CADMUS

2018-2019 Idaho Wattsmart Business Program Evaluation

FINAL REPORT

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Glossary of Terms

Demand Side Management Central (DSMC)

DSMC is Rocky Mountain Power's project management and reporting database. The DSMC provides project management tools, validation check on each project, and a data warehouse with reporting capability.

Evaluated Gross Savings

Evaluated gross savings represent the total program savings, based on the validated savings and installations, before adjusting for behavioral effects such as freeridership or spillover. They are most often calculated for a given measure 'i' as:

$$Evaluated\ Gross\ Savings_i = Verified\ Installations_i * Unit\ Consumption_i$$

Evaluated Net Savings

Evaluated net savings are the program savings net of what would have occurred in the program's absence. These savings are the observed impacts attributable to the program. Net savings are calculated as the product of evaluated gross savings and net-to-gross (NTG) ratio:

$$Net\ Savings = Evaluated\ Gross\ Savings * NTG$$

Freeridership

Freeridership in energy efficiency programs is participants who would have adopted the energy-efficient measure in the program's absence. This is often expressed as the freeridership rate, or the proportion of evaluated gross savings that can be classified as freeridership.

Gross Realization Rate

This is the ratio of evaluated gross savings to the savings reported (or claimed) by the program administrator.

In-Service Rate (ISR)

The ISR (also called the installation rate) is the proportion of incented measures actually installed.

Net-to-Gross (NTG)

The NTG ratio is the ratio of net savings to evaluated gross savings:

$$NTG = (1 - Freeridership\ Rate) + Spillover\ Rate$$

Spillover

Spillover is the adoption of an energy efficiency measure induced by the program's presence, but not directly funded by the program. As with freeridership, this is expressed as a fraction of evaluated gross savings (or the spillover rate).

Technical Resource Library (TRL)

The TRL is the official database repository of measure assumptions, which is linked to Rocky Mountain Power's DSMC project database.

Trade Ally

For the purposes of the process evaluation, trade allies include any market actors who provide design services, as well as contractors, distributors, manufacturers, and vendors who provide facility evaluations and/or supply or install energy-efficient measures incentivized through the program.

Executive Summary

Through its Wattsmart Business program, Rocky Mountain Power (RMP) offered services and incentives to help commercial, industrial, and agricultural customers to maximize the energy efficiency of their equipment and operations through downstream, midstream, and direct install incentive mechanisms. During the 2018 and 2019 program years, the Wattsmart Business program reported gross electricity savings of 26,047,020 kWh in Idaho.

During the period, RMP shifted from implementing DSM offering for managed accounts directly and outsourcing DSM services for non-managed accounts, to outsourcing all DSM services. RMP contracted with three program administrators—Cascade Energy, Willdan, and Nexant—to implement all program offerings.

RMP contracted with the Cadmus team (comprised of Cadmus and VuPoint Research) to conduct impact and process evaluations of the Idaho Wattsmart Business program for the 2018 and 2019 program years. VuPoint Research performed the nonparticipant process evaluation telephone surveys, and Cadmus administered online participant surveys and performed phone interviews. For the process evaluation, the team assessed program delivery and efficacy, bottlenecks, barriers, and opportunities for possible improvements. For the impact evaluation, the team evaluated energy impacts using virtual assessments and engineering analyses, net-to-gross (NTG), and program cost-effectiveness.

At RMP's request, Cadmus evaluated program effectiveness and reported the 2018–2019 evaluation findings under the following categories:[1]

- ***Wattsmart Business (Typical Upgrades and Custom Analysis):*** RMP offered customers prescriptive incentives (Typical Upgrades) for measures such as agricultural, compressed air, HVAC, lighting, motors, building shell, food service equipment, and irrigation. It also offered custom incentives (Custom Analysis) for verified first-year energy savings resulting from installation of qualifying capital equipment upgrades not covered by Typical Upgrades incentives or other Wattsmart Business program delivery offerings.
- ***Lighting Instant Incentive (Midstream).*** Through this offering, RMP targets the lighting maintenance market by offering customers instant point-of-purchase incentives on qualified LEDs, occupancy sensors, and retrofit kits purchased through a participating lighting distributor. Customers purchasing through a nonparticipating distributor do not receive an instant discount, but they may apply to Pacific Power for incentives after the purchase.
- ***Small Business Direct Install (SBDI):*** RMP provided a free energy assessment, instant incentives, and turnkey installations for geotargeted, eligible, small business customers making recommended interior and/or exterior lighting upgrades within a designated offer window.

[1] To report net-to-gross (NTG), Cadmus surveyed Wattsmart Business Typical Upgrades and Custom Analysis participants using the same measure strata used by the Impact team.

- ***Energy Management:*** RMP provided expertise and custom incentives for verified savings, achieved through improved operations and through maintenance and management practices. Capital improvements, if eligible, were incentivized through the other Wattsmart Business program offerings. In addition, through this offering, RMP offered year-long SEM training to a cohort of water and wastewater customers.

Key Findings

Key Impact Evaluation Findings

For the impact evaluation, the Cadmus team analyzed 75 projects that contributed 25% of the 2018 and 2019 program savings. Table 1 summarizes the evaluation findings, including number of projects, gross savings, and net savings.

Overall, the program achieved a 102.8% gross realization rate for the two program years, though variability occurred between measure categories. The Cadmus team calculated net-to-gross (NTG) of 89%, yielding evaluated net savings of 24,334,354 kWh. The impact evaluation achieved ±4.0% precision with 90% confidence. The *Evaluated Gross Savings Results by Measure Category* section describe specific details and findings per strata.

Table 1. 2018 and 2019 Wattsmart Business Program Savings

Strata	Unique Projects	Reported Savings (kWh)	Evaluated Gross Savings (kWh)	Gross Realization Rate	Precision [a]	NTG	Evaluated Net Savings (kWh)
Lighting [b]	298	9,590,597	9,819,436	102.4%	3%	103%	10,114,019
Agricultural	246	7,055,758	8,047,684	114.1%	10%	64%	5,150,518
Direct Install	264	3,174,793	3,312,253	104.3%	3%	103%	3,411,620
Strategic Energy Management	7	1,705,175	1,904,143	111.7%	0%	103%	1,961,267
Energy Management	10	1,652,149	1,642,615	99.4%	0%	89%	1,461,927
Motors	15	1,012,425	851,362	84.1%	2%	89%	757,712
HVAC	31	965,356	780,709	80.9%	6%	89%	694,831
Other	45	890,768	879,168	98.7%	1%	89%	782,459
Total	**916**	**26,047,020**	**27,237,370**	**104.6%**	**4%**	**89%**	**24,334,354**

Note: Totals in tables may not add exactly due to rounding.

[b] The measure category precision is based on 80% confidence; the Portfolio precision is based on 90% confidence.

[c] The Agricultural strata includes irrigation, dairy, and other produce measures.

The program performed well overall but did experience some variation. The largest measure strata findings are:

- Within the largest energy savings stratum (Lighting: 37% of all savings), Cadmus found the data collected by RMP was sufficient for the evaluation team and the reported savings calculation methodology was found to be appropriate. Cadmus found discrepancies in the utilization of waste heat factor and hours of use by facility type for midstream projects, but few discrepancies were discovered among most sampled projects.

- Agricultural measures, accounting for 27% of all Idaho reported savings, exhibited variations in realization rates due to project-specific inputs utilized in the evaluation calculations. Most agricultural hardware measures reported savings as deemed by equipment type based on the RTF. The deemed savings use average values across the region for flow, pressure, and other pumping system characteristics. Cadmus collected pumping system data from the sampled customers and calculated evaluated savings with these updated project specific inputs. Overall, the deemed energy savings values used by RMP closely matched the weighted average of all project-specific calculated savings for agricultural measures evaluated by Cadmus.
- Projects in the Strategic Energy Management program, accounting for 7% of reported energy savings, achieved varying realization rates due to differences in billing data between the implementer's and Cadmus's sources, differences in modeling decisions, and inconsistencies with date ranges. As a whole, the program achieved savings and a 111.7% realization rate.

Table 2 and Table 3 show impact evaluation findings by program year (for 2018 and 2019, respectively). In performing the analysis, the Cadmus team combined the 2018 and 2019 program years, applying overall realization rates achieved to each year.

Table 2. 2018 Wattsmart Business Program Savings

Strata	Unique Projects	Reported Gross Savings (kWh)	Evaluated Gross Savings (kWh)	Gross Realization Rate	NTG	Evaluated Net Savings (kWh)
Lighting	147	4,576,320	4,685,515	102.4%	103%	4,826,080
Agricultural	92	2,584,719	2,948,089	114.16%	64%	1,886,777
Direct Install	169	2,029,112	2,116,967	104.3%	103%	2,180,476
Strategic Energy Management	1	310,656	346,905	111.7%	103%	357,312
Energy Management	2	517,879	514,890	99.4%	89%	458,252
Motors	4	378,158	317,998	84.1%	89%	283,018
HVAC	16	310,814	251,364	80.9%	89%	223,714
Other	20	298,430	294,544	98.7%	89%	262,144
Total	**451**	**11,006,088**	**11,476,271**	**104.3%**	**89%**	**10,477,773**

Note: Totals in tables may not add exactly due to rounding.

Table 3. 2019 Wattsmart Business Program Savings

Strata	Evaluated Projects	Reported Gross Savings (kWh)	Evaluated Gross Savings (kWh)	Gross Realization Rate	NTG	Evaluated Net Savings (kWh)
Lighting	151	5,014,277	5,133,922	102.4%	103%	5,287,939
Agricultural	154	4,471,039	5,099,595	114.1%	64%	3,263,741
Direct Install	95	1,145,681	1,195,286	104.3%	103%	1,231,144
Strategic Energy Management	6	1,394,519	1,557,238	111.7%	103%	1,603,955
Energy Management	8	1,134,270	1,127,724	99.4%	89%	1,003,675
Motors	11	634,267	533,364	84.1%	89%	474,694
HVAC	15	654,542	529,346	80.9%	89%	471,118
Other	25	592,338	584,624	98.7%	89%	520,315
Total	**465**	**15,040,933**	**15,761,099**	**104.8%**	**89%**	**13,856,581**

Note: Totals in tables may not add exactly due to rounding.

Key Process Evaluation Findings

The key process evaluation findings follow. This report's *Process Evaluation* section provides more nuanced descriptions of these key findings.

Participant Experience

- Participants reported high levels of satisfaction with the program and its components, most notably the measures installed through the program, the work provided by a trade ally, and the ease of completing paperwork
- Program awareness was most reported by participants through RMP mailings/bill inserts and word of mouth (25% each)
- Ninety-four percent of participants reported at least one benefit from the project installed, and 76% reported multiple benefits. The most common benefit reported was improved equipment function (53%), while saving money on energy bills was the second most common benefit, reported by 47% of respondents.

Trade Ally Experience

- All 4 trade allies who were interviewed noted positive effects from their participation, and said the programs fit well into their sales model
- Three trade allies suggested improvements to the online experience such as including status updates for application submissions and making the website easier to navigate in order to make the overall process easier for them and their customers

Strategic Energy Management (SEM) Participant Experience

- Both respondents identified cost-savings as their main motivation to participate in the program, but neither participant reported setting quantitative targets for energy reduction (a typical component of SEM, intended to drive long-term savings)

- Despite experiencing some challenges implementing strategic energy management (SEM) at their organizations, both respondents reported that their organizations will continue to utilize the practices and information gained through the program after they are no longer receiving a subsidy
- One respondent reported that participating as part of a cohort was helpful while the other respondent found it less helpful due to differences in organization type between them and the rest of their cohort
- Both respondents expressed satisfaction with their energy management provider and the program overall

Nonparticipants

- 62% of nonparticipants did not know of the program prior to participating in the survey; those who did most often learned of the program through a utility mailing, bill insert, or other print material (56%)
- 72% reported they were unlikely to request an incentive during the next six months
- More than 60% of all surveyed nonparticipants said upgrades were too costly, or they had done all they could without a substantial investment
- 78% of nonparticipants indicated they do have input at their facility about how equipment upgrades are made

Cost-Effectiveness Results

As shown in Table 4 the program proved cost-effective for the 2018 and 2019 evaluation period from the Utility Cost Test (UCT) perspective with a benefit/cost (B/C) ratio of 1.38 and the Participant Cost Test (PCT) perspective with a B/C ratio of 3.01. However, it was not cost-effective according to the PacifiCorp Total Resource Cost (PTRC), Total Resource Cost (TRC), and Ratepayer Impact Measure (RIM) test perspectives.

Table 4. 2018–2019 Evaluated Net Wattsmart Business Program Cost-Effectiveness Summary

Cost-Effectiveness Test	Levelized $/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PacifiCorp Total Resource Cost Test (TRC + 10% Conservation Adder)	$0.0468	$9,785,291	$9,599,545	($185,746)	0.98
Total Resource Cost Test (TRC No Adder)	$0.0468	$9,785,291	$8,726,859	($1,058,432)	0.89
Utility Cost Test (UCT)	$0.0303	$6,336,074	$8,726,859	$2,390,785	1.38
Ratepayer Impact Measure Test (RIM)		$23,663,494	$8,726,859	($14,936,635)	0.37
Participant Cost Test (PCT)		$7,225,906	$21,743,255	$14,517,349	3.01
Life Cycle Revenue Impacts ($/kWh)					$0.000456375
Discounted Participant Payback (years)					2.12

The RIM test measures program impacts on customers' rates. Most energy efficiency programs do not pass the RIM test: although energy efficiency programs reduce energy delivery costs, they also reduce energy sales. As a result, average rates per energy unit may increase. A RIM benefit/cost ratio greater

than 1.0 indicates that rates—as well as costs—will fall due to the program. Typically, this only happens for demand response programs or programs targeting the highest marginal cost hours (when marginal costs are greater than rates).

Recommendations

Based on the impact and process evaluation interviews, surveys, site verifications, and engineering analyses, the Cadmus team drew the following recommendations (this report's *Conclusions and Recommendations* section provides a more complete discussion of the findings):

Savings Considerations

Recommendation: Cadmus recommends RMP include a Waste Heat Factor () in lighting calculation workbooks. We recommend using values derived from the RTF, which are based on building type and weather zone. We also recommend RMP use facility-specific Hours of Use (HOU) from the RTF in place of the RMP internally developed HOU by facility type. The HOU for each facility type in the RTF was based on a weighted average using CBSA building type weighting and the best available lighting HOU study data from the past seven years.

Recommendation: We recommend RMP keep a documented source of the usage data used by the implementer for SEM savings. In addition, we recommend RMP clearly define dates of baseline and claimed savings periods in SEM reports and ensure consistency between the text body and figures.

Recommendation: Based on our findings, we recommend RMP review and update the prescriptive calculation tools for HVAC measures in accordance with IECC 2015 (post-1/1/2016).

Recommendation: Cadmus recommends RMP use the deemed savings categories and values from the RTF Variable Speed Drives measure (currently under review), once it is approved. This measure includes multiple categories for VFDs installed on various equipment types.

Recommendation: We recommend RMP update the deemed savings for ECMs with HVAC applications in the 2010 Idaho Market Characterization Study to match the savings identified in the Idaho Power TRM measure 2.38 Electronically Commutated Motor in HVAC Units for retrofit upgrades from PSC motors to ECM motors (1,354 kWh/hp).

Trade Ally Experience

Recommendation: Attempt to increase trade ally awareness of the quarterly scorecard process so they are able to utilize the feedback that is included in them. Tying the score cards to a personal incentive for the trade ally employees would help get them engaged in the process. For example, offering an annual dinner for all trade allies, and recognizing top performers in front of their peers at the dinner, could offer trade allies a unique opportunity for networking and professional recognition, in addition to focusing their attention on their performance in the program. Also, continue current efforts to improve the online experience for customers and trade allies by adding additional functionality in the application portal.

Strategic Energy Management Program

Recommendation: Where possible, review the SEM program curriculum to place greater emphasis on documentation and reporting of baseline usage and achieved energy savings. In addition, use an energy management assessment tool, such as one available for download from the Northwest Energy Efficiency Alliance website, to help participants set a baseline for their SEM management capabilities, and periodically reassess those capabilities. In addition, participants should be encouraged to distribute documented evidence of progress, especially energy savings, to both senior management and other staff who might find information about SEM progress useful. Tools such as report templates can facilitate the adoption of this practice.

Introduction

Rocky Mountain Power offered several Wattsmart Business technical assistance and incentive options in the 2018-2019 cycle[2]:

- Typical Upgrades incentive
- Custom Analysis incentive
- Small Business Direct Install
- Lighting Instant incentive
- Energy Management

Typical Upgrades incentive. Through this offering, Rocky Mountain Power (RMP) provides prescriptive incentives primarily for small and midsize customers. Large customers may also receive these incentives. These incentives are available to customers who apply directly or work with a Pacific Power trade ally.

Custom Analysis Incentive. For large energy users or customers with projects that require custom analysis, RMP has designed incentives that offer multiple opportunities for energy efficiency upgrades. Midsize and smaller customers may also participate in Custom Analysis incentives. RMP's implementers work with account managers, with trade allies, and directly with interested customers to help identify energy efficiency opportunities and provide analysis and verification of custom savings. The incentive is based on the expected project savings.

Small Business Direct Install (SBDI). SBDI offering provides an energy assessment and instant incentive (as a discount of project cost) for eligible retrofits at geo-targeted small business customers.

Lighting Instant Incentive (Midstream). Through this offering, RMP targets the lighting maintenance market by offering customers instant point-of-purchase incentives on qualified LEDs, occupancy sensors, and retrofit kits purchased through a participating lighting distributor. Customers purchasing through a nonparticipating distributor do not receive an instant discount, but they may apply to Pacific Power for incentives after the purchase.

Energy Management. Through this offering (e.g., recommissioning, industrial recommissioning, persistent commissioning), participating customers may receive expertise and custom incentives for verified savings achieved through improved operations, maintenance, and management practices.[3] Through this offering, RMP also offers strategic energy management, using a cohort model. Participants are recruited to participate in a year of training on strategic energy management concepts, with most sessions delivered to the group as a whole, so that participants can benefit from each others' questions and issues.

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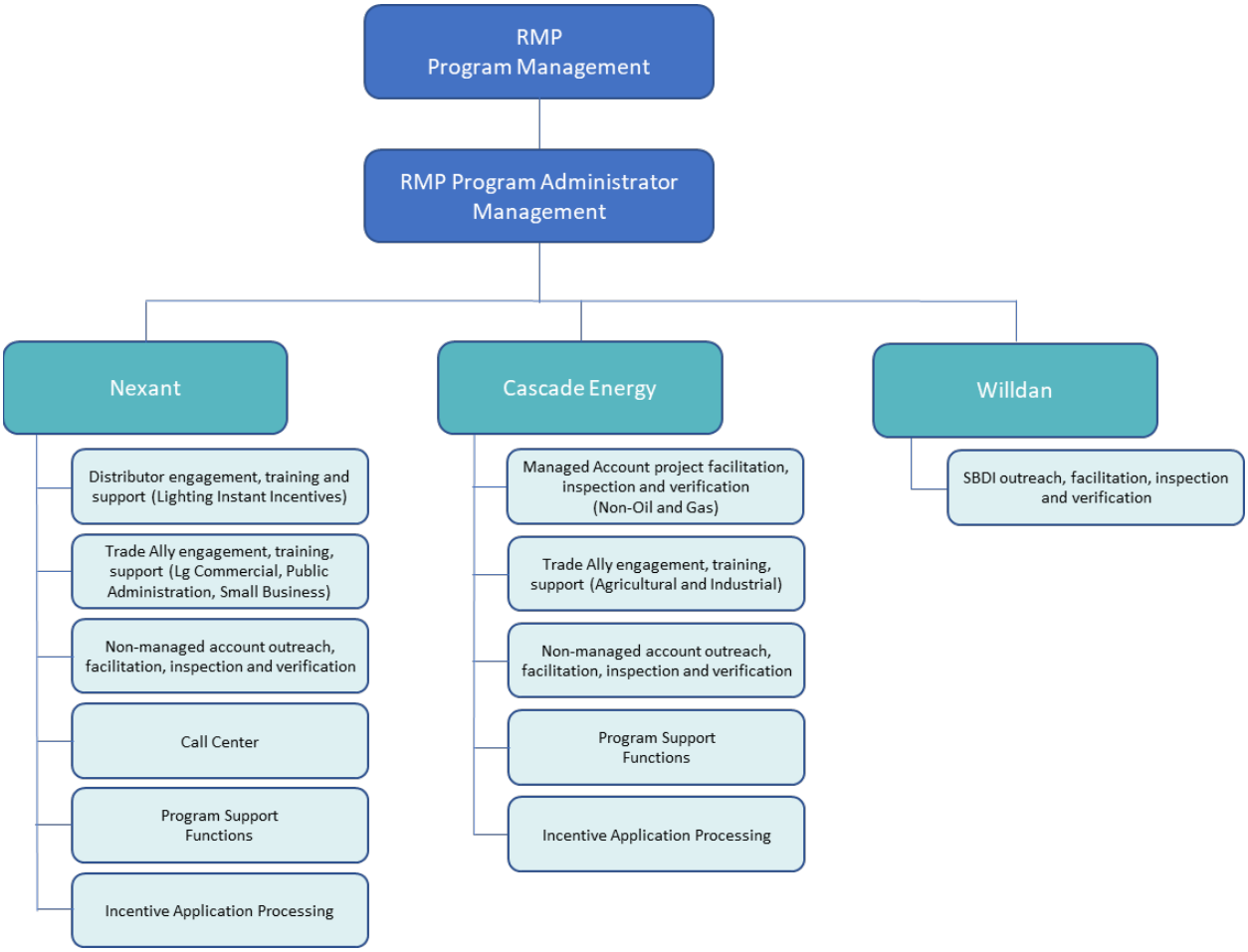
[2] RMP offered the Small Business Enhanced Incentive through May of 2018, when it was suspended and replaced by the Small Business Direct Install (SBDI) offering. Because the Business Enhanced Incentive was available for only a limited time during the cycle, this report does not address it.

[3] Cadmus evaluated four industrial recommissioning projects (typically categorized as Energy Management) under the Wattsmart Business category for the 2016–2017 evaluation period.

Figure 1 provides an overview of the program management responsibilities.

Figure 1. Wattsmart Business Program Delivery Roles



Evaluation Objectives

The Cadmus team assessed the Wattsmart Business program to determine gross and net savings achievements, assess cost-effectiveness, and, where applicable, identify areas that could help improve program delivery as well as customer involvement and satisfaction. Table 5 lists the evaluation's goals, along with corresponding evaluation activities to achieve those objectives.

Table 5. Evaluation Objectives and Activities

Rocky Mountain Power Evaluation Objectives	Management Interviews	Participant Surveys	Partial Participant and Nonparticipant Surveys	Trade Ally Interviews	Virtual Assessment	Engineering Measurement	Site-Level Billing Analysis	Net-to-Gross Analysis	Reporting
Document and measure program effects	✓	✓	✓	✓	✓	✓	✓	✓	✓
Verify installation and savings		✓			✓	✓	✓	✓	
Evaluate the program's process and the effectiveness of delivery and efficiency	✓	✓	✓	✓					
Understand the motivations of participants, nonparticipants, partial participants, and trade allies		✓	✓	✓					
Provide data support for program cost-effectiveness assessments		✓			✓	✓	✓	✓	
Identify areas for potential improvements	✓	✓	✓	✓	✓	✓	✓	✓	
Document compliance with regulatory requirements									✓

Data Collection and Evaluation Activities

The Cadmus team performed virtual assessment (due to COVID-19) and engineering analysis for 75 projects to achieve 90% confidence and ±4.0% precision. The process evaluation focused on assessing changes to program design since 2016-2017 and on monitoring trade ally and participant response to program design and delivery. Primary data collection included interviews with program managers, administrators, trade allies, and strategic energy management (SEM) participants. The team also conducted surveys with participant and nonparticipant customers.[4]

Impact Sampling and Extrapolation Methodology

Through the Idaho Wattsmart Business program, RMP provides incentives for the 16 measure categories shown in Table 6. The Cadmus team stratified these 16 measure categories into eight end-use strata, also shown in the table. The team designed the 2018 and 2019 combined participation sampling plan to achieve approximately ±20% precision at 80% confidence per strata and to exceed ±10% precision at 90% confidence at the nonresidential portfolio level. To account for the wide range of project sizes, the team created a plan that divided each end-use strata into selected groups (i.e., a few very large, hand-selected sites), then randomly sampled the remaining projects.

[4] Participants are customers completing a project through the program during the 2018 and/or 2019 evaluation period. Partial participants are customers initiating a project through the program in 2018 or 2019, but not completing that project. Nonparticipants are customers who have never initiated or completed a project through the program (or at least not in 2018 or 2019).

Table 6 also shows total project counts and energy savings reported in the tracking database, percentage of reported savings by strata, and sampled projects.

Table 6. Idaho 2018–2019 Wattsmart Business Program Impact Sampling

RMP Measure Category	Cadmus Strata	Total Reported Savings (kWh)	Percent of Reported Savings	Number of Unique Projects	Number of Unique Sampled Projects
Lighting	Lighting	9,590,597	37%	298	13
Irrigation	Agricultural	7,055,758	27%	246	19
Direct Install	Direct Install	3,174,793	12%	264	11
Strategic Energy Management	Strategic Energy Management	1,705,175	7%	7	7
Energy Management	Energy Management	1,652,149	6%	10	3
Motors	Motors	1,012,425	4%	15	8
HVAC	HVAC	965,356	4%	31	7
Farm & Dairy	Other	890,768	3%	45	7
Compressed Air	Other				
Refrigeration	Other				
Building Shell	Other				
Additional Measures	Other				
Custom	Other				
Food Service Equipment	Other				
Appliances	Other				
Non-TRL Measures	Other				
Total		**26,047,020**	**100%**	**916**	**75**

The Cadmus team calculated a realization rate for each end-use strata, applied to the remainder of the non-selected population to determine final savings per strata. Although the realization rate for Selected projects are not extrapolated to the associated strata population, they were factored into the overall evaluated savings. Figure 2 shows how the team applied the realization rates for selected and random sites within the agricultural strata to the population.

Figure 2. Agricultural Strata Realization Rate Extrapolation

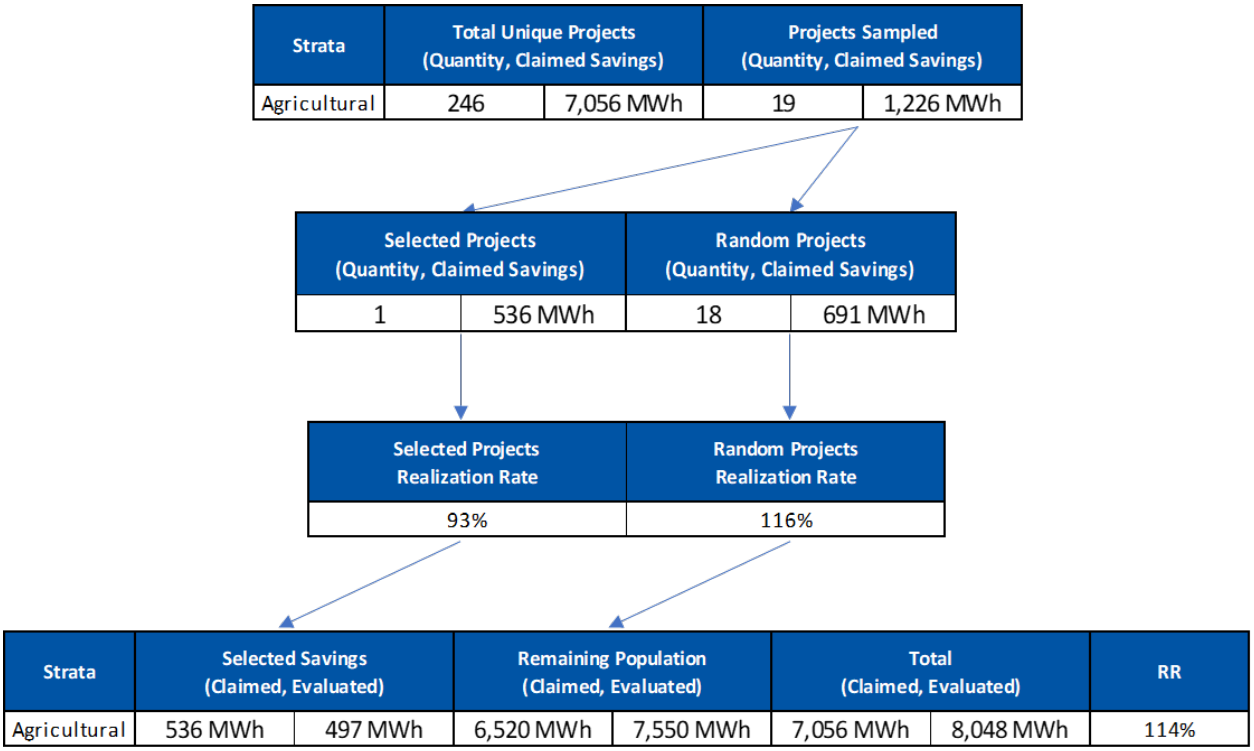


Table 7 shows the total quantity of projects sampled, the sample distribution, the associated energy savings, and the sample's percentage of the population.

