



2016–2017 Idaho *wattsmart* Business Program Evaluation

FINAL REPORT

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Table of Contents

- Table of Contents.....i**
- Glossary of Terms v**
- Executive Summary.....1**
 - Key Findings..... 2
 - Key Impact Evaluation Findings 2
 - Key Process Evaluation Findings 4
 - Cost-Effectiveness Results 5
 - Recommendations..... 6
 - Savings Considerations 6
 - Marketing and Outreach..... 6
 - Nonparticipants 6
- Introduction8**
 - Program Description..... 8
 - Program Delivery 8
 - Evaluation Objectives 9
 - Data Collection and Evaluation Activities..... 10
 - Impact Sampling and Extrapolation Methodology 10
 - Process Sample Design and Data Collection Methods 13
- Impact Evaluation15**
 - Site Visits and Engineering Analysis 16
 - Overall Evaluated Gross Savings Results 16
 - Evaluated Gross Savings Results by Measure Category 17
 - Agricultural..... 17
 - Compressed Air 19
 - Energy Management..... 20
 - Lighting..... 20
 - Motor Systems 23
 - HVAC 25
 - Refrigeration 27
 - Other 27

Evaluated Net Savings	29
Process Evaluation	37
Methodology	37
Materials and Database Review	37
Utility and Administrator Staff Interviews	38
Surveys	38
Program Implementation and Delivery	40
Program Overview	40
Program Challenges and Successes	46
Customer Response	47
Wattsmart Business Typical Upgrades and Custom Analysis	47
Small Business Direct Install/Small Business Lighting	54
Partial Participants	58
Nonparticipants	60
Cost-Effectiveness	65
Conclusions and Recommendations	69
Savings Considerations	69
Conclusion	69
Recommendation	70
Marketing and Outreach	70
Conclusion	70
Recommendation	70
Nonparticipants	70
Conclusion	70
Recommendation	71
Appendices	72
Appendix A. Self-Report NTG Methodology	72
Appendix B. Nonparticipant Spillover	72
Appendix C. Participant Survey Guide	72
Appendix D. Nonparticipant/Partial Participant Survey Guide	72
Appendix E. Measure Category Cost-Effectiveness	72

Table

Table 1. 2016 and 2017 <i>wattsmart</i> Business Program Savings ^a	3
Table 2. 2016 <i>wattsmart</i> Business Program Savings ^a	3
Table 3. 2017 <i>wattsmart</i> Business Program Savings ^a	4
Table 4. 2016–2017 Evaluated Net <i>wattsmart</i> Business Program Cost-Effectiveness Summary.....	6
Table 5. Evaluation Objectives and Activities	10
Table 6. Idaho 2016–2017 <i>wattsmart</i> Business Program Impact Sampling	11
Table 7. Idaho 2016–2017 <i>wattsmart</i> Business Program Impact Sampling Summary.....	12
Table 8. Idaho 2016–2017 <i>wattsmart</i> Business Program Data Collection and Sampling	14
Table 9. Impact Steps to Determine Evaluated Gross and Net Savings.....	15
Table 10. Reported and Evaluated Gross Savings by Program Year	17
Table 11. Reported and Evaluated Gross <i>wattsmart</i> Business Program Savings by Measure Category (2016–2017).....	17
Table 12. Agricultural Sample Detailed Findings	18
Table 13. Lighting Sample Detailed Findings	22
Table 14. Motor System Sample Results	24
Table 15. Critical Inputs	25
Table 16. HVAC Sample Results	27
Table 17. Other Sample Detailed Findings.....	28
Table 18. <i>wattsmart</i> Business Program NTG Results for 2016–2017	30
Table 19. Measure Installations in Absence of <i>wattsmart</i> Business Program.....	32
Table 20. <i>wattsmart</i> Business Program Participant Spillover.....	34
Table 21. NTG Percentages by Measure Strata	35
Table 22. NTG Comparisons ^a	36
Table 23. Research Areas and Questions.....	37
Table 24. Benefits and Costs Included in Various Cost-Effectiveness Tests	66
Table 25. Selected Cost Analysis Inputs.....	66
Table 26. <i>wattsmart</i> Business Program Cost-Effectiveness Summary for 2016 and 2017 Net Savings	67
Table 27. <i>wattsmart</i> Business Program Cost-Effectiveness Summary for 2016 Net Savings	68
Table 28. <i>wattsmart</i> Business Program Cost-Effectiveness Summary for 2017 Net Savings	68

Figures

Figure 1. <i>wattsmart</i> Business Program Delivery Roles	9
Figure 2. Realization Rate Extrapolation.....	12
Figure 3. Agricultural Sample Results	18
Figure 4. Lighting Sample Results	22
Figure 5. Motor Systems Sample Results.....	24
Figure 6. HVAC Sample Results	26
Figure 7. Other Sample Results.....	28
Figure 8. Freeridership by Respondent.....	33
Figure 9. Typical Upgrades and Custom Analysis Participant Respondents by Business Sector	48
Figure 10. Typical Upgrades and Custom Analysis Participants Information Sources.....	49
Figure 11. Typical Upgrades and Custom Analysis Participants Preferred Method of Communication to Stay Informed.....	50
Figure 12. Typical Upgrade Participants’ Assistance Source.....	50
Figure 13. Participant Satisfaction Levels	51
Figure 14. Benefits of Equipment Installed.....	53
Figure 15. Project Payback Period Expectations.....	54
Figure 16. SBDI Participant Respondents by Business Sector.....	55
Figure 17. SBL Participant Respondents by Business Sector	55
Figure 18. Sources of Program Awareness Among SBDI and SBL Participants.....	56
Figure 19. Participation Motivations	56
Figure 20. Customer Satisfaction Levels with SBDI and SBL Elements	57
Figure 21. Customer-Reported Benefits of Equipment Installed Through SBDI and SBL	58
Figure 22. Partial Participant Respondents by Business Sector.....	59
Figure 23. Nonparticipant Respondents by Business Sector	60
Figure 24. Nonparticipants Source of Awareness of <i>wattsmart</i> Business Program	61
Figure 25. Reason for Not Participating.....	62
Figure 26. Factors that Motivate Energy Efficiency Upgrades.....	63
Figure 27. Attitudes About Energy Efficiency Improvements—Nonparticipants	64

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:

$$\text{Evaluated Gross Savings}_i = \text{Verified Installations}_i * \text{Unit Consumption}_i$$

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:

$$\text{Net Savings} = \text{Evaluated Gross Savings} * \text{NTG}$$

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:

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

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).

T-Test

In regression analysis, a t-test is applied to determine whether the estimated coefficient differs significantly from zero. A t-test with a p-value less than 0.10 indicates that there is a 90% probability that the estimated coefficient is different from zero.

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) offers services and incentives to help commercial, industrial, and agricultural/irrigation customers to maximize the energy efficiency of their equipment and operations through downstream (customer) incentive mechanisms. During the 2016 and 2017 program years, the **wattsmart** Business program reported gross electricity savings of 24,694,572 kWh in Idaho.

RMP uses two delivery channels to offer program measures and services to customers: contracted demand-side management (DSM) delivery and internal DSM delivery. RMP contracts with two program administrators—Cascade Energy and Nexant—to manage day-to-day operations of the contracted DSM delivery channel, through which RMP primarily offers prescriptive incentives, marketed and delivered to customers through local trade allies who join and participate in the **wattsmart** Business Vendor Network, as well as trade allies who are not members of the Network. RMP contracts with Willdan Energy Solutions for turnkey delivery of the Small Business Direct Install (SBDI) offering. Through the internal DSM delivery channel, RMP's project managers deliver technical energy analysis services through contracted third-party energy engineering firms and custom incentives for capital improvements and behavior-based Energy Management measures to large managed-account customers, engaged in more complex projects not covered by other offerings.¹

RMP's in-house staff also oversee the **wattsmart** Business Energy Management offerings (Recommissioning, Industrial Recommissioning, Persistent Commissioning, or Strategic Energy Management [SEM]), delivered through the same stable of contracted third-party engineering providers with expertise appropriate to the individual projects.

RMP contracted with the Cadmus team (comprised of Cadmus, ADM Associates, and VuPoint Research) to conduct impact and process evaluations of the Idaho **wattsmart** Business program for the 2016 and 2017 program years. Cadmus subcontracted a portion of the impact evaluation to ADM Associates, and VuPoint Research performed the process evaluation telephone surveys. For the impact evaluation, the team assessed energy impacts, net-to-gross (NTG), and program cost-effectiveness. For the process evaluation, the team assessed program delivery and efficacy, bottlenecks, barriers, and opportunities for possible improvements.

At RMP's request, Cadmus evaluated program participants and reported the 2016–2017 evaluation findings under the following categories:²

- ***Wattsmart Business (Typical Upgrades and Custom Analysis)***: This category includes projects delivered through contracted DSM and internal DSM delivery channels. RMP offered customers

¹ Managed accounts are typically accounts larger than one MW of demand on an annual basis.

² To report NTG, Cadmus surveyed **wattsmart** Business Typical Upgrades and Custom Analysis participants using the same measure strata used by the Impact team.

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.

- **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. Beginning in June 2016, RMP restructured the Small Business Lighting (SBL) offering to a SBDI offering for retrofits, with 2017 as its first full year of operation.³
- **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.

Key Findings

Key Impact Evaluation Findings

For the impact evaluation, the Cadmus team analyzed 81 projects that contributed 25% of the 2016 and 2017 program savings. Table 1 summarizes the evaluation findings, including number of projects, gross savings, and net savings. Overall, the program achieved a 96.1% gross realization rate for the two program years, though variability occurred between measure categories. The Cadmus team calculated net-to-gross (NTG) as 84%, yielding evaluated net savings of 19,933,002 kWh. Overall, the impact evaluation achieved $\pm 4.0\%$ precision with 90% confidence. The *Evaluated Gross Savings Results by Measure Category* section describe specific details and findings per strata.

³ Additional details about the SBL offering can be found in the *Program Description* section of this report, and surveyed customer responses are provided in the *Customer Response* section *Small Business Direct Install/Small Business Lighting*.

Table 1. 2016 and 2017 wattsmart Business Program Savings^a

Strata	Evaluated Projects ^b	Reported Gross Savings (kWh)	Evaluated Gross Savings (kWh)	Gross Realization Rate	Precision ^c	NTG	Evaluated Net Savings (kWh)
Agricultural ^d	91	3,928,853	3,808,374	97%	8%	74%	2,818,196
Compressed Air	4	450,485	450,485	100%	NA	84%	378,407
Energy Management	1	342,880	425,236	124%	0%	84%	357,198
HVAC	29	1,908,866	2,161,533	113%	7%	65%	1,404,997
Lighting	480	16,309,456	15,307,852	94%	4%	89%	13,623,988
Motor Systems	22	509,248	429,124	84%	14%	77%	677,538
Refrigeration	4	879,919	879,919	100%	NA	102%	437,706
Other	19	364,865	264,013	72%	6%	89%	234,972
Total	650	24,694,572	23,726,536	96.1%	4%	84%	19,933,002

^a Totals in tables may not add exactly due to rounding.

^b Evaluated Projects refer to the quantity of unique projects within each strata.

^c The measure category precision is based on 80% confidence; the Portfolio precision is based on 90% confidence.

^d The Agricultural strata includes irrigation, dairy, and other produce measures.

Table 2 and Table 3 show impact evaluation findings by program year (for 2016 and 2017, respectively). In performing the analysis, the Cadmus team combined the 2016 and 2017 program years, applying overall realization rates achieved over each year.

Table 2. 2016 wattsmart Business Program Savings^a

Strata	Evaluated Projects	Reported Gross Savings (kWh)	Evaluated Gross Savings (kWh)	Gross Realization Rate	NTG	Evaluated Net Savings (kWh)
Agricultural	56	2,440,482	2,365,644	97%	74%	1,750,576
Compressed Air	1	121,290	121,290	100%	84%	101,884
Energy Management	N/A	N/A	N/A	N/A	N/A	0
HVAC	13	998,655	1,130,842	113%	65%	735,047
Lighting	213	9,789,714	9,188,503	94%	89%	8,177,768
Motor Systems	10	254,897	214,792	84%	77%	237,111
Refrigeration	2	307,937	307,937	100%	102%	219,088
Other	14	274,910	198,922	72%	89%	177,041
Total	309	14,187,885	13,527,931	95.3%	84%	11,398,516

^a Totals in tables may not add exactly due to rounding.

Table 3. 2017 wattsmart Business Program Savings^a

Strata	Evaluated Projects	Reported Gross Savings (kWh)	Evaluated Gross Savings (kWh)	Gross Realization Rate	NTG	Evaluated Net Savings (kWh)
Agricultural	35	1,488,371	1,442,730	97%	74%	1,067,620
Compressed Air	3	329,195	329,195	100%	84%	276,524
Energy Management	1	342,880	425,236	124%	84%	357,198
HVAC	16	910,211	1,030,691	113%	65%	669,949
Lighting	267	6,519,742	6,119,349	94%	89%	5,446,220
Motor Systems	12	254,351	214,332	84%	77%	440,426
Refrigeration	2	571,982	571,982	100%	102%	218,619
Other	5	89,955	65,091	72%	89%	57,931
Total	341	10,506,687	10,198,605	97.1%	84%	8,534,487

^a 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.⁴

Participant Experience

Typical Upgrades and Custom Analysis:

- Participants reported satisfaction with the program components, and a majority found it very easy or somewhat easy to submit the applications
- Participants reported no challenges to participating in the program (71%, n=38)
- Participants reported one or more benefits (n=37)
 - 52% reported lower costs (energy bills [41%], lower maintenance costs [11%])
 - 46% reported reduced energy consumption or demand
 - 30% reported better/brighter lighting
- Seven of eight participants who reported using a program participating vendor, reported being very satisfied with the vendors’ work

SBDI/SBL:

- Though SBDI has a participant profile similar to SBL (business sectors, number of locations), SBDI also extended program delivery to customers with more than 100 employees.

⁴ Though the Cadmus team attempted to survey the one Energy Management participant, the participant remained nonresponsive after five attempts; therefore, this evaluation does not address survey results or findings reported through Energy Management.

- SBDI and SBL customer motivation and satisfaction levels did not significantly differ; all participants reported being somewhat or very satisfied

Partial Participants:

- Cost barriers and lack of communication became factors for some organizations not completing projects

Nonparticipants

- 41% (28 of 68) nonparticipants knew of the program prior to participating in the survey; most learned of the program through word-of-mouth (nine), through RMP marketing and outreach (seven), or through contact with a RMP or wattsmart business representative (five)
- 21 of 27 were unlikely to request an incentive during the next six months
- More than 50% of all surveyed nonparticipants said upgrades were too costly, or they did all they could without a substantial investment

Marketing and Outreach

- RMP's marketing focus on customer case studies was reflected in the media and collateral
- Marketing of the program included multiple touch-points, with particularly strong visuals in their social media and well selected and marketed case studies. The website provides abundant information for customers, although layout of some information can be confusing when topics are covered in more than one location.
- While the media flowchart calendarized media throughout the year, timing of emails, bill inserts, or organic social media content was not indicated
- Outreach efforts were sparse January through March and picked up April through June, and September through November

Cost-Effectiveness Results

As shown in Table 4, the program proved cost-effective for the 2016 and 2017 evaluation period from all test perspectives, except for the Ratepayer Impact Measure (RIM) test. The program proved cost-effective from the Total Resource Cost Test (TRC) perspective with a benefit/cost ratio of 1.74, as well as the Utility Cost Test (UCT) at 2.81.

Table 4. 2016–2017 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)	\$0.045	\$8,682,890	\$16,587,250	\$7,904,360	1.91
Total Resource Cost Test No Adder	\$0.045	\$8,682,890	\$15,079,318	\$6,396,428	1.74
Utility Cost Test (UCT)	\$0.028	\$5,366,403	\$15,079,318	\$9,712,915	2.81
Ratepayer Impact Measure Test		\$22,312,685	\$15,079,318	(\$7,233,367)	0.68
Participant Cost Test (PCT)		\$7,889,741	\$23,402,475	\$15,512,734	2.97
Life Cycle Revenue Impacts (\$/kWh)					\$0.000189481
Discounted Participant Payback (years)					2.75

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 visits, and other 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: Reduce the cool roof measure claimed deemed savings amount from the 0.33 kWh per year per square foot assumption currently used from DEER to 0.13 kWh per year per square foot. Rocky Mountain Power updated the deemed savings for cool roofs in January, 2018 to 0.11 kWh per square foot for new construction projects and 0.22 kWh per square foot for retrofit projects.

Marketing and Outreach

Recommendation: Add timing for emails, bill inserts, and direct mail to the media flowchart or develop a calendar showing timing of both media and other outreach combined. Additional recommendations of incorporating email with marketing campaigns and updating all materials to the latest branding scheme had already been implemented by the time of this report.

Data Management

Recommendation: Going forward, include SBDI measure data for each SBDI installation, in the program database, or at a minimum, in the data provided to the evaluation team.

Nonparticipants

Recommendation: While Cadmus recognizes the increasing need to cost-effectively secure larger customers with significant savings potential, if additional program growth is desired in any of the program offerings, RMP should consider increasing the frequency of brand marketing of the program, and business-to-business outreach by all program administrators. Target the two largest nonparticipant business sectors (Dairy/Agricultural, and Real Estate/Property Management) with case studies highlighting actual energy cost savings achieved by other small businesses in those sectors. Continue growing the program approved trade ally network, to extend RMP's outreach to customers, beyond its own marketing efforts.

Introduction

Program Description

Rocky Mountain Power (RMP) offers **wattsmart** Business program measures, services, and incentives through two delivery channels:

- Contracted demand-side management (DSM) delivery (including Typical Upgrades, Small Business Lighting (SBL), Small Business Direct Install (SBDI))
- Internal DSM delivery (Custom Analysis, Energy Management)

Through the Typical Upgrades offering, RMP provides prescriptive incentives, primarily for small and midsize customers; large customers, however, may receive these incentives as well. RMP contracted with Nexant and Cascade Energy to coordinate with trade allies, provide training and support, and conduct application processing services for these prescriptive incentives.

Wattsmart Business' SBL offering was an enhanced incentive for small business customers, delivered through program-approved trade allies. Nexant managed these trade allies for all participants. RMP offered this to customers through May 2016, at which time it was suspended.

Wattsmart Business' SBDI offering provides an energy assessment and instant incentive (as a discount of project cost) for eligible retrofits at geo-targeted small business customers, delivered through Willdan—a third-party turnkey provider. SBDI was launched in June 2016 to replace the SBL offering.

RMP targets custom incentives to large energy users that generally offer multiple opportunities for energy efficiency upgrades via projects that require custom analysis. Midsize and smaller customers, however, may also participate in custom incentives. RMP provides energy efficiency analysis and verification of custom savings for large customers through the same stable of contracted third-party engineering providers mentioned above.

Through the Energy Management offering (e.g., Recommissioning, Industrial Recommissioning, Persistent Commissioning, or Strategic Energy Management (SEM)), participating customers receive no-cost expertise and custom incentives for verified savings achieved through improved operations, maintenance, and management practices.

Program Delivery

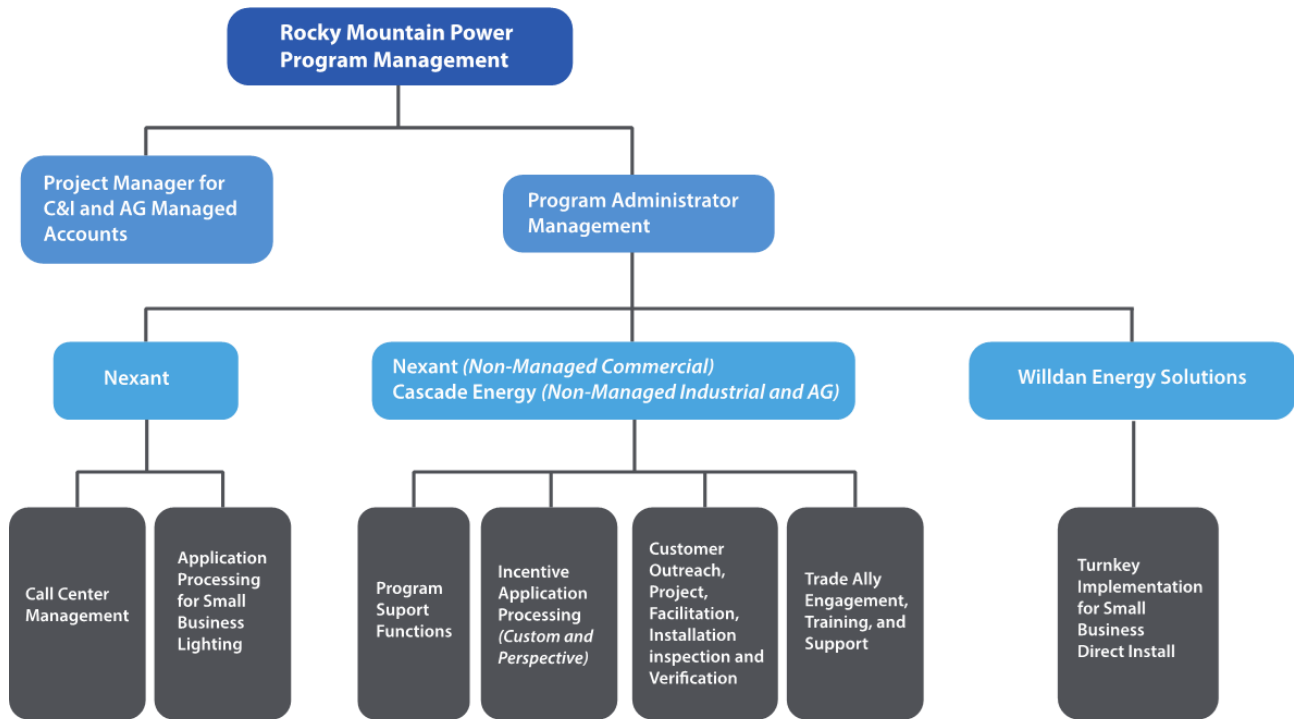
The RMP program manager, who oversees the **wattsmart** Business program, is responsible for contracting with and managing the program's administrators (i.e., Cascade Energy and Nexant and subcontractor Evergreen Consulting Group). In addition, the program manager oversees in-house delivery and cost-effectiveness, achieving and monitoring program performance and compliance, conducting program marketing, and recommending changes to the program's terms and conditions.

RMP's in-house project manager and regional business managers conduct outreach and deliver projects to managed accounts (typically, those larger than one MW). Nexant and Cascade also may conduct

direct customer outreach, project facilitation, and measurement and verification for custom projects serving non-managed accounts, and, on occasion, they may provide project facilitation to managed accounts at RMP’s request.⁵ Willdan conducts all outreach and delivery for the SBDI offering to RMP customers (with assistance from RMP marketing staff), while RMP delivers Energy Management offerings through the stable of third-party engineering providers. These providers are drawn from contracted third-party engineering services with the expertise appropriate for individual projects. Nexant and Cascade may also deliver Energy Management offerings to non-managed accounts.

Figure 1 presents an overview of 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.

⁵ Managed accounts typically are accounts larger than one MW. These accounts are handled individually by a RMP project manager. Non-managed accounts typically are those less than one MW.

Table 5. Evaluation Objectives and Activities

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

Data Collection and Evaluation Activities

The Cadmus team performed on-site visits and engineering analysis for 81 projects to achieve 90% confidence and $\pm 4.0\%$ precision. The team’s process evaluation included a thorough review of program operations, marketing materials, and data tracking. The team interviewed program managers and administrators to thoroughly understand and document the program’s history, objectives, and operations. The team also surveyed program participants, partial participants, and nonparticipants regarding program offerings and operations.⁶

Impact Sampling and Extrapolation Methodology

Through the Idaho **watt**smart Business program, RMP provides incentives for the 12 measure categories shown in Table 6. The Cadmus team stratified these 12 measure categories into eight end-use strata, also shown in the table. The team designed the 2016 and 2017 combined participation sampling plan to achieve approximately $\pm 20\%$ precision at 80% confidence per strata and to exceed $\pm 10\%$ precision at 90% confidence at the nonresidential portfolio level. To account for the wide range of project sizes, the

⁶ Participants are customers completing a measure or project through the program during the 2016 and/or 2017 evaluation period. Partial participants are customers initiating a project through the program during the same period, but not completing that project. Nonparticipants are customers that have never initiated or completed a project through the program (at least not in 2016 or 2017).

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.

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 2016–2017 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
Irrigation	Agricultural	3,928,853	16%	91	22
Farm & Dairy					
Compressed Air	Compressed Air	450,485	2%	4	2
Energy Management	Energy Management	342,880	1%	1	1
HVAC	HVAC	1,908,866	8%	29	14
Lighting	Lighting	16,309,456	66%	480	18
Direct Install					
Motors	Motor Systems	509,248	2%	22	12
Additional Measures	Other	364,865	1%	19	10
Building Shell					
Food Service Equipment					
Refrigeration	Refrigeration	879,919	4%	4	2
Total		24,694,572	100%	650	81

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 lighting strata to the population.

Figure 2. Lighting Strata Realization Rate Extrapolation

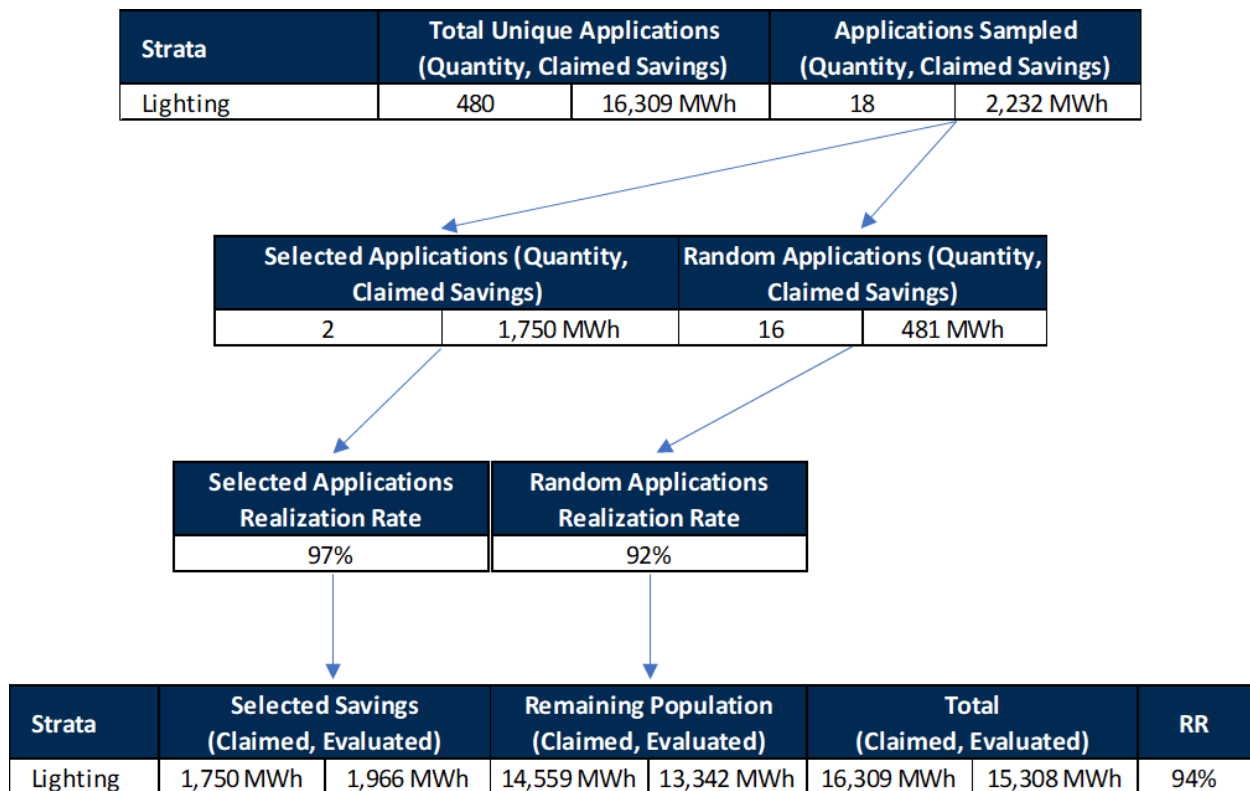


Table 7 shows the total quantity of projects sampled, the sample distribution, the associated energy savings, and the sample’s percentage of the population.

Table 7. Idaho 2016-2017 wattsmart Business Program Impact Sampling Summary

Strata	Number of Unique Projects	Number of Unique Sampled Projects		Sample Reported Savings (kWh)	Total Reported Savings	Percent of Reported Savings Sampled
		Random	Selected			
Agricultural	91	21	1	942,659	3,928,853	24%
Compressed Air	4	0	2	300,110	450,485	67%
Energy Management	1	0	1	342,880	342,880	100%
HVAC	29	7	7	1,361,816	1,908,866	71%
Lighting	480	16	2	2,232,042	16,309,456	14%
Motor Systems	22	8	4	453,825	509,248	89%
Other	19	4	6	277,936	364,248	76%
Refrigeration	4	0	2	307,937	879,919	35%
Total	650	56	25	6,291,205	24,694,572	25%

Process Sample Design and Data Collection Methods

In conducting the process evaluation, the Cadmus team grouped projects into four categories, defining these through conversations with RMP to achieve RMP's reporting objectives:

- **wattsmart** Business (including projects receiving Typical Upgrades incentives and projects receiving Custom Analysis incentives)
- SBL
- SBDI
- Energy Management

The team developed samples for three customer populations—participants, partial participants, and nonparticipants—using a simple random sampling within each category.⁷ The team defined participants as customers completing Typical Upgrades, Custom Analysis, SBL, SBDI, or Energy Management projects through the program during the evaluation period (program years 2016 and 2017). The team defined partial participants as customers initiating Typical Upgrades, Custom Analysis, or SBDI projects through the program in 2016 or 2017, but not completing those projects. Due to the small population, the team did not stratify these customers by measure category or other strata. Rather, the team selected projects for review using simple random sampling.

The Cadmus team defined nonparticipants as customers that never initiated or completed a project through the program or that had not done so in 2016 and 2017; the team selected these projects for review using simple random sampling.

Table 8 shows the final sample disposition for each data collection activity.⁸ The *Surveys* section of the Process Evaluation chapter provides a detailed methodology for each surveyed population.

⁷ At RMP's request, due to other planned or ongoing survey activity, all managed accounts were removed from the populations prior to stratification or sampling.

⁸ Cadmus contracted with VuPoint Research to conduct the Participant, Partial Participant, and Nonparticipant surveys. A third-party research company, VuPoint's experience included conducting residential and nonresidential quantitative and qualitative research in the Northwest. VuPoint applied industry-recognized best practices, including employing experienced recruiters and dialing customer contacts up to five times during different times of the workday and on different workdays of the week until either achieving the designated quota for each customer segment or exhausting the sample.

Table 8. Idaho 2016-2017 wattsmart Business Program Data Collection and Sampling

Data Collection Activity	Population	Sampling Frame ^b	Target Completes	Achieved Completes
RMP Program Staff Interviews	N/A	N/A	N/A	4
Program Administrator Interviews	N/A	N/A	N/A	7
wattsmart Business Participant Surveys (Typical Upgrade or Custom Analysis)	Segmented Below	Segmented Below	Segmented Below	Segmented Below
Agricultural	67	64	21	12
Compressed Air	4	4	4	0
HVAC	16	14	10	2
Lighting (other than SBL or SBDI)	194	152	25	20
Motor Systems	20	15	10	1
Refrigeration	4	3	3	1
Other ^a	17	7	6	2
wattsmart Business Online Participant Survey	Included Above	Included Above	Included Above	9 ^c
Participant Surveys (SBL)	28	28	20	10
Participant Surveys (SBDI)	87	83	38	26
Participant Survey (Energy Management)	1	1	1	0
Participant Subtotal	438	371	138	83
Partial Participant Surveys				
wattsmart Business	277	60	32	10
SBDI		7	7	1
Nonparticipant Surveys	6,863	4,587	68	68
Total Surveys	7,140	5,025	245	162

^a Other included: Additional Measures, Building Shell, and Food Service Equipment.

^b The team based the sampling frame on unique customers with contact information, after removing duplicates and managed accounts.

^c Five lighting participants, three agricultural participants, and one HVAC participant (only used in the NTG analysis). Participants responding to the online survey were asked the freeridership and spillover sections of the original telephone survey guide. Results from these nine online surveys are included in the *Evaluated Net Savings* section of this evaluation report but not in the *Customer Response* section.

Impact Evaluation

This section provides the impact evaluation’s findings for the **wattsmart** Business program that resulted from the Cadmus team’s data analysis. That analysis used the following methods:

- Participant Surveys
- Partial Participant Surveys
- Nonparticipant Surveys
- Site Visits
- Engineering Reviews
- Project-Based Billing Analysis

The team produced two evaluated saving values: gross savings and net savings. 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. Reported gross savings are electricity savings (kWh) that RMP reported in the 2016 and 2017 *Rocky Mountain Power Energy Efficiency and Peak Reduction Annual Reports* (annual reports).⁹

To determine gross savings, the Cadmus 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
	2	Verification: Adjust gross savings based on actual installation rates
	3	Unit Energy Savings: Validate saving calculations (i.e., engineering review, analysis, meter data, engineering reviews)
	4	Realization Rates: Extrapolate realization rates to population
Evaluated Net Savings	5	Attribution: Apply NTG adjustments

Step 1: For first step in verifying the accuracy of the participant database data, the Cadmus team reviewed the program tracking database to ensure 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: agricultural,

⁹ Available online:
http://www.pacificorp.com/content/dam/pacificorp/doc/Energy_Sources/Demand_Side_Management/2016/2016_Idaho_DSM_Annual_Report%2BAppendix.pdf; and
http://www.pacificorp.com/content/dam/pacificorp/doc/Energy_Sources/Demand_Side_Management/2017/ID_PAC-E-05-10-2017-DSM-Report4-24-18.pdf

compressed air, energy management, HVAC, lighting, motor systems, refrigeration, and other measures. The team completed 81 site visits as part of the 2016 and 2017 program evaluation.

Using the following method, the team calculated program gross savings:

1. Conduct site visits for verification and to inform the engineering analysis for each selected project.
2. Calculate a realization rate—the ratio of verified-to-reported (*ex ante*) savings by end-use strata.
3. Extrapolate calculated realization rates at sampled sites (by end-use strata) to the remaining program population.

Step 3: The team reviewed all project documentation, developed an evaluation, measurement, and verification plan, and performed site visits to verify installation, specifications, and operations of incentivized measures. For three sites within the sample, the team installed light loggers.

Step 4: This step reviewed measure savings assumptions, equations, and inputs (including billing analysis for selected measures). For complicated or custom measures, the team conducted an engineering analysis using appropriate measurement and verification options within the International Performance Measurement and Verification Protocol. For sites where light meters could be installed, the team used logger data to determine hours-of-use (HOU) or power consumption for each equipment type installed.

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.

Site Visits and Engineering Analysis

The Cadmus team reviewed all project documentation available from RMP, including incentive applications, equipment invoices, reports published by third-party energy engineering consultants, and savings calculation spreadsheets.

Using a data collection form for each site visit, the team performed the following tasks:

- Verified installation and operation of equipment receiving incentives, confirmed installed equipment met program eligibility requirements, and verified the quantity of installed measures matched program documentation.
- Collected physical data to inform 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 involved with the project, gathering information (e.g., type of equipment replaced, HOU) that could not be verified on site through documentation reviews or metering.

