10.83	\$7.50	\$0.030	2.14	1.68	1
A/C	Unitary Commercial A/C, Air Cooled (Cooling Mode). <= 5 tons. Split system & single package. Part A: Base to CEE Tier 1	Code standards	Tons	Commercial-Miscellaneous-Cooling-All	15	69.00	\$69.23	-	\$33.68	\$30.00	\$0.030	2.16	2.13	1
A/C	Unitary Commercial A/C, Air Cooled (Cooling Mode). <= 5 tons. Split system & single package. Part B: Base to CEE Tier 2	Code standards	Tons	Commercial-Miscellaneous-Cooling-All	15	108.00	\$108.37	-	\$60.30	\$75.00	\$0.030	1.39	1.88	1
Heat Pump	Heat Pumps, Air Cooled (Cooling Mode). <= 5 tons. Split system & single package. Part A: Base to CEE Tier 1	Code standards	Tons	Commercial-Miscellaneous-Cooling-All	15	69.00	\$69.23	-	\$153.00	\$30.00	\$0.030	2.16	0.49	1, 2
Heat Pump	Heat Pumps, Air Cooled (Cooling Mode). <= 5 tons. Split system & single package. Part B: Base to CEE Tier 2	Code standards	Tons	Commercial-Miscellaneous-Cooling-All	15	108.00	\$108.37	-	\$168.27	\$75.00	\$0.030	1.39	0.70	1, 2
VRF AC	Variable Refrigerant Flow Units. <= 64 tons. A/C. Part B: Base to CEE Tier 1	Code standards	Tons	Commercial-Miscellaneous-Cooling-All	15	82.50	\$82.78	-	\$69.24	\$75.00	\$0.030	1.07	1.27	1
VRF AC	Variable Refrigerant Flow Units. <= 5 tons. A/C. Part C: Base to CEE Tier 2	Code standards	Tons	Commercial-Miscellaneous-Cooling-All	15	118.00	\$118.40	-	\$181.50	\$100.00	\$0.030	1.14	0.70	1, 2

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>	
VRF Heat Pump	Variable Refrigerant Flow Units. <= 64 tons. Heat Pump. Part B: Base to CEE Tier 1	Code standards	Tons	Commercial-Miscellaneous-Cooling-All	15	124.00	\$124.42	-	\$141.75	\$75.00	\$0.030	1.58	0.94	1, 2
VRF Heat Pump	Variable Refrigerant Flow Units. <= 5 tons. Heat Pump. Part C: Base to CEE Tier 2	Code standards	Tons	Commercial-Miscellaneous-Cooling-All	15	160.00	\$160.54	-	\$165.50	\$100.00	\$0.030	1.53	1.04	1
A/C	Air-cooled chiller condenser, IPLV 14.0 EER or higher	Code standards	Tons	Commercial-Miscellaneous-Cooling-All	20	200.00	\$239.30	-	\$56.50	\$80.00	\$0.030	2.78	4.21	3
A/C	Water-cooled chiller electronically operated, reciprocating and positive displacement	Code standards	Tons	Commercial-Miscellaneous-Cooling-All	20	118.30	\$141.55	-	\$33.40	\$40.00	\$0.030	3.25	4.21	4
A/C	Airside economizer	Code standards	Ton of cooling	Commercial-Miscellaneous-Cooling-All	15	186.00	\$186.63	-	\$81.36	\$75.00	\$0.030	2.32	2.36	1
A/C	Direct evaporative cooler	Code standards	Tons	IPC_Evap Cooler	15	315.00	\$424.65	-	\$364.00	\$200.00	\$0.030	2.03	1.25	1
Building Shell	Reflective roof treatment	Code standards	ft <sup>2</sup> roof area	Commercial-Miscellaneous-Cooling-All	15	0.12	\$0.12	-	\$0.05	\$0.05	\$0.030	2.18	2.39	1
Controls	Energy Management System (EMS) controls. Part A: 1 strategy	Code standards	Tons of cooling	Commercial-Miscellaneous-Ventilation-All	15	226.00	\$155.99	\$14.25	\$162.49	\$60.00	\$0.030	2.34	1.10	1
Controls	Energy Management System (EMS) controls. Part B: 2 strategies	Code standards	Tons of cooling	Commercial-Miscellaneous-Ventilation-All	15	408.00	\$281.61	\$19.00	\$162.49	\$70.00	\$0.030	3.42	1.88	1
Controls	EMS controls. Part C: 3 strategies	Code standards	Tons of cooling	Commercial-Miscellaneous-Ventilation-All	15	511.00	\$352.71	\$30.88	\$162.49	\$80.00	\$0.030	3.70	2.36	1
Controls	EMS controls. Part D: 4 strategies	Code standards	Tons of cooling	Commercial-Miscellaneous-Ventilation-All	15	568.00	\$392.05	\$49.88	\$162.49	\$90.00	\$0.030	3.66	2.68	1
Controls	EMS controls. Part E: 5 strategies	Code standards	Tons of cooling	Commercial-Miscellaneous-Ventilation-All	15	618.00	\$426.56	\$49.88	\$162.49	\$100.00	\$0.030	3.60	2.87	1
Controls	Guest room energy management system	Code standards	Ton	Commercial-Lodging-Ventilation-All	11	571.00	\$281.68	-	\$57.50	\$50.00	\$0.030	4.20	4.15	1
Controls	Part A. Variable speed drive on HVAC system applications: -chilled water pumps -condenser water pumps -cooling tower fans	Code standards	HP	Commercial-Miscellaneous-Ventilation-All	15	268.00	\$184.98	-	\$165.33	\$60.00	\$0.030	2.72	1.17	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 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>	
Controls	Part B. Variable speed drive on HVAC system applications: -supply -return -outside air -make-up air -hot water pumps	Code standards	HP	Commercial-Miscellaneous-Ventilation-All	15	996.00	\$687.47	-	\$142.05	\$100.00	\$0.030	5.29	4.40	1
Variable Speed Controls	Part C: Variable speed drive on Potato/Onion Storage Shed Ventilation	No VFD	HP	IPC_Onion Potato VSD	10	1,193.00	\$408.90	-	\$264.00	\$200.00	\$0.030	1.73	1.50	1
Demand Controlled Kitchen Ventilation Exhaust Hood	Demand Controlled Kitchen Ventilation Exhaust Hood	Kitchen hood with constant speed ventilation motor	HP	Commercial-Restaurant-Ventilation-All	15	4,423.00	\$3,055.19	-	\$1,991.00	\$200.00	\$0.030	9.18	1.58	1
Appliances with Electric Water Heating	Efficient Laundry Machines (electric)	Code standards	Unit	Commercial-Lodging-Water Heating-All	10	994.00	\$441.57	\$1,320.39	\$393.00	\$125.00	\$0.030	2.85	4.27	5
Appliances with Electric Water Heating	ENERGY STAR <sup>®</sup> undercounter (residential style) dishwasher	Code standards	Machine	Commercial-Restaurant-Water Heating-All	12	2,210.00	\$1,241.76	\$230.78	\$232.00	\$200.00	\$0.030	4.66	5.35	6
Appliances with Electric Water Heating	ENERGY STAR commercial dishwasher	Code standards	Machine	Commercial-Restaurant-Water Heating-All	12	5,561.00	\$3,124.63	\$622.41	\$3,978.00	\$500.00	\$0.030	4.69	0.98	6, 7
Refrigeration	Refrigeration head pressure controls	Code standards	HP	Commercial-Miscellaneous-Refrigeration-All	16	225.00	\$148.26	-	\$166.60	\$40.00	\$0.030	3.17	0.94	1, 7
Refrigeration	Refrigeration floating suction controls	Code standards	HP	Commercial-Miscellaneous-Refrigeration-All	16	77.00	\$50.74	-	\$53.75	\$10.00	\$0.030	4.12	1.00	1
Refrigeration	Efficient refrigeration condensers	Code standards	Tons of refrigeration	Commercial-Miscellaneous-Refrigeration-All	15	114.00	\$71.76	-	\$35.00	\$20.00	\$0.030	3.06	2.05	1
Strip Curtains	For walk-in freezers	No protective barrier	Curtain/Door	Commercial-Warehouse-Refrigeration-All	4	4,865.00	\$938.32	-	\$213.00	\$150.00	\$0.030	3.17	2.88	1
Strip Curtains	For walk-in refrigerators	No protective barrier	Curtain/Door	Commercial-Warehouse-Refrigeration-All	4	3,024.00	\$583.25	-	\$213.00	\$150.00	\$0.030	2.42	2.11	1
Automatic High-Speed Doors	Freezer to Refrigerator	manual or electric warehouse door	Door	Commercial-Warehouse-Refrigeration-All	8	101,222.00	\$36,678.24	-	\$11,650.00	\$4,000.00	\$0.030	5.21	2.75	1
Automatic High-Speed Doors	Freezer to Dock	manual or electric warehouse door	Door	Commercial-Warehouse-Refrigeration-All	8	140,093.00	\$50,763.32	-	\$11,650.00	\$8,000.00	\$0.030	4.16	3.52	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 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>	
Smart Power Strips	Load-sensing, motion-sensing, or timer-controlled power strip	No existing load or motion-sensing, or timer-controlled power strip	Power strip	Commercial-Small Office-Office Equipment-All	4	118.00	\$23.96	-	\$33.00	\$10.00	\$0.030	1.77	0.72	1, 7
High-Volume, Low-Speed Fan	High-Volume, Low-Speed Fan	Standard high-speed fan	Fan	Commercial-Warehouse-Ventilation-All	15	16,733.00	\$11,131.47	-	\$3,185.00	\$2,000.00	\$0.030	4.45	3.32	1
Compressed Air	Air compressor VFD	No existing VFD	HP	Commercial-Miscellaneous-Miscellaneous-All	15	949.00	\$627.77	-	\$223.00	\$150.00	\$0.030	3.52	2.75	1
Compressed Air	No-Loss Condensate Drain	Open tube with ball valve	HP	Commercial-Miscellaneous-Miscellaneous-All	10	1,830.00	\$871.45	-	\$700.00	\$300.00	\$0.030	2.46	1.27	1
Compressed Air	Low Pressure Drop Filter	Standard filter	HP	Commercial-Miscellaneous-Miscellaneous-All	5	44.00	\$11.31	-	\$10.00	\$7.50	\$0.030	1.28	1.10	1
Compressed Air	Refrigerated Compressed Air Dryer	Standard air dryer	CFM	Commercial-Miscellaneous-Miscellaneous-All	10	10.62	\$5.06	-	\$6.00	\$2.00	\$0.030	2.18	0.88	1, 2
Compressed Air	Efficient Compressed Air Nozzle <= ¼ inch	Standard air nozzle	Unit	Commercial-Miscellaneous-Miscellaneous-All	15	602.50	\$398.56	-	\$49.50	\$30.00	\$0.030	8.29	6.49	1
Compressed Air	Efficient Compress Air Nozzle > ¼ inch	Standard air nozzle	Unit	Commercial-Miscellaneous-Miscellaneous-All	15	2,997.50	\$1,982.88	-	\$104.00	\$60.00	\$0.030	13.23	11.25	1
Engine Block Heater Controls	Wall-mounted engine block heater	Standard engine block heater without controls	Unit	IPC_Engine Block	15	2,733.00	\$1,187.48	-	\$70.00	\$50.00	\$0.030	9.00	8.59	1
Engine Block Heater Controls	Engine-mounted engine block heater	Standard engine block heater without controls	Unit	IPC_Engine Block	15	2,335.00	\$1,014.55	-	\$120.00	\$100.00	\$0.030	5.97	5.87	1
Dairy VFD	VFD on milking vacuum pump	No existing VFD	HP	Commercial-Miscellaneous-Miscellaneous-All	15	3,084.00	\$2,040.10	-	\$356.00	\$250.00	\$0.030	5.96	5.00	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> 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 2017 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 2020 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> Idaho Power TRM prepared by ADM Associates, Inc. 2018.

