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DEMAND-SIDE MANAGEMENT

# 2019 Annual Report

**Supplement 1:**  
COST-EFFECTIVENESS



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## SUPPLEMENT 1: COST-EFFECTIVENESS

### Cost-Effectiveness

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

Prior to the actual implementation of energy efficiency or demand response programs, Idaho Power performs a preliminary cost-effectiveness 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, 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 total resource cost (TRC) test, utility cost test (UCT), and 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 will begin using the UCT as the primary cost-effectiveness test 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.

Idaho Power uses many 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. If program participation and savings increase, fixed costs (such as labor and marketing) are distributed more broadly, and the program cost-effectiveness increases.

When an existing program or measure is shown to be not cost-effective, Idaho Power works with the Energy Efficiency Advisory Group (EEAG) to get additional input. If the measure or program continues to be offered, the company must demonstrate why the measure or program was implemented or continued and the steps the company plans to take to improve its cost-effectiveness. The company believes this aligns with the expectations of the IPUC and Public Utility Commission of Oregon (OPUC).



In OPUC Order No. 94-590, issued in UM 551, the OPUC outlines specific cost-effectiveness guidelines for energy efficiency measures and programs managed by program administrators. The OPUC expects that measures and programs pass both the UCT and TRC tests. 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. Some customers, contractors, and trade allies operate in both states. Offering different program designs would create confusion in the marketplace and could inhibit participation. In addition, program infrastructure is designed to implement consistent programs across the service area.

## 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*. In the past, Idaho Power has primarily used the TRC test for resource planning, however based on IPUC Order No. 34503, the company will transition to using the UCT as the primary test for energy efficiency resource planning. For program planning and evaluation, the company will primarily use the UCT to develop B/C ratios to determine the cost-effectiveness of DSM programs. The PCT provides the company the opportunity to



assess a program or measure from the participant perspective and to determine if it is in the best interest of the average customer.

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 2019 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 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 cost 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 (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 will include this value even in years when the IRP shows no peak-hour capacity deficits. In 2019, the cost of operating the three demand response programs was \$8.3 million. Idaho Power estimates that if the three programs were dispatched for the full 60 hours, the total costs would have been approximately \$11.5 million and would have remained cost-effective.

## Assumptions

Idaho Power relies on research conducted by third-party sources 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 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 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 2019 dollars. The costs are escalated by 11.6%, which is the percentage provided by the RTF in workbook RTFStandardInformationWorkbook\_v4\_1.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 2018, the company contracted with ADM to update the TRM. Idaho Power also relies on other sources for savings and cost assumptions, such as the Northwest Power and Conservation Council (NWPCC), Northwest Energy Efficiency Alliance (NEEA), the Database for Energy Efficiency Resources (DEER), the Energy Trust of Oregon (ETO), the Bonneville Power Administration (BPA), third-party consultants, and other regional utilities. Occasionally, Idaho Power will also use internal engineering estimates and calculations for savings and costs based on information gathered from previous projects.

The company freezes savings assumptions when the budgets and goals are established for the next calendar year unless code and 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 2019 Annual Report*. As a general rule, the 2019 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 of all the financial assumptions for the cost-effectiveness analysis. *Appendix C—Technical Appendix* of Idaho Power's 2017 IRP contains the DSM alternate costs, discount rate, and escalation rate. These 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. The DSM alternate energy costs are based on both the projected fuel costs of a peaking unit 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 2019.

Idaho Power's 2019 amended IRP was filed on January 31, 2020 with the IPUC under case IPC-E-19-19 and with the OPUC under case LC 74. Because the 2019 IRP has not been acknowledged, the 2017 IRP is the source for all financial assumptions and cost-effectiveness analysis in 2019 and 2020. The 2019 amended IRP is expected to be the source of all assumptions and analysis for the 2021 program year.

As recommended by the NAEPP'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 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 the WACC is not an appropriate discount rate to use. Because the customer bill savings is based on Idaho Power's 2019 average customer segment rate and is not escalated, the participant bill savings is discounted using a real discount rate of 4.54%, which 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 2019 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 non- conservation 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) Pilot Program and Shade Tree Project were two exceptions.

There is a potential of double counting savings in the HER Pilot Program if a customer receives a report and also participates 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, so a NTG of 95% was applied to the cost-effectiveness analysis.

For the Shade Tree Project, the evaluators recommended Idaho Power use a spillover factor of 24% to account for the shade the tree provides to the participant's neighboring homes. A NTG of 124% was applied to the program cost-effectiveness analysis.

For the program cost-effectiveness analyses, a sensitivity analysis was also conducted to show what the minimum NTG percentage needs to be for the 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 measure basis, where relevant, and program basis. As part of *Supplement 1: Cost-Effectiveness* and where applicable, Idaho Power publishes the cost-effectiveness by measure, calculating the PCT and RIM test at the program level, listing the assumptions associated with cost-effectiveness, and citing 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, Shade Tree Project, Weatherization Assistance for Qualified Customers (WAQC), and Weatherization Solutions for



Eligible Customers programs. These programs have few or no customer 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 2019 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 2019, most of Idaho Power's energy efficiency programs were cost-effective from the UCT, except for Energy House Calls and the weatherization programs for income-qualified customers.

The UCT and TRC ratios for the Energy House Calls program are 0.96 and 1.30 respectively. In late 2018 and early 2019, Idaho Power and EEAG discussed a series of topics to comply with IPUC Order No. 34141. One part of the discussions revolved around the frequency of evaluations and the potential effect of evaluation costs to program cost-effectiveness. EEAG recommended that cost-effectiveness be calculated with and without the evaluation costs. Impact and process evaluations were conducted for the Energy House Calls program in 2019. If the evaluation costs were removed from the program's cost-effectiveness, the UCT and TRC ratios would be 1.11 and 1.49 respectively.

WAQC had a TRC of 0.43 and a UCT ratio of 0.35, and Weatherization Solutions for Eligible Customers had a TRC of 0.43 and a UCT ratio of 0.30. The cost-effectiveness ratios for both programs declined in 2019 from both the UCT and TRC perspective due to the adoption of the 2017 IRP DSM alternate cost assumptions. To calculate the programs' cost-effectiveness, 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 2.459% were calculated from the \$1,194,640 of indirect program expenses divided by the total DSM expenses of \$48,584,696 as shown in Appendix 3 of the *Demand-Side Management 2019 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-two out of 285 individual measures in various programs are shown to be not cost-effective from either the UCT or TRC perspective. Of the 52 measures, 14 are not cost-effective from the UCT perspective. These measures will be monitored to examine their impact on the specific program's overall cost-effectiveness. 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. 2019 non-cost-effective measures

| Program                              | Number of Measures | Number Fail UCT | Notes                                                                                                                                                                                                                                                                                                                                                                      |
|--------------------------------------|--------------------|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Energy House Calls                   | 10                 | 10              | Measures not cost-effective from UCT due to the inclusion of evaluation costs in the administration costs. If the evaluation cost were to be removed, the measures and program would be cost-effective. All measures pass the TRC.                                                                                                                                         |
| Heating & Cooling Efficiency Program | 6                  | 1               | All measures except smart thermostats pass UCT. 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. |
| Multifamily Energy Savings Program   | 2                  | 2               | Measures have UCTs of 0.90 and TRCs between 1.40 and 1.48. Measures not cost-effective due to the application of administration costs on a \$/kWh. Measure is included to increase savings in a cost-effective program.                                                                                                                                                    |
| Rebate Advantage                     | 6                  | 0               | All measures pass UCT. Measures have a TRC between 0.62 and 0.98. Three measures would be cost-effective with TRC of 1.10 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.                                                                                     |
| Residential New Construction Pilot   | 1                  | 0               | Measure passes UCT. Pilot program in Idaho only.                                                                                                                                                                                                                                                                                                                           |
| 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                     | 2                  | 0               | All measures pass UCT. TRC between 0.92 and 0.97. Measures are included to increase participation a cost-effective program.                                                                                                                                                                                                                                                |
| Retrofits                            | 15                 | 0               | All measures pass UCT. TRC ranges from 0.75 to 0.99. Nine 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 0.86. 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>52</b>          | <b>14</b>       |                                                                                                                                                                                                                                                                                                                                                                            |



In the following tables, find the annual program cost-effectiveness results that include measure-level cost-effectiveness. Exceptions to the measure-level tables are programs that are analyzed at the project level: the Custom Projects option of the C&I Energy Efficiency Program, the Custom Incentive Option of Irrigation Efficiency Rewards, the Shade Tree Project, WAQC, and Weatherization Solutions for Eligible Customers.

The measure-level cost-effectiveness includes inputs of measure life, energy savings, incremental cost, incentives, program administration cost, and non-energy impacts/benefits. Program administration costs include all non-incentive costs: labor, marketing, training, education, purchased services, and evaluation. Energy and expense data have been rounded to the nearest whole unit.

## 2019 DSM Detailed Expenses by Program

Included in this supplement is a detailed breakout of program expenses as shown in Appendix 2 of the *Demand-Side Management 2019 Annual Report*. These expenses are broken out by funding source major-expense type (labor/administration, materials, other expenses, purchased services, and incentives).

Table 2. 2019 DSM detailed expenses by program (dollars)

| Sector/Program                                  | Idaho Rider          | Oregon Rider      | Idaho Power         | Total Program        |
|-------------------------------------------------|----------------------|-------------------|---------------------|----------------------|
| <b>Energy Efficiency Total</b>                  | <b>\$ 31,554,465</b> | <b>\$ 990,049</b> | <b>\$ 1,560,343</b> | <b>\$ 34,104,857</b> |
| <b>Residential Total</b>                        | <b>\$ 7,839,046</b>  | <b>\$ 263,073</b> | <b>\$ 1,470,126</b> | <b>\$ 9,572,244</b>  |
| <b>Easy Savings: Low-Income Energy</b>          |                      |                   |                     |                      |
| <b>Efficiency Education</b>                     | —                    | —                 | 145,494             | 145,494              |
| Labor/Administrative Expense                    | —                    | —                 | 20,487              | 20,487               |
| Materials and Equipment                         | —                    | —                 | 125,000             | 125,000              |
| Purchased Services                              | —                    | —                 | 7                   | 7                    |
| <b>Educational Distributions</b>                | <b>2,989,184</b>     | <b>91,688</b>     | —                   | <b>3,080,873</b>     |
| Labor/Administrative Expense                    | 40,954               | 2,172             | —                   | 43,125               |
| Materials and Equipment                         | 2,003,100            | 68,032            | —                   | 2,071,132            |
| Purchased Services                              | 945,130              | 21,485            | —                   | 966,615              |
| <b>Energy Efficient Lighting</b>                | <b>2,026,977</b>     | <b>99,285</b>     | —                   | <b>2,126,262</b>     |
| Incentives                                      | 1,045,519            | 47,003            | —                   | 1,092,522            |
| Labor/Administrative Expense                    | 53,548               | 2,835             | —                   | 56,383               |
| Other Expense                                   | 10,308               | 2,599             | —                   | 12,906               |
| Purchased Services                              | 917,602              | 46,848            | —                   | 964,450              |
| <b>Energy House Calls</b>                       | <b>143,570</b>       | <b>18,324</b>     | —                   | <b>161,894</b>       |
| Labor/Administrative Expense                    | 17,195               | 929               | —                   | 18,124               |
| Materials and Equipment                         | 47                   | —                 | —                   | 47                   |
| Other Expense                                   | 33,315               | 2,260             | —                   | 35,575               |
| Purchased Services                              | 93,012               | 15,135            | —                   | 108,147              |
| <b>Heating &amp; Cooling Efficiency Program</b> | <b>478,560</b>       | <b>20,619</b>     | —                   | <b>499,179</b>       |
| Incentives                                      | 264,079              | 11,750            | —                   | 275,829              |
| Labor/Administrative Expense                    | 102,031              | 5,371             | —                   | 107,401              |
| Materials and Equipment                         | —                    | (2,250)           | —                   | (2,250)              |
| Other Expense                                   | 35,173               | 2,426             | —                   | 37,599               |
| Purchased Services                              | 77,278               | 3,322             | —                   | 80,600               |
| <b>Home Energy Audit</b>                        | <b>230,786</b>       | —                 | —                   | <b>230,786</b>       |
| Labor/Administrative Expense                    | 62,838               | —                 | —                   | 62,838               |
| Materials and Equipment                         | 9,162                | —                 | —                   | 9,162                |
| Other Expense                                   | 55,493               | —                 | —                   | 55,493               |
| Purchased Services                              | 103,293              | —                 | —                   | 103,293              |



| Sector/Program                                           | Idaho Rider          | Oregon Rider      | Idaho Power      | Total Program        |
|----------------------------------------------------------|----------------------|-------------------|------------------|----------------------|
| <b>Multifamily Energy Savings Program</b>                | <b>115,560</b>       | <b>15,745</b>     | —                | <b>131,306</b>       |
| Labor/Administrative Expense                             | 51,952               | 6,067             | —                | 58,020               |
| Materials and Equipment                                  | 31,754               | 1,474             | —                | 33,228               |
| Other Expense                                            | (763)                | 1,870             | —                | 1,107                |
| Purchased Services                                       | 32,617               | 6,335             | —                | 38,952               |
| <b>Oregon Residential Weatherization</b>                 | —                    | <b>5,982</b>      | —                | <b>5,982</b>         |
| Incentives                                               | —                    | 440               | —                | 440                  |
| Labor/Administrative Expense                             | —                    | 3,297             | —                | 3,297                |
| Other Expense                                            | —                    | 1,156             | —                | 1,156                |
| Purchased Services                                       | —                    | 1,089             | —                | 1,089                |
| <b>Rebate Advantage</b>                                  | <b>148,220</b>       | <b>8,529</b>      | —                | <b>156,748</b>       |
| Incentives                                               | 103,000              | 6,000             | —                | 109,000              |
| Labor/Administrative Expense                             | 17,471               | 921               | —                | 18,392               |
| Other Expense                                            | 7,654                | 403               | —                | 8,057                |
| Purchased Services                                       | 20,095               | 1,205             | —                | 21,300               |
| <b>Residential New Construction Pilot Program</b>        | <b>534,118</b>       | —                 | —                | <b>534,118</b>       |
| Incentives                                               | 431,000              | —                 | —                | 431,000              |
| Labor/Administrative Expense                             | 59,816               | —                 | —                | 59,816               |
| Materials and Equipment                                  | 92                   | —                 | —                | 92                   |
| Other Expense                                            | 42,953               | —                 | —                | 42,953               |
| Purchased Services                                       | 257                  | —                 | —                | 257                  |
| <b>Shade Tree Project</b>                                | <b>147,750</b>       | —                 | —                | <b>147,750</b>       |
| Labor/Administrative Expense                             | 38,186               | —                 | —                | 38,186               |
| Materials and Equipment                                  | 365                  | —                 | —                | 365                  |
| Other Expense                                            | 3,772                | —                 | —                | 3,772                |
| Purchased Services                                       | 105,427              | —                 | —                | 105,427              |
| <b>Simple Steps, Smart Savings™</b>                      | <b>87,599</b>        | <b>2,900</b>      | —                | <b>90,499</b>        |
| Incentives                                               | 36,924               | 949               | —                | 37,873               |
| Labor/Administrative Expense                             | 30,252               | 1,627             | —                | 31,879               |
| Other Expense                                            | 1,342                | 17                | —                | 1,359                |
| Purchased Services                                       | 19,080               | 307               | —                | 19,388               |
| <b>Weatherization Assistance for Qualified Customers</b> | —                    | —                 | <b>1,303,727</b> | <b>1,303,727</b>     |
| Labor/Administrative Expense                             | —                    | —                 | 49,541           | 49,541               |
| Other Expense                                            | —                    | —                 | 351              | 351                  |
| Purchased Services                                       | —                    | —                 | 1,253,835        | 1,253,835            |
| <b>Weatherization Solutions for Eligible Customers</b>   | <b>936,721</b>       | —                 | <b>20,905</b>    | <b>957,626</b>       |
| Labor/Administrative Expense                             | 5,071                | —                 | 20,905           | 25,976               |
| Other Expense                                            | 18,552               | —                 | —                | 18,552               |
| Purchased Services                                       | 913,098              | —                 | —                | 913,098              |
| <b>Commercial/Industrial</b>                             | <b>\$ 21,265,992</b> | <b>\$ 552,857</b> | <b>\$ 52,501</b> | <b>\$ 21,871,350</b> |
| <b>Custom Projects</b>                                   | <b>11,614,380</b>    | <b>212,991</b>    | <b>52,501</b>    | <b>11,879,873</b>    |
| Incentives                                               | 9,074,101            | 115,341           | —                | 9,189,442            |
| Labor/Administrative Expense                             | 600,676              | 31,692            | 52,501           | 684,869              |
| Other Expense                                            | 373,639              | 7,306             | —                | 380,944              |
| Purchased Services                                       | 1,565,965            | 58,653            | —                | 1,624,618            |
| <b>New Construction</b>                                  | <b>3,365,862</b>     | <b>182,614</b>    | —                | <b>3,548,476</b>     |
| Incentives                                               | 2,942,698            | 160,018           | —                | 3,102,716            |
| Labor/Administrative Expense                             | 228,482              | 12,087            | —                | 240,568              |
| Other Expense                                            | 33,081               | 1,741             | —                | 34,822               |
| Purchased Services                                       | 161,601              | 8,769             | —                | 170,370              |
| <b>Retrofits</b>                                         | <b>6,131,117</b>     | <b>149,939</b>    | —                | <b>6,281,056</b>     |
| Incentives                                               | 5,083,828            | 94,354            | —                | 5,178,182            |
| Labor/Administrative Expense                             | 360,161              | 18,982            | —                | 379,143              |