Overall Evaluated Gross Savings Results

To calculate gross savings for **watt**smart Business program measures, the Cadmus team reviewed the tracking database, verified measures, and either conducted engineering reviews, site visits, or billing

analyses. Table 10 presents reported and evaluated gross savings for the 2016 and 2017 program years, producing a 96.1% 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	
2016	14,187,885	13,527,931	95.3%
2017	10,506,687	10,198,605	97.1%
Total	24,694,572	23,726,536	96.1%

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

Table 11. Reported and Evaluated Gross Program Savings by Measure Category (2016–2017)

Strata	Program Savings (kWh)		Realization Rates	Precision (90% Confidence)
	Reported	Evaluated Gross		
Agricultural	3,928,853	3,808,374	97%	8%
Compressed Air	450,485	450,485	100%	NA
Energy Management	342,880	425,236	124%	0%
HVAC	1,908,866	2,161,533	113%	7%
Lighting	16,309,456	15,307,852	94%	4%
Motor Systems	509,248	429,124	84%	14%
Refrigeration	879,919	879,919	100%	NA
Other	364,865	264,013	72%	6%
Total	24,694,572	23,726,536	96.1%	4%

Evaluated Gross Savings Results by Measure Category

Agricultural

RMP provided incentives for farm/dairy and irrigation agricultural projects. RMP incentivized 92 measures for 91 projects and reported 3,928,853 kWh in energy savings for the 2016 and 2017 program years. Incentivized agricultural projects accounted for 16% of all reported energy savings in Idaho.

Methodology

To determine savings for incentivized agricultural projects in Idaho, RMP used custom calculations or deemed savings values. The Cadmus team evaluated 22 agricultural projects, accounting for 24% of reported energy savings within the agricultural strata. Evaluated projects included: irrigation hardware upgrades, VFDs serving irrigation pumps, potato storage fan VFD upgrades, and custom irrigation system upgrades. When third-party engineering firms performed custom calculations, the team reviewed the inputs, assumptions, performance expectations, and utility 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

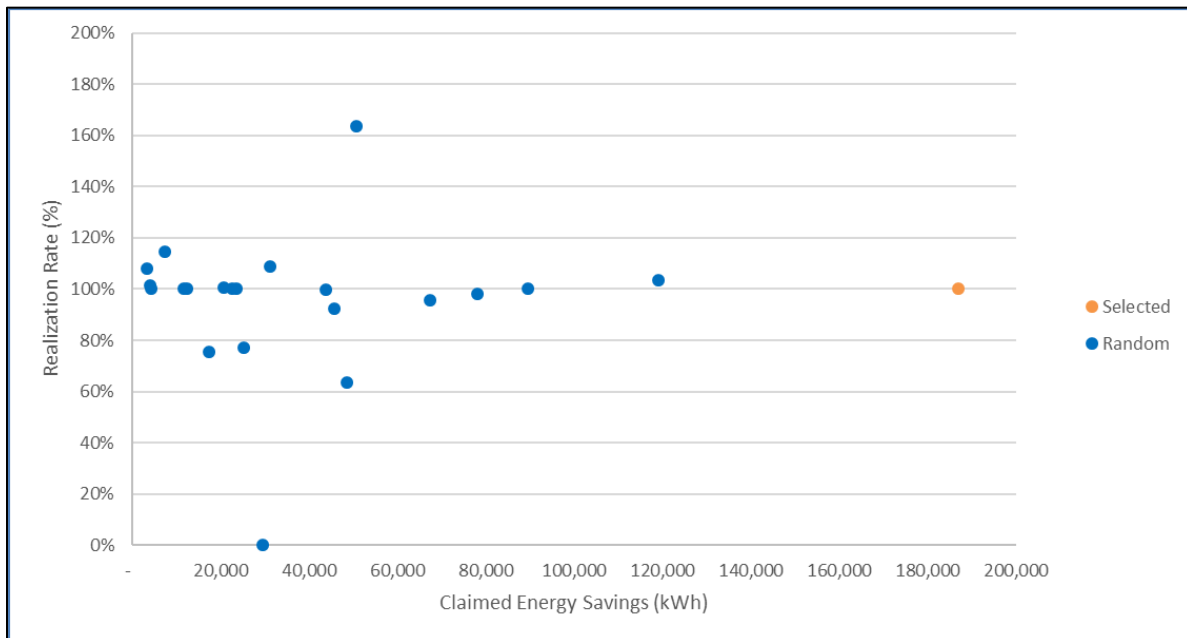
For potato storage fan VFD upgrades, the team used the following critical inputs to calculate energy savings:

- Fan motor horsepower and efficiency
- VFD control strategy and setpoints
- Potato storage schedule

Findings

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

Figure 3. Agricultural Sample Results



Four sites exhibited realization rates less than 80%, though one site exhibited a realization rate greater than 120%. Table 12 provides specific details related to these projects.

Table 12. Agricultural Sample Detailed Findings

Project	Project Measures	Reported kWh	Evaluated kWh	Site Realization Rate	Notes
IDC00828	Low Elevation Spray Application (LESA)	29,476	0	0%	LESA removed after installation due to flow problems.
IDC01390	VFD Serving Potato Storage	48,508	30,807	64%	The revised load profile resulted in fewer HOU.

Project	Project Measures	Reported kWh	Evaluated kWh	Site Realization Rate	Notes
IDC01866	Irrigation Hardware	17,428	13,151	75%	Flow and pressure rates observed were lower than assumed with deemed savings.
IDC00911	Custom Irrigation Upgrade	25,279	19,455	77%	The observed flow rate was lower than that estimated in incentive documentation.
IDC01705	Irrigation Hardware	50,674	82,937	164%	Observed flow and pressure rates were higher than assumed with deemed savings.

A few of the more atypical measure-level realization rates require further explanation:

- Energy savings for nearly all irrigation measures involved installing high-efficiency equipment that minimized evaporation from irrigation systems. The results of less evaporation include fewer pumping hours, lower flowrates, or lower system pressures. Reducing these system characteristics resulted in lower energy use by pumping systems. Energy savings were calculated by estimating or measuring post-implementation performance characteristics (e.g., pumping HOU, flowrate, pressure). The Cadmus team evaluated these projects by observing or measuring system characteristics and updating energy-savings calculations based on measured performance. This measured performance typically varied from incentive documentation, resulting in variances to evaluated savings. For projects where RMP used deemed savings per measure type, deemed saving values were based on average or typical post-implementation performance.
- The team deemed energy savings for irrigation hardware measures based on the Regional Technical Forum. Savings used an average value for flowrates, system pressures, and other assumptions. Where possible, the team collected site-specific information and updated these values using the Regional Technical Forum’s irrigation hardware calculator. Updated values for data collected on-site affected energy savings in either a positive or negative manner.

Compressed Air

RMP provided incentives for four projects with eight measures, reporting 450,485 kWh in energy savings for the 2016 and 2017 program years, and accounting for 2% of all reported energy savings in Idaho.

Methodology

The Cadmus team evaluated two compressed air projects, accounting for 67% of all reported energy savings within the strata. RMP’s administrator utilized custom calculations and metered data to inform the claimed energy savings. Energy savings calculations used the following critical inputs:

- System pressure setpoints
- System load profiles
- Compressor types, quantities, efficiencies, and load controls

The team reviewed custom calculations for both projects, identifying critical system performance parameters affecting the energy-savings calculations. The team performed site visits to inspect and document installed system specifications and operational setpoints. Where possible, the team collected trend data and interviewed facility staff to understand system load profiles and operational schedules.

Findings

Both evaluated projects produced 100% realization rates, and all site observations and findings matched the incentive documentation.

Energy Management

RMP provided incentives for one energy management project in 2017, reporting 342,880 kWh in energy savings. The project accounted for 1% of all reported energy savings in the Idaho WSB program.

Methodology

RMP used custom calculations to determine savings for the energy management project in Idaho. The evaluated project involved implementation of air compressor VFDs, anti-sweat heaters, and interior daylighting controls at the customer's facility. RMP administrators provided spreadsheet calculations and workbooks as well as energy simulation models. All project documentation included an energy analysis report that identified potential energy efficiency measures and associated savings as well as a savings verification report that documented the success of implemented measures and associated changes to claimed energy savings.

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 energy efficiency measure. The team performed a site visit and physically verified all critical information on the site. Where possible, the team collected trend data from the building management system to review system performance over an extended period.

Findings

The evaluated site exhibited a 125% realization rate. Though two of the three measure types performed as expected, claimed energy savings for the interior daylighting controls measure were based on lighting performance from the facility's lighting management system for a 48-hour period. Claimed energy savings assumed this performance represented annual operations. As surface irradiance varies daily, based on weather and on earth's relationship to the sun, fewer energy savings were realized in winter and greater energy savings were realized in summer. The Cadmus team evaluated this measure's performance by calculating annual daylighting controls' performance, based on surface irradiance in Idaho using annual hourly data (TMY3).

Lighting

RMP provided incentives for seven types of lighting projects: controls, custom, exterior lighting, general illuminance, interior lighting, 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 2016 and 2017, RMP incentivized 1,157 lighting measures within 480 unique projects, and reported 16,309,456 kWh in energy savings. Incentivized lighting projects accounted for 66% of all reported energy savings in the Idaho **wattsmart** Business program.

Methodology

The Cadmus team evaluated 18 lighting projects, accounting for 14% of all reported energy savings within the lighting strata. RMP used the Idaho **wattsmart** Business prescriptive lighting calculator to determine incentive amounts for all lighting projects in Idaho. The **wattsmart** Business lighting 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:

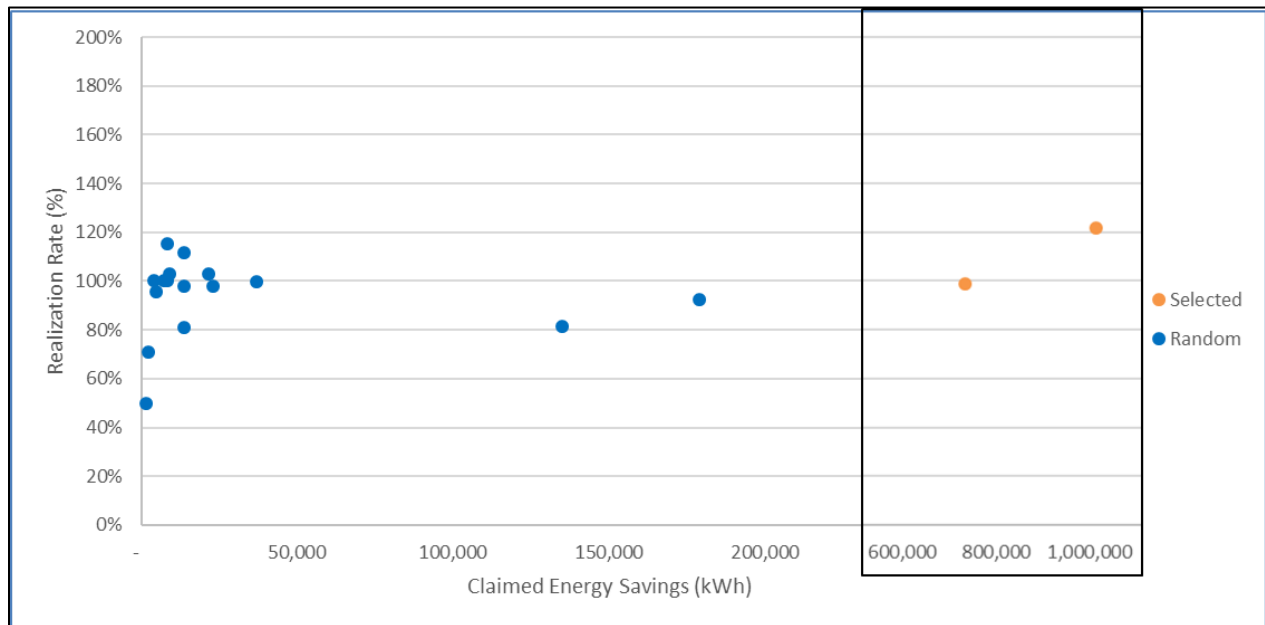
- Lighting operation schedule
- Space name, type, area, and condition
- Baseline lighting fixture location, type, quantity, controls, and wattage
- Proposed lighting fixture location, type, quantity, controls, and wattage

The Cadmus team reviewed the **wattsmart** Business lighting calculator's methodology and assumptions to determine its applicability for each lighting project sampled. For the five direct-install lighting projects, the team reviewed the RMP **wattsmart** Small Business Direct Calculator. For each sampled project, the team performed site visits to inspect and document the lighting equipment installed. For three of 18 projects visited, the team installed light loggers to document HOU where incentivized lighting fixtures were installed. The team then used the collected data to update the **wattsmart** Business lighting calculator or RMP **wattsmart** Small Business Direct Calculator.

Findings

Figure 4 indicates realization rates and associated energy savings for each of the sampled lighting projects.

Figure 4. Lighting Sample Results*



* The claimed energy savings axis changes scale in the box to the right.

Two sites exhibited a less than 80% realization rate, and one site exhibited a greater than 120% realization rate. For remaining sites, the Cadmus team found no or nominal differences between the team’s calculated savings and the reported savings. For two sites falling well below the 100% realization rate, differences in savings resulted from missing fixtures and reduced HOU. Table 13 provides specific details.

Table 13. Lighting Sample Detailed Findings

Project	Project Measures	Reported kWh	Evaluated kWh	Site Realization Rate	Notes
WBID_176045	High-Efficiency Lighting	1,650	819	50%	A new construction project where the claimed facility type and lighting power density allowance was higher than permitted by the observed facility type (school/university).
IDFX1_000414	High-Efficiency Lighting	2,194	1,560	71%	Observed HOU deviated from reported HOU use by more than 50% in many spaces.
IDFX1_000524	High-Efficiency Lighting	1,015,621	1,238,333	122%	Light loggers indicated higher HOU than reported.

Only five of the 18 projects evaluated produced a 100% realization rate. Five projects involved HOU that deviated from incentive documentation. Revised HOU were based on light logger data over a period of two months or on interview results from the facility contact. HOU based on interview data were only

updated where the HOU deviated from incentive documentation by more than 50%. Four projects involved installations of high-efficiency lighting fixtures, with advanced lighting controls found on site that affected how lighting was controlled and deviated from the incentive documentation. Two projects had installed light fixtures that did not match the incentive documentation.

Motor Systems

RMP provided incentives for four types of motor systems projects—Green Motor Rewinds, electrically commutated motors, motor upgrades, and custom projects. RMP incentivized 27 measures within 22 projects and reported 509,248 kWh in energy savings for the 2016 and 2017 program years. Incentivized motor system projects accounted for 2% of all reported energy savings in the Idaho **wattsmart** Business program.

Methodology

The Cadmus team evaluated 12 motor system projects, accounting for 89% of all reported energy savings within the motor systems strata. For evaluated projects, RMP used prescriptive calculators, deemed savings, and custom calculations to determine reported energy savings. Critical inputs used to calculate energy savings for nearly all motor systems projects included the following:

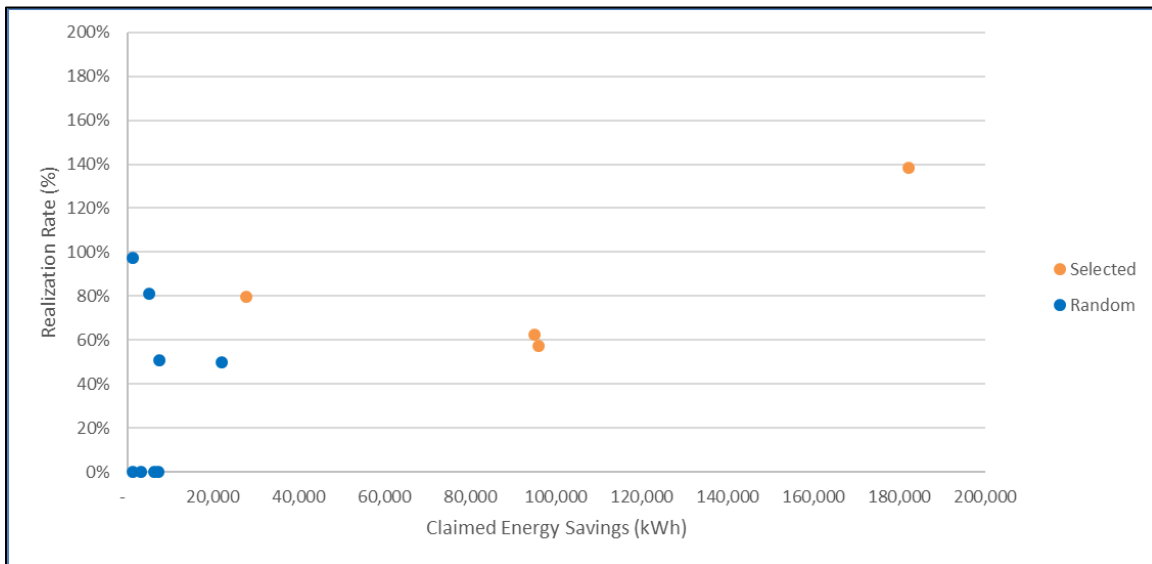
- Manufacturer make/model
- Motor horsepower
- Motor efficiency
- Load factor
- Operation schedule (daily run hours, VFD speed)

For each sampled project, the Cadmus team performed site visits to inspect and document equipment specifications and performance.

Findings

Figure 5 indicates realization rates and associated energy savings for each sampled project.

Figure 5. Motor Systems Sample Results



Eight sites had realization rates below 80%, and one site had a realization rate above 120%. The Cadmus team found no to nominal differences in reported savings for the remaining sites. Table 14 provides specific details for the 9 sites with realization rates greater than 120% or less than 80%.

Table 14. Motor System Sample Results

Project	Project Measure	Reported kWh	Evaluated kWh	Site Realization Rate	Notes
IDFX1_000624	Green Motor Rewind	3,089	0	0%	Motor found in storage.
IDFX1_000626	Green Motor Rewind	7,195	0	0%	Motor found in storage.
WSBID_67825	Green Motor Rewind	1,376	0	0%	Motor found in storage.
WBID_67834	Green Motor Rewind	6,193	0	0%	Motor found in storage.
WBID_31361	VFDs Serving Process Motors	21,940	10,971	50%	Incentivized equipment removed after six months.
WSBID_66544	Electronically Commutated Motors (ECM)	7,440	3,787	51%	Motor efficiency for installed ECMs lower than assumed in the deemed savings value.
WBID_11409	VFDs Serving Process Motors	95,926	55,178	58%	Power metering indicated a higher load profile than expected by the program.
IDC01219	VFDs Serving Process Motors	94,866	59,229	62%	Power metering indicated a higher load profile than expected by the program.

Project	Project Measure	Reported kWh	Evaluated kWh	Site Realization Rate	Notes
WBID_57982	VFDs Serving Process Motors	182,000	252,072	139%	Trend data indicated lower average speeds and greater energy savings than expected by the program.

A few of the more atypical measure-level realization rates require further explanation:

- For projects where VFDs were applied to existing motor systems, energy savings were based on expected VFD load profiles and occurred any time the flow reduced below 100% speed. The Cadmus team installed power metering equipment on motors for two custom projects, which were observed to run at higher speeds than expected. When the load profile was higher than expected (i.e., closer to 100%), lower energy savings were realized.
- Motors for four of the six green motor rewind projects were observed in storage and not in use. Because the motors are not installed and running, no energy savings are realized.

HVAC

RMP provided incentives for five types of HVAC projects: cooling, custom, heat pump, HVAC, and motors. RMP incentivized 60 HVAC measures within 29 unique projects, reporting energy savings of 1,908,866 kWh; this accounted for 8% of all reported energy savings for the 2016 and 2017 program years.

Methodology

The Cadmus team evaluated 14 unique HVAC projects, accounting for 71% of all reported energy savings within the HVAC strata. Of projects the Cadmus team sampled, RMP used prescriptive calculators for nine projects, deemed savings for three projects, and custom calculations for two projects. Where prescriptive calculators were used to determine claimed energy savings, the critical inputs shown in Table 15 were inspected during the team’s site visits to evaluate energy savings.

Table 15. Critical Inputs

Rocky Mountain Power HVAC Calculator	Rocky Mountain Power FinAnswer Express Chiller Calculator
Manufacturer Make/Model	Manufacturer Make/Model
Quantity	Quantity
Cooling Capacity	Chiller Service Type
Energy Efficiency Ratio (EER), Seasonal Energy Efficiency Ratio (SEER), Heating Seasonal Performance Factor (HSPF)	Heat Rejection Specifications
Business Type	Air-Conditioning Heating and Refrigeration Institute (AHRI) Capacity
Interior/Exterior Space Type	AHRI Integrated Part Load Value and Full-Load Efficiency
	Facility Type

The Cadmus team reviewed the methodology and assumptions for each prescriptive calculator to determine the applicability for each project sampled. For each sampled project, the team performed site visits to inspect and document the installed equipment, interview facility staff, and review the expected performance characteristics. The team then used the collected data to update the prescriptive calculators and determine evaluated savings.

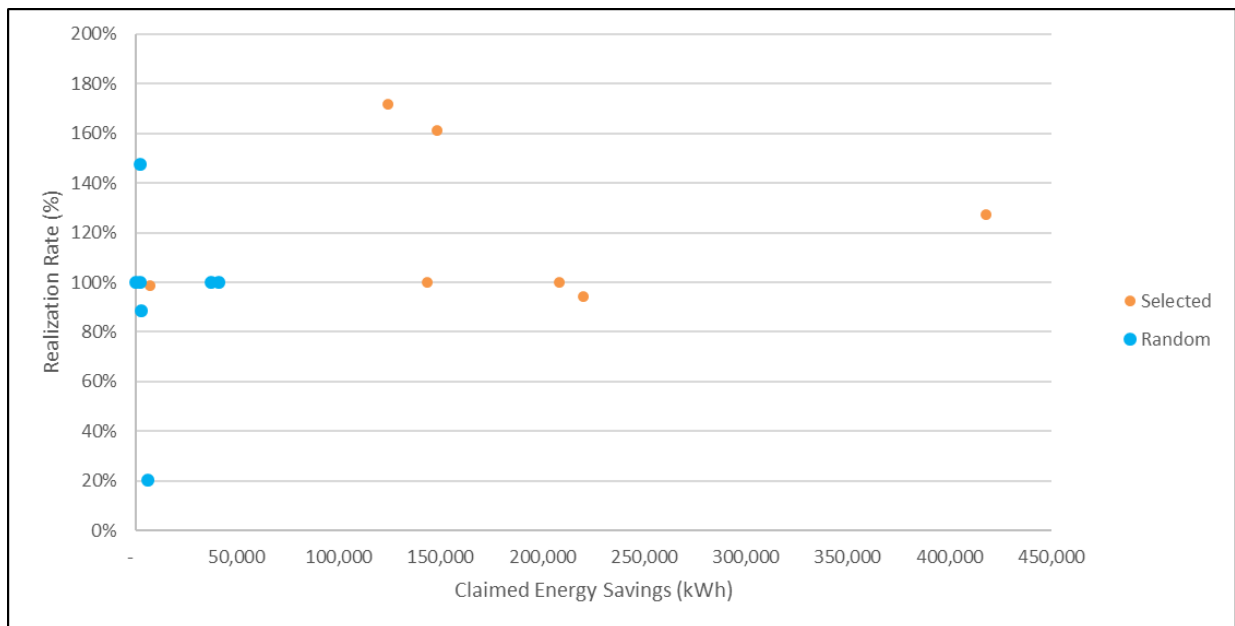
For projects where custom calculations were used to determine claimed energy savings, the team reviewed the energy analysis reports and verification reports for energy-savings methodology, inputs, assumptions, and accuracy. If site findings deviated from claimed equipment quantities, performance specifications, or HOU, the team recreated the custom calculations with the updated information. The team also installed power metering equipment for one project and analyzed meter data to develop a load profile and to determine HOU.

For projects with VFDs applied to HVAC fans, RMP used deemed savings of 1,082 kWh/hp. The team 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. The revised deemed savings amounts were higher than RMP's deemed savings values.

Findings

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

Figure 6. HVAC Sample Results



One project exhibited a realization rate below 80%, and four sites exhibited realization rates above 120%. The Cadmus team found minimal differences in reported savings for the remaining sites. Table 16 provides specific details for the five sites with realization rates greater than 120% or less than 80%.

Table 16. HVAC Sample Results

Project	Project Measure	Reported kWh	Evaluated kWh	Site Realization Rate	Notes
IDFX1_000609	Heat Pumps	5,977	1,214	20%	Air conditioners installed instead of the incentivized heat pumps.
WBID_8326	VFDs Serving Fans and Pumps at a Cogeneration Plant	417,918	531,638	127%	Metered data exhibited greater system efficiency and lower energy use than expected.
WSBID_71993	Heat Pumps	2,188	3,227	147%	Larger, high-efficiency heat pump installed than incentivized.
WBID_172570	VFDs Serving Fan Wall	148,000	238,690	161%	VFDs evaluated using updated deemed savings values.
WBID_172572	VFDs Serving Fan Wall	124,320	213,465	172%	VFDs evaluated using updated deemed savings values.

Refrigeration

RMP incentivized 10 refrigeration measures within four unique projects, and reported energy savings of 879,919 kWh, accounting for 4% of all reported energy savings for the 2016 and 2017 program years.

Methodology

The Cadmus team evaluated two refrigeration projects that accounted for 35% of all reported energy savings within the refrigeration strata. RMP used custom calculations to determine claimed energy savings for the reported projects. RMP’s approved service provider performed custom calculations for energy efficiency opportunities on custom projects. For some complicated and large energy-saving projects, the administrator installed power meters to measure performance before and after measure implementation. The team reviewed the customer’s custom calculation workbooks for the energy-savings methodology, inputs, assumptions, and accuracy.

Findings

On-site findings matched the application documentation. The Cadmus team observed minor discrepancies on site, but all had minimal impacts on the evaluated energy consumption savings.

Other

RMP provided incentives for three types of projects within the Other category: building shell, food service equipment, and additional measures. RMP incentivized 37 measures related to 19 projects, reporting 364,865 kWh in energy savings for the 2016 and 2017 program years. Incentivized projects for this category accounted for 2% of all reported energy savings in Idaho.

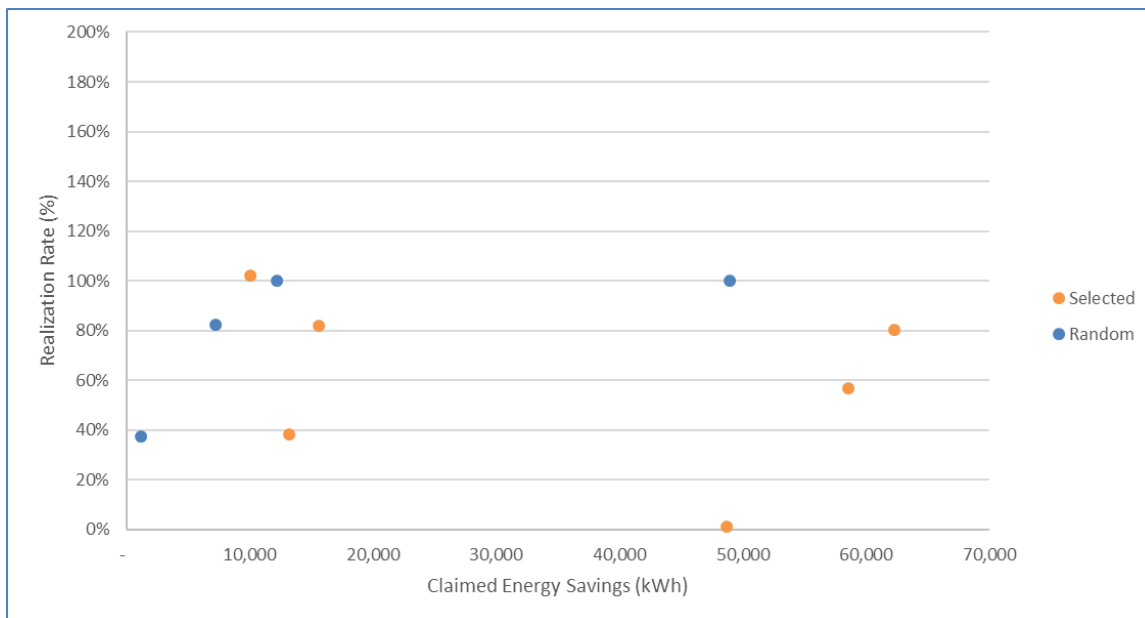
Methodology

The Other strata serves as a catch-all for a variety of projects not previously identified as agricultural, compressed air, energy management, lighting, motor systems, HVAC, or refrigeration. For incentivized Other projects in Idaho, RMP used prescriptive calculators, deemed savings values, and custom calculations to determine reported energy savings. The Cadmus team evaluated 10 projects, accounting for 76% of the reported energy savings within the Other strata.

Findings

Figure 7 indicates realization rates and associated energy savings for each sampled project.

Figure 7. Other Sample Results



Four projects had realization rates below 80%. Table 17 provides specific details related to those projects.

Table 17. Other Sample Detailed Findings

Project	Project Measures	Reported kWh	Evaluated kWh	Realization Rate (site)	Notes
IDFX1_000671	Cool Roof	48,718	655	1%	Calculated savings lower due to site-specific climate and facility data.
IDFX1_000669	Cool Roof	1,188	443	37%	Calculated savings lower due to site-specific climate and facility data.
WSBID_71269	High-Efficiency Dishwasher	13,218	5,036	38%	Dishwasher loads per day reported by facility staff lower than assumed in the claimed energy savings calculation.
IDFX1_000597	LED Case Lighting	58,560	33,360	57%	Deemed savings higher than calculated using RTF Case Lighting calculator.

Cool roof projects had realization rates lower than 100%. For these projects, RMP used deemed savings of 0.33 kWh saved for every square foot of cool roof installed. When the Cadmus team evaluated the incentivized and sampled cool roof projects on a case-by-case basis, using the specific climate and building information in Idaho, savings were significantly lower than anticipated. Rocky Mountain Power updated the deemed savings for cool roofs in January, 2018 to 0.11 kWh per square foot for new construction projects and 0.22 kWh per square foot for retrofit projects.

Evaluated Net Savings

The Cadmus team evaluated net savings by conducting a freeridership and spillover analysis using responses from surveys. Appendix A. Self-Report NTG 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).¹⁰

Further, in estimating nonparticipant spillover (NPSO), Cadmus included a series of questions from the 2016–2017 general population survey of Idaho RMP customers. This addressed savings generated by customers who, motivated by the program’s reputation and marketing, conducted energy efficiency installations without receiving incentives. Cadmus estimated NPSO as 2% of the 2016-2017 **wattsmart** Business program gross savings, applying the 2% NPSO equally across the program measure strata. Appendix B provides a detailed explanation of the estimated NPSO.

Table 18 provides the net savings evaluation results, shown as evaluated gross savings and NTG by program measure strata. Measure strata freeridership estimates were weighted by their evaluated program energy savings, and spillover values added to arrive at the overall 84% NTG estimate for the program.

¹⁰ The Uniform Methods Project chapter covering estimation of net savings:
<http://www.nrel.gov/docs/fy14osti/62678.pdf>

Table 18. wattsmart Business Program NTG Results for 2016–2017

Measure Strata	Measure Responses (n)	Evaluated Gross Program Population Savings (kWh)	NTG
Lighting	60	15,307,852	89%
Agricultural	15	3,808,374	74%
HVAC	3	2,161,533	65%
Refrigeration	1	879,919	77%
Motor Systems	1	429,124	102%
Other	2	264,013	89%
Compressed Air	0	450,485	84% ^b
Energy Management	0	425,236	84% ^b
Overall	82	23,726,536	84%^a

^a Weighted by evaluated gross program population savings.

^b Applied overall savings weighted NTG of measures with survey respondents due to no survey respondents to inform a specific measure strata estimate. Overall NTG estimate is the savings weighted average of measure strata with survey respondents.

The following sections describe the NTG methodology the Cadmus team used and the results for the 2016–2017 **wattsmart** Business program.

Methodology

This section contains a brief overview of the NTG methodology (with a more detailed explanation provided in Appendix A. Self-Report NTG Methodology). To determine net savings, the Cadmus team used a self-report approach and analyzed collected data to estimate freeridership and spillover. Typically, this approach is considered the most cost-effective, transparent, and flexible method for estimating NTG. Consequently, it is the NTG methodology most frequently employed in the industry.

Freeridership and spillover constituted the NTG. The Cadmus team used the following formula to determine the final NTG ratio for all 2016 and 2017 participants:

$$\text{Net-to-gross ratio} = 100\% - \text{Freeridership Percentage} + \text{Participant Spillover Percentage} + \text{Nonparticipant Spillover Percentage}$$

Freeridership Estimation

The Cadmus team determined freeridership based on an approach previously developed for RMP, which used responses from a series of survey questions. These questions asked 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 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 within 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 due. This estimate of program "spillover" estimate represented energy savings attributable to the program's intervention and influence, but not currently reported in program tracking data. Spillover savings can derive from participants and nonparticipants, but participant spillover occurs when a program influences its participants to install additional energy-efficient equipment beyond that 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 savings derived from additional measures installed and by determining whether respondents' credited RMP with influencing their decisions to install additional measures. The team included measures eligible for program incentives, provided the respondent did not request or receive the incentive.

Freeridership Findings

After conducting 82 surveys, the Cadmus team converted the freeridership question responses into a freeridership estimate for each participant, using the approach described in Appendix A. Self-Report NTG Methodology.

To determine the extent that the program affected installation decisions, the team asked respondents what would have differed about their installations had the program not been an option. Table 19 a summarizes of participant measure responses, along with an initial freeridership estimate, calculated for each respondent.

Table 19. Measure Installations in Absence of wattsmart Business Program (n=82)

Respondent Category	n	Percentage of Total Respondents ^a	Initial Freeridership Estimate
Would have been installed at the same efficiency and scope within the same year	19	23%	100%
Would not have been installed at all	38	46%	0%
Would have been installed more than 12 months later	14	17%	0%
Would have installed 98% of the equipment at the same level of efficiency within the same year	1	1%	98%
Would have installed 80% of the equipment at the same level of efficiency within the same year	1	1%	80%
Would have installed 75% of the equipment at the same level of efficiency within the same year	3	4%	75%
Would have installed 25% of the equipment at a lower efficiency than installed through the program (but better than standard efficiency) within the same year	1	1%	37.5%
Would have installed 60% of the equipment at the same level of efficiency within the same year	1	1%	60%
Would have installed 50% of the equipment at the same level of efficiency within the same year	3	4%	50%
Would have installed 10% of the equipment at the same level of efficiency within the same year	1	1%	10%

^a Total may not sum to 100% due to rounding.