<sup>2</sup> Measure not cost-effective from TRC perspective. Measure included in the program to increase participation in a cost-effective program and to encourage adoption of higher-efficiency equipment.

<sup>3</sup> Idaho Power TRM prepared by ADM Associates, Inc. 2018. Averaged air-cooled chillers.

<sup>4</sup> Idaho Power TRM prepared by ADM Associates, Inc. 2018. Averaged water-cooled chillers.

<sup>5</sup> Idaho Power TRM prepared by ADM Associates, Inc. 2018. NEBs from water savings from RTF. ComClothesWashers\_v5\_1.xlsm. Simple average. 2018.

<sup>6</sup> Idaho Power TRM prepared by ADM Associates, Inc. 2018. NEBs from water savings from RTF. ComDishwasher\_v1\_2.xlsm. 2012.

<sup>7</sup> Measure not cost-effective from TRC perspective. Measure to be removed in 2021 due to updated saving assumptions and cost-effectiveness issues.

## Retrofits

Segment: Commercial  
2020 Program Results

Cost Inputs		Ref
Program Administration .....	\$ 994,706	
Program Incentives.....	2,592,571	I
<b>Total UC</b> .....	<b>\$ 3,587,277</b>	P
Measure Equipment and Installation (Incremental Participant Cost).....	\$ 10,989,726	M

Net Benefit Inputs (NPV)		Ref
<b>Resource Savings</b>		
2020 Annual Gross Energy (kWh).....	20,965,215	
NPV Cumulative Energy (kWh).....	203,335,858	\$ 11,655,243 S
10% Credit (Northwest Power Act).....	1,165,524	
<b>Total Electric Savings</b> .....	<b>\$ 12,820,768</b>	A
<b>Participant Bill Savings</b>		
NPV Cumulative Participant Savings.....	\$ 11,141,114	B
<b>Other Benefits</b>		
Non-Utility Rebates/Incentives .....	\$ -	NUI
NEBs .....	\$ 3,380,947	NEB

Summary of Cost-Effectiveness Results			
Test	Benefit	Cost	Ratio
UC Test .....	\$ 11,655,243	\$ 3,587,277	3.25
TRC Test .....	16,201,715	11,984,431	1.35
RIM Test.....	11,655,243	14,728,391	0.79
PCT .....	17,114,633	10,989,726	1.56

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

Assumptions for Levelized Calculations	
<b>Discount Rate</b>	
Nominal (WACC).....	6.74%
Real ((1 + WACC) / (1 + Escalation)) - 1 .....	4.54%
Escalation Rate .....	2.10%
Net-to-Gross (NTG) .....	100%
Minimum NTG Sensitivity .....	46%
Average Customer Segment Rate/kWh .....	\$0.057
Line Losses .....	9.60%

**Note:** Measure inputs from Evergreen Consulting Group or the TRM prepared by ADM Associates, Inc., unless otherwise noted.  
NEB/impacts on a \$/kWh for each end-use. Based on 2019 impact evaluation.