Table 7. Idaho 2018-2019 Wattsmart Business Program Impact Sampling Summary

Strata	Number of Unique Total Projects	Total Reported Savings	Number of Unique Sampled Projects		Sample Reported Savings (kWh)	Percent of Reported Savings Sampled
			Random	Selected		
Lighting	298	9,590,597	13	0	703,750	7.3%
Agricultural	246	7,055,758	18	1	1,226,350	17.4%
Direct Install	264	3,174,793	11	0	127,147	4.0%
Strategic Energy Management	7	1,705,175	1	6	1,705,175	100.0%
Energy Management	10	1,652,149	0	3	680,601	41.2%
Motors	15	1,012,425	5	3	976,324	96.4%
HVAC	31	965,356	5	2	565,025	58.5%
Other	45	890,768	4	3	408,752	45.9%
Total	**916**	**26,047,020**	**57**	**18**	**6,393,124**	**24.5%**

Process Sample Design and Data Collection Methods

The team developed survey samples for participants, partial participants, and nonparticipants using simple random sampling. After removing measures with duplicate or missing contact information, the team stratified the participant sample based on the program offering and further stratified the Typical

Upgrades and Custom Analysis participants by the measures they installed. Partial participants and nonparticipants were defined by their actions during the 2018-2019 period, regardless of whether they had completed an incented project before 2018 or in 2020.

Table 8 shows the final sample disposition for survey activities. Participant surveys were delivered online, and the partial and nonparticipant surveys were delivered by phone. The *Surveys* section of the *Process Evaluation* chapter provides a detailed methodology for each surveyed population.

Table 8. Idaho 2018–2019 Wattsmart Business Program Process Survey Sampling

Data Collection Activity	Project Population	Sampling Frame [a]	Target Completes	Achieved Completes
Typical Upgrades and Custom Analysis				
Agricultural	333	104	54	10
Energy Management	9	2		0
HVAC	25	6		1
Lighting (other than Small Business Direct Install or Lighting Instant Incentives)	311	40		7
Motors	18	6		1
Other	23	8		1
Small Business Direct Install	95	38	Census	1
Lighting Instant Incentives	86	26	Census	3
Participant Subtotal	**900**	**230**	**118**	**24**
Partial Participants	**96**	**24**	**Census**	**0**
Nonparticipants	**5,300**	**5,300**	**200**	**200**
Total	**6,302**	**5,554**	**342**	**225**

[a] Sampling frame based on unique customers with contact information after removing duplicates.

Impact Evaluation

This section provides the impact evaluation's findings for the Wattsmart Business program that resulted from the Cadmus team's data analysis. The analysis used the following methods:

- Participant surveys
- Partial participant surveys
- Site-level billing analysis
- Virtual assessments
- Engineering analysis

The team produced two evaluated saving values: gross savings and net savings. Gross savings are verified for installation and engineering calculations based on RMP's reported savings. Reported savings are electricity savings (kWh) that RMP reported in the 2018 and 2019 *Rocky Mountain Power Energy Efficiency and Peak Reduction Annual Reports* (annual reports).[5] Net savings are evaluated program savings, net of what would have occurred in the program's absence and addressing observed impacts attributable to the program.

To determine gross savings, the team applied Step One through Step Four, as shown in Table 9. To determine evaluated net savings, the team applied Step Five. Definitions of the steps follow.

Table 9. Impact Steps to Determine Evaluated Gross and Net Savings

Savings Estimate	Step	Action
Evaluated Gross Savings	1	Tracking Database Review: Validate the accuracy of data in the participant database and verify that savings match annual reports.
	2	Verification: Adjust savings based on actual installation rates.
	3	Unit Energy Savings: Validate saving calculations (i.e., engineering review, analysis, meter data).
	4	Realization Rates: Extrapolate realization rates to the population, if applicable.
Evaluated Net Savings	5	Attribution: Apply NTG adjustments

Step 1: In the first step of verifying the accuracy of data, the Cadmus team reviewed the program tracking database to ensure that participants and reported savings matched annual reports.

Step 2: The team selected a sample of sites drawn from the RMP program database. The team then stratified the distribution of measures among sampled sites, primarily by end-use type: lighting,

[5] Rocky Mountain Power. April 30, 2019. *Idaho Energy Efficiency and Peak Reduction Annual Report: January 1, 2018 – December 31, 2018.* https://www.pacificorp.com/content/dam/pcorp/documents/en/pacificorp/environment/dsm/idaho/2018_ID_DSM_Annual_Report_Appendices.pdf
Rocky Mountain Power. April 20, 2020. *Idaho Energy Efficiency and Peak Reduction Annual Report: January 1, 2019 – December 31, 2019.* https://www.pacificorp.com/content/dam/pcorp/documents/en/pacificorp/environment/dsm/idaho/2019_ID_DSM_Annual_Report_4-20-20.pdf

agricultural, strategic energy management, energy management, motors, HVAC, and other measures. The team evaluated 75 sampled projects as part of the 2018 and 2019 program evaluation.

Step 3: The team reviewed all project documentation; developed an evaluation, measurement, and verification plan; and in a few instances performed virtual site visits to verify the installation, specifications, and operations of incented measures. The team also collected trend data for nine projects to document historical performance.

Step 4: This step involved reviewing measure savings assumptions, equations, and inputs, which included billing analysis for selected measures. For complicated or custom measures, the team conducted an engineering analysis using the appropriate measurement and verification options in the International Performance Measurement and Verification Protocol.[6] The team used interviews and other operational data to determine hours of use or power consumption for metered equipment types. In some instances, customers provided trend data from their building management systems, which the team used to determine equipment load profiles, hours of use, and performance characteristics.

Step 5: The team used participant surveys to calculate freeridership and participant spillover using an industry-standard, self-report methodology. The team also surveyed nonparticipants to determine whether spillover was credited to the program.

Project Review

Cadmus reviewed all project documentation available from Rocky Mountain Power, which included project applications, equipment invoices, pre-installation reports published by energy engineering consultants, and savings calculation spreadsheets.

The team performed the following tasks for each site:

- Verified the installation and operation of equipment receiving incentives, confirmed that installed equipment met program eligibility requirements, and verified that the quantity of installed measures matched program documentation.
- Collected additional data to inform the savings analyses and performed a detailed review of site project files to collect additional data for each site.
- Where applicable, the team interviewed facility personnel, gathering information such as equipment types replaced, and hours of operation.

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[6] Efficiency Valuation Organization. January 2012. *International Performance Measurement and Verification Protocol, Concepts and Options for Determining Energy and Water Savings, Volume 1.* Page 25. (EVO 10000 – 1:2012). http://www.evo-world.org/

Engineering Analysis

In general, Cadmus referenced current measure workbooks and saving estimation methodologies from the Idaho Power Technical Reference Manual (TRM) and the Regional Technical Forum (RTF).[7,8] The Idaho Power TRM was updated in 2018 and relies on sources 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, the Bonneville Power Administration (BPA), third-party consultants, and other regional utilities. The RTF uses a market baseline to calculate evaluated measure-level savings for midstream lighting projects. This market baseline is more efficient than federal or state minimum code requirements by providing a snapshot in time and representing values such as the average efficiency. In many instances, RMP's reported savings were based on as-found conditions.

Cadmus reviewed both the market and as-found baselines—and, if available, the methodology used to derive the baseline—for reasonableness.

Overall Evaluated Gross Savings Results

To calculate gross savings for Wattsmart Business program measures, the Cadmus team reviewed the tracking database, verified measures, and either conducted engineering reviews, site assessments, or billing analyses. Table 10 presents reported and evaluated gross savings for the 2018 and 2019 program years, producing a 104.6% overall realization rate.

Table 10. Reported and Evaluated Gross Savings by Program Year

Program Year	Program Savings (kWh)		Gross Program Realization Rates
	Reported	Evaluated Gross	
2018	11,006,088	11,476,271	104.3%
2019	15,040,933	15,761,099	104.8%
Total	**26,047,020**	**27,237,370**	**104.6%**

Table 11 provides evaluation results for reported and evaluated gross savings, along with realization rates by measure type.

[7] ADM Associates. October 15, 2018. *Technical Reference Manual 2.2.* Prepared for Idaho Power Company. https://docs.idahopower.com/pdfs/EnergyEfficiency/Reports/2018TRM.pdf

[8] Regional Technical Forum. "UES Measures." Accessed January 2021. https://rtf.nwcouncil.org/measures

Table 11. Reported and Evaluated Gross Program Savings by Measure Category (2018–2019)

Strata	Program Savings (kWh)		Realization Rates	Precision [a]
	Reported	Evaluated Gross		
Lighting	9,590,597	9,819,436	102.4%	3%
Agricultural	7,055,758	8,047,684	114.1%	10%
Direct Install	3,174,793	3,312,253	104.3%	3%
Strategic Energy Management	1,705,175	1,904,143	111.7%	0%
Energy Management	1,652,149	1,642,615	99.4%	0%
Motors	1,012,425	851,362	84.1%	2%
HVAC	965,356	780,709	80.9%	6%
Other	890,768	879,168	98.7%	1%
Total	**26,047,020**	**27,237,370**	**104.6%**	**4%**

[a] Stratum confidence is calculated at 80%, and the total program at 90% confidence.

Evaluated Gross Savings Results by Measure Category

Each of the eight measure categories above are discussed in detail below.

Lighting

RMP provided incentives for five types of lighting projects: controls, exterior lighting, general illuminance, lighting, and non-general illuminance. These projects applied to either renovations or new construction and involved high-efficient lighting technologies (e.g., CFLs, LEDs, induction fixtures). For 2018 and 2019, RMP provided incentives for 802 lighting measures in 298 unique projects and reported 9,590,597 kWh in energy savings. These lighting projects accounted for 37% of all reported energy savings in the Idaho Wattsmart Business program.

Methodology

The Cadmus team evaluated 13 lighting projects that accounted for 7% of all reported energy savings in the lighting strata. RMP used the Idaho Wattsmart Business prescriptive lighting calculator to determine incentive amounts for all lighting projects in Idaho. This calculator documents customer information, project locations, light fixture specifications, energy-saving calculations, and financial information. The following critical inputs were used to calculate energy savings:

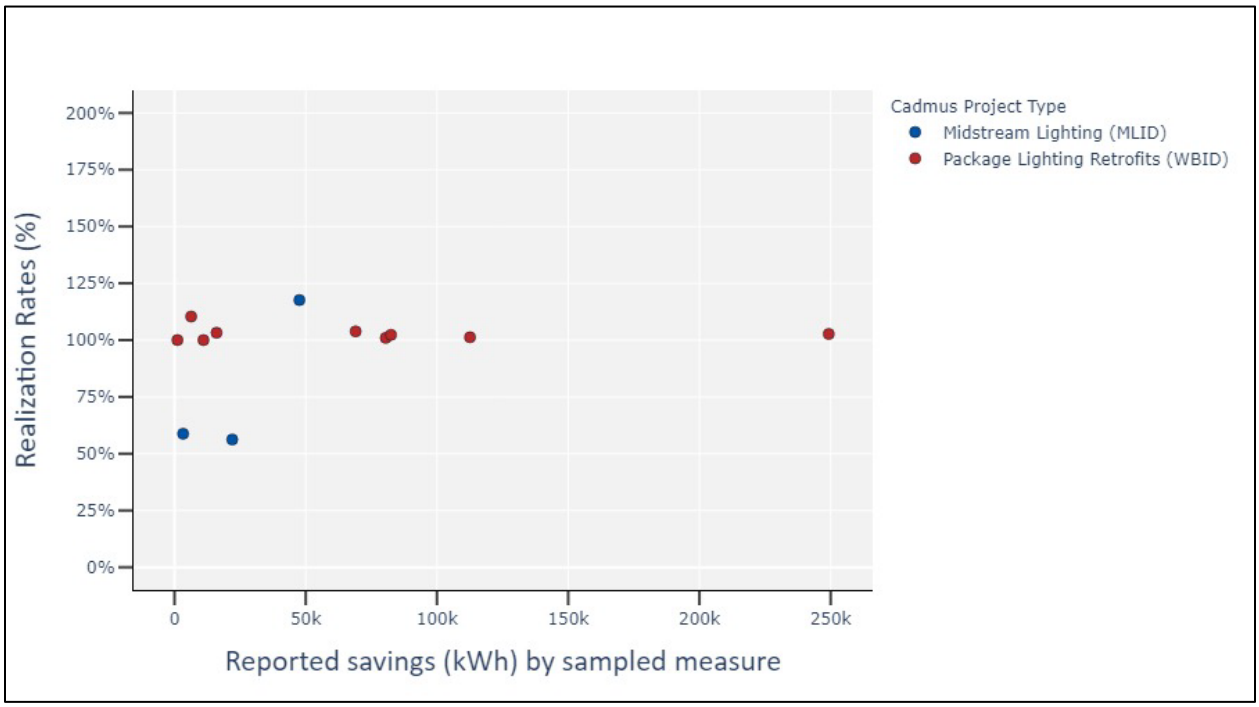
- Lighting operation schedule
- Space name, type, area, and condition
- Baseline lighting fixture location, type, quantity, controls, and wattage
- Proposed lighting fixture location, type, quantity, controls, and wattage

The Cadmus team reviewed the Wattsmart Business lighting calculator's methodology and assumptions to determine its applicability for each lighting project sampled. Historically, hours of use (HOU) were found to be the driving factor for deviations in realized energy savings, but this year, COVID-19 limited our ability to perform HOU metering.

Findings

Figure 3 shows realization rates and associated energy savings for each sampled lighting project.

Figure 3. Lighting Sample Results



Note: One midstream lighting project reporting 2,534 kWh electric energy savings exhibited a 286% realization rate.

All nine Wattsmart Business lighting projects realized energy savings between 100% and 104% of the reported savings. Deviations in realization rates were because evaluated savings applied a waste heat factor, but reported savings did not. Where lighting is installed in interior spaces, the reduction in heating load due to high efficiency lighting results in less cooling load on the HVAC equipment serving the space. The waste heat factor accounts for this reduction in energy use from the HVAC equipment.

The four midstream lighting projects had realization rates between 56% and 286%. Midstream lighting projects use a post-purchase application where the customer indicates the quantity of bulbs purchased from a list of approved bulb types. Energy savings were reported based on average hours of use across the entire midstream program. Evaluated savings used hours of use specific to the facility type, installation rates from the Regional Technical Forum, and a lumen equivalence method to determine the baseline bulb wattage. The differences between reported and evaluated hours of use have the greatest impact on variability in realization rates.

Agricultural

RMP provided incentives for custom, irrigation, and water distribution equipment projects in the agricultural stratum. RMP provided incentives for 595 measures for 246 projects and reported 7,055,758 kWh in energy savings for the 2018 and 2019 program years. These agricultural projects accounted for 27% of all reported energy savings in Idaho.

Methodology

To determine savings for the agricultural projects in Idaho, RMP used custom calculations or deemed savings. The Cadmus team evaluated 19 agricultural projects that accounted for 17% of reported energy savings in the agricultural strata. Evaluated projects included irrigation hardware upgrades, variable frequency drives (VFDs) serving irrigation pumps, and high efficiency irrigation pumps. When third-party engineering firms performed custom calculations, the team reviewed the inputs, assumptions, performance expectations, and utility consumption data. For irrigation system projects, the team used the following critical inputs to calculate energy savings:

- Pump motor horsepower and efficiency
- System flow rates, pressure setpoint, and schedule
- System pressure

Findings

Figure 4 shows realization rates and associated energy savings for each sampled project.

Figure 4. Agricultural Sample Results

Cadmus found three sites with realization rates greater than 120% or lower than 80%. Details for these projects are described in Table 12.

Table 12. Wattmart Business Program NTG Results for 2018–2019

Project ID	Project Type	Reported Savings (kWh)	Evaluated Savings (kWh)	Realization Rate	Project Notes
WBID_262409	Irrigation Hardware	47,223	89,785	190%	Customer reported system lift is 300% higher than value used in RTF and resulted in greater energy savings.
WBID_234400	Irrigation Pump VFD	52,252	75,360	144%	Evaluated savings based on manufacturer pump curve and VFD coefficients from DOE-2. Reported savings calculations were unavailable for review.
WBID_236244	Irrigation Hardware	48,296	27,112	56%	Evaluated savings based on RTF calculator for low-pressure sprinkler packages specific to the project location.

Cadmus team evaluated 15 projects involving high-efficiency irrigation hardware using the energy savings calculation methodology described in the irrigation hardware measure from the RTF. The RTF specifies energy savings per hardware type based on region-specific studies of pump irrigation lift, flow rates, water loss, and other factors. The team calculated evaluated savings based on site-specific inputs. For most projects, the sample exhibited minimal differences between reported and evaluated savings, as the inputs and calculations were reasonable.

Four customers reported pump irrigation lift that was either higher or lower than the value used in the RTF, resulting in evaluated savings that were higher or lower than reported. Nevertheless, for all irrigation hardware measures, the average realization weight was 98%, indicating appropriate use of the RTF deemed savings.

The Cadmus team evaluated four projects involving high-efficiency pumps with VFDs. The team calculated savings based on reported pump specifications, load profiles, and customer reported inputs such as pressure setpoints and control methodology. Evaluated savings deviated from reported savings in all projects, and the team found no systematic differences. The reported savings methodology utilized by RMP are deemed appropriate and documented with sufficient rigor.

Direct Install

RMP provided incentives to small business customers for 264 unique projects in 2018 and 2019 and reported 3,174,793 kWh in energy savings. Direct install projects accounted for 12% of all reported energy savings in the Idaho Wattsmart Business program.

Methodology

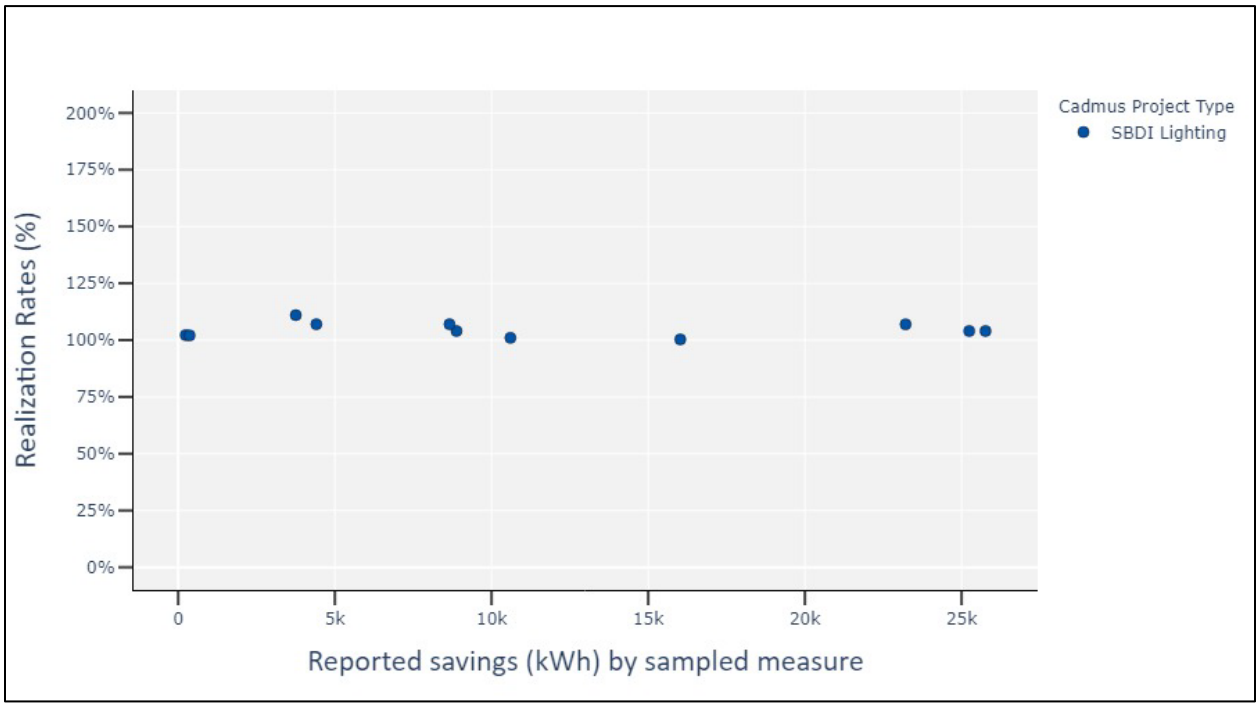
The Cadmus team evaluated 11 lighting projects that accounted for 4% of all reported energy savings in the direct install strata. RMP used the Idaho Wattsmart Small Business Direct Install (SBDI) prescriptive lighting calculator to determine incentive amounts for all small business direct install lighting projects in

Idaho. This calculator documents customer information, project locations, light fixture specifications, energy-saving calculations, and financial information. The biggest difference between the prescriptive lighting calculator (see the *Lighting* section above) and the SBDI prescriptive lighting calculator is that the latter uses hours of use based on facility type instead of hours of use reported by the customer.

Findings

Figure 5 shows realization rates and associated energy savings for sampled direct install lighting projects.

Figure 5. Direct Install Sample Results



All 11 evaluated projects were evaluated to achieve energy savings between 100% and 110%, or an average of 104%, of the reported savings. Hours of use was the greatest contributing factor to variances in realization rates. To calculate savings for sampled projects, the Cadmus team used the Table 2-8 Stipulated Lighting Hours of Use (HOU) by Building Type and the Standard Protocol Calculator for Non-Residential Lighting Improvements from the Regional Technical Forum. RMP used hours of use from an internally developed table. The Cadmus team also applied a waste heat factor to the evaluated savings but reported savings did not.

Strategic Energy Management

RMP provided incentives for seven energy management projects in 2018 and 2019 and reported 1,705,758 kWh in energy savings. These projects accounted for 7% of all reported energy savings in the Idaho Wattsmart Business program.

Methodology

RMP's SEM implementer developed predictive models using energy usage and production data from each facility's baseline period. These models forecast consumption in the reporting period to predict what consumption would have been if SEM were not implemented at each facility. The implementer compared predicted performance period usage to modeled energy usage to determine savings for each SEM project in Idaho. RMP administrators provided reports detailing the data and model specifications used to develop savings estimates.

The Cadmus team developed regression models using data from the baseline period. Cadmus developed its own models independently of RMP's models, though the Cadmus team also verified the validity of the SEM implementor's models. The program implementer chose the date boundaries of each facility's baseline period, which is meant to capture "business-as-usual" energy consumption. The Cadmus team built each baseline model by selecting the combination of heating degree days, cooling degree days, and production variables that optimized the model's statistical performance.

To estimate a facility's savings during the reporting period, the team used its baseline models to forecast baseline consumption patterns into the reporting period to predict what consumption would have been if the program had not been implemented. The team calculated SEM savings as the difference between model-predicted and measured (actual) energy consumption during the reporting period. To avoid double-counting savings, Cadmus then deducted prorated savings resulting from any capital projects (unassociated with SEM) that received incentives through the Wattsmart Business program. The team prorated savings from these capital projects to account for the amount of time the capital projects were installed during the reporting period.

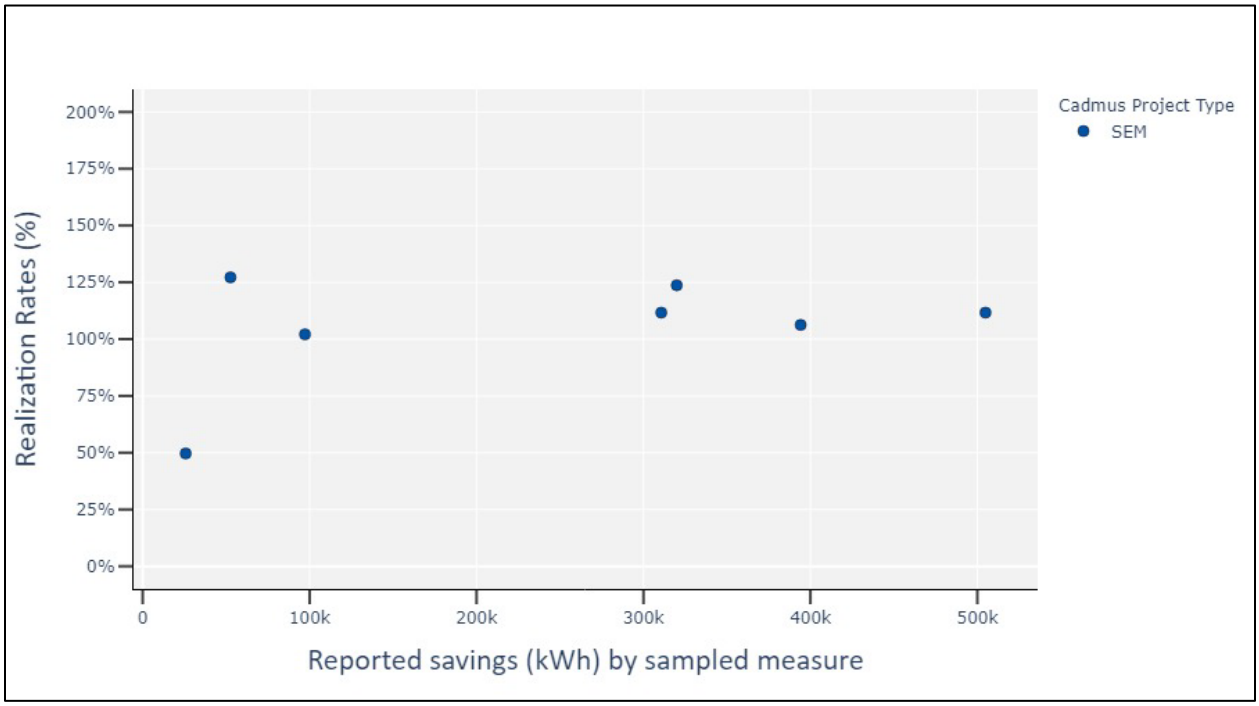
Obtaining facility billing data identical to the billing data used by the implementer proved challenging due to changes in RMP's meter and agreement numbers[9] for some sites between when the implementer and Cadmus evaluated the projects. As a result, usage data provided to Cadmus differed from the usage data used by Cascade—likewise, the models and model coefficients Cadmus used differed from those the implementer reported. Nevertheless, because the billing data differed by no more than 1% in most cases, Cadmus proceeded with the data provided by RMP.

Findings

Figure 6 shows realization rates and associated energy savings for each sampled SEM project.

[9] Agreement numbers are one of the identifiers RMP uses for billing and customer tracking.

Figure 6. Strategic Energy Management Sample Results



The Strategic Energy Management program achieved a 112% realization rate in total. Differences between evaluated and reported savings at specific facilities result from numerous factors. At one facility which had two SEM projects (Phase 1 and Phase 2), differences in billing data between what the implementer reported and what Cadmus received were too egregious[10], preventing a meaningful evaluation of the site. Instead, Cadmus applied the total realization rate from the other SEM projects in Idaho to estimate savings at this site. At another site with one project, Cadmus found that the implementer incorrectly prorated a capital project, subtracting fewer savings from the modeled savings than necessary to estimate SEM savings; this resulted in the site receiving a 50% realization rate.

Two projects received realization rates greater than 120%. WBID_211909 received a 124% realization rate as a result of slight differences in the billing data from the implementer. Cadmus selected the same model specification as the implementer, but with small differences in the billing data during the baseline period, evaluated savings can also shift. Realization rates for smaller projects are especially sensitive to these shifts. WBID_212040 received a 127% realization rate, likely due to differences between the billing data sources, though diagnostics are difficult to run for this site due to errors in the billing data reported by the implementer in the cohort's baseline model report.

[10] For a majority of projects, the billing data reported by the implementer differed from the billing data provided by RMP by 0-2%. For the site which did not receive an evaluation, the billing data received from RMP differed from what the implementer provided by 12%.

Obtaining facility billing data identical to the billing data used by the implementer proved challenging due to changes in RMP's meter and agreement numbers for some sites between when the implementer and Cadmus evaluated the projects. As a result, usage data provided to Cadmus differed from the usage data used by Cascade—likewise, the models and model coefficients Cadmus used differed from those the implementer reported. Nevertheless, because the billing data differed by no more than 1% in most cases, Cadmus proceeded with the data provided by RMP.

Energy Management

RMP provided incentives for recommissioning and industrial recommissioning projects in the energy management stratum. RMP provided incentives for 10 projects and reported 1,652,149 kWh in energy savings for the 2018 and 2019 program years, accounting for 6% of all reported energy savings in Idaho.

Methodology

RMP used custom spreadsheet calculation workbooks to determine energy savings for the energy management projects. These workbooks simulate equipment performance based on control strategies and setpoints observed during site visits and analyzed through trend data. Initial energy savings are predicted based on updated control strategies, setpoints, and proposed performance modifications. Savings were verified based on trend data collected after the energy efficiency measures were implemented.