Due to the program delivery’s portfolio nature, the Cadmus team credited past participations’ influence by reducing freeridership if participants indicated that past program participation played important roles in their decisions. Given RMP’s efforts to cross-promote its entire portfolio of energy efficiency programs, 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 the prior program’s influence on a scale of 1 to 5, where 1 indicated “not important at all” and 5 indicated “extremely important.” For those rating their previous participation as a 4 or 5, the team reduced their freeridership score by 50% or 75%, respectively. This affected seven projects that initially received a 100% freeridership estimate, reducing five of their freeridership scores by 75% and reducing two of the estimates by 50%.¹¹

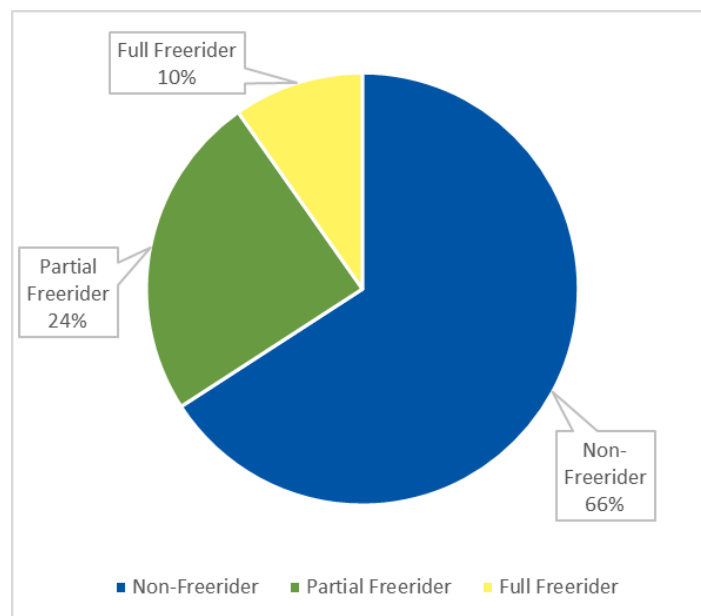
¹¹ The Cadmus team reduced a project’s freeridership scores, initially estimated at 80%—by 75% (i.e., a 5 rating), resulting in the project’s 20% freeridership score. In addition, the team reduced a project’s freeridership score, initially estimated at 75%—by 50% (i.e., a 4 rating), resulting in a 37.5% adjusted freeridership.

In addition, the team compared participants’ statements about what they would have done in the program’s absence to statements they made about factors influencing their projects. Several participants’ measure-specific responses (n=3) indicated that they found the program incentive or program assistance 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 requested that participants explain the program’s influence on their projects in their own words.

Three respondents provided a description that warranted freeridership adjustments. For example, when asked about the program’s impact on their decisions to complete energy efficiency improvements, one participant stated: “It helped [make the] decision and saved money.” Based on this response, the team adjusted the project’s freeridership score from 100% to 50%. The team adjusted another respondent’s freeridership score from 75% to 37.5% based on the response: “Excellent incentive and it was a driving factor.”

Based on participants’ responses and after adjusting for inconsistencies and prior program experience, the team determined freeridership by respondent, as shown in Figure 8. Overall, the team identified 10% of participants as full freeriders, 66% as non-freeriders, and 24% as partial freeriders.

Figure 8. Freeridership by Respondent



Participant Spillover Findings

After participating in the **wattsmart** Business program, some participants installed additional, energy-efficient measures. The Cadmus team only attributed program spillover to additional purchases significantly influenced by **wattsmart** Business program participation, but not reported through the program. Respondents indicated the influence level on a 1 to 5-point scale, where 1 indicated not important at all and 5 indicated extremely important in response to the following 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. Only two respondents—both agricultural strata participants—responded with a 5.

The Cadmus team used evaluated savings values from the engineering gross savings analysis to estimate spillover measure savings. This involved estimating the SBL offering’s spillover percentage by dividing the sum of additional spillover savings (12,087 kWh) by total gross program savings achieved by all 15 irrigation measure strata respondents. This produced the results shown in Table 20.

Table 20. *wattsmart* Business Program Participant Spillover

Measure Strata	Spillover Measures Installed	Spillover Measure Quantity	Total Spillover Energy Savings (kWh)	Surveyed Program Measure Strata Savings (kWh)	Spillover Percentage
Agricultural	Sprinkler packages	10	979	551,559	2%
	Heat Pump Water Heater	1	844		
	Variable Drive	1	10,264		

Nonparticipant Spillover

The Cadmus team used a series of questions included in the nonparticipant surveys 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 to be 2% of total 2016–2017 *wattsmart* Business Program savings and applied the 2% NPSO estimate to each measure strata’s NTG. Appendix B. Nonparticipant Spillover provides detailed nonparticipant spillover analysis methods and results.

NTG Findings

As shown in Table 21, the Cadmus team calculated a program-weighted NTG of 84% by weighting each measure strata freeridership percentage by the evaluated gross population’s energy savings for each measure strata, and then adding participant spillover and nonparticipant spillover.

Table 21. wattsmart Business Program NTG Results for 2016–2017

Measure Strata	Measure Responses (n)	Freeridership Percentage	Spillover Percentage ^a	NPSO	NTG	Evaluated Gross Program Population Savings (kWh)
Lighting	60	13% ^a	0%	2%	89%	15,307,852
Agricultural	15	30% ^a	2%	2%	74%	3,808,374
HVAC	3	37% ^a	0%	2%	65%	2,161,533
Refrigeration	1	25% ^a	0%	2%	77%	879,919
Motor Systems	1	0% ^a	0%	2%	102%	429,124
Other	2	13% ^a	0%	2%	89%	264,013
Compressed Air	0	NA	NA	NA	84% ^c	450,485
Energy Management	0	NA	NA	NA	84% ^c	425,236
Overall	82	18%^b	0%^b	2%	84%	23,726,536

^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 22 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 22. NTG Comparisons^a

Utility/Region	Reported Year	Responses (n)	Freeridership %	Spillover %	NPSO	NTG
Rocky Mountain Power Idaho 2016–2017 <i>wattsmart</i> Business Evaluation	2018	82	18%	0%	2%	84%
Rocky Mountain Power Idaho 2014–2015 <i>wattsmart</i> Business Evaluation	2016	80	18%	0%	NA	82%
Rocky Mountain Power Idaho 2012–2013 Energy FinAnswer Evaluation	2015	61	21%	0%	NA	79%
Rocky Mountain Power Idaho 2012–2013 FinAnswer Express Evaluation	2015	84	22%	0%	NA	78%
Northeast Utility—C&I Prescriptive	2016	77	23%	0%	NA	77%
CY2016 Focus on Energy Non-Residential Evaluation Report—Wisconsin Statewide	2017	434	28%	1%	NA	73%
2014-2015 Massachusetts C&I Natural Gas Freeridership and Spillover Study—Statewide	2015	901	18%	4%	NA	86%

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

The 2016–2017 *wattsmart* Business program’s (18%) freeridership estimate was the same as the 2014–2015 *wattsmart* Business program’s freeridership estimate (18%). The 2012–2013 Energy FinAnswer Evaluation and the 2012–2013 FinAnswer Express Evaluation produced freeridership values of 21% and 22%, respectively.¹² 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 CY2016 Wisconsin Focus on Energy Nonresidential evaluations was comparable to that used for the 2016–2017 *wattsmart* Business program, though the designs differed.

¹² 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

This section outlines the detailed findings from the Cadmus team’s process evaluation of the **wattsmart** Business program. The Cadmus team based these findings on analysis of data collected through program staff interviews and through participant, partial participant, and nonparticipant surveys. In conducting the evaluation, the team focused on assessing the following:

- The effectiveness of the program design, marketing, and processes
- Participants’ and partial participants’ experience and satisfaction
- Customer participation barriers

The team focused its research activities on key research topics—consistent with the 2014–2015 evaluation of the **wattsmart** Business program—and on topics of interest identified by program stakeholders. Table 23 lists the primary research questions used.

Table 23. Research Areas and Questions

Research Areas	Researchable Questions and Topics
Program Status	How did the program perform in 2016 and 2017, and what opportunities and challenges do program staff foresee for future program years?
Awareness	How did customers learn about the RMP wattsmart Business program incentives?
Participation/ Motivations and Barriers	What key factors influenced participants’ and partial participants’ decisions to participate in the program? What were the key factors in any customer’s decision to install energy efficiency improvements? What were the participation barriers for participants, partial participants, and nonparticipants?
Satisfaction	How satisfied were participants and partial participants with the program and with the program measures, incentives, and services?
Freeridership and Spillover	How influential was the program on participants’ and partial participants’ decisions to participate? How influential was the program on any customer’s decision to install energy efficiency equipment without program incentives or services?
Firmographics	What were the business characteristics of participants in each program offering? How did 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 2016 and 2017.

Materials and Database Review

The Cadmus team conducted a review of the following:

- The Idaho Energy Efficiency and Peak Reduction Annual Reports (for January 1, 2016, to December 31, 2016; and for January 1, 2017, to December 31, 2017)
- The 2017 **wattsmart** Small Business Direct-Install Program Manual

- Exhibits that RMP provided to Cadmus; these described planned program updates during the 2016–2017 evaluation period
- The **wattsmart** Business program website
- Participant and partial participant databases
- RMP’s nonresidential customer database

This chapter’s Program Implementation and Delivery section (below) includes these reviews within the applicable subsections (e.g., Design, Implementation, Marketing and Outreach, Database Interface and Data Management).

Utility and Administrator Staff Interviews

Building on information collected during the 2014–2015 **wattsmart** Business program evaluation, the Cadmus team developed stakeholder interview guides and collected information about key topics from program management staff. The team conducted four interviews with RMP program staff and seven interviews with Cascade, Nexant, and Willdan program staff (i.e., the program administrators for the program’s contracted delivery portions). The interviews covered the following topics:

- Changes in stakeholder roles and responsibilities
- 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

As noted, the Cadmus team’s surveys addressed three customer populations—participants, partial participants, and nonparticipants. Following initial telephone surveys of participants, the team initiated an online survey for Typical Upgrades and Custom Analysis participants not reached during the telephone surveys, in an effort to improve precision for the NTG calculations. Participants responding to the online survey were asked a limited battery of questions, including the original survey guide’s freeridership and spillover sections, plus one question about program awareness and questions addressing firmographics to identify respondents’ business types and sizes. Online survey results are included in this report’s *Evaluated Net Savings* section but not in the *Customer Response* section.

Participant Telephone Surveys

The Cadmus team conducted telephone surveys with 74 participants who installed measures through the **wattsmart** Business program. The surveys included 31 participants in Typical Upgrades, seven in Custom Analysis, 10 in SBL, and 26 receiving SBDI incentives. The one Energy Management participant

proved nonresponsive to the survey effort. The team designed survey instruments for each participant group, collecting 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 the 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 **watt**smart Business program overall
 - Customers' participation challenges
- ***Program influence***: freeridership and savings spillover
- ***Customer information***: firmographic information

Participant Sample Detail

To ensure achieving the largest possible sample in categories with fewer participants, the team prioritized participants by measure categories or offerings with the smallest populations. Participants installing more than one measure type were selected for the measure type for which they showed the largest kWh savings. This prioritization, from the highest priority (smallest population) to the lowest priority (largest population) produced the following sequence:

- Energy Management
- Compressed Air
- Refrigeration
- HVAC
- Other
- Motor Systems
- SBL
- Agricultural
- SBDI
- Lighting

VuPoint randomly selected survey participants within each reporting category, attempting to fulfill individual quotas for each category.

Nonparticipant and Partial Participant Telephone Surveys

The Cadmus team conducted telephone surveys with 68 nonparticipants and 11 partial participants. 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
- ***Customer experience***
 - Reasons partial participants did not complete specific projects
- ***Program influence: savings spillover***
- ***Customer information: firmographic information and fuels used for space and water heating***

Nonparticipant Sample Detail

The team removed participants, partial participants, and managed accounts from the master list of nonresidential customers provided by RMP. For the remaining population, the team randomly called nonparticipants for surveys.

Partial Participant Sample Detail

RMP, Nexant, Cascade, and Willdan provided the Cadmus team with lists of 2016 and 2017 partial participants from each of their respective program responsibility areas. The team checked this list against a list of program participants, removing any customers who, within that same timeframe, appeared on the participant list for another project; this eliminated the possibility of double-sampling these individuals. The team also removed any managed accounts identified by RMP. For partial participants who began but did not complete multiple projects during the evaluation period, the team included projects with the greatest estimated kWh savings, and randomly selected partial participants from that sampling frame for surveys.

Program Implementation and Delivery

Drawing on stakeholder interviews and participant survey data, this section addresses changes in the **wattsmart** Business program's implementation and delivery during the 2016–2017 evaluation period.

Program Overview

RMP focused on cost-effectiveness in 2016 and 2017, taking the following actions:

- Implemented flexible tariffs for all prescriptive measures for a maximum not-to-exceed incentive amount and an offered incentive amount
- Changed retrofit lighting incentives (excluding re-lamp measures) to a pay-for-savings rate vs. pay per-lamp
- Reduced lighting incentives for all mainstream commercial LED technologies

- Adjusted incentives or measure caps for evaporative pre-coolers, commercial refrigerators and freezers, network PC power management, milk pre-coolers, refrigerator/freezer recycling, and residential room air conditioners/dishwashers/refrigerators/electric water heaters/heat pump water heaters used in a business

These changes sought to provide RMP with greater flexibility to adjust incentives in response to changing market conditions, changing equipment eligibility, changing efficiency baselines, and declining equipment costs. Under a managed transition to the new incentives, customers received a 45-day notice of impending changes and had 90 days to build and finish projects.

RMP and the administrators also reported that staff prioritized customer satisfaction during this period, with Nexant conducting satisfaction surveys beginning in June 2017. Customers provided feedback on their satisfaction levels with the following:

- Vendors' knowledge of program incentives and information provided (i.e., energy savings options, project costs and benefits)
- Vendor communications
- Product/project installations

Nexant's surveys also asked participants if they would participate in the program again or recommend it to others. Nexant collected, monitored, and used customer responses to provide both performance feedback and coaching to vendors. Beginning in October 2017, Nexant began providing quarterly survey results reports to RMP.

Design

To benefit small business customers, RMP restructured the SBL offering as a direct-install offer for lighting retrofits and power-strips, effective December 2016. Willdan Energy Services offered turnkey services to customers agreeing to install eligible measures identified during a free energy assessment of their facility. To enhance program cost-effectiveness, the program offered SBDI to customers in a geo-targeted area during a specified window of opportunity. Participants were required to pay the first 25% of eligible project costs, and RMP paid the remaining 75% up to \$5,000. Willdan reported replacing T8 or T12 fluorescent lamps with TLED lamps and ballasts on 2' and 4' fixtures, accounting for 90% of their work. Willdan reported working to add air-conditioning measures and rooftop controls to the program in 2018.

Implementation

In March 2017, RMP launched the **watt**smart Business Vendor Network, replacing the Energy Efficiency Alliance, requiring trade allies to reregister as program vendors and enforcing stricter requirements (i.e., increased minimum participation requirements, industry training and proof of insurance). In fall 2017, RMP added premium vendor status, providing lighting vendors an opportunity to gain exclusive recognition by meeting specific criteria, including participation as an approved vendor for a minimum of one year, completion of five or more Typical Upgrades lighting projects, or employing at least one full-time staff member that held program-specified enhanced lighting certification or credentials.

The Network provided customers with a trained pool of local trade allies (i.e., contractors and distributors) to assist in identifying and implementing energy efficiency projects. **wattsmart** Business Vendor Network members promoted the program to their customers, assisted customers with their projects, provided recommended upgrades, created proposals and bids, assisted with paperwork, and supplied and/or installed the upgrades.

Cascade and Nexant recruited and managed trade allies, each in their respective markets. For Cascade, these were trade allies delivering industrial and agricultural measures. For Nexant, these were trade allies delivering commercial measures, eligible for prescriptive or custom incentives, to small and midsized commercial customers (i.e., non-managed accounts) and vendors delivering the SBL offering (2016).

Administrator staff noted that the reregistration process caused some confusion and elicited negative responses from trade allies already approved by the program. Though some trade allies and projects were lost in the transition, staff worked to reregister trade allies. They reported that some trade allies came back to the program to discover a reliable and engaged group, especially for lighting. Trade allies that did not reregister to receive the designation of a **wattsmart** Business vendor could submit projects to the program, but they are not listed as wattsmart Business vendors on the customer-facing Find a Vendor search on the program website.

As Cascade’s trade allies delivered prescriptive and custom non-lighting measures, and, to insure quality control, Cascade prepared all savings and incentive calculations for its trade allies, Cascade did not require its trade allies to register with the program. Cascade also assisted industrial and agricultural customers in completing applications for some non-lighting Typical Upgrades measures (e.g., variable speed air compressors, fast-acting doors), requiring savings calculations to determine incentives. Cascade explained, however, that its process was designed to provide such assistance, and applications for typical measures not requiring these calculations (i.e., those using deemed savings) were processed easily.

Marketing and Outreach

RMP, Nexant, Cascade, and Willdan shared marketing responsibilities as well as outreach to customers during the 2016–2017 evaluation period. In addition to radio, print, paid digital display, and search advertising, direct mail (bill inserts *and Energy Insights* newsletter), email, and social media deployed by RMP, the company’s project managers provided direct outreach to managed accounts. Trade ally partners, managed by program administrators, became responsible for direct boots-on-the-ground marketing to small and midsized customers as well as to large customers other than those managed directly by RMP account managers.

Nexant (in conjunction with its subcontractor) provided marketing communications and materials to trade allies registered with the program, and coordinated messaging with RMP communication staff. Nexant also hosted annual events for lighting and non-lighting program trade allies.

Somewhat different than Nexant’s broad marketing to many trade allies, Cascade conducted direct business-to-business and face-to-face outreach to industrial and agricultural trade allies in Idaho, and

often identified new trade allies through networking with the area’s U.S. Department of Agriculture office, agricultural expositions, networking with customers or Google searches. Given the number of trade allies in, for example, compressed air, dairy, and irrigation pumping, they tended to be fewer and farther between than lighting and HVAC contractors, Cascade found it more effective to develop one-on-one relationships with trade allies through repeated personal visits, phone calls, and—at times—joint-visits that trade allies made to customers (rather than organizing formal training sessions for each group).

Cascade also conducted outreach directly to customers, locating project leads for trade allies or offering scoping services to identify savings opportunities for customers. This included direct mail to all agricultural and irrigation customers twice per year, sending a one-page application form to alert them to the program and its opportunities.

Similarly, when a trade ally identified a potential customer for the **watt**smart Business incentives, Cascade provided engineering support to assist the trade ally in reaching out to the customer, preparing the necessary calculations to show the customer’s potential savings, and advised the trade ally on how to achieve higher savings from a project.

Willdan, in conducting its marketing and outreach for the SBDI offering, designed collateral and website content, which RMP reviewed and approved prior to Willdan’s use in the field. Willdan engaged with RMP’s regional business managers to gain introductions to civic leaders and to inform them when they would become active in their communities. To identify projects, Willdan also conducted direct business-to-business outreach. RMP also supported SBDI outreach through earned media using local newspapers, Google advertisements, and social media buys (Facebook and Twitter) in each targeted community.

Marketing Strategy

The program’s 2017 marketing strategy reflected a strong, contracted DSM delivery channel focus, using a network of trade allies, contractors, and vendors, and broadening the program’s reach through program and non-program contractors, with whom customers could have existing relationships. RMP provided oversight into marketing conducted by program administrators or administrators’ subcontractors.

As each administrator became responsible for meeting their program goals, each used a separate marketing effort, providing some control over attaining those goals. RMP noted that keeping all teams “on the same page” and maintaining the same brand presentation proved a bit challenging, due to some turnover in the teams. RMP’s marketing staff acknowledged that while they understood the administrators’ desire to control their own marketing, bringing it all in-house to RMP would simplify quality control and reduce the need to retrain administrator staff as they changed positions; doing so would also require adding in-house staff. Such a change, marketing staff reported, was not urgent, but perhaps something to consider in the future.

Willdan noted it is developing a three-year marketing strategy and annual marketing plan to be revised annually as needed. Marketing for the SBDI offering will focus on engaging geo-targeted rural and urban communities through a combination of Willdan contractors and, where possible, local contractor firms.

Marketing Messaging

Program Website Evaluation

On multiple occasions, the Cadmus team referenced information provided on the program’s website. The team considered the site visually easy to navigate and the information provided within each measure category useful in achieving a high-level understanding of the steps necessary to initiate a project, while also supporting brochures, case studies, detailed incentive lists, policy papers, and other documents explaining program requirements. Some measures and topics, however, appeared in more than one location, making it somewhat difficult to determine where to find applicable information. For example, lighting for major renovations is linked from multiple locations including lighting retrofits/major renovation, and lighting new construction.

Wattsmart Advertising and Outreach

Following interviews with RMP and the program administrators’ staff, Cadmus’ reviewed the *Rocky Mountain Power Idaho Master 2017 Media Flowchart* and the *CCCom Update (January to December 2017)*, along with campaign materials linked in the flowchart. Specific findings, identified during reviews of these elements, follow.

Key Messages

Through conversations and emails with RMP program marketing staff, Cadmus learned RMP approached marketing of the program with a focus on customer case studies to be used in TV, radio and print campaigns. Documents provided to Cadmus by RMP did not specifically state this strategy, however, hyperlinks to the various ads, emails, videos, and radio and TV spots were included.

Media Flowchart

- The flowchart addressed media and did not include timing for emails, bill inserts, or organic social media content—all items that complement media.
- Almost no outreach efforts occurred from January through March, aside from newspaper ads and two emails.
- Marketing campaigns for April through June and September through November did not show accompanying or supporting emails.

Marketing Materials

- Marketing materials utilized three different branding schemes which can cause confusion for customers.
- Visuals used in Facebook ads were used well, showing real people in relevant situations.
- Case studies were strong and well-marketed, however, on the website it was unclear which applied to Idaho customers.

Database Interface and Data Management

During the 2014–2015 program evaluation, RMP consolidated its nonresidential DSM programs under the **wattsmart** Business program umbrella and transitioned data management to its new Demand Side

Management Central software (DSMC). During the evaluation period, Nexant began using the DSMC to enter data directly into its system, then uploaded projects to RMP. Streamlining this process, however, as noted by Nexant’s subcontractor, created some issues with different versions of DSMC forms and with accessing project data in each system, which might use different application form numbers.

Data transfer differed between companies:

- Nexant’s subcontractor uploaded project data to Nexant, which in turn uploaded the data to RMP. Nexant and its subcontractor are exploring ways to streamline this process to avoid entering data twice.
- Cascade uploaded project data into DSMC once per week and reported no issues.
- Willdan uploaded batch files through an SFTP site to RMP, but did not have direct access to DSMC.

One administrator staff said, overall, the program operated efficiently with one exception: program staff would benefit from better understanding of the process by which measures were designed and entered into the program databases: “The measures as designed have so much information in them, it can be difficult to deal with them, and many measures have different versions and different effective dates, [making it] difficult to manage because of the complexity.” The staff member continued: “Errors get caught because of the level of detail, and this reduces risk, but at a really big cost, higher than it needs to be.”

Data Quality Assurance

RMP evaluates data quality assurance on an ongoing basis. RMP data management staff said errors, identified in projects uploaded from program administrators, decreased overall since 2014–2015. A brief uptick, observed early in 2018, was attributed to transitions in staff managing data input at one administrator. RMP said this uptick again declined.

Willdan reported reconciling project files monthly without issues, unless going back to adjust project inputs (which typically does not happen to more than one to two projects per year).

Program Database Evaluation

The Cadmus team found some issues in the different program databases provided by RMP and the administrators, making the program evaluation somewhat challenging:

- The databases contained esoteric addresses for agricultural customers, a possibly unavoidable situation due to the nature of rural locations (e.g., farm fields, barns) where equipment has been installed:
 - Addresses included information that was not part of the actual address (e.g., #pumps, #Gym, #market).
- Abbreviations used in customer names that made cleaning and interpreting data difficult (e.g., HS for high school, dist. for district, dept. for department).

- Descriptions of partial participant project dispositions varied between RMP and each administrator, meaning project designations included in the survey sample could vary by year, depending on the evaluator’s interpretation.
- Installed measures were not listed for SBDI projects.

Now that RMP has completed the process of combining prior energy efficiency programs under the **wattsmart** Business umbrella, inconsistencies in data reporting by program categories—identified during the 2014–2015 program evaluation—have been resolved.

Program Challenges and Successes

RMP program management staff and program administrators reported that, for the most part, they received the resources needed to deliver the program in 2016 and 2017. Staff from RMP and the administrators cited the following program strengths:

- Experienced program administrators and subcontractors.
- Annual improvements to the Program Guidelines for Rocky Mountain Power Contractors, including information about incentives and documentation of project payback requirements, engineering and inspection requirements, and customer eligibility.
- Well-established relationships with trade allies and recruitment of an SBDI installation subcontractor midway through 2017.
- A robust prescriptive lighting program, with little fraud.
- Increasing customer participation due to the SBDI offering, particularly in rural communities where administrator staff noted participation rose from a low of 1% to a high of 16% (50% in one community), and an increase from 2% participation to an average of 6% participation in urban areas.

RMP has improved other issues, such as the need to cost-effectively reach more small business customers and provide trade allies with more online applications. However, program management and implementation staff also noted the following challenges that they anticipate will affect the program going forward. Several of these challenges (e.g., staying ahead of changes in technology, the need for larger and larger projects to hit savings targets) were concerns also voiced during the 2014–2015 program evaluation:

- Ever-increasing savings targets for all offerings, as these result in a need for larger projects as well as offering additional measures through SBDI.
- Keeping up with accelerating technology curves for lighting and lighting controls and adapting to these under the regulatory process as quickly as the market changes.
- Transitioning from lighting incentives to incentives for lighting with controls.
- Project deferrals or cancellations due to agricultural customers’ sensitivity to any downward fluctuations in commodity prices (e.g., milk, potatoes).
- Resource constraints, including a shortage of licensed electricians and laborers. Difficulties have been experienced in recruiting trade allies from existing RMP programs to work in SBDI due to

the remuneration structure, which pays trade allies for kWh saved rather than more typical structures, where trade allies earn on their labor and on a markup for equipment installed.

- Preapprovals that the program requires for typical incentives add time to projects. Distributors no longer stock quantities of all products, requiring customers or trade allies to order products, which can add six to eight weeks to a project after preapproval. In turn, this extends the time between a customer starting a project and their receiving a check.

Customer Response

The Cadmus team conducted process surveys with 74 **wattsmart** Business program participants—38 receiving Typical Upgrades or Custom Analysis incentives, 26 receiving incentives through the SBDI offer, and 10 receiving incentives through the SBL offer.

Wattsmart Business Typical Upgrades and Custom Analysis

The 38 survey respondents receiving Typical Upgrades (31) or Custom Analysis incentives (seven) completed projects across six measure categories:¹³

1. Lighting (20)
2. Agricultural (12)
3. HVAC (2)
4. Motor Systems (1)
5. Refrigeration (1)
6. Other (2)

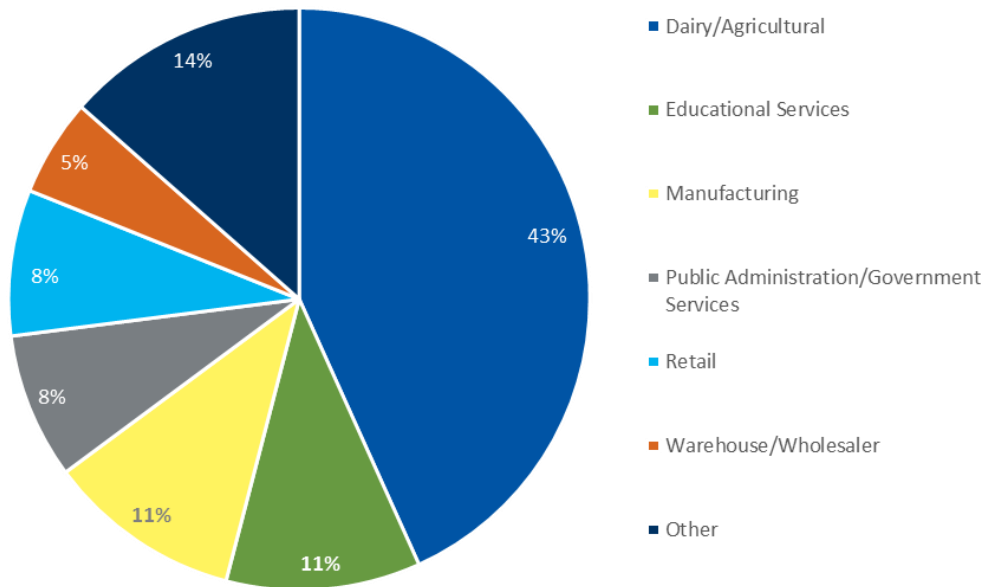
Dairy/Agriculture was the most common industry among Typical Upgrades or Custom Analysis respondents, representing 43% (n=37). As shown in Figure 9, the remainder of respondents were scattered across a wide variety of sectors, with no more than 11% in any one.¹⁴ Of these 38 participants, 61% operated in a single Idaho location, and another 31% operated in two to five locations (n=36). The great majority, 81% (n=36), owned their facilities rather than leased them. Business sizes also varied, with 42% of respondents having 10 or fewer employees and 25% having 100 or more, with the remainder distributed across the middle of the range (n=36).

Among custom project respondents, specifically, six were in dairy or agriculture and had ten or fewer employees, and one was a food processing company with between 51 and 75 employees. Six of these businesses operated in only one location, while one dairy or agriculture company had 10 locations. Five respondents owned their properties, one owned a 50% share in the property, and one leased their property.

¹³ Respondents in the seventh category—compressed air—were nonresponsive.

¹⁴ The Other category consisted of respondents in food processing, food service, nonprofit/religious organizations, newspapers, and real estate/property management.

Figure 9. Typical Upgrades and Custom Analysis Participant Respondents by Business Sector



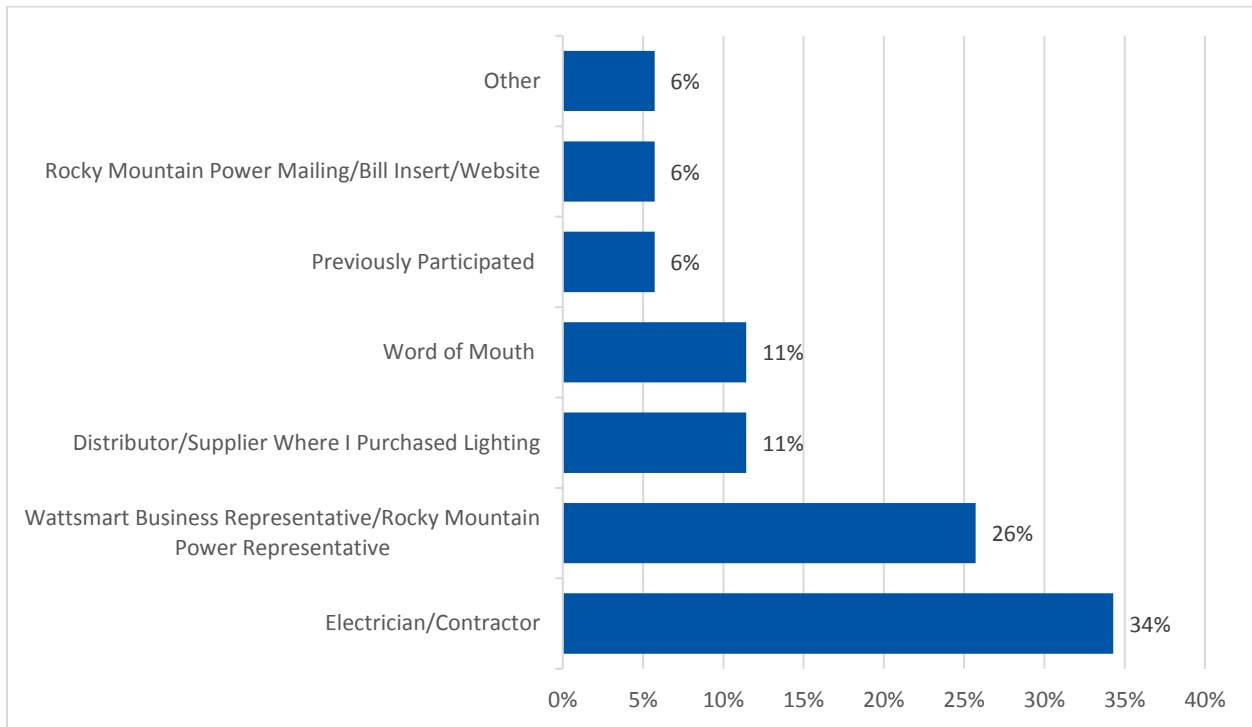
Source: Rocky Mountain Power **wattsmart** Business Program 2016–2017
wattsmart Business Participant Survey QF1. Don't know and refused responses removed. (n=37)

Awareness and Communication

As intended by the program’s design, participants receiving **wattsmart** Business Typical Upgrade or Custom Analysis incentives most frequently learned about available incentives through their electricians or contractors (34%, n=35), followed by program representatives or their RMP representatives (26%).¹⁵ Other sources included lighting distributors, word-of-mouth, RMP marketing channels, and other sources. As shown in Figure 10, combined, these smaller groups represented 40% of respondents’ answers. Participants reported sources at proportionally similar rates as those reported in 2014-2015.

¹⁵ 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.”

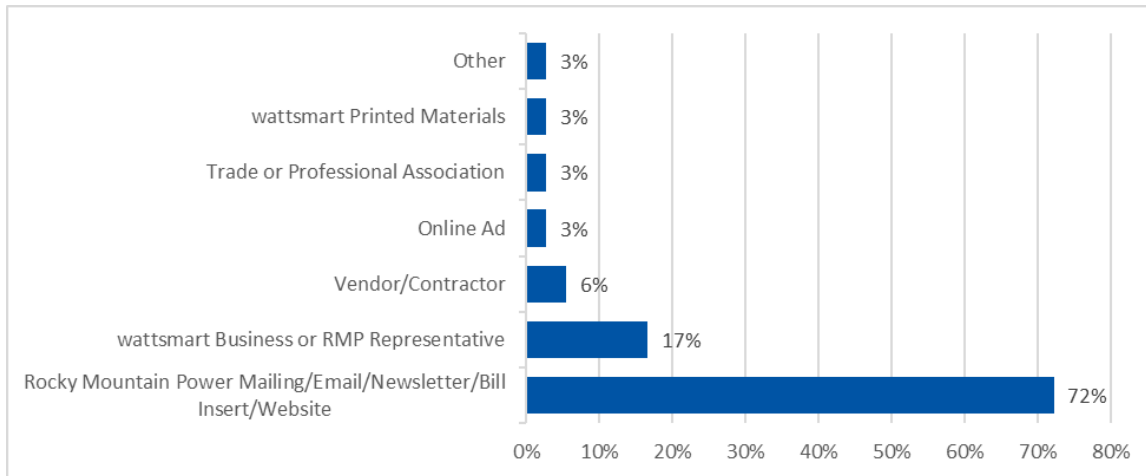
Figure 10. Typical Upgrades and Custom Analysis Participants Information Sources



Source: Rocky Mountain Power **wattsmart** Business Program 2016–2017 **wattsmart** Business Participant Survey QB3. Don't know and refused responses removed. Multiple responses allowed. (n=35)

Although participants least frequently learned about program incentives from an RMP mailing, email, newsletter, bill insert, or the website, they most frequently indicated one of these channels as their preferred communication method to stay informed about other RMP programs or incentives. Figure 11 shows all preferences reported by participants.