| Sector/Program                                               | Idaho Rider         | Oregon Rider      | Idaho Power       | Total Program       |
|--------------------------------------------------------------|---------------------|-------------------|-------------------|---------------------|
| Materials and Equipment .....                                | —                   | —                 | —                 | —                   |
| Other Expense .....                                          | 47,983              | 2,525             | —                 | 50,509              |
| Purchased Services .....                                     | 639,145             | 34,077            | —                 | 673,222             |
| <b>Commercial Energy-Saving Kits .....</b>                   | <b>154,632</b>      | <b>7,312</b>      | —                 | <b>161,945</b>      |
| Labor/Administrative Expense .....                           | 14,817              | 785               | —                 | 15,602              |
| Materials and Equipment .....                                | 106,555             | 5,201             | —                 | 111,755             |
| Other Expense .....                                          | 1,702               | 90                | —                 | 1,792               |
| Purchased Services .....                                     | 31,559              | 1,237             | —                 | 32,796              |
| <b>Irrigation Total</b>                                      | <b>\$ 2,449,427</b> | <b>\$ 174,120</b> | <b>\$ 37,716</b>  | <b>\$ 2,661,263</b> |
| <b>Irrigation Efficiency Rewards .....</b>                   | <b>2,449,427</b>    | <b>174,120</b>    | <b>37,716</b>     | <b>2,661,263</b>    |
| Incentives .....                                             | 2,109,284           | 155,988           | —                 | 2,265,273           |
| Labor/Administrative Expense .....                           | 299,234             | 15,800            | 37,716            | 352,750             |
| Materials and Equipment .....                                | 7,575               | 399               | —                 | 7,974               |
| Other Expense .....                                          | 29,767              | 1,720             | —                 | 31,487              |
| Purchased Services .....                                     | 3,566               | 214               | —                 | 3,780               |
| <b>Market Transformation Total</b>                           | <b>\$ 2,585,017</b> | <b>\$ 136,053</b> | <b>\$ —</b>       | <b>\$ 2,721,070</b> |
| <b>NEAA .....</b>                                            | <b>2,585,017</b>    | <b>136,053</b>    | —                 | <b>2,721,070</b>    |
| Purchased Services .....                                     | 2,585,017           | 136,053           | —                 | 2,721,070           |
| <b>Other Program and Activities Total</b>                    | <b>\$ 2,160,635</b> | <b>\$ 127,298</b> | <b>\$ —</b>       | <b>\$ 2,287,933</b> |
| <b>Commercial/Industrial Energy Efficiency Overhead</b>      | <b>463,177</b>      | <b>29,758</b>     | —                 | <b>492,935</b>      |
| Labor/Administrative Expense .....                           | 273,351             | 14,897            | —                 | 288,248             |
| Other Expense .....                                          | 160,811             | 13,334            | —                 | 174,145             |
| Purchased Services .....                                     | 29,015              | 1,527             | —                 | 30,542              |
| <b>Energy Efficiency Direct Program Overhead .....</b>       | <b>251,229</b>      | <b>13,390</b>     | —                 | <b>264,620</b>      |
| Labor/Administrative Expense .....                           | 237,814             | 12,529            | —                 | 250,342             |
| Other Expense .....                                          | 13,416              | 862               | —                 | 14,277              |
| <b>Oregon Commercial Audit .....</b>                         | <b>—</b>            | <b>7,262</b>      | —                 | <b>7,262</b>        |
| Labor/Administrative Expense .....                           | —                   | 620               | —                 | 620                 |
| Other Expense .....                                          | —                   | 592               | —                 | 592                 |
| Purchased Services .....                                     | —                   | 6,050             | —                 | 6,050               |
| <b>Residential Energy Efficiency Education Initiative...</b> | <b>152,579</b>      | <b>8,272</b>      | —                 | <b>160,851</b>      |
| Labor/Administrative Expense .....                           | 86,940              | 4,581             | —                 | 91,521              |
| Materials and Equipment .....                                | 419                 | 22                | —                 | 441                 |
| Other Expense .....                                          | 63,190              | 3,562             | —                 | 66,752              |
| Purchased Services .....                                     | 2,031               | 107               | —                 | 2,137               |
| <b>Residential Energy Efficiency Overhead .....</b>          | <b>1,293,650</b>    | <b>68,615</b>     | —                 | <b>1,362,265</b>    |
| Labor/Administrative Expense .....                           | 187,432             | 10,358            | —                 | 197,790             |
| Other Expense .....                                          | 1,085,308           | 57,122            | —                 | 1,142,430           |
| Purchased Services .....                                     | 20,910              | 1,135             | —                 | 22,045              |
| <b>Indirect Program Expenses Total</b>                       | <b>\$ 959,330</b>   | <b>\$ 46,138</b>  | <b>\$ 189,173</b> | <b>\$ 1,194,640</b> |
| <b>Energy Efficiency Accounting and Analysis .....</b>       | <b>927,383</b>      | <b>44,457</b>     | <b>189,173</b>    | <b>1,161,013</b>    |
| Labor/Administrative Expense .....                           | 420,450             | 22,179            | 160,389           | 603,018             |
| Materials and Equipment .....                                | 100                 | 5                 | —                 | 105                 |
| Other Expense .....                                          | 13,125              | 690               | 28,784            | 42,599              |
| Purchased Services .....                                     | 493,708             | 21,583            | —                 | 515,291             |
| <b>Energy Efficiency Advisory Group .....</b>                | <b>20,937</b>       | <b>1,105</b>      | —                 | <b>22,041</b>       |
| Labor/Administrative Expense .....                           | 6,086               | 323               | —                 | 6,409               |
| Other Expense .....                                          | 14,851              | 782               | —                 | 15,633              |



| Sector/Program                       | Idaho Rider          | Oregon Rider        | Idaho Power         | Total Program        |
|--------------------------------------|----------------------|---------------------|---------------------|----------------------|
| Special Accounting Entries .....     | 11,009               | 576                 | —                   | 11,586               |
| Special Accounting Entry .....       | 11,009               | 576                 | —                   | 11,586               |
| <b>Demand Response Total</b>         | <b>\$ 810,533</b>    | <b>\$ 467,100</b>   | <b>\$ 6,998,563</b> | <b>\$ 8,276,196</b>  |
| <b>Residential Total</b>             | <b>\$ 495,703</b>    | <b>\$ 30,762</b>    | <b>\$ 351,200</b>   | <b>\$ 877,665</b>    |
| A/C Cool Credit .....                | 495,703              | 30,762              | 351,200             | 877,665              |
| Incentives .....                     | —                    | 4,256               | 351,200             | 355,456              |
| Labor/Administrative Expense .....   | 65,697               | 3,481               | —                   | 69,178               |
| Materials and Equipment .....        | (18,385)             | (145)               | —                   | (18,530)             |
| Other Expense .....                  | 16,713               | 880                 | —                   | 17,593               |
| Purchased Services .....             | 431,677              | 22,291              | —                   | 453,968              |
| <b>Commercial/Industrial Total</b>   | <b>\$ 75,306</b>     | <b>\$ 256,606</b>   | <b>\$ 294,911</b>   | <b>\$ 626,823</b>    |
| <b>Flex Peak Program</b> .....       | <b>75,306</b>        | <b>256,606</b>      | <b>294,911</b>      | <b>626,823</b>       |
| Incentives .....                     | —                    | 252,616             | 294,911             | 547,527              |
| Labor/Administrative Expense .....   | 72,482               | 3,841               | —                   | 76,323               |
| Other Expense .....                  | 2,825                | 149                 | —                   | 2,973                |
| <b>Irrigation Total</b>              | <b>\$ 239,523</b>    | <b>\$ 179,733</b>   | <b>\$ 6,352,452</b> | <b>\$ 6,771,708</b>  |
| <b>Irrigation Peak Rewards</b> ..... | <b>239,523</b>       | <b>179,733</b>      | <b>6,352,452</b>    | <b>6,771,708</b>     |
| Incentives .....                     | —                    | 167,117             | 6,350,125           | 6,517,242            |
| Labor/Administrative Expense .....   | 74,140               | 3,921               | 2,327               | 80,388               |
| Materials and Equipment .....        | 24,470               | 1,288               | —                   | 25,758               |
| Other Expense .....                  | 1,384                | 73                  | —                   | 1,457                |
| Purchased Services .....             | 139,530              | 7,334               | —                   | 146,864              |
| <b>Grand Total</b>                   | <b>\$ 38,069,980</b> | <b>\$ 1,766,639</b> | <b>\$ 8,748,078</b> | <b>\$ 48,584,696</b> |

Table 3. Cost-effectiveness of 2019 programs by B/C test

| Program/Sector                                                | UCT         | TRC         | RIM         | PCT         |
|---------------------------------------------------------------|-------------|-------------|-------------|-------------|
| Educational Distributions .....                               | 2.06        | 3.32        | 0.49        | N/A         |
| Energy Efficient Lighting* .....                              | 4.04        | 5.17        | 0.52        | 11.72       |
| Energy House Calls* .....                                     | 0.96        | 1.30        | 0.34        | N/A         |
| Heating & Cooling Efficiency Program .....                    | 1.56        | 0.77        | 0.43        | 1.48        |
| Multifamily Energy Savings Program .....                      | 1.15        | 2.34        | 0.39        | N/A         |
| Rebate Advantage .....                                        | 1.82        | 1.14        | 0.39        | 2.55        |
| Residential New Construction Pilot Program* .....             | 1.58        | 0.83        | 0.45        | 1.55        |
| Shade Tree Project .....                                      | 1.09        | 1.16        | 0.52        | N/A         |
| Simple Steps, Smart Savings .....                             | 1.40        | 5.56        | 0.43        | 11.10       |
| Weatherization Assistance for Qualified Customers .....       | 0.35        | 0.43        | 0.21        | N/A         |
| Weatherization Solutions for Eligible Customers .....         | 0.30        | 0.43        | 0.18        | N/A         |
| <b>Residential Energy Efficiency Sector</b> .....             | <b>1.90</b> | <b>2.29</b> | <b>0.46</b> | <b>7.76</b> |
| Commercial Energy-Saving Kits .....                           | 1.57        | 2.52        | 0.60        | N/A         |
| Custom Projects* .....                                        | 3.62        | 1.92        | 1.06        | 1.73        |
| New Construction* .....                                       | 3.15        | 2.88        | 0.77        | 3.52        |
| Retrofits* .....                                              | 3.68        | 1.85        | 0.80        | 2.12        |
| <b>Commercial/Industrial Energy Efficiency Sector**</b> ..... | <b>3.55</b> | <b>2.01</b> | <b>0.92</b> | <b>2.09</b> |
| Irrigation Efficiency Rewards .....                           | 2.44        | 3.13        | 0.98        | 3.16        |
| <b>Irrigation Energy Efficiency Sector***</b> .....           | <b>2.46</b> | <b>3.13</b> | <b>0.98</b> | <b>3.16</b> |
| <b>Energy Efficiency Portfolio</b> .....                      | <b>2.72</b> | <b>2.12</b> | <b>0.76</b> | <b>2.79</b> |

\*Evaluation costs included in cost-effectiveness ratios.

\*\*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  
2019 Program Results

| Cost Inputs                                                             | Ref                 |
|-------------------------------------------------------------------------|---------------------|
| Program Administration .....                                            | \$ 3,080,873        |
| Program Incentives .....                                                | -                   |
| <b>Total UC .....</b>                                                   | <b>\$ 3,080,873</b> |
| Measure Equipment and Installation (Incremental Participant Cost) ..... | \$ -                |
|                                                                         | M                   |

| Summary of Cost-Effectiveness Results |    |            |              |       |
|---------------------------------------|----|------------|--------------|-------|
| Test                                  |    | Benefit    | Cost         | Ratio |
| UC Test .....                         | \$ | 6,333,292  | \$ 3,080,873 | 2.06  |
| TRC Test .....                        |    | 10,242,798 | 3,080,873    | 3.32  |
| RIM Test .....                        |    | 6,333,292  | 12,979,584   | 0.49  |
| PCT .....                             |    | N/A        | N/A          | N/A   |

| Net Benefit Inputs (NPV)               | Ref                 |
|----------------------------------------|---------------------|
| <b>Resource Savings</b>                |                     |
| 2019 Annual Gross Energy (kWh) .....   | 19,250,220          |
| NPV Cumulative Energy (kWh) .....      | \$ 125,844,838      |
| 10% Credit (Northwest Power Act) ..... | 633,329             |
| <b>Total Electric Savings .....</b>    | <b>\$ 6,966,621</b> |
|                                        | 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             |

|                                               |              |
|-----------------------------------------------|--------------|
| <b>Participant Bill Savings</b>               |              |
| NPV Cumulative Participant Bill Savings ..... | \$ 9,898,712 |
|                                               | B            |
| <b>Other Benefits</b>                         |              |
| Non-Utility Rebates/Incentives .....          | \$ -         |
| NEBs .....                                    | \$ 3,276,178 |
|                                               | NUI          |
|                                               | NEB          |

| 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 .....                  | 49%     |
| Average Customer Segment Rate/kWh .....        | \$0.085 |
| Line Losses .....                              | 9.60%   |

**Notes:** Energy savings as reported by the Franklin Energy for the 2018 to 2019 student kits.  
Home Energy Report savings reported for August 2018 through December 2019.  
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.



| Year: 2019                                                          | 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> | 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                              | 8.64                                       | \$4.30                               | \$1.98                                    | -               | \$0.476                          | 1.05                   | 1.63                   | 1             |
| Student Energy Efficiency Kit (SEEK) Program                        | 2018–2019 kit offering. Kits include: high efficiency showerhead, shower timer, 3 LEDs, FilterTone alarm, digital thermometer, LED nightlight.                                   | No kit                      | Kit                             | IPC_Student Kits                   | 11                              | 210.24                                     | \$106.08                             | \$10.20                                   | -               | \$0.135                          | 3.75                   | 4.48                   | 2             |
| Energy-Saving Kit—weighted average of non-electric and electric kit | 9 - 250 to 1049 lumen General Purpose bulbs 1 - 1.75 gpm showerhead and non-electric thermostatic shower valve combo (electric kit only) 3 - faucet aerators (electric kit only) | No kit                      | Kit                             | IPC_Energy-savings Kits (weighted) | 11                              | 308.87                                     | \$136.54                             | \$105.33                                  | -               | \$0.272                          | 1.63                   | 3.05                   | 3             |
| Energy-Saving Kit (giveaway lightbulb only kit)                     | 9 - 250 to 1049 lumen General Purpose bulbs                                                                                                                                      | No kit                      | Kit                             | Residential-All-Lighting-All       | 13                              | 77.76                                      | \$38.72                              | \$17.85                                   | -               | \$0.272                          | 1.83                   | 2.86                   | 1             |
| Welcome Kit (lightbulb only kit)                                    | 4 - 250 to 1049 lumen General Purpose bulbs                                                                                                                                      | No kit                      | Kit                             | Residential-All-Lighting-All       | 13                              | 34.56                                      | \$17.21                              | \$7.93                                    | -               | \$0.476                          | 1.05                   | 1.63                   | 1             |
| Home Energy Reports                                                 | Home energy report                                                                                                                                                               | No behavior change          | Report                          | IPC_Home Energy Reports            | 1                               | 338.11                                     | \$19.81                              | \$-                                       | -               | \$0.024                          | 2.35                   | 2.58                   | 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> No participant costs.  
<sup>e</sup> Average program administration and overhead costs to achieve each kWh of savings for each initiative. 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: ResLighting, Bulbs\_v6\_1.xlsm, 2018.  
<sup>2</sup> Franklin Energy: 2018-2019 Idaho Power Energy Wise Program Summary Report, 2019.  
<sup>3</sup> Lightbulbs - RTF: ResLighting, Bulbs\_v6\_1.xlsm, Showerhead - RTF: ThermostaticShowerRestrictionValve\_v2\_1. By Request installation rate reduced from 90% to 57%. Faucet aerators - RTF: Aerators\_v1\_1.xlsm.  
<sup>4</sup> Idaho Power HER Year 2 Final Program Summary, Aclara, 2020. Per report savings based on 17 months of savings from August 2018 to December 2019. Applied NTG of 95%.