Year: 2020

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 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>	
Standard/High Performance T8 Fluorescents	4-foot T8	4-foot T12	fixture	Commercial-Miscellaneous-Interior Lighting-All	6	182.49	\$55.56	-	\$53.17	\$30.01	\$0.030	1.57	1.04	1
Standard T8 Fluorescents	6-foot T8	6-foot T12	fixture	Commercial-Miscellaneous-Interior Lighting-All	6	332.20	\$101.14	-	\$76.03	\$16.00	\$0.030	3.90	1.29	1
Standard T8 Fluorescents	4-foot T8	8-foot T12	fixture	Commercial-Miscellaneous-Interior Lighting-All	6	445.52	\$135.65	-	\$66.50	\$50.58	\$0.030	2.12	1.87	1
T5/T8 High Bay - New Fixture	4-foot T8/T5	Fixture using > 200 input watts	fixture	Commercial-Miscellaneous-Interior Lighting-All	9	1,195.77	\$521.93	-	\$206.92	\$135.44	\$0.030	3.05	2.36	1
Relamp T8/ T5HO to Reduced Wattage T8/ T5HO	Reduced wattage T8/T5 re-lamp	4' T8/T5 HO	fixture	Commercial-Miscellaneous-Interior Lighting-All	12	124.99	\$69.82	-	\$21.65	\$1.00	\$0.030	14.70	3.02	1
Permanent Fixture Removal	Permanent Fixture Removal		fixture	Commercial-Miscellaneous-Interior Lighting-All	6	876.59	\$266.89	-	\$29.48	\$22.73	\$0.030	5.44	5.26	1
LEDs	Screw-in or pin-based LED	Existing lamp using > input watts	fixture	Commercial-Miscellaneous-Interior Lighting-All	12	502.97	\$280.97	-	\$56.37	\$30.96	\$0.030	6.10	4.33	1
LEDs	LED tubes (type A, B & DM)	lamp using > 17 watts	fixture	Commercial-Miscellaneous-Interior Lighting-All	12	279.42	\$156.09	-	\$65.25	\$6.02	\$0.030	10.84	2.33	1
LEDs	LED Tubes (type C) or hardwired conversion	fixture using higher wattage	fixture	Commercial-Miscellaneous-Interior Lighting-All	12	312.08	\$174.33	-	\$99.52	\$15.60	\$0.030	6.98	1.76	1
LED Exit Sign	LED fixture or sign lighting retrofit kit	fixture using higher wattage	fixture	Commercial-Miscellaneous-Interior Lighting-All	12	429.23	\$239.77	-	\$180.93	\$61.64	\$0.030	3.22	1.36	1
Lighting Controls	New LED fixture or LED fixture kit with lighting control strategies	fixture using higher wattage	fixture	Commercial-Miscellaneous-Interior Lighting-All	12	545.54	\$304.75	-	\$239.55	\$103.76	\$0.030	2.54	1.31	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 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>	
Lighting Controls	New LED fixture with Networked Controls	fixture using higher wattage	fixture	Commercial-Miscellaneous-Interior Lighting-All	12	599.03	\$334.63	-	\$339.77	\$131.79	\$0.030	2.23	1.03	1
LED Exit Sign	LED Exit sign	fixture using higher wattage	fixture	IPC_8760	12	230.68	\$117.73	-	\$68.69	\$40.00	\$0.030	2.51	1.71	1
Lighting Controls	Lighting Controls	Manual controls	fixture	Commercial-Miscellaneous-Interior Lighting-All	10	179.65	\$85.97	-	\$90.10	\$27.59	\$0.030	2.61	0.99	1, 9
Standard T8 Fluorescents	6-foot T8	6-foot T12	fixture	IPC_Outdoor Lighting	6	386.42	\$71.58	-	\$76.03	\$14.00	\$0.030	2.80	0.90	1, 9
Standard T8 Fluorescents	4-foot T8	8-foot T12	fixture	IPC_Outdoor Lighting	6	496.54	\$91.98	-	\$83.27	\$41.88	\$0.030	1.62	1.03	1
T5/T8 High Bay - New Fixture	4-foot T8/T5	Fixture using > 200 input watts	fixture	IPC_Outdoor Lighting	11	1,643.61	\$541.62	-	\$195.03	\$102.71	\$0.030	3.56	2.44	1
Permanent Fixture Removal	Permanent Fixture Removal		fixture	IPC_Outdoor Lighting	6	1,016.60	\$188.32	-	\$35.78	\$17.73	\$0.030	3.90	3.13	1
LEDs	Screw-in or pin-based LED	Existing lamp using > input watts	fixture	IPC_Outdoor Lighting	12	583.30	\$208.15	-	\$87.93	\$27.96	\$0.030	4.58	2.17	1
LEDs	LED tubes (type A, B & DM)	lamp using > 17 watts	fixture	IPC_Outdoor Lighting	12	324.04	\$115.63	-	\$66.98	\$6.02	\$0.030	7.35	1.66	1
LEDs	LED Tubes (type C) or hardwired conversion	fixture using higher wattage	fixture	IPC_Outdoor Lighting	12	342.71	\$122.29	-	\$113.60	\$6.85	\$0.030	7.14	1.09	1
LED Exit Sign	LED fixture or sign lighting retrofit kit	fixture using higher wattage	fixture	IPC_Outdoor Lighting	12	804.15	\$286.96	-	\$275.95	\$91.09	\$0.030	2.49	1.05	1
Lighting Controls	New LED fixture or LED fixture kit with lighting control strategies	fixture using higher wattage	fixture	IPC_Outdoor Lighting	12	1,324.18	\$472.53	-	\$427.62	\$198.89	\$0.030	1.98	1.11	1
Lighting Controls	New LED fixture with Networked Controls	fixture using higher wattage	fixture	IPC_Outdoor Lighting	12	1,454.01	\$518.86	-	\$456.12	\$261.72	\$0.030	1.70	1.14	1
Lighting Controls	Lighting Controls	Manual controls	fixture	IPC_Outdoor Lighting	10	364.55	\$109.87	-	\$109.12	\$27.59	\$0.030	2.29	0.93	1, 9
Refrigeration Case Lighting	Refrigeration Case Lighting		lamp	Commercial-Miscellaneous-Refrigeration-All	6	347.86	\$99.74	-	\$97.91	\$42.36	\$0.030	1.89	1.01	1
Air Conditioning Units	<= 5 ton AC Unit. Base to CEE Tier 1	Code standards	tons	Commercial-Miscellaneous-Cooling-All	15	69.00	\$69.23	-	\$33.68	\$30.00	\$0.030	2.16	2.13	3
Air Conditioning Units	<= 5 ton AC Unit. Base to CEE Tier 2	Code standards	tons	Commercial-Miscellaneous-Cooling-All	15	108.00	\$108.37	-	\$60.30	\$75.00	\$0.030	1.39	1.88	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>	
Air Conditioning Units	<= 5 ton VRF. Base to CEE Tier 2	Code standards	tons	Commercial-Miscellaneous-Cooling-All	15	118.00	\$118.40	-	\$181.50	\$100.00	\$0.030	1.14	0.70	2, 3
Air Conditioning Units	<= 64 ton VRF. Base to CEE Tier 1	Code standards	tons	Commercial-Miscellaneous-Cooling-All	15	82.50	\$82.78	-	\$69.24	\$75.00	\$0.030	1.07	1.27	3
Heat Pump (HP) units	<= 5 ton HP Unit. Base to CEE Tier 1	Code standards	tons	Commercial-Miscellaneous-Cooling-All	15	69.00	\$69.23	-	\$153.00	\$30.00	\$0.030	2.16	0.49	2, 3
Heat Pump (HP) units	<= 5 ton HP Unit. Base to CEE Tier 2	Code standards	tons	Commercial-Miscellaneous-Cooling-All	15	108.00	\$108.37	-	\$168.27	\$75.00	\$0.030	1.39	0.70	2, 3
Heat Pump (HP) units	<= 5 ton Variable Refrigerant Flow (VRF). Base to CEE Tier 2	Code standards	tons	Commercial-Miscellaneous-Cooling-All	15	160.00	\$160.54	-	\$165.50	\$100.00	\$0.030	1.53	1.04	3
Heat Pump (HP) units	<= 64 ton VRF. Base to CEE Tier 1	Code standards	tons	Commercial-Miscellaneous-Cooling-All	15	124.00	\$124.42	-	\$141.75	\$75.00	\$0.030	1.58	0.94	2, 3
Chillers	Air-cooled chiller condenser, IPLV 14.0 EER or higher	Standard air-cooled chiller	tons	Commercial-Miscellaneous-Cooling-All	20	200.00	\$239.30	-	\$56.50	\$80.00	\$0.030	2.78	4.21	4
Chillers	Water-cooled chiller electronically operated, reciprocating and positive displacement	Standard water-cooled chiller	tons	Commercial-Miscellaneous-Cooling-All	20	118.30	\$141.55	-	\$33.40	\$40.00	\$0.030	3.25	4.21	5