Figure 11. Typical Upgrades and Custom Analysis Participants Preferred Method of Communication to Stay Informed

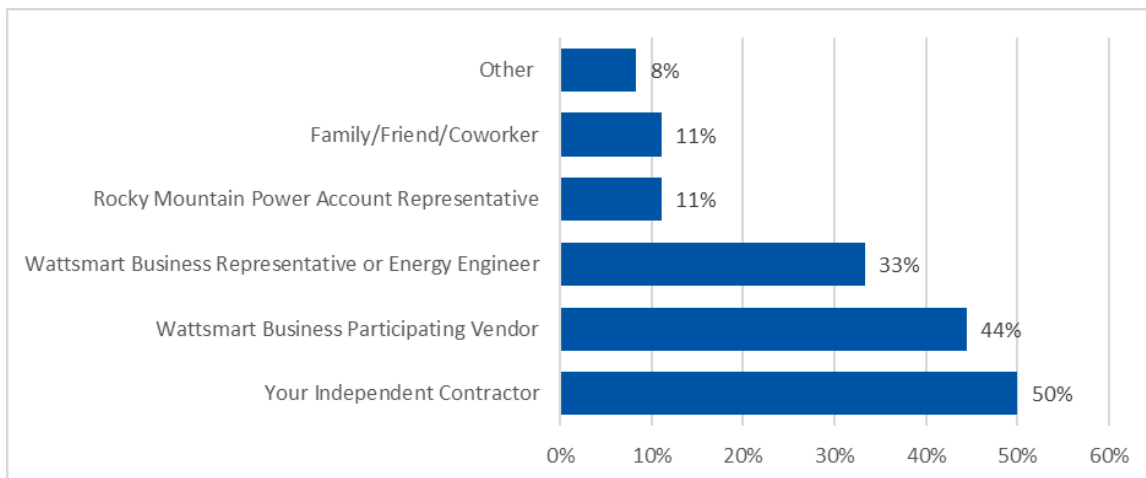


Source: Rocky Mountain Power **wattsmart** Business Program 2016–2017 **wattsmart** Business Participant Survey QG3. Don't know and refused responses removed. Multiple responses allowed. (n=36)

Project Initiation and Installation

In initiating their projects, participants cited independent contractors more frequently than other help sources. As shown in Figure 12, **wattsmart** participating vendors, RMP **wattsmart** Business representatives, or energy engineer also frequently aided participants.

Figure 12. Typical Upgrade Participants' Assistance Source



Source: Rocky Mountain Power **wattsmart** Business Program 2016–2017 **wattsmart** Business Participant Survey QC1. Don't know and refused responses removed. Multiple responses allowed. (n=36)

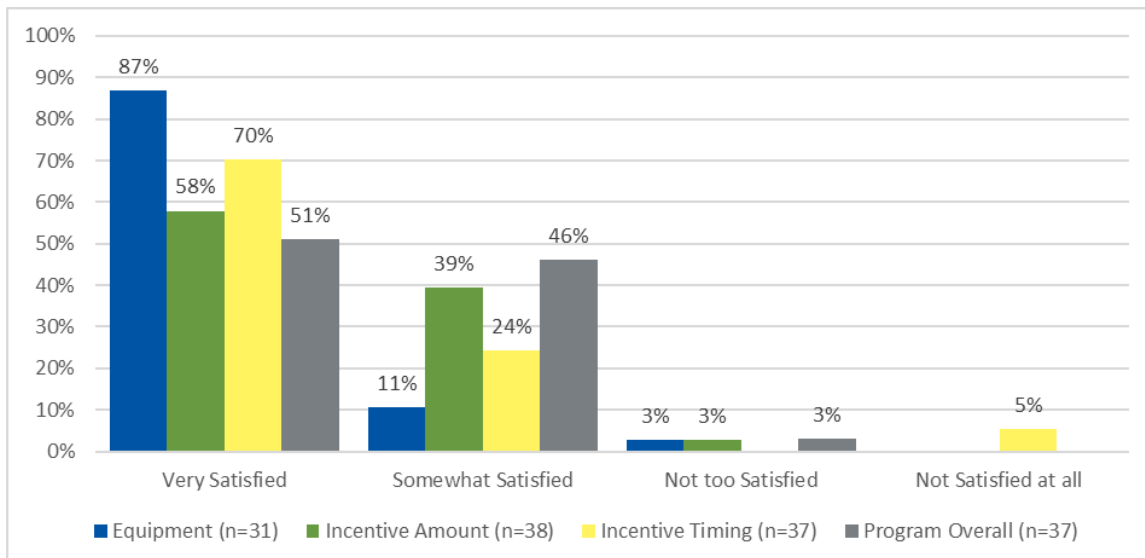
The majority of participants found it easy to complete their project applications, reporting the process as very easy (46%) or somewhat easy (43%) (n=35). Of 13 respondents offering suggestions for improvement, seven noted that it would helpful not to complete the paperwork themselves. Two

respondents requested better directions, including step-by-step instructions, and two noted the process required talking to too many different people. One irrigation respondent suggested allowing participants to complete their applications online. The Cadmus team found no correlations between participants reporting difficulties and a single-measure category or source of project initiation help.

Satisfaction

Figure 13 shows respondent satisfaction levels with several program components and the program overall. Respondents were most likely to be very satisfied with equipment they purchased, followed by the incentive’s timing. Respondents were less likely to be very satisfied with incentive amounts, or with the program overall. Incentive timing had the widest range of satisfaction, with 5% of respondents reporting they were not satisfied at all with this program component. Incentive timing was the only program component that received this lowest satisfaction rating.

Figure 13. Participant Satisfaction Levels

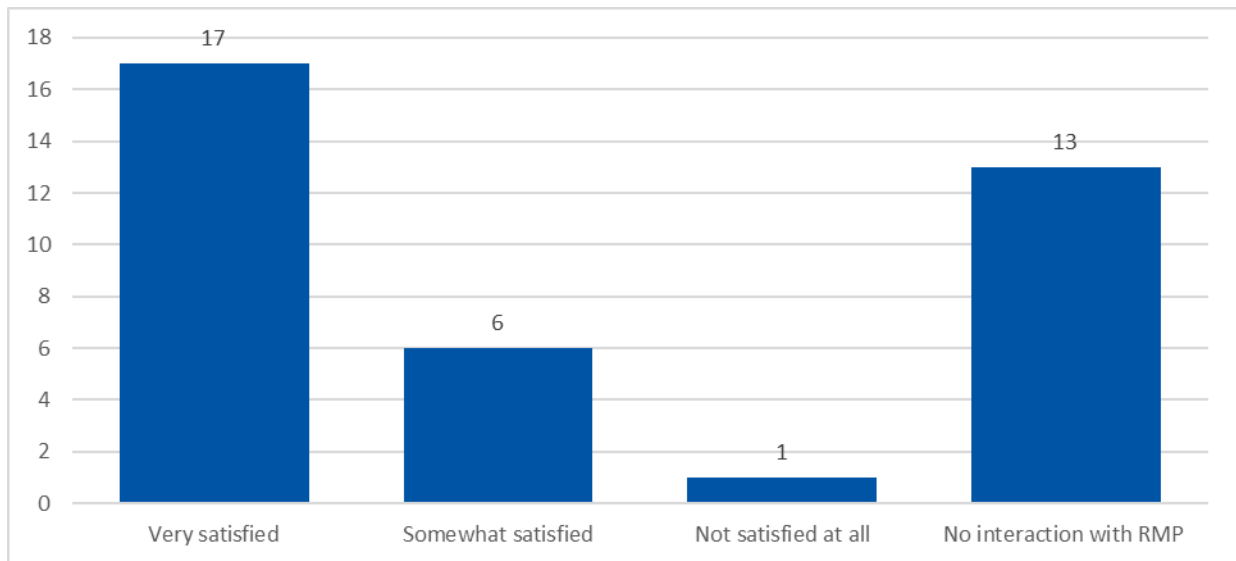


Source: Rocky Mountain Power **wattsmart** Business Program 2016–2017 **wattsmart** Business Participant Survey QC4, QC6, QC12, and QG1. Don’t know and refused responses removed.

Eight Typical Upgrades or Custom Analysis participants used a **wattsmart** participating vendor to install their project. Of these, all expressed satisfaction with the vendor’s work: seven reported they were very satisfied, and one reported they were somewhat satisfied.

Twenty-four participants, representing 65% of respondents (n=37) reported some interaction with Rocky Mountain Power during their project. Of these, 17 were very satisfied, and 6 were somewhat satisfied. One respondent was not at all satisfied (Figure 14).

Figure 14. Satisfaction with Interaction with Rocky Mountain Power



Source: Rocky Mountain Power *watt*smart Business Program 2016–2017 *watt*smart Business Participant Survey QC21. Don't know and refused responses removed. (n=37)

The great majority of participants (97%, n=37) were somewhat or very satisfied with the program overall. When asked how RMP could improve the program, 68% (n=37) of respondents indicated they had no suggestions, but 14% percent suggested better or more communication, with one asking for more consistency. Another 11% suggested providing quicker response times. Other suggestions included increasing the incentive (8%), simplifying the application (5%) and simplifying the website (3%). (Responses sum to more than 100% because the question allowed multiple responses.)

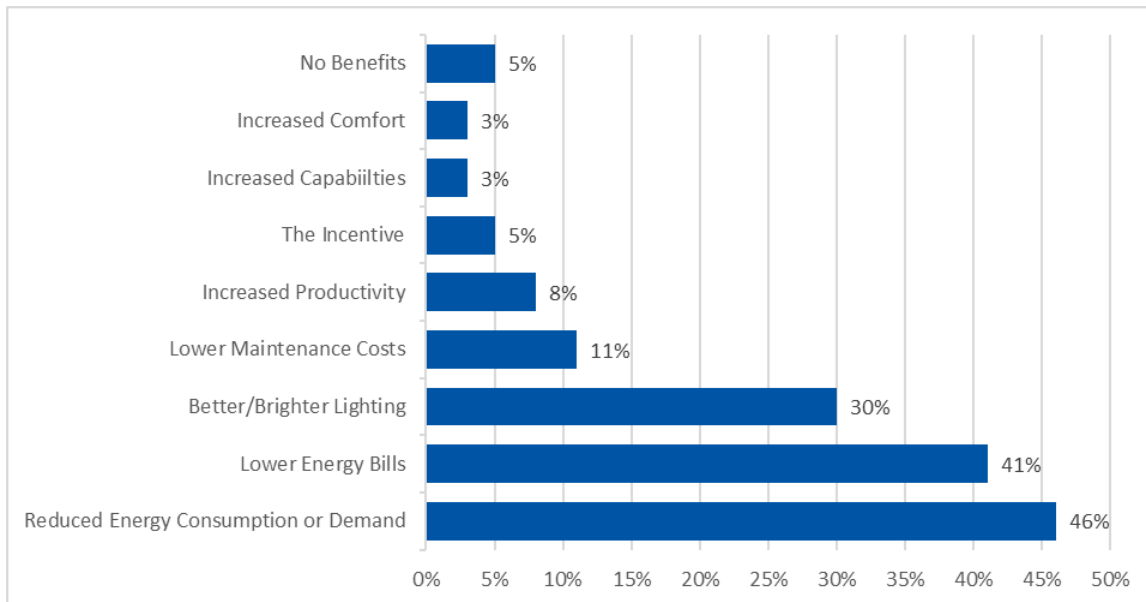
Three participants reported wanting to install additional equipment that did not qualify for incentives through the Typical Upgrades or Custom Analysis offerings. These included LED lighting, a variable-frequency drive (VFD), and water heaters and refrigerators. It was not clear why the respondents that mentioned LED lighting and the VFD were not aware these measures were available through the program. The respondent that mentioned a refrigerator did not provide detail on the type of refrigerator needed, but this equipment may have been available through the program as well.

Benefits and Challenges

Surveys asked respondents about benefits they experienced from participation and challenges they had to overcome to participate.

Of 37 respondents receiving Typical Upgrades or Custom Analysis incentives, 35 reported that their company experienced one or more benefits due to equipment installed. The most common benefits included using less energy (cited by 46%) and saving money on utility bills (cited by 41%). Figure 15 shows the frequency of all benefits cited by respondents.

Figure 15. Benefits of Equipment Installed

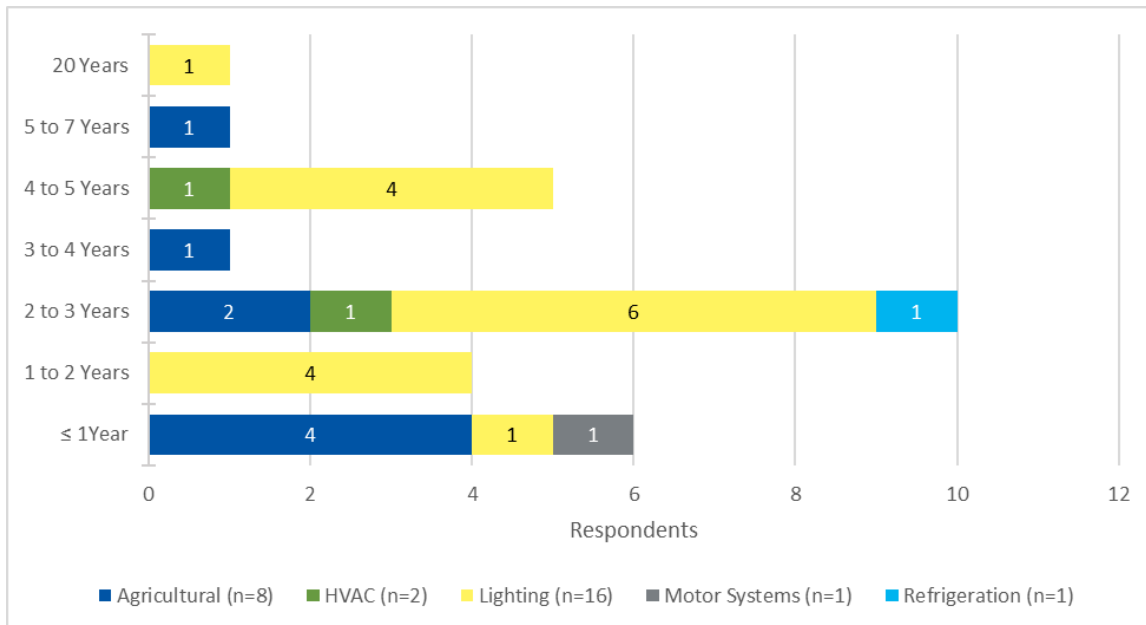


Source: Rocky Mountain Power **wattsmart** Business Program 2016–2017 **wattsmart** Business Participant Survey QC18. Don't know and refused responses removed. Multiple responses allowed. (n=37)

The majority of respondents (71%, n=38) did not report challenges in program participation. However, two respondents reported challenges related to deciding to participate, including the project's total cost and the timing of the project installation. A third respondent reported difficulties with the equipment installed, and a fourth could not determine if they saved any money on their bills. The remaining seven challenges related to project implementation, including coordinating among many individuals involved in completing the project (four), and managing the paperwork and tracking the incentive payment (three). Respondents reporting challenges were distributed roughly proportionally to the sample across the different implementation pathways, with 10 respondents participating through the contracted DSM delivery channel, and one participating through a Rocky Mountain Power representative (internal delivery channel).

The project payback period presented a potential challenge for customers. When asked what payback period they typically sought, participants reported timeframes ranging from less than one year to 20 years, with the majority (71%, n=28) reporting a period of three years or less, with another 21% reporting a period of three to five years. Figure 16 shows the breakout of typical payback periods by measure category.

Figure 16. Project Payback Period Expectations



Source: Rocky Mountain Power **wattsmart** Business Program 2016–2017 **wattsmart** Business Participant Survey QC8. Don't know and refused responses removed. (n=28).

Of 28 respondents providing a typical payback, five received Custom Analysis incentives. This group expected the following paybacks:

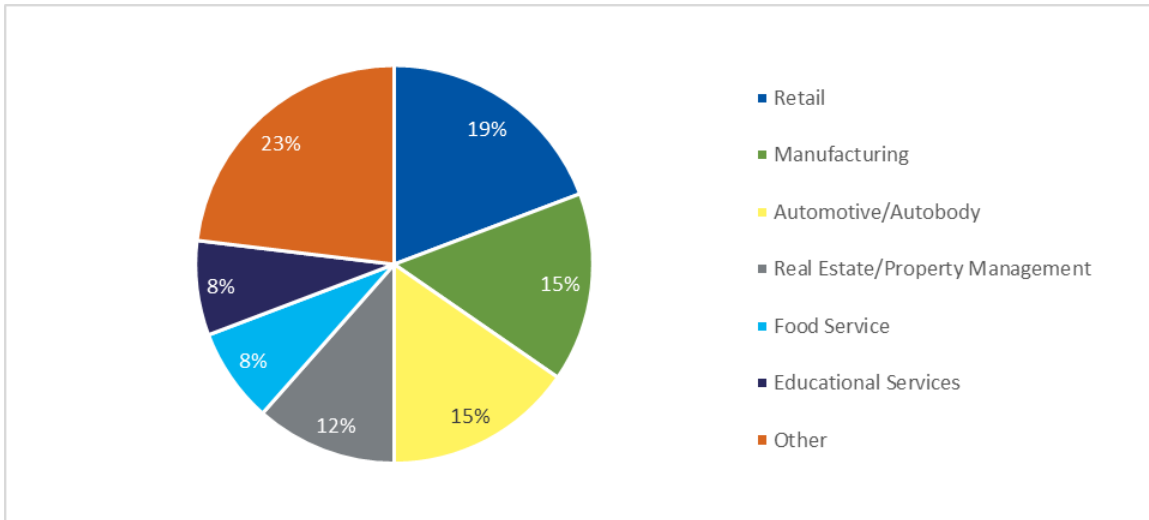
- Pump replacement—one year or less (two), and two to three years (one)
- Irrigation system redesign—five to seven years (one)
- Evaporator fan for a refrigeration system—two to three years (one)

Figure 16 includes these five projects under the Agricultural and Refrigeration categories, respectively.

Small Business Direct Install/Small Business Lighting

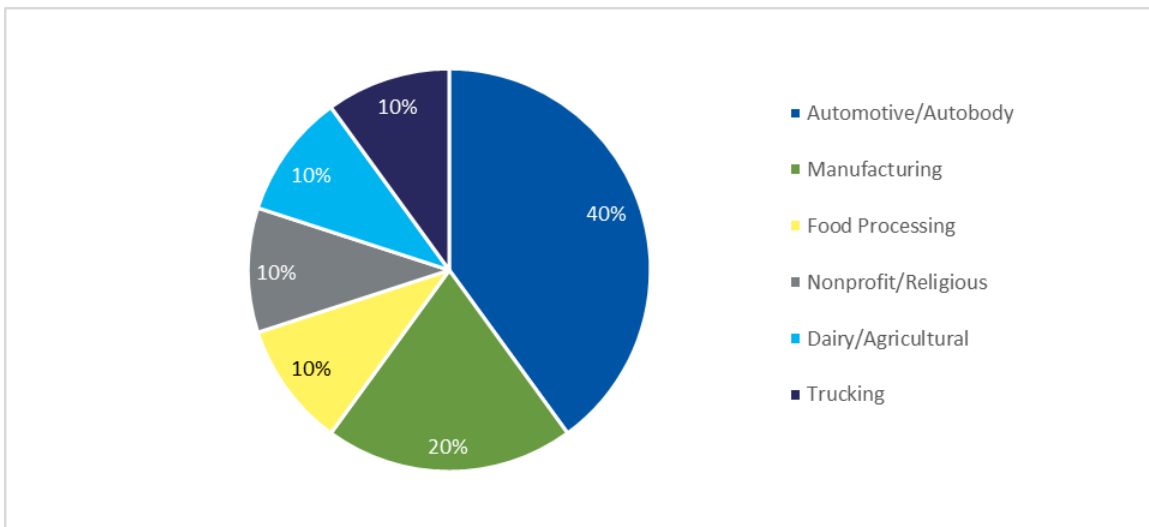
The Cadmus team completed surveys with 26 SBDI participants and 10 SBL participants. As RMP will only continue the SBDI offer, this section focuses primarily on those participants. Both groups' respondents included a wide variety of business types, as shown in Figure 17 and Figure 18. Both groups also primarily included smaller businesses although those in the SBDI sample also included larger customers employing more than 100 people, whereas no one in the SBL sample employed more than 100 people. In the SBDI sample, 73% of businesses employed 1 to 25 people, and 65% operated in only one location. In the SBL sample, 80% of respondents employed 1 to 25 people, and 70% operated in only one location. Eighty-four percent of the SBDI sample respondents are property owners, compared to 100% of the SBL sample.

Figure 17. SBDI Participant Respondents by Business Sector



Source: Rocky Mountain Power **wattsmart** Business Program 2016–2017 Small Business Lighting/Small Business Direct Install Participant Survey QF1. (n=26).

Figure 18. SBL Participant Respondents by Business Sector



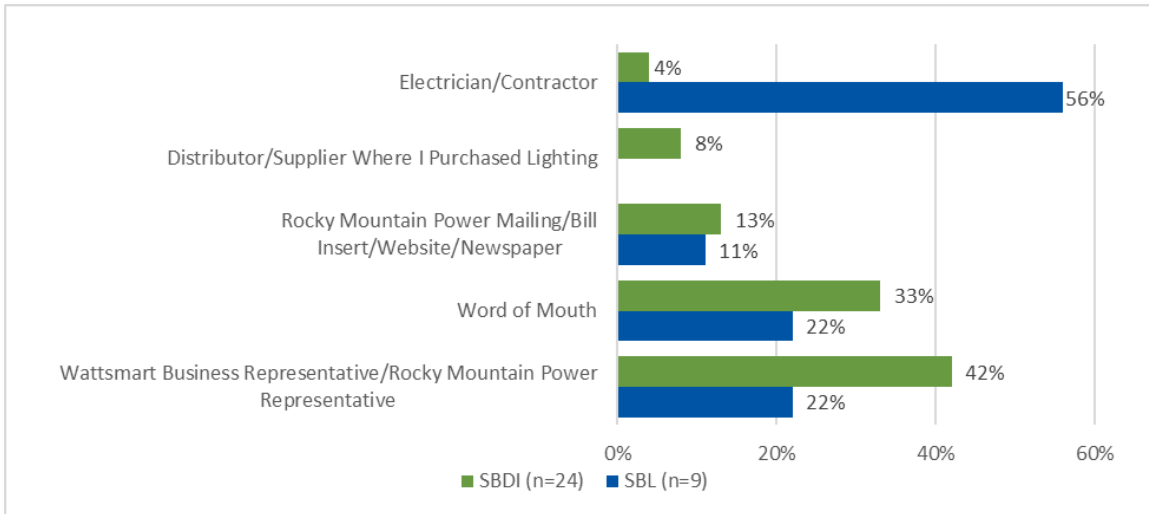
Source: Rocky Mountain Power **wattsmart** Business Program 2016–2017 Small Business Lighting/Small Business Direct Install Participant Survey QF1. (n=10).

Awareness and Communication

As intended by the program’s design, SBDI participants most often (42%, n=24) learned about the program through a **wattsmart** Business representative or a RMP representative. Participants also frequently learned about the program through word-of-mouth. By contrast, SBL participants learned about the program through their electricians or contractors.

Figure 19 shows all awareness channels mentioned by respondents and their distributions. Although most respondents did not learn about the program through a RMP mailing, bill insert, or website, 75% (n=24) indicated this as their preferred method to learn about future opportunities.

Figure 19. Sources of Program Awareness Among SBDI and SBL Participants

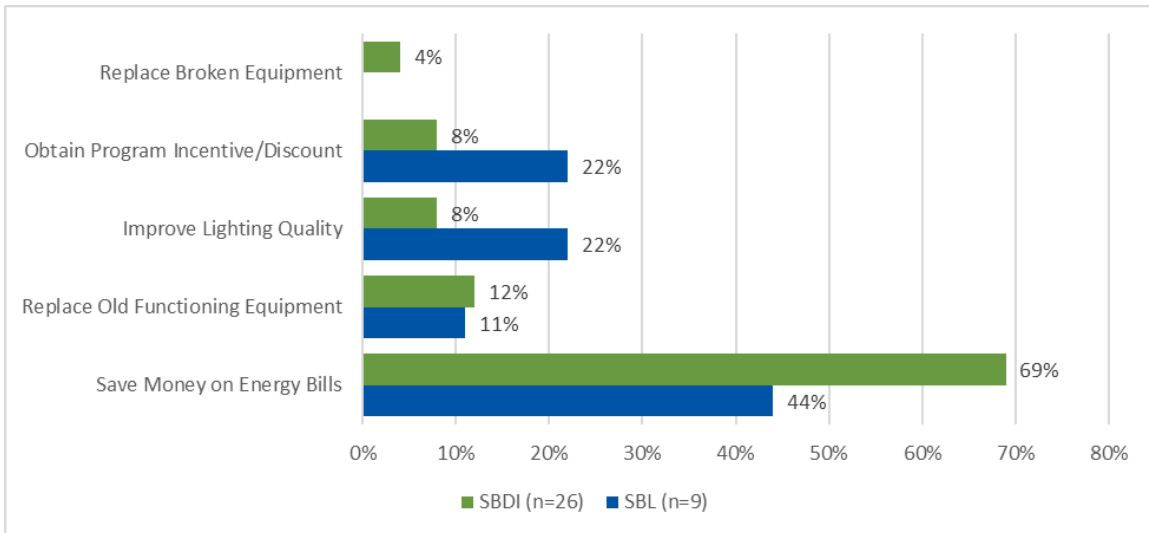


Source: Rocky Mountain Power **wattsmart** Business Program 2016–2017 Small Business Lighting/Small Business Direct Install Participant Survey QB3. Don't know and refused responses removed.

Motivation and Participation

When asked for their motivations to complete their projects, most SBDI participants cited saving money on energy bills. Respondents less frequently cited other motivations, such as replacing old or broken equipment, improving lighting quality, obtaining the program incentive. As shown in Figure 20, SBDI respondents cited saving money on energy bills as a motivation more often than SBL participants. A majority of SBDI participants (71%, n=24) also indicated that cost-savings information in the project proposal proved most influential in their decisions to proceed with their project, while another 24% found energy-saving information most influential.

Figure 20. Motivation to Participate

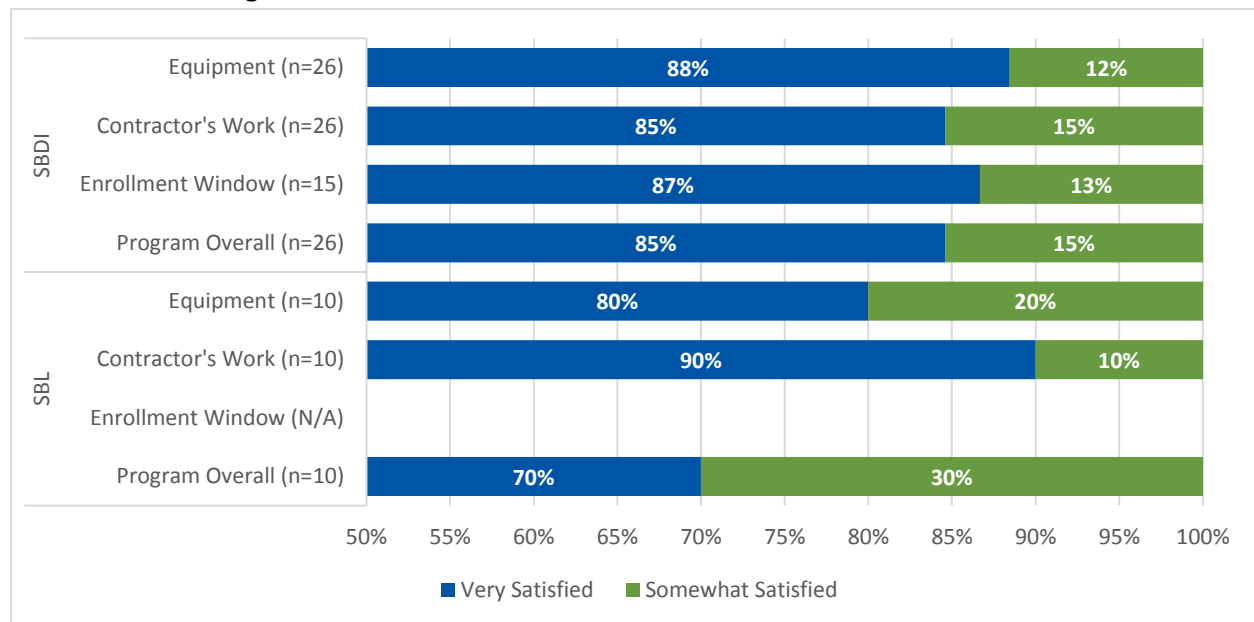


Source: Rocky Mountain Power **wattsmart** Business Program 2016– Small Business Lighting/Small Business Direct Install Participant Survey QC1. Don't know and refused responses removed.

Satisfaction

Figure 21 shows SBDI participants’ high satisfaction levels with three program elements: the equipment installed, the contractor’s work, and the enrollment window, in addition to the program overall. The percentage of SBDI respondents indicating they were very satisfied with each addressed aspect ranged from 85% to 88% (n=26). Eighty-five percent of SBDI respondents were very satisfied with the program overall, compared to 70% (n=10) of SBL participants. The proportion of SBDI and SBL participants reporting they were very satisfied with equipment or contractor’s work were not significantly different from participants in the SBL program in 2014-2015.

Figure 21. Customer Satisfaction Levels with SBDI and SBL Elements



Source: Rocky Mountain Power *wattsmart* Business Program 2016–2017 Small Business Lighting/Small Business Direct Install Participant Survey QC6, QC8, QC15 and QG2.

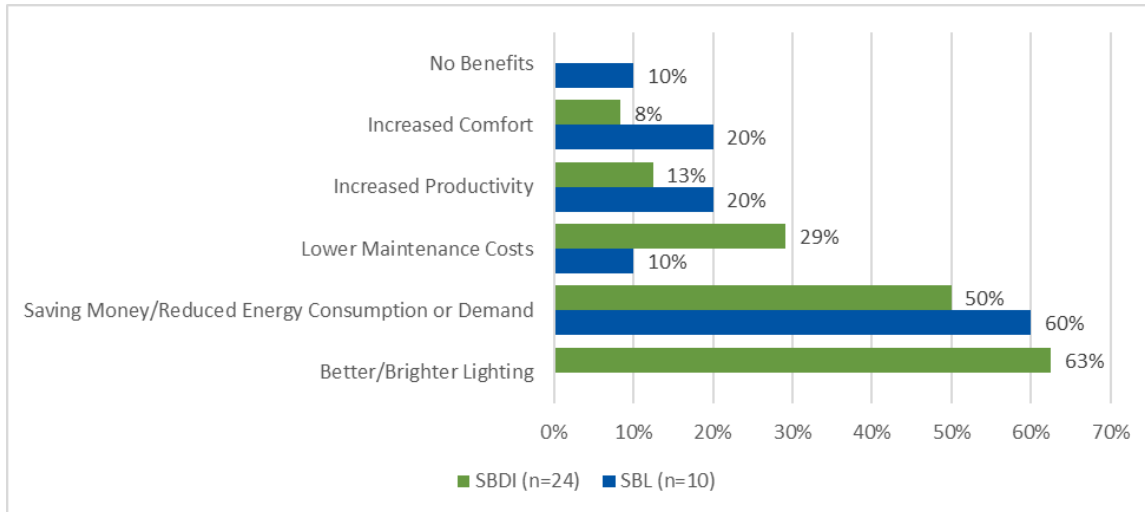
Respondents that did not indicate they were very satisfied with the equipment or the contractor were asked to further explain their level of satisfaction. Regarding equipment, three respondents indicated they had issues with LED lighting, including flickering, some lights not working, and dimness. Four respondents provided detail on their satisfaction with the contractor. Issues ranged widely, including one respondent that said the contractor used temporary workers, had broken some items, and was not organized. Others cited some items in the work scope not completed, difficulty contacting the contractor or scheduling work, and appearance.

Benefits and Challenges

All SBDI respondents indicated that their companies experienced some benefits from participating in the program. Although not a primary motivation for most respondents, better or brighter lighting was the most commonly cited benefit, reported by 63% (n=24) of participants. One-half of participants (50%) said they benefitted from reduced energy consumption or energy cost savings. Other benefits included reduced maintenance costs, increased productivity, and improved comfort. No SBL respondents

reported better lighting as a benefit, but a slightly higher percentage of SBL respondents reported increased productivity or comfort than did SBDI respondents. As shown in Figure 22, 10% of SBL participants (n=10) reported experiencing no benefits.

Figure 22. Customer-Reported Benefits of Equipment Installed Through SBDI and SBL



Source: Rocky Mountain Power **wattsmart** Business Program 2016–2017 Small Business Lighting/Small Business Direct Install Participant Survey: QD16. Don't know and refused responses removed. Multiple responses allowed (n=23).

The large majority of SBDI participants (84%, n=26) and all SBL participants (100%, n=10) did not report challenges in program participation. Three SBDI respondents reporting a challenge found the installation inconvenient. A fourth noted that some facility areas were not included. When asked how RMP could improve the experience, one SBDI respondent suggested conducting the installation after hours. No other respondents provided suggestions.

When asked if they had recommendations for improving the SBDI offering, four participants offered the following suggestions:

- Advertise the program more (one)
- Expand the eligibility area (one)
- Provide better contractors (one)
- Offer the program at the residential level (one)

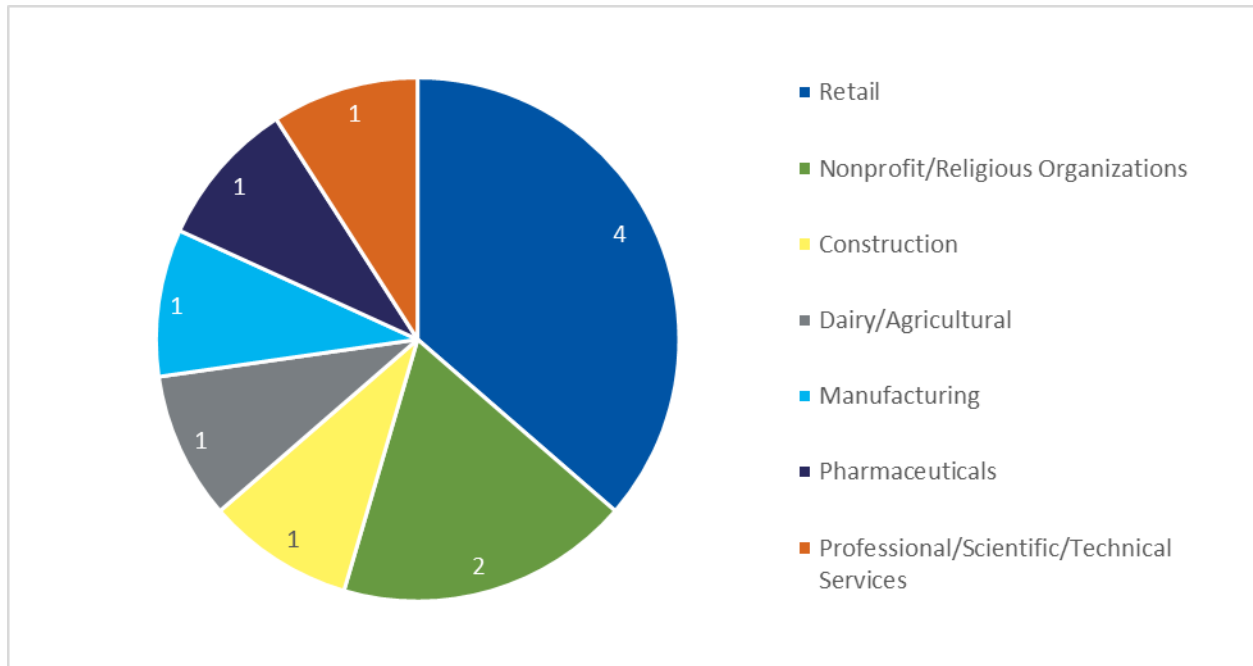
Partial Participants

The Cadmus team surveyed 10 partial participants in the Typical Upgrades and Custom Analysis offerings, and one partial participant from the SBDI program. Nine respondents started lighting projects, one respondent started an irrigation project, and one respondent started a direct install project through the SBDI program.