## Energy Efficient Lighting

Segment: Residential  
2019 Program Results

| Cost Inputs                                                       | Ref                 |
|-------------------------------------------------------------------|---------------------|
| Program Administration .....                                      | \$ 1,033,740        |
| Program Incentives .....                                          | 1,092,522           |
| <b>Total UC .....</b>                                             | <b>\$ 2,126,262</b> |
| Measure Equipment and Installation (Incremental Participant Cost) | \$ 1,748,299 M      |

### Summary of Cost-Effectiveness Results

| Test           | Benefit    | Cost         | Ratio |
|----------------|------------|--------------|-------|
| UC Test .....  | 8,599,070  | \$ 2,126,262 | 4.04  |
| TRC Test ..... | 14,377,698 | 2,782,039    | 5.17  |
| RIM Test ..... | 8,599,070  | 16,600,157   | 0.52  |
| PCT .....      | 20,485,138 | 1,748,299    | 11.72 |

### 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 .....                  | 25%     |
| Average Customer Segment Rate/kWh .....        | \$0.085 |
| Line Losses .....                              | 9.60%   |

| Net Benefit Inputs (NPV)                      | Ref                 |
|-----------------------------------------------|---------------------|
| <b>Resource Savings</b>                       |                     |
| 2019 Annual Gross Energy (kWh) .....          | 16,245,551          |
| NPV Cumulative Energy (kWh) .....             | 173,846,043         |
| 10% Credit (Northwest Power Act) .....        | 859,907             |
| <b>Total Electric Savings .....</b>           | <b>\$ 9,458,976</b> |
| <b>Participant Bill Savings</b>               |                     |
| NPV Cumulative Participant Bill Savings ..... | \$ 14,473,895 B     |
| <b>Other Benefits</b>                         |                     |
| Non-Utility Rebates/Incentives .....          | \$ - NUI            |
| NEBs .....                                    | \$ 4,918,721 NEB    |

**Note:** NEBs include PV of periodic bulb replacement costs.

Cost-effectiveness ratios includes evaluation costs that were incurred in 2019. Without evaluation costs, UCT and TRC would have been 4.06 and 5.18 respectively.



| Year: 2019                               | 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                              | 13.62                                             | \$6.78                               | \$5.62  | \$2.11                                          | \$1.00          | \$0.064                          | 3.62                   | 4.39          | 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                              | 11.64                                             | \$5.80                               | \$2.42  | \$0.81                                          | \$0.73          | \$0.064                          | 3.93                   | 5.66          | 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                              | 26.84                                             | \$13.36                              | \$6.39  | \$4.65                                          | \$0.83          | \$0.064                          | 5.25                   | 3.31          | 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                              | 8.99                                              | \$4.48                               | \$2.42  | \$1.83                                          | \$0.79          | \$0.064                          | 3.28                   | 3.05          | 1                      |
| Globe                                    | Retail_LED_Globe_250 to 1049 lumens                                     | Baseline bulb               | Fixture                         | Residential All-Lighting | 13                              | 14.00                                             | \$6.97                               | \$4.74  | \$2.15                                          | \$0.50          | \$0.064                          | 4.99                   | 4.07          | 1                      |
| Globe                                    | Retail_LED_Globe_1050 to 1489 lumens                                    | Baseline bulb               | Fixture                         | Residential All-Lighting | 13                              | 31.56                                             | \$15.72                              | \$11.46 | \$2.97                                          | \$0.50          | \$0.064                          | 6.24                   | 5.76          | 1                      |
| Globe                                    | Retail_LED_Globe_1490 to 2600 lumens                                    | Baseline bulb               | Fixture                         | Residential All-Lighting | 13                              | 12.49                                             | \$6.22                               | \$6.06  | \$4.69                                          | \$0.50          | \$0.064                          | 4.79                   | 2.35          | 1                      |
| Reflectors and Outdoor                   | Retail_LED_Reflectors and Outdoor_250 to 1049 lumens                    | Baseline bulb               | Fixture                         | Residential All-Lighting | 13                              | 8.00                                              | \$3.98                               | \$2.09  | \$0.28                                          | \$0.80          | \$0.064                          | 3.04                   | 8.17          | 1                      |
| Reflectors and Outdoor                   | Retail_LED_Reflectors and Outdoor_1050 to 1489 lumens                   | Baseline bulb               | Fixture                         | Residential All-Lighting | 13                              | 9.64                                              | \$4.80                               | \$2.09  | \$0.69                                          | \$0.96          | \$0.064                          | 3.04                   | 5.64          | 1                      |
| Reflectors and Outdoor                   | Retail_LED_Reflectors and Outdoor_1490 to 2600 lumens                   | Baseline bulb               | Fixture                         | Residential All-Lighting | 13                              | 55.53                                             | \$27.65                              | \$10.58 | \$4.64                                          | \$2.00          | \$0.064                          | 4.98                   | 5.00          | 1                      |
| LED Fixture Retailer                     | LED Indoor Fixture                                                      | Baseline bulb               | Fixture                         | Residential All-Lighting | 20                              | 17.33                                             | \$11.78                              | \$29.42 | \$19.49                                         | \$0.66          | \$0.064                          | 6.66                   | 2.06          | 2                      |
| LED Fixture Retailer                     | LED Outdoor Fixture                                                     | Baseline bulb               | Fixture                         | IPC Outdoor Lighting     | 20                              | 33.48                                             | \$17.15                              | \$39.33 | \$37.95                                         | \$0.81          | \$0.064                          | 5.81                   | 1.45          | 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: ResLighting\_Bulbs\_v6\_1.xlsm. 2018.  
<sup>2</sup> RTF: ResLighting\_Bulbs\_v6\_1.xlsm. 2018. Weighted average of actual fixture sales.

## Energy House Calls

Segment: Residential  
2019 Program Results

| Summary of Cost-Effectiveness Results |            |            |       |
|---------------------------------------|------------|------------|-------|
| Test                                  | Benefit    | Cost       | Ratio |
| UC Test                               | \$ 155,871 | \$ 161,894 | 0.96  |
| TRC Test                              | 209,659    | 161,894    | 1.30  |
| RIM Test                              | 155,871    | 464,477    | 0.34  |
| 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                  |  |  | 104%    |
| Average Customer Segment Rate/kWh        |  |  | \$0.085 |
| Line Losses                              |  |  | 9.60%   |

| Cost Inputs                                                       |            | Ref |
|-------------------------------------------------------------------|------------|-----|
| Program Administration                                            | \$ 161,894 |     |
| Program Incentives                                                | –          | I   |
| Total UC                                                          | \$ 161,894 | P   |
| Measure Equipment and Installation (Incremental Participant Cost) | \$ –       | M   |

| Net Benefit Inputs (NPV)                |              | Ref          |
|-----------------------------------------|--------------|--------------|
| Resource Savings                        |              |              |
| 2019 Annual Gross Energy (kWh)          | 309,154      |              |
| NPV Cumulative Energy (kWh)             | \$ 3,580,288 | \$ 155,871 S |
| 10% Credit (Northwest Power Act)        |              | 15,587       |
| Total Electric Savings                  | \$ 171,458   | A            |
| Participant Bill Savings                |              |              |
| NPV Cumulative Participant Bill Savings | \$ 302,583   | B            |
| Other Benefits                          |              |              |
| Non-Utility Rebates/Incentives          | \$ –         | NUI          |
| NEBs                                    | \$ 38,200    | 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.  
Cost-effectiveness ratios includes evaluation costs that were incurred in 2019. Without evaluation costs, UCT and TRC would have been 1.11 and 1.49, respectively.  
No participant costs.



| Year: 2019                         | 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                                            | \$494.25                             | \$238.34 | -                                               | -               | \$0.524                          | 0.97                   | 1.53          | 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                                          | \$634.17                             | \$282.72 | -                                               | -               | \$0.524                          | 0.97                   | 1.50          | 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                                            | \$312.49                             | \$234.61 | -                                               | -               | \$0.524                          | 0.97                   | 1.79          | 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                                            | \$444.93                             | \$282.72 | -                                               | -               | \$0.524                          | 0.97                   | 1.68          | 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                              | 30.11                                             | \$14.01                              | \$4.05   | -                                               | -               | \$0.524                          | 0.89                   | 1.23          | 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                                             | \$24.59                              | \$55.13  | -                                               | -               | \$0.524                          | 0.79                   | 2.64          | 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                                             | \$16.53                              | \$44.59  | -                                               | -               | \$0.524                          | 0.79                   | 3.00          | 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                              | 176.44                                            | \$73.08                              | \$85.76  | -                                               | -               | \$0.524                          | 0.79                   | 1.80          | 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                              | 232.42                                            | \$96.26                              | \$145.58 | -                                               | -               | \$0.524                          | 0.79                   | 2.06          | 2, 5                   |
| Water heater pipe covers           | Up to 6 ft                                                                                                            | No existing coverage             | Pipe wrap                       | Residential-All-Water Heating-Water Heater        | 10                              | 78.02                                             | \$32.31                              | \$-      | -                                               | -               | \$0.524                          | 0.79                   | 0.87          | 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 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. ResMHHeatingCoolingPrescriptiveDuctSeal\_v2\_0.xlsm. 2015.

<sup>2</sup> Measure not cost-effective. Program and measures not cost-effective due to the inclusion of 2019 evaluation costs. Program is cost-effective without these costs.

<sup>3</sup> RTF. ResLighting\_Bulbs\_v6\_1.xlsm. 2018.

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

<sup>5</sup> RTF. Showerheads\_v3.1.xlsm. 2016.

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

# Heating & Cooling Efficiency Program

Segment: Residential  
2019 Program Results

| Cost Inputs                                                             | Ref                 |
|-------------------------------------------------------------------------|---------------------|
| Program Administration .....                                            | \$ 223,350          |
| Program Incentives.....                                                 | 275,829 I           |
| <b>Total UC .....</b>                                                   | <b>\$ 499,179 P</b> |
| Measure Equipment and Installation (Incremental Participant Cost) ..... | \$ 1,288,832 M      |

| Net Benefit Inputs (NPV)              | Ref                 |
|---------------------------------------|---------------------|
| <b>Resource Savings</b>               |                     |
| 2019 Annual Gross Energy (kWh).....   | 1,412,343           |
| NPV Cumulative Energy (kWh).....      | 15,755,403 \$       |
| 10% Credit (Northwest Power Act)..... | 77,967              |
| <b>Total Electric Savings .....</b>   | <b>\$ 857,632 A</b> |

|                                               |                |
|-----------------------------------------------|----------------|
| <b>Participant Bill Savings</b>               |                |
| NPV Cumulative Participant Bill Savings ..... | \$ 1,321,701 B |
| <b>Other Benefits</b>                         |                |
| Non-Utility Rebates/Incentives .....          | \$ - NUI       |
| NEBs.....                                     | \$ 304,990 NEB |

**Note:** NEBs include NPV of RTF values for annual operation and maintenance (O&M) savings and monetized comfort savings.  
Program has a TRC cost-effectiveness exception approved under OPUC Advice No. 17-09.

| Summary of Cost-Effectiveness Results |            |            |       |  |
|---------------------------------------|------------|------------|-------|--|
| Test                                  | Benefit    | Cost       | Ratio |  |
| UC Test .....                         | \$ 779,665 | \$ 499,179 | 1.56  |  |
| TRC Test .....                        | 1,162,622  | 1,512,183  | 0.77  |  |
| RIM Test .....                        | 779,665    | 1,820,880  | 0.43  |  |
| PCT .....                             | 1,902,520  | 1,288,832  | 1.48  |  |

| 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 .....                  | 322%    |
| Average Customer Segment Rate/kWh .....        | \$0.085 |
| Line Losses .....                              | 9.60%   |



| Year: 2019                                        | 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                              | 6,440.05                             | \$3,491.29 | \$1,247.41                                      | \$3,917.03      | \$800.00                         | \$0.158                | 1.92                   | 1.03 | 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                              | 684.80                               | \$371.24   | \$18.59                                         | \$167.80        | \$250.00                         | \$0.158                | 1.04                   | 1.55 | 1, 2, 3, 4    |
|                                                   | 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                              | 712.75                               | \$386.40   | \$17.88                                         | \$168.62        | \$250.00                         | \$0.158                | 1.07                   | 1.57 | 1, 2, 3, 4    |
|                                                   | 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                              | 8,134.44                             | \$5,377.41 | -                                               | \$9,995.12      | \$1,000.00                       | \$0.158                | 2.35                   | 0.52 | 5, 6          |
|                                                   | Open-Loop Heat Pump                                | Open loop water source heat pump - heat pump to open loop (Heating & Cooling Zone Weighted Average)                                               | Electric resistance/ Oil Propane        | Unit                        | Residential-All-Heating-Air-Source Heat Pump         | 20                              | 7,811.00                             | \$5,163.60 | -                                               | \$6,669.73      | \$1,000.00                       | \$0.158                | 2.31                   | 0.72 | 5, 6          |
|                                                   | Ductless Heat Pump                                 | Zonal to DHP. (Heating & Cooling Zone Weighted Average)                                                                                           | Zonal Electric                          | Unit                        | Residential-All-Heating-Air-Source Heat Pump         | 15                              | 2,212.07                             | \$1,199.21 | \$1,090.94                                      | \$3,935.00      | \$750.00                         | \$0.158                | 1.09                   | 0.56 | 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                              | 1,330.08                             | \$637.04   | \$(40.81)                                       | \$725.83        | \$300.00                         | \$0.158                | 1.25                   | 0.71 | 7             |
|                                                   | Evaporative Cooler                                 | Evaporative Cooler                                                                                                                                | Central Air Conditioning                | Unit                        | Residential-Single Family Idaho-Cooling-All          | 12                              | 406.62                               | \$536.43   | -                                               | \$246.28        | \$150.00                         | \$0.158                | 2.50                   | 1.90 | 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                              | 936.40                               | \$531.93   | -                                               | \$679.11        | \$350.00                         | \$0.158                | 1.07                   | 0.71 | 9             |
|                                                   | Electronically Commutated Motor (ECM) Blower Motor | ECM Blower Motor                                                                                                                                  | permanent split capacitor (PSC) motor   | Unit                        | IPC_ECM                                              | 18                              | 2,683.11                             | \$1,607.88 | -                                               | \$300.00        | \$50.00                          | \$0.158                | 3.39                   | 2.44 | 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> | 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                                            | \$767.30                             | –                                               | \$700.00        | \$200.00                         | \$0.158                | 2.84                   | 1.10          | 10     |
| Smart Thermostat | Smart Thermostat     | non wi-fi enabled thermostat/no thermostat | Unit         | Residential-Single Family Idaho -Heating-All | 5                               | 649.88                                            | \$111.47                             | –                                               | \$315.53        | \$75.00                          | \$0.158                | 0.63                   | 0.29          | 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 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: ResSFExistingHVAC\_v4\_1.xlsx. Weighted average of 2019 participants in heating and cooling zones 1-3.

<sup>2</sup> RTF: ResHeatingCoolingCommissioningControlsSizingSF\_v3\_6.xlsx. Weighted average of 2019 participants in heating and cooling zones 1-3.

<sup>3</sup> RTF: ResMHEExistingHVAC\_v3\_4.xlsx. Weighted average of 2019 participants in heating and cooling zones 1-3.

<sup>4</sup> RTF: ResMHHeatingCoolingCommissioningControlsSizing\_v3\_4.xlsx. Weighted average of 2019 participants in heating and cooling zones 1-3.

<sup>5</sup> Measure not cost-effective.

<sup>6</sup> RTF: ResGSHF\_v2\_6\_2016. Weighted average of 2019 participants in heating and cooling zones 1-3.

<sup>7</sup> RTF: ResHPWH\_v3\_v.xlsm.2017. Measure cost-effective without inclusion of admin costs.

<sup>8</sup> AEG: Potential Study. 2016.

<sup>9</sup> RTF: ResSF DuctSealing\_v5\_1.xlsx. 2019. Measure would be cost-effective without inclusion of admin costs.

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

<sup>11</sup> RTF: ResConnectedTstats\_v11\_1.xlsx.

<sup>12</sup> Measure not cost-effective. Measure is being piloted and will be monitored in 2020.



## Multifamily Energy Savings Program

Segment: Residential  
2019 Program Results

| Cost Inputs                                                             | Ref               |
|-------------------------------------------------------------------------|-------------------|
| Program Administration .....                                            | \$ 131,306        |
| Program Incentives .....                                                | –                 |
| <b>Total UC .....</b>                                                   | <b>\$ 131,306</b> |
| Measure Equipment and Installation (Incremental Participant Cost) ..... | \$ –              |
|                                                                         | M                 |

| Net Benefit Inputs (NPV)               | Ref               |
|----------------------------------------|-------------------|
| <b>Resource Savings</b>                |                   |
| 2019 Annual Gross Energy (kWh) .....   | 346,107           |
| NPV Cumulative Energy (kWh) .....      | \$ 3,165,466      |
| 10% Credit (Northwest Power Act) ..... | 15,110            |
| <b>Total Electric Savings .....</b>    | <b>\$ 166,207</b> |
|                                        | A                 |

|                                               |            |
|-----------------------------------------------|------------|
| <b>Participant Bill Savings</b>               |            |
| NPV Cumulative Participant Bill Savings ..... | \$ 257,402 |
|                                               | B          |
| <b>Other Benefits</b>                         |            |
| Non-Utility Rebates/Incentives .....          | \$ –       |
| NEBs .....                                    | \$ 141,293 |
|                                               | NUI<br>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 .....                         | \$ 151,098 | \$ 131,306 | 1.15  |     |
| TRC Test .....                        | 307,501    | 131,306    | 2.34  |     |
| RIM Test .....                        | 151,098    | 388,708    | 0.39  |     |
| PCT .....                             | N/A        | 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 .....                  | 87%     |
| Average Customer Segment Rate/kWh .....        | \$0.085 |
| Line Losses .....                              | 9.60%   |

| Year: 2019                         | 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> | 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                              | 30.11                                             | \$14.01                              | \$4.05                                          | -               | \$0.379                          | 1.23                   | 1.71                   | 1             |
| General Purpose LED Direct Install | Efficient Technology: LED Lamp Type: General Purpose and Dimmable Lumen Category: 250 to 1049 lumens Space Type: Exterior                                  | Baseline bulb                | Lamp                            | IPC_ Outdoor Lighting                        | 12                              | 42.16                                             | \$14.44                              | \$6.43                                          | -               | \$0.379                          | 0.90                   | 1.40                   | 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                              | 53.56                                             | \$18.34                              | \$9.86                                          | -               | \$0.379                          | 0.90                   | 1.48                   | 1, 2          |
| Reflector LED Direct Install       | Efficient Technology: LED Lamp Type: Reflectors and Outdoor Lumen Category: 250 to 1049 lumens Space Type: Exterior                                        | Baseline bulb                | Lamp                            | IPC_ Outdoor Lighting                        | 12                              | 51.96                                             | \$24.18                              | \$9.34                                          | -               | \$0.379                          | 1.23                   | 1.83                   | 1             |
| 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                              | 16.79                                             | \$7.81                               | \$5.29                                          | -               | \$0.379                          | 1.23                   | 2.18                   | 1             |
| 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                              | 23.42                                             | \$10.90                              | \$6.43                                          | -               | \$0.379                          | 1.23                   | 2.08                   | 1             |
| 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                                             | \$18.20                              | \$40.81                                         | -               | \$0.379                          | 1.09                   | 3.65                   | 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                                             | \$19.69                              | \$53.06                                         | -               | \$0.379                          | 1.09                   | 4.15                   | 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> | 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> |               |
| 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                              | 254.87                                            | \$105.56                             | \$178.37                                        | -               | \$0.379                          | 1.09                   | 3.05                   | 4             |
| Water heater pipe covers                                            | up to 6 feet                                                                     | No existing coverage             | Pipe wrap    | Residential-All-Water Heating-Water Heater | 10                              | 78.02                                             | \$32.31                              | -                                               | -               | \$0.379                          | 1.09                   | 1.20                   | 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 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: ResLighting\_Bulbs\_v6\_1.xlsm. 2018.<sup>2</sup> Not cost-effective due to the application of admin costs.<sup>3</sup> RTF: Aerators\_v1\_1.xlsm. 2018.<sup>4</sup> RTF: ResThermostatShowerRestrictionValve\_v2\_1.xlsm. 2018.<sup>5</sup> AEG: Potential Study. 2018.