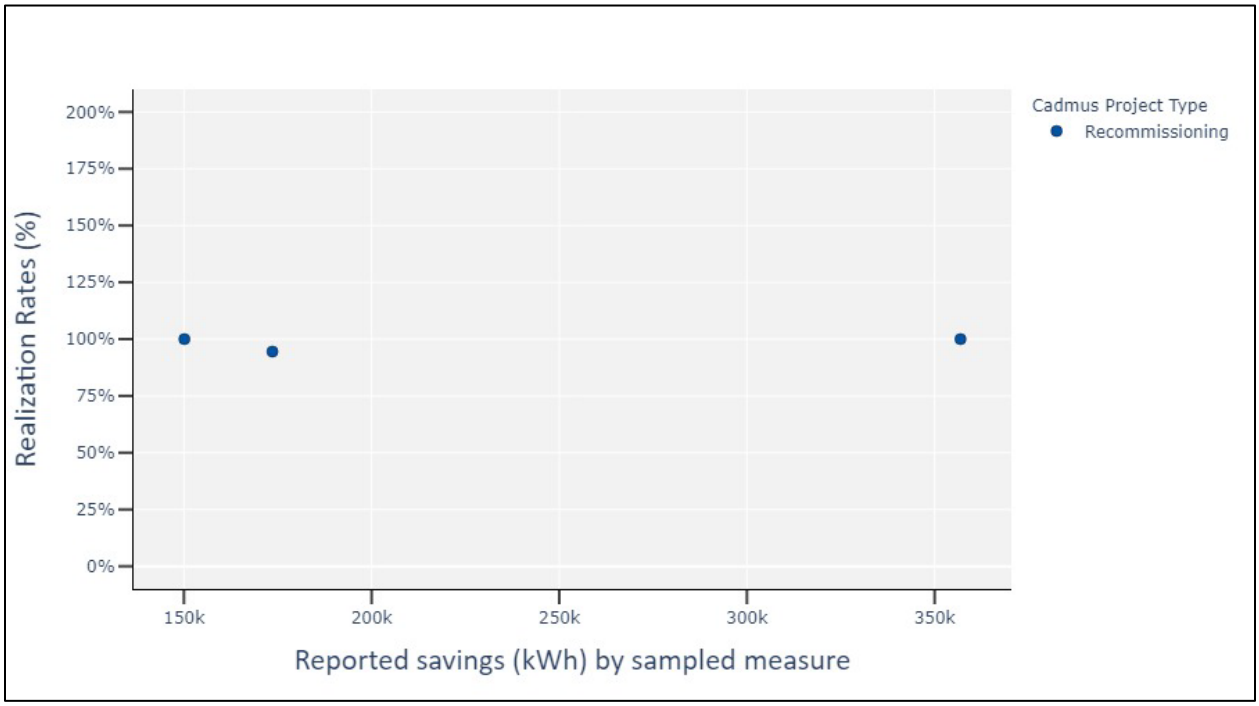
The Cadmus team evaluated energy management measures by reviewing the energy analysis and savings verification reports and identifying equipment quantity, capacity, efficiency, performance characteristics, control strategies, and proposed changes for each measure. Where possible, the team contacted the customers and collected supplemental post-implementation data, including screen captures from the customer's building management system to verify control setpoints, control strategies, or trend data to verify implementation success.

Findings

Cadmus evaluated three energy management recommissioning projects from the 2018 and 2019 program years. Figure 7 shows realization rates and associated energy savings for each sampled energy management project.

The three evaluated projects exhibited realization rates between 95% and 100%. One customer, a hospital, was unreachable. Two customers provided data for verifying implementation success. For one of these customers, the team reduced equipment operating hours for evaluated savings to account for compressor shutdown periods, as explained by the customer (and not related to COVID-19). Otherwise, savings calculations for all three projects were well documented and followed best practices. None of the projects reported savings exceeding 10% of the facility energy use, and therefore did not meet the IPMVP threshold for utility bill analysis.

Figure 7. Energy Management Sample Results



Motors

RMP provided incentives for three types of motor systems projects—green motor rewinds, electrically commutated motors (ECMs), and custom projects. RMP provided incentives for 28 measures in 15 projects and reported 1,012,425 kWh in energy savings for the 2018 and 2019 program years. The motor system projects accounted for 4% of all reported energy savings in the Idaho Wattsmart Business program.

Methodology

The Cadmus team evaluated eight motors projects, accounting for 96% of all reported energy savings in the motors stratum. The sample consisted of ECMs and custom projects. All reported savings based on unit energy savings per motor horsepower or based on custom calculations. Cadmus used savings calculation methodologies from ECM measures in the RTF, VFD measures from the Idaho Power TRM, or custom calculations. For all motor measures, these were the critical inputs used to calculate energy savings:

- Manufacturer make/model
- Motor horsepower
- Motor efficiency
- Load factor
- Operation schedule (daily run hours, VFD speed)

Findings

Figure 8 shows realization rates and associated energy savings for each sampled project.

Figure 8. Motors Sample Results

The Cadmus team found no to nominal differences in reported savings for five sites, but three had low realization rates for the following reasons:

- Two projects involved installation of ECMs on HVAC fans. RMP reported energy savings for ECMs as 2,895 kWh per hp for HVAC end-use applications based on a 2010 market characterization study. Cadmus used the savings calculations from the measure "Electronically Commutated Motor in HVAC Units" in the Idaho Power TRM. These evaluated savings were lower than reported savings due to the difference in assumed baseline motor efficiency between the 2010 market characterization study and the 2018 Idaho Power TRM.
- One project involved the installation of a specialized aeration system in place of baseline aeration pumps serving a wastewater plant. This project used custom calculations based on a spot measurement of baseline pump energy use. The Cadmus team found that the baseline energy use reported greater energy use than could reasonably be expected and insufficient documentation was provided to justify the increased energy use. Cadmus evaluated this project with lower savings due to the difference in baseline energy use assessment.

HVAC

RMP provided incentives for four types of HVAC projects: cooling, custom, heat pump, and motors. RMP provided incentives for 53 HVAC measures in 31 unique projects and reported energy savings of 965,356 kWh, which accounted for 4% of all reported energy savings for the 2018 and 2019 program years.

Methodology

The Cadmus team evaluated seven unique HVAC projects, which accounted for 59% of all reported energy savings in the HVAC strata. Three sampled projects involved the installation of unitary air conditioning units or chillers. RMP reported savings for these projects based on a prescriptive calculator. The team reviewed the calculator to ensure its methodology matched industry best practices, the baseline energy efficiencies referenced the appropriate energy codes, and the installed efficiencies matched the manufacturers specifications.

Two sampled projects involved the installation of VFDs on HVAC fans and pumps. For projects with VFDs applied to HVAC fans, RMP used deemed savings of 1,082 kWh/hp. Cadmus evaluated these projects by referencing the 2014 Variable Speed Drive Loadshape study and applying deemed savings specific to HVAC supply fans, return fans, and exhaust fans.[11] Cadmus evaluated projects with VFDs applied to pumps by referencing the deemed savings from the Idaho Power TRM measure VFDs for pump.[12] For the remaining sampled projects, Cadmus used custom calculations for reported savings. For projects for which custom calculations were used to determine claimed energy savings, the team reviewed the energy analysis reports and verification reports for energy-savings methodology, inputs, assumptions, and accuracy. If site findings deviated from claimed equipment quantities, performance specifications, or hours of use, the team recreated the custom calculations with the updated information.

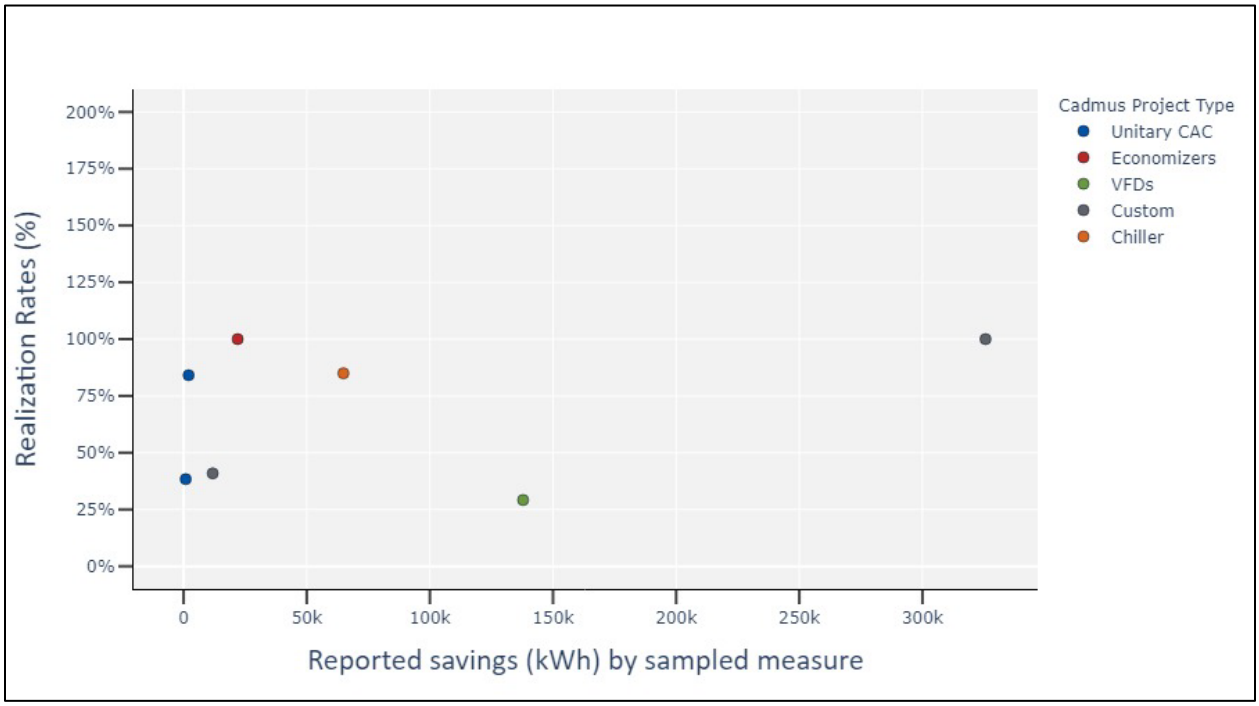
Findings

Figure 9 shows realization rates and associated energy savings for each sampled project.

[11] Northeast Energy Efficiency Partnership. 2014. *Variable Speed Drive Loadshape.* NEEP VSD Loadshape Project_FINAL.pdf

[12] ADM Associates. October 15, 2018. *Technical Reference Manual 2.2.* Prepared for Idaho Power Company. https://docs.idahopower.com/pdfs/EnergyEfficiency/Reports/2018TRM.pdf

Figure 9. HVAC Sample Results



Cadmus found minimal differences in reported savings for four sites, but three had low realization rates for the following reasons:

- One project involved the installation of a VFD serving a chilled water pump. RMP utilizes a single deemed savings value for VFDs serving pumps. Cadmus evaluated this project based on the deemed savings specified in the Idaho Power TRM measure VFDs[13] for chilled water pumps. Savings for VFDs installed on chilled water pumps are lower than the average savings found from VFDs installed on all pumps. Because the end-use load profiles directly impact the savings achieved by VFDs, the evaluated savings specific to chilled water pumps are lower than reported savings.
- One project involved the installation of a high-efficiency packaged air conditioning unit. This project reported energy savings based on a baseline energy use efficiency from the IECC 2012. Idaho adopted the IECC 2015 energy code prior to the application date of the sampled project. Because of this, the evaluated savings used a higher efficiency baseline, which resulted in lower realized energy savings.
- One project involved the installation of sensors on refrigerated display cases and an alarm to notify facility staff if doors were ajar for an extended period. The savings associated with this behavior-change measure were reported based on the expected time doors were left open,

[13] ADM Associates. October 15, 2018. *Technical Reference Manual 2.2.* Prepared for Idaho Power Company. https://docs.idahopower.com/pdfs/EnergyEfficiency/Reports/2018TRM.pdf

assumed refrigeration efficiency, assumed alarm notification settings, and expected response rate by facility staff. Cadmus evaluated this project based on engineering experience and performance of similar behavior-change measures and found lower energy savings were realized.

Other

RMP provided incentives for nine types of projects in the Other category: additional measures, appliances, building shell, compressed air, custom, farm & dairy, food service equipment, and refrigeration measures. RMP provided incentives for 55 measures related to 45 projects, reporting 890,768 kWh in energy savings for the 2018 and 2019 program years. Projects for this category accounted for 3% of all reported energy savings in Idaho.

Methodology

The Other strata serves as a catch-all for a variety of projects not previously identified in the lighting, agricultural, direct install, strategic energy management, energy management, motors, or HVAC strata. RMP used prescriptive calculators, deemed savings, and custom calculations to report energy savings. The Cadmus team evaluated seven projects, which accounted for 46% of the reported energy savings in the Other strata.

Findings

Figure 10 shows realization rates and associated energy savings for each sampled project.

Figure 10. Other Sample Results

Six projects had realization rates between 97% and 100%. For the one project with the low realization rate, RMP used deemed savings of 1.22 kWh saved for every square foot of window film installed. Cadmus used the deemed savings of window film from the California Municipal Utilities Association Savings Estimation Technical Reference Manual.[14] This manual provides a savings estimation specific to the climate in Idaho where the window film is installed and more accurately reflects the project-specific energy savings.

Evaluated Net Savings

The Cadmus team evaluated net savings by conducting a freeridership and spillover analysis using responses from surveys. *Appendix A. Self-Reported Net-to-Gross Methodology* provides detailed information about the net savings methodology. This net savings approach aligns with industry best practices, as summarized in the Uniform Methods Project (UMP).[15]

Freeridership refers to the energy savings projects that would have occurred outside of program participation. Spillover savings are generated by customers who, motivated by the program's reputation and marketing, conducted energy efficiency installations without receiving incentives. To estimate nonparticipant spillover (NPSO), Cadmus included a series of questions in the 2018–2019 general population survey of Idaho RMP customers. Cadmus estimated NPSO as 3% of the 2018-2019 Wattsmart Business program gross savings and applied this percentage equally across the program measure strata.

Appendix B Nonparticipant Spillover provides a detailed explanation of the estimated NPSO.

Table 13 provides the net savings evaluation results, shown as evaluated gross savings and NTG by program measure strata. Freeridership estimates were weighted by their evaluated program energy savings, and spillover values added to arrive at the overall 89% NTG estimate for the program.

[14] California Municipal Utilities Association Savings Estimation Technical Reference Manual.

[15] The Uniform Methods Project chapter covering estimation of net savings: http://www.nrel.gov/docs/fy14osti/62678.pdf

Table 13.Wattsmart Business Program NTG Results for 2018–2019

Measure Strata	Measure Responses (n)	Evaluated Gross Program Population Savings (kWh)	NTG	Evaluated Net Program Savings (kWh)
Lighting	9	9,819,436	103%	10,114,019
Agricultural	8	8,047,684	64%	5,150,518
Direct Install	1	3,312,253	103%	3,411,620
Strategic Energy Management	2	1,904,143	103%	1,961,267
Energy Management	0	1,642,615	89% [a]	1,461,927
Motors	0	851,362	89% [a]	757,712
HVAC	0	780,709	89% [a]	694,831
Other	0	879,168	89% [a]	782,459
Overall	**20**	**27,237,370**	**89% [b]**	**24,334,354**

[a] Applied overall savings weighted NTG of measures with survey respondents due to a single respondent or no survey respondents to inform a specific measure strata estimate. Overall NTG estimate is the savings weighted average of measure strata with survey respondents.

[b] Weighted by evaluated gross program population savings.

The following sections describe the NTG methodology the Cadmus team used and the results for the 2018–2019 Wattsmart Business program.

Methodology

This section contains a brief overview of the NTG methodology (a more detailed explanation is provided in Appendix A. Self-Reported Net-to-Gross Methodology). To determine net savings, the Cadmus team used a self-report approach and analyzed collected data to estimate freeridership and spillover. Typically, the self-report approach is the most cost-effective, transparent, and flexible method for estimating NTG and, consequently, is the NTG methodology most frequently employed in the industry. The Cadmus team used the following formula to determine the final NTG ratio for all 2018 and 2019 participants:

Net-to-gross ratio = 100% – Freeridership Percentage + Participant Spillover Percentage + Nonparticipant Spillover Percentage

Freeridership Estimation

The Cadmus team determined freeridership based on an approach previously developed for RMP, which used responses from a series of survey questions asking whether participants would have installed the same equipment in the program's absence at the same time and in the same amount and efficiency.

As the first step in scoring freeridership, the team reviewed participant survey responses to determine whether the exact same project (in terms of scope and efficiency level) would have occurred at the same time in the program's absence. If so, the team scored the respondent as a complete freerider. If not, the team reviewed the responses to determine whether the project would have occurred at all within the same 12-month period. Those not fitting either of these criteria were scored as non-freeriders. If the project would have occurred within the same 12-month period, but at differing sizes or efficiency levels, the score the respondent as a partial freerider.

The team then weighted program-measure, strata-specific freeridership estimates by evaluated energy savings achieved by respondents in the sample to calculate the weighted freeridership estimate for each measure strata.

Spillover Estimation

The Cadmus team also estimated the program activities' indirect influence on the broader market. This estimate of program spillover represented energy savings attributable to the program's intervention and influence but that were not currently reported in program tracking data. Spillover savings can derive from participants and nonparticipants. Participant spillover occurs when a program influences its participants to install additional energy-efficient equipment other that what is incentivized by a program. Nonparticipant spillover savings occur when market allies influenced by the program install or influence nonparticipants to install energy-efficient equipment.

The team determined participant spillover by estimating the savings derived from the additional measures installed and by determining whether respondents' credited RMP with influencing their decisions to install these additional measures. The team included measures eligible for program incentives, provided the respondent did not request or receive the incentive.

Freeridership Findings

After reviewing the survey responses from 20 participants, the Cadmus team converted responses to the freeridership question into a freeridership estimate for each participant, using the approach described in *Appendix A. Self-Reported Net-to-Gross Methodology.*

To determine the extent to which the program affected the decision to install, the team asked respondents what would have differed about their installations had the program not been an option. Table 14 summarizes participant measure responses, along with an initial freeridership estimate, calculated for each respondent.

Table 14. Measure Installations in Absence of Wattsmart Business Program (n=20)

Respondent Category	n	Percentage of Total Respondents	Initial Freeridership Estimate
Would have been installed at the same efficiency and scope within the same year	4	20%	100%
Would not have been installed at all	8	40%	0%
Would have been installed more than 12 months later	7	35%	0%
Would have installed 100% of equipment within the same year but they didn't know the efficiency they would install	1	5%	50%

Note: Total may not sum to 100% due to rounding.

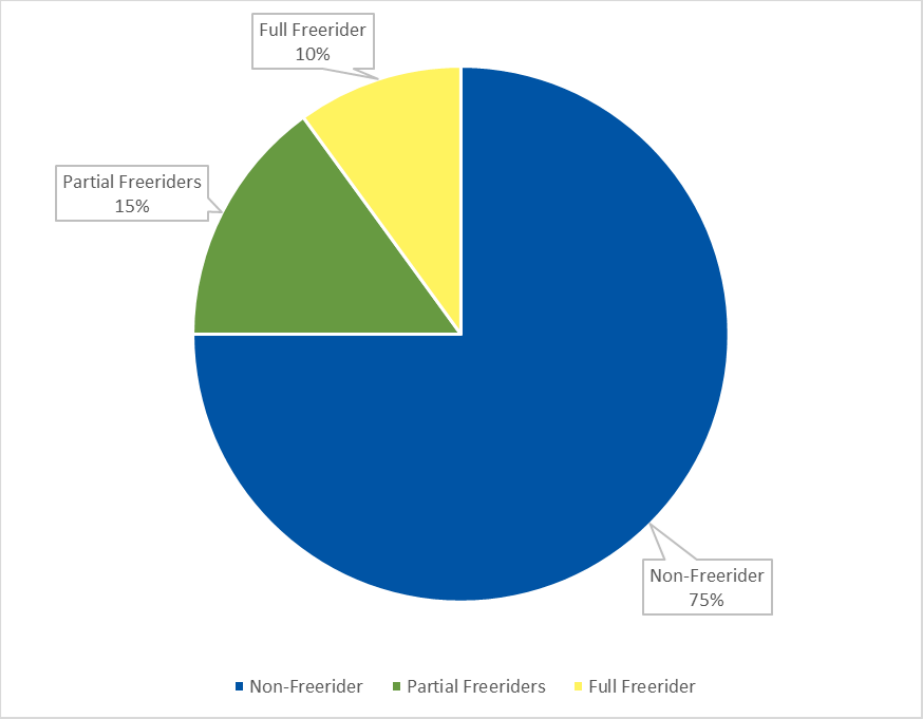
Due to the delivery design of the program portfolio, the Cadmus team credited the influence from past participation. The team reduced freeridership if respondents said past program participation played an important role in their decisions. RMP makes an effort to cross-promote its entire portfolio of energy efficiency programs, so a respondent's prior participation in a RMP program could have influenced their decision to participate in the current program.

To calculate this credit, the Cadmus team reviewed respondents' ratings of prior program influence on a scale of 1 to 5, where 1 indicated *not important at all* and 5 indicated *extremely important*. For those who rated their previous participation as a 4 or 5, the team reduced their freeridership score by 50% or 75%, respectively. This affected two projects that initially received an estimate of 100% freeridership, reducing one freeridership score by 75% and another by 50%.

The team also compared participants' statements about what they would have done in the program's absence to statements they made about factors influencing their projects. Two participants' measure-specific responses indicated they thought the program incentive or program assistance was important in their decisions, but they also said they would have installed a similar project at the same time. The team considered these responses inconsistent and asked participants to explain the program's influence on their projects in their own words. Neither respondent provided a description that warranted freeridership adjustments.

Based on participants' responses and after adjusting for inconsistencies and prior program experience, the team determined freeridership by respondent, as shown in Figure 11. Overall, the team identified 10% of participants as full freeriders, 75% as non-freeriders, and 15% as partial freeriders.

Figure 11. Freeridership by Respondent



Participant Spillover Findings

After participating in the Wattsmart Business program, some participants installed additional, energy-efficient measures. The Cadmus team attributed program spillover only to additional purchases

significantly influenced by participation in the Wattsmart Business program but not reported through the program.

Respondents rated influence on a 1- to 5-point scale, where 1 indicated *not important at all* and 5 indicated *extremely important* in response to this request: "Please rate how important your experience with the RMP program was in your decision to install this energy efficient product." If a respondent rated a measure as a 5, the team considered the spillover measure attributable to the RMP program. None of the respondents who rated a measure as a 5 provided enough information to reliably estimate energy savings for the measure and a 0% participant spillover percentage was applied to measure strata.

Nonparticipant Spillover

The Cadmus team used a series of questions in the nonparticipant survey to estimate nonparticipant spillover. Nonparticipant spillover refers to savings generated by customers who were motivated by RMP's program's reputation, past RMP program participation, and/or RMP's program marketing to conduct energy efficiency installations for which they did not receive an incentive. The team estimated nonparticipant spillover as 3% of total 2018-2019 Wattsmart Business Program savings and applied this 3% estimate to each measure strata's NTG. This is in line with the 2016-2017 evaluation result of 2%. *Appendix B. Nonparticipant Spillover* provides detailed nonparticipant spillover analysis methods and results.

NTG Findings

As shown in Table 15, the Cadmus team calculated a program-weighted NTG of 89% by weighting each measure strata freeridership percentage by the evaluated gross population's energy savings for each measure strata then adding participant spillover and nonparticipant spillover.

Table 15. Wattsmart Business Program NTG Results for 2018–2019

Measure Strata	Measure Responses (n)	Freeridership Percentage	Spillover Percentage [a]	NPSO	NTG	Evaluated Net Program Savings (kWh)
Lighting	9	0% [a]	0%	3%	103%	10,114,019
Agricultural	8	39% [a]	0%	3%	64%	5,150,518
Direct Install	1	0% [a]	0%	3%	103%	3,411,620
Strategic Energy Management	2	0% [a]	0%	3%	103%	1,961,267
Energy Management	0	N/A	N/A	N/A	89% [c]	1,461,927
Motors	0	N/A	N/A	N/A	89% [c]	757,712
HVAC	0	N/A	N/A	N/A	89% [c]	694,831
Other	0	N/A	N/A	N/A	89% [c]	782,459
Overall	**20**	**14%** [b]	**0%** [b]	**3%**	**89%**	**24,334,354**

[a] Weighted by evaluated gross program savings.

[b] Weighted by evaluated gross program population savings.

[c] Applied the overall savings' weighted NTG for measures with survey respondents due to survey respondents not informing a specific measure-strata estimate. The overall NTG estimate was the savings-weighted average of measure strata with survey respondents.

Benchmarking NTG

The Cadmus team benchmarked RMP's programs against similar nonresidential programs. Table 16 shows freeridership, spillover, and NTG estimates for nonresidential programs reported for prior RMP program years and for other utilities offering similar programs and measures.

Table 16. NTG Comparisons

Utility/Region	Reported Year	Responses (n)	Freeridership %	Spillover %	NPSO	NTG
Rocky Mountain Power Idaho 2018–2019 Wattsmart Business Evaluation	**2021**	**20**	**14%**	**0%**	**3%**	**89%**
Rocky Mountain Power Idaho 2016–2017 Wattsmart Business Evaluation	2018	82	18%	0%	2%	84%
Rocky Mountain Power Idaho 2014–2015 Wattsmart Business Evaluation	2016	80	18%	0%	N/A	82%
Rocky Mountain Power Idaho 2012–2013 Energy FinAnswer Evaluation	2015	61	21%	0%	N/A	79%
Rocky Mountain Power Idaho 2012–2013 FinAnswer Express Evaluation	2015	84	22%	0%	N/A	78%
Northeast Utility — Non-Residential	2019	89	26%	0%	N/A	74%
CY2018 Focus on Energy Non-Residential Evaluation Report—Wisconsin Statewide	2019	80	30%	1%	N/A	71%
2014-2015 Massachusetts C&I Natural Gas Freeridership and Spillover Study— Statewide	2015	901	18%	4%	N/A	86%

Note: NTG values derive from self-response surveys, though differences in analysis and scoring methodologies may vary across evaluations.

The 2018–2019 Wattsmart Business program's (14%) freeridership estimate was lower than the 2016-2017 Wattsmart Business program's and 2014-2015 Wattsmart Business program's freeridership estimates (18%). The 2012-2013 Energy FinAnswer Evaluation and the 2012–2013 FinAnswer Express Evaluation produced freeridership values of 21% and 22%, respectively.[16] These RMP program evaluations were completed using the same NTG methodology used in this evaluation. The methodology used for the Northeast Utility C&I Prescriptive and CY2019 Wisconsin Focus on Energy Nonresidential evaluations was comparable to that used for the 2018-2019 Wattsmart Business program, though the designs differed.

[16] Between 2013 and 2015, RMP combined a number of programs under the Wattsmart Business program umbrella, rolling the Energy FinAnswer program into the Custom Analysis delivery channel, and the FinAnswer Express program into the Typical Upgrades delivery channel within the Wattsmart Business program.

Process Evaluation

Cadmus conducted an intensive process evaluation for the 2016-2017 cycle that included detailed documentation of administrative structures, marketing, data storage, and reporting. For the 2018-2019 cycle, Cadmus conducted a more limited process evaluation that focused on recent changes to program design or implementation and the response to those changes from trade allies and participants. Findings are based on an analysis of data collected through interviews with program and implementer staff and trade allies and through surveys of participants, partial participants, and nonparticipants. For these research tasks, the team assessed the following:

- Effectiveness of the program's design and processes
- Participant's customer experience and satisfaction
- Barriers to customer participation

Table 17 lists the questions asked in the primary research areas. Although data were collected during the COVID-19 pandemic, survey and interview instruments tried to focus respondents on their experiences with the program in 2019 and did not address events or situations occurring in 2020.

Table 17. Research Areas and Questions

Research Areas	Researchable Questions and Topics
Program Status	How did the program perform in 2018 and 2019, and what opportunities and challenges do program staff foresee for future program years?
Awareness	How did customers learn about the Rocky Mountain Power Wattsmart Business program incentives?
Participation Motivations and Barriers	What are the key factors influencing participants' decision to participate in the program? What are the key factors in any customer's decision to install energy efficiency improvements? What are the participation barriers for participants and nonparticipants?
Satisfaction	How satisfied are participants with the program and with the program measures, incentives, and services?
Firmographics	What are the business characteristics of participants in each program offering? How do participant awareness and business size compare by program delivery channel?

Methodology

The following sections provide an overview of the methodology that the Cadmus team used for process evaluation research for program years 2018 and 2019.

Materials and Database Review

The Cadmus team reviewed several program documents and files to inform development of data collection instruments, survey samples, and data analysis:

- Idaho Energy Efficiency and Peak Reduction Annual Reports for 2018 and 2019
- Wattsmart Business program website
- Participant and partial participant databases
- RMP's nonresidential customer database

Utility and Administrator Staff Interviews

The Cadmus team developed stakeholder interview guides and collected information about key topics from program management staff. The team conducted four interviews, one each with program staff at Rocky Mountain Power, Willdan, Nexant, and Cascade Energy, focusing on changes during 2018 and 2019 and covering these topics:

- Program goals and performance
- Program design and implementation changes
- Marketing and outreach
- Program delivery and management
- Data management and quality assurance
- Barriers and areas for improvement

Surveys

The Cadmus team surveyed three customer populations—participants, nonparticipants and partial participants. This section describes the process to design and field surveys. (For final survey disposition, see Table 8 above.)

Participant Surveys

The team designed survey instruments for each participant group (Typical Upgrades and Custom Analysis incentives, Small Business Enhanced incentives, and Lighting Instant incentives) to collect data about the following process evaluation topics:

- Customer perceptions and motivations
- Program awareness
- Reasons and motivations for participation
- Perceived value of the program
- Customer experience
- Effectiveness of program delivery, including marketing, outreach, and delivery channels
- Customer interactions with trade allies, program staff, and program-funded third-party technical service providers
- Customer satisfaction regarding specific program elements and the Wattsmart Business program overall
- Customers' participation challenges
- Customer firmographic information

Cadmus included only 2019 participants in the sample frame, considering that participants would no longer accurately remember the circumstances of projects completed in 2018 by the time of the survey. To prepare the sample frame, the team first removed records with no email address. Next, the team selected an individual record for each email contact in the participant tracking data. Where a group of

records had the same contact information, the team first identified the measure category in the group that had the lowest representation in the sample frame then randomly selected one record from that measure category.