Figure 23 shows the distribution of business types among these respondents. Unlike the participant sample, which had a majority of dairy and agricultural businesses, the majority of partial participants

represented retail (4; n=11) or nonprofit/religious organizations (2). The businesses varied in size, with the number of employees ranging from 1–10 to 201–500. Six of these businesses operated in one Idaho location, four operated in two to four locations, and one operated in 32 locations. Nine of the 11 respondents owned their facilities.

Figure 23. Partial Participant Respondents by Business Sector



Source: Rocky Mountain Power **wattsmart** Business Program 2016–2017 **wattsmart** Business Nonparticipant-Partial Participant Survey QF1. (n=11).

Awareness

As with participants, the majority of partial participants learned about the program through their electricians or contractors (five) or contact with the **wattsmart** Business representative or RMP representative (three). Other sources included a vendor or lighting supplier, an RMP mailing, bill inserts or websites, and having previously participated in a RMP program. The majority of partial participants (nine) said the best way to inform them of future opportunities would be through RMP mailings, bill inserts, or websites. Two respondents recommended a cell phone call, and one respondent indicated social media as the best channel.¹⁶

Motivation and Barriers

When asked to choose the most important factor motivating them to make energy-efficient upgrades, most partial participants cited saving money on energy bills (seven). Three respondents were primarily motivated by the program incentive, while a fourth considered simplicity the most important factor.

¹⁶ This survey question allowed multiple responses.

When asked why they did not complete their project, two respondents reported a problem with the contractor, and two reported the project proved too expensive. Two respondents said the project was now underway or completed, with one restarting a project after transferring the business ownership; the second said the project was completed through a different program. All six of these respondents, plus one other respondent (who did not provide a reason for not completing their project), said they were either very (two) or somewhat (five) likely to apply for an incentive from RMP within the next six months. Of the four remaining respondents, one said they did not complete their project because they needed more support, and the other three did not provide a reason. All four said it was not too likely or not at all likely that they would apply for an incentive in the next six months, or they did not respond.

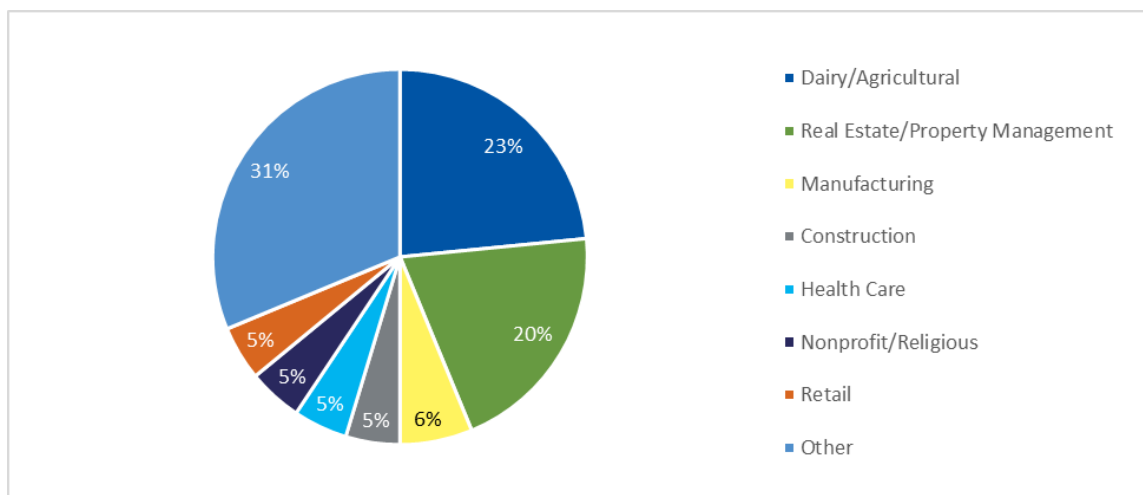
Satisfaction

Ten of 11 respondents were somewhat or very satisfied with the program. Five respondents suggested better communications or more information could improve the program experience, and one suggested increasing incentive amounts.

Nonparticipants

The Cadmus team surveyed 68 nonparticipants who either never completed a project through the program or had not done so within the past two years. As shown in Figure 24, nonparticipant respondents included several business types, with the largest groups including dairy/agriculture (23%, n=64) and real estate (20%). Most respondents (62%, n=63) had one location in Idaho, 32% had two to seven locations, and the remaining 5% had more than 40 locations. Similarly, 70% (n=60) of respondents had 10 or fewer employees, 15% had 11 to 75 employees, and 8% had more than 100 employees. Seventy-three percent of respondents (n=63) owned their facilities. Twenty-one percent of nonparticipants used electricity to heat their facilities while the remaining 79% used other fuels such as diesel, propane, oil, or did not heat their space (n=58). Participants relied more heavily on electricity for water heating (53%), with 48% using other fuels or not heating water (n=59).

Figure 24. Nonparticipant Respondents by Business Sector

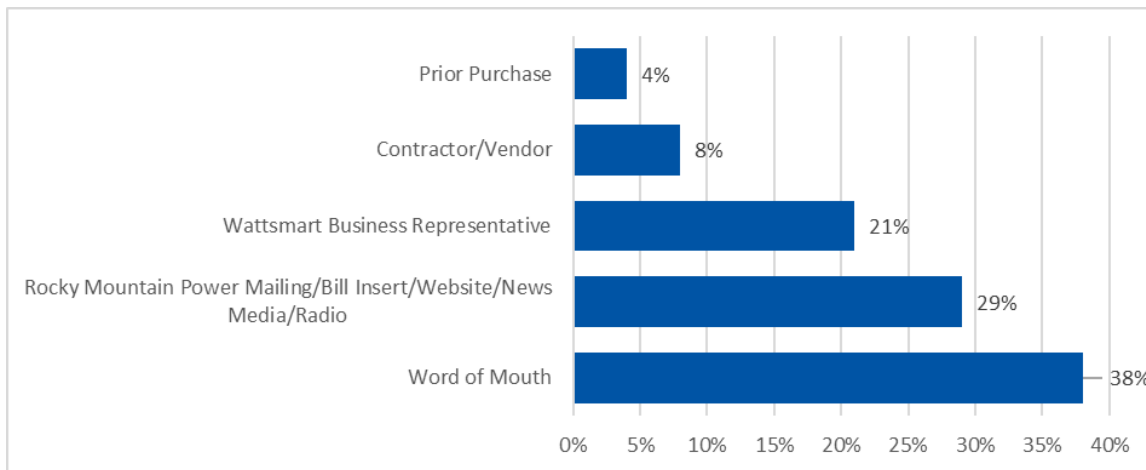


Source: Rocky Mountain Power **watt**smart Business Program 2016–2017 Nonparticipant-Partial Participant Survey QF1. Don't know and refused responses removed. (n=64).

Awareness

Fewer than one-half of nonparticipants (41%, n=68) knew of the **wattsmart** program prior to participating in the survey. Of respondents who were aware, they most commonly learned of the program through word-of-mouth (38%, n=24), followed by RMP mailings, bill inserts, or other marketing, or through a **wattsmart** Business representative (21%). Contractors or prior purchases served as less common information sources (12%). The majority of these respondents (78%, n=27) said it was not too likely or not at all likely that they would apply for a **wattsmart** Business incentive in the next six months.

Figure 25. Nonparticipants Source of Awareness of *wattsmart* Business Program

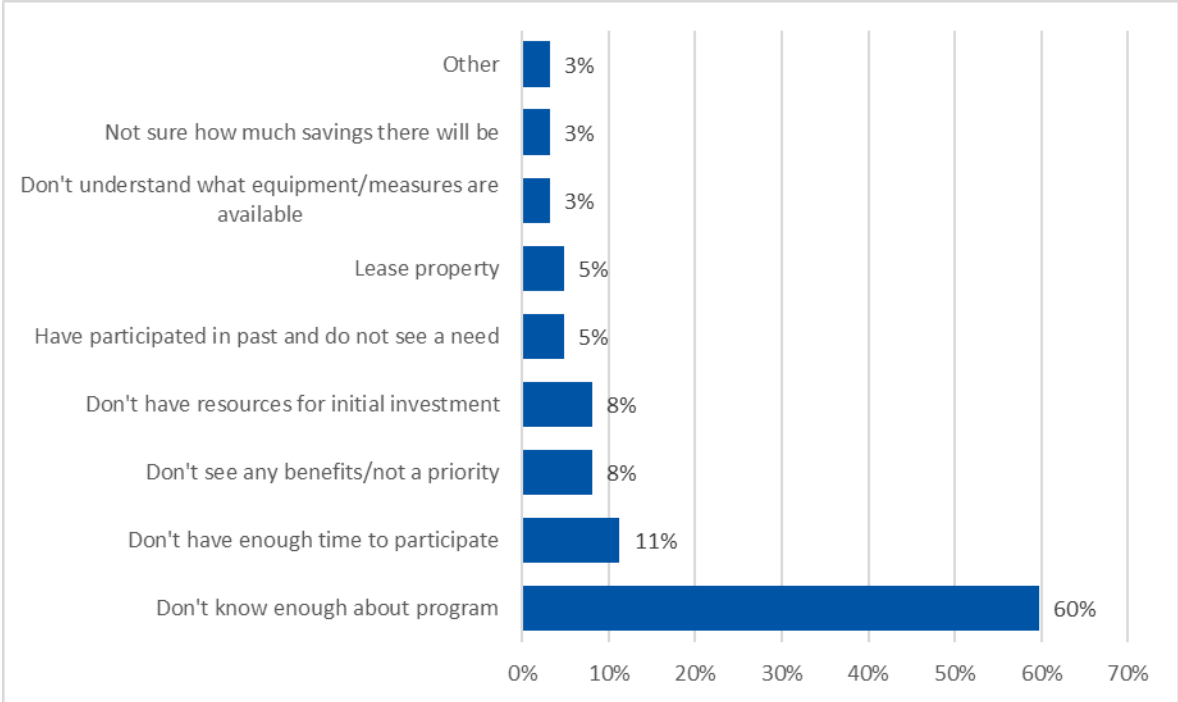


Source: Rocky Mountain Power **wattsmart** Business Program 2016–2017 Nonparticipant-Partial Participant Survey QC3. Don’t know and refused responses removed. (n=24).

Motivation

The largest single factor impacting whether customers were motivated to participate in the program was their level of awareness. When asked why they had not participated, respondents most commonly said they did not know enough about the program (60%, n=62), which corresponds to the previously noted finding that 59% of respondents had not heard of the program prior to the survey. Among those that were aware of the program, the most frequent reason for not participating was lack of time, reported by 11%. As shown in Figure 26, other common reasons for not participating included lacking funds for upfront costs and not seeing the benefit of the program. The latter category included three different perspectives: 8% said they did not see a benefit, generally; 5% participated in the past and did not see a need for further improvements; and 3% were unsure about potential savings.

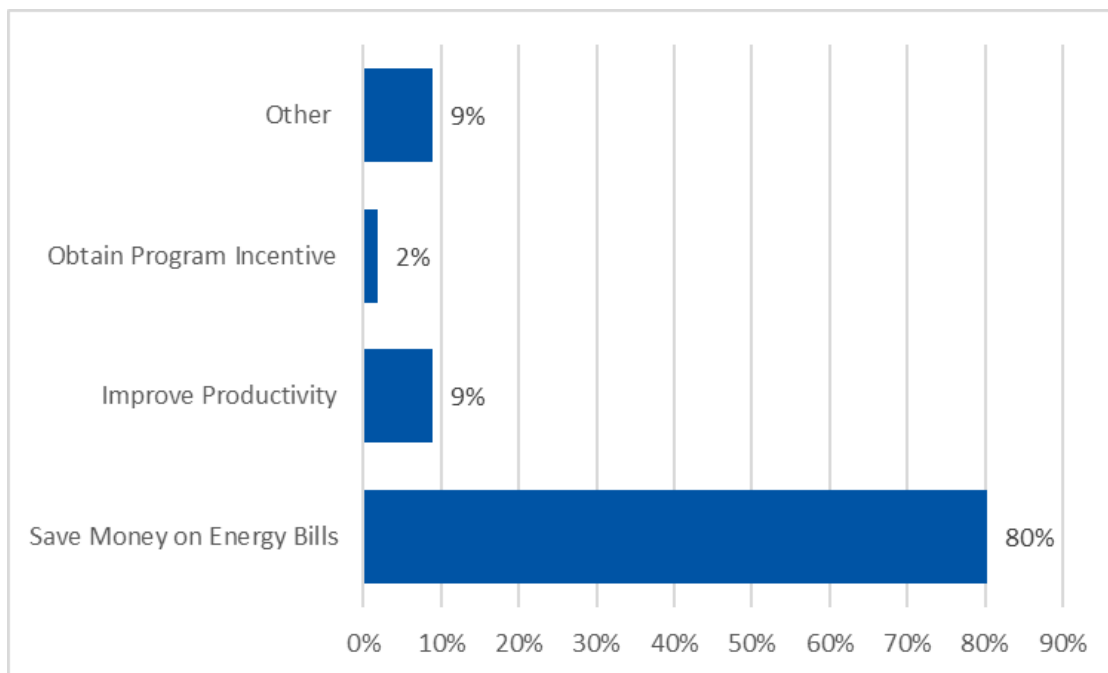
Figure 26. Reason for Not Yet Participating



Source: Rocky Mountain Power **wattsmart** Business 2016–2017 Nonparticipant-Partial Participant Survey QD13. Don't know and refused responses removed. (n=62).

Respondents most commonly said they would be motivated to make energy efficiency upgrades to save money on energy bills (80%, n=56). As shown in Figure 27, 9% wanted to improve productivity and only 2% said they were motivated by a program incentive. Other motivations cited by nonparticipants included cost effective upgrades, to obtain timber for their mill, upgrading as part of a remodel, and one nonparticipant listed no motivation because the landlord pays for electricity.

Figure 27. Factors that Motivate Energy Efficiency Upgrades



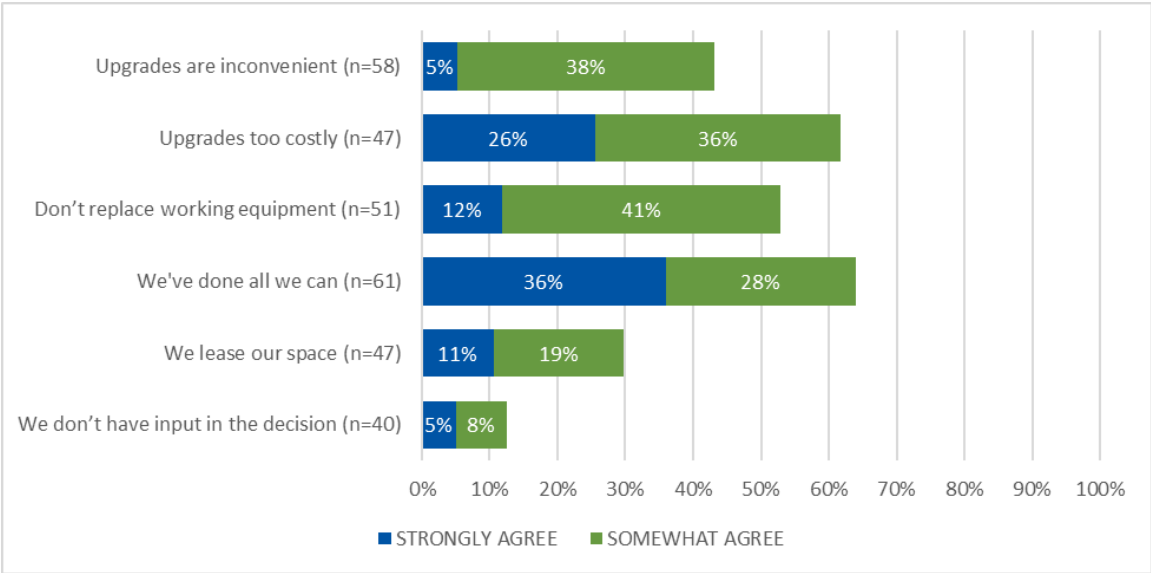
Source: Source: Rocky Mountain Power *wattsmart* Business Program 2016–2017 Nonparticipant-Partial Participant Survey QD1. Don't know and refused responses removed. (n=56).

The Cadmus team further explored nonparticipant attitudes about making energy efficiency upgrades at their facilities, asking them to what extent they agreed with the series of statements listed below. Not all statements applied to every respondent; those answering “don’t know” or “not applicable” were removed. The exact wording of each response follows (though abbreviated in Figure 28):

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

Similar to those reported in 2014-2015, nonparticipants’ responses indicated that the majority provided input regarding energy efficiency upgrade decisions, and a large percentage owned their facilities. They believed upgrades to their facilities would be too costly, and they made all of the energy efficiency improvements they can without substantial investments. Half of respondents (53%) were reluctant to replace working equipment, regardless of efficiency. In a follow-up question, 41% of respondents (n=61) said they considered savings gained from energy efficiency when calculating a return-on-investment for potential projects.

Figure 28. Attitudes About Energy Efficiency Improvements—Nonparticipants



Source: Rocky Mountain Power *wattsmart* Business Program 2016–2017 Nonparticipant-Partial Participant Survey QD7a-D7e. Not Applicable and Don't know responses were removed.

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.¹⁷ 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 24 summarizes the five tests' components.

¹⁷ 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 24. 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 25 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, except for energy savings and the discount rate, which the Cadmus team derived from the 2015 Integrated Resource Plan.

Table 25. Selected Cost Analysis Inputs

Input Description	2016	2017	Total
Evaluated Gross Energy Savings (kWh/year) ^a	13,527,931	10,198,605	23,726,536
Discount Rate	6.66%	6.66%	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 ^b	1.9%	1.9%	N/A
Total Program Costs	\$2,940,399	\$2,574,766	\$5,515,165

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

^b The Cadmus team determined future retail rates using a 1.9% annual escalator. PacifiCorp’s 2015 Integrated Resource Plan, Volume I—Chapter 7—Modeling and Portfolio Evaluation. Available online: https://www.rockymountainpower.net/content/dam/pacificorp/doc/Energy_Sources/Integrated_Resource_Plan/2015IRP/PacifiCorp_2015IRP-Vol1-MainDocument.pdf

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 energy savings and

measure lives from sources such as the RTF.¹⁸ For all analyses, the team used avoided costs associated with the 2015 IRP Eastside Class 2 DSM Decrement Values.^{19, 20}

The Cadmus team analyzed **wattsmart** Business program cost-effectiveness for net savings by incorporating evaluated freeridership and spillover. Table 26 presents the 2016 and 2017 program years' cost-effectiveness analysis results, including evaluated NTG (but not accounting for non-energy benefits [excepting those represented by the 10% conservation adder included in the PTRC]). For this scenario, the **wattsmart** Business program proved cost-effective from all perspectives, except the RIM test. The program proved cost-effective from the Total Resource Cost Test (TRC) perspective with a benefit/cost ratio of 1.74, as well as the Utility Cost Test (UCT) at 2.81.

The RIM test measures program impacts on customer rates. Most programs do not pass the RIM test, given that, while energy efficiency programs reduce costs, they also reduce energy sales. As a result, the average rate per energy unit may increase. A passing RIM test indicates that rates as well as costs will fall due to the program. Typically, this only happens for demand response programs or programs targeted to the highest marginal cost hours (i.e., when marginal costs are greater than rates).

Table 26. wattsmart Business Program Cost-Effectiveness Summary for 2016 and 2017 Net Savings

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/ Cost Ratio
PTRC	\$0.045	\$8,682,890	\$16,587,250	\$7,904,360	1.91
TRC	\$0.045	\$8,682,890	\$15,079,318	\$6,396,428	1.74
UCT	\$0.028	\$5,366,403	\$15,079,318	\$9,712,915	2.81
RIM		\$22,312,685	\$15,079,318	(\$7,233,367)	0.68
PCT		\$7,889,741	\$23,402,475	\$15,512,734	2.97
Lifecycle Revenue Impacts (\$/kWh)	\$0.000189481				
Discounted Participant Payback (years)	2.75				

Table 27 presents the 2016 program cost-effectiveness analysis results, including the evaluated NTG, but not accounting for non-energy benefits (except those represented by the 10% conservation adder

¹⁸ See Appendix C for detailed cost-effectiveness inputs and results at the measure category level.

¹⁹ Appendix N of PacifiCorp's 2013 Integrated Resource Plan, Volume II—Appendices details the IRP decrements. Available online:
http://www.pacificorp.com/content/dam/pacificorp/doc/Energy_Sources/Integrated_Resource_Plan/2013IRP/PacifiCorp-2013IRP_Vol2-Appendices_4-30-13.pdf

²⁰ PacifiCorp Class 2 DSM Decrement Study details the IRP decrements. April 20, 2015. Available online:
http://www.pacificorp.com/content/dam/pacificorp/doc/Energy_Sources/Demand_Side_Management/2015/2015_Class_2_DSM_Decrement_Study.pdf

included in the PTRC). For this scenario, the **wattsmart** Business program proved cost-effective from all perspectives, except the RIM.

Table 27. wattsmart Business Program Cost-Effectiveness Summary for 2016 Net Savings

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC	\$0.045	\$5,123,428	\$9,087,830	\$3,964,402	1.77
TRC	\$0.045	\$5,123,428	\$8,261,663	\$3,138,236	1.61
UCT	\$0.026	\$2,940,399	\$8,261,663	\$5,321,264	2.81
RIM		\$12,989,570	\$8,261,663	(\$4,727,906)	0.64
PCT		\$4,869,198	\$13,734,244	\$8,865,045	2.82
Lifecycle Revenue Impacts (\$/kWh)					\$0.000128411
Discounted Participant Payback (years)					2.60

Table 28 presents the 2017 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). Again, for this scenario, the **wattsmart** Business program proved cost-effective from all perspectives except the RIM.

Table 28. wattsmart Business Program Cost-Effectiveness Summary for 2017 Net Savings

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC	\$0.044	\$3,796,523	\$7,998,882	\$4,202,359	2.11
TRC	\$0.044	\$3,796,523	\$7,271,711	\$3,475,188	1.92
UCT	\$0.030	\$2,587,576	\$7,271,711	\$4,684,135	2.81
RIM		\$9,944,034	\$7,271,711	(\$2,672,324)	0.73
PCT		\$3,221,711	\$10,312,136	\$7,090,425	3.20
Lifecycle Revenue Impacts (\$/kWh)					\$0.000072123
Discounted Participant Payback (years)					1.96

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. RMP also effectively transitioned the SBL offering to SBDI, while increasing the size of customer facilities served and maintaining customer satisfaction levels. Overall customers reported satisfaction levels with the program and its elements in rates similar those reported in 2014-2015. Customers are satisfied across both the contracted and in-house delivery channels, with no reported differences in satisfaction levels between administrators.

Customers recognized and reported benefits from participation in the **wattsmart** Business program and with some exceptions, reported satisfaction with the program elements (equipment offered, contractor's work, enrollment window [SBDI]), as well as their interaction with RMP. Few respondents reported challenges participating in the different program offerings, however, among Typical Upgrades and Custom Analysis participants who did report challenges, customers said they wanted better and more frequent communication from RMP and the administrators, and quicker response times. Participants reporting challenges with the SBDI offering asked for better contractors and expansion of the program to cover more areas and equipment at their facilities.

Partial participants also reported high levels of satisfaction with the program and a majority, indicated they were likely to apply for an incentive from RMP in the next six months. As with program participants, partial participants also asked for better communication and more program information. The Cadmus team found that most nonparticipants did not participate because they did not know about the program.

The 2016-2017 program evaluation yielded an overall gross realization rate of 96.1% with a precision of $\pm 4.0\%$ at 90% confidence. Within the seven measure categories, there were varying degrees of realization rates and precision. The Cadmus team calculated NTG as 84% 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

To determine savings for the 2016-2017 program years, RMP used deemed savings for cool roof projects with claimed savings of 0.33 kWh per year, per square foot. This deemed value comes from DEER, and was based on California's varied climate. When the Cadmus team evaluated the incentivized and sampled cool roof projects on a case-by-case basis, using the specific climate and building information in Idaho, the savings were significantly lower. The reduction in savings is most likely due to a lower need for mechanical cooling in Idaho's climate.

Recommendation

Based on our findings, we recommend reducing the deemed claimed savings amount to 0.13 kWh per year, per square foot. This revised deemed savings amount represents the average evaluated energy savings among cool roof projects sampled using site-specific weather and building information and simulated using the Oak Ridge National Laboratory Cool Roof calculator.

Marketing and Outreach

Conclusion

RMP's marketing and outreach appear to support the program delivery to participants, although, a common request from participants and partial participants alike, was for more program information and more frequent communication. While much communication between the program and participants falls to the administrators, RMP marketing staff support those efforts. Several low-cost opportunities are available to RMP to enhance the ongoing marketing and outreach efforts.

Recommendation

Add timing for emails, bill inserts, and direct mail to the media flowchart or develop a calendar showing timing of both media and other outreach combined. Additional recommendations of incorporating email with marketing campaigns and updating all materials to the latest branding scheme had already been implemented by the time of this report.

Conclusion

While the absence of measure information in the project database, for individual SBDI projects, did not significantly impede the program evaluation, having that information would have added depth and understanding, useful in the process evaluation team's survey of SBDI participants, and in evaluating that delivery channel's alignment with the program design.

Recommendation

Going forward, include SBDI measure data for each SBDI installation, in the program database, or at a minimum, in the data provided to the evaluation team.

Nonparticipants

Conclusion

With 59% of surveyed nonparticipants unaware of the program, increasing program awareness offers an opportunity for RMP to acquire new participants, and potentially, energy savings. While the majority of nonparticipants are small businesses operating one facility and employing 10 or fewer people, a group well suited to the SBDI offer, a small percentage are larger customers with multiple locations which could participate in the Typical Upgrades or Custom Analysis incentives. Twenty-three percent of all non-participants are in the Dairy/Agricultural business sector, a sector which is served through business-to-business contact with Cascade Energy and their trade allies.

Nonparticipants are primarily learning about the program by word-of-mouth, or through RMP marketing effort but do not understand how their businesses will benefit by participating. Therefore, RMP will need to reach these customers and help them determine if energy efficiency opportunities exist at their facilities, and if upgrades can be affordable, give the incentives available.

Recommendation

While Cadmus recognizes the increasing need to cost-effectively secure larger customers with significant savings potential, if additional program growth is desired in any of the program offerings, RMP should consider increasing the frequency of brand marketing of the program, and business-to-business outreach by all program administrators. Target the two largest nonparticipant business sectors (Dairy/Agricultural, and Real Estate/Property Management) with case studies highlighting actual energy cost savings achieved by other small businesses in those sectors. Continue growing the program approved trade ally network, to extend RMP's outreach to customers, beyond its own marketing efforts.

Appendices

Appendix A. Self-Report NTG Methodology

Appendix B. Nonparticipant Spillover

Appendix C. Participant Survey Guides

Appendix D. Nonparticipant/Partial Participant Survey Guide

Appendix E. Measure Category Cost-Effectiveness

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.¹ This net savings approach aligns with industry best practices summarized in the Uniform Methods Project (UMP) section discussing net savings.² This appendix provides a detailed description of how the evaluation team estimated NTG for the 2016-2017 **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 its 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).

¹ 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

² 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:

$$\text{Initial Freeridership Ratio} = \text{Efficiency Score} \times \text{Quantity Score}$$

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

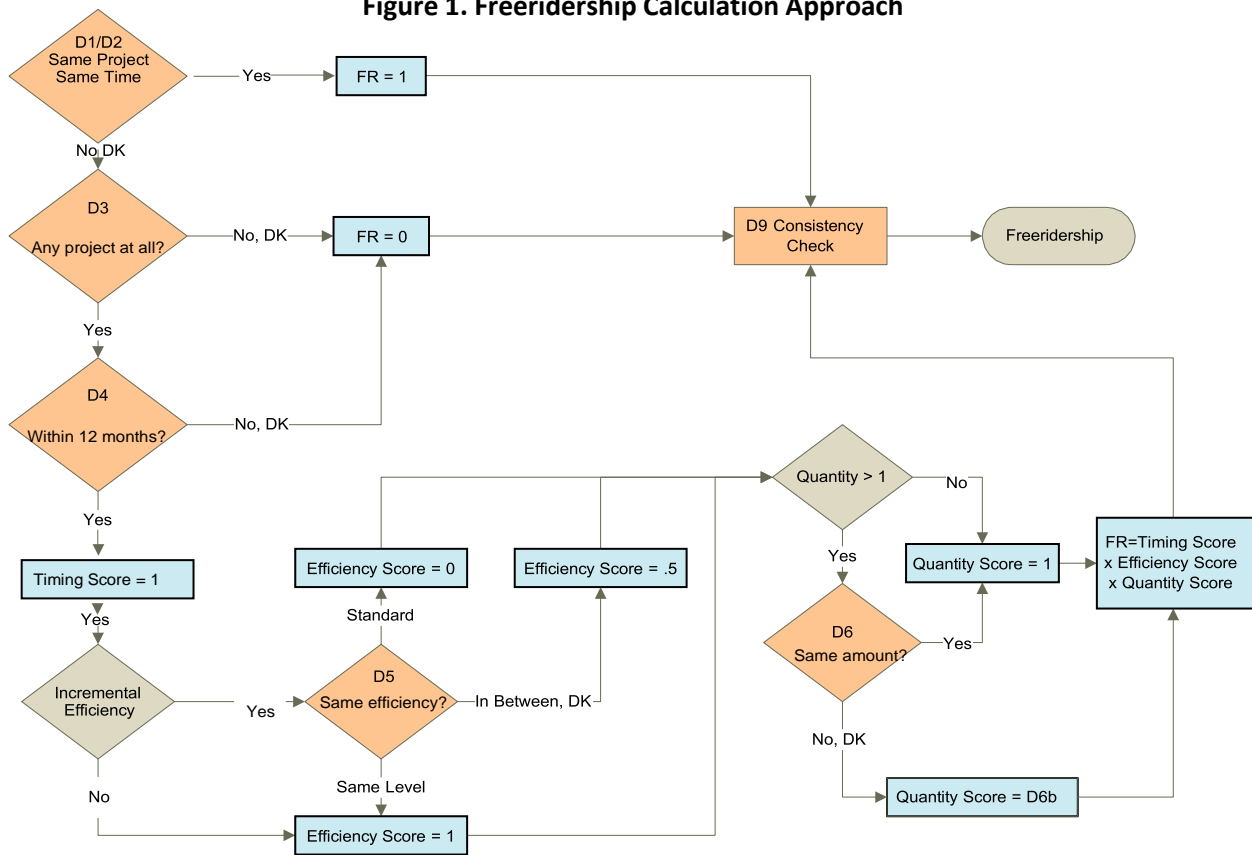
(D8). During the scoring process, these responses were reviewed by analysts to determine which scenario is correct and are scored accordingly to create an adjusted freeridership score.

Table 1 provides detailed scoring and descriptions of each question.

Table 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 D2=yes and D1=yes then freeridership = 1
D3	Without the program, would you have installed any [MEASURE] equipment?	If D4=no, freeridership = 0
D4	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
D5	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
D6	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
D9.6	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 D9.6 = 5, reduce adjusted free-ridership by 75% If D9.6 = 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 D9.2 or D9.4 Initial freeridership score is reduced by 50% if D8 response merits an adjustment

Figure 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 “like” spillover projects. “Like” spillover is associated with equipment that is not similar to the equipment that is incentivized by the program. Table 2 provides detailed scoring and descriptions of each “like” spillover question.

Table 2. Participant Spillover Calculation Approach

Question	Question Text	Scoring
E9	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
E10	What type of equipment did you install?	If no, potential spillover savings = 0
E10.# Series	Measure specific efficiency, capacity, fuel type questions	If responses indicated non-program qualifying unit, potential spillover savings = 0
E11	How many did you purchase and install?	E11 x program-evaluated per-unit savings = potential spillover savings
E12	Did you receive an incentive from RMP or another organization for this equipment?	If yes, potential spillover savings = 0.
E15	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.

As it has no comparative program savings data, “unlike” spillover can often only be characterized qualitatively. The Cadmus team asked detailed follow up questions for “unlike” spillover responses that allowed the potential for them to be credited to the program as participant spillover if adequate information was provided to estimate savings by an engineer on the team.

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 68 nonparticipating customers from a sample of 4,625 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 2016-2017 **wattsmart** Business program evaluation activities.

Using the variables shown in Table 1, the Cadmus team determined total NPSO generated by Rocky Mountain Power's marketing and outreach efforts during the 2016 and 2017 program years.

Table 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	$A \div C$
E	Total Population Usage kWh	Rocky Mountain Power Customer Database
F	NPSO kWh Savings Applied to Population	$D \times E$
G	Total Gross Program Evaluated kWh Savings	2016-2017 <i>wattsmart</i> Business Evaluation
H	NPSO as a Percentage of Total 2016-2017 <i>wattsmart</i> Business Evaluated kWh Savings	$F \div G$

Results

Of 68 Rocky Mountain Power nonparticipant customers surveyed, four nonparticipant respondents reported installing measures attributed to Rocky Mountain Power’s influence. Table 2 presents measures types and gross evaluated kWh savings the Cadmus team attributed to Rocky Mountain Power, generating total savings of 16,691 kWh.

Table 2. NPSO Response Summary

Reported Spillover Measure Type	Quantity	Unit Energy Savings (kWh) ¹	Total Savings (kWh)
LED Lighting	49	78.8 per unit	3,861
Pumps	1	12,830 per unit	12,830
Total	50		16,691

¹ Unit energy savings (kWh) estimated for each measure were generated from the 2016-2017 *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 2016-2017 *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 2016-2017 *wattsmart* Business evaluated kWh savings in Idaho to be 2% (H). Table 3 below details the analysis steps. The first step is taking the total sample spillover savings from the 68 respondents (16,691 (A)) and dividing it by the total sample usage (15,094,147 kWh (C)). This results in the Sample NPSO (0.1% (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 (381,809,140 kWh (E)), as provided to Cadmus by Rocky Mountain Power¹.

The total population energy usage is then multiplied by the Sample NPSO to obtain the population NPSO savings (422,214 (F)). This savings is then divided by the total gross program kWh savings (23,726,536 (G)) found in 2016-2017 *wattsmart* Business Evaluation to calculate the NPSO of 2%.

Table 3. Idaho NPSO *wattsmart* Results

Variable	Metric	Value	Source
A	Total kWh Spillover Savings from Survey Respondents	16,691	Survey data / Engineering Analysis
B	Total Nonparticipant Customers Surveyed	68	Survey disposition
C	Sample Usage	15,094,147	Rocky Mountain Power Customer Database
D	Sample NPSO	0.1%	A ÷ C
E	Total Population Usage kWh	381,809,140	Rocky Mountain Power Customer Database
F	NPSO kWh Savings Applied to Population	422,214	D x E
G	Total Gross Program Evaluated kWh Savings	23,726,536	2016-2017 <i>wattsmart</i> Business Evaluation
H	NPSO as a Percentage of Total 2016-2017 <i>wattsmart</i> Business Evaluated kWh Savings	2%	F ÷ G

¹ NPSO savings were not extrapolated to industrial customers to provide a conservative estimate.