Rebate Advantage

Segment: Residential  
2019 Program Results

| Cost Inputs                                                            | Ref          |
|------------------------------------------------------------------------|--------------|
| Program Administration.....                                            | \$ 47,748    |
| Program Incentives.....                                                | 109,000 I    |
| Total UC.....                                                          | \$ 156,748 P |
| Measure Equipment and Installation (Incremental Participant Cost)..... | \$ 308,148 M |

| Net Benefit Inputs (NPV)              | Ref          |
|---------------------------------------|--------------|
| Resource Savings                      |              |
| 2019 Annual Gross Energy (kWh).....   | 353,615      |
| NPV Cumulative Energy (kWh).....      | 5,968,832 \$ |
| 10% Credit (Northwest Power Act)..... | 28,556       |
| Total Electric Savings.....           | \$ 314,117 A |

|                                              |               |
|----------------------------------------------|---------------|
| Participant Bill Savings                     |               |
| NPV Cumulative Participant Bill Savings..... | \$ 583,873 B  |
| Other Benefits                               |               |
| Non-Utility Rebates/Incentives.....          | \$ - NUI      |
| NEBs.....                                    | \$ 91,798 NEB |

| Summary of Cost-Effectiveness Results |            |            |       |  |
|---------------------------------------|------------|------------|-------|--|
| Test                                  | Benefit    | Cost       | Ratio |  |
| UC Test.....                          | \$ 285,561 | \$ 156,748 | 1.82  |  |
| TRC Test.....                         | 405,915    | 355,897    | 1.14  |  |
| RIM Test.....                         | 285,561    | 740,621    | 0.39  |  |
| PCT.....                              | 784,671    | 308,148    | 2.55  |  |

| 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.....                  | 75%     |
| Average Customer Segment Rate/kWh.....        | \$0.085 |
| Line Losses.....                              | 9.60%   |



| Year: 2019                                          | Program: Rebate Advantage                              |                                                                      |              | Market Segment: Residential                       |                                 | Program Type: Energy Efficiency                   |                                      |                                                 |                 |                                  |                        |                        |               |
|-----------------------------------------------------|--------------------------------------------------------|----------------------------------------------------------------------|--------------|---------------------------------------------------|---------------------------------|---------------------------------------------------|--------------------------------------|-------------------------------------------------|-----------------|----------------------------------|------------------------|------------------------|---------------|
|                                                     |                                                        |                                                                      |              |                                                   |                                 | Benefit                                           |                                      | Cost                                            |                 |                                  | B/C Tests              |                        |               |
| Measure Name                                        | Measure Descriptions                                   | Replacing                                                            | Measure Unit | End Use                                           | Measure Life (yrs) <sup>a</sup> | Annual Gross Energy Savings (kWh/yr) <sup>b</sup> | NPV DSM Alternate Costs <sup>c</sup> | 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> | Source/ Notes |
| 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                                          | \$1,861.06                           | \$367.28                                        | \$1,000.00      | \$0.135                          | 1.42                   | 0.81                   | 1, 2          |
| 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                                          | \$2,694.72                           | \$1,103.44                                      | \$1,000.00      | \$0.135                          | 1.86                   | 1.30                   | 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                                          | \$2,696.11                           | \$1,103.44                                      | \$1,000.00      | \$0.135                          | 1.86                   | 1.30                   | 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                                          | \$3,369.23                           | \$1,383.69                                      | \$1,000.00      | \$0.135                          | 2.16                   | 1.57                   | 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                                          | \$2,003.92                           | \$366.75                                        | \$1,000.00      | \$0.135                          | 1.50                   | 0.78                   | 1, 2          |
| EcoRated manufactured home                          | EcoRated_electric_HZ2_CZ2                              | Manufactured home built to HUD code.                                 | Home         | Residential- Manufactured Home Idaho -Heating-All | 43                              | 3,572.70                                          | \$2,862.71                           | \$1,112.63                                      | \$1,000.00      | \$0.135                          | 1.93                   | 1.24                   | 1             |
| 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                                          | \$2,349.14                           | \$419.05                                        | \$1,000.00      | \$0.135                          | 1.68                   | 0.62                   | 1, 2          |
| NEEM home                                           | NEEM_electric_HZ2_CZ1                                  | Manufactured home built to HUD code.                                 | Home         | Residential- Manufactured Home Idaho -Heating-All | 42                              | 4,170.99                                          | \$3,315.01                           | \$1,264.94                                      | \$1,000.00      | \$0.135                          | 2.12                   | 0.98                   | 1, 2, 3       |
| NEEM home                                           | NEEM_electric_HZ2_CZ2                                  | Manufactured home built to HUD code.                                 | Home         | Residential- Manufactured Home Idaho -Heating-All | 42                              | 4,172.51                                          | \$3,316.22                           | \$1,264.94                                      | \$1,000.00      | \$0.135                          | 2.12                   | 0.98                   | 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                                          | \$3,317.94                           | \$1,264.94                                      | \$1,000.00      | \$0.135                          | 2.12                   | 0.98                   | 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                                          | \$4,130.64                           | \$1,602.52                                      | \$1,000.00      | \$0.135                          | 2.44                   | 1.19                   | 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 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> RTE: 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  
2019 Program Results

| Cost Inputs                                                             | Ref               |
|-------------------------------------------------------------------------|-------------------|
| Program Administration .....                                            | \$ 103,118        |
| Program Incentives .....                                                | 431,000           |
| <b>Total UC .....</b>                                                   | <b>\$ 534,118</b> |
| Measure Equipment and Installation (Incremental Participant Cost) ..... | \$ 1,308,273      |
|                                                                         | M                 |

| Net Benefit Inputs (NPV)               | Ref               |
|----------------------------------------|-------------------|
| <b>Resource Savings</b>                |                   |
| 2019 Annual Gross Energy (kWh) .....   | 774,597           |
| NPV Cumulative Energy (kWh) .....      | 13,452,789        |
| 10% Credit (Northwest Power Act) ..... | 84,199            |
| <b>Total Electric Savings .....</b>    | <b>\$ 926,190</b> |
|                                        | A                 |

### Participant Bill Savings

|                                          |              |     |
|------------------------------------------|--------------|-----|
| NPV Cumulative Participant Savings ..... | \$ 1,354,615 | B   |
| <b>Other Benefits</b>                    |              |     |
| Non-Utility Rebates/Incentives .....     | \$ -         | NUI |
| NEBs .....                               | \$ 246,514   | NEB |

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

Cost-effectiveness ratios includes evaluation costs that were incurred in 2019. Without evaluation costs, UCT and TRC would have been 1.66 and 0.85, respectively.

### Summary of Cost-Effectiveness Results

| Test           | Benefit    | Cost       | Ratio |
|----------------|------------|------------|-------|
| UC Test .....  | \$ 841,991 | \$ 534,118 | 1.58  |
| TRC Test ..... | 1,172,704  | 1,411,391  | 0.83  |
| RIM Test ..... | 841,991    | 1,888,733  | 0.45  |
| PCT .....      | 2,032,129  | 1,308,273  | 1.55  |

### 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 .....                  | 178%    |
| Average Customer Segment Rate/kWh .....        | \$0.085 |
| Line Losses .....                              | 9.60%   |



| Year: 2019       | 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> |               |
| ENERGY STAR home | Multifamily Central Electric Heating Zone 1 Cooling Zone 3 | Multi-family home built to International Energy Conservation Code 2012 Code. Adopted 2014. | Home                            | Prog_Energy Star Homes NW                    | 45                              | 2,440.00                                          | \$2,531.90                           | \$158.91   | \$2,243.67                                      | \$1,000.00      | \$0.133                          | 1.91                   | 1.15                   | 1             |
| 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                              | 2,389.16                                          | \$2,634.18                           | \$1,088.06 | \$4,605.43                                      | \$1,500.00      | \$0.133                          | 1.45                   | 0.81                   | 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, ResNewConstructionNEEAMFHomesIDMTv1.4.xlsm, 2017.  
<sup>2</sup> NEEA circuit rider code enforcement initiative, 2019 average per home savings. Costs and NEBs from RTF, ResNCMTHouse\_ID\_v\_3\_1.xlsm, 2020.

## Shade Tree Project

Segment: Residential  
2019 Program Results

| Cost Inputs                                                            | Ref               |
|------------------------------------------------------------------------|-------------------|
| Program Administration.....                                            | \$ 147,750        |
| Program Incentives.....                                                | —                 |
| <b>Total UC</b> .....                                                  | <b>\$ 147,750</b> |
| Measure Equipment and Installation (Incremental Participant Cost)..... | \$ —              |
|                                                                        | M                 |

| Summary of Cost-Effectiveness Results |    |           |            |       |
|---------------------------------------|----|-----------|------------|-------|
| Test                                  |    | Benefit   | Cost       | Ratio |
| UC Test .....                         | \$ | 160,846   | \$ 147,750 | 1.09  |
| TRC Test .....                        |    | 171,478.0 | 147,750    | 1.16  |
| RIM Test .....                        |    | 160,846   | 308,218    | 0.52  |
| PCT .....                             |    | N/A       | N/A        | N/A   |

| Net Benefit Inputs (NPV)                                        | Ref               |
|-----------------------------------------------------------------|-------------------|
| <b>Resource Savings</b>                                         |                   |
| 2019 Annual Gross Energy (kWh) from 2013 to 2015 plantings..... | 35,727            |
| Cumulative Energy (kWh) from 2019 plantings.....                | 2,741,157         |
| NPV Cumulative Energy (kWh).....                                | 849,433           |
| 10% Credit (Northwest Power Act).....                           | 12,971            |
| <b>Total Electric Savings</b> .....                             | <b>\$ 142,686</b> |
|                                                                 | A                 |

| Benefits and Costs Included in Each Test |                         |  |  |                 |
|------------------------------------------|-------------------------|--|--|-----------------|
| UC Test .....                            | = S * NTG               |  |  | = P             |
| TRC Test .....                           | = (A + NUI * NTG) + NEB |  |  | = 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) .....                       | 124%    |
| Minimum NTG Sensitivity .....                  | 114%    |
| Average Customer Segment Rate/kWh .....        | \$0.085 |
| Line Losses .....                              | 9.60%   |

|                                         |             |
|-----------------------------------------|-------------|
| <b>Participant Bill Savings</b>         |             |
| NPV Cumulative Participant Savings..... | \$ 129,410  |
|                                         | B           |
| <b>Other Benefits</b>                   |             |
| Non-Energy Impacts—Therms.....          | \$ (17,506) |
| NEBs.....                               | \$ 16,254   |
|                                         | NEB         |

**Notes:** Annual Report shows incremental savings from the 2013 to 2015 planting years. Cost-effectiveness based on the trees distributed in 2019 to coincide with the 2019 financials.  
Net-to-gross factor of 24% applied to energy savings and therm impacts to account for trees shading neighboring homes per evaluator's recommendation.  
Non-energy impacts include costs associated with increased home heating energy. Other NEBs associated with air quality, stormwater runoff, and carbon dioxide.



## Simple Steps, Smart Savings™

Segment: Residential  
2019 Program Results

| Cost Inputs                                                            | Ref                |
|------------------------------------------------------------------------|--------------------|
| Program Administration .....                                           | \$ 52,626          |
| Program Incentives.....                                                | 37,873 I           |
| <b>Total UC .....</b>                                                  | <b>\$ 90,499 P</b> |
| Measure Equipment and Installation (Incremental Participant Cost)..... | \$ 70,915 M        |

| Summary of Cost-Effectiveness Results |            |           |       |  |
|---------------------------------------|------------|-----------|-------|--|
| Test                                  | Benefit    | Cost      | Ratio |  |
| UC Test .....                         | \$ 126,595 | \$ 90,499 | 1.40  |  |
| TRC Test .....                        | 686,710    | 123,541   | 5.56  |  |
| RIM Test .....                        | 126,595    | 292,379   | 0.43  |  |
| PCT .....                             | 787,208    | 70,915    | 11.10 |  |

| Net Benefit Inputs (NPV)              | Ref                 |
|---------------------------------------|---------------------|
| <b>Resource Savings</b>               |                     |
| 2019 Annual Gross Energy (kWh).....   | 271,452             |
| NPV Cumulative Energy (kWh).....      | 2,482,699 S         |
| 10% Credit (Northwest Power Act)..... | 12,659              |
| <b>Total Electric Savings .....</b>   | <b>\$ 139,254 A</b> |

| 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 .....                  | 72%     |
| Average Customer Segment Rate/kWh .....        | \$0.085 |
| Line Losses .....                              | 9.60%   |

| 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 .....                  | 72%     |
| Average Customer Segment Rate/kWh .....        | \$0.085 |
| Line Losses .....                              | 9.60%   |

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

| Year: 2019          |                                                                  | 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                              | 101.12                                            | \$61.93                              | \$199.49 | \$98.41                                         | \$25.00         | \$0.194                          | 1.39                   | 2.27          | 1, 2                   |
| 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                              | 15.11                                             | \$6.26                               | \$30.84  | –                                               | \$2.00          | \$0.194                          | 1.27                   | 7.65          | 3                      |
| 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                              | 41.27                                             | \$17.09                              | \$86.82  | –                                               | \$6.00          | \$0.194                          | 1.22                   | 7.54          | 3                      |
| 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                              | 63.46                                             | \$26.28                              | \$133.64 | –                                               | \$6.00          | \$0.194                          | 1.44                   | 8.88          | 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 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> BPA. UES. Measures. List.xlsx. 2018.<sup>2</sup> NEBs from RTF. ResClothesWashers\_v6\_1.xlsm. 2016. Adjusted savings by changing Electric Water Heating saturation from 61% to 49% to match Idaho Power mix.<sup>3</sup> RTF. Showerheads\_v3.1.xlsm. 2016. Adjusted savings by changing Electric Water Heating saturation from 60% to 49% to match Idaho Power mix.



## Weatherization Assistance for Qualified Customers

Segment: Residential  
2019 Program Results

| Cost Inputs                                                  | Ref                 |
|--------------------------------------------------------------|---------------------|
| Program Administration.....                                  | \$ 192,478          |
| Community Action Partnership (CAP) Agency Payments.....      | 1,111,249           |
| <b>Total Program Expenses/Total UC</b> .....                 | <b>\$ 1,303,727</b> |
| Idaho Power Indirect Overhead Expense Allocation—2.459%..... | \$ 32,059           |
| Additional State Funding.....                                | 649,763             |
|                                                              | M                   |

| Net Benefit Inputs (NPV)              | Ref               |
|---------------------------------------|-------------------|
| <b>Resource Savings</b>               |                   |
| 2019 Annual Gross Energy (kWh).....   | 649,299           |
| NPV Cumulative Energy (kWh).....      | 9,974,715         |
| 10% Credit (Northwest Power Act)..... | 46,486            |
| <b>Total Electric Savings</b> .....   | <b>\$ 511,342</b> |
|                                       | A                 |

|                                              |                   |
|----------------------------------------------|-------------------|
| <b>Participant Bill Savings</b>              |                   |
| NPV Cumulative Participant Bill Savings..... | \$ 919,600        |
|                                              | B                 |
| <b>Other Benefits</b>                        |                   |
| Non-Utility Rebates/Incentives.....          | \$ —              |
| NEBs.....                                    |                   |
| Health and Safety.....                       | \$ 186,936        |
| Repair.....                                  | 12,202            |
| Other.....                                   | 137,556           |
| <b>NEBs Total</b> .....                      | <b>\$ 336,694</b> |
|                                              | NEB               |

**Notes:** Savings updated in 2016 and based on a billing analysis of the 2013-2014 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. Program has a cost-effectiveness exception approved under OPUC Order No. 15-200.

| Summary of Cost-Effectiveness Results |            |              |       |  |
|---------------------------------------|------------|--------------|-------|--|
| Test                                  | Benefit    | Cost         | Ratio |  |
| UC Test.....                          | \$ 464,856 | \$ 1,335,785 | 0.35  |  |
| TRC Test.....                         | 848,036    | 1,985,548    | 0.43  |  |
| RIM Test.....                         | 464,856    | 2,255,385    | 0.21  |  |
| 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.....                  | 286%    |
| Average Customer Segment Rate/kWh.....        | \$0.085 |
| Line Losses.....                              | 9.60%   |

## Weatherization Solutions for Eligible Customers

Segment: Residential  
2019 Program Results

| Cost Inputs                                                   | Ref               |
|---------------------------------------------------------------|-------------------|
| Program Administration .....                                  | \$ 133,760        |
| Weatherization LLC Payments .....                             | 823,867           |
| <b>Total Program Expenses/Total UC .....</b>                  | <b>\$ 957,626</b> |
| Idaho Power Indirect Overhead Expense Allocation—2.459% ..... | \$ 23,548         |
| Additional State Funding .....                                | —                 |
|                                                               | M                 |

| Net Benefit Inputs (NPV)               | Ref               |
|----------------------------------------|-------------------|
| <b>Resource Savings</b>                |                   |
| 2019 Annual Gross Energy (kWh) .....   | 504,988           |
| NPV Cumulative Energy (kWh) .....      | 7,017,178         |
| 10% Credit (Northwest Power Act) ..... | 29,393            |
| <b>Total Electric Savings .....</b>    | <b>\$ 323,325</b> |
|                                        | A                 |

|                                               |                  |
|-----------------------------------------------|------------------|
| <b>Participant Bill Savings</b>               |                  |
| NPV Cumulative Participant Bill Savings ..... | \$ 621,782       |
|                                               | B                |
| <b>Other Benefits</b>                         |                  |
| Non-Utility Rebates/Incentives .....          | \$ —             |
| NEBs .....                                    |                  |
| Health and Safety .....                       | 50,227           |
| Repair .....                                  | 5,086            |
| Other .....                                   | 40,002           |
| <b>NEBs Total .....</b>                       | <b>\$ 95,315</b> |
|                                               | NEB              |

