



2016-2017 Wyoming *wattsmart* Business Program Evaluation

FINAL REPORT

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Prepared for:

Rocky Mountain Power

1407 West North Temple

Salt Lake City, UT 84116

Prepared by:

Danielle Kolp

Ryan Hughes

Bitsy Broughton

Andrew Carollo

Evan Hatteberg

Steve Cofer

Cadmus

ADM Associates

John Vazquez

Curtis Robbins

VuPoint Research

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Glossary of Terms

Custom Energy Savings Calculation Methodology

Energy savings calculated using a custom methodology require project and site-specific inputs, such as operating hours, average load, and equipment performance. These projects typically do not meet requirements for deemed or prescriptive calculations, described below, and are commonly industrial/process-related. Metered and/or trend data are typically collected during the analysis and/or post-inspection phase of custom projects.

Deemed Energy Savings Calculation Methodology

Energy savings calculated using deemed values refer to one savings factor per measure unit for all projects, regardless of facility type, equipment end use, or operating hours. For example, RMP uses a deemed value of 1,160 kWh/horsepower for all HVAC variable frequency drive projects and a deemed value of 0.37 kWh/CFM for all evaporative cooling projects.

Demand Side Management Central

Demand Side Management Central (DSMC) is Rocky Mountain Power's project management and reporting database, which 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 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 the net-to-gross (NTG) ratio:

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

Freeridership

Freeridership in energy efficiency programs is represented by 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

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

In-Service Rate

The in-service rate (also known as the installation rate) is the proportion of incented measures actually installed.

Net-to-Gross

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

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

Prescriptive Energy Savings Calculation Methodology

Energy savings calculated using a prescriptive methodology or calculator require more than one input to determine energy savings (e.g., HVAC equipment performance, operating hours, and capacity).

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

The Technical Resource Library is the official database repository of measure definitions, which is linked to the DSMC.

Trade Ally

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

Verification Engineer

Verification engineers are third parties hired to verify project savings.

Executive Summary

Through its **wattsmart**[®] Business program, Rocky Mountain Power (RMP) offers services and incentives to help commercial, industrial, and irrigation customers maximize the energy efficiency of their equipment and operations through midstream (distributors/suppliers) and downstream (customer) incentive mechanisms. During the 2016 and 2017 program years, the **wattsmart** Business program reported gross electricity savings of 66,296,892 kWh in Wyoming.

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, Inc.—to manage day-to-day operations of the contracted DSM delivery channel, which RMP primarily uses to offer prescriptive incentives. These are marketed and delivered to customers through local trade allies that join and participate in the **wattsmart** Business Vendor Network as well as through trade allies that are not members of the Network.

RMP contracts with Willdan Energy Solutions for turnkey delivery of the Small Business Direct Install (SBDI) offering as well as customer outreach, energy assessment, and engineering services for Oil and Gas customers. 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 (e.g., 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 Wyoming **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

¹ Typically, managed accounts are larger than 1 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.

- **wattsmart Business (Typical Upgrades and Custom Analysis):** This category includes projects delivered through contracted DSM and internal DSM delivery channels. RMP offered customers prescriptive incentives (Typical Upgrades) for measures such as compressed air, HVAC, advanced rooftop controls, lighting, motors, building shell, food service equipment, irrigation, and oil and gas pump-off controls and submersible pumps. 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:** 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. Effective November 1, 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
- **Midstream:** RMP offered instant point-of-purchase incentives for qualifying LED and reduced wattage fluorescent lamps, purchased from participating lighting distributors. Customers purchasing from nonparticipating suppliers could still apply for incentives post-purchase.
- **Energy Management:** RMP provided expertise and custom incentives for verified savings, achieved through improved operations and through maintenance and management practices. If eligible, capital improvements were incentivized through other **wattsmart** Business program offerings.

Key Findings

Key Impact Evaluation Findings

For the impact evaluation, the Cadmus team analyzed 81 projects that contributed 40% of the 2016 and 2017 program savings. Table 1 summarizes the evaluation findings (e.g., the number of unique projects, gross savings, net savings, precision). Overall, the two years exhibited a 91% gross realization rate, though variability occurred between measure categories. The team calculated NTG as 93%, yielding evaluated net savings of 56,122,453 kWh. Overall, the impact evaluation achieved $\pm 9.3\%$ precision with 90% confidence. Two strata—lighting and motor systems—accounted for 76% of energy savings. The following bullet points describe the key findings for those strata:

- Motor systems accounted for 38.9% of all reported energy savings. The Cadmus team evaluated 20 projects, resulting in a 93% realization rate within the motor systems strata. Five of 136 projects accounted for over 55% of reported energy savings in the motors strata. Results from these projects significantly impacted the total realization rate within the Motor systems strata.