Appendix C. PacifiCorp *wattsmart* Business Program (2016–2017) *wattsmart* Business Participant Survey

Researchable Questions		
Key Research Topics	Areas of Investigation	Related Questions
Screening	Project initiation process	C1
Marketing and Outreach	Program Awareness	B3, C16-C17
	Future communication preferences	G3
Barriers	Obstacles to installing high-efficiency equipment	C2, C3, C14, C15, C19, C20
Satisfaction	Assess satisfaction with Program application process, various program components and reasons for dissatisfaction among participants	C4-C13, C18, C21, C22, G1,G2
Firmographics	Determine building and company characteristics of participants	Section F
Decision Making	Key factors influencing customers' decision to participate in program	C1, C18,
Freeridership and Spillover	Assess net savings	Sections D and E

Target Quota = See samples for each state

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

- **[UTILITY]**
- **[MEASURE.NAME.FINAL] MEASURE1**
- **[PROGRAM YEAR]**
- **[CONTACT NAME]**
- **[CUSTOMER NAME]**
- **[SITE ADDRESS 1]**
- **[SITE CITY]**
- **[PROJECT STATE]**
- **[CUSTOMER INCENTIVE]**
- **[BILL_CREDIT]**

A. Introduction

Hello, I'm [INSERT NAME] calling on behalf of [INSERT UTILITY]. May I speak with [INSERT CONTACT NAME]? OR [IF NO NAME OR NAMED RESPONDENT NO LONGER WORKS FOR COMPANY] May I speak with the FACILITY MANAGER, ENERGY MANAGER OR SOMEONE WHO IS FAMILIAR WITH THEIR PARTICIPATION IN THE [UTILITY] INCENTIVE FOR [CUSTOMER NAME]? [IF THAT PERSON IS NOT AT THIS PHONE NUMBER, ASK FOR THEIR NAME AND PHONE NUMBER AND START AGAIN]

1. **Respondent not available: ASK IF YOU CAN LEAVE A MESSAGE ON THEIR VM**
98. (Don't know) [ASK TO SPEAK WITH SOMEONE WHO KNOWS AND BEGIN AGAIN]

A1. Hello, I'm [INSERT NAME] calling on behalf of [INSERT UTILITY]. Are you the person who handles energy decisions for [CUSTOMER NAME]? [IF THAT PERSON IS NOT AT THIS PHONE NUMBER, ASK FOR THEIR NAME AND PHONE NUMBER AND START AGAIN]

1. (Yes)
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. Are you the person responsible for making energy-efficiency decisions for your company at the [SITE ADDRESS 1], [SITE CITY] location? [IF SITE ADDRESS 1 IS BLANK, JUST READ THE CITY]

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. We are conducting an important survey today about [INSERT UTILITY]'s wattsmart business program. [INSERT UTILITY] is actively seeking your opinions to help improve their business efficiency programs and to better understand how to assist customers in saving money and energy. This call may be monitored or recorded for quality assurances purposes. Anything you share with us today will be confidential and not attributed to any one individual or business.

1. [IF RESPONDENT ASKS HOW LONG, SAY "Approximately 10-15 minutes."]
2. [IF NEEDED, STATE "this survey is for research purposes only and this 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 NIKKI KARPAVICH, 801-220-4439.

B. Screeners

- B1. 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) **[RECORD CORRECT YEAR IF POSSIBLE]**
 3. (No, wrong address) **[RECORD CORRECT ADDRESS]**
 4. (No, wrong measure) **[CORRECT BELOW]**
(MEASURE 1 IS INCORRECT **[Correct: _____]**) **[CALL THIS VARIABLE C_MEASURE]**
 5. (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]**
- B2. 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 invoice.
1. (Yes)
 2. (No) **[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]**
- B3. How did your organization learn about the incentives or discounts available for this project? **[DO NOT READ LIST; MULTIPLE RESPONSES POSSIBLE]**
1. (Contact with *wattsmart* Business representative or utility representative)
 2. (*wattsmart* printed program materials)
 3. (*wattsmart* sponsored workshop or community event)
 4. (Utility mailing, bill insert, or utility Website)
 5. (Through my electrician or contractor)
 6. (Previously participated in program/received an incentive)
 7. (Through a civic organization, trade association or professional organization) **[SPECIFY: _____]**
 8. (Through the distributor or supplier where I purchase lighting)
 9. (Word of mouth (family, friend, or business colleague))
 10. (Other **[SPECIFY: _____]**)
 98. (Don't know)
 99. (Refused)

C. Wattsmart Business

Thank you. I'd like to ask you about your project where you installed **[INSERT MEASURE1 OR C_MEASURE1]**.

C1. I'm going to read you a short list. Please tell me who, if anyone, was involved in helping you initiate your project where you installed **[INSERT MEASURE1 OR C_MEASURE1]**. **[READ LIST AND MARK ALL THAT APPLY 98 = DON'T KNOW TO ALL 99= REFUSED ALL] [RANDOMIZE LIST]**

1. A wattsmart Business program participating vendor
2. Your independent contractor
3. A wattsmart Business representative or Energy Engineer
4. Your **[UTILITY]** account representative
5. A family member, friend, or coworker?
6. Other **[SPECIFY: Who else was involved? _____]**
98. (Don't know)
99. (Refused)

C2. Thinking about the general application and any supplemental equipment applications you submitted, how easy would you say this paperwork was to complete? Would you say...? **[READ LIST]**

1. Very easy,
2. Somewhat easy,
3. Not too easy, or
4. Not at all easy?
98. (Don't know)
99. (Refused)

[ASK IF C2=2, 3 OR 4]

C3. What would have made this paperwork easier to complete?

1. **[RECORD VERBATIM: _____]**
98. (Don't know)
99. (Refused)

C4. Thinking about the incentive you received for this project, were you satisfied with the amount of the incentive? 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)

[IF C4=2, 3 OR 4]

C5. What incentive amount would have been enough for you to say you were very satisfied?

- [RECORD VERBATIM: _____]**
98. (Don't know)
99. (Refused)

C6. How satisfied were you with the amount of time it took to receive the incentive? 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)

[IF C6=2, 3 OR 4]

C7. What amount of time would have been appropriate? **[RECORD VERBATIM: _____]**

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

C8. What payback period does your company typically look for on these kinds of projects? **[RECORD**

VERBATIM: _____]

98. (Don't know)

Thank you, now I'd like to ask you a few questions about the implementation of your project.

C9. I'm going to read you a short list. Please tell me who, if anyone, was involved in helping you install the **[INSERT MEASURE1 OR C_MEASURE1]**.

1. A wattsmart Business program participating vendor
2. Your independent contractor **[SKIP TO C12]**
3. Someone else **[SPECIFY: _____]** **[SKIP TO C12]**
98. (Don't know) **[SKIP TO C12]**
99. (Refused) **[SKIP TO C12]**

C10. How satisfied were you with the work provided by the participating vendor that installed the **[INSERT MEASURE1 OR C_MEASURE1]**? 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)

[IF C10=2, 3 OR 4]

C11. Why do you say that?

1. **[RECORD VERBATIM: _____]**
98. (Don't know)
99. (Refused)

C12. How satisfied were you with the **[MEASRURE1 OR C MEASURE1]** you installed? 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)

[IF C12=2, 3 OR 4]

C13. Why do you say that?

1. **[RECORD VERBATIM: _____]**
98. (Don't know)
99. (Refused)

C14. Was there other energy-efficient equipment you wanted to install, which did not qualify for *wattsmart* Business incentives?

1. (Yes)
2. (No) **[SKIP TO C18]**
98. (Don't know) **[SKIP TO C18]**
99. (Refused) **[SKIP TO C18]**

[IF C14=1]

C15. What equipment?

1. **[RECORD VERBATIM: _____]**
98. (Don't know)
99. (Refused)

[IF C9=1]

C16. Did you ask the participating vendor installing your project about this other equipment?

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

[IF C16=1]

C17. Did the participating vendor direct you to the other *wattsmart* Business programs as a place where that equipment may be eligible for incentives?

1. (Yes)
2. (No)

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

C18. What would you say are the main benefits your company has experienced as a result of the energy-efficient equipment installed? [DO NOT READ LIST; RECORD ALL THAT APPLY; PROBE FOR MULTIPLE RESPONSES]

- 1. (The incentive)
- 2. (Using less energy, reducing energy consumption or energy demand)
- 3. (Saving money on our utility bills; lower energy bills)
- 4. (Increased occupant comfort)
- 5. (Better aesthetics/better or brighter lighting)
- 6. (Increased productivity)
- 7. (Saving money on maintenance costs)
- 8. (Other [SPECIFY: _____])
- 9. (NO BENEFITS)
- 98. (Don't know)
- 99. (Refused)

C19. What challenges, if any, did you encounter participating in the *wattsmart* Business program incentives?

- 1. [SPECIFY: _____]
- 2. (No challenges)
- 98. (Don't know)
- 99. (Refused)

[IF C19=1]

C20. What could [UTILITY] do to help your company overcome these challenges? [DO NOT READ LIST, ALLOW MULTIPLE RESPONSES]

- 1. (Nothing)
- 2. (Higher incentives)
- 3. (Offer low-interest loans/financing)
- 4. (Simplify the paperwork)
- 5. (Provide better/more information about program)
- 6. (Other [RECORD VERBATIM ANSWER _____])
- 98. (Don't know)
- 99. (Refused)

[ASK IF C20=5]

C20.5 You mentioned you would like more information. What type of information do you need?
[RECORD VERBATIM: _____]

C21. Thinking about your project, how satisfied are you with your interaction with [UTILITY]? Are you ...

[READ LIST]

1. Very satisfied
2. Somewhat satisfied
3. Not too satisfied
4. Not satisfied at all
5. I did not interact with [UTILITY] during this project
98. (Don't know)
99. (Refused)

[IF C21=2, 3, OR 4]

C22. Why do you say you were [INSERT ANSWER FROM C21] with [UTILITY]?

1. [RECORD VERBATIM: _____]
98. (Don't know)
99. (Refused)

D. Freeridership

Thank you. Next, I'd like to ask you about your decision to purchase the [MEASURE1/C_MEASURE1].

D1. 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 D3]
98. (Don't know) [SKIP TO D3]
99. (Refused) [SKIP TO D3]

D2. 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 D7]
2. (No) [SKIP TO D4]
98. (Don't know) [SKIP TO D4]
99. (Refused) [SKIP TO D4]

D3. Without the program, would you have installed any [MEASURE_1/C_MEASURE1] equipment?

1. (Yes)
2. (No) [SKIP TO D8]
98. (Don't know) [SKIP TO D8]
99. (Refused) [SKIP TO D8]

- D4. 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 D8]**
 98. (Don't know)
 99. (Refused)
- D5. 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. (Don't know)
 99. (Refused)
- D6. Would you have installed more, less, or the same amount of **[MEASURE_1/C_MEASURE1]** without the program?
1. (More)
 - D6a. Compared to the installed amount, how much more?
[RECORD PERCENTAGE: _____]
 2. (Less)
 - D6b. Compared to the installed amount, how much less?
[RECORD PERCENTAGE: _____]
 98. (Don't know)
 99. (Refused)
- D7. 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. (Don't know)
 99. (Refused)
- 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_1/C_MEASURE1]**?
- D9. With the *wattsmart* Business program, your company received financial incentives of **[CUSTOMER INCENTIVE OR BILL CREDIT]** for installing **[MEASURE_1/C_MEASURE1]**.

For the **[MEASURE_1/C_MEASURE1]** purchases, 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: Respondents can also state that a particular factor is Not Applicable, please code N/A as 6]**

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

E. Spillover

E1. Now I'd like to ask about energy efficiency improvements other than those you installed through the program. Since participating in this program, have you purchased and installed any additional energy efficiency improvements on your own without any assistance from a utility or other organization?

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

E2. Did you purchase and install any energy efficient improvements that are the same as the **[MEASURE_1/C_MEASURE1]** you installed through the program?

1. (Yes)
2. (No) **[SKIP TO E9]**
98. (Don't know) **[SKIP TO E9]**
99. (Refused) **[SKIP TO E9]**

E3. How many did you purchase and install?

1. **[RECORD RESPONSE]**
98. (Don't know)
99. (Refused)

E4. 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. (Don't know)
99. (Refused)

- E5. Did you receive an incentive from **[UTILITY]** or another organization for this equipment?
1. (Yes)
 2. (No)
 98. (Don't know)
 99. (Refused)

[ASK IF E5=1]

- E6. What program or sponsor provided the incentive?
1. **[ENTER PROGRAM OR UTILITIY]**
 98. (Don't know)
 99. (Refused)
- E7. 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 product(s).
1. RECORD RATING: _____]
 98. (Don't know)
 99. (Refused)

[ASK IF E5=2]

- E8. Why did you not apply for an incentive from **[UTILITY]** for this equipment?
1. [RECORD RESPONSE]
 98. (Don't know)
 99. (Refused)
- E9. In **[PROGRAM YEAR]** did you purchase and install any *other* energy efficiency improvements on your own without any assistance (financial or technical) from a utility, vendor or other organization?
1. (Yes)
 2. (No) **[SKIP TO SECTION F]**
 98. (Don't know) **[SKIP TO SECTION F]**
 99. (Refused) **[SKIP TO SECTION F]**
- E10. What type of equipment did you install? **[DO NOT READ LIST. RECORD ALL THAT APPLY]**
1. (Lighting equipment)
 2. (HVAC equipment (heating and cooling))
 3. (Water heating equipment)
 4. (Variable drive)
 5. (Efficient motor)
 6. (Refrigeration equipment, freezers)
 7. (Building envelope measure)
 8. (Compressed air equipment)

- 9. (Chiller)
- 10. (Pump)
- 11. (Irrigation equipment (gaskets, drains, sprinklers))
- 12. (Other) **[SPECIFY]:** _____
- 13. (None of the above) **[SKIP TO SECTION F]**
- 98. (Don't know) **[SKIP TO SECTION F]**
- 99. (Refused) **[SKIP TO SECTION F]**

[ASK E10.11-E10.14 AND E11-E15 if E10=1]

- E10.11** What type of lighting was purchased and installed? **[SPECIFY TYPE EXAMPLE: CFL, LED, FLUORESCENT]:** _____
- E10.12** What is the wattage of the lighting? **[SPECIFY]:** _____
- E10.13** In what location was it installed (Wall/Ceiling/Outdoors)? **[SPECIFY]:** _____
- E10.14** What type of equipment was removed or replaced? **[SPECIFY]:** _____

[ASK E10.21-E10.24 AND E11-E15 if E10=2]

- E10.21** What type of HVAC equipment was purchased and installed? **[SPECIFY TYPE]:** _____
- E10.22** What Fuel type is used? **[SPECIFY]:** _____
- E10.23** What is the efficiency rating of the equipment? **[SPECIFY]:** _____
- E10.24** What is the capacity of the equipment? **[SPECIFY]:** _____

[ASK E10.31-E10.34 AND E11-E15 if E10=3]

- E10.31** What type of water heating equipment was purchased and installed? **[SPECIFY TYPE]:** _____
- E10.32** What Fuel type is used? **[SPECIFY]:** _____
- E10.33** What is the efficiency rating of the equipment? **[SPECIFY]:** _____
- E10.34** (If water heater with storage) What is the capacity of the equipment? **[SPECIFY]:** _____

[ASK E10.41-E10.42 AND E11-E15 if E10=4]

- E10.41** What type of motor was it installed on? **[SPECIFY TYPE]:** _____
- E10.42** What is the horsepower of the motor? **[SPECIFY]:** _____

[ASK E10.51-E10.52 AND E11-E15 if E10=5]

- E10.51** What equipment was the motor installed on? **[SPECIFY TYPE]:** _____
- E10.52** What is the horsepower of the motor? **[SPECIFY]:** _____

[ASK E10.61 AND E11-E15 if E10=6]

- E10.61** What type of refrigeration or freezer equipment was purchased and installed? **[SPECIFY TYPE]:** _____

[ASK E10.71-E10.73 AND E11-E15 if E10=7]

E10.71 What building envelope measure was purchased and installed? [SPECIFY TYPE]:

E10.72 What is the efficiency (R-value) of the measure? [SPECIFY]: _____

E10.73 In what location was it installed (Wall/Roof/Floor)? [SPECIFY]: _____

[ASK E10.81-E10.82 AND E11-E15 if E10=8]

E10.81 FOR What type of application was the compressed air equipment purchased and installed? [SPECIFY APPLICATION]: _____

E10.82 What is the horsepower of the compressor motor? [SPECIFY]: _____

[ASK E10.91-E10.92 AND E11-E15 if E10=9]

E10.91 FOR What type of application was the chiller purchased and installed? [SPECIFY APPLICATION]: _____

E10.92 What size chiller did you install? [SPECIFY]: _____

[ASK E10.101-E10.103 AND E11-E15 if E10=10]

E10.101 FOR What type of application was the pump purchased and installed? [SPECIFY APPLICATION]: _____

E10.102 What is the horsepower of the motor for the pump? [SPECIFY] _____

E10.103 What is the efficiency rating of the pump? [SPECIFY]: _____

[ASK E10.111 AND E11-E15 if E10=11]

E10.111 WHAT IRRIGATION EQUIPMENT DID YOU purchase and install? [SPECIFY GASKETS, DRAINS, SPRINKLERS, ETC.]: _____

[ASK IF E10=1-12] [ASK ABOUT EACH ITEM MENTIONED IN E10]

E11. How many did you purchase and install? [ASK FOR EACH MEASURE MENTIONED IN E10] [IF E10 MEASURE = 'BUILDING ENVELOPE' THEN ASK HOW MANY 'SQUARE FEET']

1. [RECORD RESPONSE]

98. (Don't know)

99. (Refused)

[ASK IF E10=1-12] [ASK ABOUT EACH ITEM MENTIONED IN E10]

E12. Just to confirm, did you receive an incentive from [UTILITY] or another organization for this equipment? [ASK FOR EACH MEASURE MENTIONED IN E10]

1. (Yes)

2. (No)

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

[ASK FOR EACH YES IN E12]

- E13. What utility or organization provided the incentive? **[ASK FOR EACH MEASURE MENTIONED IN E10]**
- 1. **[RECORD UTILITY OR ORGANIZATION]**
 - 98. (Don't know)
 - 99. (Refused)

[ASK IF E10=1-12] [ASK ABOUT EACH ITEM MENTIONED IN E10]

- E14. What information did you rely upon to determine that the equipment installed was energy efficient? **[ASK FOR EACH MEASURE MENTIONED IN E10]**
- 1. **[RECORD RESPONSE]**
 - 98. (Don't know)
 - 99. (Refused)

[ASK IF E10=1-12] [ASK ABOUT EACH ITEM MENTIONED IN E10]

- E15. 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 product(s). **[ASK FOR EACH MEASURE MENTIONED IN E10]**
- 1. **[RECORD RATING: _____]**
 - 98. (Don't know)
 - 99. (Refused)

[ASK SECTION F TO ALL SURVEY RESPONDENTS]

F. Firmographics

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)
 - 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. How many locations does your company operate in [PROJECT STATE]?

1. [RECORD NUMBER: _____]
98. (Don't know)
99. (Refused)

F3. Does your organization lease or own the facility or facilities?

1. (Lease)
2. (Own)
3. (Other) [RECORD VERBATIM: _____]
98. (Don't know)
99. (Refused)

F4. How many people are employed by your company at all locations?

1. (1-10)
2. (11-25)
3. (26-50)
4. (51-75)
5. (76-100)
6. (101-200)
7. (201-500)
8. More than 500
98. (Don't know)
99. (Refused)

G. 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. 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)
2. (Quicker response time)
3. (Larger selection of eligible equipment)
4. (Increasing the incentive amount)
5. (Simplify the application process)
6. (Simplify the website)
7. (Provide quicker approval on applications)
8. (Send incentive check out faster)
9. (Other **[SPECIFY: _____]**)
10. (No, nothing)
98. (Don't know)
99. (Refused)

G2.1 **[ASK IF G2 = 1]** You mentioned you would like better communication. Who would you like more communication from? **[RECORD RESPONSE_____]**

G2.2 **[ASK IF G2 = 2]** You mentioned a quicker response time. Who would you like a quicker response time from? **[RECORD RESPONSE_____]**

G2.3 **[ASK IF G2 = 3]** What other energy-efficient equipment should *wattsmart* business offer incentives for? **[RECORD RESPONSE_____]**

G2.5 **[ASK IF G2=5]** In what way would you like them to simply the application process? **[RECORD RESPONSE_____]**

G2.6 **[ASK IF G2 = 6]** In what way would you like them to simplify the website? **[RECORD RESPONSE_____]**

G3. In the future, how would you like to stay informed about opportunities available through the *wattsmart* Business Program? **[DO NOT READ LIST; MULTIPLE RESPONSES POSSIBLE]**

1. (Contact with *wattsmart* Business representative or utility representative)
2. (*wattsmart* printed program materials)
3. (*wattsmart* sponsored workshop or event)
4. (Utility mailing, email, newsletter with bill, bill insert, or utility Website)

5. (Contact with a vendor/contractor)
6. (Through a trade association, trade publication or professional organization) [SPECIFY: _____])
7. (Newspaper ad)
8. (Radio ad)
9. (TV ad)
10. (Social Media (e.g., Facebook, Twitter, YouTube))
11. (Online ads)
12. (Other [SPECIFY: _____])
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.

PacifiCorp *wattsmart* Business Program (2016 - 2017) Small Business Lighting/ Small Business Direct Install Participant Survey

Researchable Questions		
Key Research Topics	Areas of Investigation	Related Questions
Screening	Project initiation process	C1, C4, C5
Marketing and Outreach	Program Awareness	B3, C14
	Future communication preferences	G3
Barriers	Obstacles to installing high-efficiency lighting	C17-C19
Satisfaction	Assess satisfaction with Program application process, various program components and reasons for dissatisfaction among participants	C1-C3, C6-C9, C15, C16
Firmographics	Determine building and company characteristics of participants	Section F
Decision Making	Key factors influencing customers' decision to participate in program	C1, C5
Freeridership and Spillover	Assess net savings	Sections D and E

Target Quota = See samples for individual states

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

- **[UTILITY]**
- **[PROGRAM NAME]**
- **[MEASURE.NAME.FINAL] MEASURE1**
- **[PROGRAM YEAR]**
- **[CONTACT NAME]**
- **[CUSTOMER NAME]**
- **[SITE ADDRESS 1]**
- **[SITE CITY]**
- **[PROJECT STATE]**
- **[CUSTOMER INCENTIVE]**

A. Introduction

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 facility manager, energy manager or someone who is familiar with your participation in the [UTILITY] [PROGRAM NAME] incentive program? [IF THAT PERSON IS NOT AT THIS PHONE NUMBER, ASK FOR THEIR NAME AND PHONE NUMBER AND START AGAIN]

1. **Respondent not available: ASK IF YOU CAN LEAVE A MESSAGE ON THEIR VM**
98. (Don't know) [ASK TO SPEAK WITH SOMEONE WHO KNOWS AND BEGIN AGAIN]

A1. Hello, I'm [INSERT NAME] calling on behalf of [UTILITY]. Are you the person who handles energy decisions for [CUSTOMER NAME]? [IF THAT PERSON IS NOT AT THIS PHONE NUMBER, ASK FOR THEIR NAME AND PHONE NUMBER AND START AGAIN]

1. (Yes)
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. Are you the person responsible for making energy-efficiency decisions for your company at the [SITE ADDRESS 1], [SITE CITY] 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. We are conducting an important survey today about [UTILITY]'S [PROGRAM NAME] program. [UTILITY] is actively seeking your opinions to help improve their business efficiency programs and to better understand how to assist customers in saving money and energy. This call may be monitored or recorded for quality assurances purposes. Anything you share with us today will be confidential and not attributed to any one individual or business.

1. [IF RESPONDENT ASKS HOW LONG, SAY "Approximately 10 minutes."]
2. [IF NEEDED, STATE "this survey is for research purposes only and this 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 NIKKI KARPAVICH, 801-220-4439.

B. Screeners

- B1. Our records show that you **[FOR SBL READ: installed energy efficient lighting including [MEASURE1]] [FOR SBDI READ: participated in the [MEASURE1] program]**, at **[SITE ADDRESS 1]** in **[PROGRAM YEAR]**? Is this correct? **[MULTIPLE RESPONSE]**
1. (Yes)
 2. (No, wrong year) **[RECORD CORRECT YEAR IF POSSIBLE]**
 3. (No, wrong address) **[RECORD CORRECT ADDRESS]**
 4. (No, wrong measure) **[CORRECT BELOW]**
(MEASURE 1 IS INCORRECT **[Correct: _____]**) **[CALL THIS VARIABLE C_MEASURE]**
 5. (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]**
- B2. 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, or a discount applied to your project invoice.
1. (Yes)
 2. (No) **[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]**
- B3. How did your organization learn about the incentives or discounts available for this project? **[DO NOT READ LIST; MULTIPLE RESPONSES POSSIBLE]**
1. (Contact with *wattsmart* Business representative or utility representative)
 2. (*wattsmart* printed program materials)
 3. (*wattsmart* sponsored workshop or community event)
 4. (Utility mailing, bill insert, or utility Website)
 5. (Through my electrician or contractor)
 6. (Previously participated in program/received an incentive)
 7. (Through a trade association or professional organization) **[SPECIFY: _____]**
 8. (Through the vendor, distributor or supplier where I purchase lighting)
 9. (Word of mouth (family, friend, or business colleague))
 10. (Other **[SPECIFY: _____]**)
 98. (Don't know)
 99. (Refused)

C. *Small Business Direct Install/Small Business Lighting/wattsmart Small Business Lighting Incentives*

Thank you. I'd like to ask you about your participation in the **[PROGRAM NAME]** incentives.

- C1. What factor was most important to your company's decision to participate in the **[PROGRAM NAME]** incentives? **[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)

[IF PROGRAM NAME= SMALL BUSINESS LIGHTING OR WATTSMART SMALL BUSINESS LIGHTING ASK C2. IF PROGRAM NAME =SMALL BUSINESS DIRECT INTALL SKIP TO C4]

- C2. How easy was it to schedule a *wattsmart* Small Business Lighting approved contractor to conduct your free facility assessment? Would you say...? **[READ LIST]**
1. Very easy
 2. Somewhat easy
 3. Not too easy
 4. Not at all easy
 98. (Don't know)
 99. (Refused)

[IF C2=2, 3 OR 4]

- C3. What would have made it easier to schedule a *wattsmart* Small Business approved contractor?
1. **[RECORD VERBATIM: _____]**
 98. (Don't know)
 99. (Refused)
- C4. After the free energy assessment, did you receive a project proposal with estimates of your incentive or discount and cost savings?
1. (Yes)
 2. (No) **[SKIP TO C6]**
 98. (Don't know) **[SKIP TO C6]**
 99. (Refused) **[SKIP TO C6]**

[IF C4=1]

- C5. What information in the project proposal was most influential in your decision to proceed with your project....? [PROBE FOR SPECIFICS OF WHAT WAS INFLUENTIAL]
1. (Cost savings)
 2. (Energy savings)
 3. (Other) [RECORD VERBATIM: _____]
 4. (Nothing)
 98. (Don't know)
 99. (Refused)

- C6. How satisfied were you with the work provided by the contractor? 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)

[IF C6=2, 3 OR 4]

- C7. Why do you say you were [INSERT ANSWER FROM C6] with the work provided by the contractor?
1. [RECORD VERBATIM: _____]
 98. (Don't know)
 99. (Refused)

- C8. How satisfied were you with the equipment provided by the contractor? 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)

[IF C8=2, 3 OR 4]

- C9. Why do you say you were [INSERT ANSWER FROM C8] with the equipment provided by the contractor?
1. [RECORD VERBATIM: _____]
 98. (Don't know)
 99. (Refused)

C10. Was there other lighting equipment you wanted to install, which was not offered in your **[PROGRAM NAME]** project proposal?

1. (Yes)
2. (No) **[SKIP TO C14]**
98. (Don't know) **[SKIP TO C14]**
99. (Refused) **[SKIP TO C14]**

[IF C10=1]

C11. What equipment?

1. **[RECORD VERBATIM: _____]**
98. (Don't know)
99. (Refused)

C12. Did you ask the contractor installing your project, about this other equipment?

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

[IF C12=1]

C13. Did the contractor direct you to the other *wattsmart* Business programs as a place where that equipment may be eligible for incentives?

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

[IF PROGRAM NAME = SMALL BUSINESS DIRECT INSTALL ASK C14]

C14. **[UTILITY]** offered the Small Business Direct incentives in your community, during a specified window of time. Were you aware you had a limited time to enroll in the Small Business Direct incentives?

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

C15. **[IF C14=1]** Thinking about the timeframe of your project, how satisfied were you with the window of time in which you could enroll in the Small Business Direct incentives? 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)

C16. What would you say are the main benefits your company has experienced as a result of the lighting installed? **[DO NOT READ LIST; RECORD ALL THAT APPLY; PROBE FOR MULTIPLE RESPONSES]**

1. (The incentive)
2. (Savings money, reducing energy consumption or energy demand)
3. (Increased occupant comfort)
4. (Better aesthetics/better or brighter lighting)
5. (Increased productivity)
6. (Saving money on maintenance costs)
7. (Other **[SPECIFY: _____]**)
8. (NO BENEFITS)
98. (Don't know)
99. (Refused)

C17. What challenges, if any, did you encounter participating in the **[PROGRAM NAME]** incentives?

1. **[SPECIFY: _____]**
2. (No challenges)
98. (Don't know)
99. (Refused)

[ASK IF C17=1]

C18. What could **[UTILITY]** do to help your company overcome these challenges? **[DO NOT READ LIST, ALLOW MULTIPLE RESPONSES]**

1. (Nothing)
2. (Higher incentives)
3. (Offer low-interest loans/financing)
4. (Simplify the paperwork)
5. (Provide better/more information about program)
6. (Other **[RECORD VERBATIM ANSWER _____]**)
98. (Don't know)
99. (Refused)

[ASK IF C18=5]

C18.5 You mentioned providing better information about the program. What type of information do you need? **[SPECIFY: _____]**

- C19. Do you have any suggestions for improving the **[PROGRAM NAME]** offering?
1. (Yes) **[SPECIFY: _____]**
 2. (No)
 98. (Don't know)
 99. (Refused)

D. Freeridership

Thank you. Next, I'd like to ask you about your decision to **[FOR SBL READ: purchase] [FOR SBDI READ: install]** the **MEASURE1/C_MEASURE1** equipment.

- D1. 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 D3]**
 98. (Don't know) **[SKIP TO D3]**
 99. (Refused) **[SKIP TO D3]**
- D2. Without the program, meaning without either the technical assistance or the financial incentive, would you have still installed the **MEASURE_1/C_MEASURE1** equipment at the same time?
1. (Yes) **[SKIP TO D6]**
 2. (No) **[SKIP TO D4]**
 98. (Don't know) **[SKIP TO D4]**
 99. (Refused) **[SKIP TO D4]**
- D3. Without the program, would you have installed any **MEASURE_1/C_MEASURE1** equipment?
1. (Yes)
 2. (No) **[SKIP TO D7]**
 98. (Don't know) **[SKIP TO D7]**
 99. (Refused) **[SKIP TO D7]**
- D4. Without the program, in terms of timing, when would you have installed the **MEASURE_1/C_MEASURE1** equipment?
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 D7]**
 98. (Don't know)
 99. (Refused)

D5. Would you have installed more, less, or the same amount of **[MEASURE_1/C_MEASURE1]** equipment without the program?

1. (More)
 - D5a. Compared to the installed amount, how much more?
[RECORD PERCENTAGE: _____]
2. (Less)
 - D5b. Compared to the installed amount, how much less?
[RECORD PERCENTAGE: _____]
98. (Don't know)
99. (Refused)

D6. Prior to hearing about the program, was the cost of **[MEASURE_1/C_MEASURE1]** equipment included in your organization's most recent capital budget?

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

D7. In your own words, can you please describe what impact the program had on your decision to complete **[FOR SBL READ: these energy efficiency improvements for] [FOR SBDI READ: this installation of] [MEASURE_1/C_MEASURE1]** equipment?

1. **[RECORD VERBATIM: _____]**
98. (Don't know)
99. (Refused)

D8. With the **[PROGRAM NAME]** program, your company received financial incentives of **[CUSTOMER INCENTIVE]** for installing **[MEASURE_1/C_MEASURE1]** equipment.

For the **[MEASURE_1/C_MEASURE1]** purchases, 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: Respondents can also state that a particular factor is Not Applicable, please code N/A as 6]**

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 type of lighting
6. Previous participation with a **[UTILITY]** program

E. Spillover

E1. Now I'd like to ask about energy efficient lighting improvements **other than those** you installed through the program. Since participating in this program, have you purchased and installed any additional energy-efficient lighting on your own without any assistance from a utility or other organization?

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

E2. Did you purchase and install any energy-efficient lighting that is the same as the **[MEASURE1/C_MEASURE1]** you installed through the program?

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

E3. How many did you purchase and install?

1. **[RECORD RESPONSE]**
98. (Don't know)
99. (Refused)

E4. Did you receive an incentive from **[UTILITY]** or another organization for this lighting?

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

[ASK IF E4=1]

E5. What program or sponsor provided the incentive?

1. **[ENTER PROGRAM OR UTILTY]**
98. (Don't know)
99. (Refused)

E6. 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] [PROGRAM NAME]** program was in your decision to install this lighting.

1. **[RECORD RATING: _____]**
98. (Don't know)
99. (Refused)

[ASK IF E4=2 OTHERWISE SKIP TO SECTION F]

- E7. Why did you not apply for an incentive from **[UTILITY]** for this equipment?
1. **[RECORD RESPONSE] [SKIP TO SECTION F]**
 98. (Don't know) **[SKIP TO SECTION F]**
 99. (Refused) **[SKIP TO SECTION F]**
- E8. What type of efficient lighting did you purchase and install? **[SPECIFY TYPE EXAMPLE: CFL, LED, FLUORESCENT]:** _____
- E8.11 What is the wattage of the lighting? **[SPECIFY]:** _____
- E8.12 In what location was it installed (Wall/Ceiling/Outdoors)? **[SPECIFY]:** _____
- E8.13 What type of equipment was removed or replaced? **[SPECIFY]:** _____
- E9. How many did you purchase and install?
1. **[RECORD RESPONSE]**
 98. (Don't know)
 99. (Refused)
- E10. Just to confirm, did you receive an incentive from **[UTILITY]** or another organization for this energy-efficient lighting?
1. (Yes)
 2. (No)
 98. (Don't know)
 99. (Refused)
- [ASK IF E10=1]**
- E11. What utility or organization provided the incentive?
1. **[RECORD UTILITY OR ORGANIZATION]**
 98. (Don't know)
 99. (Refused)
- E12. What information did you rely upon to determine that the lighting installed was energy efficient?
1. **[RECORD RESPONSE]**
 98. (Don't know)
 99. (Refused)
- E13. 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]** LED Instant Incentive Program was in your decision to install this lighting.
1. **[RECORD RATING: _____]**
 98. (Don't know)
 99. (Refused)

F. Firmographics

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)
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. How many locations does your company operate in **[PROJECT STATE]**?

1. **[RECORD NUMBER: _____]**
98. (Don't know)
99. (Refused)

F3. Does your organization lease or own the facility or facilities?

1. (Lease)
2. (Own)
3. (Other **[RECORD VERBATIM: _____]**)
98. (Don't know)
99. (Refused)

F4. How many people are employed by your company at all locations?