**Notes:** Savings updated in 2016 and based on a billing analysis of the 2013–2014 weatherization projects.  
Program cost-effectiveness incorporated IPUC staff recommendations from case GNR-E-12-01. Recommendations include: Claimed 100% of savings; increased NTG to 100%; added a 10% conservation preference adder; health, safety, and repair NEBs; and allocation of indirect overhead expenses.  
No customer participant costs.

| Summary of Cost-Effectiveness Results |            |            |       |  |
|---------------------------------------|------------|------------|-------|--|
| Test                                  | Benefit    | Cost       | Ratio |  |
| UC Test .....                         | \$ 293,932 | \$ 981,174 | 0.30  |  |
| TRC Test .....                        | 418,640    | 981,174    | 0.43  |  |
| RIM Test .....                        | 293,932    | 1,602,956  | 0.18  |  |
| 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 .....                  | 333%    |
| Average Customer Segment Rate/kWh .....        | \$0.085 |
| Line Losses .....                              | 9.60%   |



## Commercial Energy-Saving Kits

Segment: Commercial  
2019 Program Results

| Cost Inputs                                                             | Ref               |
|-------------------------------------------------------------------------|-------------------|
| Program Administration .....                                            | \$ 161,945        |
| Program Incentives .....                                                | -                 |
| <b>Total UC .....</b>                                                   | <b>\$ 161,945</b> |
| Measure Equipment and Installation (Incremental Participant Cost) ..... | \$ -              |
|                                                                         | M                 |

### Summary of Cost-Effectiveness Results

| Test           | Benefit    | Cost       | Ratio |
|----------------|------------|------------|-------|
| UC Test .....  | \$ 253,848 | \$ 161,945 | 1.57  |
| TRC Test ..... | 408,179    | 161,945    | 2.52  |
| RIM Test ..... | 253,848    | 424,930    | 0.60  |
| PCT .....      | N/A        | N/A        | N/A   |

### Net Benefit Inputs (NPV)

| Resource Savings                       | Ref               |
|----------------------------------------|-------------------|
| 2019 Annual Gross Energy (kWh) .....   | 569,594           |
| NPV Cumulative Energy (kWh) .....      | \$ 4,873,583      |
| 10% Credit (Northwest Power Act) ..... | 25,385            |
| <b>Total Electric Savings .....</b>    | <b>\$ 279,233</b> |
|                                        | 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 .....                  | 64%     |
| 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: 2019                | 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. | kit                        | kit                             | IPC_Commercial Kit Restaurant | 8                               | 539.15                                            | \$205.84                             | \$329.93 | –                                               | –               | \$0.284                          | 1.34                   | 3.63                   | 1             |
| Retail Commercial Kit     | 2-9W LEDs, 2-8W LED BR30s, 1-bathroom aerator, 2-exit sign retrofit                                | kit                        | kit                             | IPC_Commercial Kit Retail     | 11                              | 240.56                                            | \$122.71                             | \$6.89   | –                                               | –               | \$0.284                          | 1.80                   | 2.08                   | 1             |
| Office Commercial Kit     | 2-9W LEDs, 2-bathroom aerators, 1-kitchen aerator, 2-exit sign retrofit, 1-advance power strip     | kit                        | kit                             | IPC_Commercial Kit Office     | 11                              | 174.04                                            | \$82.33                              | \$8.62   | –                                               | –               | \$0.284                          | 1.67                   | 2.01                   | 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 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>h</sup> Idaho Power analysis based on average hours of use by building type. Assume 40% of kits distributed to businesses with electric water heat.



## Custom Projects

Segment: Industrial  
2019 Program Results

| Cost Inputs                                                             | Ref                  |
|-------------------------------------------------------------------------|----------------------|
| Program Administration .....                                            | \$ 2,690,431         |
| Program Incentives .....                                                | 9,189,442            |
| <b>Total UC .....</b>                                                   | <b>\$ 11,879,873</b> |
| Measure Equipment and Installation (Incremental Participant Cost) ..... | \$ 21,899,746        |
|                                                                         | M                    |

| Net Benefit Inputs (NPV)               | Ref                  |
|----------------------------------------|----------------------|
| <b>Resource Savings</b>                |                      |
| 2019 Annual Gross Energy (kWh) .....   | 70,433,920           |
| NPV Cumulative Energy (kWh) .....      | \$ 785,739,916       |
| 10% Credit (Northwest Power Act) ..... | 4,301,758            |
| <b>Total Electric Savings .....</b>    | <b>\$ 47,319,336</b> |
|                                        | A                    |

|                                          |               |
|------------------------------------------|---------------|
| <b>Participant Bill Savings</b>          |               |
| NPV Cumulative Participant Savings ..... | \$ 28,599,081 |
|                                          | B             |
| <b>Other Benefits</b>                    |               |
| Non-Utility Rebates/Incentives .....     | \$ -          |
| NEBs .....                               | \$ -          |
|                                          | NUI           |
|                                          | NEB           |

**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.

Cost-effectiveness ratios includes evaluation costs that were incurred in 2019. Without evaluation costs, UCT and TRC would have been 3.63 and 1.93, respectively.

| Summary of Cost-Effectiveness Results |               |               |       |  |
|---------------------------------------|---------------|---------------|-------|--|
| Test                                  | Benefit       | Cost          | Ratio |  |
| UC Test .....                         | \$ 43,017,578 | \$ 11,879,873 | 3.62  |  |
| TRC Test .....                        | 47,319,336    | 24,590,176    | 1.92  |  |
| RIM Test .....                        | 43,017,578    | 40,478,953    | 1.06  |  |
| PCT .....                             | 37,788,523    | 21,899,746    | 1.73  |  |

| 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 .....                  | 35%     |
| Average Customer Segment Rate/kWh .....        | \$0.037 |
| Line Losses .....                              | 9.60%   |

| Year: 2019                                     | Program: Custom Projects—Green Motors          | Market Segment: Industrial | Program Type: Energy Efficiency |           |                                 |                                                   |                                      |     |                                                 |                 |                                  |                        |                        |               |
|------------------------------------------------|------------------------------------------------|----------------------------|---------------------------------|-----------|---------------------------------|---------------------------------------------------|--------------------------------------|-----|-------------------------------------------------|-----------------|----------------------------------|------------------------|------------------------|---------------|
|                                                |                                                |                            | Measure                         |           |                                 | 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> |               |
| Measure Name                                   | Measure Descriptions                           | Replacing                  | Measure Unit                    | End Use   | Measure Life (yrs) <sup>a</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                                            | \$176.42                             | –   | \$139.57                                        | \$30.00         | \$0.050                          | 3.14                   | 1.17                   | 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                                            | \$236.07                             | –   | \$155.71                                        | \$40.00         | \$0.050                          | 3.14                   | 1.36                   | 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                                            | \$336.76                             | –   | \$177.91                                        | \$50.00         | \$0.050                          | 3.56                   | 1.66                   | 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                                            | \$362.75                             | –   | \$195.39                                        | \$60.00         | \$0.050                          | 3.36                   | 1.64                   | 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                                          | \$422.43                             | –   | \$238.78                                        | \$80.00         | \$0.050                          | 3.11                   | 1.58                   | 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                                          | \$454.62                             | –   | \$264.33                                        | \$100.00        | \$0.050                          | 2.84                   | 1.54                   | 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                                          | \$478.11                             | –   | \$311.76                                        | \$120.00        | \$0.050                          | 2.61                   | 1.40                   | 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                                          | \$492.05                             | –   | \$336.98                                        | \$150.00        | \$0.050                          | 2.29                   | 1.35                   | 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                                          | \$649.45                             | –   | \$418.03                                        | \$200.00        | \$0.050                          | 2.27                   | 1.42                   | 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                                          | \$750.20                             | –   | \$416.68                                        | \$250.00        | \$0.050                          | 2.15                   | 1.60                   | 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                                          | \$891.78                             | –   | \$464.14                                        | \$300.00        | \$0.050                          | 2.13                   | 1.68                   | 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                                          | \$1,182.88                           | –   | \$558.75                                        | \$400.00        | \$0.050                          | 2.12                   | 1.82                   | 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                                          | \$1,431.71                           | –   | \$718.14                                        | \$500.00        | \$0.050                          | 2.08                   | 1.73                   | 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                                          | \$1,709.17                           | –   | \$725.89                                        | \$600.00        | \$0.050                          | 2.07                   | 1.97                   | 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                                          | \$1,992.56                           | –   | \$760.82                                        | \$700.00        | \$0.050                          | 2.07                   | 2.14                   | 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                                          | \$2,259.26                           | -   | \$849.77                                        | \$800.00        | \$0.050                          | 2.05                   | 2.16                   | 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                                          | \$2,537.41                           | -   | \$928.86                                        | \$900.00        | \$0.050                          | 2.05                   | 2.21                   | 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                                          | \$2,823.28                           | -   | \$1,003.48                                      | \$1,000.00      | \$0.050                          | 2.05                   | 2.25                   | 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                                         | \$3,820.89                           | -   | \$1,510.16                                      | \$1,200.00      | \$0.050                          | 2.24                   | 2.08                   | 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                                         | \$4,438.78                           | -   | \$1,647.57                                      | \$1,400.00      | \$0.050                          | 2.23                   | 2.18                   | 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                                         | \$5,062.14                           | -   | \$1,828.03                                      | \$1,600.00      | \$0.050                          | 2.23                   | 2.23                   | 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                                         | \$5,682.84                           | -   | \$2,015.32                                      | \$1,800.00      | \$0.050                          | 2.23                   | 2.26                   | 1             |
| Green Motors Program Rewind: Motor size 1,500 HP | Green Motors Program Rewind: Motor size 1,500 HP | Standard rewind practice | Motor        | MF_Motors | 9                               | 21,329.20                                         | \$8,901.28                           | -   | \$2,972.05                                      | \$3,000.00      | \$0.050                          | 1.51                   | 1.67                   | 1             |
| Green Motors Program Rewind: Motor size 4,500 HP | Green Motors Program Rewind: Motor size 4,500 HP | Standard rewind practice | Motor        | MF_Motors | 9                               | 62,268.99                                         | \$25,986.63                          | -   | \$7,050.45                                      | \$9,000.00      | \$0.050                          | 1.48                   | 1.83                   | 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 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.

## New Construction

Segment: Commercial  
2019 Program Results

| Cost Inputs                                                             | Ref                 |
|-------------------------------------------------------------------------|---------------------|
| Program Administration .....                                            | \$ 445,760          |
| Program Incentives .....                                                | 3,102,716           |
| <b>Total UC .....</b>                                                   | <b>\$ 3,548,476</b> |
| Measure Equipment and Installation (Incremental Participant Cost) ..... | \$ 4,847,075        |
|                                                                         | M                   |

| Net Benefit Inputs (NPV)               | Ref                  |
|----------------------------------------|----------------------|
| <b>Resource Savings</b>                |                      |
| 2019 Annual Gross Energy (kWh) .....   | 20,640,334           |
| NPV Cumulative Energy (kWh) .....      | \$ 200,184,926       |
| 10% Credit (Northwest Power Act) ..... | 1,117,667            |
| <b>Total Electric Savings .....</b>    | <b>\$ 12,294,342</b> |
|                                        | A                    |

### Participant Bill Savings

|                                               |               |   |
|-----------------------------------------------|---------------|---|
| NPV Cumulative Participant Bill Savings ..... | \$ 10,978,156 | B |
|-----------------------------------------------|---------------|---|

### Other Benefits

|                                      |              |     |
|--------------------------------------|--------------|-----|
| Non-Utility Rebates/Incentives ..... | \$ -         | NUI |
| NEBs .....                           | \$ 2,971,178 | NEB |

**Notes:** Non-energy benefits/impacts on a \$/kWh for each end-use. Based on 2019 impact evaluation.  
Cost-effectiveness ratios includes evaluation costs that were incurred in 2019. Without evaluation costs, UCT and TRC would have been 3.18 and 2.90, respectively.

### Summary of Cost-Effectiveness Results

| Test           | Benefit       | Cost         | Ratio |
|----------------|---------------|--------------|-------|
| UC Test .....  | \$ 11,176,675 | \$ 3,548,476 | 3.15  |
| TRC Test ..... | 15,265,520    | 5,292,835    | 2.88  |
| RIM Test ..... | 11,176,675    | 14,526,633   | 0.77  |
| PCT .....      | 17,052,051    | 4,847,075    | 3.52  |

### 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 .....                  | 32%     |
| Average Customer Segment Rate/kWh .....        | \$0.057 |
| Line Losses .....                              | 9.60%   |