The sample frame contained these measure categories, from highest priority (smallest population) to lowest priority (largest population):

1. Building Shell
2. Refrigeration
3. Compressed Air
4. Energy Management
5. Farm & Dairy
6. HVAC
7. Motors
8. Lighting (Lighting Instant Incentive)
9. Lighting (Small Business Direct Install)
10. Lighting (typical)
11. Irrigation

Survey invitations were sent to the entire sample to collect as many responses as possible. The initial online survey achieved a response rate of 12% (20 completes) for Typical Upgrades and Custom Analysis incentives, 12% (3 completes) for Lighting Instant Incentives, and 5% (1 complete) for Small Business Direct Install.

Nonparticipant Telephone Surveys

VuPoint conducted a telephone survey with 200 nonparticipants. The surveys addressed the following process evaluation topics:

- Customer perceptions and motivations
- Program awareness
- Reasons for and barriers to making energy-efficient improvements
- Likelihood of requesting an incentive in the future
- Program influence (spillover)
- Customer firmographic information

The team removed participants and partial participants from the master list of nonresidential customers provided by RMP. From the remaining population, VuPoint randomly called nonparticipants for surveys until the quota of 200 was reached.

Partial Participant Surveys

Partial participants included customers who had begun at least one project during the evaluation period but had not completed the project and who, from the perspective of the implementer staff, were no longer viable recruits for participation. Willdan, Nexant, and Cascade Energy provided the Cadmus team with lists of 2018 and 2019 partial participants from their respective areas of program responsibility. The team removed any customers who, within this period, appeared in the participant tracking data. For any remaining partial participants who had begun but not completed multiple projects, the team selected the project with the greatest estimated kWh savings in the sample. The team also removed partial participants with no contact information.

VuPoint attempted to survey partial participants; however, this group was nonresponsive after five attempts and therefore no survey results or findings are reported.

Trade Ally Interviews

Cadmus interviewed four participating RMP Wattsmart Business trade allies from Idaho to collect feedback about their experience and gather insights about improving the experience for customers and vendors. Interviews sought to answer specific research questions regarding program function and how changes have impacted trade ally use.

The Cadmus team targeted active participating contractors and installers who had completed jobs in 2018-2019. The team used contact information provided by Nexant and sent a first round of email invitations and supplemented with follow-up calls where necessary. Table 18 shows the total available contacts for trade allies in Idaho, targets, and completes.

Table 18. Trade Ally and Installer Interviews for the 2018-2019 Process Evaluation

	Total Participating Trade Allies	Target Completes	Actual Completes
Idaho	18	3	4

Strategic Energy Management Participant Interviews

Cadmus interviewed two participants from the Rocky Mountain Power Strategic Energy Management Program from Idaho to understand their participation experience and to gather insights about improving the program. Interviews sought to answer specific research questions regarding program function and the value of the actions taken through the program and to collect feedback about the overall experience.

The Cadmus team attempted to contact all four participants to schedule the interviews. The team used contact information provided by Cascade and reached out by phone for initial attempts and supplemented with follow-up emails where necessary. Table 19 shows the total available contacts for participants in Idaho, targets, and completes.

Table 19. SEM Participant Interviews for the 2018-2019 Process Evaluation

	Total SEM Participants	Target Completes	Actual Completes
Idaho	4	Census	2

Program Implementation Changes

Drawing on stakeholder interviews, this section describes changes in the Wattsmart Business program's implementation and delivery during the 2018-2019 evaluation period.

Administrator Roles

Through 2018, RMP outsourced implementation of energy efficiency services for most customers, but it provided energy efficiency services directly for very large customers (referred to as a managed account). In mid-2019, after a competitive bidding process, RMP staff hired Cascade Engineering, with a team of

subcontractors, to take over customer relationship management and project management for managed accounts. This transition, which occurred over a number of months, freed RMP staff to focus more on program design and management. For customers, this change allowed for a more streamlined experience since one team could work with the customer from project identification through to project completion and application processing.

Changes to Program Offerings

The most significant change to the program offerings was the launch of the midstream (Instant Incentives) offering in 2018. Through this initiative, RMP provides incentives to encourage distributors to stock and promote more efficient lamps. These incentives are designed to target smaller lamp-only replacements, such as routine maintenance lamp replacement, where customers perform the work themselves and do not work with a contractor.

RMP also worked with other program administrators, including Bonneville Power and Idaho Power, to promote cohort-model strategic energy management training to water and wastewater companies. As of 2019, six customers had participated and had achieved over 1.9 million kWh in savings.

In addition, in 2018 RMP added prescriptive incentives for irrigation measures, and added HVAC rooftop controls as an eligible measure.

Table 20 shows the number of unique customers participating, by offering and measure and in total, in 2018 and 2019. The number of unique customers is one indication of the effectiveness of the value proposition of the program offerings, and the effectiveness of program marketing. Overall participation by unique account was slightly lower in 2019 relative to 2018 but varied more substantially within some individual offerings and measures. Customers participating in Small Business Direct Install offering fell 46% in 2019 relative to 2018, from 169 to 91. On the other hand, participation in agricultural incentives increased 43%, from 99 to 142, after the program added prescriptive incentives for irrigation. Although the number of unique participants decreased in 2019, the reported savings increased (see Table 10).

Table 20. Unique Customer Participants by Year and by Offering

Offering	Measure Category	Unique Customers [a]	
		2018	2019
Midstream Instant Incentives	Lighting	37	41
Small Business Direct Install	Lighting	169	91
Typical Upgrades and Custom Analysis Incentives	Agricultural	99	142
	Lighting	94	83
	Other	19	22
	HVAC	12	14
	Motors	6	11
	Energy Management	2	7
	SEM	1	6
Total		**420**	**391**

[a] The total reflects the total number of unique customers participating in any RMP program; this value is less than the sum of the rows because some accounts are counted multiple times due to participation in multiple programs or measures

Trade Ally Experience

Cadmus interviewed four participating RMP Wattsmart Business trade allies to understand their participation experience and gather insights about how the experience can be improved for customers and vendors. The interviews addressed the following research questions:

- What do companies expect from participation?
- What aspects of the program work well?
- How have recent program changes impacted trade ally use of programs?
- Are there opportunities for improvement? Where do trade allies need more support?
- What feedback can trade allies offer on customer response to program changes?'
- Do trade allies have ideas for new products?

Program Participation

All four trade allies mentioned positive effects from their participation and said the programs fit well into their sales model. Three also mentioned either a competitive advantage, business expansion opportunity, or ease of selling projects due to participation in the program. The other trade ally mentioned added benefits for customers, such as incentives to help finance projects. In addition, three trade allies made positive remarks about the responsiveness and helpfulness of program staff.

Trade allies were asked about the "Premium Vendor" designation, and all were aware of it. Two trade allies were listed as premium vendors; another claimed to be but was not listed as such in the data. This may indicate that some trade allies have been downgraded and are unaware of it. Of these three trade allies one mentioned specific benefits to the designation, such as having certain marketing advantages, another claimed not to have experienced any benefits from the designation, and the third had not seen the business listed at the top of the Wattsmart online portal. All three said they would work to maintain

the designation. The trade ally who is not currently listed as a premium vendor reported being open to receiving the designation.

Scorecards that show the number of projects completed and customer satisfaction ratings are sent to trade allies each quarter. Interviewed trade allies had little familiarity with these quarterly scorecards. Two were not aware of what the quarterly scorecards were, and another mentioned seeing or hearing about them but not fully understanding what they were. One respondent knew of the scorecards but often received low scores for not showing layouts to every customer. This trade ally reported providing a layout only if the customer needed it and thought the layout was not always applicable as the business mostly does retrofits.

Areas for Improvement

Trade allies also offered suggestions for improvement and detailed where they need more support. Three said updates or improvements to the online experience would be helpful for them as well as their customers. They suggested putting status updates for application submissions through the online portal and making the website easier to navigate and more user-friendly for customers.

One trade ally said customer application requirements such as the account and meter numbers could be difficult to acquire. One suggested adding whole building air sealing incentives for the program. Two trade allies expressed some frustration with the Small Business Direct Install offering in the RMP territory because the eligibility criteria were broad enough to include some customers that did not seem to be small businesses. The Small Business Direct Install incentive is substantially higher than the typical incentives' contractors reported losing customers after they were offered a better deal for a similar project by the Small Business Direct Install subcontractors.

Strategic Energy Management (SEM) Participant Experience

Cadmus interviewed two of four participants in the Strategic Energy Management (SEM) program. The interviews sought to gather insights about specific research topics regarding the function and value of the program as well as overall program experience. Specific research topics included the following:

- Reasons and motivations for participation
- Value of the program and SEM to organization and future commitment to SEM
- Interaction with energy management providers and engagement with cohort
- Satisfaction with program components

Participation Experience and Value of SEM

Both respondents said their company learned about the SEM program through outreach from RMP. They also identified cost-savings as their main motivation to participate. When asked how their company is evaluating its involvement in SEM, one reported the company does not have any specific goals and is just monitoring energy-using practices. The other, a municipal water utility, said the organization was looking for opportunities to save on energy costs but did not have specific goals or objectives for their participation.

Typical SEM practices include setting energy savings targets, training staff and dedicating staff time to energy management tasks, logging and tracking completion of potential energy opportunities, establishing an energy baseline and monitoring use over time, and reporting on energy efficiency achievements, among other practices. Both respondents said their companies had tried to adopt new SEM practices as a result of participating in the program but to varying degrees of success.

The respondents described different degrees of staff engagement. One respondent emphasized that few other staff were involved in the SEM activities. According to the respondent, the organization had too few employees, who all had too much responsibility, to ask them to focus any of their time of energy management. The other respondent said that several staff were engaged in SEM including several senior managers and executives. This respondent noted that management support for SEM had increased significantly near the end of his engagement in the program, following turnover in a senior position. This respondent said that, following the program, all staff were "much more conscious of energy decisions," and that the facility was engaging with other city agencies to further the discussion of more efficient use of water resources. For example, they were discussing irrigation with the parks department.

The respondents also differed in how they characterized their awareness and pursuit of energy efficiency opportunities following the program. The first respondent, despite not involving colleagues in most of the program activity, reported that all staff were now more aware of relative energy usage of different pumps, and factored this into scheduling. The respondent said that the organization expected to continue to consider energy usage in pump scheduling, because the practice saved the organization money. However, this respondent also reported the organization did not set any energy targets or track energy usage over time, and that the facility's energy costs were primarily weather dependent (and therefore there were few efficiency opportunities). The respondent said that he had not expected the program to result in much savings, and did not believe that it had. It was not clear whether the respondent had access to data or analysis that could isolate savings from weather-based fluctuations.

The second respondent reported that although the implementer had identified some savings opportunities, facility management had been resistant to pursuing these opportunities due to operational concerns, and general lack of faith in the resulting savings. Although this facility had initially set an energy target, the organization changed its rate class and how it was charged for usage, which made the target irrelevant. As a result, this respondent said initial savings were lower than they could have been, in his opinion. In addition, some opportunities were out of reach due to financial barriers. But the facility was continuing to research additional savings opportunities, and expected to maintain the SEM practices learned through the program long term.

Satisfaction and Areas for Improvement

Both respondents had positive experiences interacting with their energy management provider. One respondent said there was a learning curve as the organization was different from other organizations involved in the SEM program, but that the information was still useful. The second respondent said information was provided at the correct technical level to be useful. Both thought the time commitment for training for the program was appropriate.

The first respondent said the cohort model was not as helpful to his organization as it appeared to be to other members, due to the differences in operations between his organization and the others. However, this respondent did note the most helpful aspect of the program was being able to identify areas where efficiency concerns did overlap with the cohort. The second respondent said the experience as part of a cohort was helpful, in that it allowed him to discuss energy usage issues and ideas for projects with other participants.

Overall, both respondents had positive experiences with the program, were satisfied with the energy management provider they worked with and were satisfied with the program overall. One respondent said, "Great program, awesome that they want to help save everyone some money."

In written feedback on the draft findings from the evaluation, the implementer indicated that current SEM curriculum does have an emphasis on creating and maintaining an opportunity register that documents the improvement efforts of participants. They also stated that they provide regular feedback to participants on their performance compared to their baseline and solicit and receive evaluations for each workshop. Additionally, the implementer noted they encourage participants to share their results from program participation within their organizations.

Typical Incentives/Custom Analysis Participant Experience and Satisfaction

The Cadmus team conducted online surveys with 24 Wattsmart Business program participants—20 receiving Typical Upgrades or Custom Analysis incentives, 1 receiving incentives through the SBDI offer, and 3 receiving incentives through the Lighting Instant Incentives offer.

Wattsmart Business Typical Upgrades and Custom Analysis

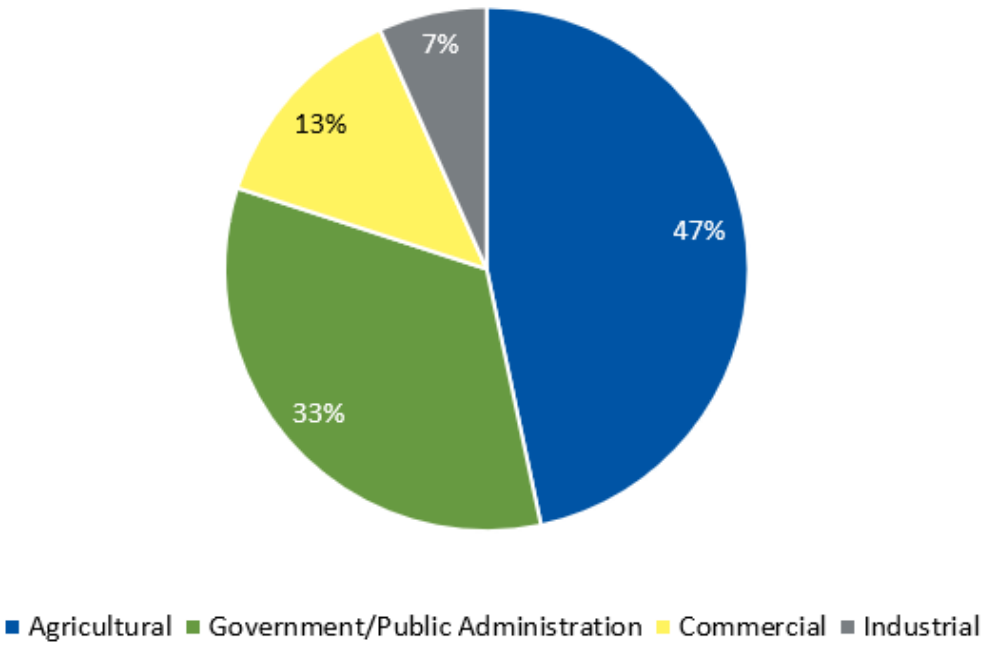
As shown in Table 21, there were 20 survey respondents who received Typical Upgrades or Custom Analysis incentives across six measure categories.

Table 21. Typical Upgrades and Custom Analysis Customers by Measure Type

Measure Category	Typical Upgrades	Custom Analysis
Agricultural	9	1
Lighting	7	0
HVAC	1	0
Motor Systems	1	0
Other	1	0
Total	**19**	**1**

Agriculture was the most common industry among Typical Upgrades or Custom Analysis respondents, representing 47% (n=15) followed by Lighting projects. As shown in Figure 12, the remainder of respondents were scattered across a wide variety of sectors. Business sizes also varied—53% of respondents had 10 or fewer employees, 13% had 100 or more, and the remainder were distributed across the middle of the range (n=15). Seventy-three percent of respondents said their company uses gas to fuel their space heating while 13% use electric and the remainder use propane. Fuel used for water heating was more evenly split—47% of respondents reported using electricity and gas, 6% reported using propane.

Figure 12. Typical Upgrades and Custom Analysis Participant Respondents by Business Sector



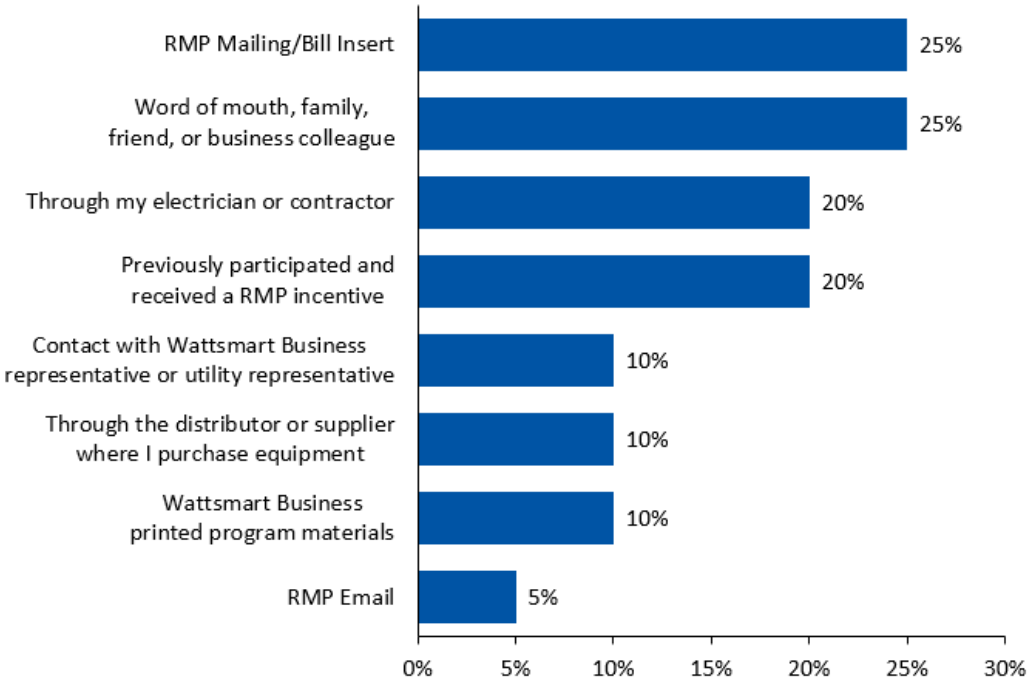
Source: RMP Wattsmart Business Program 2018–2019 Wattsmart Business Participant Survey QE1. Don't know and refused responses removed. (n=15)

Awareness

Among respondents, the most common sources of awareness about the Wattsmart Business Typical Upgrade or Custom Analysis incentives were RMP mailing or bill inserts and word of mouth (25% each, n=20).[17] As shown in Figure 13, other sources included learning through an electrician or contractor, previous participation, and other sources.

[17] The "n" represents the number of respondents providing a relevant response to the question. Percentages may sum to more than 100% as some respondents provided multiple responses. The analysis does not include respondents indicating "don't know" or "refused."

Figure 13. Typical Upgrades and Custom Analysis Participants Information Sources



Source: RMP Wattsmart Business Program 2018–2019 Wattsmart Business Participant Survey QA4. Don't know and refused responses removed. Multiple responses allowed. (n=20)

Customer Experience

Cadmus identified three key metrics that provide a high-level picture of how participants are engaging with the Wattsmart Business program and application processes: how much of the project cost is covered by incentives, who installed the measure, and who filled out the application. These metrics were not captured in previous surveys, but Cadmus intends to continue to monitor them moving forward.

Most respondents reported their incentive covered 25% or less of their project cost (63%, n=16). Of these respondents, two completed lighting projects and eight completed non-lighting projects.

Ten of 13 respondents said their projects were primarily installed by an independent contractor rather than by someone else (two respondents), themselves (one respondent), or a Wattsmart Business program participating trade ally (zero respondents).

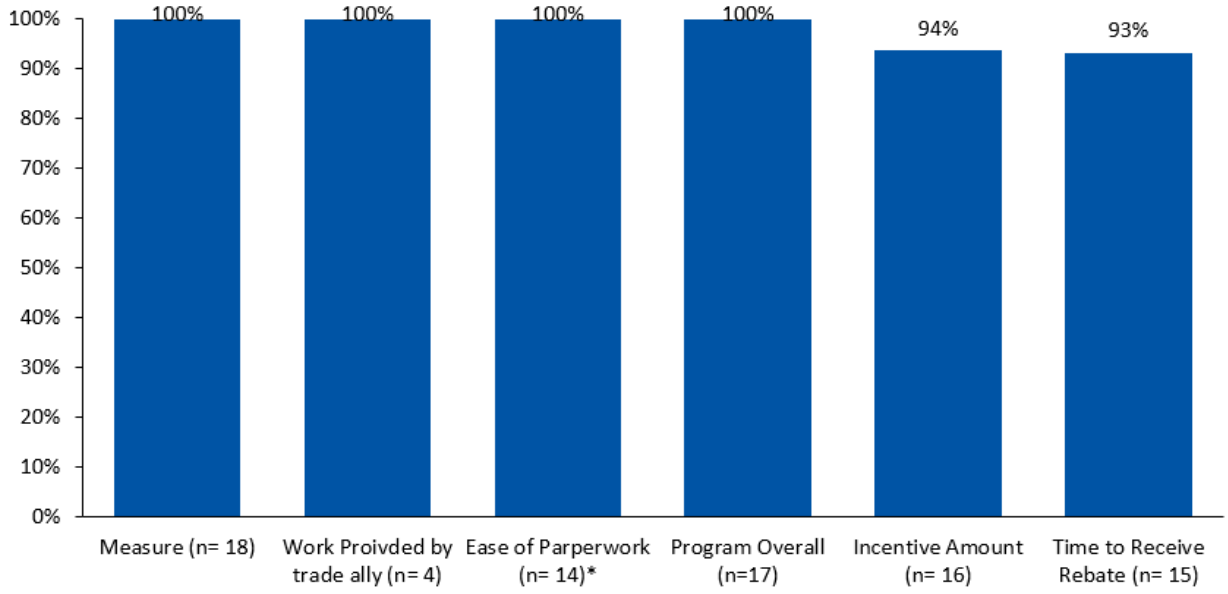
Eleven respondents said they or someone else at their company completed their applications, while four said their contractor or installer completed the application, and one respondent said a Wattsmart Business representative or energy engineer completed it (n=16).

Satisfaction and Areas for Improvement

Figure 14 shows respondent satisfaction levels with several program components and the program overall. Respondents were most likely to be *very satisfied* or *somewhat satisfied* with the measure they purchased, the work provided by a trade ally, the ease of completing paperwork, and the program

overall. Respondents were still likely to be satisfied with incentive amounts and the time to receive their rebate, although a few were less than satisfied. One respondent was *not too satisfied* with the dollar amount of the incentive because it covered about 10% of the project cost and this respondent would have been satisfied if it had covered 25%. Another respondent was *not at all satisfied* with the number of weeks it took to receive the incentive from following submittal of a final application.

Figure 14. Satisfaction with Program Components



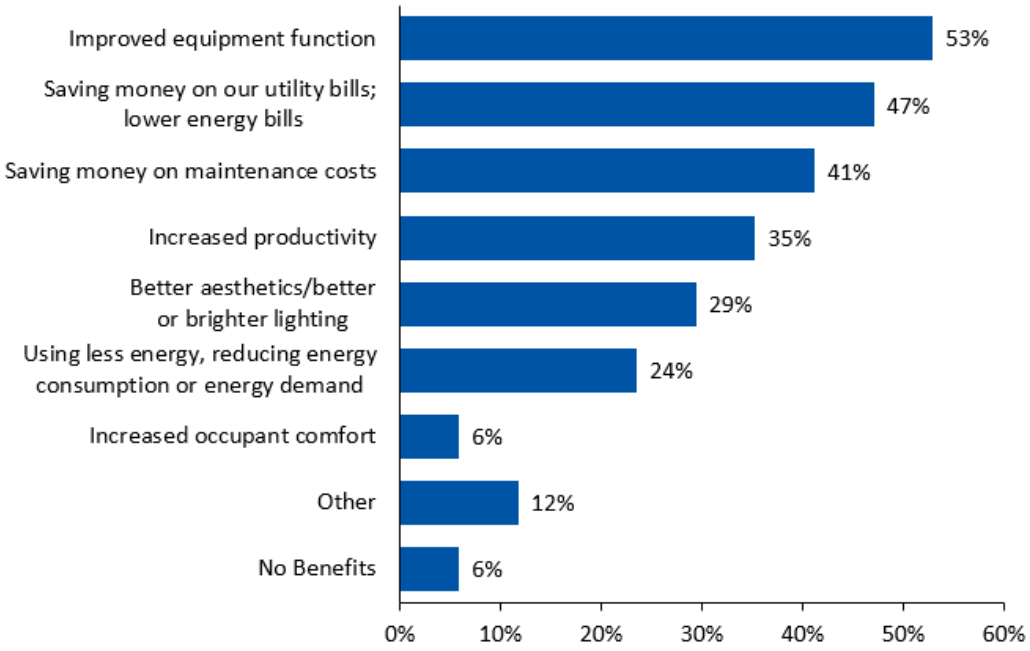
Source: RMP Wattsmart Business Program 2018–2019 Wattsmart Business Participant Survey QB2, QB4, QB7, B10, B12, and QB15. Don't know and refused responses removed.
* Rating scale measured "easy" rather than "satisfied."

Though satisfaction with the program and its components was high, one respondent offered a specific recommendation to improve the program, suggesting: "Allow irrigation pumping curtailment to be allowed for 40 hp pumps. Current program only benefits 60 hp pumps or larger."

Project Benefits

Surveys asked respondents about benefits they experienced from program participation. Sixteen respondents reported that their company experienced one or more benefits due to equipment installation. Only one said the company did not experience any benefits. The most common benefits were improved equipment function (53%) and saving money on utility bills (47%). Figure 15 shows the frequency of all benefits cited by respondents.

Figure 15. Benefits of Equipment Installed



Source: RMP Wattsmart Business Program 2018–2019 Wattsmart Business Participant Survey QB14. Don't know and refused responses removed. Multiple responses allowed. (n=17)

Small Business Direct Install

Due to a smaller participant population in Idaho than in other states, only one response for SBDI was collected. This respondent was in the government/public administration sector and the organization, which owns its facility, employed 11 to 25 people.

The respondent indicated that the organization completed the project to replace old, but still functioning, equipment. Following the project, the primary benefit of the project was better aesthetics/brighter lighting. The respondent was very satisfied with all aspects of the program addressed in the survey.

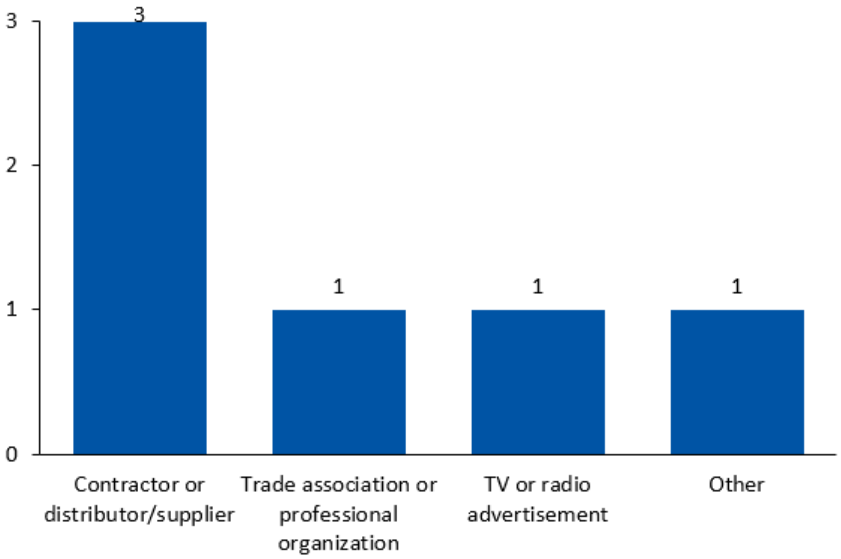
Lighting Instant Incentives

The Cadmus team received three responses from customers who participated in the Lighting Instant Incentives program. Two respondents were commercial businesses, and one was in the government/public administration sector. One respondent's company employed one to 10 people, another employed between 76 and 100, and the third employed more than 500 people. All three respondents said their organization owned the facility where the project was completed. All three also said their companies use gas for both space and water heating.

Awareness and Participation Experience

As shown in Figure 16, respondents learned about incentives available for the equipment they purchased through multiple channels. The primary channel respondents identified was through the contractor or distributor where they purchase equipment.

Figure 16. Awareness Channels for Incentives



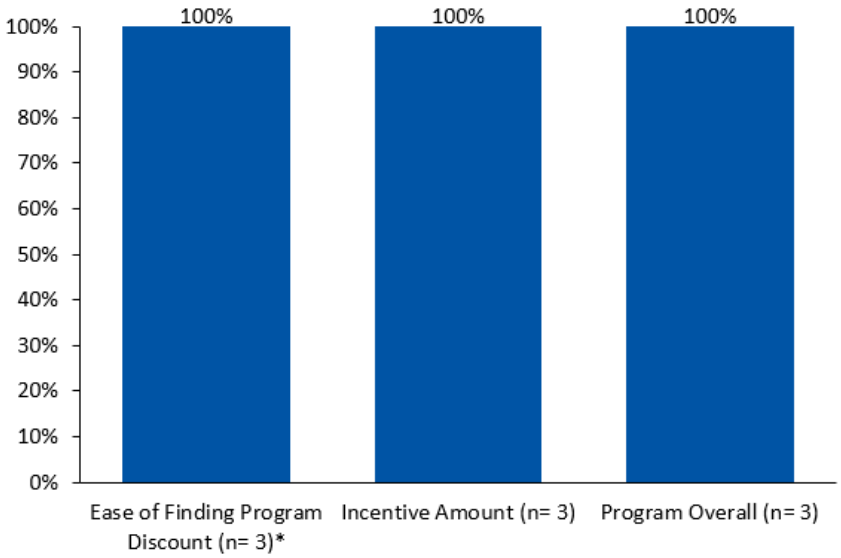
Source: RMP Wattsmart Business Program 2018–2019 Wattsmart Business Participant Survey QB1. Multiple responses allowed (n=3).