Economizers	Airside economizer control addition	No prior control	ton of cooling	Commercial-Miscellaneous-Cooling-All	15	278.00	\$278.94	-	\$155.01	\$100.00	\$0.030	2.57	1.88	3
Economizers	Airside economizer control repair	Non-functional economizer	ton of cooling	Commercial-Miscellaneous-Cooling-All	15	278.00	\$278.94	-	\$73.65	\$50.00	\$0.030	4.78	3.74	3
Evaporative Cooler	Direct evaporative cooler	Replacing standard AC unit	tons	Commercial-Miscellaneous-Cooling-All	15	315.00	\$316.07	-	\$364.00	\$200.00	\$0.030	1.51	0.93	2, 3
Automated Controls	EMS controls with 1 strategy	Proposed strategy not existing (retrofit system)	tons of cooling	Commercial-Miscellaneous-Ventilation-All	15	371.00	\$256.07	\$19.00	\$197.98	\$100.00	\$0.030	2.30	1.44	3
Automated Controls	EMS controls with 2 strategies	Proposed strategy not existing (retrofit system)	tons of cooling	Commercial-Miscellaneous-Ventilation-All	15	621.00	\$428.63	\$19.00	\$197.98	\$125.00	\$0.030	2.98	2.26	3
Automated Controls	EMS controls with 3 strategies	Proposed strategy not existing (retrofit system)	tons of cooling	Commercial-Miscellaneous-Ventilation-All	15	870.00	\$600.50	\$66.51	\$197.98	\$150.00	\$0.030	3.41	3.24	3
Automated Controls	EMS controls with 4 strategies	Proposed strategy not existing (retrofit system)	tons of cooling	Commercial-Miscellaneous-Ventilation-All	15	1,730.00	\$1,194.09	\$228.04	\$197.98	\$175.00	\$0.030	5.26	6.17	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>	
Automated Controls	EMS controls with 5 strategies	Proposed strategy not existing (retrofit system)	tons of cooling	Commercial-Miscellaneous-Ventilation-All	15	1,798.00	\$1,241.03	\$230.42	\$197.98	\$200.00	\$0.030	4.89	6.33	3
Automated Controls	EMS controls with 1 strategy	Proposed strategy not existing (new system)	tons of cooling	Commercial-Miscellaneous-Ventilation-All	15	226.00	\$155.99	\$14.25	\$162.49	\$60.00	\$0.030	2.34	1.10	3
Automated Controls	EMS controls with 2 strategies	Proposed strategy not existing (new system)	tons of cooling	Commercial-Miscellaneous-Ventilation-All	15	408.00	\$281.61	\$19.00	\$162.49	\$70.00	\$0.030	3.42	1.88	3
Automated Controls	EMS controls with 3 strategies	Proposed strategy not existing (new system)	tons of cooling	Commercial-Miscellaneous-Ventilation-All	15	511.00	\$352.71	\$30.88	\$162.49	\$80.00	\$0.030	3.70	2.36	3
Automated Controls	EMS controls with 4 strategies	Proposed strategy not existing (new system)	tons of cooling	Commercial-Miscellaneous-Ventilation-All	15	568.00	\$392.05	\$49.88	\$162.49	\$90.00	\$0.030	3.66	2.68	3
Automated Controls	EMS controls with 5 strategies	Proposed strategy not existing (new system)	tons of cooling	Commercial-Miscellaneous-Ventilation-All	15	618.00	\$426.56	\$49.88	\$162.49	\$100.00	\$0.030	3.60	2.87	3
Automated Controls	Lodging room occupancy controls	Manual controls	ton	Commercial-Lodging-Ventilation-All	11	665.00	\$328.05	-	\$150.61	\$75.00	\$0.030	3.45	2.12	3
Electronically Commutated Motor (ECM)	ECM motor in HVAC application	Shaded pole or permanent split capacitor motor	motor	Commercial-Miscellaneous-Ventilation-All	15	1,354.00	\$934.57	-	\$305.00	\$100.00	\$0.030	6.65	2.97	3
Premium Windows	Low U-value, U-factor of .30 or less	Standard windows	ft2 window area	Commercial-Miscellaneous-Heating-Electric Furnace	25	6.87	\$4.57	-	\$5.92	\$2.50	\$0.030	1.69	0.82	2, 3
Reflective Roofing	Adding reflective roof treatment	Non-reflective low pitch roof	ft2 roof area	Commercial-Miscellaneous-Cooling-All	15	0.12	\$0.12	-	\$0.05	\$0.05	\$0.030	2.18	2.39	3
Ceiling Insulation	Increase to R38 min. insulation	Insulation level, R11 or less	ft2 wall area	Commercial-Miscellaneous-Heating-Electric Furnace	25	2.00	\$1.33	-	\$1.38	\$0.35	\$0.030	3.24	1.02	3
Wall Insulation	Increase to R11 min. insulation	Insulation level, R2.5 or less	ft2 wall area	Commercial-Miscellaneous-Heating-Electric Furnace	25	9.15	\$6.08	-	\$0.66	\$0.40	\$0.030	9.02	7.16	3
Wall Insulation	Increase to R19 min. insulation	Insulation level, R2.5 or less	ft2 wall area	Commercial-Miscellaneous-Heating-Electric Furnace	25	10.29	\$6.84	-	\$0.66	\$0.55	\$0.030	7.96	7.77	3
Computers	PC network power management	No central control software in place	unit	Commercial-Small Office-Office Equipment-All	4	148.00	\$30.05	-	\$12.00	\$10.00	\$0.030	2.08	2.01	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>	
Laundry Machines	High efficiency washer	Standard washer, electric HW	unit	Commercial-Lodging-Water Heating-All	8	994.00	\$361.80	\$1,101.06	\$393.00	\$125.00	\$0.030	2.34	3.55	3, 6
Stock Tank	Thermostatically controlled Stock Tank De-Icer	Non thermostatically controlled de-icer	unit	Commercial-Miscellaneous-Heating-Electric Furnace	10	3,030.00	\$1,010.66	-	\$51.60	\$50.00	\$0.030	7.17	7.80	7
HVAC Fan Motor Belt	Type AX notched V-belt Type BX notched V-belt	Type A solid V-belt Type B solid V-belt	hp	Commercial-Miscellaneous-Ventilation-All	5	78.00	\$21.05	-	\$1.90	\$5.00	\$0.030	2.87	5.46	3
HVAC Fan Motor Belt	Synchronous belt	Standard fan belt	hp	Commercial-Miscellaneous-Ventilation-All	5	199.00	\$53.71	-	\$67.00	\$35.00	\$0.030	1.31	0.81	2, 3
Commercial showerhead, electric water heat	2.0 gpm or less installed in health club/fitness business	Showerhead using 2.2 gpm or greater	unit	Commercial-Small Heating-All	10	2,159.00	\$958.87	\$2,659.79	\$3.66	\$15.00	\$0.030	12.02	54.28	8
Commercial showerhead, electric water heat	2.0 gpm or less installed in commercial business (non health club/fitness business)	Showerhead using 2.2 gpm or greater	unit	Commercial-Small Office-Water Heating-All	10	115.00	\$51.07	\$141.63	\$3.66	\$9.00	\$0.030	4.10	27.82	8
Smart Power Strips	Load-sensing, motion-sensing, or timer-controlled power strip	No existing load-sensing, motion-sensing, or timer-controlled power strip	power strip	Commercial-Small Office-Office Equipment-All	4	118.00	\$23.96	-	\$37.00	\$10.00	\$0.030	1.77	0.65	3, 15
Engine block heater	Stationary pump-driven circulating block heater	Thermosiphon electric resistance circulating block heater < 3 kW	unit	IPC_Engine Block	15	7,469.00	\$3,245.26	-	\$1,400.00	\$200.00	\$0.030	7.65	2.20	3
Engine block heater	Stationary pump-driven circulating block heater	Thermosiphon electric resistance circulating block heater 3 kW or greater	unit	IPC_Engine Block	15	17,633.00	\$7,661.49	-	\$1,950.00	\$1,500.00	\$0.030	3.78	3.40	3
Engine block heater	Wall mounted engine block heater	Thermosiphon electric resistance circulating block heater 3 kW or greater	unit	IPC_Engine Block	15	2,733.00	\$1,187.48	-	\$120.00	\$50.00	\$0.030	9.00	6.47	3