| Year: 2019   |                                                                                                                         | 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> | 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                                              | \$0.27                               | –                                               | \$0.14          | \$0.10                           | \$0.032                | 2.37          | 1.93                   | 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                                              | \$0.54                               | –                                               | \$0.28          | \$0.20                           | \$0.032                | 2.37          | 1.93                   | 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                                              | \$1.23                               | –                                               | \$0.65          | \$0.30                           | \$0.032                | 3.38          | 1.90                   | 1    |
| Lighting     | Exterior Light Load Reduction. Minimum of 15% below code.                                                               | Code standards            | kW              | IPC_Outdoor Lighting                           | 15                              | 4,059.00                                          | \$1,688.82                           | –                                               | \$287.00        | \$200.00                         | \$0.032                | 5.12          | 4.46                   | 1    |
| Lighting     | Daylight Photo Controls                                                                                                 | Code standards            | ft <sup>2</sup> | Commercial-Miscellaneous-Interior Lighting-All | 14                              | 1.97                                              | \$1.21                               | –                                               | \$0.46          | \$0.25                           | \$0.032                | 3.87          | 2.55                   | 1    |
| Lighting     | Occupancy Sensors                                                                                                       | Code standards            | Sensor          | Commercial-Miscellaneous-Interior Lighting-All | 8                               | 387.00                                            | \$148.71                             | –                                               | \$134.22        | \$25.00                          | \$0.032                | 3.98          | 1.12                   | 1    |
| Lighting     | High-Efficiency Exit Signs                                                                                              | Code standards            | Sign            | IPC_8760                                       | 16                              | 28.00                                             | \$17.41                              | –                                               | \$10.83         | \$7.50                           | \$0.032                | 2.07          | 1.63                   | 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                                             | \$68.08                              | –                                               | \$33.68         | \$30.00                          | \$0.032                | 2.11          | 2.09                   | 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                                            | \$106.56                             | –                                               | \$60.30         | \$75.00                          | \$0.032                | 1.36          | 1.84                   | 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                                             | \$68.08                              | –                                               | \$153.00        | \$30.00                          | \$0.032                | 2.11          | 0.48                   | 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                                            | \$106.56                             | –                                               | \$168.27        | \$75.00                          | \$0.032                | 1.36          | 0.68                   | 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                                             | \$81.40                              | –                                               | \$69.24         | \$75.00                          | \$0.032                | 1.05          | 1.25                   | 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                                            | \$116.42                             | –                                               | \$181.50        | \$100.00                         | \$0.032                | 1.12          | 0.69                   | 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                                            | \$122.34                             | -       | \$141.75                                        | \$75.00         | \$0.032                          | 1.55                   | 0.92          | 1                      |
| 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                                            | \$157.86                             | -       | \$165.50                                        | \$100.00        | \$0.032                          | 1.50                   | 1.02          | 1, 2                   |
| A/C            | Air-cooled chiller condenser, IPLV 14.0 EER or higher                                                                     | Code standards | Tons                      | Commercial-Miscellaneous-Cooling-All     | 20                              | 200.00                                            | \$235.81                             | -       | \$56.50                                         | \$80.00         | \$0.032                          | 2.73                   | 4.12          | 3                      |
| A/C            | Water-cooled chiller electronically operated, reciprocating and positive displacement                                     | Code standards | Tons                      | Commercial-Miscellaneous-Cooling-All     | 20                              | 118.30                                            | \$139.48                             | -       | \$33.40                                         | \$40.00         | \$0.032                          | 3.19                   | 4.13          | 4                      |
| A/C            | Airside economizer                                                                                                        | Code standards | Ton of cooling            | Commercial-Miscellaneous-Cooling-All     | 15                              | 186.00                                            | \$183.51                             | -       | \$81.36                                         | \$75.00         | \$0.032                          | 2.27                   | 2.31          | 1                      |
| A/C            | Direct evaporative cooler                                                                                                 | Code standards | Tons                      | IPC_Evap Cooler                          | 15                              | 315.00                                            | \$419.18                             | -       | \$364.00                                        | \$200.00        | \$0.032                          | 2.00                   | 1.23          | 1                      |
| Building Shell | Reflective roof treatment                                                                                                 | Code standards | ft <sup>2</sup> roof area | Commercial-Miscellaneous-Cooling-All     | 15                              | 0.12                                              | \$0.11                               | -       | \$0.05                                          | \$0.05          | \$0.032                          | 2.13                   | 2.34          | 1                      |
| Controls       | Energy Management System (EMS) controls. Part A: 1 strategy                                                               | Code standards | Tons of cooling           | Commercial-Miscellaneous-Ventilation-All | 15                              | 226.00                                            | \$152.34                             | \$13.73 | \$162.49                                        | \$60.00         | \$0.032                          | 2.27                   | 1.07          | 1                      |
| Controls       | Energy Management System (EMS) controls. Part B: 2 strategies                                                             | Code standards | Tons of cooling           | Commercial-Miscellaneous-Ventilation-All | 15                              | 408.00                                            | \$275.02                             | \$18.31 | \$162.49                                        | \$70.00         | \$0.032                          | 3.31                   | 1.83          | 1                      |
| Controls       | EMS controls. Part C: 3 strategies                                                                                        | Code standards | Tons of cooling           | Commercial-Miscellaneous-Ventilation-All | 15                              | 511.00                                            | \$344.44                             | \$29.75 | \$162.49                                        | \$80.00         | \$0.032                          | 3.57                   | 2.28          | 1                      |
| Controls       | EMS controls. Part D: 4 strategies                                                                                        | Code standards | Tons of cooling           | Commercial-Miscellaneous-Ventilation-All | 15                              | 568.00                                            | \$382.86                             | \$48.06 | \$162.49                                        | \$90.00         | \$0.032                          | 3.54                   | 2.60          | 1                      |
| Controls       | EMS controls. Part E: 5 strategies                                                                                        | Code standards | Tons of cooling           | Commercial-Miscellaneous-Ventilation-All | 15                              | 618.00                                            | \$416.57                             | \$48.06 | \$162.49                                        | \$100.00        | \$0.032                          | 3.48                   | 2.78          | 1                      |
| Controls       | Guest room energy management system                                                                                       | Code standards | Ton                       | Commercial-Lodging-Ventilation-All       | 11                              | 571.00                                            | \$273.80                             | -       | \$57.50                                         | \$50.00         | \$0.032                          | 4.01                   | 3.97          | 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                                            | \$180.65                             | -       | \$165.33                                        | \$60.00         | \$0.032                          | 2.63                   | 1.14          | 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:<br>-supply<br>-return<br>-outside air<br>-make-up air<br>-hot water pumps | Code standards                                     | HP                    | Commercial-Miscellaneous-Ventilation-All   | 15                              | 996.00                                            | \$671.36                             | -          | \$142.05                                        | \$100.00        | \$0.032                          | 5.09                   | 4.25                   | 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                                          | \$394.20                             | -          | \$264.00                                        | \$200.00        | \$0.032                          | 1.66                   | 1.43                   | 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                                          | \$2,983.59                           | -          | \$1,991.00                                      | \$200.00        | \$0.032                          | 8.74                   | 1.54                   | 1             |
| Appliances with Electric Water Heating             | Efficient Laundry Machines (electric)                                                                                               | Code standards                                     | Unit                  | Commercial-Lodging-Water Heating-All       | 10                              | 994.00                                            | \$429.23                             | \$1,306.23 | \$393.00                                        | \$125.00        | \$0.032                          | 2.74                   | 4.19                   | 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                                          | \$1,208.79                           | \$228.31   | \$232.00                                        | \$200.00        | \$0.032                          | 4.47                   | 5.15                   | 6             |
| Appliances with Electric Water Heating             | ENERGY STAR commercial dishwasher                                                                                                   | Code standards                                     | Machine               | Commercial-Restaurant-Water Heating-All    | 12                              | 5,561.00                                          | \$3,041.66                           | \$615.74   | \$3,978.00                                      | \$500.00        | \$0.032                          | 4.49                   | 0.95                   | 6, 8          |
| Refrigeration                                      | Refrigeration head pressure controls                                                                                                | Code standards                                     | HP                    | Commercial-Miscellaneous-Refrigeration-All | 16                              | 225.00                                            | \$144.73                             | -          | \$166.60                                        | \$40.00         | \$0.032                          | 3.07                   | 0.92                   | 1, 7          |
| Refrigeration                                      | Refrigeration floating suction controls                                                                                             | Code standards                                     | HP                    | Commercial-Miscellaneous-Refrigeration-All | 16                              | 77.00                                             | \$49.53                              | -          | \$53.75                                         | \$10.00         | \$0.032                          | 3.97                   | 0.97                   | 1, 8          |
| Refrigeration                                      | Efficient refrigeration condensers                                                                                                  | Code standards                                     | Tons of refrigeration | Commercial-Miscellaneous-Refrigeration-All | 15                              | 114.00                                            | \$69.94                              | -          | \$35.00                                         | \$20.00         | \$0.032                          | 2.96                   | 1.99                   | 1             |
| Strip Curtains                                     | For walk-in freezers                                                                                                                | No protective barrier                              | Curtain/Door          | Commercial-Warehouse-Refrigeration-All     | 4                               | 4,865.00                                          | \$925.48                             | -          | \$213.00                                        | \$150.00        | \$0.032                          | 3.03                   | 2.76                   | 1             |
| Strip Curtains                                     | For walk-in refrigerators                                                                                                           | No protective barrier                              | Curtain/Door          | Commercial-Warehouse-Refrigeration-All     | 4                               | 3,024.00                                          | \$575.27                             | -          | \$213.00                                        | \$150.00        | \$0.032                          | 2.33                   | 2.04                   | 1             |
| Automatic High-Speed Doors                         | Freezer to Refrigerator                                                                                                             | manual or electric warehouse door                  | Door                  | Commercial-Warehouse-Refrigeration-All     | 8                               | 101,222.00                                        | \$35,785.81                          | -          | \$11,650.00                                     | \$4,000.00      | \$0.032                          | 4.94                   | 2.64                   | 1             |
| Automatic High-Speed Doors                         | Freezer to Dock                                                                                                                     | manual or electric warehouse door                  | Door                  | Commercial-Warehouse-Refrigeration-All     | 8                               | 140,093.00                                        | \$49,528.18                          | -          | \$11,650.00                                     | \$8,000.00      | \$0.032                          | 3.97                   | 3.38                   | 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> | 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                                            | \$23.66                              | \$33.00                                         | \$10.00         | \$0.032                          | 1.72                   | 0.71          | 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                                         | \$10,860.62                          | \$3,185.00                                      | \$2,000.00      | \$0.032                          | 4.28                   | 3.21          | 1                      |
| Compressed Air               | Air compressor VFD                                            | No existing VFD                                                     | HP           | Commercial-Miscellaneous-Miscellaneous-All   | 15                              | 949.00                                            | \$612.46                             | \$223.00                                        | \$150.00        | \$0.032                          | 3.40                   | 2.66          | 1                      |
| Compressed Air               | No-Loss Condensate Drain                                      | Open tube with ball valve                                           | HP           | Commercial-Miscellaneous-Miscellaneous-All   | 10                              | 1,830.00                                          | \$848.62                             | \$700.00                                        | \$300.00        | \$0.032                          | 2.37                   | 1.23          | 1                      |
| Compressed Air               | Low Pressure Drop Filter                                      | Standard filter                                                     | HP           | Commercial-Miscellaneous-Miscellaneous-All   | 5                               | 44.00                                             | \$11.13                              | \$10.00                                         | \$7.50          | \$0.032                          | 1.25                   | 1.07          | 1                      |
| Compressed Air               | Refrigerated Compressed Air Dryer                             | Standard air dryer                                                  | CFM          | Commercial-Miscellaneous-Miscellaneous-All   | 10                              | 10.62                                             | \$4.92                               | \$6.00                                          | \$2.00          | \$0.032                          | 2.10                   | 0.85          | 1, 7                   |
| Compressed Air               | Efficient Compressed Air Nozzle <= ¼ inch                     | Standard air nozzle                                                 | Unit         | Commercial-Miscellaneous-Miscellaneous-All   | 15                              | 602.50                                            | \$388.84                             | \$49.50                                         | \$30.00         | \$0.032                          | 7.89                   | 6.22          | 1                      |
| Compressed Air               | Efficient Compress Air Nozzle > ¼ inch                        | Standard air nozzle                                                 | Unit         | Commercial-Miscellaneous-Miscellaneous-All   | 15                              | 2,997.50                                          | \$1,934.52                           | \$104.00                                        | \$60.00         | \$0.032                          | 12.41                  | 10.64         | 1                      |
| Engine Block Heater Controls | Wall-mounted engine block heater                              | Standard engine block heater without controls                       | Unit         | IPC_Engine Block                             | 15                              | 2,733.00                                          | \$1,144.23                           | \$70.00                                         | \$50.00         | \$0.032                          | 8.32                   | 7.99          | 1                      |
| Engine Block Heater Controls | Engine-mounted engine block heater                            | Standard engine block heater without controls                       | Unit         | IPC_Engine Block                             | 15                              | 2,335.00                                          | \$977.60                             | \$120.00                                        | \$100.00        | \$0.032                          | 5.60                   | 5.52          | 1                      |
| Dairy VFD                    | VFD on milking vacuum pump                                    | No existing VFD                                                     | HP           | Commercial-Miscellaneous-Miscellaneous-All   | 15                              | 3,084.00                                          | \$1,990.35                           | \$356.00                                        | \$250.00        | \$0.032                          | 5.71                   | 4.82          | 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 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> 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 monitored in 2019. Measure included in the program to increase participation in a cost-effective program.<sup>8</sup> Measure not cost effective. Measure cost-effective without inclusion of admin costs.



## Retrofits

Segment: Commercial  
2019 Program Results

| Cost Inputs                                                             | Ref                 |
|-------------------------------------------------------------------------|---------------------|
| Program Administration .....                                            | \$ 1,102,874        |
| Program Incentives .....                                                | 5,178,182           |
| <b>Total UC .....</b>                                                   | <b>\$ 6,281,056</b> |
| Measure Equipment and Installation (Incremental Participant Cost) ..... | \$ 16,597,895       |
|                                                                         | M                   |

| Summary of Cost-Effectiveness Results |               |              |       |  |
|---------------------------------------|---------------|--------------|-------|--|
| Test                                  | Benefit       | Cost         | Ratio |  |
| UC Test .....                         | \$ 23,108,060 | \$ 6,281,056 | 3.68  |  |
| TRC Test .....                        | 32,803,590    | 17,700,769   | 1.85  |  |
| RIM Test .....                        | 23,108,060    | 28,978,675   | 0.80  |  |
| PCT .....                             | 35,260,525    | 16,597,895   | 2.12  |  |

| Net Benefit Inputs (NPV)               | Ref                  |
|----------------------------------------|----------------------|
| <b>Resource Savings</b>                |                      |
| 2019 Annual Gross Energy (kWh) .....   | 42,674,418           |
| NPV Cumulative Energy (kWh) .....      | \$ 413,887,451       |
| 10% Credit (Northwest Power Act) ..... | 2,310,806            |
| <b>Total Electric Savings .....</b>    | <b>\$ 25,418,866</b> |
|                                        | 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 .....                                | = 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 .....                  | 30%     |
| Average Customer Segment Rate/kWh .....        | \$0.057 |
| Line Losses .....                              | 9.60%   |

| 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 .....                  | 30%     |
| 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.

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

Cost-effectiveness ratios includes evaluation costs that were incurred in 2019. Without evaluation costs, UCT and TRC would have been 3.70 and 1.86, respectively.