Respondents were also asked about their main reasoning for purchasing their equipment. One respondent reported making the purchase to replace burned-out lamps; the other two said they were re-lamping an area of their facility as part of ongoing maintenance.

Satisfaction and Areas for Improvement

Respondents reported high levels of satisfaction with the program and its components. As shown in Figure 17, all three reported being satisfied with the two components of the program they were asked about and with the program itself.

Figure 17. Satisfaction with Program Components



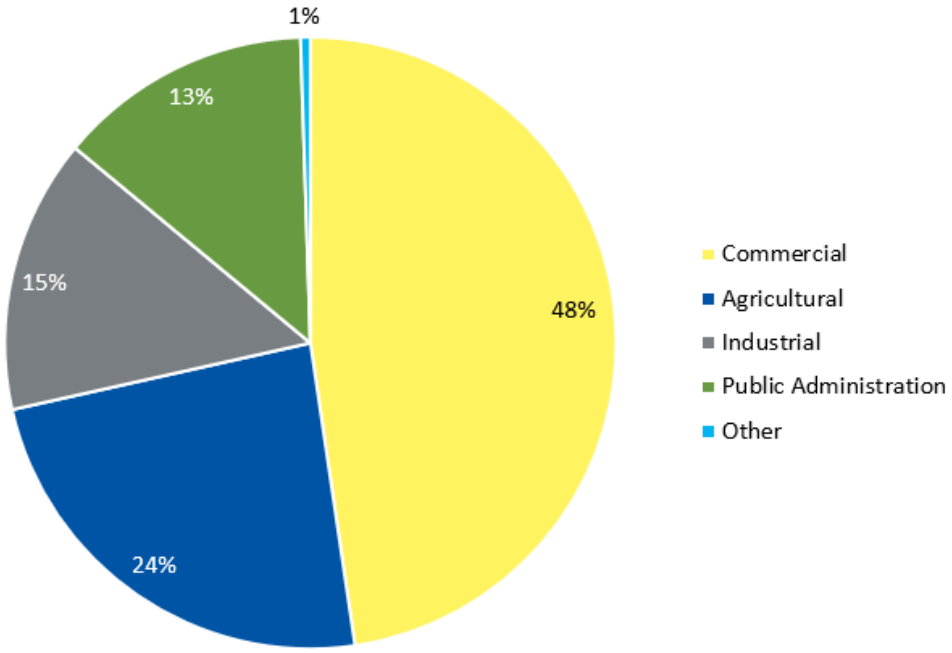
Source: RMP Wattsmart Business Program 2018–2019 Wattsmart Business Participant Survey QB4, QB7, QB9.
* Rating scale measured "easy" rather than "satisfied" (n=3).

None of the respondents reported experiencing any challenges with the program nor did they provide any recommendations on ways to improve the program.

Nonparticipants

The Cadmus team surveyed 200 nonparticipants who either never completed a project through the program or had not done so within the past two years. As shown in Figure 18, nonparticipant respondents included several business types. The largest group was commercial businesses (48%, n=193). Most respondents (68%, n=186) employed zero to 10 people, and others employed anywhere from 11 to 25 people to more than 500 people.

Figure 18. Nonparticipant Respondents by Business Sector



Source: RMP Wattsmart Business Program 2018–2019 Nonparticipant-Partial Participant Survey QF1. Don't know and refused responses removed. (n=193).

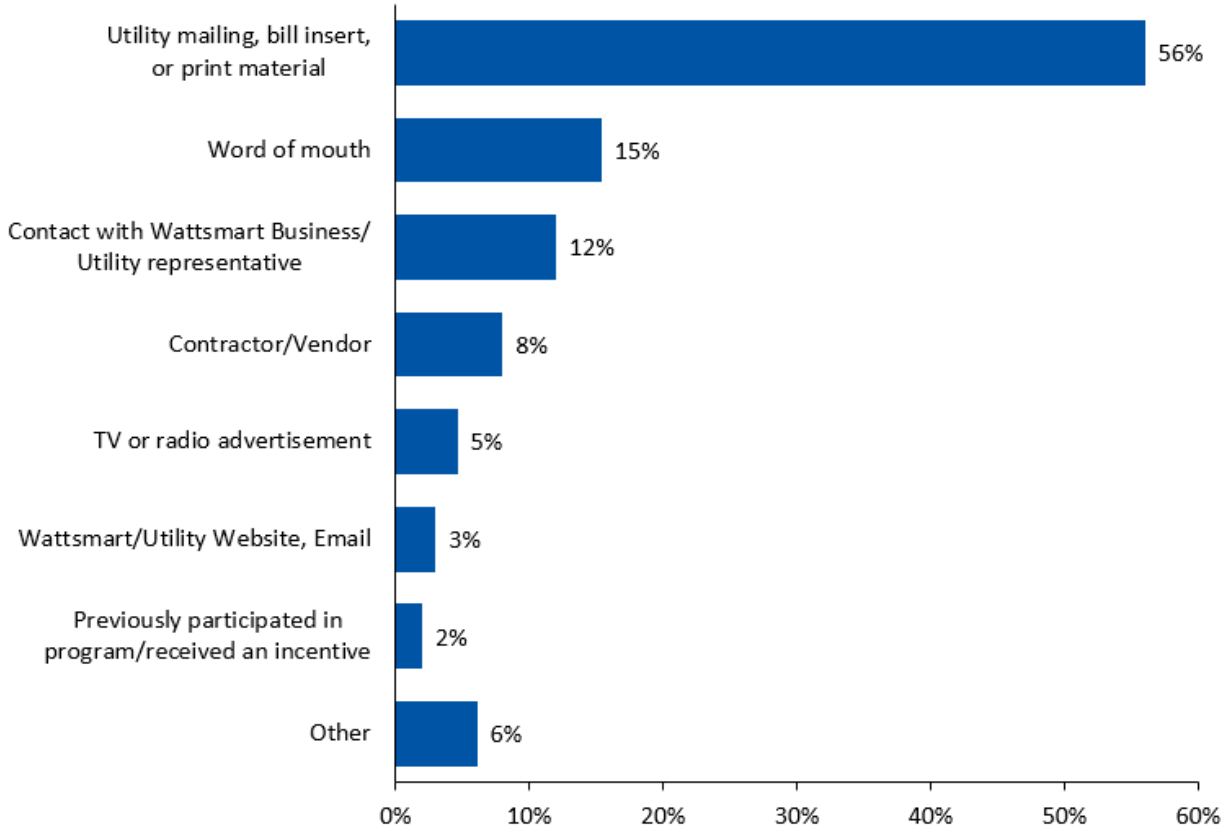
Sixty percent of nonparticipants used gas to heat their facilities, 18% used electricity, and 40% used a combination of the two or other fuels such as diesel, propane, oil, or did not heat their space (n=176). Participants relied more heavily on electricity for water heating (49%), with 44% using gas and 8% using both, other fuels, or not heating water (n=167).

Awareness

More than one-half of nonparticipants (62%, n=198) did not know of the Wattsmart program prior to participating in the survey. Of respondents who were aware, they most commonly learned of the program through a utility mailing, bill insert, or other print material (56%, n=65), followed by word of mouth (15%). Figure 19 shows how nonparticipants heard about the program.

Most respondents (72%, n=75) said it was not too likely or not at all likely they would apply for a Wattsmart Business incentive in the next six months.

Figure 19. Nonparticipants Source of Awareness of Wattsmart Business Program



Source: RMP Wattsmart Business Program 2018–2019 Nonparticipant-Partial Participant Survey QC3. Don't know and refused responses removed. (n=65).

Motivation

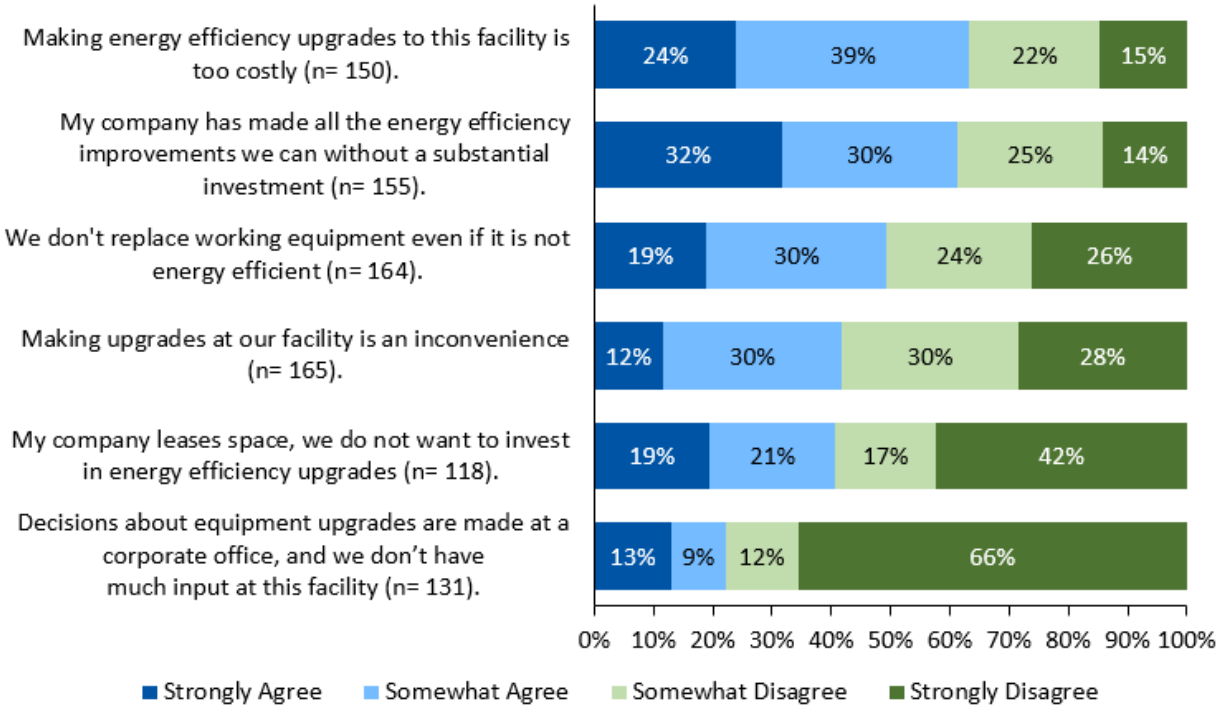
More than any other reason given, when considering energy efficiency upgrades, nonparticipant respondents were primarily motivated by the opportunity to save money on energy bills (80%, n=176). Other responses described a variety of motivations (e.g., costs of equipment and installation, obtaining a program incentive, or upgrading existing equipment).

Non-participants said they would be more motivated to make energy-efficient purchases or upgrades if equipment costs were lower (60%), incentives were higher (22%), or if they had more information on return on investment/help with the business case for investment (8%, n=165). Other responses included receiving more information generally, incentives on different products/technologies, higher annual savings, and ownership of the property.

The Cadmus team also asked nonparticipants: "When calculating the return on investment for proposed capital upgrades, does your company include savings gained from energy efficiency?" Nonparticipants were split, with 53% saying yes and 47% saying no (n=168).

To explore nonparticipants' attitudes about making energy efficiency upgrades at their facilities, the survey asked respondents to what extent they agreed with the barrier statements shown in Figure 20. Statements are shown in order by percentage of respondent agreement.

Figure 20. Nonparticipants' Attitudes About Energy Efficiency Improvements



Source: RMP Wattsmart Business Program 2018–2019 Partial Participant/Nonparticipant Survey: QD7a-QD7f. Not applicable, don't know, and refused responses were removed.

Responses strongly indicate that nonparticipants viewed energy efficiency as not worth the required upfront investment. Respondents generally have input into decisions about energy efficiency upgrades (78% *somewhat disagreed* or *strongly disagreed* with the statement that they did not, n=131), and most were not opposed to investing in upgrades even in leased spaces (59%, n=118). However, 62% *strongly agreed* or *somewhat agreed* that their company had made all the energy improvements they could without substantial investment (n=155), and 63% agreed that energy efficiency upgrades were too costly (n=150).

Cost-Effectiveness

In assessing Wattsmart Business program cost-effectiveness, the Cadmus team analyzed program benefits and costs from five different perspectives, using Cadmus' DSM Portfolio Pro model.[18] The California Standard Practice Manual for assessing demand-side management program cost-effectiveness describes the benefit/cost ratios that the Cadmus team used for the following five tests:

- **PacifiCorp Total Resource Cost (PTRC) Test:** This test examines program benefits and costs from RMP's and RMP customers' perspectives (combined). On the benefit side, it included avoided energy costs, capacity costs, and line losses, plus a 10% adder to reflect non-quantified benefits. On the cost side, it included costs incurred by both the utility and participants.
- **Total Resource Cost (TRC) Test:** This test also examines program benefits and costs from RMP's and RMP customers' perspectives (combined). On the benefit side, it included avoided energy costs, capacity costs, and line losses. On the cost side, it included costs incurred by both the utility and participants.
- **Utility Cost Test (UCT):** This test examines program benefits and costs solely from RMP's perspective. The benefits included avoided energy, capacity costs, and line losses. Costs included program administration, implementation, and incentive costs associated with program funding.
- **Ratepayer Impact Measure (RIM) Test:** All ratepayers (participants and nonparticipants) may experience rate increases designed to recover lost revenues. These benefits included avoided energy costs, capacity costs, and line losses. Costs included all RMP program costs and lost revenues.
- **Participant Cost Test (PCT):** From this perspective, program benefits included bill reductions and incentives received. Costs included a measure's incremental cost (compared to baseline measures), plus installation costs incurred by the customer.

Table 22 summarizes the five tests' components.

[18] DSM Portfolio Pro has been independently reviewed by various utilities, their consultants, and a number of regulatory bodies, including the Iowa Utility Board, the Public Service Commission of New York, the Colorado Public Utilities Commission, and the Nevada Public Utilities Commission.

Table 22. Benefits and Costs Included in Various Cost-Effectiveness Tests

Test	Benefits	Costs
PTRC	Present value of avoided energy and capacity costs, [a] with a 10% adder for non-quantified benefits	Program administrative and marketing costs, and costs incurred by participants
TRC	Present value of avoided energy and capacity costs [a]	Program administrative and marketing costs, and costs incurred by participants
UCT	Present value of avoided energy and capacity costs [a]	Program administrative, marketing, and incentive costs
RIM	Present value of avoided energy and capacity costs [a]	Program administrative, marketing, and incentive costs, plus the present value of lost revenues
PCT	Present value of bill savings and incentives received	Incremental measure and installation costs

[a] Includes avoided line losses.

Table 23 provides selected cost analysis inputs for each year, including evaluated energy savings, discount rates, line losses, inflation rates, and total program costs. RMP provided all of these values in its DSM annual reports[19] except for evaluated energy savings rate derived by the Cadmus team.

Table 23. Selected Cost Analysis Inputs

Input Description	2018	2019	Total
Evaluated Net Energy Savings (kWh/year) [a]	11,584,896	15,313,980	26,898,876
Discount Rate	6.57%	6.57%	N/A
Commercial Line Loss	10.75%	10.75%	N/A
Industrial Line Loss	7.52%	7.52%	N/A
Irrigation Line Loss	11.45%	11.45%	N/A
Inflation Rate	2.2%	2.2%	N/A
Total Program Costs	**$3,039,594**	**$3,296,479**	**$6,336,073**

[a] Savings are realized at the meter, while benefits account for line loss.

Wattsmart Business program benefits included energy savings and their associated avoided costs. For the cost-effectiveness analysis, the Cadmus team used this study's evaluated net energy savings and measure lives from program tracking data.[20]

The Cadmus team analyzed Wattsmart Business program cost-effectiveness for net savings by incorporating evaluated freeridership and spillover. Table 24 presents the 2018 and 2019 program years' cost-effectiveness analysis results, including evaluated NTG (but not accounting for non-energy benefits

[19] Rocky Mountain Power. *Idaho Energy Efficiency and Peak Reduction Annual Report: January 1, 2018 – December 31, 2018*. Issued April 30, 2019. https://www.pacificorp.com/content/dam/pcorp/documents/en/pacificorp/environment/dsm/idaho/2018_ID_DSM_Annual_Report_Appendices.pdf
Rocky Mountain Power. *Idaho Energy Efficiency and Peak Reduction Annual Report: January 1, 2019 – December 31, 2019*. Issued April 20, 2020. https://www.pacificorp.com/content/dam/pcorp/documents/en/pacificorp/environment/dsm/idaho/2019_ID_DSM_Annual_Report_4-20-20.pdf

[20] See Appendix E for detailed cost-effectiveness inputs and results at the measure category level.

[excepting those represented by the 10% conservation adder included in the PTRC]). For this scenario, the Wattsmart Business program proved cost-effective from the UCT perspective with a B/C ratio of 1.38 and the PCT with a B/C ratio of 3.41. The program did not prove cost-effective from the PTRC, TRC, and RIM test perspectives.

Table 24. Wattsmart Business Program Cost-Effectiveness Summary for 2018 and 2019 Net Savings

Cost-Effectiveness Test	Levelized $/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC	$0.0468	$9,785,291	$9,599,545	($185,746)	0.98
TRC	$0.0468	$9,785,291	$8,726,859	($1,058,432)	0.89
UCT	$0.0303	$6,336,074	$8,726,859	$2,390,785	1.38
RIM		$23,663,494	$8,726,859	($14,936,635)	0.37
PCT		$7,225,906	$21,743,255	$14,517,349	3.01
Lifecycle Revenue Impacts ($/kWh)					$0.000456375
Discounted Participant Payback (years)					2.12

Table 25 presents the 2018 program cost-effectiveness analysis results, including the evaluated NTG, but not accounting for non-energy benefits (except those represented by the 10% conservation adder included in the PTRC). For this scenario, the Wattsmart Business program proved cost-effective from the PTRC, UCT, and PCT perspectives but not the TRC and RIM test perspectives.

Table 25. Wattsmart Business Program Cost-Effectiveness Summary for 2018 Net Savings

Cost-Effectiveness Test	Levelized $/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC	$0.0436	$4,266,898	$4,431,415	$164,517	1.04
TRC	$0.0436	$4,266,898	$4,028,559	($238,339)	0.94
UCT	$0.0311	$3,039,595	$4,028,559	$988,964	1.33
RIM		$11,372,823	$4,028,559	($7,344,264)	0.35
PCT		$2,816,009	$10,213,968	$7,397,959	3.63
Lifecycle Revenue Impacts ($/kWh)					$0.000201319
Discounted Participant Payback (years)					1.63

Table 26 presents the 2019 program cost-effectiveness analysis results, including evaluated NTG, but not accounting for non-energy benefits (except those represented by the 10% conservation adder included in the PTRC). For this scenario, the Wattsmart Business program proved cost-effective from the UCT, and PCT perspectives but not the PTRC, TRC, and RIM test perspectives.

Table 26. Wattsmart Business Program Cost-Effectiveness Summary for 2019 Net Savings

Cost-Effectiveness Test	Levelized $/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC	$0.0503	$5,518,393	$5,168,130	($350,263)	0.94
TRC	$0.0503	$5,518,393	$4,698,300	($820,093)	0.85
UCT	$0.0300	$3,296,479	$4,698,300	$1,401,821	1.43
RIM		$12,290,671	$4,698,300	($7,592,371)	0.38
PCT		$4,409,897	$11,529,287	$7,119,390	2.61
Lifecycle Revenue Impacts ($/kWh)					$0.000261797
Discounted Participant Payback (years)					2.51

Conclusions and Recommendations

RMP, in collaboration with their administrators, Cascade Energy, Nexant, and Willdan Energy Solutions, are successfully delivering energy efficiency incentives and services to their customers, as designed in the Wattsmart Business program. Overall customers reported high satisfaction levels with the program and its elements, including for the new midstream Instant Incentive program.

Although the Instant Incentive program made a strong start in 2018, participation in 2019 increased only slightly from 2018, the year the program launched.

Trade allies reported overall satisfaction with the program, with the exception of the overlap in customer and project eligibility between the Small Business Direct Install offering and the typical Incentives offering.

Lack of solid data made it difficult to assess the energy savings resulting from the SEM program from the participant's perspective, however, participants reported adopting new management behaviors that they expected to persist, and taking concrete actions to achieve savings.

The 2018-2019 program impact evaluation yielded an overall gross realization rate of 104.6% with a precision of ±4.0% at 90% confidence. Within the eight measure categories, there were varying degrees of realization rates and precision. The Cadmus team calculated NTG as 89% for the program overall.

This section provides the Cadmus team's conclusions and recommendations based on the findings presented in this report.

Savings Considerations

Conclusion: Lighting was the largest Idaho strata, at over 37% of Idaho 2018-2019 program savings by kWh. Reported lighting savings were calculated using RMP's prescriptive calculation workbooks. These workbooks calculate savings based on customer reported or observed lighting schedule, fixture specifications, and space lighting control characteristics. The reported savings do not apply a waste heat factor (WHF) or controls factor. It is industry standard for lighting savings to include a waste heat factor (WHF). The WHF accounts for the reduction in lighting waste heat removed by an HVAC system as a result of switching to a more efficient lighting system. This is a summer cooling benefit and a winter heating penalty. Evaluated savings were higher than reported savings for most projects due to the use of WHF in the evaluated savings calculations.

Midstream lighting projects reported hours of use based on an RMP internally developed hours of use by facility type schedule. Cadmus used facility-specific HOU specified in the RTF. In some instances, hours of use by facility resulted in higher or lower evaluated energy savings than reported.

Recommendation: Cadmus recommends RMP include a WHF in lighting calculation workbooks. We recommend using values derived from the RTF, which are based on building type and weather zone.[21] We also recommend RMP use facility-specific HOU from the RTF in place of the RMP internally developed HOU by facility type. The HOU for each facility type in the RTF was based on a weighted average using CBSA building type weighting and the best available lighting HOU study data from the past seven years.

Conclusion: Cadmus and RMP were not always able to locate the usage data used by the implementer for SEM reported savings. In addition, Cadmus found the reported savings documentation had conflicting baseline and claimed savings period dates. These items made it difficult to accurately evaluate SEM projects.

Recommendation: We recommend RMP keep a documented source of the usage data used by the implementer for SEM savings. In addition, we recommend RMP clearly define dates of baseline and claimed savings periods in SEM reports and ensure consistency between the text body and figures.

Conclusion: RMP uses prescriptive calculation tools to calculate savings for HVAC measures including unitary air commercial air conditioners (unitary CACs), chillers, and heat pumps in the 2018-2019 program years. Cadmus sampled HVAC projects where the prescriptive calculation tool for unitary CACs utilized a baseline efficiency lower than the energy code at the time of application (IECC 2015) in some cases. Cadmus evaluated all HVAC projects by utilizing energy efficiency of baseline equipment based on the IECC 2015 (post-1/1/2016),[22]. Because the baseline equipment efficiency is lower than code minimum for the reported calculations in some cases, those projects realized lower energy savings than reported.

Recommendation: Based on our findings, we recommend RMP review and update the prescriptive calculation tools for HVAC measures in accordance with IECC 2015 (post-1/1/2016).[23]

Conclusion: Reported deemed savings for VFDs were based on the 2010 Idaho Market Characterization Study, which includes two categories: VFDs installed on fans and VFDs installed on pumps. VFDs savings can vary substantially based on the equipment they are installed on, especially heating versus cooling

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[21] Regional Technical Forum. "Non-Residential Lighting Midstream." Accessed January 2021. https://rtf.nwcouncil.org/measure/non-residential-lighting-midstream

[22] 2015 International Energy Conservation Code, Table C403.3.2(1). Minimum efficiency as of 1/1/2016. https://codes.iccsafe.org/content/IECC2015/chapter-4-[ce]-commercial-energy-efficiency#IECC2015_Pt01_Ch04_SecC403

[23] 2015 International Energy Conservation Code, Table C403.3.2(1). Minimum efficiency as of 1/1/2016. https://codes.iccsafe.org/content/IECC2015/chapter-4-[ce]-commercial-energy-efficiency#IECC2015_Pt01_Ch04_SecC403

pumps. Cadmus evaluated incentivized VFDs in the 2018-2019 program years based on the specific equipment type the VFDs were installed on (such as chilled water pumps).

Recommendation: Cadmus recommends RMP use the deemed savings categories and values from the RTF Variable Speed Drives measure (currently under review), once it is approved.[24] This measure includes multiple categories for VFDs installed on various equipment types.

Conclusion: The deemed savings the implementers used for ECMs with HVAC applications in the 2018-2019 program years was from the 2010 Idaho Market Characterization Study. Cadmus found this deemed savings, 6,935 kWh/hp, to be higher than what would reasonably be expected for this technology. Motors serving HVAC fans are typically Permanent Split Capacitor (PSC) motors and operate at a higher efficiency than Shaded Pole (SP) motors. When upgrading from a PSC motor to a ECM motor, lower energy savings are realized when compared to an upgrade from a SP motor to ECM motor.

Recommendation: We recommend RMP update the deemed savings for ECMs with HVAC applications in the 2010 Idaho Market Characterization Study to match the savings identified in the Idaho Power TRM measure 2.38 Electronically Commutated Motor in HVAC Units for retrofit upgrades from PSC motors to ECM motors (1,354 kWh/hp).

Trade Ally Experience

Conclusion: While trade allies overall reported high levels of satisfaction with the Wattsmart Business Program, some areas of improvement were identified. Trade allies demonstrated little familiarity with the quarterly scorecards with two not even being aware of them. In addition, trade allies also suggested specific improvements to the online experience. These suggestions included having status updates for application submissions through the online portal and making the website easier to navigate and more user-friendly for customers.

Recommendation: Attempt to increase trade ally awareness of the quarterly scorecard process so they are able to utilize the feedback that is included in them. Tying the score cards to a personal incentive for the trade ally employees would help get them engaged in the process. For example, offering an annual dinner for all trade allies, and recognizing top performers in front of their peers at the dinner, could offer trade allies a unique opportunity for networking and professional recognition, in addition to focusing their attention on their performance in the program. Also, continue on current efforts to improve the online experience for customers and trade allies by adding additional functionality in the application portal.

SEM Program

Conclusion: Participants were generally satisfied with their participation in the SEM program, reported achieving savings, and expected to continue to practice some behaviors they had adopted as a result of

[24] Regional Technical Forum. "Variable Speed Drives." Accessed January 2021. https://rtf.nwcouncil.org/measure/variable-speed-drives

their participation (such as adjusting pumping schedules to rely on more efficient pumps more often). However, better documentation of baselines, expected savings, and achieved savings could help improve participant outcomes. One participant had low expectations for the program because he saw little opportunity for savings at his facility, even after participating. Neither participant reported having stable energy savings goals, and it was not clear from the responses that participants had been able to conduct analysis independently to observe what savings they had achieved, or share that information with others in their organization. Cadmus had similar difficulty analyzing savings, despite working closely with Rocky Mountain Power and the implementers.

Recommendation: Where possible, review the SEM program curriculum to place greater emphasis on documentation and reporting of baseline usage and achieved energy savings. In addition, use an energy management assessment tool, such as one available for download from the Northwest Energy Efficiency Alliance website, to help participants set a baseline for their SEM management capabilities, and periodically reassess those capabilities.[25] In addition, participants should be encouraged to distribute documented evidence of progress, especially energy savings, to both senior management and other staff who might find information about SEM progress useful. Tools such as report templates can facilitate the adoption of this practice.

[25] NEEA Energy Management Assessment Tool: Resources | SEM Hub

Appendices

Appendix A. Self-Reported Net-to-Gross Methodology

Net-to-gross (NTG) estimates are a critical part of demand-side management program impact evaluations, because they allow utilities to determine portions of gross energy savings that were influenced by and are attributable to their DSM programs. Freeridership and participant spillover are the two NTG components calculated in this evaluation. True freeriders are customers who would have purchased an incented appliance or equipment without any support from the program (e.g. taking the incentive). Participant spillover is the amount of additional savings obtained by customers investing in additional energy-efficient measures or activities due to their program participation. Various methods can be used to estimate program freeridership and spillover; for this evaluation, the Cadmus team used self-reports from survey participants to estimate measure strata level NTG ratios. The Cadmus team used the same net savings methodology that has been used since the 2009-2011 and 2012-2013 Energy FinAnswer Program Evaluations and described in detail in Appendix B of the 2009-2011 evaluation report.[26] This net savings approach aligns with industry best practices summarized in the Uniform Methods Project (UMP) section discussing net savings.[27]

This appendix provides a detailed description of how the evaluation team estimated NTG for the 2018-2019 Wattsmart Business Program.

Survey Design

Using self-reported responses, the Cadmus team estimated net savings first by assessing the program's influence on the participant's decision to implement an energy efficiency project and what would have occurred absent the program's intervention. This estimation includes an examination of the program's influence on three key characteristics of the project: its timing, its level of efficiency, and it's scope (i.e., size of the project). This estimate represents the amount of savings attributed to the program that would have occurred without its intervention and is often referred to as "freeridership." Cadmus then estimated program influence on the broader market as a result of the indirect effects of the program's activities. This estimate, often referred to as "spillover," represents the amounts of savings that occurred because of the program's intervention and influence but that is not currently claimed by the program. Spillover savings can be broken into two categories of savings: "participant" spillover and "non-participant" spillover. Participant spillover savings occur directly (i.e., program participants install additional energy efficient equipment), while non-participant spillover savings occur indirectly (i.e., trade allies install additional energy efficiency equipment for customers that choose not to participate as a results of the program).