Engine block heater	Engine-mounted engine block heater	Thermosiphon electric resistance circulating block heater 3 kW or greater	unit	IPC_Engine Block	15	2,335.00	\$1,014.55	-	\$170.00	\$100.00	\$0.030	5.97	4.65	3
High Volume Low Speed Fan	High Volume Low Speed Fan	Standard high speed fan	Fan	Commercial-Warehouse-Ventilation-All	15	16,733.00	\$11,131.47	-	\$4,185.00	\$2,000.00	\$0.030	4.45	2.61	3
Compressed Air	Air compressor VFD	No existing VFD	HP	Commercial-Miscellaneous-Miscellaneous-All	15	949.00	\$627.77	-	\$223.00	\$150.00	\$0.030	3.52	2.75	3
Compressed Air	Low Pressure Drop Filter	Open tube with ball valve	HP	Commercial-Miscellaneous-Miscellaneous-All	5	44.00	\$11.31	-	\$10.00	\$7.50	\$0.030	1.28	1.10	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>	
Compressed Air	No-Loss Condensate Drain	Standard filter	HP	Commercial-Miscellaneous-Miscellaneous-All	10	1,830.00	\$871.45	-	\$700.00	\$300.00	\$0.030	2.46	1.27	3
Compressed Air	Efficient Compressed Air Nozzle <= ¼ inch	Standard air nozzle	unit	Commercial-Miscellaneous-Miscellaneous-All	15	602.50	\$398.56	-	\$49.50	\$30.00	\$0.030	8.29	6.49	3
Compressed Air	Efficient Compress Air Nozzle > ¼ inch	Standard air nozzle	unit	Commercial-Miscellaneous-Miscellaneous-All	15	2,997.50	\$1,982.88	-	\$104.00	\$60.00	\$0.030	13.23	11.25	3
Compressed Air	Refrigerated Compressed Air Dryer	Standard air dryer	CFM	Commercial-Miscellaneous-Miscellaneous-All	10	10.62	\$5.06	-	\$6.00	\$2.00	\$0.030	2.18	0.88	2, 3
Refrigeration	Install auto-closer - walk-in	no/damaged auto-closer, low temp	door	Commercial-Miscellaneous-Refrigeration-All	8	2,509.00	\$930.16	-	\$157.00	\$125.00	\$0.030	4.64	4.41	3
Refrigeration	Install auto-closer - reach-in	Damaged auto-closer, low temp	door	Commercial-Miscellaneous-Refrigeration-All	8	326.00	\$120.86	-	\$122.00	\$100.00	\$0.030	1.10	1.01	3
Refrigeration	Install auto-closer - walk-in	No/damaged auto-closer, med. Temp	door	Commercial-Miscellaneous-Refrigeration-All	8	562.00	\$208.35	-	\$157.00	\$100.00	\$0.030	1.78	1.32	3
Refrigeration	Install auto-closer - reach-in	Damaged auto-closer, med. Temp	door	Commercial-Miscellaneous-Refrigeration-All	8	243.00	\$90.09	-	\$122.00	\$70.00	\$0.030	1.17	0.77	2, 3
Refrigeration	Add anti-sweat heat controls	Low/med. Temp case w/ out controls	linear ft	Commercial-Miscellaneous-Refrigeration-All	8	266.00	\$98.61	-	\$47.90	\$40.00	\$0.030	2.06	1.94	3
Automatic high speed doors	Freezer to Dock	manual or electric warehouse door	Door	Commercial-Warehouse-Refrigeration-All	8	155,659.00	\$56,403.73	-	\$12,650.00	\$8,000.00	\$0.030	4.45	3.58	3
Automatic high speed doors	Freezer to Refrigerator	manual or electric warehouse door	Door	Commercial-Warehouse-Refrigeration-All	8	112,469.00	\$40,753.64	-	\$12,650.00	\$4,000.00	\$0.030	5.53	2.80	3
Strip Curtain	For walk-in freezers	no protective barrier	Curtain/ Door	Commercial-Warehouse-Refrigeration-All	4	4,865.00	\$938.32	-	\$274.00	\$150.00	\$0.030	3.17	2.46	3
Strip Curtain	For walk-in refrigerators	no protective barrier	Curtain/ Door	Commercial-Warehouse-Refrigeration-All	4	3,024.00	\$583.25	-	\$274.00	\$150.00	\$0.030	2.42	1.76	3
Evaporative Fans	Add evaporative fan controls	low or med. temp. walk-in or reach-in with no controls	fan	Commercial-Miscellaneous-Refrigeration-All	15	696.00	\$438.13	-	\$161.74	\$75.00	\$0.030	4.57	2.64	3
Evaporative Fans	Install ECM/PSC evap fan motor	Med. or low temp. walk-in	motor	Commercial-Miscellaneous-Refrigeration-All	15	1,075.00	\$676.70	-	\$296.78	\$100.00	\$0.030	5.12	2.26	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>	
Evaporative Fans	Install ECM/PSC evap fan motor	Med. or low temp. reach-in	motor	Commercial-Miscellaneous-Refrigeration-All	15	429.00	\$270.05	-	\$84.45	\$60.00	\$0.030	3.71	3.05	3
Floating Head/Suction Pressures	Head pressure controller	Standard head pressure control	HP	Commercial-Miscellaneous-Refrigeration-All	16	440.00	\$289.93	-	\$272.60	\$80.00	\$0.030	3.11	1.12	3
Floating Head/Suction Pressures	Suction pressure controller	Standard suction pressure control	HP	Commercial-Miscellaneous-Refrigeration-All	16	104.00	\$68.53	-	\$86.91	\$20.00	\$0.030	2.96	0.84	2, 3
Demand Controlled Kitchen Ventilation Exhaust Hood	VFD installed on kitchen exhaust and/or makeup air fan	Kitchen hood with constant speed ventilation	HP	Commercial-Restaurant-Ventilation-All	15	4,423.00	\$3,055.19	-	\$1,991.00	\$200.00	\$0.030	9.18	1.58	3
Vending Machines	Non-cooled snack control	Vending machine with no sensor	sensor	Commercial-Miscellaneous-Miscellaneous-All	5	387.00	\$99.49	-	\$75.00	\$50.00	\$0.030	1.61	1.26	3
Commercial kitchen equipment	ENERGY STAR® undercounter (residential style) dishwasher	Code standards	machine	Commercial-Restaurant-Water Heating-All	12	2,210.00	\$1,241.76	\$230.78	\$232.00	\$200.00	\$0.030	4.66	5.35	3, 10
Commercial kitchen equipment	ENERGY STAR commercial dishwasher	Code standards	machine	Commercial-Restaurant-Water Heating-All	12	5,561.00	\$3,124.63	\$622.41	\$3,978.00	\$500.00	\$0.030	4.69	0.98	3, 10, 15
Commercial kitchen equipment	ENERGY STAR listed electric combination oven (6-15 pans)	Standard electric oven	oven	Commercial-Restaurant-Food Preparation-All	10	12,999.00	\$6,682.73	-	\$1,779.71	\$1,100.00	\$0.030	4.49	3.39	11
Commercial kitchen equipment	ENERGY STAR listed electric combination oven (16-20 pans)	Standard electric oven	oven	Commercial-Restaurant-Food Preparation-All	10	17,877.00	\$9,190.49	-	\$486.25	\$300.00	\$0.030	10.99	9.89	11
Commercial kitchen equipment	ENERGY STAR listed electric convection oven	Standard electric oven	oven	Commercial-Restaurant-Food Preparation-All	10	1,672.00	\$859.57	-	\$1,006.07	\$300.00	\$0.030	2.45	0.90	2, 12
Commercial kitchen equipment	ENERGY STAR listed electric fryer	Standard fryer	fryer	Commercial-Restaurant-Food Preparation-All	8	2,449.00	\$1,036.25	-	\$859.20	\$400.00	\$0.030	2.19	1.22	13
Commercial kitchen equipment	ENERGY STAR listed electric steamer - 3 pan	Standard steamer	steamer	Commercial-Restaurant-Food Preparation-All	9	21,470.00	\$10,077.53	-	\$393.67	\$80.00	\$0.030	13.92	10.68	14
Commercial kitchen equipment	ENERGY STAR listed electric steamer - 4 pan	Standard steamer	steamer	Commercial-Restaurant-Food Preparation-All	9	28,564.00	\$13,407.29	-	\$150.26	\$100.00	\$0.030	14.01	14.64	14
Commercial kitchen equipment	ENERGY STAR listed electric steamer - 5 pan	Standard steamer	steamer	Commercial-Restaurant-Food Preparation-All	9	35,659.00	\$16,737.52	-	-	\$150.00	\$0.030	13.72	15.09	14