| Year: 2019                                | 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                                            | \$54.64                              | –   | \$53.17                                         | \$30.01         | \$0.032                          | 1.52                   | 1.02                   | 1             |
| Standard T8 Fluorescents                  | 6-foot T8                                                           | 6-foot T12                        | fixture      | Commercial-Miscellaneous-Interior Lighting-All | 6                               | 332.20                                            | \$99.47                              | –   | \$76.03                                         | \$16.00         | \$0.032                          | 3.74                   | 1.26                   | 1             |
| Standard T8 Fluorescents                  | 4-foot T8                                                           | 8-foot T12                        | fixture      | Commercial-Miscellaneous-Interior Lighting-All | 6                               | 445.52                                            | \$133.41                             | –   | \$66.50                                         | \$50.58         | \$0.032                          | 2.06                   | 1.82                   | 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                                          | \$508.65                             | –   | \$206.92                                        | \$135.44        | \$0.032                          | 2.93                   | 2.28                   | 1             |
| Relamp T8/T5HO to Reduced Wattage T8/T5HO | Reduced wattage T8/T5                                               | 4' T8/T5 HO                       | fixture      | Commercial-Miscellaneous-Interior Lighting-All | 12                              | 124.99                                            | \$67.96                              | –   | \$21.65                                         | \$1.00          | \$0.032                          | 13.59                  | 2.91                   | 1             |
| Permanent Fixture Removal                 | Permanent Fixture Removal                                           |                                   | fixture      | Commercial-Miscellaneous-Interior Lighting-All | 6                               | 876.59                                            | \$262.48                             | –   | \$29.48                                         | \$22.73         | \$0.032                          | 5.17                   | 5.02                   | 1             |
| LEDs                                      | Screw-in or pin-based LED                                           | Existing lamp using > input watts | fixture      | Commercial-Miscellaneous-Interior Lighting-All | 12                              | 502.97                                            | \$273.48                             | –   | \$56.37                                         | \$30.96         | \$0.032                          | 5.81                   | 4.15                   | 1             |
| LEDs                                      | LED tubes (type A, B & DM)                                          | lamp using > 17 watts             | fixture      | Commercial-Miscellaneous-Interior Lighting-All | 12                              | 279.42                                            | \$151.93                             | –   | \$65.25                                         | \$6.02          | \$0.032                          | 10.15                  | 2.25                   | 1             |
| LEDs                                      | LED Tubes (type C) or hardwired conversion                          | fixture using higher wattage      | fixture      | Commercial-Miscellaneous-Interior Lighting-All | 12                              | 312.08                                            | \$169.68                             | –   | \$99.52                                         | \$15.60         | \$0.032                          | 6.63                   | 1.70                   | 1             |
| LED Exit Sign                             | LED fixture or sign lighting retrofit kit                           | fixture using higher wattage      | fixture      | Commercial-Miscellaneous-Interior Lighting-All | 12                              | 429.23                                            | \$233.38                             | –   | \$180.93                                        | \$61.64         | \$0.032                          | 3.10                   | 1.32                   | 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                                            | \$296.62                             | –   | \$239.55                                        | \$103.76        | \$0.032                          | 2.45                   | 1.27                   | 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                                            | \$325.71                             | -   | \$339.77                                        | \$131.79        | \$0.032                          | 2.16                   | 1.00                   | 1             |
| LED Exit Sign                | LED Exit sign                                                       | fixture using higher wattage      | fixture      | IPC_ 8760                                      | 12                              | 230.68                                            | \$114.33                             | -   | \$68.69                                         | \$40.00         | \$0.032                          | 2.41                   | 1.65                   | 1             |
| Lighting Controls            | Lighting Controls                                                   | Manual controls                   | fixture      | Commercial-Miscellaneous-Interior Lighting-All | 10                              | 179.65                                            | \$83.73                              | -   | \$90.10                                         | \$27.59         | \$0.032                          | 2.51                   | 0.96                   | 1, 9          |
| Standard T8 Fluorescents     | 6-foot T8                                                           | 6-foot T12                        | fixture      | IPC_ Outdoor Lighting                          | 6                               | 386.42                                            | \$69.62                              | -   | \$76.03                                         | \$14.00         | \$0.032                          | 2.64                   | 0.87                   | 1, 9          |
| Standard T8 Fluorescents     | 4-foot T8                                                           | 8-foot T12                        | fixture      | IPC_ Outdoor Lighting                          | 6                               | 496.54                                            | \$89.46                              | -   | \$83.27                                         | \$41.88         | \$0.032                          | 1.55                   | 0.99                   | 1, 9          |
| T5/T8 High Bay - New Fixture | 4-foot T8/T5                                                        | Fixture using > 200 input watts   | fixture      | IPC_ Outdoor Lighting                          | 11                              | 1,643.61                                          | \$519.60                             | -   | \$195.03                                        | \$102.71        | \$0.032                          | 3.35                   | 2.31                   | 1             |
| Permanent Fixture Removal    | Permanent Fixture Removal                                           |                                   | fixture      | IPC_ Outdoor Lighting                          | 6                               | 1,016.60                                          | \$183.15                             | -   | \$35.78                                         | \$17.73         | \$0.032                          | 3.64                   | 2.95                   | 1             |
| LEDs                         | Screw-in or pin-based LED                                           | Existing lamp using > input watts | fixture      | IPC_ Outdoor Lighting                          | 12                              | 583.30                                            | \$199.78                             | -   | \$87.93                                         | \$27.96         | \$0.032                          | 4.28                   | 2.06                   | 1             |
| LEDs                         | LED tubes (type A, B & DM)                                          | lamp using > 17 watts             | fixture      | IPC_ Outdoor Lighting                          | 12                              | 324.04                                            | \$110.98                             | -   | \$66.98                                         | \$6.02          | \$0.032                          | 6.77                   | 1.58                   | 1             |
| LEDs                         | LED Tubes (type C) or hardwired conversion                          | fixture using higher wattage      | fixture      | IPC_ Outdoor Lighting                          | 12                              | 342.71                                            | \$117.38                             | -   | \$113.60                                        | \$6.85          | \$0.032                          | 6.59                   | 1.04                   | 1             |
| LED Exit Sign                | LED fixture or sign lighting retrofit kit                           | fixture using higher wattage      | fixture      | IPC_ Outdoor Lighting                          | 12                              | 804.15                                            | \$275.42                             | -   | \$275.95                                        | \$91.09         | \$0.032                          | 2.36                   | 1.00                   | 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                                          | \$453.54                             | -   | \$427.62                                        | \$198.89        | \$0.032                          | 1.88                   | 1.06                   | 1             |
| Lighting Controls            | New LED fixture with Networked Controls                             | fixture using higher wattage      | fixture      | IPC_ Outdoor Lighting                          | 12                              | 1,454.01                                          | \$498.00                             | -   | \$456.12                                        | \$261.72        | \$0.032                          | 1.62                   | 1.09                   | 1             |
| Lighting Controls            | Lighting Controls                                                   | Manual controls                   | fixture      | IPC_ Outdoor Lighting                          | 10                              | 364.55                                            | \$105.44                             | -   | \$109.12                                        | \$27.59         | \$0.032                          | 2.20                   | 0.90                   | 1, 9          |
| Refrigeration Case Lighting  | Refrigeration Case Lighting                                         |                                   | lamp         | Commercial-Miscellaneous-Refrigeration-All     | 6                               | 347.86                                            | \$97.96                              | -   | \$97.91                                         | \$42.36         | \$0.032                          | 1.83                   | 0.99                   | 1, 9          |
| Air Conditioning Units       | <= 5 ton AC Unit. Base to CEE Tier 1                                | Code standards                    | tons         | Commercial-Miscellaneous-Cooling-All           | 15                              | 69.00                                             | \$68.08                              | -   | \$33.68                                         | \$30.00         | \$0.032                          | 2.11                   | 2.09                   | 3             |
| Air Conditioning Units       | <= 5 ton AC Unit. Base to CEE Tier 2                                | Code standards                    | tons         | Commercial-Miscellaneous-Cooling-All           | 15                              | 108.00                                            | \$106.56                             | -   | \$60.30                                         | \$75.00         | \$0.032                          | 1.36                   | 1.84                   | 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                                            | \$116.42                             | –        | \$181.50                                        | \$100.00        | \$0.032                          | 1.12                   | 0.69                   | 2, 3          |
| Air Conditioning Units | <= 64 ton VRF. Base to CEE Tier 1                                                     | Code standards                                   | tons            | Commercial-Miscellaneous-Cooling-All     | 15                              | 82.50                                             | \$81.40                              | –        | \$69.24                                         | \$75.00         | \$0.032                          | 1.05                   | 1.25                   | 3             |
| Heat Pump (HP) units   | <= 5 ton HP Unit. Base to CEE Tier 1                                                  | Code standards                                   | tons            | Commercial-Miscellaneous-Cooling-All     | 15                              | 69.00                                             | \$68.08                              | –        | \$153.00                                        | \$30.00         | \$0.032                          | 2.11                   | 0.48                   | 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                                            | \$106.56                             | –        | \$168.27                                        | \$75.00         | \$0.032                          | 1.36                   | 0.68                   | 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                                            | \$157.86                             | –        | \$165.50                                        | \$100.00        | \$0.032                          | 1.50                   | 1.02                   | 3             |
| Heat Pump (HP) units   | <= 64 ton VRF. Base to CEE Tier 1                                                     | Code standards                                   | tons            | Commercial-Miscellaneous-Cooling-All     | 15                              | 124.00                                            | \$122.34                             | –        | \$141.75                                        | \$75.00         | \$0.032                          | 1.55                   | 0.92                   | 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                                            | \$235.81                             | –        | \$56.50                                         | \$80.00         | \$0.032                          | 2.73                   | 4.12                   | 4             |
| Chillers               | Water-cooled chiller electronically operated, reciprocating and positive displacement | Standard water-cooled chiller                    | tons            | Commercial-Miscellaneous-Cooling-All     | 20                              | 118.30                                            | \$139.48                             | –        | \$33.40                                         | \$40.00         | \$0.032                          | 3.19                   | 4.13                   | 5             |
| Economizers            | Airside economizer control addition                                                   | No prior control                                 | ton of cooling  | Commercial-Miscellaneous-Cooling-All     | 15                              | 278.00                                            | \$274.29                             | –        | \$155.01                                        | \$100.00        | \$0.032                          | 2.52                   | 1.84                   | 3             |
| Economizers            | Airside economizer control repair                                                     | Non-functional economizer                        | ton of cooling  | Commercial-Miscellaneous-Cooling-All     | 15                              | 278.00                                            | \$274.29                             | –        | \$73.65                                         | \$50.00         | \$0.032                          | 4.66                   | 3.66                   | 3             |
| Evaporative Cooler     | Direct evaporative cooler                                                             | Replacing standard AC unit                       | tons            | Commercial-Miscellaneous-Cooling-All     | 15                              | 315.00                                            | \$310.79                             | –        | \$364.00                                        | \$200.00        | \$0.032                          | 1.48                   | 0.91                   | 3             |
| Automated Controls     | EMS controls with 1 strategy                                                          | Proposed strategy not existing (retrofit system) | tons of cooling | Commercial-Miscellaneous-Ventilation-All | 15                              | 371.00                                            | \$250.07                             | \$18.31  | \$197.98                                        | \$100.00        | \$0.032                          | 2.24                   | 1.40                   | 3             |
| Automated Controls     | EMS controls with 2 strategies                                                        | Proposed strategy not existing (retrofit system) | tons of cooling | Commercial-Miscellaneous-Ventilation-All | 15                              | 621.00                                            | \$418.59                             | \$18.31  | \$197.98                                        | \$125.00        | \$0.032                          | 2.89                   | 2.20                   | 3             |
| Automated Controls     | EMS controls with 3 strategies                                                        | Proposed strategy not existing (retrofit system) | tons of cooling | Commercial-Miscellaneous-Ventilation-All | 15                              | 870.00                                            | \$586.43                             | \$64.08  | \$197.98                                        | \$150.00        | \$0.032                          | 3.30                   | 3.14                   | 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                                          | \$1,166.12                           | \$219.69 | \$197.98                                        | \$175.00        | \$0.032                          | 5.06                   | 5.93                   | 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> | 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                                          | \$1,211.95                           | \$221.98                                        | \$200.00        | \$0.032                          | 4.71                   | 6.09                   | 3             |
| Automated Controls                    | EMS controls with 1 strategy         | Proposed strategy not existing (new system)      | tons of cooling | Commercial-Miscellaneous-Ventilation-All          | 15                              | 226.00                                            | \$152.34                             | \$13.73                                         | \$60.00         | \$0.032                          | 2.27                   | 1.07                   | 3             |
| Automated Controls                    | EMS controls with 2 strategies       | Proposed strategy not existing (new system)      | tons of cooling | Commercial-Miscellaneous-Ventilation-All          | 15                              | 408.00                                            | \$275.02                             | \$18.31                                         | \$70.00         | \$0.032                          | 3.31                   | 1.83                   | 3             |
| Automated Controls                    | EMS controls with 3 strategies       | Proposed strategy not existing (new system)      | tons of cooling | Commercial-Miscellaneous-Ventilation-All          | 15                              | 511.00                                            | \$344.44                             | \$29.75                                         | \$80.00         | \$0.032                          | 3.57                   | 2.28                   | 3             |
| Automated Controls                    | EMS controls with 4 strategies       | Proposed strategy not existing (new system)      | tons of cooling | Commercial-Miscellaneous-Ventilation-All          | 15                              | 568.00                                            | \$382.86                             | \$48.06                                         | \$90.00         | \$0.032                          | 3.54                   | 2.60                   | 3             |
| Automated Controls                    | EMS controls with 5 strategies       | Proposed strategy not existing (new system)      | tons of cooling | Commercial-Miscellaneous-Ventilation-All          | 15                              | 618.00                                            | \$416.57                             | \$48.06                                         | \$100.00        | \$0.032                          | 3.48                   | 2.78                   | 3             |
| Automated Controls                    | Lodging room occupancy controls      | Manual controls                                  | ton             | Commercial-Lodging-Ventilation-All                | 11                              | 665.00                                            | \$318.87                             | –                                               | \$75.00         | \$0.032                          | 3.31                   | 2.04                   | 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                                          | \$912.67                             | –                                               | \$100.00        | \$0.032                          | 6.37                   | 2.88                   | 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                                              | \$4.44                               | –                                               | \$2.50          | \$0.032                          | 1.63                   | 0.80                   | 2, 3          |
| Reflective Roofing                    | Adding reflective roof treatment     | Non-reflective low pitch roof                    | ft2 roof area   | Commercial-Miscellaneous-Cooling-All              | 15                              | 0.12                                              | \$0.11                               | –                                               | \$0.05          | \$0.032                          | 2.13                   | 2.34                   | 3             |
| Ceiling Insulation                    | Increase to R38 min. insulation      | Insulation level, R11 or less                    | ft2 wall area   | Commercial-Miscellaneous-Heating-Electric Furnace | 25                              | 2.00                                              | \$1.29                               | –                                               | \$0.35          | \$0.032                          | 3.12                   | 0.99                   | 3, 9          |
| Wall Insulation                       | Increase to R11 min. insulation      | Insulation level, R2.5 or less                   | ft2 wall area   | Commercial-Miscellaneous-Heating-Electric Furnace | 25                              | 9.15                                              | \$5.92                               | –                                               | \$0.40          | \$0.032                          | 8.54                   | 6.83                   | 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                                             | \$6.65                               | –                                               | \$0.55          | \$0.032                          | 7.57                   | 7.40                   | 3             |
| Computers                             | PC network power management          | No central control software in place             | unit            | Commercial-Small Office-Office Equipment-All      | 4                               | 148.00                                            | \$29.68                              | –                                               | \$10.00         | \$0.032                          | 2.01                   | 1.95                   | 3             |

|                                            |                                                                                     |                                                                           |               |                                                   |                                 | 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> |               |      |
| Measure Name                               | Measure Descriptions                                                                | Replacing                                                                 | Measure unit  | End Use                                           | Measure Life (yrs) <sup>a</sup> |                                                   |                                      |             |                                                 |                 |                                  |                        |                        |               |      |
| Laundry Machines                           | High efficiency washer                                                              | Standard washer HW                                                        | electric unit | Commercial-Lodging-Water Heating-All              | 8                               |                                                   | 994.00                               | \$353.09    | \$1,089.25                                      | \$393.00        | \$125.00                         | \$0.032                | 2.25                   | 3.48          | 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                             | \$973.69    | -                                               | \$51.60         | \$50.00                          | \$0.032                | 6.63                   | 7.21          | 3, 7 |
| HVAC Fan Motor Belt                        | Type AX notched V-belt<br>Type BX notched V-belt                                    | Type A solid V-belt<br>Type B solid V-belt                                | hp            | Commercial-Miscellaneous-Ventilation-All          | 5                               |                                                   | 78.00                                | \$20.72     | -                                               | \$1.90          | \$5.00                           | \$0.032                | 2.76                   | 5.18          | 3    |
| HVAC Fan Motor Belt                        | Synchronous belt                                                                    | Standard fan belt                                                         | hp            | Commercial-Miscellaneous-Ventilation-All          | 5                               |                                                   | 199.00                               | \$52.85     | -                                               | \$67.00         | \$35.00                          | \$0.032                | 1.28                   | 0.79          | 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 Office-Water Heating-All         | 10                              |                                                   | 2,159.00                             | \$932.07    | \$2,659.79                                      | \$3.66          | \$15.00                          | \$0.032                | 11.08                  | 50.66         | 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                               | \$49.65     | \$141.63                                        | \$3.66          | \$9.00                           | \$0.032                | 3.92                   | 26.74         | 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                               | \$23.66     | -                                               | \$37.00         | \$10.00                          | \$0.032                | 1.72                   | 0.64          | 2, 3 |
| 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                             | \$3,127.05  | -                                               | \$1,400.00      | \$200.00                         | \$0.032                | 7.12                   | 2.10          | 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                            | \$7,382.41  | -                                               | \$1,950.00      | \$1,500.00                       | \$0.032                | 3.58                   | 3.23          | 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                             | \$1,144.23  | -                                               | \$120.00        | \$50.00                          | \$0.032                | 8.32                   | 6.07          | 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                             | \$977.60    | -                                               | \$170.00        | \$100.00                         | \$0.032                | 5.60                   | 4.39          | 3    |
| High Volume Low Speed Fan                  | High Volume Low Speed Fan                                                           | Standard high speed fan                                                   | Fan           | Commercial-Warehouse-Ventilation-All              | 15                              |                                                   | 16,733.00                            | \$10,860.62 | -                                               | \$4,185.00      | \$2,000.00                       | \$0.032                | 4.28                   | 2.53          | 3    |
| Compressed Air                             | Air compressor VFD                                                                  | No existing VFD                                                           | HP            | Commercial-Miscellaneous-Miscellaneous-All        | 15                              |                                                   | 949.00                               | \$612.46    | -                                               | \$223.00        | \$150.00                         | \$0.032                | 3.40                   | 2.66          | 3    |
| Compressed Air                             | Low Pressure Drop Filter                                                            | Open tube with ball valve                                                 | HP            | Commercial-Miscellaneous-Miscellaneous-All        | 5                               |                                                   | 44.00                                | \$11.13     | -                                               | \$10.00         | \$7.50                           | \$0.032                | 1.25                   | 1.07          | 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                                          | \$848.62                             | -   | \$700.00                                        | \$300.00        | \$0.032                          | 2.37                   | 1.23                   | 3             |
| Compressed Air             | Efficient Compressed Air Nozzle <= 1/4 inch | Standard air nozzle                                    | unit         | Commercial-Miscellaneous-Miscellaneous-All | 15                              | 602.50                                            | \$388.84                             | -   | \$49.50                                         | \$30.00         | \$0.032                          | 7.89                   | 6.22                   | 3             |
| Compressed Air             | Efficient Compress Air Nozzle > 1/4 inch    | Standard air nozzle                                    | unit         | Commercial-Miscellaneous-Miscellaneous-All | 15                              | 2,997.50                                          | \$1,934.52                           | -   | \$104.00                                        | \$60.00         | \$0.032                          | 12.41                  | 10.64                  | 3             |
| Compressed Air             | Refrigerated Compressed Air Dryer           | Standard air dryer                                     | CFM          | Commercial-Miscellaneous-Miscellaneous-All | 10                              | 10.62                                             | \$4.92                               | -   | \$6.00                                          | \$2.00          | \$0.032                          | 2.10                   | 0.85                   | 2, 3          |
| Refrigeration              | Install auto-closer - walk-in               | no/damaged auto-closer, low temp                       | door         | Commercial-Miscellaneous-Refrigeration-All | 8                               | 2,509.00                                          | \$908.00                             | -   | \$157.00                                        | \$125.00        | \$0.032                          | 4.42                   | 4.21                   | 3             |
| Refrigeration              | Install auto-closer - reach-in              | Damaged auto-closer, temp                              | door         | Commercial-Miscellaneous-Refrigeration-All | 8                               | 326.00                                            | \$117.98                             | -   | \$122.00                                        | \$100.00        | \$0.032                          | 1.07                   | 0.98                   | 3, 9          |
| Refrigeration              | Install auto-closer - walk-in               | No/damaged auto-closer, med. Temp                      | door         | Commercial-Miscellaneous-Refrigeration-All | 8                               | 562.00                                            | \$203.39                             | -   | \$157.00                                        | \$100.00        | \$0.032                          | 1.72                   | 1.28                   | 3             |
| Refrigeration              | Install auto-closer - reach-in              | Damaged auto-closer, med. Temp                         | door         | Commercial-Miscellaneous-Refrigeration-All | 8                               | 243.00                                            | \$87.94                              | -   | \$122.00                                        | \$70.00         | \$0.032                          | 1.13                   | 0.75                   | 2, 3          |
| Refrigeration              | Add anti-sweat heat controls                | Low/med. Temp case w/ out controls                     | linear ft    | Commercial-Miscellaneous-Refrigeration-All | 8                               | 266.00                                            | \$96.27                              | -   | \$47.90                                         | \$40.00         | \$0.032                          | 1.98                   | 1.88                   | 3             |
| Automatic high speed doors | Freezer to Dock                             | manual or electric warehouse door                      | Door         | Commercial-Warehouse-Refrigeration-All     | 8                               | 155,659.00                                        | \$55,031.35                          | -   | \$12,650.00                                     | \$8,000.00      | \$0.032                          | 4.24                   | 3.43                   | 3             |
| Automatic high speed doors | Freezer to Refrigerator                     | manual or electric warehouse door                      | Door         | Commercial-Warehouse-Refrigeration-All     | 8                               | 112,469.00                                        | \$39,762.05                          | -   | \$12,650.00                                     | \$4,000.00      | \$0.032                          | 5.23                   | 2.69                   | 3             |
| Strip Curtain              | For walk-in freezers                        | no protective barrier                                  | Curtain/Door | Commercial-Warehouse-Refrigeration-All     | 4                               | 4,865.00                                          | \$925.48                             | -   | \$274.00                                        | \$150.00        | \$0.032                          | 3.03                   | 2.37                   | 3             |
| Strip Curtain              | For walk-in refrigerators                   | no protective barrier                                  | Curtain/Door | Commercial-Warehouse-Refrigeration-All     | 4                               | 3,024.00                                          | \$575.27                             | -   | \$274.00                                        | \$150.00        | \$0.032                          | 2.33                   | 1.71                   | 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                                            | \$426.98                             | -   | \$161.74                                        | \$75.00         | \$0.032                          | 4.39                   | 2.55                   | 3             |
| Evaporative Fans           | Install ECM/PSC evap fan motor              | Med. or low temp. walk-in                              | motor        | Commercial-Miscellaneous-Refrigeration-All | 15                              | 1,075.00                                          | \$659.49                             | -   | \$296.78                                        | \$100.00        | \$0.032                          | 4.91                   | 2.19                   | 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 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             | motor        | Commercial-Miscellaneous-Refrigeration-All | 15                              | 429.00                                     | \$263.18                             | -        | \$84.45                                         | \$60.00         | \$0.032                          | 3.57                   | 2.95                   | 3             |
| Floating Head/Suction Pressures                    | Head pressure controller                                  | Standard head pressure control               | HP           | Commercial-Miscellaneous-Refrigeration-All | 16                              | 440.00                                     | \$283.03                             | -        | \$272.60                                        | \$80.00         | \$0.032                          | 3.01                   | 1.09                   | 3             |
| Floating Head/Suction Pressures                    | Suction pressure controller                               | Standard suction pressure control            | HP           | Commercial-Miscellaneous-Refrigeration-All | 16                              | 104.00                                     | \$66.90                              | -        | \$86.91                                         | \$20.00         | \$0.032                          | 2.87                   | 0.82                   | 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                                   | \$2,983.59                           | -        | \$1,991.00                                      | \$200.00        | \$0.032                          | 8.74                   | 1.54                   | 3             |
| Vending Machines                                   | Non-cooled snack control                                  | Vending machine with no sensor               | sensor       | Commercial-Miscellaneous-Miscellaneous-All | 5                               | 387.00                                     | \$97.86                              | -        | \$75.00                                         | \$50.00         | \$0.032                          | 1.57                   | 1.23                   | 3             |
| Commercial kitchen equipment                       | ENERGY STAR® undercounter (residential style) dishwasher  | Code standards                               | machine      | Commercial-Restaurant-Water Heating-All    | 12                              | 2,210.00                                   | \$1,208.79                           | \$228.31 | \$232.00                                        | \$200.00        | \$0.032                          | 4.47                   | 5.15                   | 3, 10         |
| Commercial kitchen equipment                       | ENERGY STAR dishwasher                                    | Code standards                               | machine      | Commercial-Restaurant-Water Heating-All    | 12                              | 5,561.00                                   | \$3,041.66                           | \$615.74 | \$3,978.00                                      | \$500.00        | \$0.032                          | 4.49                   | 0.95                   | 3, 9, 10      |
| 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                                  | \$6,519.53                           | -        | \$1,760.62                                      | \$1,100.00      | \$0.032                          | 4.30                   | 3.29                   | 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                                  | \$8,966.04                           | -        | \$481.03                                        | \$300.00        | \$0.032                          | 10.28                  | 9.37                   | 11            |
| Commercial kitchen equipment                       | ENERGY STAR listed electric convection oven               | Standard electric oven                       | oven         | Commercial-Restaurant-Food Preparation-All | 10                              | 1,672.00                                   | \$838.58                             | -        | \$995.28                                        | \$300.00        | \$0.032                          | 2.37                   | 0.88                   | 2, 12         |
| Commercial kitchen equipment                       | ENERGY STAR listed electric fryer                         | Standard fryer                               | fryer        | Commercial-Restaurant-Food Preparation-All | 8                               | 2,449.00                                   | \$1,014.75                           | -        | \$849.98                                        | \$400.00        | \$0.032                          | 2.12                   | 1.20                   | 13            |
| Commercial kitchen equipment                       | ENERGY STAR listed electric steamer - 3 pan               | Standard steamer                             | steamer      | Commercial-Restaurant-Food Preparation-All | 9                               | 21,470.00                                  | \$9,837.89                           | -        | \$389.45                                        | \$80.00         | \$0.032                          | 12.83                  | 10.05                  | 14            |
| Commercial kitchen equipment                       | ENERGY STAR listed electric steamer - 4 pan               | Standard steamer                             | steamer      | Commercial-Restaurant-Food Preparation-All | 9                               | 28,564.00                                  | \$13,088.47                          | -        | \$148.65                                        | \$100.00        | \$0.032                          | 12.91                  | 13.55                  | 14            |
| Commercial kitchen equipment                       | ENERGY STAR listed electric steamer - 5 pan               | Standard steamer                             | steamer      | Commercial-Restaurant-Food Preparation-All | 9                               | 35,659.00                                  | \$16,339.50                          | -        | -                                               | \$150.00        | \$0.032                          | 12.66                  | 13.92                  | 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> | 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                                         | \$19,590.54                          | –                                               | \$64.48         | \$175.00                         | \$0.032                | 12.70                  | 15.04 | 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                                         | \$32,594.24                          | –                                               | \$4,414.68      | \$200.00                         | \$0.032                | 13.16                  | 5.36  | 14            |
| Variable-speed controls      | Variable speed drive on HVAC system applications:<br>-chilled water pumps<br>-condenser water pumps<br>-cooling tower fans  | Single-speed HVAC system fan/pump | HP           | Commercial-Miscellaneous-Ventilation-All   | 15                              | 268.00                                            | \$180.65                             | –                                               | \$194.28        | \$60.00                          | \$0.032                | 2.63                   | 0.98  | 3, 9          |
| Variable-speed controls      | Variable speed drive on HVAC system applications:<br>-supply<br>-return<br>-outside air<br>-make-up air<br>-hot water pumps | Single-speed HVAC system fan/pump | HP           | Commercial-Miscellaneous-Ventilation-All   | 15                              | 996.00                                            | \$671.36                             | –                                               | \$174.82        | \$100.00                         | \$0.032                | 5.09                   | 3.57  | 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                                          | \$394.20                             | –                                               | \$264.00        | \$200.00                         | \$0.032                | 1.66                   | 1.43  | 3             |
| Dairy VFD                    | VFD on milking vacuum pump                                                                                                  | No existing VSD                   | HP           | Commercial-Miscellaneous-Miscellaneous-All | 15                              | 3,084.00                                          | \$1,990.35                           | –                                               | \$356.00        | \$250.00                         | \$0.032                | 5.71                   | 4.82  | 3             |