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[26] Final Evaluation Report For Idaho's Energy FinAnswer Program (PY 2009-2011) – Appendix B: http://www.pacificorp.com/content/dam/pacificorp/doc/Energy_Sources/Demand_Side_Management/2013/ID_Energy_FinAnswer_Program_Evaluation_2009-2011.pdf

[27] The UMP chapter covering estimation of net savings is available online: http://www.nrel.gov/extranet/ump/pdfs/20131120_estimating_net_energy_savings.pdf. See also: http://ump.pnnl.gov/showthread.php/5238-Estimating-Net-Energy-Savings-Methods-and-Practices

Freeridership Calculation

To determine freeridership, the interview presented respondents with a series of questions regarding their decision to install the equipment promoted by the program. The Cadmus team then scored the responses to these questions to determine the level of freeridership. A score of 1.0 indicates the respondent is a complete free-rider; they would have installed the exact same equipment at the same time and in the same quantity without the program's assistance. A score of 0.0 (zero) indicates the respondent is not a free-rider; that is, without the program they either would not have installed any equipment within 12 months of when they did or they would have installed baseline efficient equipment.

As the first step in scoring, the Cadmus team reviewed the interview responses to determine if the exact same project (in terms of scope and efficiency level) would have occurred at the same time without the program. If so, the respondent is scored as a complete free-rider. If not, the team reviewed the responses to determine whether the project would have occurred at all within the same 12 month period. If not, the respondent is scored as a non-free-rider. If the project would have occurred within the same 12 month period but altered in respect to its size or efficiency level, the respondent is scored as a partial free-rider. To assess the level of partial free-ridership, the Cadmus team used the

respondents' estimates of the percentage of the installed equipment that would have been high efficiency equipment (the efficiency score) and the percentage of high efficiency equipment that would have been installed within 12 months without the program (the quantity score). If the project would have occurred with some changes absent the program, the product of these two estimates is the initial free-ridership ratio or:

$$Initial\ Freeridership\ Ratio = Efficiency\ Score\ x\ Quantity\ Score$$

The initial freeridership score was adjusted to account for prior program participation. Given Rocky Mountain Power's efforts to cross-promote their entire portfolio of energy efficiency programs, a respondent's prior participation in a Rocky Mountain Power (RMP) program may have been influential in their decision to participate in the current program. Ideally, this influence would be attributed to the prior program as spillover savings since that program was responsible for the influence. However, given the portfolio-level marketing approach that RMP implements, respondents are unlikely to be able to identify the prior program by name. Therefore, the Cadmus team attributed the savings credit to the current program. To calculate this credit, the team reviewed the respondents' rating of the influence of the prior program. If the respondent rates their previous participation as a "4" or "5," their adjusted freeridership was reduced by either 50 percent or 75 percent respectively.

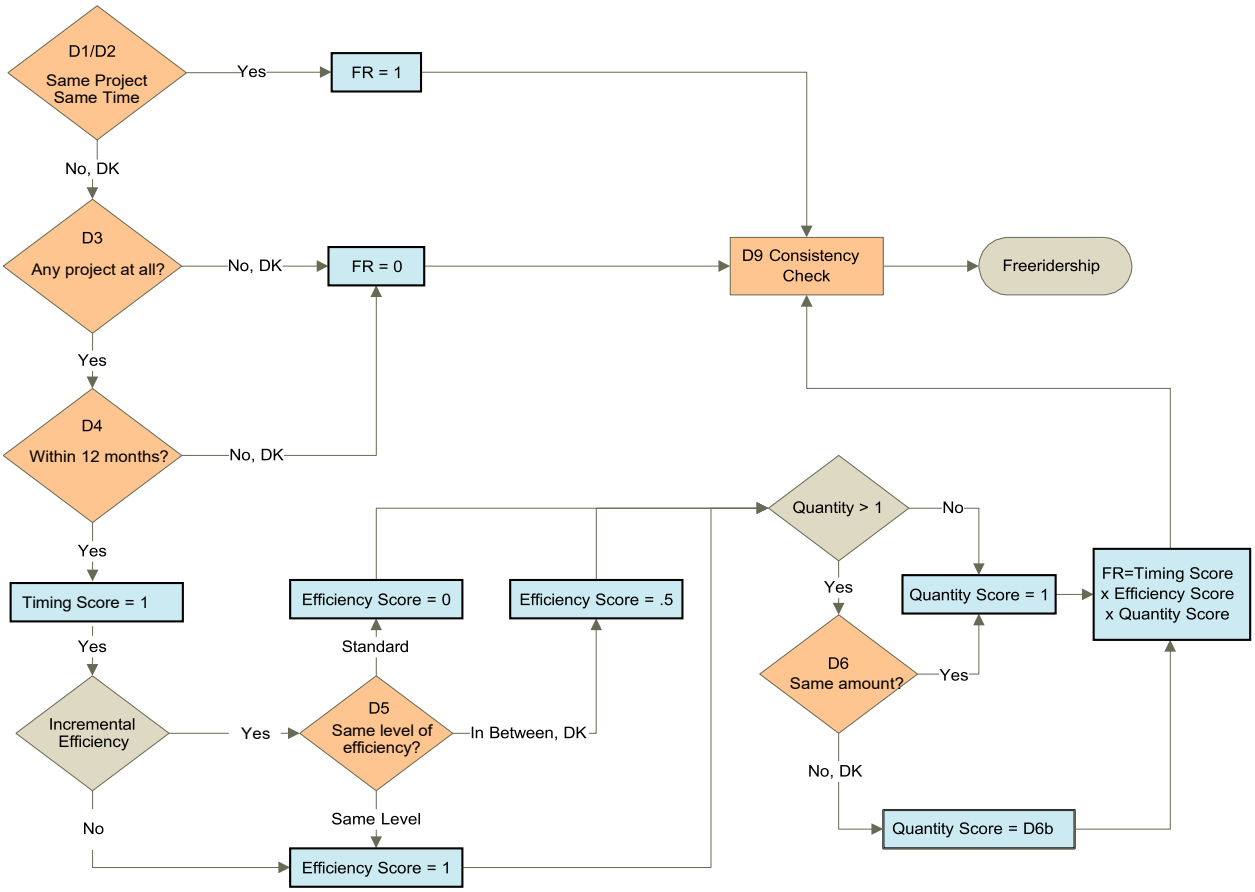
After adjusting the initial freeridership ratio for past program participation, a series of consistency check questions were reviewed. These questions asked about the influence of the program's interventions (e.g., financial incentives, technical assistance) and address the counter-factual (e.g., what would have happened without the program). For example, if the respondent stated that the financial incentive was extremely important to their decision (D9.2 = 5 – extremely important) but that they would have installed the exact same equipment at the same time without the program (D2 = Yes and D1= Yes), the interviewer asks them to describe in their own words what impact the program had on their decision

(C8). During the scoring process, these responses were reviewed by analysts to determine which scenario is correct and are scored accordingly to create an adjusted freeridership score. Table A-1 provides detailed scoring and descriptions of each question.

Table A-1. Freeridership Calculation Approach

Question	Question Text	Scoring
D1	Without the program, meaning without either the technical assistance or the financial incentive, would you have still completed the exact same [MEASURE] project?	None; qualifying question
D2	Without the program, meaning without either the technical assistance or the financial incentive, would you have still installed the [MEASURE] at the same time?	If C2=yes and C1=yes then freeridership = 1
C3	Without the program, would you have installed any [MEASURE] equipment?	If C4=no, freeridership = 0
C4	Without the program, in terms of timing, when would you have installed the [MEASURE]?	If not within 12 months of original purchase date, freeridership = 0
C5	Relative to the energy efficiency of [MEASURE] installed through the program, how would you characterize the efficiency of equipment you would have installed without the program?	If high efficiency, efficiency score = 1 If between high efficiency and baseline, efficiency score = 0.5 If baseline efficiency, efficiency score = 0
C6	Would you have installed more, less, or the same amount of [MEASURE] without the program?	If same or more, quantity score = 1 If less, quantity score = percentage of equipment not installed
C9.6	On a scale from 1 to 5, with 1 being not important at all and 5 being extremely important, how important was each of the following factors in deciding which equipment to install: Previous participation with a Rocky Mountain Power program	If C9.6 = 5, reduce adjusted free-ridership by 75% If C9.6 = 4, reduce adjusted free-ridership by 50%
D9.2	On a scale from 1 to 5, with 1 being not important at all and 5 being extremely important, how important was each of the following factors in deciding which equipment to install: information provided by Rocky Mountain Power on energy saving opportunities	Consistency Check
D9.4	On a scale from 1 to 5, with 1 being not important at all and 5 being extremely important, how important was each of the following factors in deciding which equipment to install: The Rocky Mountain Power incentive or discount	Consistency Check
D8	In your own words, can you please describe what impact the program had on your decision to complete these energy efficiency improvements for [MEASURE]?	Considered if '4' or '5-extremely important' rating from C9.2 or C9.4 Initial freeridership score is reduced by 50% if C8 response merits an adjustment free-ridership by 50%

Figure A-1. Freeridership Calculation Approach



Participant Spillover Calculation

For the Wattsmart Business program, the Cadmus team measured participant spillover by asking a sample of participants about their purchases and whether they received an incentive for a particular measure (if they installed another efficient measure or undertook another energy-efficiency activity because of their program participation). We also asked these respondents to rate the Wattsmart Business Program's (and incentives) relative importance on their decisions to pursue additional energy-efficient activities.

The Cadmus team used a top-down approach to calculate spillover savings. We began our analysis with a subset of data containing only survey respondents who indicated they installed additional energy-savings measures after participating in the Wattsmart Business Program. From this subset, we removed participants who said the program had little influence on their decisions to purchase additional measures, thus retaining only participants who rated the program as highly important. We also removed

participants who applied for a Wattsmart Business Program incentive for the additional measures they installed.

The Cadmus team used evaluated program savings as a proxy to estimate the savings associated with spillover projects. Table A-2 provides detailed scoring and descriptions of each spillover question.

Table A-2. Participant Spillover Calculation Approach

Question	Question Text	Scoring
D8	Since participating in this program, have you purchased and installed any other energy efficiency improvements on your own without any assistance from a utility or other organization?	If no, potential spillover savings = 0
D9	What type of equipment did you install?	If no, potential spillover savings = 0
D10.# Series	Measure specific efficiency, capacity, fuel type questions	If responses indicated non-program qualifying unit, potential spillover savings = 0
D10.b	How many did you purchase and install?	E11 x program-evaluated per-unit savings = potential spillover savings
D12	Did you receive an incentive from RMP or another organization for this equipment?	If yes, potential spillover savings = 0.
D14	On a scale from 1 to 5, with 1 being not important at all and 5 being extremely important, please rate how important your experience with the [UTILITY] [CATEGORY] program was in your decision to install [this/these] energy efficient product(s).	"5" rating results in potential spillover savings attributed to program.

The Cadmus team calculated the measure strata level spillover percentages by dividing the sum of additional spillover savings by the total incentivized gross savings achieved for all respondents in the measure strata:

$$Spillover\ \% = \frac{\sum Spillover\ Measure\ kWh\ Savings\ for\ All\ Measure\ Strata\ \ Respondents}{\sum Program\ Measure\ kWh\ Savings\ for\ All\ Measure\ Strata\ Respondents}$$

Appendix B. Nonparticipant Spillover

Effective program marketing and outreach generates program participation and increases general energy efficiency awareness among customers. The cumulative effect of sustained utility program marketing can affect customers' perceptions of their energy usage and, in some cases, motivate customers to take efficiency actions outside of the utility's program. This is generally called nonparticipant spillover (NPSO)—results in energy savings caused by, but not rebated through, utilities' demand-side management activities.

To understand whether Rocky Mountain Power's general and program marketing efforts generated energy efficiency improvements outside of the company's incentive programs, the Cadmus team collected spillover data through a nonparticipant survey, conducted with randomly selected nonresidential, nonparticipating customers.

Methodology

The Cadmus team randomly selected and surveyed 197 nonparticipating customers from a sample of 5,300 randomly generated nonresidential nonparticipant accounts provided by Rocky Mountain Power.

Using a 1 to 5 scale, with 1 meaning "not important at all" and 5 meaning "very important," the survey asked customers to rate the importance of several factors on their decisions to install energy efficient equipment without receiving an incentive from Rocky Mountain Power. This question determined whether Rocky Mountain Power's energy efficiency initiatives motivated energy-efficient purchases. The surveys asked respondents to address the following factors:

- General information about energy efficiency provided by Rocky Mountain Power
- Information from Rocky Mountain Power program staff or contractors
- Past participation experience participating in a Rocky Mountain Power energy efficiency program

The Cadmus team estimated NPSO savings from respondents who rated any of the above factors as "very important" for any energy-efficient actions or installations reported. The Cadmus Team leveraged estimated gross savings for the reported measures using 2018-2019 Wattsmart Business program evaluation activities. Using the variables shown in Table B-1, the Cadmus team determined total NPSO generated by Rocky Mountain Power's marketing and outreach efforts during the 2018 and 2019 program years.

Table B-1. NPSO Analysis Method

Variable	Metric	Source
A	Total kWh Spillover Savings from Survey Respondents	Survey data / Engineering Analysis
B	Total Nonparticipant Customers Surveyed	Survey disposition
C	Sample Usage	Rocky Mountain Power Customer Database
D	Sample NPSO	A ÷ C
E	Total Population Usage kWh	Rocky Mountain Power Customer Database
F	NPSO kWh Savings Applied to Population	D x E
G	Total Gross Program Evaluated kWh Savings	2018-2019 Wattsmart Business Evaluation
H	NPSO as a Percentage of Total 2018-2019 Wattsmart Business Evaluated kWh Savings	F ÷ G

Results

Of 68 Rocky Mountain Power nonparticipant customers surveyed, four nonparticipant respondents reported installing measures attributed to Rocky Mountain Power's influence. Table B-2 presents measures types and gross evaluated kWh savings the Cadmus team attributed to Rocky Mountain Power, generating total savings of 61,062 kWh.

Table B-2. NPSO Response Summary

Reported Spillover Measure Type	Quantity	Unit Energy Savings (kWh) [a]	Total Savings (kWh)
LED Lighting	86	75.5 per unit	6,490
VFD	1	53,672 per unit	53,672
Water Heater	1	900 per unit	900
Total	**88**		**61,062**

[a] Unit energy savings (kWh) estimated for each measure were generated from the 2018-2019 Wattsmart Business program evaluated gross savings analysis. Unit energy savings represents the average savings per unit for all attributable measures for a given measure type.

The NPSO represents energy savings from companies that did not participate in the 2018-2019 Wattsmart Business program who reduced their energy consumption and attributed their action to information provided by Rocky Mountain Power or past participation in a Rocky Mountain Power energy efficiency program.

Cadmus found NPSO as a percentage of total 2018-2019 Wattsmart Business evaluated kWh savings in Idaho to be 2% (H). Table B-3 below details the analysis steps. The first step is taking the total sample spillover savings from the 197 respondents (61,062 (A)) and dividing it by the total sample usage (28,256,657 kWh (C)). This results in the Sample NPSO (0.2% (D)).

The sample NPSO is then applied to the total population of consumption as calculated using average consumption by revenue class multiplied by the number of customers in each class (360,303,470 kWh (E)), as provided to Cadmus by Rocky Mountain Power.[28]

The total population energy usage is then multiplied by the Sample NPSO to obtain the population NPSO savings (778,613 (F)). This savings is then divided by the total gross program kWh savings (27,237,370 (G)) found in 2018-2019 Wattsmart Business Evaluation to calculate the NPSO of 3%.

Table B-3. Idaho NPSO Wattsmart Results

Variable	Metric	Value	Source
A	Total kWh Spillover Savings from Survey Respondents	61,062	Survey data / Engineering Analysis
B	Total Nonparticipant Customers Surveyed	197	Survey disposition
C	Sample Usage	28,256,657	Rocky Mountain Power Customer Database
D	Sample NPSO	0.2%	A ÷ C
E	Total Population Usage kWh	360,303,470	Rocky Mountain Power Customer Database
F	NPSO kWh Savings Applied to Population	778,613	D x E
G	Total Gross Program Evaluated kWh Savings	27,237,370	2018-2019 Wattsmart Business Evaluation
H	NPSO as a Percentage of Total 2018-2019 Wattsmart Business Evaluated kWh Savings	3%	F ÷ G

[28] NPSO savings were not extrapolated to industrial customers to provide a conservative estimate.

Appendix C. PacifiCorp Wattsmart Business Program (2018–2019) Wattsmart Business Participant Survey

Researchable Questions		
Key Research Topics	**Areas of Investigation**	**Related Questions**
Screening	Project initiation process	B1
Marketing and Outreach	Program Awareness	A4, A5
Barriers	Obstacles to installing high-efficiency equipment	B2, B13, B17, B18
Satisfaction	Assess satisfaction with Program application process, various program components and reasons for dissatisfaction among participants	B4-B13, B15, B16
Firmographics	Determine building and company characteristics of participants	Section E
Decision Making	Key factors influencing customers' decision to participate in program	B1, B14
Freeridership and Spillover	Assess net savings	Sections C and D

Target Quota = TBD

General Instructions

- This survey is designed for visual presentation online
- Text in red indicates programming instructions that will not be seen by the respondent
- Question numbers will not be seen by the respondent

Variables to be pulled into Survey

- **[PROGRAM NAME]**
- **[UTILITY]**
- **[MEASURE1]**
- **[LTG FLAG] (**indicates a participant that purchased LEDs, but did not purchase controls)
- **[PROGRAM YEAR]**
- **[CONTACT NAME]**
- **[CUSTOMER NAME]**
- **[SITE ADDRESS 1]**
- **[SITE CITY]**
- **[SITE ZIP]**
- **[PROJECT STATE]**
- **[CUSTOMER INCENTIVE]**
- **[BILL_CREDIT]**

Email Invitation

To: **[EMAIL]**
From: **UTILITY** Feedback
Subject: We're checking in…give us an update on your efficient equipment purchase with a **[UTILITY]** Wattsmart Business rebate

Dear **[CONTACT NAME]**,

We invite you to tell us about your recent experience with **UTILITY**'s **[PROGRAM NAME]** program. Your input is very important to us and will be kept confidential and only used for research purposes. The survey will take 7-10 minutes to complete. As our thanks for completing the survey, eligible respondents will be **entered into a drawing to win one of five $50 Amazon gift cards.** Your vital feedback will be used to improve our programs for customers like you.

Click the link below to find out if you are eligible:

[auto-generated link]

Or you may copy and paste the URL below into your internet browser: [auto-generated URL]

If you have any questions about this research, or any difficulties taking the survey, please contact Alex Opipari at The Cadmus Group, the national research firm conducting this survey on **[UTILITY'S]** behalf. You can reach Alex at alex.opipari@cadmusgroup.com.

Thank you in advance for sharing your experiences and your time.

Alesha Pino
Sr. Business Specialist
PacifiCorp

Reminder Invitation

To: **[EMAIL]**
From: **UTILITY** Feedback
Subject: Don't forget to tell **UTILITY** about your **[PROGRAM NAME]** program experience!

Dear **[CONTACT NAME]**,

We recently invited you to tell us about your experience with **[UTILITY]**'s **[PROGRAM NAME]** program. We would still like to hear from you. Your input is very important to us and will be kept confidential. **Please take 7-10 minutes today to complete the survey**. As our thanks for completing the survey, eligible respondents will be entered into a drawing to win one of five $50 Amazon gift cards. Your vital feedback will be used to improve our programs for customers like you.

Click the link below to find out if you are eligible:

[auto-generated link]

Or you may copy and paste the URL below into your internet browser: [auto-generated URL]

If you have any questions about this research, or any difficulties taking the survey, please contact Alex Opipari at The Cadmus Group, the national research firm conducting this survey on **[UTILITY'S]** behalf. You can reach Alex at alex.opipari@cadmusgroup.com.

Thank you in advance for sharing your experiences and your time.

Alesha Pino
Sr. Business Specialist
PacifiCorp

Email Invitation – for suggested contacts

To: **[EMAIL]**
From: **[UTILITY]** Feedback
Subject: We're checking in…give us an update on your efficient equipment purchase with a **[UTILITY]** Wattsmart Business rebate

Dear **[CONTACT NAME]**,

We are reaching out to you based on a referral from **[NAME OF REFERRER]**. We invite you to tell us about your recent experience with **[UTILITY]**'s **[PROGRAM NAME]** program. Your input is very important to us and will be kept confidential and only used for research purposes. The survey will take 7-10 minutes to complete. As our thanks for completing the survey, eligible respondents will be **entered into a drawing to win one of five $50 Amazon gift cards.** Your vital feedback will be used to improve our programs for customers like you.

Click the link below to find out if you are eligible:

[auto-generated link]

Or you may copy and paste the URL below into your internet browser: [auto-generated URL]

If you have any questions about this research, or any difficulties taking the survey, please contact Alex Opipari at The Cadmus Group, the national research firm conducting this survey on **[UTILITY]** 's behalf. You can reach Alex at alex.opipari@cadmusgroup.com.

Thank you in advance for sharing your experiences and your time.

Alesha Pino
Sr. Business Specialist
PacifiCorp

Survey Introduction

[UTILITY-APPROVED LOGO TO APPEAR ON START SCREEN]

Welcome! Thank you for sharing your experience with the **[PROGRAM NAME]** program, offered by **[UTILITY]**.

[TERMINATION MESSAGE] Based on your responses, you are not eligible for this survey. Thank you for your interest in the Wattsmart Business program.
[UTILITY] offers a variety of energy efficiency programs that could help you save energy and manage your monthly bills. For more information on other ways to save, please visit **[UTILITY]**.net.

A. Screeners

A1. Before beginning, please verify our program information is correct and you are familiar with the project.
Our records show that you installed energy efficient equipment including **[MEASURE1]**, at **[SITE ADDRESS 1]** in **[INSERT PROGRAM YEAR]**? Is this correct? **[MULTIPLE RESPONSE]**

1. Yes
2. No, wrong year
   - A1a. In what year did you install this project? **[RECORD CORRECT YEAR : _____]**
3. No, wrong address
   - A1b. What is the correct address? **[RECORD CORRECT ADDRESS: FIELDS FOR STREET, CITY, STATE, ZIP]**
4. No, wrong measure
   - A1c. What type of equipment did you install or adjust? **[CALL THIS VARIABLE C_MEASURE]**
     1. Lighting
     2. New HVAC equipment
     3. HVAC equipment scheduling or setpoint changes
     4. Ventilation, Motor or Fan
     5. Refrigeration
     6. Compressed air
     7. Irrigation
     8. Other equipment
   - A1d. Can you describe this equipment? **[OPEN_ENDED: _____]**
5. No, I did not participate **[THANK AND TERMINATE]**

98. I don't know
   - A1e. Can you provide the name and email address of the right person to speak to about this project?
     1. **[FIRST NAME] [LAST NAME] [EMAIL ADDRESS]**

     [THANK AND TERMINATE]

A2. To ensure our records are correct, can you confirm that you received an incentive for this upgrade? The incentive may have been in the form of a check from the utility, a utility bill credit, or a discount applied to your project or equipment invoice.

1. Yes, I received an incentive
2. No, I did not receive an incentive **[THANK AND TERMINATE]**

98. I don't know

A1f. Can you provide the name and email address of the right person to speak to about this project?

1. **[FIRST NAME] [LAST NAME] [EMAIL ADDRESS]**

[THANK AND TERMINATE]

Great, you are eligible to take this short survey and be entered to win one of five $50 Amazon gift cards!

This survey will take 7-10 minutes to complete. Your responses will remain confidential and will only be used for research purposes. Be sure to enter your name and address at the end of the survey to enter the drawing.

A3. How did your organization learn about the incentives or discounts available for this project? Please select all that apply and scroll down to see all options. **[RANDOMIZE LIST]**

1. Contact with Wattsmart Business representative or utility representative
2. Wattsmart Business printed program materials
3. **[UTILITY]** Website
4. Wattsmart Business sponsored workshop or community event
5. **[UTILITY]** mailing or bill insert
6. **[UTILITY]** email
7. Through my electrician or contractor
8. Previously participated and received a **[UTILITY]** incentive
9. Through a civic organization, trade association or professional organization **[SPECIFY: _____]**
10. Through the distributor or supplier where I purchase equipment
11. Word of mouth, family, friend, or business colleague
12. TV or radio advertisement
13. Social media or other online advertisement
14. Other **[SPECIFY: _____]**

98. I don't know

A4. **[IF A4≠8]** To your knowledge, had your company participated in a **[UTILITY]** incentive program prior to completing this project?

1. Yes
2. No

98. I don't know

B. Wattsmart Business

Thank you. This next section will ask you about the process to apply for and receive your incentive.

B1. Who took the lead role in completing the application paperwork, including any supplemental applications? **[RANDOMIZE LIST; MAINTAIN "OTHER" AND "DON'T KNOW" AT END]**

1. Myself or someone else at my company
2. My contractor or installer
3. A Wattsmart Business representative or Energy Engineer
4. My **[UTILITY]** account representative
5. Someone else: **[_____]**

98. I don't know

B2. How easy would you say this paperwork was to complete?

1. Very easy
2. Somewhat easy
3. Not too easy
4. Not at all easy

98. I was not involved in the paperwork at all

B3. **[ASK IF B2=2, 3 or 4]** What would have made this paperwork easier to complete?

1. **[_____]**

98. I don't know

B4. Thinking about the incentive you received for this project, how satisfied were you with the dollar amount of the incentive?

1. Very satisfied
2. Somewhat satisfied
3. Not too satisfied
4. Not satisfied at all

98. I don't know the amount of the incentive **[SKIP TO B6]**

B5. About what percent of the project cost would you estimate was covered by the incentive?

1. **[NUMERIC: 0% to 100%]** % of the total project cost

98. I don't know

B6. **[IF B4=2, 3 OR 4 OR 98]** What incentive amount would have been enough for you to say you were very satisfied? Please respond as a percent of the total project cost.

1. **[NUMERIC: 0% to 100%]** % of the total project cost

98. I don't know

B7. How satisfied were you with the number of weeks from when you submitted a final application to when you received your incentive?

1. Very satisfied
2. Somewhat satisfied
3. Not too satisfied
4. Not satisfied at all

98. I don't know

B8. **[IF B7=2, 3 OR 4]** How many weeks would be acceptable from when you submit your application to when you receive your incentive?

1. **[NUMERIC 0-20]** weeks

98. I don't know

Screen Text: **Thank you, the next questions will ask you about the implementation of your project.**

B9. Who, if anyone, was involved in helping you install the **[INSERT MEASURE1 OR C_MEASURE**1].

1. A Wattsmart Business program participating vendor
2. My independent contractor **[SKIP TO B12]**
3. Someone else **[SPECIFY: _____]** **[SKIP TO B12]**

98. I don't know **[SKIP TO B12]**

B10. How satisfied were you with the work provided by the participating vendor that installed the **[INSERT MEASURE1 OR C_MEASURE**1]?

1. Very satisfied
2. Somewhat satisfied
3. Not too satisfied
4. Not satisfied at all

98. I don't know

B11. **[IF B10=2, 3 or 4]** Why do you say that?

1. **[TEXT: _____]**

98. I don't know

B12. How satisfied are you with the **[MEASURE1 OR C MEASURE1]** you installed?

1. Very satisfied
2. Somewhat satisfied
3. Not too satisfied
4. Not satisfied at all

98. I don't know

B13. **[IF B12=2, 3 or 4]** Why do you say that?

1. **[TEXT: _____]**

98. I don't know

B14. What would you say are the main benefits your company has experienced as a result of the energy-efficient equipment you installed? Select all that apply. **[RANDOMIZE]**

1. Using less energy, reducing energy consumption or energy demand
2. Saving money on our utility bills; lower energy bills
3. Increased occupant comfort
4. Better aesthetics/better or brighter lighting
5. Increased productivity
6. Saving money on maintenance costs
7. Improved equipment function
8. Another benefit: **[_____]**
9. No benefits **[LOCK OUT OTHER RESPONSES IF SELECTED]**

B15. Thinking about your project overall, how satisfied are you with the Wattsmart Business program?

1. Very satisfied
2. Somewhat satisfied
3. Not too satisfied
4. Not satisfied at all

B16. **[IF B15=2, 3, or 4]** Why do you say you were **[INSERT ANSWER FROM B15]** with the Wattsmart Business program?

1. **[SPECIFY: _____]**

98. I don't know

B17. **[IF LTG FLAG=YES]** In the process of scoping your project, did you consider installing lighting controls?

1. Yes
2. No

B18. **[IF LTG FLAG=YES]** Why did you not purchase controls for your lighting equipment?

1. Our company has no need to automate lighting
2. Controls are too expensive
3. Didn't know enough about the technology or the options
4. We already have controls installed
5. We did purchase controls
6. Another reason: _____

B19. Do you have any recommendations to improve the Wattsmart Business program?

1. No
2. Yes **[OPEN END TEXT ENTRY]**

C. Freeridership

[ASK SECTION C IF PROJECT STATE = WA, UT,WY OR ID; AND IF [PROGRAM YEAR] = 2019] [FORCE RESPONSE TO ALL QUESTIONS]

Thank you. For the next questions, think about the process to identify your project and finalize your decision to purchase the MEASURE1/C_MEASURE1].