1. (1-10)
2. (11-25)
3. (26-50)
4. (51-75)
5. (76-100)
6. (101-200)
7. (201-500)
8. More than 500
98. (Don't know)
99. (Refused)

G. Closing

G1. Overall, how satisfied would you say you are with the **[PROGRAM NAME]** 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. Is there anything that **[UTILITY]** could have done to improve your overall experience with the **[PROGRAM NAME]** program? **[DO NOT READ THE LIST, RECORD ALL THAT APPLY]**

1. (Better/more communication)
2. (Quicker response time)
3. (Larger selection of eligible equipment)
4. (Increasing the incentive amount)
5. (Simplify the application process)
6. (Simplify the website)
7. (Provide quicker approval on applications)
8. (Send incentive check out faster)
9. (Other **[SPECIFY: _____]**)
10. (No, nothing)
98. (Don't know)
99. (Refused)

G2.1 **[ASK IF G2 = 1]** You mentioned you would like better communication. Who would you like more communication from? **[RECORD RESPONSE_____]**

G2.2 **[ASK IF G2 = 2]** You mentioned a quicker response time. Who would you like a quicker response time from? **[RECORD RESPONSE_____]**

G2.3 **[ASK IF G2 = 3]** What other energy-efficient equipment should wattsmart business offer incentives for? **[RECORD RESPONSE_____]**

G2.5 **[ASK IF G2=5]** In what way would you like them to simplify the application process? **[RECORD RESPONSE_____]**

G2.6 **[ASK IF G2 = 6]** In what way would you like them to simplify the website? **[RECORD RESPONSE_____]**

G3. In the future, how would you like to stay informed about opportunities available through the wattsmart Business Program? **[DO NOT READ LIST; MULTIPLE RESPONSES POSSIBLE]**

1. (Contact with wattsmart Business representative or utility representative)
2. (wattsmart printed program materials)
3. (wattsmart sponsored workshop or event)
4. (Utility mailing, email, newsletter with bill, bill insert, or utility Website)
5. (Contact with a vendor/contractor)
6. (Through a trade association, trade publication or professional organization) **[SPECIFY: _____]**)
7. (Newspaper ad)
8. (Radio ad)
9. (TV ad)
10. (Social Media (e.g., Facebook, Twitter, YouTube))
11. (Online ads)
12. (Other **[SPECIFY: _____]**)
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.

PacifiCorp *wattsmart* Business Program (2016–2017) *Energy Management* Participant Survey

Researchable Questions		
Key Research Topics	Areas of Investigation	Related Questions
Screening	Project initiation process	C1
Marketing and Outreach	Program Awareness	B3
	Future communication preferences	G3
Barriers	Obstacles to installing high-efficiency equipment	C3-C4, C34-C35
Satisfaction	Assess satisfaction with Program application process, various program components and reasons for dissatisfaction among participants	C5-C32, G1, G2
Firmographics	Determine building and company characteristics of participants	Section F
Decision Making	Key factors influencing customers’ decision to participate in program. Benefits received.	C1, C2, C9, C33
Freeridership and Spillover	Assess net savings	Sections D and E

Target Quota = See samples for individual states

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

- **[UTILITY]**
- **[PROGRAM YEAR]**
- **[CONTACT NAME]**
- **[PROJECT NAME]**
- **[SITE ADDRESS 1]**
- **[SITE CITY]**
- **[PROJECT STATE]**
- **[MEASURE SUB TYPE]**
- **[MEASURE CUSTOM NAME]**
- **[CUSTOMER INCENTIVE]**
- **[BILL_CREDIT]**

A. Introduction

Hello, I'm [INSERT NAME] calling on behalf of [INSERT UTILITY]. May I speak with [INSERT CONTACT NAME]? OR [IF NO NAME OR NAMED RESPONDENT NO LONGER WORKS FOR COMPANY] May I speak with the facility manager, energy manager or someone who is familiar with your participation in the [UTILITY] incentives for the [PROJECT NAME] project? [IF THAT PERSON IS NOT AT THIS PHONE NUMBER, ASK FOR THEIR NAME AND PHONE NUMBER AND START AGAIN]

1. **Respondent not available:** ASK IF YOU CAN LEAVE A MESSAGE ON THEIR VM
98. (Don't know) [ASK TO SPEAK WITH SOMEONE WHO KNOWS AND BEGIN AGAIN]

A1. Hello, I'm [INSERT NAME] calling on behalf of [INSERT UTILITY]. Are you the person who handles energy decisions for the [PROJECT NAME] project? [IF THAT PERSON IS NOT AT THIS PHONE NUMBER, ASK FOR THEIR NAME AND PHONE NUMBER AND START AGAIN]

1. (Yes)
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 READ A1 AGAIN]
99. (Refused) [THANK AND TERMINATE]

A2. Are you the person responsible for making energy-efficiency decisions for your company at the [SITE ADDRESS 1], [SITE CITY] location?

1. (Yes)
2. (No, person is able to come to phone) [ASK FOR PERSON WHO IS AND RE-READ A2]
3. (No, person is not able to come to phone) [GET NAME AND PHONE NUMBER, SCHEDULE CALL BACK – START CALLBACK AT A1]
98. (Don't know) [ASK TO SPEAK WITH SOMEONE WHO KNOWS AND RE-READ A2]
99. (Refused) [THANK AND TERMINATE]

A3. We are conducting an important survey today about [INSERT UTILITY]'s Energy Management program. [INSERT UTILITY] is actively seeking your opinions to help improve their business efficiency programs and to better understand how to assist customers in saving money and energy. This call may be monitored or recorded for quality assurances purposes. Anything you share with us today will be confidential and not attributed to any one individual or business.

1. [IF RESPONDENT ASKS HOW LONG, SAY "Approximately 10-15 minutes."]
2. [IF NEEDED, STATE "this survey is for research purposes only and this 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 NIKKI KARPAVICH, 801-220-4439.

B. Screeners

- B1. Our records show that you completed a **[MEASURE SUB TYPE]** project at **[SITE ADDRESS 1]** in **[INSERT PROGRAM YEAR]**? Is this correct? **[IF MEASURE CUSTOM NAME IN SAMPLE READ: This included [MEASURE CUSTOM NAME]. [MULTIPLE RESPONSE]**
1. (Yes)
 2. (No, wrong year) **[RECORD CORRECT YEAR IF POSSIBLE]**
 3. (No, wrong address) **[RECORD CORRECT ADDRESS]**
 4. (No, wrong measure) **[CORRECT BELOW]**
 - B1.4A (ASKED IF MEASURE SUB TYPE IS INCORRECT **[Which of the following did you complete?**)
 - 1 Industrial Recommissioning
 - 2 Persistent Recommissioning
 - 3 Recommissioning
 - 4 Strategic Energy Management
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]**
- [ASSIGN VARIABLE C_MEASURE SUB TYPE based on response to B1.4A]**
5. (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]**
- B2. To ensure our records are correct, can you confirm that you received an incentive for this project?
1. (Yes)
 2. (No) **[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]**
- B3. How did your organization learn about the incentives for this **[MEASURE SUB TYPE OR C MEASURE SUB TYPE]** project? **[DO NOT READ LIST; MULTIPLE RESPONSES POSSIBLE]**
1. (Contact with *wattsmart* Business representative or utility representative)
 2. (*wattsmart* printed program materials)
 3. (*wattsmart* sponsored workshop or community event)
 4. (Utility mailing, bill insert, or utility Website)
 5. (Previously participated in program/received an incentive)
 6. (Through a civic organization, trade association or professional organization)
[SPECIFY: _____]
 7. (Through the vendor or supplier where I purchase equipment)
 8. (Word of mouth (family, friend, or business colleague)

- 9. (Other [SPECIFY: _____])
- 98. (Don't know)
- 99. (Refused)

C. Energy Management

- C1. What factors were important to your company's decision to participate in the **[MEASURE SUB TYPE OR C MEASURE SUB TYPE]** incentives? **[DO NOT READ LIST; RECORD ALL THAT APPLY]**
- 1. (To save money on energy bills)
 - 2. (To save energy)
 - 3. (To obtain professional services of the Energy Management Provider/identify operational issues in the building systems or processes)
 - 4. (To obtain a program incentive)
 - 5. (To improve productivity)
 - 6. (Other [SPECIFY _____])
 - 98. (Don't know)
 - 99. (Refused)
- C2. Thinking about the factor(s) you just mentioned, what was the most important to your company's decision to participate? **[DO NOT READ LIST; RECORD ONE RESPONSE]**
- 1. (To save money on energy bills)
 - 2. (To save energy)
 - 3. (To obtain professional services/ services of the Energy Management Provider/identify operational issues in the building systems or processes)
 - 4. (To obtain a program incentive)
 - 5. (To improve productivity)
 - 6. (Other [SPECIFY _____])
 - 98. (Don't know)
 - 99. (Refused)
- C3. Thinking about the general application and any supplemental applications you submitted, how easy would you say this paperwork was to complete? Would you say...? **[READ LIST]**
- 1. Very easy,
 - 2. Somewhat easy,
 - 3. Not too easy, or
 - 4. Not at all easy?
 - 98. (Don't know)
 - 99. (Refused)

[ASK IF C3=2, 3 OR 4]

- C4. What would have made this paperwork easier to complete?
1. **[RECORD VERBATIM: _____]**
 98. (Don't know)
 99. (Refused)
- C5. Thinking about the incentive you received for this project, were you satisfied with the amount of the incentive? 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)

[IF C5=2, 3 OR 4]

- C6. What incentive amount would have been enough for you to say you were very satisfied?
- [RECORD VERBATIM: _____]**
98. (Don't know)
 99. (Refused)
- C7. How satisfied were you with the amount of time it took to receive the incentive? 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)

[IF C7=2, 3 OR 4]

- C8. What amount of time would have been appropriate? [Record answer in days, weeks, months]
- [RECORD VERBATIM: _____]**
98. (Don't know)
 99. (Refused)

C9. What payback period does your company typically look for on these kinds of projects?

[RECORD SPECIFIC PERIOD OF TIME, EX 1-2 MONTHS, 1 YEAR, 2-3 YEARS]

[RECORD VERBATIM: _____]

98. (Don't know)

Thank you, now I'd like to ask you a few questions about the information and services provided for your project, by the [UTILITY] funded, Energy Management Provider.

[ASK C10-C17 IF MEASURE SUB TYPE OR C MEASURE SUB TYPE ≠ STRATEGIC ENERGY MANAGEMENT]

C10. Overall, how satisfied were you with the detailed site assessment that was conducted by the engineering services Provider for this project? 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)

[IF C10=2, 3 OR 4]

C11. Why do you say that?

1. [RECORD VERBATIM: _____]
98. (Don't know)
99. (Refused)

C12. How satisfied were you with the recommendations presented in the Savings and Incentive Report for this project? 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)

[IF C12=2, 3 OR 4]

C13. Why do you say that?

1. [RECORD VERBATIM: _____]
98. (Don't know)
99. (Refused)

C14. After you implemented the project, how satisfied were you with the project verification completed by the Energy Management Provider? 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)

[IF C14=2, 3 OR 4]

C15. Why do you say that?

1. **[RECORD VERBATIM: _____]**
98. (Don't know)
99. (Refused)

C16. How satisfied were you with the final Savings and Verification Report? Would you say...? **[READ LIST]**

1. Very satisfied **[SKIP TO C30]**
2. Somewhat satisfied
3. Not too satisfied
4. Not satisfied at all
98. (Don't know) **[SKIP TO C30]**
99. (Refused) **[SKIP TO C30]**

[IF C16=2, 3 OR 4]

C17. Why do you say that?

1. **[RECORD VERBATIM: _____] [SKIP TO C30]**
98. (Don't know) **[SKIP TO C30]**
99. (Refused) **[SKIP TO C30]**

[ASK C18-C29 IF MEASURE SUB TYPE OR C MEASURE SUB TYPE =STRATEGIC ENERGY MANAGEMENT]

C18. Overall, how satisfied were you with the energy management assessment conducted for this project? 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)

[IF C18=2, 3 OR 4]

C19. Why do you say that?

1. **[RECORD VERBATIM: _____]**
98. (Don't know)
99. (Refused)

C20. How satisfied were you with the coaching your organization received from the Energy Management Provider for this project? 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)

[IF C20=2, 3 OR 4]

C21. What would have increased your satisfaction with the coaching your organization received?

1. **[RECORD VERBATIM: _____]**
98. (Don't know)
99. (Refused)

C22. During the phase in which you and your Energy Management Provider determined the energy savings for your facility, an Energy Map was created, energy data was collected and analyzed, and an energy savings model and dashboard were built. Following this, the Energy Management Provider would have discussed each of these with your organization. Thinking about this phase, how satisfied were you with the Energy Map? 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)

[IF C22=2, 3 OR 4]

C23. Why do you say that?

1. **[RECORD VERBATIM: _____]**
98. (Don't know)
99. (Refused)

C24. Thinking about this same phase, how satisfied were you with the information you received about the energy data analysis? 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)

[IF C24=2, 3 OR 4]

C25. Why do you say that?

1. **[RECORD VERBATIM: _____]**
98. (Don't know)
99. (Refused)

C26. Again, thinking about this same phase, how satisfied were you with the savings model? 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)

[IF C26=2, 3 OR 4]

C27. Why do you say that?

1. **[RECORD VERBATIM: _____]**
98. (Don't know)
99. (Refused)

C28. As a final step in this phase, the Energy Management Provider estimated the energy savings for your facility and created an SEM Savings Memorandum. How satisfied were you with the information you received in this memorandum? 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)

[IF C28=2, 3 OR 4]

- C29. Why do you say that?
1. **[RECORD VERBATIM: _____]**
 98. (Don't know)
 99. (Refused)

[ASK ALL C30-C34]

- C30. Overall how satisfied were you with the engineering services provider funded by **[UTILITY]**? 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)

[IF C30=2, 3 OR 4]

- C31. Why do you say that?
1. **[RECORD VERBATIM: _____]**
 98. (Don't know)
 99. (Refused)

- C32. Overall, how satisfied were you with the **[MEASURE SUB TYPE OR C MEASURE SUB TYPE]** 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)

- C33. What would you say are the main benefits your company has experienced as a result of your participation in the **[MEASURE SUB TYPE OR C MEASURE SUB TYPE]** program]? **[DO NOT READ LIST; RECORD ALL THAT APPLY; PROBE FOR MULTIPLE RESPONSES]**
1. (Saving money on our utility bills; lower energy bills)
 2. (Using less energy, reducing energy consumption or energy demand)
 3. (Obtained professional services of the Energy Management Provider/identified operational issue in the building systems or processes)
 4. (The incentive)
 5. (Improved productivity)
 6. (Saving money on maintenance costs)

- 7. (Other [SPECIFY: _____])
- 8. (NO BENEFITS)
- 98. (Don't know)
- 99. (Refused)

C34. Other than what you've already told me, did you encounter any challenges participating in the [MEASURE SUB TYPE OR C MEASURE SUB TYPE] program?

- 1. [SPECIFY: _____]
- 2. (No challenges)
- 98. (Don't know)
- 99. (Refused)

[IF C34=1]

C35. What could [UTILITY] do to help your company overcome these challenges? [DO NOT READ LIST, ALLOW MULTIPLE RESPONSES]

- 1. (Nothing)
- 2. (Higher incentives)
- 3. (Offer low-interest loans/financing)
- 4. (Simplify the paperwork)
- 5. (Provide better/more information about program)
- 6. (Other [RECORD VERBATIM ANSWER _____])
- 98. (Don't know)
- 99. (Refused)

[ASK IF C35=5]

C35.5 You mentioned you would like more information. What type of information do you need?
[RECORD VERBATIM: _____]

D. Freeridership

[IF MEASURE SUB TYPE OR C_MEASURE SUB TYPE=STRATEGIC ENERGY MANAGEMENT SKIP TO E16]

Thank you. Next, we have a few questions about other energy-efficiency improvements you might have made.

[ASK D1-D9 IF MEASURE SUB TYPE OR C MEASURE SUB TYPE ≠STRATEGIC ENERGY MANAGEMENT]

D1. Without the [MEASURE SUB TYPE OR C MEASURE SUB TYPE] program, meaning without either the technical assistance or the financial incentive, would you have still completed the exact same [MEASURE SUB TYPE OR C MEASURE SUB TYPE] project?

- 1. (Yes)
- 2. (No) [SKIP TO D3]

98. (Don't know) [SKIP TO D3]
99. (Refused) [SKIP TO D3]
- D2. Without the program, meaning without either the technical assistance or the financial incentive, would you have still completed the [MEASURE SUB TYPE OR C MEASURE SUB TYPE] project at the same time?
1. (Yes) [SKIP TO D7]
 2. (No) [SKIP TO D4]
98. (Don't know) [SKIP TO D4]
99. (Refused) [SKIP TO D4]
- D3. Without the program, would you have completed any [MEASURE SUB TYPE OR C MEASURE SUB TYPE] project?
1. (Yes)
 2. (No) [SKIP TO D8]
98. (Don't know) [SKIP TO D8]
99. (Refused) [SKIP TO D8]
- D4. Without the program, in terms of timing, when would you have completed the [MEASURE SUB TYPE OR C MEASURE SUB TYPE] project?
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 D8]
98. (Don't know)
99. (Refused)
- D5. Relative to the energy efficiency of [MEASURE SUB TYPE OR C MEASURE SUB TYPE] project completed through the program, how would you characterize the efficiency of the recommissioning project you would have completed without the program?
1. Just as efficient as completed with the program
 2. Lower than completed through the program, but better than standard efficiency
 3. Standard efficiency
98. (Don't know)
99. (Refused)
- D6. Would you have recommissioned more, less, or the same amount of equipment without the program?
1. (More)
 - D6a. Compared to the amount recommissioned through the program, how much more? [RECORD PERCENTAGE: _____] [NUMERIC 0-100,998(DON'T KNOW),999 (REFUSED)]
 2. (Less)

D6b. Compared to the amount recommissioned through the program, how much less? [RECORD PERCENTAGE: _____] [NUMERIC 0-100, 998 (DON'T KNOW), 999 (REFUSED)]

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

D7. Prior to hearing about the program, was the cost of your recommissioning project included in your organization's most recent capital budget?

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

D8. In your own words, can you please describe what impact the program had on your decision to complete this [MEASURE SUB TYPE OR C MEASURE SUB TYPE] project?

D9. With the [MEASURE SUB TYPE OR C MEASURE SUB TYPE] program, your company received financial incentives of [CUSTOMER INCENTIVE] for your project. For the project, 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 recommission. 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]

- 1. Recommendations provided by [UTILITY]'s engineering services Provider on energy saving opportunities
- 2. Information on payback
- 3. The [UTILITY] incentive
- 4. Verification of proper installation, repairs, and/or control strategies
- 5. Previous participation with a [UTILITY] program [RECORD RATINGS AND SPECIFY PROGRAM___]

E. Spillover

E1. Now I'd like to ask about recommissioning projects **other than** those you completed through the program. Since participating in this program, have you completed any additional recommissioning projects on your own without any assistance from a utility or other organization?

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

E2. Did you complete a recommissioning project that is the same as the [MEASURE SUB TYPE OR C MEASURE SUB TYPE] project you completed through the program?

- 1. (Yes)
- 2. (No) **[SKIP TO E9]**
- 98. (Don't know) **[SKIP TO E9]**
- 99. (Refused) **[SKIP TO E9]**

E3. How many projects did you complete?

- 1. **[RECORD RESPONSE]** [Numeric 0-97]
- 98. (Don't know)
- 99. (Refused)

E4. Relative to the energy efficiency of the project completed through the program, how would you characterize the efficiency of this project?

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

E5. Did you receive an incentive from **[UTILITY]** or another organization for this recommissioning?

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

[ASK IF E5=1]

E6. What program or sponsor provided the incentive?

- 1. **[ENTER PROGRAM OR UTILITY]**
- 98. (Don't know)
- 99. (Refused)

E7. 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] [MEASURE SUB TYPE OR C MEASURE SUB TYPE]** program was in your decision to recommission this equipment(s).

- 1. RECORD RATING: _____]
- 98. (Don't know)
- 99. (Refused)

[ASK IF E5=2]

E8. Why did you not apply for an incentive from **[UTILITY]** for this recommissioning project?

- 1. **[RECORD RESPONSE]**
- 98. (Don't know)
- 99. (Refused)

- E9. In **[PROGRAM YEAR]** did you purchase and install **other** energy efficiency improvements, on your own without any assistance (financial or technical) from a utility, vendor or other organization?
1. (Yes)
 2. (No) **[SKIP TO SECTION F]**
 98. (Don't know) **[SKIP TO SECTION F]**
 99. (Refused) **[SKIP TO SECTION F]**

- E10. What type of equipment did you install? **[DO NOT READ LIST. RECORD ALL THAT APPLY]**
1. (Lighting equipment)
 2. (HVAC equipment (heating and cooling)/HVAC controls/Ventilation/Fans)
 3. (Water heating equipment)
 4. (Variable frequency drive)
 5. (Efficient motor)
 6. (Refrigeration equipment)
 7. (Building envelope measures)
 8. (Compressed air equipment)
 9. (Chiller)
 10. (Pump)
 11. (Irrigation equipment (gaskets, drains, sprinklers))
 12. (Other) **[SPECIFY]:** _____
 13. (None of the above) **[SKIP TO SECTION F]**
 98. (Don't know) **[SKIP TO SECTION F]**
 99. (Refused) **[SKIP TO SECTION F]**

[ASK E10.11-E10.14 AND E11-E15 if E10=1]

E10.11 What type of lighting was purchased and installed? **[SPECIFY TYPE EXAMPLE: CFL, LED, FLUORESCENT]:** _____

E10.12 What is the wattage of the lighting? **[SPECIFY]:** _____

E10.13 In what location was it installed (Wall/Ceiling/Outdoors)? **[SPECIFY]:** _____

E10.14 What type of equipment was removed or replaced? **[SPECIFY]:** _____

[ASK E10.21-E10.24 AND E11-E15 if E10=2]

E10.21 What type of HVAC equipment was purchased and installed? **[SPECIFY TYPE]:** _

E10.22 What Fuel type is used? **[SPECIFY]:** _____

E10.23 What is the efficiency rating of the equipment? Is that HSFP, EER or SEER? [Record as HSFP or EER or SEER (ex 13 SEER)] **[SPECIFY]:** _____

E10.24 What is the capacity, in tons, of the equipment? [Record in tons (5 tons, 10 tons etc.)] **[SPECIFY]:** _____

[ASK E10.31-E10.34 AND E11-E15 if E10=3]

E10.31 What type of water heating equipment was purchased and installed? **[SPECIFY TYPE]:** _____

E10.32 What Fuel type is used? **[SPECIFY]:** _____

E10.33 What is the energy factor of the equipment? [Record energy factor (ex .54 EF or 2 EF)] **[SPECIFY]:** _____

E10.34 (If water heater with storage) What is the capacity, in gallons, of the equipment? [Record in gallons] **[SPECIFY]:** _____

[ASK E10.41-E10.42 AND E11-E15 if E10=4]

E10.41 What type of motor was it installed on? **[SPECIFY TYPE]:** _____

E10.42 What is the horsepower of the motor? **[SPECIFY]:** _____

[ASK E10.51-E10.52 AND E11-E15 if E10=5]

E10.51 What equipment was the motor installed on? **[SPECIFY TYPE]:** _____

E10.52 What is the horsepower of the motor? **[SPECIFY]:** _____

[ASK E10.61 AND E11-E15 if E10=6]

E10.61 What type of refrigeration or freezer equipment was purchased and installed? **[SPECIFY TYPE]:** _____

[ASK E10.71-E10.73 AND E11-E15 if E10=7]

E10.71 What building envelope measure was purchased and installed? **[SPECIFY TYPE]:** _____

E10.72 What is the efficiency (R-value) of the measure? **[SPECIFY]:** _____

E10.73 In what location was it installed (Wall/Roof/Floor)? **[SPECIFY]:** _____

[ASK E10.81-E10.82 AND E11-E15 if E10=8]

E10.81 FOR What type of application was the compressed air equipment purchased and installed? **[SPECIFY APPLICATION]:** _____

E10.82 What is the horsepower of the compressor motor? **[SPECIFY]:** _____

[ASK E10.91-E10.92 AND E11-E15 if E10=9]

E10.91 FOR What type of application was the chiller purchased and installed? **[SPECIFY APPLICATION]:** _____

E10.92 What size chiller, in tons, did you install? [Record in tons (5-ton, 10 ton etc.)] **[SPECIFY]:** _____

[ASK E10.101-E10.103 AND E11-E15 if E10=10]

E10.101 FOR What type of application was the pump purchased and installed? **[SPECIFY APPLICATION]:** _____

E10.102 What is the horsepower of the motor for the pump? **[SPECIFY]** _____

E10.103 What is the efficiency rating of the pump? [Record percentage (ex 94%)]
[SPECIFY]: _____

[ASK E10.111 AND E11-E15 if E10=11]

E10.111 WHAT IRRIGATION EQUIPMENT DID YOU purchased and install? **[SPECIFY GASKETS, DRAINS, SPRINKLERS, ETC.]:** _____

[ASK IF E10=1-12] [ASK ABOUT EACH ITEM MENTIONED IN E10 = 1- 12]

E11. How many did you purchase and install? [ASK FOR EACH MEASURE MENTIONED IN E10 = 1-12] [IF E10 MEASURE = 7 'BUILDING ENVELOPE' THEN ASK HOW MANY 'SQUARE FEET']

1. [RECORD RESPONSE]
98. (Don't know)
99. (Refused)

[ASK IF E10=1-12] [ASK ABOUT EACH ITEM MENTIONED IN E10]

E12. Just to confirm, did you receive an incentive from **[UTILITY]** or another organization for this equipment? [ASK FOR EACH MEASURE MENTIONED IN E10]

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

[ASK FOR EACH YES IN E12]

E13. What utility or organization provided the incentive? [ASK FOR EACH MEASURE MENTIONED IN E10]

1. [RECORD UTILITY OR ORGANIZATION]
98. (Don't know)
99. (Refused)

[ASK IF E10=1-12] [ASK ABOUT EACH ITEM MENTIONED IN E10]

E14. What information did you rely upon to determine that the equipment installed was energy efficient? [ASK FOR EACH MEASURE MENTIONED IN E10]

1. [RECORD RESPONSE]
98. (Don't know)
99. (Refused)

[ASK IF E10=1-12] [ASK ABOUT EACH ITEM MENTIONED IN E10]

- E15. 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] [MEASURE SUB TYPE OR C MEASURE SUB TYPE]** program was in your decision to install [this/these/ energy-efficient product(s)]? **[ASK FOR EACH MEASURE MENTIONED IN E10]**
1. **[RECORD RATING: _____]**
 98. (Don't know)
 99. (Refused)

**[IF MEASURE SUB TYPE OR C MEASURE SUB TYPE≠STRATEGIC ENERGY MANAGEMENT SKIP TO F1]
[ASK E16 IF MEASURE SUB TYPE OR C MEASURE SUB TYPE =STRATEGIC ENERGY MANAGEMENT]**

- E16. Does your organization have other facilities within the **[UTILITY]** service territory?
1. (Yes)
 2. (No) **[SKIP TO SECTION F]**
 98. (Don't know) **[SKIP TO SECTION F]**
 99. (Refused) **[SKIP TO SECTION F]**
- E17. Please describe any **[MEASURE SUB TYPE OR C MEASURE SUB TYPE]** activities at your other locations within **[UTILITY]**'s territory, that you implemented **since** participating in the program, without an incentive from **[UTILITY]**.
1. **[RECORD RESPONSE]**
 2. (None) **[SKIP TO SECTION F]**
 98. (Don't know) **[SKIP TO SECTION F]**
 99. (Refused) **[SKIP TO SECTION F]**
- E18. 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] [MEASURE SUB TYPE OR C MEASURE SUB TYPE]** program was in your decision to implement [this/these/ activity(s)]?
1. **[RECORD RATING: _____]**
 98. (Don't know)
 99. (Refused)

[ASK SECTION F TO ALL SURVEY RESPONDENTS]

F. Firmographics

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)
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. How many locations does your company operate in **[PROJECT STATE]**?

1. **[RECORD NUMBER: _____] [NUMERIC 1-500]**
2. More than 500
- 998 (Don't know)
- 999 (Refused)

F3 Does your organization lease or own the facility or facilities?

1. (Lease)
2. (Own)
3. (Other) **[Record VERBATIM: _____]**
98. (Don't know)
99. (Refused)

F4 How many people are employed by your company at all locations?

1. (1-10)
2. (11-25)
3. (26-50)
4. (51-75)
5. (76-100)
6. (101-200)
7. (201-500)
8. More than 500
98. (Don't know)
99. (Refused)

G. Closing

G1. Overall, how satisfied would you say you are with the **[MEASURE SUB TYPE OR C MEASURE SUB TYPE]** 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. Is there anything that **[UTILITY]** could have done to improve your overall experience with the **[MEASURE SUB TYPE OR C MEASURE SUB TYPE]** program? **[DO NOT READ THE LIST, RECORD ALL THAT APPLY]**

1. (Better/more communication)
2. (Quicker response time)
3. (Larger selection of eligible equipment)
4. (Increasing the incentive amount)
5. (Simplify the application process)
6. (Simplify the website)
7. (Provide quicker approval on applications)
8. (Send incentive check out faster)
9. (Other **[SPECIFY: _____]**)
10. (No, nothing)
98. (Don't know)
99. (Refused)

G2.1 **[ASK IF G2 = 1]** You mentioned you would like better communication. Who would you like more communication from? **[RECORD RESPONSE _____]**

G2.2 **[ASK IF G2 = 2]** You mentioned a quicker response time. Who would you like a quicker response time from? **[RECORD RESPONSE _____]**

G2.3 **[ASK IF G2 = 3]** What other energy-efficient equipment should *wattsmart* business offer incentives for? **[RECORD RESPONSE_____]**

G2.5 **[ASK IF G2=5]** In what way would you like them to simplify the application process? **[RECORD RESPONSE_____]**

G2.6 **[ASK IF G2 = 6]** In what way would you like them to simplify the website? **[RECORD RESPONSE_____]**

G3. In the future, how would you like to stay informed about opportunities available through the **[MEASURE SUB TYPE OR C MEASURE SUB TYPE]** program? **[DO NOT READ LIST; MULTIPLE RESPONSES POSSIBLE]**

1. (Contact with *wattsmart* Business representative or utility representative)
2. (*wattsmart* printed program materials)
3. (*wattsmart* sponsored workshop or event)
4. (Utility mailing, email, newsletter with bill, bill insert, or utility Website)
5. (Contact with a vendor/contractor)
6. (Through a trade association, trade publication or professional organization) **[SPECIFY: _____]**)
7. (Newspaper ad)
8. (Radio ad)
9. (TV ad)
10. (Social Media (e.g., Facebook, Twitter, YouTube))
11. (Online ads)
12. (Other **[SPECIFY: _____]**)
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 D. PacifiCorp *wattsmart* Business Program (2016/2017) 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:

California=68

Washington=68

Utah=68

Idaho=68

Wyoming=68

Partial participants: See quota tab in Partial Participants 2016-2017 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 [CUSTOMER NAME]? [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-efficiency 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. We are conducting an important survey today about [UTILITY]'s wattsmart Business Program. [UTILITY] is actively seeking your opinions to help improve their business efficiency programs and to better understand how to assist customers in saving money and energy. [IF SITE STATE=CA AND IF PARTICIPANT=PARTIAL PARTICIPANT, READ: For completing this survey, we will enter your name into a drawing for the chance to win a \$100-dollar gift card.] This call may be monitored or recorded for quality assurances purposes. Anything you share with us today will be confidential and not attributed to any one individual or business.
1. [IF RESPONDENT ASKS HOW LONG, SAY "Approximately 5 to 7 minutes."]
 2. [IF NEEDED, STATE "This survey is for research purposes only and this 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 [Nikki Karpavich, 801-220-4439]

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 **[UTILITY]** in **[YEAR]**, but did not complete this project through the wattsmart Business Program. You may have first discussed this project with **[UTILITY]**, or submitted an application as early as 2013, but the project was officially created in **[YEAR]** **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 2016 or 2017?]** 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* printed program materials)
 3. (*wattsmart* sponsored workshop or community event)
 4. (Utility mailing, bill insert, or utility website)
 5. (Through my electrician or contractor)
 6. (Previously participated in program/received an incentive)
 7. (Through a trade association or professional organization) **[SPECIFY: _____]**)
 8. (Through a vendor, distributor or supplier where I purchase lighting)
 9. (Word of mouth (family, friend, or business colleague))
 10. (Other **[SPECIFY: _____]**)
 98. (Don't know)
 99. (Refused)

[ASK NONPARTICIPANTS C2]

- 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]**

[ASK IF C2=1]

- C3. How did your organization learn about the *wattsmart* Business Program? **[DO NOT READ LIST; MULTIPLE RESPONSES POSSIBLE]**
1. (Contact with *wattsmart* Business representative through phone, email, or in person)
 2. (*wattsmart* printed program materials)
 3. (*wattsmart* sponsored workshop or event)
 4. (Contact with utility representative)
 5. (Utility mailing, bill insert, or utility website)
 6. (I contacted my contractor/vendor to ask)
 7. (My contractor/vendor let me know about them)
 8. (Previously participated in program/received an incentive)
 9. (Through a trade association or professional organization) **[SPECIFY: _____]**)
 10. (Word of mouth (family, friend, or business colleague))

- 11. (Other [SPECIFY: _____])
- 98. (Don't know)
- 99. (Refused)

[ASK IF C1=1-12 OR 98 OR 99, OR IF C3=1-12 OR 98 OR 99]

C4. 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)
- 3. (*wattsmart* sponsored workshop or community event)
- 4. (Utility mailing, mail, newsletter with bill, bill insert, or utility website)
- 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, 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

[ASK EVERYONE D1]

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

D1. What factor is the most 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 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)

[ASK IF D9=3]

- D10. 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]**

[ASK IF D10=1]

- D11. Who could best to 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)

[ASK IF D9=5]

- D12. 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)

[ASK EVERYONE]

E. Spillover

- E1. In 2016 or 2017, did you purchase and install any energy efficiency improvements on your own without any assistance (financial or technical) from a utility, vendor or other organization?
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?
1. (Lighting) **[SPECIFY TYPE EXAMPLE: CFL, LED, FLUORESCENT]:** _____
 - 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 **[SPECIFY]?** _____
 - d. What is the equipment's rated capacity **[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 drives)
 - 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]**

[ASK IF E2=1-12]

- E3. 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. What program or sponsor provided the incentive(s)? **[RECORD FOR EACH MEASURE MENTIONED IN E2]**
1. **[SPECIFY]**
 98. (Don't know)
 99. (Refused)

[ASK IF E2=1-12]

- E5. 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 General information about energy efficiency provided by **[UTILITY]** _____
[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 this rating differ for any of the improvements you mentioned?

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

E5.1b **[ASK IF E5.1A=1]** Which of the following equipment would you rate differently on the General information about energy efficiency provided by **[UTILITY]**? **[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].

- Lighting
- HVAC (heating and cooling)
- Water heating
- Variable drives
- Efficient motors
- Refrigeration
- Building envelope
- Compressed air
- Chillers
- Pumps
- Irrigation
- [OTHER SPECIFY]**
- None of the above

E5.2 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 other improvements you mentioned?