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>	
Commercial kitchen equipment	ENERGY STAR listed electric steamer - 6 pan	Standard steamer	steamer	Commercial-Restaurant-Food Preparation-All	9	42,754.00	\$20,067.76	-	\$65.18	\$175.00	\$0.030	13.77	16.38	14
Commercial kitchen equipment	ENERGY STAR listed electric steamer -10 pan or larger	Standard steamer	steamer	Commercial-Restaurant-Food Preparation-All	9	71,133.00	\$33,388.21	-	\$4,462.55	\$200.00	\$0.030	14.31	5.57	14
Variable-speed controls	Variable speed drive on HVAC system applications: -chilled water pumps -condenser water pumps -cooling tower fans	Single-speed HVAC system fan/pump	HP	Commercial-Miscellaneous-Ventilation-All	15	268.00	\$184.98	-	\$194.28	\$60.00	\$0.030	2.72	1.01	3
Variable-speed controls	Variable speed drive on HVAC system applications: -supply -return -outside air -make-up air -hot water pumps	Single-speed HVAC system fan/pump	HP	Commercial-Miscellaneous-Ventilation-All	15	996.00	\$687.47	-	\$174.82	\$100.00	\$0.030	5.29	3.69	3
Variable speed controls	Variable speed drive on potato and onion storage shed ventilation	No existing VSD	HP	IPC_Onion Potato VSD	10	1,193.00	\$408.90	-	\$264.00	\$200.00	\$0.030	1.73	1.50	3
Dairy VFD	VFD on milking vacuum pump	No existing VSD	HP	Commercial-Miscellaneous-Miscellaneous-All	15	3,084.00	\$2,040.10	-	\$356.00	\$250.00	\$0.030	5.96	5.00	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 2017 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 2020 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> Evergreen Consulting Group, LLC. Idaho Power Lighting Tool. 2018.  
<sup>2</sup> Measure not cost-effective from TRC perspective. Measure included in the program to increase participation in a cost-effective program and to encourage adoption of higher efficiency equipment.  
<sup>3</sup> Idaho Power TRM prepared by ADM Associates, Inc. 2018.  
<sup>4</sup> Idaho Power TRM prepared by ADM Associates, Inc. 2018. Averaged air cooled chillers.  
<sup>5</sup> Idaho Power TRM prepared by ADM Associates, Inc. 2018. Averaged water cooled chillers.  
<sup>6</sup> Idaho Power TRM prepared by ADM Associates, Inc. 2018. NEBs from water savings from RTF. ComClothesWashers\_v5\_1.xlsm. Simple average. 2018.  
<sup>7</sup> RTF. AgStockTankDe-Icer\_v1\_1.xlsm. 2018.  
<sup>8</sup> RTF. Showerheads\_v3.1.xlsm.  
<sup>9</sup> Measure not cost-effective. Measure cost-effective without inclusion of admin costs.  
<sup>10</sup> Idaho Power TRM prepared by ADM Associates, Inc. 2018. NEBs from water savings from RTF. ComDishwasher\_v1\_2.xlsm. 2012.  
<sup>11</sup> RTF. ComCookingCombinationOven\_v2\_3.xlsm. 2018.  
<sup>12</sup> RTF. ComCookingConvectionOven\_v2\_3.xlsm. Simple average of half and full size ovens. 2018.  
<sup>13</sup> RTF. ComCookingFryer\_v2\_3.xlsm. 2018.  
<sup>14</sup> RTF. ComCookingSteamer\_v2\_4.xlsm. 2018.  
<sup>15</sup> Measure not cost-effective from TRC perspective. Measure to be removed in 2021 due to updated saving assumptions and cost-effectiveness issues.