C1. Without the program, meaning without either the technical assistance or the financial incentive, would you have still completed the **exact same [MEASURE_1/C_MEASURE1] project**?
1. Yes
2. No **[SKIP TO C3]**
98. I don't know **[SKIP TO C3]**

C2. Without the program, meaning without either the technical assistance or the financial incentive, would you have still installed the **[MEASURE_1/C_MEASURE1]** at the same time?
1. Yes **[SKIP TO C7]**
2. No **[SKIP TO C4]**
98. I don't know **[SKIP TO C4]**

C3. Without the program, would you have installed **any [MEASURE_1/C_MEASURE1]**?
1. Yes
2. No **[SKIP TO C8]**
98. I don't know **[SKIP TO C8]**

C4. Without the program, in terms of timing, when would you have installed the **[MEASURE_1/C_MEASURE1]**?
1. Within one year from original participation date
2. In one to two years from original participation date
3. More than two years from original participation date **[SKIP TO C8]**
98. I don't know

C5. Relative to the energy efficiency of **[MEASURE_1/C_MEASURE1]** installed through the program, how would you characterize the efficiency of equipment you would have installed **without** the program?
1. Just as efficient as installed with the program
2. Lower than installed through the program, but better than standard efficiency
3. Standard efficiency
98. I don't know

C6. Would you have installed more, less, or the same amount of **[MEASURE_1/C_MEASURE1]** without the program?

1. More

   A1a. **COMPARED TO THE INSTALLED AMOUNT, HOW MUCH MORE? [RECORD PERCENTAGE: _____]**

2. Less

   A1b. **COMPARED TO THE INSTALLED AMOUNT, HOW MUCH LESS? [RECORD PERCENTAGE: _____]**

3. Same amount

98. I don't know

C7. Prior to hearing about the program, was the cost of **[MEASURE_1/C_MEASURE1]** included in your organization's most recent capital budget?

1. Yes
2. No

98. I don't know

C8. In your own words, can you please describe what impact the program had on your decision to complete these energy efficiency improvements for **[MEASURE_1/C_MEASURE1]**?

C9. With the Wattsmart Business program, your company received financial incentives of **[CUSTOMER INCENTIVE]** for installing **[MEASURE_1/C_MEASURE1]**.

For the **[MEASURE_1/C_MEASURE1]** purchase, on a scale from 1 to 5, with 1 being not important at all and 5 being extremely important, how important was each of the following factors in deciding which equipment to install. If a factor is not applicable to you, please say so. **[NOTE: RESPONDENT FILLS IN NUMERIC VALUE (1 TO 5) FOR EACH OF THE BELOW SIX ITEMS. RESPONDENTS CAN ALSO STATE THAT A PARTICULAR FACTOR IS NOT APPLICABLE, PLEASE CODE N/A AS 99]**

1. Recommendation from contractor or vendor
2. Information provided by **[UTILITY]** on energy saving opportunities
3. Information on payback
4. The **[UTILITY]** incentive or discount
5. Familiarity with this equipment
6. Previous participation with a **[UTILITY]** program

D. Spillover

[ASK SECTION D IF PROJECT STATE = WA, UT,WY OR ID]

The next questions will ask about energy efficiency improvements *other than those* you installed through the program.

D1. Since participating in this program, have you purchased and installed any additional energy efficiency improvements on your own without any financial assistance from a utility?
1. Yes
2. No **[SKIP TO SECTION E]**
98. I don't know **[SKIP TO SECTION E]**

D2. Did you purchase and install any energy efficient improvements that are the **same type** as the **[MEASURE_1/C_MEASURE1]** you installed through the program?
1. Yes
2. No **[SKIP TO D8]**
98. I don't know **[SKIP TO D8]**

D3. How many did you purchase and install?
1. **[RECORD RESPONSE]**
98. I don't know

D4. Relative to the energy efficiency of the equipment installed through the program, how would you characterize the efficiency of this equipment?
1. Just as efficient as installed through the program
2. Lower than installed through the program, but better than the standard efficiency
3. Standard efficiency
98. I don't know

D5. Did you receive an incentive from **[UTILITY]** or another organization for this equipment?
1. Yes
2. No
98. I don't know

D6. **[ASK IF D5=1]** On a scale from 1 to 5, with 1 being not important at all and 5 being extremely important, please rate how important your experience with the **[UTILITY]** Wattsmart Business program was in your decision to install these energy efficient products.
1. **[RECORD RATING: _____]**
98. I don't know

D7. **[ASK IF D5=2]** Why did you not apply for an incentive from **[UTILITY]** for this equipment?
1. **[RECORD RESPONSE]**
98. I don't know

[ASK ALL]

D8. Since participating in the **[PROGRAM NAME]** program, did you purchase and install any ***other*** energy efficiency improvements on your own without any financial or technical assistance from a utility, vendor or other organization?

1. Yes
2. No **[SKIP TO SECTION E]**

98. I don't know **[SKIP TO SECTION E]**

D9. What type of equipment did you install? **[SELECT ALL THAT APPLY]**

1. Lighting equipment
2. HVAC equipment
3. Water heating equipment
4. Variable drive
5. Efficient motor
6. Refrigeration equipment or freezers
7. Building envelope measure
8. Compressed air equipment
9. Chiller
10. Pump
11. Irrigation equipment (gaskets, drains, sprinklers, etc.)
12. Other equipment: **[SPECIFY]**_____
13. None of the above **[SKIP TO SECTION E]**

98. I don't know **[SKIP TO SECTION E]**

[ASK D10.11-D10.14 AND D10-D14 if D9=1]

D10.11 What type of lighting was purchased and installed without assistance? **[MULTIPLE RESPONSE]**

1. Decorative LEDs
2. LED wall fixtures
3. General purpose LEDs
4. Pin-based LEDs
5. Reflector/flood LEDs
6. Tubular LEDs
7. Exterior LED wall packs or fixtures
8. Other type [_____]

D10.12 What is the wattage of the lighting? **[SPECIFY]**: _____

D10.13 In what location was it installed?

1. Wall
2. Ceiling
3. Outdoors
4. Another location **[SPECIFY]**: _____

98. I don't know

D10.14 What type of equipment was removed or replaced? **[SPECIFY]**: _____

[ASK D10.21-D10.24 AND D10-D14 if D10=2]

D10.21 What type of HVAC equipment was purchased and installed without assistance? **[SPECIFY TYPE]**: _

D10.22 What Fuel type is used? **[SPECIFY]**: _____

D10.23 What is the efficiency rating of the equipment? This will be the HSPF or SEER or ER rating of the equipment. **[SPECIFY]**: _____

D10.24 What is the capacity of the equipment in tons? **[SPECIFY]**: _____

[ASK D10.31-D10.34 AND D10-D14 if D10=3]

D10.31 What type of water heating equipment was purchased and installed without assistance? (For example: storage tank, tankless, heat pump, point-of-use, etc.) **[SPECIFY TYPE]**: _____

D10.32 What Fuel type is used? **[SPECIFY]**: _____

D10.33 What is the efficiency rating of the equipment? (This should be an energy factor, such as .62 EF, or 2.6 EF) **[SPECIFY]**: _____

D10.34 If a water heater with storage, what is the equipment capacity in gallons? **[SPECIFY]**:

[ASK D10.41-D10.42 AND D10-D14 if D10=4]

D10.41 What type of motor was the VFD installed on? **[SPECIFY TYPE]**: _____

D10.42 What is the horsepower of the motor? **[SPECIFY]**: _____

[ASK D10.51-D10.52 AND D10-D14 if D10=5]

D10.51 What equipment was the motor installed on? **[SPECIFY TYPE]**: _____

D10.52 What is the horsepower of the motor? **[SPECIFY]**: _____

[ASK D10.61 AND D10-D14 if D10=6]

D10.61 What type of refrigeration or freezer equipment did you install without assistance?
[SPECIFY TYPE]: _____

[ASK D10.71-D10.72 AND D10-D14 if D10=7]

D10.71 What is the efficiency R-value of the insulation measure? **[SPECIFY]**: _____
D10.72 In what location was it installed Wall/Roof/Floor? **[SPECIFY]**: _____

[ASK D10.81-D10.82 AND D10-D14 if D10=8]

D10.81 For what type of application was the compressed air equipment purchased and installed (production line, etc.)? **[SPECIFY APPLICATION]**: _____
D10.82 What is the horsepower of the compressor motor? **[SPECIFY]**: _____

[ASK D10.91-D10.92 AND D10-D14 if D10=9]

D10.91 For what type of application was the chiller purchased and installed (commercial building, etc.)? **[SPECIFY APPLICATION]**: _____
D10.92 What size chiller did you install? **[SPECIFY]**: _____ (tons)

[ASK D10.101-D10.103 AND D10-D14 if D10=10]

D10.101 For what type of application was the pump purchased and installed (HVAC, etc)? **[SPECIFY APPLICATION]**: _____
D10.102 What is the horsepower of the motor for the pump? **[SPECIFY]** _____
D10.103 What is the efficiency rating of the pump? **[SPECIFY]**: _____ (%)

[ASK D10.111 AND D10-D14 if D10=11]

D10.111 What irrigation equipment did you purchase and install without assistance? **[SPECIFY GASKETS, DRAINS, SPRINKLERS, ETC.]**: _____

[ASK IF D9=1-12] **[ASK ABOUT EACH ITEM MENTIONED IN D10]**

D10. In regard to the **[D9 TEXT]**, how many did you purchase and install? **[ASK FOR EACH MEASURE MENTIONED IN D10]** **[IF D10 MEASURE = 'BUILDING ENVELOPE' THEN ASK HOW MANY 'SQUARE FEET']**

1. **[RECORD RESPONSE]**
98. I don't know

[ASK IF D10=1-12] **[ASK ABOUT EACH ITEM MENTIONED IN D10]**

D11. Just to confirm, did you receive an incentive from **[UTILITY]** or another organization for this equipment? **[ASK FOR EACH MEASURE MENTIONED IN D10]**

1. Yes
2. No
98. I don't know

[ASK FOR EACH YES IN D11]

D12. What utility or organization provided the incentive? **[ASK FOR EACH MEASURE MENTIONED IN D10]**

1. **[RECORD UTILITY OR ORGANIZATION]**
98. I don't know

[ASK IF D10=1-12] **[ASK ABOUT EACH ITEM MENTIONED IN D10]**

D13. What information did you rely upon to determine that the equipment installed was energy efficient? **[ASK FOR EACH MEASURE MENTIONED IN D10]**

1. **[RECORD RESPONSE]**
98. I don't know

[ASK IF D10=1-12] **[ASK ABOUT EACH ITEM MENTIONED IN D10]**

D14. On a scale from 1 to 5, with 1 being not important at all and 5 being extremely important, please rate how important your experience with the **[UTILITY]** Wattsmart Business program was in your decision to install [this/these] energy efficient products. [ASK FOR EACH MEASURE MENTIONED IN D10]

1. **[RECORD RATING: _____]**
98. I don't know

E. Firmographics

[ASK SECTION E TO ALL SURVEY RESPONDENTS]

These final questions will help us understand your business.

E1. What industry is your company in?

1. Accommodation
2. Arts, Entertainment and Recreation
3. Construction
4. Dairy, Agricultural
5. Educational Services
6. Finance, Insurance
7. Food Service
8. Food Processing
9. Health Care
10. Manufacturing
11. Mining
12. Nonprofit and Religious Organizations
13. Oil and Gas
14. Professional, Scientific and Technical Services
15. Public Administration/Government Services
16. Retail
17. Refrigerated Warehouse
18. Real Estate/Property Management
19. Repair and Maintenance Service
20. Transportation
21. Warehouses or Wholesaler
22. Something else **[SPECIFY: _____]**

99. I prefer not to answer

E2. How many people are employed by your company at all locations in **[PROJECT STATE]**?

1. None
2. 1-10
3. 11-25
4. 26-50
5. 51-75
6. 76-100
7. 101-200
8. 201-500
9. More than 500

98. I don't know
99. I prefer not to answer

E3. What type of fuel is used for space heating at your facility?
1. Electric
2. Gas
3. Another fuel **[SPECIFY: _____]**
98. I don't know

E4. What type of fuel is used for water heating at your facility?
1. Electric
2. Gas
3. Another fuel **[SPECIFY: _____]**
98. I don't know

F. Closing

F1. Please provide the following information to be entered into a drawing to win one of five $50 Amazon gift cards.
1. Name:
2. Address:
3. Address 2:
4. City:
5. State:
6. Zip:
7. Email:

This completes the survey! Your responses are very important to [UTILITY]. We appreciate your participation and thank you very much for your time. Have a good day.

Appendix D. PacifiCorp Wattsmart Business Program (2018–2019) Wattsmart Business Nonparticipant/Partial Participant Survey

Researchable Questions		
Key Research Topics	**Areas of Investigation**	**Related Questions**
Marketing and Outreach	Program awareness	C1-C4, D10-D11
	Future communication preferences	C5
Motivation and Barriers	Reasons to make energy-efficient improvements; Obstacles to installing high-efficiency equipment	D1-D9, D12-D14, G1-G3
Spillover	Assess savings spillover	Section E
Firmographics	Determine building and company characteristics of participants	Section F

Target Quota:
Nonparticipants: up to 200 for each state
Partial Participants: up to 50 for each state

Partial participants: (See quota tab in Partial Participants 2018-2019 Sample for VuPoint)

General Instructions

- Interviewer instructions are in green **[LIKE THIS]** (the style is "Survey: Interviewer Instructions").
- CATI programming instructions are in red **[LIKE THIS]** (the style is "Survey: Programming").
- Items that should not be read by the interviewer are in parentheses like this ( ).

Variables to Be Pulled into Survey

- **[CONTACT NAME]**
- **[CUSTOMER NAME]**
- **[SITE.ADDRESS 1]**
- **[SITE CITY]**
- **[SITE STATE]**
- **[UTILITY]**
- **[MEASURE.NAME.FINAL] MEASURE**
- **[YEAR] PROGRAM YEAR**

A. Introduction

A1. Hello, I'm **[INSERT NAME]** calling on behalf of **[UTILITY]**. May I speak with **[CONTACT NAME]**? OR **[IF NO NAME OR NAMED RESPONDENT NO LONGER WORKS FOR COMPANY]** May I speak with the person who handles energy decisions for your company? **[IF THAT PERSON IS NOT AT THIS PHONE NUMBER, ASK FOR THEIR NAME AND PHONE NUMBER AND START AGAIN]**

1. (Yes) **[IF CORRECT PERSON, SKIP TO A3. IF TRANSFERRED TO SOMEONE ELSE, READ A2]**
2. (No or not a convenient time) **[ASK IF RESPONDENT WOULD LIKE TO ARRANGE A MORE CONVENIENT TIME OR IF YOU CAN LEAVE A MESSAGE FOR A MORE APPROPRIATE PERSON]**

98. (Don't know) **[ASK TO SPEAK WITH SOMEONE WHO KNOWS AND BEGIN AGAIN]**
99. (Refused) **[THANK AND TERMINATE]**

A2. Hello, I'm **[INSERT NAME]** calling on behalf of **[UTILITY]**. Are you the person responsible for making energy decisions for your company at the **[SITE.ADDRESS 1]** location?

1. (Yes)
2. (No, person is able to come to phone) **[ASK FOR PERSON WHO IS AND START AGAIN]**
3. (No, person is not able to come to phone) **[GET NAME AND PHONE NUMBER, SCHEDULE CALL BACK]**

98. (Don't know) **[ASK TO SPEAK WITH SOMEONE WHO KNOWS AND BEGIN AGAIN]**
99. (Refused) **[THANK AND TERMINATE]**

A3. How are you doing today? I'm calling because we are conducting an important survey today about **[UTILITY]**'s Wattsmart Business Program. **[UTILITY]** is actively seeking your opinions to help improve their energy efficiency incentive programs and to better understand how to assist customers in saving money and energy**. THIS CALL WILL TAKE ABOUT FIVE MINUTES.** So you are aware, this call may be monitored or recorded for quality assurance purposes. Anything you share with us today will be kept confidential and anonymous. Is that alright?

1. **[IF RESPONDENT ASKS HOW LONG, SAY "APPROXIMATELY 5 MINUTES."]**
2. **[IF NEEDED, STATE "THIS SURVEY IS FOR RESEARCH PURPOSES ONLY AND IS NOT A MARKETING CALL. THIS IS THE PRIMARY WAY FOR CUSTOMERS TO PROVIDE INPUT INTO THE INCENTIVE PROGRAMS** [UTILITY] **OFFERS. YOUR PERSPECTIVES HELP [UTILITY] DESIGN ENERGY-EFFICIENCY PROGRAMS TO HELP THEIR CUSTOMERS SAVE MONEY AND ENERGY."]**
3. **[ONLY IF ASKED FOR A [UTILITY] CONTACT TO VERIFY THE SURVEY AUTHENTICITY, OFFER [ALESHA PINO, 801-220-2656]**

B. Screeners

[ASK PARTIAL PARTICIPANTS]

B1. Our records show that you initiated **[DEPENDING ON MEASURE NAME READ "a" or "an"]** **[MEASURE]** project at **[SITE.ADDRESS 1]** with **[UTILTY]** in **[YEAR]**, but did not complete this project through the Wattsmart Business Program. Is this correct?

1. (Yes)
2. (No, wrong year) **[RECORD CORRECT YEAR, IF POSSIBLE]**
3. (No, wrong address) **[RECORD CORRECT ADDRESS]**
4. (No, I did not participate) **[THANK AND TERMINATE]**

98. (Don't know) [ask to speak with someone who would know and start again at A2. If no one, then **THANK AND TERMINATE]**
99. (Refused) **[THANK AND TERMINATE]**

[THANK AND TERMINATE TEXT] Those are all the questions we have for you today. Thank you for your help. Have a nice day!

[ASK EVERYONE]

B2. Did your company receive an incentive from **[UTILITY]**'s Wattsmart Business Program for installing **[FOR PARTIAL PARTICIPANTS READ:** this equipment?**]** **[FOR NONPARTICIPANTS READ:** energy efficient equipment in 2018 or 2019? By energy-efficient equipment, I mean high-efficiency lighting, HVAC equipment, irrigation or dairy equipment, variable speed drives, building envelope, or other energy-efficient equipment.**]**

1. (Yes) **[READ: FOR THIS SURVEY, WE ARE SEEKING THOSE COMPANIES WHO DID NOT RECEIVE AN INCENTIVE. WE WILL NOT TAKE ANY MORE OF YOUR TIME TODAY. THANK YOU.]** **[TERMINATE]**
2. (No)

98. (Don't know) **[ASK TO SPEAK WITH SOMEONE WHO WOULD KNOW AND START AGAIN AT A2. IF NO ONE, THEN THANK AND TERMINATE]**
99. (Refused) **[THANK AND TERMINATE]**

[THANK AND TERMINATE TEXT] Those are all the questions we have for you today. Thank you for your help. Have a nice day!

C. Awareness

[ASK PARTIAL PARTICIPANTS C1 THEN SKIP TO C4]

C1. Even though you did not receive an incentive; how did your organization learn about the incentives available for this project? **[DO NOT READ LIST; MULTIPLE RESPONSES POSSIBLE]**

1. (Contact with Wattsmart Business representative or utility representative)
2. (Wattsmart Business printed program materials)
3. (**[UTILITY]** Website)
4. (Wattsmart Business sponsored workshop or community event)
5. (**[UTILITY]** mailing or bill insert)
6. (**[UTILITY]** email)
7. (Through my electrician or contractor)
8. (Previously participated in program/received an incentive)
9. (Through a trade association or professional organization) **[SPECIFY: _____])**
10. (Through a vendor, distributor or supplier where I purchase lighting)
11. (Word of mouth (family, friend, or business colleague)
12. (TV or radio advertisement)
13. (Social media or other online advertisement)
14. (Other **[SPECIFY: _____])**

98. (Don't know)
99. (Refused)

C2. **[ASK NONPARTICIPANTS C2]** Prior to this call today, were you aware that **[UTILITY]** offers technical expertise and cash incentives to help their commercial and industrial customers like you, improve your business' electric energy efficiency?

1. (Yes)
2. (No) **[SKIP TO C5]**

98. (Don't know) **[SKIP TO C5]**
99. (Refused) **[SKIP TO C5]**

C3. **[ASK IF C2=1]** How did your organization learn about the Wattsmart Business Program? **[DO NOT READ LIST; MULTIPLE RESPONSES POSSIBLE]**

1. (Contact with Wattsmart Business representativeor utility representative)
2. (Wattsmart Business printed program materials)
3. (**[UTILITY]** Website)
4. (Wattsmart Business sponsored workshop or event)
5. (**[UTILITY]** mailing or bill insert,)
6. (**[UTILITY]** email)
7. (I contacted my contractor/vendor to ask)
8. (My contractor/vendor let me know about them)
9. (Previously participated in program/received an incentive)
10. (Through a trade association or professional organization) **[SPECIFY: _____])**
11. (Word of mouth (family, friend, or business colleague)
12. (TV or radio advertisement)
13. (Social media or other online advertisement)
14. (Other **[SPECIFY: _____])**

98. (Don't know)
99. (Refused)

C4. **[ASK IF C1=1-10 OR 98 OR 99, OR IF C3=1-11 OR 98 OR 99]** How likely is it that your business will request an incentive from the Wattsmart Business program for an energy efficiency project in the next 6 months? Would you say … **[READ LIST]**

1. Very likely
2. Somewhat likely
3. Not too likely
4. Not at all likely

98. (Don't know)
99. (Refused)

C5. What's the best way for **[UTILITY]** to inform you about their incentives for energy-efficient improvements? **[DO NOT READ. MULTIPLE RESPONSES POSSIBLE]**

1. (Contact with Wattsmart Business representative, or utility representative)
2. (Wattsmart printed program materials or website)
3. (Wattsmart sponsored workshop or community event)
4. (Utility mailing, email, newsletter with bill, bill insert,)
5. (Through my electrician or contractor)
6. (Through a trade association, trade publication or professional organization) **[SPECIFY: _____])**
7. (Through the vendor, distributor or supplier where I purchase lighting)
8. (Newspaper ad)
9. (Radio ad)
10. (TV ad)
11. (Social Media (e.g., Facebook, Instagram, Twitter, YouTube))
12. (Online ads)
13. (Other **[SPECIFY: _____])**
14. (Not interested in being informed about incentives for energy-efficient improvements)

98. (Don't know)
99. (Refused)

D. Motivation and Barriers

Thank you. The next few questions are about making energy-efficient improvements for your business.

D1. **[ASK EVERYONE D1]** What factor is the <u>most</u> important to motivate your company to make energy-efficient upgrades? **[DO NOT READ LIST; RECORD ONE RESPONSE]**

1. (To save money on energy bills)
2. (To obtain a program incentive)
3. (To obtain a tax credit)
4. (To replace old (but still functioning) equipment)
5. (To replace broken equipment)
6. (To improve productivity)
7. (To improve lighting quality)
8. (Other **[SPECIFY_____]**)

98. (Don't know)
99. (Refused)

[NONPARTICIPANTS SKIP TO D7; PARTIAL PARTICIPANTS ASK D2-D6]

D2. Did your company complete the **[MEASURE]** project you initiated with **[UTILITY]** even though you did not receive a Wattsmart Business incentive?

1. (Yes) **[SKIP TO D4]**
2. (No)

98. (Don't know) **[SKIP TO D4]**
99. (Refused) **[SKIP TO D4]**

D3. Why did you not complete the project?

1. **[RECORD RESPONSE]** **[SKIP TO E1]**

98. (Don't know) **[SKIP TO E1]**
99. (Refused) **[SKIP TO E1]**

D4. Did your company apply for a Wattsmart Business incentive?

1. (Yes)
2. (No) **[SKIP TO D6]**

98. (Don't know) **[SKIP TO E1]**
99. (Refused) **[SKIP TO E1]**

D5. Why did your project not receive an incentive?

1. **[RECORD RESPONSE]** **[SKIP TO E1]**

98. (Don't know) **[SKIP TO E1]**
99. (Refused) **[SKIP TO E1]**

D6. Why did you not apply for an incentive?

1. (Project did not qualify) **[SKIP TO E1]**
2. (Other) **[RECORD RESPONSE]** **[SKIP TO E1]**

98. (Don't know) **[SKIP TO E1]**
99. (Refused) **[SKIP TO E1]**

[NONPARTICIPANT ASK D7-D14]

D7. I'm going to read you six short statements describing situations companies experience when considering energy-efficient improvements. Please tell me to what extent you agree with each statement. If it doesn't apply to you, please let me know that. The first statement is:
[RANDOMIZE, READ STATEMENT; THEN JUST FOR THE FIRST STATEMENT, READ THE FOLLOWING: WOULD YOU SAY YOU STRONGLY AGREE, SOMEWHAT AGREE, SOMEWHAT DISAGREE, OR STRONGLY DISAGREE?]
[READ LIST AND RECORD 1=STRONGLY AGREE, 2=SOMEWHAT AGREE, 3=SOMEWHAT DISAGREE, AND 4=STRONGLY DISAGREE; 97= NOT APPLICABLE, 98=DON'T KNOW, AND 99=REFUSED]

D2a. Making upgrades at our facility is an inconvenience.
D2b. Making energy efficiency upgrades to this facility is too costly.
D2c. We don't replace working equipment even if it is not energy efficient.
D2d. My company has made all the energy efficiency improvements we can without a substantial investment.
D2e. My company leases space, we do not want to invest in energy efficiency upgrades.
D2f. Decisions about equipment upgrades are made at a corporate office, and we don't have much input at this facility.

D8. When calculating the return on investment for proposed capital upgrades, does your company include savings gained from energy efficiency?
1. (Yes)
2. (No)
98. (Don't know)
99. (Refused)

D9. What would motivate your business to make more energy-efficient purchases or upgrades to your current equipment? **[DO NOT READ LIST; RECORD UP TO 3 RESPONSES]**
1. (Lower costs of product/equipment)
2. (Information on return on investment/help with the business case for investment)
3. (More information generally)
4. (Higher incentives)
5. (Incentives on different products/technologies)
6. (Other) **[SPECIFY]**
98. (Don't know)
99. (Refused)

D10. **[ASK IF D9=3]** When you say you would like more information, what kind of information is most useful?
1. [**RECORD RESPONSE**]
98. (Don't know) **[SKIP TO D13]**
99. (Refused) **[SKIP TO D13]**

D11. **[ASK IF D10=1]** Who could best provide you with this information? For example, a Wattsmart Business representative, someone like your contractor, or a product manufacturer?

1. (Wattsmart Business)
2. (Contractor/Distributor/Vendor)
3. (Store staff)
4. (Product Manufacturer)
5. (Something else) **[SPECIFY: _____]**

98. (Don't know)
99. (Refused)

D12. **[ASK IF D9=5]** When you say incentives on different products or technologies, what kind of products or technologies?

1. [RECORD RESPONSE]

98. (Don't know)
99. (Refused)

D13. What are the reasons you have not yet participated in a Wattsmart Business program? **[DO NOT READ LIST; MULTIPLE CHOICES POSSIBLE]**

1. (Don't know enough about program)
2. (Don't understand what equipment/measures are available)
3. (Don't have resources for initial investment)
4. (Don't have enough time to participate)
5. (Not sure how much savings there will be)
6. (Don't see any benefits)
7. (Have participated in past and do not see a need)
8. (Other) **[SPECIFY]**

98. (Don't know) **[SKIP TO E1]**
99. (Refused) **[SKIP TO E1]**

D14. What could **[UTILITY]** do to help your business participate in the Wattsmart Business program?

1. [RECORD ANSWER]

98. (Don't know)
99. (Refused)

E. Spillover

[ASK EVERYONE]

E1. In 2018 or 2019, did you purchase and install any energy efficiency improvements on your own without any financial assistance from a utility?

1. (Yes)
2. (No) **[SKIP TO SECTION F]**
98. (Don't know) **[SKIP TO SECTION F]**
99. (Refused) **[SKIP TO SECTION F]**

E2. What type of equipment did you purchase and install without assistance?