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

E5.2b **[ASK IF E5.2A = 1]** Which of the following equipment would you rate differently on the Information from **[UTILITY]** program staff or contractors? **[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.]

- Lighting
- HVAC (heating and cooling)
- Water heating
- Variable drives
- Efficient motors
- Refrigeration
- Building envelope
- Compressed air
- Chillers
- Pumps
- Irrigation
- [OTHER SPECIFY]**
- None of the above

E5.3 Your experience with a past **[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 other improvements you mentioned?

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

E5.3b **[ASK IF E5.3A = 1]** Which of the following equipment would you rate differently on your experience with a past **[UTILITY]** energy efficiency program? **[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.]

- Lighting
- HVAC (heating and cooling)
- Water heating
- Variable drives
- Efficient motors
- Refrigeration
- Building envelope
- Compressed air
- Chillers
- Pumps
- Irrigation

[OTHER SPECIFY]

None of the above

[ASK SECTION F TO ALL SURVEY RESPONDENTS]

F. Firmographics

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)
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. How many locations does your company operate in [PROJECT STATE]?

1. [RECORD VERBATIM: _____]
98. (Don't know)
99. (Refused)

F3. Does your organization lease or own the facilities or facilities?

1. Lease
2. Own
3. Other [RECORD VERBATIM: _____]
98. (Don't know)
99. (Refused)

F4. How many people are employed by your company at all locations?

1. (1-10)
2. (11-25)
3. (26-50)
4. (51-75)
5. (76-100)
6. (101-200)
7. (201-500)
8. More than 500
9. (Other) [RECORD VERBATIM: _____]
98. (Don't know)
99. (Refused)

F5. 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)

F6. 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-G4] [NONPARTICIPANTS GO TO CLOSING STATEMENT]

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)

[IF G1=3 OR 4]

G2. 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 WATSMART 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)

G4. May I please get the spelling of your name, and your mailing address to enter you into the drawing for the \$100-dollar gift card? The winner will be notified within the next month.

1. **[RECORD NAME]**
2. **[RECORD MAILING ADDRESS]**

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 was reported for evaluated net and gross savings. Net results apply the evaluated NTG to evaluated gross savings. Table E1 shows cost-effectiveness inputs for Idaho’s Wattsmart program.

Table E1. Idaho wattsmart Business End-Use Category Cost-Effectiveness Inputs

Input Description	2016	2017	Total
Average Measure Life*			
Agricultural	8.1	10.0	8.9
Compressed Air	15.0	14.9	14.9
Energy Management	N/A	3.0	3.0
HVAC	14.8	15.0	14.9
Lighting	14.0	14.1	14.0
Motor Systems	15.2	15.3	15.3
Other	9.1	15.2	10.6
Refrigeration	15.0	15.4	15.3
Evaluated Net Energy Savings (kWh/year)**			
Agricultural	2,365,644	1,442,730	3,808,374
Compressed Air	121,290	329,195	450,485
Energy Management	N/A	425,236	425,236
HVAC	1,130,842	1,030,691	2,161,533
Lighting	9,188,503	6,119,349	15,307,852
Motor Systems	214,792	214,332	429,124
Other	198,922	65,091	264,013
Refrigeration	307,937	571,982	879,919
Total Utility Cost (including incentives)***			
Agricultural	\$537,216	\$358,680	\$895,897
Compressed Air	\$27,220	\$81,802	\$109,022
Energy Management	N/A	\$108,401	\$108,401
HVAC	\$235,295	\$166,881	\$402,176
Lighting	\$1,964,157	\$1,636,960	\$3,601,117
Motor Systems	\$51,713	\$61,508	\$113,222
Other	\$65,918	\$31,915	\$97,833
Refrigeration	\$58,879	\$141,429	\$200,308
Incentives			
Agricultural	\$355,595	\$212,089	\$567,684
Compressed Air	\$18,194	\$49,379	\$67,573



Energy Management	N/A	\$74,630	\$74,630
HVAC	\$160,975	\$77,233	\$238,208
Lighting	\$1,235,605	\$982,009	\$2,217,614
Motor Systems	\$32,744	\$36,457	\$69,201
Other	\$45,459	\$23,055	\$68,514
Refrigeration	\$35,962	\$85,094	\$121,056
Commercial Retail Rate	\$0.09	\$0.09	N/A
Industrial Retail Rate	\$0.07	\$0.06	N/A
Irrigation Retail Rate	\$0.09	\$0.09	N/A

*Weighted average measure category lives are based on individual measure lifetimes and weighted by savings and the frequency of installations.

**Evaluated savings reflect impacts at the customer meter.

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

Agricultural

Table E2, Table E3, and Table E4 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 E2).

**Table E2. Idaho Agricultural 2016-2017 Net
(2015 Decrement East Industrial 40% – Load Shape Irrigation)**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	\$0.076	\$1,312,610	\$1,175,043	(\$137,567)	0.90
TRC	\$0.076	\$1,312,610	\$1,068,221	(\$244,389)	0.81
UCT	\$0.043	\$750,837	\$1,068,221	\$317,385	1.42
RIM		\$2,031,496	\$1,068,221	(\$963,275)	0.53
PCT		\$1,332,693	\$2,136,151	\$803,459	1.60
Lifecycle Revenue Impacts (\$/kWh)					\$0.000003664
Discounted Participant Payback (years)					4.85

**Table E3. Idaho Agricultural 2016 Net
(2015 Decrement East Industrial 40% – Load Shape Irrigation)**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	\$0.106	\$557,343	\$373,775	(\$183,568)	0.67
TRC	\$0.106	\$557,343	\$339,795	(\$217,548)	0.61
UCT	\$0.053	\$281,167	\$339,795	\$58,628	1.21

RIM		\$652,530	\$339,795	(\$312,735)	0.52
PCT		\$590,078	\$660,920	\$70,841	1.12
Lifecycle Revenue Impacts (\$/kWh)					\$0.000001231
Discounted Participant Payback (years)					5.07

**Table E4. Idaho Agricultural 2017 Net
(2015 Decrement East Industrial 40% – Load Shape Irrigation)**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	\$0.063	\$805,569	\$854,633	\$49,065	1.06
TRC	\$0.063	\$805,569	\$776,939	(\$28,629)	0.96
UCT	\$0.039	\$500,949	\$776,939	\$275,990	1.55
RIM		\$1,470,805	\$776,939	(\$693,866)	0.53
PCT		\$792,073	\$1,573,482	\$781,410	1.99
Lifecycle Revenue Impacts (\$/kWh)					\$0.000002639
Discounted Participant Payback (years)					3.32

Table E5, Table E6, and Table E7 show the agriculture end-use category cost-effectiveness results for gross evaluated savings. The agricultural end-use category proved cost-effective from all test perspectives except the RIM perspective (Table E5).

**Table E5. Idaho Agricultural 2016-2017 Gross
(2015 Decrement East Industrial 40% – Load Shape Irrigation)**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	\$0.060	\$1,687,182	\$2,180,873	\$493,692	1.29
TRC	\$0.060	\$1,687,182	\$1,982,612	\$295,430	1.18
UCT	\$0.031	\$873,500	\$1,982,612	\$1,109,112	2.27
RIM		\$3,351,635	\$1,982,612	(\$1,369,023)	0.59
PCT		\$1,368,122	\$3,032,576	\$1,664,454	2.22
Lifecycle Revenue Impacts (\$/kWh)					\$0.000038691
Discounted Participant Payback (years)					2.86

**Table E6. Idaho Agricultural 2016 Gross
(2015 Decrement East Industrial 40% – Load Shape Irrigation)**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	\$0.063	\$1,060,145	\$1,267,734	\$207,589	1.20
TRC	\$0.063	\$1,060,145	\$1,152,486	\$92,341	1.09
UCT	\$0.032	\$537,216	\$1,152,486	\$615,270	2.15
RIM		\$2,001,074	\$1,152,486	(\$848,588)	0.58
PCT		\$878,524	\$1,819,453	\$940,929	2.07
Lifecycle Revenue Impacts (\$/kWh)					\$0.000023983



Discounted Participant Payback (years)	2.53
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**Table E7. Idaho Agricultural 2017 Gross
(2015 Decrement East Industrial 40% – Load Shape Irrigation)**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	\$0.055	\$668,797	\$973,954	\$305,156	1.46
TRC	\$0.055	\$668,797	\$885,413	\$216,615	1.32
UCT	\$0.030	\$358,680	\$885,413	\$526,732	2.47
RIM		\$1,440,509	\$885,413	(\$555,096)	0.61
PCT		\$522,206	\$1,293,917	\$771,711	2.48
Lifecycle Revenue Impacts (\$/kWh)					\$0.000016291
Discounted Participant Payback (years)					2.95

Compressed Air

Table E8, Table E9, and Table E10 show the compressed air end-use category cost-effectiveness results for net evaluated savings. The compressed air end-use category proved cost-effective from all test perspectives except the RIM perspective (Table E8).

**Table E8. Idaho Compressed Air 2016-2017 Net
(2015 Decrement East Industrial 40% – Load Shape Machinery)**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	\$0.051	\$195,043	\$282,171	\$87,128	1.45
TRC	\$0.051	\$195,043	\$256,519	\$61,476	1.32
UCT	\$0.027	\$103,914	\$256,519	\$152,605	2.47
RIM		\$362,921	\$256,519	(\$106,402)	0.71
PCT		\$185,260	\$372,831	\$187,571	2.01
Lifecycle Revenue Impacts (\$/kWh)					\$0.000002890
Discounted Participant Payback (years)					5.44

**Table E9. Idaho Compressed Air 2016 Net
(2015 Decrement East Industrial 40% – Load Shape Machinery)**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	\$0.052	\$56,917	\$77,931	\$21,014	1.37
TRC	\$0.052	\$56,917	\$70,846	\$13,929	1.24
UCT	\$0.025	\$27,220	\$70,846	\$43,626	2.60
RIM		\$101,475	\$70,846	(\$30,629)	0.70
PCT		\$57,013	\$106,592	\$49,580	1.87
Lifecycle Revenue Impacts (\$/kWh)					\$0.000000866
Discounted Participant Payback (years)					5.38

**Table E10. Idaho Compressed Air 2017 Net
(2015 Decrement East Industrial 40% – Load Shape Machinery)**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	\$0.050	\$147,325	\$217,842	\$70,517	1.48
TRC	\$0.050	\$147,325	\$198,038	\$50,713	1.34
UCT	\$0.028	\$81,802	\$198,038	\$116,237	2.42
RIM		\$278,858	\$198,038	(\$80,820)	0.71
PCT		\$136,788	\$283,970	\$147,181	2.08
Lifecycle Revenue Impacts (\$/kWh)	\$0.000002270				
Discounted Participant Payback (years)	4.46				

Table E11, Table E12, and Table E13 show the compressed air end-use category cost-effectiveness results for gross evaluated savings. The compressed air end-use category proved cost-effective from all test perspectives except the RIM perspective (Table E11).

**Table E11. Idaho Compressed Air 2016-2017 Gross
(2015 Decrement East Industrial 40% – Load Shape Machinery)**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	\$0.049	\$224,685	\$335,918	\$111,233	1.50
TRC	\$0.049	\$224,685	\$305,380	\$80,695	1.36
UCT	\$0.023	\$103,914	\$305,380	\$201,465	2.94
RIM		\$412,255	\$305,380	(\$106,876)	0.74
PCT		\$185,260	\$372,831	\$187,571	2.01
Lifecycle Revenue Impacts (\$/kWh)	\$0.000002903				
Discounted Participant Payback (years)	5.44				

**Table E12. Idaho Compressed Air 2016 Gross
(2015 Decrement East Industrial 40% – Load Shape Machinery)**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	\$0.051	\$66,039	\$92,775	\$26,736	1.40
TRC	\$0.051	\$66,039	\$84,341	\$18,302	1.28
UCT	\$0.021	\$27,220	\$84,341	\$57,121	3.10
RIM		\$115,619	\$84,341	(\$31,278)	0.73
PCT		\$57,013	\$106,592	\$49,580	1.87
Lifecycle Revenue Impacts (\$/kWh)	\$0.000000884				
Discounted Participant Payback (years)	5.38				



**Table E13. Idaho Compressed Air 2017 Gross
(2015 Decrement East Industrial 40% – Load Shape Machinery)**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	\$0.048	\$169,211	\$259,336	\$90,125	1.53
TRC	\$0.048	\$169,211	\$235,760	\$66,549	1.39
UCT	\$0.023	\$81,802	\$235,760	\$153,958	2.88
RIM		\$316,393	\$235,760	(\$80,633)	0.75
PCT		\$136,788	\$283,970	\$147,181	2.08
Lifecycle Revenue Impacts (\$/kWh)	\$0.000002265				
Discounted Participant Payback (years)	4.46				

Energy Management

Table E14 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 the RIM perspective (Table E14).

**Table E14. Idaho Energy Management 2017 Net
(2015 Decrement East Industrial 40% – Load Shape HVAC)**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	\$0.032	\$36,185	\$131,812	\$95,627	3.64
TRC	\$0.032	\$36,185	\$119,829	\$83,644	3.31
UCT	\$0.097	\$108,401	\$119,829	\$11,428	1.11
RIM		\$198,453	\$119,829	(\$78,624)	0.60
PCT		\$2,874	\$181,835	\$178,961	63.26
Lifecycle Revenue Impacts (\$/kWh)	\$0.000008032				
Discounted Participant Payback (years)	0.03				

Table E15 shows the energy management end-use category cost-effectiveness results for gross evaluated savings. The energy management end-use category proved cost-effective from all test perspectives except the RIM perspective (Table E15).

**Table E15. Idaho Energy Management 2017 Gross
(2015 Decrement East Industrial 40% – Load Shape HVAC)**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	\$0.028	\$36,645	\$156,919	\$120,274	4.28
TRC	\$0.028	\$36,645	\$142,654	\$106,009	3.89
UCT	\$0.082	\$108,401	\$142,654	\$34,253	1.32
RIM		\$215,606	\$142,654	(\$72,952)	0.66
PCT		\$2,874	\$181,835	\$178,961	63.26
Lifecycle Revenue Impacts (\$/kWh)	\$0.000007452				
Discounted Participant Payback (years)	0.03				

HVAC

Table E16, Table E17, and Table E18 show the HVAC end-use category cost-effectiveness results for net evaluated savings. The HVAC end-use category proved cost-effective from all test perspectives (Table E16).

**Table E16. Idaho HVAC 2016-2017 Net
(2015 Decrement East Commercial Cooling 14% – Load Shape Cooling)**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	\$0.042	\$626,185	\$2,386,455	\$1,760,270	3.81
TRC	\$0.042	\$626,185	\$2,169,505	\$1,543,320	3.46
UCT	\$0.026	\$391,756	\$2,169,505	\$1,777,749	5.54
RIM		\$1,727,502	\$2,169,505	\$442,003	1.26
PCT		\$719,715	\$2,288,379	\$1,568,665	3.18
Lifecycle Revenue Impacts (\$/kWh)	(\$0.000012005)				
Discounted Participant Payback (years)	3.19				

**Table E17. Idaho HVAC 2016 Net
(2015 Decrement East Commercial Cooling 14% – Load Shape Cooling)**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	\$0.053	\$427,607	\$1,265,062	\$837,455	2.96
TRC	\$0.053	\$427,607	\$1,150,056	\$722,450	2.69
UCT	\$0.029	\$235,295	\$1,150,056	\$914,761	4.89
RIM		\$957,640	\$1,150,056	\$192,416	1.20
PCT		\$543,518	\$1,272,275	\$728,757	2.34
Lifecycle Revenue Impacts (\$/kWh)	(\$0.000005438)				
Discounted Participant Payback (years)	4.06				



**Table E18. Idaho HVAC 2017 Net
(2015 Decrement East Commercial Cooling 14% – Load Shape Cooling)**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	\$0.029	\$211,803	\$1,196,078	\$984,274	5.65
TRC	\$0.029	\$211,803	\$1,087,343	\$875,540	5.13
UCT	\$0.023	\$166,881	\$1,087,343	\$920,463	6.52
RIM		\$821,134	\$1,087,343	\$266,209	1.32
PCT		\$187,932	\$1,083,777	\$895,845	5.77
Lifecycle Revenue Impacts (\$/kWh)	(\$0.000007477)				
Discounted Participant Payback (years)	1.23				

Table E19, Table E20, and Table E21 show the HVAC end-use category cost-effectiveness results for gross evaluated savings. The HVAC end-use category proved cost-effective from all test perspectives (Table E19).

**Table E19. Idaho HVAC 2016-2017 Gross
(2015 Decrement East Commercial Cooling 14% – Load Shape Cooling)**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	\$0.038	\$878,085	\$3,671,469	\$2,793,384	4.18
TRC	\$0.038	\$878,085	\$3,337,699	\$2,459,615	3.80
UCT	\$0.017	\$391,756	\$3,337,699	\$2,945,944	8.52
RIM		\$2,446,749	\$3,337,699	\$890,950	1.36
PCT		\$719,715	\$2,288,379	\$1,568,665	3.18
Lifecycle Revenue Impacts (\$/kWh)	(\$0.000024198)				
Discounted Participant Payback (years)	3.19				

**Table E20. Idaho HVAC 2016 Gross
(2015 Decrement East Commercial Cooling 14% – Load Shape Cooling)**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	\$0.050	\$617,838	\$1,946,249	\$1,328,412	3.15
TRC	\$0.050	\$617,838	\$1,769,318	\$1,151,480	2.86
UCT	\$0.019	\$235,295	\$1,769,318	\$1,534,023	7.52
RIM		\$1,346,595	\$1,769,318	\$422,722	1.31
PCT		\$543,518	\$1,272,275	\$728,757	2.34
Lifecycle Revenue Impacts (\$/kWh)	(\$0.000011947)				
Discounted Participant Payback (years)	4.06				

**Table E21. Idaho HVAC 2017 Gross
(2015 Decrement East Commercial Cooling 14% – Load Shape Cooling)**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	\$0.024	\$277,579	\$1,840,119	\$1,562,540	6.63
TRC	\$0.024	\$277,579	\$1,672,836	\$1,395,257	6.03
UCT	\$0.015	\$166,881	\$1,672,836	\$1,505,955	10.02
RIM		\$1,173,424	\$1,672,836	\$499,411	1.43
PCT		\$187,932	\$1,083,777	\$895,845	5.77
Lifecycle Revenue Impacts (\$/kWh)	(\$0.000014026)				
Discounted Participant Payback (years)	1.23				

Lighting

Table E22, Table E23, and Table E24 show the lighting end-use category cost-effectiveness results for net evaluated savings. The lighting end-use category proved cost-effective from all test perspectives except for the RIM perspective (Table E22).

**Table E22. Idaho Lighting 2016-2017 Net
(2015 Decrement East Commercial Lighting 53% – Load Shape Lighting)**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	\$0.040	\$5,572,888	\$11,092,040	\$5,519,152	1.99
TRC	\$0.040	\$5,572,888	\$10,083,673	\$4,510,785	1.81
UCT	\$0.025	\$3,498,903	\$10,083,673	\$6,584,770	2.88
RIM		\$15,978,732	\$10,083,673	(\$5,895,059)	0.63
PCT		\$4,753,124	\$16,178,575	\$11,425,451	3.40
Lifecycle Revenue Impacts (\$/kWh)	\$0.000160111				
Discounted Participant Payback (years)	2.40				

**Table E23. Idaho Lighting 2016 Net
(2015 Decrement East Commercial Lighting 53% – Load Shape Lighting)**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	\$0.039	\$3,382,051	\$6,311,153	\$2,929,102	1.87
TRC	\$0.039	\$3,382,051	\$5,737,412	\$2,355,361	1.70
UCT	\$0.023	\$1,964,157	\$5,737,412	\$3,773,254	2.92
RIM		\$9,683,483	\$5,737,412	(\$3,946,071)	0.59
PCT		\$2,981,459	\$9,909,005	\$6,927,545	3.32
Lifecycle Revenue Impacts (\$/kWh)	\$0.000116534				
Discounted Participant Payback (years)	2.19				



**Table E24. Idaho Lighting 2017 Net
(2015 Decrement East Commercial Lighting 53% – Load Shape Lighting)**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	\$0.041	\$2,336,746	\$5,099,295	\$2,762,548	2.18
TRC	\$0.041	\$2,336,746	\$4,635,722	\$2,298,976	1.98
UCT	\$0.028	\$1,636,960	\$4,635,722	\$2,998,762	2.83
RIM		\$6,714,513	\$4,635,722	(\$2,078,790)	0.69
PCT		\$1,889,658	\$6,687,124	\$4,797,466	3.54
Lifecycle Revenue Impacts (\$/kWh)	\$0.000058384				
Discounted Participant Payback (years)	1.72				

Table E25, Table E26, Table E27 show the lighting end-use category cost-effectiveness results for gross evaluated savings. The lighting end-use category proved cost-effective from all test perspectives except for the RIM perspective (Table E25).

**Table E25. Idaho Lighting 2016-2017 Gross
(2015 Decrement East Commercial Lighting 53% – Load Shape Lighting)**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	\$0.039	\$6,095,732	\$12,462,967	\$6,367,235	2.04
TRC	\$0.039	\$6,095,732	\$11,329,970	\$5,234,238	1.86
UCT	\$0.022	\$3,498,903	\$11,329,970	\$7,831,066	3.24
RIM		\$17,521,183	\$11,329,970	(\$6,191,213)	0.65
PCT		\$4,753,124	\$16,178,575	\$11,425,451	3.40
Lifecycle Revenue Impacts (\$/kWh)	\$0.000168155				
Discounted Participant Payback (years)	2.40				

**Table E26. Idaho Lighting 2016 Gross
(2015 Decrement East Commercial Lighting 53% – Load Shape Lighting)**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	\$0.038	\$3,710,012	\$7,091,183	\$3,381,171	1.91
TRC	\$0.038	\$3,710,012	\$6,446,530	\$2,736,518	1.74
UCT	\$0.020	\$1,964,157	\$6,446,530	\$4,482,373	3.28
RIM		\$10,637,557	\$6,446,530	(\$4,191,027)	0.61
PCT		\$2,981,459	\$9,909,005	\$6,927,545	3.32
Lifecycle Revenue Impacts (\$/kWh)	\$0.000123768				
Discounted Participant Payback (years)	2.19				

**Table E27. Idaho Lighting 2017 Gross
(2015 Decrement East Commercial Lighting 53% – Load Shape Lighting)**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	\$0.039	\$2,544,609	\$5,729,544	\$3,184,936	2.25
TRC	\$0.039	\$2,544,609	\$5,208,677	\$2,664,068	2.05
UCT	\$0.025	\$1,636,960	\$5,208,677	\$3,571,717	3.18
RIM		\$7,342,075	\$5,208,677	(\$2,133,398)	0.71
PCT		\$1,889,658	\$6,687,124	\$4,797,466	3.54
Lifecycle Revenue Impacts (\$/kWh)	\$0.000059917				
Discounted Participant Payback (years)	1.72				

Motor Systems

Table E28, Table E29, and Table E30 show the motor systems end-use category cost-effectiveness results for net evaluated savings. The motor systems end-use category proved cost-effective from the UCT and PCT perspectives (Table E28).

**Table E28. Idaho Motor Systems 2016-2017 Net
(2015 Decrement East Industrial 40% – Load Shape Machinery)**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	\$0.089	\$406,893	\$334,387	(\$72,507)	0.82
TRC	\$0.089	\$406,893	\$303,988	(\$102,905)	0.75
UCT	\$0.024	\$109,381	\$303,988	\$194,607	2.78
RIM		\$419,562	\$303,988	(\$115,574)	0.72
PCT		\$357,291	\$371,023	\$13,732	1.04
Lifecycle Revenue Impacts (\$/kWh)	\$0.000003027				
Discounted Participant Payback (years)	14.79				

**Table E29. Idaho Motor Systems 2016 Net
(2015 Decrement East Industrial 40% – Load Shape Machinery)**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	\$0.059	\$138,752	\$169,583	\$30,831	1.22
TRC	\$0.059	\$138,752	\$154,167	\$15,414	1.11
UCT	\$0.022	\$51,713	\$154,167	\$102,453	2.98
RIM		\$213,121	\$154,167	(\$58,954)	0.72
PCT		\$117,434	\$190,987	\$73,553	1.63
Lifecycle Revenue Impacts (\$/kWh)	\$0.000001601				
Discounted Participant Payback (years)	6.84				



**Table E30. Idaho Motor Systems 2017 Net
(2015 Decrement East Industrial 40% – Load Shape Machinery)**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	\$0.121	\$286,000	\$175,779	(\$110,220)	0.61
TRC	\$0.121	\$286,000	\$159,799	(\$126,200)	0.56
UCT	\$0.026	\$61,508	\$159,799	\$98,291	2.60
RIM		\$220,190	\$159,799	(\$60,390)	0.73
PCT		\$255,832	\$192,027	(\$63,804)	0.75
Lifecycle Revenue Impacts (\$/kWh)	\$0.000001630				
Discounted Participant Payback (years)	N/A				

Table E31, Table E32, and Table E33 show the motor systems end-use category cost-effectiveness results for gross evaluated savings. The motor systems end-use category proved cost-effective from the UCT and PCT perspectives (Table E31).

**Table E31. Idaho Motor Systems 2016-2017 Gross
(2015 Decrement East Industrial 40% – Load Shape Machinery)**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	\$0.089	\$399,748	\$327,830	(\$71,917)	0.82
TRC	\$0.089	\$399,748	\$298,027	(\$101,720)	0.75
UCT	\$0.024	\$109,381	\$298,027	\$188,646	2.72
RIM		\$413,480	\$298,027	(\$115,452)	0.72
PCT		\$357,291	\$371,023	\$13,732	1.04
Lifecycle Revenue Impacts (\$/kWh)	\$0.000003024				
Discounted Participant Payback (years)	14.79				

**Table E32. Idaho Motor Systems 2016 Gross
(2015 Decrement East Industrial 40% – Load Shape Machinery)**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	\$0.059	\$136,403	\$166,258	\$29,855	1.22
TRC	\$0.059	\$136,403	\$151,144	\$14,740	1.11
UCT	\$0.022	\$51,713	\$151,144	\$99,430	2.92
RIM		\$209,956	\$151,144	(\$58,812)	0.72
PCT		\$117,434	\$190,987	\$73,553	1.63
Lifecycle Revenue Impacts (\$/kWh)	\$0.000001597				
Discounted Participant Payback (years)	6.84				

**Table E33. Idaho Motor Systems 2017 Gross
(2015 Decrement East Industrial 40% – Load Shape Machinery)**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	\$0.121	\$280,883	\$172,333	(\$108,550)	0.61
TRC	\$0.121	\$280,883	\$156,666	(\$124,217)	0.56
UCT	\$0.027	\$61,508	\$156,666	\$95,158	2.55
RIM		\$217,078	\$156,666	(\$60,412)	0.72
PCT		\$255,832	\$192,027	(\$63,804)	0.75
Lifecycle Revenue Impacts (\$/kWh)	\$0.000001630				
Discounted Participant Payback (years)	N/A				

Other

Table E34, Table E35, and Table E36 show the other end-use category cost-effectiveness results for net evaluated savings. The other end-use category proved cost-effective from all test perspectives except for the RIM perspective (Table E34).

**Table E34. Idaho Other 2016-2017 Net
(2015 Decrement East Water Heating 53% – Load Shape Water Heat)
(2015 Decrement East Commercial Cooling 14% – Load Shape Cooling)**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	\$0.108	\$208,730	\$239,452	\$30,722	1.15
TRC	\$0.108	\$208,730	\$217,684	\$8,954	1.04
UCT	\$0.050	\$95,840	\$217,684	\$121,844	2.27
RIM		\$265,017	\$217,684	(\$47,333)	0.82
PCT		\$202,208	\$257,161	\$54,954	1.27
Lifecycle Revenue Impacts (\$/kWh)	\$0.000001240				
Discounted Participant Payback (years)	7.75				

**Table E35. Idaho Other 2016 Net
(2015 Decrement East Water Heating 53% – Load Shape Water Heat)
(2015 Decrement East Commercial Cooling 14% – Load Shape Cooling)**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	\$0.120	\$159,398	\$144,610	(\$14,788)	0.91
TRC	\$0.120	\$159,398	\$131,463	(\$27,934)	0.82
UCT	\$0.050	\$65,918	\$131,463	\$65,546	1.99
RIM		\$181,690	\$131,463	(\$50,227)	0.72
PCT		\$156,111	\$175,540	\$19,429	1.12
Lifecycle Revenue Impacts (\$/kWh)	\$0.000001364				
Discounted Participant Payback (years)	9.53				



**Table E36. Idaho Other 2017 Net
(2015 Decrement East Water Heating 53% – Load Shape Water Heat)
(2015 Decrement East Commercial Cooling 14% – Load Shape Cooling)**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	\$0.082	\$52,618	\$101,159	\$48,541	1.92
TRC	\$0.082	\$52,618	\$91,963	\$39,345	1.75
UCT	\$0.050	\$31,915	\$91,963	\$60,048	2.88
RIM		\$88,877	\$91,963	\$3,086	1.03
PCT		\$49,166	\$87,057	\$37,891	1.77
Lifecycle Revenue Impacts (\$/kWh)	(\$0.000000083)				
Discounted Participant Payback (years)	4.99				

Table E37, Table E38, and Table E39 show the other end-use category cost-effectiveness results for gross evaluated savings. The other end-use category proved cost-effective from all test perspectives except for the RIM perspective (Table E37).

**Table E37. Idaho Other 2016-2017 Gross
(2015 Decrement East Water Heating 53% – Load Shape Water Heat)
(2015 Decrement East Commercial Cooling 14% – Load Shape Cooling)**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	\$0.107	\$230,973	\$269,054	\$38,081	1.16
TRC	\$0.107	\$230,973	\$244,594	\$13,621	1.06
UCT	\$0.044	\$95,840	\$244,594	\$148,754	2.55
RIM		\$285,930	\$244,594	(\$41,336)	0.86
PCT		\$202,208	\$257,165	\$54,957	1.27
Lifecycle Revenue Impacts (\$/kWh)	\$0.000001083				
Discounted Participant Payback (years)	7.75				

**Table E38. Idaho Other 2016 Gross
(2015 Decrement East Water Heating 53% – Load Shape Water Heat)
(2015 Decrement East Commercial Cooling 14% – Load Shape Cooling)**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	\$0.118	\$176,570	\$162,483	(\$14,087)	0.92
TRC	\$0.118	\$176,570	\$147,712	(\$28,858)	0.84
UCT	\$0.044	\$65,918	\$147,712	\$81,794	2.24
RIM		\$195,999	\$147,712	(\$48,287)	0.75
PCT		\$156,111	\$175,540	\$19,429	1.12
Lifecycle Revenue Impacts (\$/kWh)	\$0.000001311				
Discounted Participant Payback (years)	9.53				

**Table E39. Idaho Other 2017 Gross
(2015 Decrement East Water Heating 53% – Load Shape Water Heat)
(2015 Decrement East Commercial Cooling 14% – Load Shape Cooling)**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	\$0.081	\$58,026	\$113,668	\$55,642	1.96
TRC	\$0.081	\$58,026	\$103,335	\$45,309	1.78
UCT	\$0.044	\$31,915	\$103,335	\$71,420	3.24
RIM		\$95,920	\$103,335	\$7,415	1.08
PCT		\$49,166	\$87,060	\$37,894	1.77
Lifecycle Revenue Impacts (\$/kWh)					(\$0.00000200)
Discounted Participant Payback (years)					4.99

Refrigeration

Table E40, Table E41, and Table E42 show the refrigeration end-use category cost-effectiveness results for net evaluated savings. The refrigeration end-use category proved cost-effective from all test perspectives except for the RIM perspective (Table E40).

**Table E40. Idaho Refrigeration 2016-2017 Net
(2015 Decrement East Industrial 40% – Load Shape Machinery)**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	\$0.044	\$307,755	\$515,317	\$207,562	1.67
TRC	\$0.044	\$307,755	\$468,470	\$160,715	1.52
UCT	\$0.027	\$191,477	\$468,470	\$276,993	2.45
RIM		\$665,570	\$468,470	(\$197,100)	0.70
PCT		\$301,326	\$731,448	\$430,122	2.43
Lifecycle Revenue Impacts (\$/kWh)					\$0.000005163
Discounted Participant Payback (years)					4.23

**Table E41. Idaho Refrigeration 2016 Net
(2015 Decrement East Industrial 40% – Load Shape Machinery)**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	\$0.050	\$126,974	\$181,367	\$54,393	1.43
TRC	\$0.050	\$126,974	\$164,879	\$37,906	1.30
UCT	\$0.023	\$58,879	\$164,879	\$106,001	2.80
RIM		\$231,690	\$164,879	(\$66,811)	0.71
PCT		\$135,139	\$260,392	\$125,253	1.93
Lifecycle Revenue Impacts (\$/kWh)					\$0.000001955
Discounted Participant Payback (years)					5.42



**Table E42. Idaho Refrigeration 2017 Net
(2015 Decrement East Industrial 40% – Load Shape Machinery)**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	\$0.040	\$192,822	\$356,191	\$163,370	1.85
TRC	\$0.040	\$192,822	\$323,810	\$130,988	1.68
UCT	\$0.030	\$141,429	\$323,810	\$182,381	2.29
RIM		\$462,777	\$323,810	(\$138,967)	0.70
PCT		\$177,255	\$502,429	\$325,174	2.83
Lifecycle Revenue Impacts (\$/kWh)	\$0.000003731				
Discounted Participant Payback (years)	2.60				

Table E43, Table E44, and Table E45 show the refrigeration end-use category cost-effectiveness results for gross evaluated savings. The refrigeration end-use category proved cost-effective from all test perspectives except for the RIM perspective (Table E43).

**Table E43. Idaho Refrigeration 2016-2017 Gross
(2015 Decrement East Industrial 40% – Load Shape Machinery)**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	\$0.041	\$377,060	\$669,243	\$292,183	1.77
TRC	\$0.041	\$377,060	\$608,403	\$231,343	1.61
UCT	\$0.021	\$191,477	\$608,403	\$416,926	3.18
RIM		\$807,183	\$608,403	(\$198,780)	0.75
PCT		\$301,326	\$731,448	\$430,122	2.43
Lifecycle Revenue Impacts (\$/kWh)	\$0.000005207				
Discounted Participant Payback (years)	4.23				

**Table E44. Idaho Refrigeration 2016 Gross
(2015 Decrement East Industrial 40% – Load Shape Machinery)**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	\$0.048	\$158,056	\$235,542	\$77,486	1.49
TRC	\$0.048	\$158,056	\$214,129	\$56,073	1.35
UCT	\$0.018	\$58,879	\$214,129	\$155,250	3.64
RIM		\$283,309	\$214,129	(\$69,180)	0.76
PCT		\$135,139	\$260,392	\$125,253	1.93
Lifecycle Revenue Impacts (\$/kWh)	\$0.000001955				
Discounted Participant Payback (years)	5.42				

**Table E45. Idaho Refrigeration 2017 Gross
(2015 Decrement East Industrial 40% – Load Shape Machinery)**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	\$0.038	\$233,590	\$462,586	\$228,996	1.98
TRC	\$0.038	\$233,590	\$420,533	\$186,942	1.80
UCT	\$0.023	\$141,429	\$420,533	\$279,103	2.97
RIM		\$558,764	\$420,533	(\$138,231)	0.75
PCT		\$177,255	\$502,429	\$325,174	2.83
Lifecycle Revenue Impacts (\$/kWh)	\$0.000003731				
Discounted Participant Payback (years)	2.60				