## Small Business Direct Install

Segment: Commercial  
2020 Program Results

Cost Inputs		Ref
Program Administration .....	\$ 339,830	
Program Incentives.....	–	I
<b>Total UC .....</b>	<b>\$ 339,830</b>	<b>P</b>
Measure Equipment and Installation (Incremental Participant Cost).....	\$ –	M

Net Benefit Inputs (NPV)		Ref
<b>Resource Savings</b>		
2020 Annual Gross Energy (kWh).....	780,260	
NPV Cumulative Energy (kWh).....	6,184,935	\$ 352,506 S
10% Credit (Northwest Power Act).....		35,251
<b>Total Electric Savings .....</b>	<b>\$ 387,757</b>	<b>A</b>
<b>Participant Bill Savings</b>		
NPV Cumulative Participant Bill Savings .....	\$ 330,703	B
<b>Other Benefits</b>		
Non-Utility Rebates/Incentives .....	\$ –	NUI
NEBs.....	\$ 159,441	NEB

**Notes:** Energy savings are unique by project and are reviewed by the third-party implementer.  
NEB/impacts on a \$/kWh for each end-use. Based on 2019 impact evaluation of other C&I programs

Summary of Cost-Effectiveness Results			
Test	Benefit	Cost	Ratio
UC Test .....	\$ 352,506	\$ 339,830	1.04
TRC Test .....	547,198	339,830	1.61
RIM Test .....	352,506	670,533	0.53
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	
<b>Discount Rate</b>	
Nominal (WACC).....	6.74%
Real ((1 + WACC) / (1 + Escalation)) – 1 .....	4.54%
Escalation Rate .....	2.10%
Net-to-Gross (NTG).....	100%
Minimum NTG Sensitivity .....	96%
Average Customer Segment Rate/kWh .....	\$0.059
Line Losses .....	9.60%

## Irrigation Efficiency Rewards

Segment: Irrigation  
2020 Program Results

Cost Inputs		Ref
Program Administration .....	\$ 432,856	
Program Incentives.....	2,968,817	I
<b>Total UC</b> .....	<b>\$ 3,401,673</b>	P
Measure Equipment and Installation (Incremental Participant Cost).....	\$ 16,424,199	M

Net Benefit Inputs (NPV)		Ref
<b>Resource Savings</b>		
2020 Annual Gross Energy (kWh).....	12,847,823	
NPV Cumulative Energy (kWh).....	143,345,570	\$ 13,600,586 S
10% Credit (Northwest Power Act).....	1,360,059	
<b>Total Electric Savings</b> .....	<b>\$ 14,960,644</b>	A
<b>Participant Bill Savings</b>		
NPV Cumulative Participant Bill Savings .....	\$ 8,152,985	B
<b>Other Benefits</b>		
Non-Utility Rebates/Incentives .....	\$ -	NUI
NEBs .....	\$ 53,944,379	NEB

Summary of Cost-Effectiveness Results			
Test	Benefit	Cost	Ratio
UC Test .....	\$ 13,600,586	\$ 3,401,673	4.00
TRC Test .....	68,905,024	16,857,055	4.09
RIM Test.....	13,600,586	11,554,657	1.18
PCT .....	65,066,180	16,424,199	3.96

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).....	6.74%
Real ((1 + WACC) / (1 + Escalation)) - 1 .....	4.54%
Escalation Rate .....	2.10%
Net-to-Gross (NTG) .....	100%
Minimum NTG Sensitivity .....	25%
Average Customer Segment Rate/kWh .....	\$0.058
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. 2020 cost-effectiveness ratios include evaluation expenses. If evaluation expenses were removed from the program's cost-effectiveness, the UCT and TRC would be 4.03 and 4.09, respectively.

Year: 2020

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 Alternate 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	IPC_Irrigation	4	25.84	\$9.19	\$1.79	\$6.35	\$1.50	\$0.034	3.86	1.65	1
Nozzle Replacement	New nozzles replacing existing worn nozzles of same flow rate or less	Worn nozzle of same flow rate or less	Unit	IPC_Irrigation	4	25.84	\$9.19	\$1.79	\$0.91	\$0.25	\$0.034	8.14	6.65	1
Sprinklers	Rebuilt or new brass impact sprinklers	Worn sprinkler	Unit	IPC_Irrigation	4	3.30	\$1.17	\$9.09	\$12.31	\$2.75	\$0.034	0.41	0.84	1, 2
Levelers	Rebuilt or new wheel line levelers	Worn wheel line leveler	Unit	IPC_Irrigation	5	4.54	\$1.98	\$4.73	\$6.23	\$0.75	\$0.034	2.19	1.08	1
Sprinklers	Center pivot/linear move: Install new sprinkler package on an existing system	Worn sprinkler system	Unit	IPC_Irrigation	5	24.08	\$10.49	\$11.12	\$25.15	\$8.00	\$0.034	1.19	0.87	1, 2
Gasket Replacement	New gaskets for hand lines, wheel lines, or portable mainline	Worn gasket	Unit	IPC_Irrigation	5	16.14	\$7.03	\$3.68	\$1.99	\$1.00	\$0.034	4.54	4.49	1
Drain Replacement	New drains, hand lines, wheel lines, or portable mainline	Worn drain	Unit	IPC_Irrigation	5	10.50	\$4.57	\$2.55	\$4.36	\$3.00	\$0.034	1.36	1.61	1
Hub Replacement	New wheel line hubs	Worn hubs	Unit	IPC_Irrigation	10	26.55	\$20.80	\$5.65	\$41.49	\$12.00	\$0.034	1.61	0.67	1, 2
New Goose Necks	New goose neck with drop tube or boomback	Worn gooseneck	Outlet	IPC_Irrigation	15	15.20	\$16.09	\$-	\$6.99	\$1.00	\$0.034	10.61	2.36	3
Pipe Repair	Cut and pipe press or weld repair of leaking hand lines, wheel lines, and portable mainline	Leaking pipe	Joint	IPC_Irrigation	8	46.40	\$30.26	\$11.70	\$12.08	\$8.00	\$0.034	3.16	3.29	1
Gasket Replacement	New center pivot base boot gasket	Worn gasket	Unit	IPC_Irrigation	8	1,932.19	\$1,260.13	\$-	\$391.29	\$125.00	\$0.034	6.61	3.03	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> 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 2017 IRP. TRC test benefit calculation includes 10% conservation adder from the Northwest Power Act.