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

- Lighting projects made up the second-highest strata, producing 37% of all reported energy savings. The Cadmus team evaluated 16 lighting projects, accounting for 1% of reported energy savings within the lighting strata. 98% of the lighting projects report savings of less than 1.5% of the total lighting savings reported. Cadmus sampled 16 lighting projects as part of the evaluation which accurately represent the lighting population. Lighting resulted in a 93% realization rate with a precision of 7.7% for that strata. Differences in savings resulted from discrepancies in fixture quantities or claimed hours of use (HOU).

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

Strata	Unique Projects	Reported Gross Savings (kWh)	Evaluated Gross Savings (kWh)	Gross Realization Rate	Precision ^b	NTG	Evaluated Net Savings (kWh)
Irrigation	18	152,218	197,438	130%	53.4%	84%	165,848
Compressed Air	7	1,078,279	1,078,279	100%	0%	100%	1,078,279
HVAC	35	2,271,548	2,349,679	103%	30.5%	98%	2,302,686
Lighting	920	24,825,584	23,067,188	93%	7.7%	92%	21,221,813
Motor Systems	134	25,764,518	24,062,620	93%	16.8%	91%	21,896,984
Oil and Gas	33	10,636,539	8,124,076	76%	16.7%	100%	8,124,076
Other	34	1,568,206	1,433,082	91%	6.6%	93%	1,332,766
Total	1,181	66,296,892	60,312,363	91.0%	9.3%	93%	56,122,453

^aTotals may not sum due to rounding.

^bPrecision at the strata level targeted 20% at 80% confidence, and the overall total at 10% precision at 90% confidence.

Table 2 and Table 3 show impact evaluation findings by program year—for 2016 and 2017, respectively. To perform the analysis, the Cadmus team combined the 2016 and 2017 program years, and applied the overall realization rates to each year.

Table 2. 2016 wattsmart Business Program Savings^a

Strata	Unique Projects	Reported Gross Savings (kWh)	Evaluated Gross Savings (kWh)	Gross Realization Rate	NTG	Evaluated Net Savings (kWh)
Irrigation	9	54,597	70,816	130%	84%	59,486
Compressed Air	3	648,384	648,384	100%	100%	648,384
HVAC	17	950,560	983,255	103%	98%	963,590
Lighting	381	12,546,394	11,657,732	93%	92%	10,725,114
Motor Systems	59	15,085,738	14,089,236	93%	91%	12,821,205
Oil and Gas	10	3,886,646	2,968,579	76%	100%	2,968,579
Other	10	396,396	362,241	91%	93%	337,080
Total	489	33,568,715	30,780,244	91.7%	93%	28,523,242

^aTotals may not sum due to rounding.

Table 3. 2017 wattsmart Business Program Savings^a

Strata	Unique Projects	Reported Gross Savings (kWh)	Evaluated Gross Savings (kWh)	Gross Realization Rate	NTG	Evaluated Net Savings (kWh)
Irrigation	9	97,621	126,622	130%	84%	106,362
Compressed Air	4	429,895	429,895	100%	100%	429,895
HVAC	18	1,320,988	1,366,424	103%	98%	1,339,096
Lighting	539	12,279,190	11,409,455	93%	92%	10,496,699
Motor Systems	75	10,678,780	9,973,384	93%	91%	9,075,779
Oil and Gas	24	6,749,893	5,155,497	76%	100%	5,155,497
Other	23	1,171,810	1,070,841	91%	93%	996,464
Total	692	32,728,177	29,523,119	90.2%	93%	27,599,211

^aTotals may not sum due to rounding.

Key Process Evaluation Findings

Key process evaluation findings follow below. This report’s Process Evaluation section provides more nuanced descriptions of these key findings.

Participant Experience

Typical Upgrades and Custom Analysis:

- Typical Upgrades and Custom Analysis participants across all measure categories reported they were very satisfied with equipment installed through the program and found it very easy (39%) or somewhat easy (57%) to submit the applications.
- Sixty-nine percent of participants reported no challenges in participating in the program; participants reporting challenges (predominately typical upgrades) described difficulties in understanding the program rules and incentive calculations, finding a participating vendor, a desire for earlier information about program changes, and help completing the paperwork.
- Participants reported one or more benefits (n=39):
 - 69% reported lower costs (energy bills [59%], lower maintenance costs [10%])
 - 33% reported reduced energy consumption or demand
 - 21% cited the incentive as a benefit
 - 13% reported increased productivity
- Six of eight participants who reported using a program participating vendor also reported being very satisfied with vendors’ work.