1. (Lighting) **[SPECIFY TYPE EXAMPLE: LED,]**: _____
   a. How many did you purchase and install **[SPECIFY]**: _____
   b. What is the wattage of the installed equipment **[SPECIFY]**: _____
   c. Where is the equipment installed? (Wall/Ceiling/Outdoors) **[SPECIFY]**: _____
   d. What type of equipment was removed or replaced **[SPECIFY]**: _____
2. (HVAC (heating and cooling)) **[SPECIFY EQUIPMENT]**: _____
   a. How many did you purchase and install **[SPECIFY]**: _____
   b. What fuel type does this equipment use **[SPECIFY]**: _____
   c. What is the efficiency rating of the equipment? This will be the HSPF or SEER or EER rating of the equipment. **[SPECIFY]**: _____
   d. What is the equipment's rated capacity in tons **[SPECIFY]**: _____
3. (Water heating) **[SPECIFY EQUIPMENT]**: _____
   a. How may did you purchase and install **[SPECIFY]**: _____
   b. What fuel type does this equipment use **[SPECIFY]**: _____
   c. What is the efficiency rating of the equipment **[SPECIFY]**: _____
   d. What is the capacity of the water heater (if water heater with storage) **[SPECIFY]**: ____
4. (Variable Frequency Drives (VFDs))
   a. How may did you purchase and install **[SPECIFY]**: _____
   b. What type of motor was it installed on **[SPECIFY]**: _____
   c. What is the horsepower of the motor **[SPECIFY]**: _____
5. (Efficient motors)
   a. How many did you purchase and install **[SPECIFY]**: _____
   b. What type of equipment is the motor installed on **[SPECIFY]**: _____
   c. What is the horsepower of the motor **[SPECIFY]**: _____
6. (Refrigeration) **[SPECIFY EQUIPMENT]**: _____
   a. How much did you purchase and install **[SPECIFY]**: _____
7. (Building envelope) **[SPECIFY TYPE]**: _____
   a. How may square feet did you purchase and install **[SPECIFY]**: _____
   b. What is the efficiency (R-value, thickness) **[SPECIFY]**: _____
   c. Where was it installed (Wall/Roof/Floor) **[SPECIFY]**: _____

8. (Compressed air) **[SPECIFY TYPE OF PROJECT]**: _____
   a. How many did you purchase and install **[SPECIFY]**: _____
   b. What is the horsepower of the compressor motor **[SPECIFY]**: _____
9. (Chillers) **[SPECIFY TYPE OF EQUIPMENT]**: _____
   a. How many did you purchase and install **[SPECIFY]**: _____
   b. What size unit did you install **[SPECIFY]**: _____
10. (Pumps) **[SPECIFY WHAT IS IT INSTALLED ON)]**: _____
    a. How many did you purchase and install **[SPECIFY]**: _____
    b. What is the horsepower of the pump motor **[SPECIFY]**: _____
    c. What is the efficiency rating of the pump **[SPECIFY]**: _____
11. (Irrigation (gaskets, drains, sprinklers) **[SPECIFY]**: _____
    a. How many did you purchase and install **[SPECIFY]**: _____
12. (Other) **[SPECIFY]**: _____
    a. How many did you purchase and install **[SPECIFY]**: _____

98. (Don't know) **[SKIP TO F1]**
99. (Refused) **[SKIP TO F1]**

E3. **[ASK IF E2=1-12]** Just to confirm, did you receive an incentive from **[UTILITY]** or another organization for any of these measures? **[RECORD FOR EACH MEASURE MENTIONED IN E2]**

1. (Yes)
2. (No) **[SKIP TO E5]**

98. (Don't know) **[SKIP TO E5]**
99. (Refused) **[SKIP TO E5]**

E4. **[QUESTION REMOVED]**

E5. **[ASK IF E2=1-12]** For these purchases, on a scale from 1 to 5, with 1 being not important at all and 5 being very important, please rate how important were each of the following on your decision to purchase and install [this/these] energy efficient improvement(s). If a factor is not applicable to you, please say so. **[NOTE: RESPONDENTS CAN ALSO STATE THAT A PARTICULAR FACTOR IS NOT APPLICABLE, PLEASE CODE N/A AS 6]**

E5.1 How important was general information about energy efficiency provided by **[UTILITY]** ____on your decision to purchase these improvements? **[IF NEEDED: ON A SCALE FROM 1 TO 5, WITH 1 BEING NOT IMPORTANT AT ALL AND 5 BEING VERY IMPORTANT. IF A FACTOR IS NOT APPLICABLE TO YOU, PLEASE SAY SO.]**

E5.1a **[ASK IF E5.1 = 1-5 AND MORE THAN 1 SELECTED IN E2]** Does your rating for the importance of general energy efficiency information provided by **[UTILITY]** differ for any specific improvements you mentioned?

1. (Yes)
2. (No)

98. (Don't know)

E5.1b **[ASK IF E5.1A=1]** For which of the following improvements would you rate the importance of general energy efficiency information differently, and what would be your rating? **[DISPLAY EQUIPMENT MENTIONED IN E2. MULTIPLE RESPONSE ALLOWED]**

ASK RATING FOR EACH EQUIPMENT SELECTED. [IF NEEDED READ: ON A SCALE FROM 1 TO 5, WITH 1 BEING NOT IMPORTANT AT ALL AND 5 BEING VERY IMPORTANT].

1. Lighting
2. HVAC (heating and cooling)
3. Water heating
4. Variable drives
5. Efficient motors
6. Refrigeration
7. Building envelope
8. Compressed air
9. Chillers
10. Pumps
11. Irrigation
12. **[OTHER SPECIFY]**
13. None of the above

E5.2 Thank you. Now, how important was product information from **[UTILITY]** program staff or contractors. ___ **[IF NEEDED: ON A SCALE FROM 1 TO 5, WITH 1 BEING NOT IMPORTANT AT ALL AND 5 BEING VERY IMPORTANT. IF A FACTOR IS NOT APPLICABLE TO YOU, PLEASE SAY SO.]**

E5.2a **[ASK IF E5.2 = 1-5 AND MORE THAN 1 SELECTED IN E2]** Does this rating differ for any of the specific improvements you mentioned?

1. (Yes)
2. (No)

98. (Don’t know)

E5.2b **[ASK IF E5.2A = 1]** For which of the following improvements would you rate the importance of information from **[UTILITY]** program staff or contractors differently, and what would be your rating? **[DISPLAY EQUIPMENT MENTIONED IN E2. MULTIPLE RESPONSE ALLOWED]**

[ASK RATING FOR EACH EQUIPMENT SELECTED.] **[IF NEEDED READ: ON A SCALE FROM 1 TO 5, WITH 1 BEING NOT IMPORTANT AT ALL AND 5 BEING VERY IMPORTANT.]**

1. Lighting
2. HVAC (heating and cooling)
3. Water heating
4. Variable drives
5. Efficient motors
6. Refrigeration
7. Building envelope
8. Compressed air
9. Chillers
10. Pumps
11. Irrigation
12. **[OTHER SPECIFY]**
13. None of the above

E5.3 How important was your past experience with a **[UTILITY]** energy efficiency program. ___

[IF NEEDED: ON A SCALE FROM 1 TO 5, WITH 1 BEING NOT IMPORTANT AT ALL AND 5 BEING VERY IMPORTANT. IF A FACTOR IS NOT APPLICABLE TO YOU, PLEASE SAY SO.]

E5.3a **[ASK IF E5.3=1-5 AND MORE THAN 1 SELECTED IN E2]** Does this rating differ for any of the specific improvements you mentioned?

1. (Yes)
2. (No)
98. (Don't know)

E5.3b **[ASK IF E5.3A = 1]** For which of the following improvements would you rate the importance of your past experience with a **[UTILITY]** energy efficiency program differently? **[DISPLAY EQUIPMENT MENTIONED IN E2. MULTIPLE RESPONSE ALLOWED]**

[ASK RATING FOR EACH EQUIPMENT SELECTED.] **[IF NEEDED READ: ON A SCALE FROM 1 TO 5, WITH 1 BEING NOT IMPORTANT AT ALL AND 5 BEING VERY IMPORTANT.]**

1. Lighting
2. HVAC (heating and cooling)
3. Water heating
4. Variable drives
5. Efficient motors
6. Refrigeration
7. Building envelope
8. Compressed air
9. Chillers
10. Pumps
11. Irrigation
12. **[OTHER SPECIFY]**
13. None of the above

F. Firmographics

[ASK SECTION F TO ALL SURVEY RESPONDENTS]

Finally, I have a few general questions about your business.

F1. What industry is your company in? [DON'T READ RESPONSES UNLESS NECESSARY]

1. (Accommodation, Lodging)
2. (Arts, Entertainment and Recreation)
3. (Construction)
4. (Dairy, Agricultural)
5. (Educational Services)
6. (Finance, Insurance)
7. (Food Service)
8. (Food Processing)
9. (Health Care)
10. (Manufacturing)
11. (Mining)
12. (Nonprofit and Religious Organizations)
13. (Oil and Gas)
14. (Professional, Scientific and Technical Services)

15. (Public Administration/Government Services)
16. (Retail)
17. (Refrigerated Warehouse)
18. (Real Estate/Property Management)
19. (Repair and Maintenance Service)
20. (Transportation)
21. (Warehouses or Wholesaler)
22. (Other **[SPECIFY: _____]**)

98. (Don't know)
99. (Refused)

F2. **[QUESTION REMOVED]**

F3. How many people are employed by your company at all locations?

1. (None)
2. (1-10)
3. (11-25)
4. (26-50)
5. (51-75)
6. (76-100)
7. (101-200)
8. (201-500)
9. (More than 500)
10. (Other) **[RECORD VERBATIM: _____]**

98. (Don't know)
99. (Refused)

F4. What type of fuel is used for space heating at your facility?

1. Electric
2. Gas
3. (Other) **[RECORD VERBATIM: _____]**

98. (Don't know)
99. (Refused)

F5. What type of fuel is used for water heating at your facility?

1. Electric
2. Gas
3. (Other) **[RECORD VERBATIM: _____]**

98. (Don't know)
99. (Refused)

G. Closing

[ASK PARTIAL PARTICIPANTS G1-G3] [NONPARTICIPANTS GO TO CLOSING]

G1. Overall, how satisfied would you say you are with the Wattsmart Business program? Would you say: **[READ LIST]**

1. Very satisfied
2. Somewhat satisfied
3. Not too satisfied
4. Not satisfied at all

98. (Don't know)
99. (Refused)

G2. **[if G1=3 or 4]** Why do you say you were **[INSERT ANSWER FROM G1]** with the program?

1. **[RECORD VERBATIM: _____]**

98. (Don't know)
99. (Refused)

G3. Is there anything that **[UTILITY]** could have done to improve your overall experience with the Wattsmart Business Program? **[DO NOT READ THE LIST, RECORD ALL THAT APPLY]**

1. (Better/more communication **[SPECIFY: WHO WOULD YOU LIKE MORE COMMUNICATION FROM? _____]**)
2. (Quicker response time **[SPECIFY: WHO WOULD YOU LIKE A QUICKER RESPONSE TIME FROM? __]**)
3. (Larger selection of eligible equipment **[ASK: WHAT ENERGY-EFFICIENT EQUIPMENT SHOULD WATTSMART BUSINESS OFFER INCENTIVES FOR? _____]**)
4. (Increasing the incentive amount)
5. (Simplify the application process) **[ASK: IN WHAT WAY? _____]**)
6. (Simplify the website) **[ASK: IN WHAT WAY? _____]**)
7. (Provide quicker approval on applications)
8. (Send incentive check out faster)
9. (Other **[SPECIFY: _____]**)
10. (No, nothing)

98. (Don't know)
99. (Refused)

This completes the survey! Your responses are very important to [UTILITY]. We appreciate your participation and thank you for your time. Have a good day.

Appendix E. Measure Category Cost-Effectiveness

Completed at the end-use category level, cost-effectiveness are reported for evaluated net savings. Table E-1 shows cost- effectiveness inputs for Idaho's Wattsmart program.

Table E-1. Idaho Wattsmart Business End-Use Category Cost-Effectiveness Inputs

Input Description	2018	2019	Total
Average Measure Life [a]			
Agricultural	6.5	6.7	6.6
Direct Install	12.0	12.0	12.0
Energy Management	10.2	3.0	5.3
HVAC	15.8	14.8	15.2
Lighting	12.8	13.4	13.1
Motors	15.0	15.0	15.0
Other	13.8	11.4	12.2
Strategic Energy Management	3.0	3.0	3.0
Evaluated Net Energy Savings (kWh/year) [b]			
Agricultural	1,886,777	3,263,741	5,150,518
Direct Install	2,180,476	1,231,144	3,411,620
Energy Management	458,252	1,003,675	1,461,927
HVAC	223,714	471,118	694,831
Lighting	4,826,080	5,287,939	10,114,019
Motors	283,018	474,694	757,712
Other	262,144	520,315	782,459
Strategic Energy Management	357,312	1,603,955	1,961,267
Total Utility Cost (including incentives) [c]			
Agricultural	$397,966	$686,217	$1,084,183
Direct Install	$927,853	$519,197	$1,447,050
Energy Management	$67,520	$56,466	$123,986
HVAC	$96,475	$179,438	$275,913
Lighting	$1,342,826	$1,430,883	$2,773,709
Motors	$82,466	$141,438	$223,904
Other	$105,719	$200,965	$306,684
Strategic Energy Management	$18,770	$81,875	$100,645
Incentives			
Agricultural	$219,519	$392,129	$611,648
Direct Install	$588,443	$332,247	$920,690
Energy Management	$10,358	$22,685	$33,043
HVAC	$45,171	$82,358	$127,529
Lighting	$420,600	$528,263	$948,863
Motors	$24,064	$48,853	$72,917
Other	$52,753	$121,769	$174,522
Strategic Energy Management	$6,213	$27,890	$34,104
Commercial Retail Rate	**$0.0861**	**$0.0852**	**N/A**
Industrial Retail Rate	**$0.0622**	**$0.0609**	**N/A**
Irrigation Retail Rate	**$0.0897**	**$0.0887**	**N/A**

[a] Weighted average measure category lives are based on individual measure lifetimes and weighted by savings.

[b] Evaluated savings reflect impacts at the customer meter.

[c] Rocky Mountain Power provided program costs and incentives in annual report data, allocating program costs by weighted savings.

Agricultural

Table E-2, Table E-3, and Table E-4 show the agriculture end-use category cost-effectiveness results for net evaluated savings. The agricultural end-use category proved cost-effective from the UCT and PCT perspectives.

Table E-2. Idaho Agricultural 2018-2019 Net (Load Shape ID_Irrigation_General)

Cost-Effectiveness Test	Levelized $/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	$0.0654	$1,993,131	$1,346,170	($646,961)	0.68
TRC	$0.0654	$1,993,131	$1,223,791	($769,340)	0.61
UCT	$0.0356	$1,084,183	$1,223,791	$139,608	1.13
RIM		$3,816,574	$1,223,791	($2,592,783)	0.32
PCT		$2,375,932	$4,881,008	$2,505,076	2.05
Lifecycle Revenue Impacts ($/kWh)					$0.000144451
Discounted Participant Payback (years)					4.01

Table E-3. Idaho Agricultural 2018 Net (Load Shape ID_Irrigation_General)

Cost-Effectiveness Test	Levelized $/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	$0.0496	$588,805	$472,814	($115,991)	0.80
TRC	$0.0496	$588,805	$429,831	($158,974)	0.73
UCT	$0.0335	$397,966	$429,831	$31,865	1.08
RIM		$1,409,203	$429,831	($979,372)	0.31
PCT		$641,186	$1,799,577	$1,158,391	2.81
Lifecycle Revenue Impacts ($/kWh)					$0.000054563
Discounted Participant Payback (years)					2.52

Table E-4. Idaho Agricultural 2019 Net (Load Shape ID_Irrigation_General)

Cost-Effectiveness Test	Levelized $/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	$0.0687	$1,404,326	$873,356	($530,970)	0.62
TRC	$0.0687	$1,404,326	$793,960	($610,366)	0.57
UCT	$0.0336	$686,217	$793,960	$107,743	1.16
RIM		$2,407,371	$793,960	($1,613,411)	0.33
PCT		$1,734,746	$3,081,431	$1,346,685	1.78
Lifecycle Revenue Impacts ($/kWh)					$0.000089887
Discounted Participant Payback (years)					4.94

Direct Install

Table E-5, Table E-6, and Table E-7 show the direct install end-use category cost-effectiveness results for net evaluated savings. The direct install end-use category proved cost-effective from the PTRC, TRC, and PCT perspectives.

Table E-5. Idaho Direct Install 2018-2019 Net (Load Shape ID_Miscellaneous_Lighting)

Cost-Effectiveness Test	Levelized $/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	$0.0269	$842,464	$1,454,493	$612,029	1.73
TRC	$0.0269	$842,464	$1,322,266	$479,802	1.57
UCT	$0.0462	$1,447,050	$1,322,266	($124,784)	0.91
RIM		$4,249,077	$1,322,266	($2,926,811)	0.31
PCT		$306,897	$3,641,104	$3,334,207	11.86
Lifecycle Revenue Impacts ($/kWh)					$0.000080229
Discounted Participant Payback (years)					N/A

Table E-6. Idaho Direct Install 2018 Net (Load Shape ID_Miscellaneous_Lighting)

Cost-Effectiveness Test	Levelized $/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	$0.0259	$541,443	$899,307	$357,864	1.66
TRC	$0.0259	$541,443	$817,552	$276,109	1.51
UCT	$0.0444	$927,853	$817,552	($110,301)	0.88
RIM		$2,720,050	$817,552	($1,902,498)	0.30
PCT		$196,148	$2,328,440	$2,132,292	11.87
Lifecycle Revenue Impacts ($/kWh)					$0.000052151
Discounted Participant Payback (years)					N/A

Table E-7. Idaho Direct Install 2019 Net (Load Shape ID_Miscellaneous_Lighting)

Cost-Effectiveness Test	Levelized $/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	$0.0255	$301,021	$555,185	$254,164	1.84
TRC	$0.0255	$301,021	$504,714	$203,693	1.68
UCT	$0.0440	$519,197	$504,714	($14,483)	0.97
RIM		$1,529,027	$504,714	($1,024,313)	0.33
PCT		$110,749	$1,312,664	$1,201,915	11.85
Lifecycle Revenue Impacts ($/kWh)					$0.000028078
Discounted Participant Payback (years)					N/A

Energy Management

Table E-8, Table E-9, and Table E-10 show the energy management end-use category cost-effectiveness results for net evaluated savings. The energy management end-use category proved cost-effective from all test perspectives except for the RIM test perspective.

Table E-8. Idaho Energy Management 2018-2019 Net (Load Shape ID_Miscellaneous_Mfg_General)

Cost-Effectiveness Test	Levelized $/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	$0.0256	$164,932	$251,777	$86,845	1.53
TRC	$0.0256	$164,932	$228,888	$63,956	1.39
UCT	$0.0192	$123,986	$228,888	$104,902	1.85
RIM		$667,084	$228,888	($438,196)	0.34
PCT		$83,133	$643,265	$560,132	7.74
Lifecycle Revenue Impacts ($/kWh)					$0.000040971
Discounted Participant Payback (years)					0.41

Table E-9. Idaho Energy Management 2018 Net (Load Shape ID_Miscellaneous_Mfg_General)

Cost-Effectiveness Test	Levelized $/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	$0.0270	$105,308	$151,458	$46,150	1.44
TRC	$0.0270	$105,308	$137,689	$32,381	1.31
UCT	$0.0173	$67,520	$137,689	$70,169	2.04
RIM		$367,765	$137,689	($230,076)	0.37
PCT		$54,096	$347,712	$293,616	6.43
Lifecycle Revenue Impacts ($/kWh)					$0.000007933
Discounted Participant Payback (years)					1.22

Table E-10. Idaho Energy Management 2019 Net (Load Shape ID_Miscellaneous_Mfg_General)

Cost-Effectiveness Test	Levelized $/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	$0.0190	$59,624	$100,319	$40,695	1.68
TRC	$0.0190	$59,624	$91,199	$31,575	1.53
UCT	$0.0180	$56,466	$91,199	$34,733	1.62
RIM		$299,319	$91,199	($208,120)	0.30
PCT		$29,037	$295,553	$266,516	10.18
Lifecycle Revenue Impacts ($/kWh)					$0.000058747
Discounted Participant Payback (years)					0.07

HVAC

Table E-11, Table E-12, and Table E-13 show the HVAC end-use category cost-effectiveness results for net evaluated savings. The HVAC end-use category proved cost-effective from the UCT and PCT perspectives.

Table E-11. Idaho HVAC 2018-2019 Net (Load Shape ID_School_HVAC_Aux)

Cost-Effectiveness Test	Levelized $/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	$0.0635	$478,000	$424,236	($53,764)	0.89
TRC	$0.0635	$478,000	$385,669	($92,331)	0.81
UCT	$0.0366	$275,913	$385,669	$109,756	1.40
RIM		$939,908	$385,669	($554,239)	0.41
PCT		$370,356	$873,591	$503,235	2.36
Lifecycle Revenue Impacts ($/kWh)					$0.000011579
Discounted Participant Payback (years)					4.40

Table E-12. Idaho HVAC 2018 Net (Load Shape ID_School_HVAC_Aux)

Cost-Effectiveness Test	Levelized $/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	$0.0654	$165,779	$135,937	($29,842)	0.82
TRC	$0.0654	$165,779	$123,579	($42,200)	0.75
UCT	$0.0380	$96,475	$123,579	$27,104	1.28
RIM		$312,267	$123,579	($188,688)	0.40
PCT		$128,624	$287,634	$159,010	2.24
Lifecycle Revenue Impacts ($/kWh)					$0.000003652
Discounted Participant Payback (years)					4.85

Table E-13. Idaho HVAC 2019 Net (Load Shape ID_School_HVAC_Aux)

Cost-Effectiveness Test	Levelized $/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	$0.0605	$312,221	$288,299	($23,922)	0.92
TRC	$0.0605	$312,221	$262,090	($50,131)	0.84
UCT	$0.0347	$179,438	$262,090	$82,652	1.46
RIM		$627,641	$262,090	($365,551)	0.42
PCT		$241,732	$585,957	$344,225	2.42
Lifecycle Revenue Impacts ($/kWh)					$0.000007637
Discounted Participant Payback (years)					4.19

Lighting

Table E-14, Table E-15, and Table E-16 show the lighting end-use category cost-effectiveness results for net evaluated savings. The lighting end-use category proved cost-effective from the PCT and UCT perspectives.

Table E-14. Idaho Lighting 2018-2019 Net (Load Shape ID_Miscellaneous_Lighting)

Cost-Effectiveness Test	Levelized $/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	$0.0518	$5,403,248	$5,124,060	($279,188)	0.95
TRC	$0.0518	$5,403,248	$4,658,236	($745,012)	0.86
UCT	$0.0266	$2,773,709	$4,658,236	$1,884,527	1.68
RIM		$11,606,845	$4,658,236	($6,948,609)	0.40
PCT		$3,474,177	$9,524,723	$6,050,546	2.74
Lifecycle Revenue Impacts ($/kWh)					$0.000157704
Discounted Participant Payback (years)					3.14

Table E-15. Idaho Lighting 2018 Net (Load Shape ID_Miscellaneous_Lighting)

Cost-Effectiveness Test	Levelized $/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	$0.0492	$2,540,056	$2,443,546	($96,511)	0.96
TRC	$0.0492	$2,540,056	$2,221,405	($318,651)	0.87
UCT	$0.0260	$1,342,826	$2,221,405	$878,579	1.65
RIM		$5,758,335	$2,221,405	($3,536,930)	0.39
PCT		$1,570,709	$4,707,502	$3,136,793	3.00
Lifecycle Revenue Impacts ($/kWh)					$0.000080273
Discounted Participant Payback (years)					2.92

Table E-16. Idaho Lighting 2019 Net (Load Shape ID_Miscellaneous_Lighting)

Cost-Effectiveness Test	Levelized $/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	$0.0528	$2,863,192	$2,680,514	($182,678)	0.94
TRC	$0.0528	$2,863,192	$2,436,831	($426,361)	0.85
UCT	$0.0264	$1,430,883	$2,436,831	$1,005,948	1.70
RIM		$5,848,510	$2,436,831	($3,411,679)	0.42
PCT		$1,903,468	$4,817,221	$2,913,753	2.53
Lifecycle Revenue Impacts ($/kWh)					$0.000084749
Discounted Participant Payback (years)					3.36

Motors

Table E-17, Table E-18, and Table E-19 show the motors end-use category cost-effectiveness results for net evaluated savings. The motors end-use category proved cost-effective from all test perspectives except for the RIM test perspective.

Table E-17. Idaho Motors 2018-2019 Net (Load Shape ID_Miscellaneous_Mfg_General)

Cost-Effectiveness Test	Levelized $/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	$0.0409	$335,726	$429,693	$93,967	1.28
TRC	$0.0409	$335,726	$390,630	$54,904	1.16
UCT	$0.0273	$223,904	$390,630	$166,726	1.74
RIM		$861,992	$390,630	($471,362)	0.45
PCT		$207,572	$789,870	$582,298	3.81
Lifecycle Revenue Impacts ($/kWh)					$0.000009847
Discounted Participant Payback (years)					2.43

Table E-18. Idaho Motors 2018 Net (Load Shape ID_Miscellaneous_Mfg_General)

Cost-Effectiveness Test	Levelized $/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	$0.0359	$112,349	$154,744	$42,395	1.38
TRC	$0.0359	$112,349	$140,676	$28,327	1.25
UCT	$0.0264	$82,466	$140,676	$58,210	1.71
RIM		$359,843	$140,676	($219,167)	0.39
PCT		$60,614	$335,724	$275,110	5.54
Lifecycle Revenue Impacts ($/kWh)					$0.000004579
Discounted Participant Payback (years)					1.49

Table E-19. Idaho Motors 2019 Net (Load Shape ID_Miscellaneous_Mfg_General)

Cost-Effectiveness Test	Levelized $/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	$0.0435	$223,377	$274,949	$51,572	1.23
TRC	$0.0435	$223,377	$249,954	$26,577	1.12
UCT	$0.0276	$141,438	$249,954	$108,516	1.77
RIM		$502,149	$249,954	($252,195)	0.50
PCT		$146,958	$454,146	$307,188	3.09
Lifecycle Revenue Impacts ($/kWh)					$0.000005269
Discounted Participant Payback (years)					3.17

Other

Table E-20, Table E-21, and Table E-22 show the other end-use category cost-effectiveness results for net evaluated savings. The other end-use category proved cost-effective from the UCT and PCT perspectives.

Table E-20. Idaho Other 2018-2019 Net (Load Shapes ID_Grocery_Refrigeration, ID_Irrigation_General, ID_Miscellaneous_Mfg_General, ID_Miscellaneous_Water_Heat, ID_School_Space_Cool)

Cost-Effectiveness Test	Levelized $/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	$0.0635	$456,287	$375,528	($80,759)	0.82
TRC	$0.0635	$456,287	$341,389	($114,898)	0.75
UCT	$0.0427	$306,684	$341,389	$34,705	1.11
RIM		$953,928	$341,389	($612,539)	0.36
PCT		$364,186	$901,763	$537,577	2.48
Lifecycle Revenue Impacts ($/kWh)					$0.000016791
Discounted Participant Payback (years)					2.91

Table E-21. Idaho Other 2018 Net (Load Shapes ID_Grocery_Refrigeration, ID_Irrigation_General, ID_Miscellaneous_Mfg_General, ID_Miscellaneous_Water_Heat, ID_School_Space_Cool)

Cost-Effectiveness Test	Levelized $/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	$0.0699	$192,410	$140,339	($52,071)	0.73
TRC	$0.0699	$192,410	$127,581	($64,829)	0.66
UCT	$0.0384	$105,719	$127,581	$21,862	1.21
RIM		$347,247	$127,581	($219,666)	0.37
PCT		$156,679	$324,133	$167,454	2.07
Lifecycle Revenue Impacts ($/kWh)					$0.000004985
Discounted Participant Payback (years)					4.89

Table E-22. Idaho Other 2019 Net (Load Shapes ID_Grocery_Refrigeration, ID_Irrigation_General, ID_Miscellaneous_Mfg_General, ID_Miscellaneous_Water_Heat, ID_School_Space_Cool)

Cost-Effectiveness Test	Levelized $/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	$0.0548	$263,877	$235,189	($28,688)	0.89
TRC	$0.0548	$263,877	$213,808	($50,069)	0.81
UCT	$0.0417	$200,965	$213,808	$12,843	1.06
RIM		$606,681	$213,808	($392,873)	0.35
PCT		$207,507	$577,630	$370,123	2.78
Lifecycle Revenue Impacts ($/kWh)					$0.000012004
Discounted Participant Payback (years)					1.95

Strategic Energy Management

Table E-23, Table E-24, and Table E-25 show the strategic energy management (SEM) end-use category cost-effectiveness results for net evaluated savings. The SEM end-use category proved cost-effective from all test perspectives except for the RIM test perspective.

Table E-23. Idaho Refrigeration 2018-2019 Net (Load Shape ID_Miscellaneous_Mfg_General)

Cost-Effectiveness Test	Levelized $/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	$0.0206	$111,503	$193,589	$82,086	1.74
TRC	$0.0206	$111,503	$175,990	$64,487	1.58
UCT	$0.0186	$100,645	$175,990	$75,345	1.75
RIM		$568,086	$175,990	($392,096)	0.31
PCT		$43,653	$487,931	$444,278	11.18
Lifecycle Revenue Impacts ($/kWh)					$0.000110678
Discounted Participant Payback (years)					0.06

Table E-24. Idaho Refrigeration 2018 Net (Load Shape ID_Miscellaneous_Mfg_General)

Cost-Effectiveness Test	Levelized $/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	$0.0188	$20,748	$33,271	$12,523	1.60
TRC	$0.0188	$20,748	$30,246	$9,498	1.46
UCT	$0.0170	$18,770	$30,246	$11,476	1.61
RIM		$98,113	$30,246	($67,867)	0.31
PCT		$7,953	$83,246	$75,293	10.47
Lifecycle Revenue Impacts ($/kWh)					$0.000019157
Discounted Participant Payback (years)					0.06

Table E-25. Idaho Refrigeration 2019 Net (Load Shape ID_Miscellaneous_Mfg_General)

Cost-Effectiveness Test	Levelized $/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	$0.0181	$90,755	$160,318	$69,563	1.77
TRC	$0.0181	$90,755	$145,744	$54,989	1.61
UCT	$0.0164	$81,875	$145,744	$63,869	1.78
RIM		$469,973	$145,744	($324,229)	0.31
PCT		$35,700	$404,685	$368,985	11.34
Lifecycle Revenue Impacts ($/kWh)					$0.000091521
Discounted Participant Payback (years)					0.06