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

<sup>f</sup> Average program administration and overhead costs to achieve each kWh of savings. Calculated from 2020 actuals.

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

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

<sup>1</sup> RTF. AgIrrigationHardware\_v4\_1.xlsm. 2018. Weighted average of Western Idaho (16.75%), Eastern Washington & Oregon (1.42%), and Eastern & Southern Idaho (81.84%).

<sup>2</sup> Measure not cost-effective. Measure to be monitored. Measure included to increase participation in a cost-effective program.

<sup>3</sup> RTF. AgIrrigationHardware\_v3\_3.xlsm. 2016. Weighted average. Measure not included in v4\_1.

Year: 2020

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 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>	
Green Motors Program Rewind: Motor size 15 HP	Green Motors Program Rewind: Motor size 15 HP	Standard rewind practice	Motor	IPC_Irrigation	18	222.19	\$263.27	–	\$129.74	\$15.00	\$0.034	11.67	2.11	1
Green Motors Program Rewind: Motor size 20 HP	Green Motors Program Rewind: Motor size 20 HP	Standard rewind practice	Motor	IPC_Irrigation	18	297.32	\$352.29	–	\$144.74	\$20.00	\$0.034	11.70	2.50	1
Green Motors Program Rewind: Motor size 25 HP	Green Motors Program Rewind: Motor size 25 HP	Standard rewind practice	Motor	IPC_Irrigation	17	447.57	\$512.75	–	\$165.38	\$25.00	\$0.034	12.75	3.12	1
Green Motors Program Rewind: Motor size 30 HP	Green Motors Program Rewind: Motor size 30 HP	Standard rewind practice	Motor	IPC_Irrigation	17	482.11	\$552.32	–	\$181.63	\$30.00	\$0.034	11.91	3.07	1
Green Motors Program Rewind: Motor size 40 HP	Green Motors Program Rewind: Motor size 40 HP	Standard rewind practice	Motor	IPC_Irrigation	17	561.43	\$643.19	–	\$221.96	\$40.00	\$0.034	10.89	2.94	1
Green Motors Program Rewind: Motor size 50 HP	Green Motors Program Rewind: Motor size 50 HP	Standard rewind practice	Motor	IPC_Irrigation	17	604.21	\$692.20	–	\$245.72	\$50.00	\$0.034	9.81	2.86	1
Green Motors Program Rewind: Motor size 60 HP	Green Motors Program Rewind: Motor size 60 HP	Standard rewind practice	Motor	IPC_Irrigation	21	553.16	\$714.38	–	\$289.79	\$60.00	\$0.034	9.06	2.55	1
Green Motors Program Rewind: Motor size 75 HP	Green Motors Program Rewind: Motor size 75 HP	Standard rewind practice	Motor	IPC_Irrigation	21	569.29	\$735.21	–	\$313.25	\$75.00	\$0.034	7.79	2.43	1
Green Motors Program Rewind: Motor size 100 HP	Green Motors Program Rewind: Motor size 100 HP	Standard rewind practice	Motor	IPC_Irrigation	21	751.39	\$970.38	–	\$388.58	\$100.00	\$0.034	7.73	2.58	1
Green Motors Program Rewind: Motor size 125 HP	Green Motors Program Rewind: Motor size 125 HP	Standard rewind practice	Motor	IPC_Irrigation	23	555.70	\$752.38	–	\$281.33	\$125.00	\$0.034	5.23	2.76	1
Green Motors Program Rewind: Motor size 150 HP	Green Motors Program Rewind: Motor size 150 HP	Standard rewind practice	Motor	IPC_Irrigation	23	660.58	\$894.39	–	\$313.37	\$150.00	\$0.034	5.19	2.93	1
Green Motors Program Rewind: Motor size 200 HP	Green Motors Program Rewind: Motor size 200 HP	Standard rewind practice	Motor	IPC_Irrigation	23	876.20	\$1,186.32	–	\$377.26	\$200.00	\$0.034	5.16	3.21	1
Green Motors Program Rewind: Motor size 250 HP	Green Motors Program Rewind: Motor size 250 HP	Standard rewind practice	Motor	IPC_Irrigation	19	1,357.04	\$1,658.76	–	\$484.87	\$250.00	\$0.034	5.60	3.44	1
Green Motors Program Rewind: Motor size 300 HP	Green Motors Program Rewind: Motor size 300 HP	Standard rewind practice	Motor	IPC_Irrigation	19	1,620.02	\$1,980.21	–	\$490.12	\$300.00	\$0.034	5.58	4.00	1
Green Motors Program Rewind: Motor size 350 HP	Green Motors Program Rewind: Motor size 350 HP	Standard rewind practice	Motor	IPC_Irrigation	19	1,888.64	\$2,308.55	–	\$513.69	\$350.00	\$0.034	5.57	4.39	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 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>	
Green Motors Program Rewind: Motor size 400 HP	Green Motors Program Rewind: Motor size 400 HP	Standard rewind practice	Motor	IPC_Irrigation	19	2,141.43	\$2,617.55	-	\$573.75	\$400.00	\$0.034	5.54	4.45	1
Green Motors Program Rewind: Motor size 450 HP	Green Motors Program Rewind: Motor size 450 HP	Standard rewind practice	Motor	IPC_Irrigation	19	2,405.07	\$2,939.80	-	\$627.16	\$450.00	\$0.034	5.53	4.56	1
Green Motors Program Rewind: Motor size 500 HP	Green Motors Program Rewind: Motor size 500 HP	Standard rewind practice	Motor	IPC_Irrigation	19	2,676.03	\$3,271.01	-	\$677.53	\$500.00	\$0.034	5.53	4.68	1
Green Motors Program Rewind: Motor size 600 HP	Green Motors Program Rewind: Motor size 600 HP	Standard rewind practice	Motor	IPC_Irrigation	24	4,113.93	\$5,687.00	-	\$1,338.28	\$600.00	\$0.034	7.69	4.23	1
Green Motors Program Rewind: Motor size 700 HP	Green Motors Program Rewind: Motor size 700 HP	Standard rewind practice	Motor	IPC_Irrigation	24	4,779.22	\$6,606.68	-	\$1,460.06	\$700.00	\$0.034	7.66	4.48	1
Green Motors Program Rewind: Motor size 800 HP	Green Motors Program Rewind: Motor size 800 HP	Standard rewind practice	Motor	IPC_Irrigation	24	5,450.38	\$7,534.48	-	\$1,619.98	\$800.00	\$0.034	7.65	4.59	1
Green Motors Program Rewind: Motor size 900 HP	Green Motors Program Rewind: Motor size 900 HP	Standard rewind practice	Motor	IPC_Irrigation	24	6,118.68	\$8,458.32	-	\$1,785.95	\$900.00	\$0.034	7.63	4.67	1
Green Motors Program Rewind: Motor size 1,500 HP	Green Motors Program Rewind: Motor size 1,500 HP	Standard rewind practice	Motor	IPC_Irrigation	24	8,423.43	\$11,644.35	-	\$2,633.80	\$1,500.00	\$0.034	5.21	3.80	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> 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 2017 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 2020 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: Ind\_and\_Ag\_GreenMotorRewind\_v3\_1.xlsm. 2017.