<sup>a</sup> Average measure life.<sup>b</sup> Estimated kWh savings measured at the customer's meter, excluding line losses.<sup>c</sup> 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> 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\_0.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.

## Irrigation Efficiency Rewards

Segment: Irrigation  
2019 Program Results

| Cost Inputs                                                             | Ref                 |
|-------------------------------------------------------------------------|---------------------|
| Program Administration .....                                            | \$ 395,990          |
| Program Incentives.....                                                 | 2,265,273           |
| <b>Total UC .....</b>                                                   | <b>\$ 2,661,263</b> |
| Measure Equipment and Installation (Incremental Participant Cost) ..... | \$ 9,646,523        |
|                                                                         | M                   |

| Summary of Cost-Effectiveness Results |              |              |       |  |
|---------------------------------------|--------------|--------------|-------|--|
| Test                                  | Benefit      | Cost         | Ratio |  |
| UC Test .....                         | \$ 6,481,777 | \$ 2,661,263 | 2.44  |  |
| TRC Test .....                        | 31,383,743   | 10,042,514   | 3.13  |  |
| RIM Test .....                        | 6,481,777    | 6,634,625    | 0.98  |  |
| PCT .....                             | 30,492,423   | 9,646,523    | 3.16  |  |

| Net Benefit Inputs (NPV)               | Ref                 |
|----------------------------------------|---------------------|
| <b>Resource Savings</b>                |                     |
| 2019 Annual Gross Energy (kWh) .....   | 10,073,455          |
| NPV Cumulative Energy (kWh) .....      | \$ 73,088,634       |
| 10% Credit (Northwest Power Act) ..... | 648,178             |
| <b>Total Electric Savings .....</b>    | <b>\$ 7,129,954</b> |
|                                        | 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 .....                                | = 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 .....        | \$0.059 |
| Line Losses .....                              | 9.60%   |

| Assumptions for Levelized Calculations         |         |
|------------------------------------------------|---------|
| <b>Discount Rate</b>                           |         |
| Nominal (WACC) .....                           | 6.74%   |
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| Minimum NTG Sensitivity .....                  | 41%     |
| Average Customer Segment Rate/kWh .....        | \$0.059 |
| Line Losses .....                              | 9.60%   |

**Notes:** Energy savings are combined for projects under the Custom and Menu program. Savings under each Custom project is unique and individually calculated and assessed. For Custom option, NEBs including yield, labor, and other benefits reported by the customer. For Menu option, NEBs from RTE. 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.



| Year: 2019                | 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                               | 26.11                                             | \$9.20                               | \$1.77  | \$6.35                                          | \$1.50          | \$0.039                          | 3.65                   | 1.61           | 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                               | 26.11                                             | \$9.20                               | \$1.77  | \$0.91                                          | \$0.25          | \$0.039                          | 7.25                   | 6.17           | 1                      |
| Sprinklers                | Rebuilt or new brass impact sprinklers                                                                                    | Worn sprinkler                                                           | Unit         | IPC_Irrigation             | 4                               | 3.33                                              | \$1.17                               | \$9.00  | \$12.31                                         | \$2.75          | \$0.039                          | 0.41                   | 0.83           | 1, 2                   |
| Levelers                  | Rebuilt or new wheel line levelers                                                                                        | Worn wheel line leveler                                                  | Unit         | IPC_Irrigation             | 5                               | 4.59                                              | \$1.97                               | \$4.68  | \$6.23                                          | \$0.75          | \$0.039                          | 2.12                   | 1.07           | 1                      |
| Sprinklers                | Center pivot/linear move: Install new sprinkler package on an existing system                                             | Worn sprinkler system                                                    | Unit         | IPC_Irrigation             | 5                               | 24.30                                             | \$10.45                              | \$11.00 | \$25.15                                         | \$8.00          | \$0.039                          | 1.17                   | 0.86           | 1, 2                   |
| Gasket Replacement        | New gaskets for hand lines, wheel lines, or portable mainline                                                             | Worn gasket                                                              | Unit         | IPC_Irrigation             | 5                               | 16.30                                             | \$7.01                               | \$3.64  | \$1.99                                          | \$1.00          | \$0.039                          | 4.29                   | 4.32           | 1                      |
| Drain Replacement         | New drains, hand lines, wheel lines, or portable mainline                                                                 | Worn drain                                                               | Unit         | IPC_Irrigation             | 5                               | 10.60                                             | \$4.56                               | \$2.53  | \$4.36                                          | \$3.00          | \$0.039                          | 1.34                   | 1.58           | 1                      |
| Hub Replacement           | New wheel line hubs                                                                                                       | Worn hubs                                                                | Unit         | IPC_Irrigation             | 10                              | 26.83                                             | \$20.66                              | \$5.59  | \$41.49                                         | \$12.00         | \$0.039                          | 1.58                   | 0.67           | 1, 2                   |
| New Goose Necks           | New goose neck with drop tube or boomback                                                                                 | Worn gooseneck                                                           | Outlet       | IPC_Irrigation             | 15                              | 15.33                                             | \$15.98                              | –       | \$6.99                                          | \$1.00          | \$0.039                          | 10.00                  | 2.32           | 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                               | 46.88                                             | \$30.13                              | \$11.58 | \$12.08                                         | \$8.00          | \$0.039                          | 3.07                   | 3.22           | 1                      |
| Gasket Replacement        | New center pivot base boot gasket                                                                                         | Worn gasket                                                              | Unit         | IPC_Irrigation             | 8                               | 1,950.04                                          | \$1,253.37                           | –       | \$391.29                                        | \$125.00        | \$0.039                          | 6.23                   | 2.95           | 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 2019 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: AgrirrigationHardware\_v4\_1.xlsm. 2019. Weighted average of Western Idaho (14.83%), Eastern Washington & Oregon (4.55%), and Eastern & Southern Idaho (80.63%).

<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: AgrirrigationHardware\_v3\_3.xlsm. 2016. Weighted average. Measure not included in v4\_1.

| Year: 2019                                     | Program: Irrigation Efficiency Rewards—Green Motors     |                          |              |                | Market Segment: Irrigation                        |                                      | Program Type: Energy Efficiency |                                                 |                 |                                  |                        |                        |               |      |   |
|------------------------------------------------|---------------------------------------------------------|--------------------------|--------------|----------------|---------------------------------------------------|--------------------------------------|---------------------------------|-------------------------------------------------|-----------------|----------------------------------|------------------------|------------------------|---------------|------|---|
|                                                |                                                         |                          |              |                | 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> |               |      |   |
| Measure Name                                   | Measure Descriptions                                    | Replacing                | Measure Unit | End Use        | Measure Life (yrs) <sup>a</sup>                   |                                      |                                 |                                                 |                 |                                  |                        |                        |               |      |   |
| Green Motors Program Rewind: Motor size 15 HP  | Green Motors Program Rewind: Motor size 15 HP practice  | Standard rewind practice | Motor        | IPC_Irrigation | 18                                                |                                      | 222.19                          | \$259.80                                        | –               | \$128.35                         | \$30.00                | \$0.050                | 6.32          | 2.05 | 1 |
| Green Motors Program Rewind: Motor size 20 HP  | Green Motors Program Rewind: Motor size 20 HP practice  | Standard rewind practice | Motor        | IPC_Irrigation | 18                                                |                                      | 297.32                          | \$347.65                                        | –               | \$143.19                         | \$40.00                | \$0.050                | 6.34          | 2.42 | 1 |
| Green Motors Program Rewind: Motor size 25 HP  | Green Motors Program Rewind: Motor size 25 HP practice  | Standard rewind practice | Motor        | IPC_Irrigation | 17                                                |                                      | 447.57                          | \$505.70                                        | –               | \$163.60                         | \$50.00                | \$0.050                | 6.99          | 2.99 | 1 |
| Green Motors Program Rewind: Motor size 30 HP  | Green Motors Program Rewind: Motor size 30 HP practice  | Standard rewind practice | Motor        | IPC_Irrigation | 17                                                |                                      | 482.11                          | \$544.73                                        | –               | \$179.68                         | \$60.00                | \$0.050                | 6.48          | 2.94 | 1 |
| Green Motors Program Rewind: Motor size 40 HP  | Green Motors Program Rewind: Motor size 40 HP practice  | Standard rewind practice | Motor        | IPC_Irrigation | 17                                                |                                      | 561.43                          | \$634.35                                        | –               | \$219.58                         | \$80.00                | \$0.050                | 5.87          | 2.82 | 1 |
| Green Motors Program Rewind: Motor size 50 HP  | Green Motors Program Rewind: Motor size 50 HP practice  | Standard rewind practice | Motor        | IPC_Irrigation | 17                                                |                                      | 604.21                          | \$682.69                                        | –               | \$243.09                         | \$100.00               | \$0.050                | 5.24          | 2.75 | 1 |
| Green Motors Program Rewind: Motor size 60 HP  | Green Motors Program Rewind: Motor size 60 HP practice  | Standard rewind practice | Motor        | IPC_Irrigation | 21                                                |                                      | 553.16                          | \$704.80                                        | –               | \$286.69                         | \$120.00               | \$0.050                | 4.77          | 2.47 | 1 |
| Green Motors Program Rewind: Motor size 75 HP  | Green Motors Program Rewind: Motor size 75 HP practice  | Standard rewind practice | Motor        | IPC_Irrigation | 21                                                |                                      | 569.29                          | \$725.35                                        | –               | \$309.89                         | \$150.00               | \$0.050                | 4.06          | 2.36 | 1 |
| Green Motors Program Rewind: Motor size 100 HP | Green Motors Program Rewind: Motor size 100 HP practice | Standard rewind practice | Motor        | IPC_Irrigation | 21                                                |                                      | 751.39                          | \$957.37                                        | –               | \$384.42                         | \$200.00               | \$0.050                | 4.03          | 2.50 | 1 |
| Green Motors Program Rewind: Motor size 125 HP | Green Motors Program Rewind: Motor size 125 HP practice | Standard rewind practice | Motor        | IPC_Irrigation | 23                                                |                                      | 555.70                          | \$742.25                                        | –               | \$278.32                         | \$250.00               | \$0.050                | 2.67          | 2.67 | 1 |
| Green Motors Program Rewind: Motor size 150 HP | Green Motors Program Rewind: Motor size 150 HP practice | Standard rewind practice | Motor        | IPC_Irrigation | 23                                                |                                      | 660.58                          | \$882.33                                        | –               | \$310.01                         | \$300.00               | \$0.050                | 2.65          | 2.83 | 1 |
| Green Motors Program Rewind: Motor size 200 HP | Green Motors Program Rewind: Motor size 200 HP practice | Standard rewind practice | Motor        | IPC_Irrigation | 23                                                |                                      | 876.20                          | \$1,170.33                                      | –               | \$373.21                         | \$400.00               | \$0.050                | 2.64          | 3.09 | 1 |
| Green Motors Program Rewind: Motor size 250 HP | Green Motors Program Rewind: Motor size 250 HP practice | Standard rewind practice | Motor        | IPC_Irrigation | 19                                                |                                      | 1,357.04                        | \$1,636.65                                      | –               | \$479.67                         | \$500.00               | \$0.050                | 2.88          | 3.29 | 1 |
| Green Motors Program Rewind: Motor size 300 HP | Green Motors Program Rewind: Motor size 300 HP practice | Standard rewind practice | Motor        | IPC_Irrigation | 19                                                |                                      | 1,620.02                        | \$1,953.82                                      | –               | \$484.86                         | \$600.00               | \$0.050                | 2.87          | 3.80 | 1 |
| Green Motors Program Rewind: Motor size 350 HP | Green Motors Program Rewind: Motor size 350 HP practice | Standard rewind practice | Motor        | IPC_Irrigation | 19                                                |                                      | 1,888.64                        | \$2,277.79                                      | –               | \$508.18                         | \$700.00               | \$0.050                | 2.87          | 4.16 | 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> | 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                                          | \$2,582.66                           | \$567.59                                        | \$800.00        | \$0.050                          | 2.85                   | 4.21                   | 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                                          | \$2,900.63                           | \$620.43                                        | \$900.00        | \$0.050                          | 2.84                   | 4.31                   | 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                                          | \$3,227.42                           | \$670.27                                        | \$1,000.00      | \$0.050                          | 2.85                   | 4.42                   | 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                                          | \$5,612.15                           | \$1,323.93                                      | \$1,200.00      | \$0.050                          | 3.99                   | 4.04                   | 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                                          | \$6,519.72                           | \$1,444.40                                      | \$1,400.00      | \$0.050                          | 3.98                   | 4.26                   | 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                                          | \$7,435.31                           | \$1,602.60                                      | \$1,600.00      | \$0.050                          | 3.97                   | 4.36                   | 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                                          | \$8,346.99                           | \$1,766.79                                      | \$1,800.00      | \$0.050                          | 3.96                   | 4.43                   | 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                                          | \$11,491.09                          | \$2,605.55                                      | \$3,000.00      | \$0.050                          | 2.69                   | 3.26                   | 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 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.