SBDI/SBL:

- While Retail was the largest business sector served by both SBDI and SBL, SBDI reached a wider range of business sectors and extended the program to larger companies (i.e., those with more than 100 employees).
- SBDI and SBL participant satisfaction levels were similar for the contractor’s work, equipment installed, and the program overall.

- SBDI participants who voiced dissatisfaction with the contractors' work (37%, n=24) cited incomplete work, sites left messy or dirty, and contractors who proved difficult to reach or nonresponsive.

Midstream:

- Three Midstream participants were very satisfied with the program overall and with the incentives (n=4); two out of three were very satisfied with assistance provided by the distributor when participants' selecting lighting.

Partial Participants:

- Three (of five) partial participants did not complete projects due to cost (Typical Upgrades), program equipment not meeting their needs (SBDI), or lack of contractor follow-through (SBDI).

Nonparticipants

- Nonparticipants had low awareness levels regarding RMP's technical assistance and financial incentives (29%, n=66); among those who were aware, 26% were very or somewhat likely to participate in the next six months (n=19), though they do not currently see a need or benefit.

Marketing and Outreach

- While Cadmus found the materials provided by RMP did not document a set marketing strategy, brand guidelines were followed, and the media flowchart articulated a mix of multiple touchpoints. This multiple touchpoint approach mixed well, producing easy-to-digest, impactful data, communicated through the brand's voice and through customer testimonials. While the media flowchart addressed media, it did not include timing for emails, bill inserts, or organic social media content.
- Overall (with some exceptions, described in greater detail in the *Wattsmart Advertising and Outreach* section), RMP's collateral pieces, radio spots, videos, and digital assets reflected a cohesive, consistent look that solidly appeared to belong to the same brand family. Collateral materials, however, did not include a direct call to action, and communications materials were copy-heavy, incorporating few (if any) graphs, charts, images, or videos.
- Navigation through individual program offerings shown on the program's website was clear and direct. Information provided within each measure category was useful in achieving a high-level understanding of the steps necessary to initiate a project, while supporting brochures, case studies, detailed incentive lists, and other documents explained program requirements.
- For program subpages, primary navigation options in the center of the page did not mirror the navigation options on the left (and vice versa).

Cost-Effectiveness Results

As shown in Table 4, the program proved cost-effective in the 2016 and 2017 evaluation years from all test perspectives, except for the Ratepayer Impact Measure (RIM) test. From the Total Resource Cost (TRC) Test perspective, the program was cost-effective and had a benefit/cost ratio of 1.31.

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 (PTRC) (TRC + 10% Conservation Adder)	\$0.053	\$27,706,765	\$39,889,380	\$12,182,615	1.44
Total Resource Cost Test (TRC) No Adder	\$0.053	\$27,706,765	\$36,263,073	\$8,556,308	1.31
Utility Cost Test (UCT)	\$0.028	\$14,483,917	\$36,263,073	\$21,779,156	2.50
Ratepayer Impact Measure (RIM) Test		\$55,661,678	\$36,263,073	(\$19,398,606)	0.65
Participant Cost Test (PCT)		\$23,193,990	\$52,721,994	\$29,528,004	2.27
Lifecycle Revenue Impacts (\$/kWh)					\$0.000156652
Discounted Participant Payback (years)					4.04

As the RIM test measures program impacts on customer rates, most energy efficiency programs do not pass RIM (although energy efficiency programs reduce energy delivery costs, they also reduce energy sales). As a result, the average energy rate per unit may increase. A RIM benefit/cost ratio greater than 1 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 prepared the following recommendations (this report’s Conclusions and Recommendations section provides a more complete discussion of the findings and associated recommendations).

Savings Considerations

Recommendation: For Electrically Submersible Pump (ESP) projects, the Cadmus team recommends the following changes:

1. Collect performance metrics for the new high-efficiency ESP and an equivalent industry standard equipment efficiency ESP. Performance metrics include motor size (hp), annual hours of operation (hrs/year), nameplate motor efficiency (%), pump efficiency at design point (%), and specific gravity.
 - Where baseline pump performance metrics are not provided, use 60% pump efficiency (per ESP Market Characterization report, September 2014).
2. Measure pump demand (kW) before and after installation.

Recommendation: Water Shutoff projects, the Cadmus team recommends reporting energy savings as the measured reduction in demand (before and after the project is implemented) multiplied by the annual hours of use. While it is expected that well production (barrels of oil extracted) may increase or decrease with varying success from these projects, an increase in oil production is considered an ancillary benefit and does not impact first year energy savings reported by RMP.

Cadmus did not evaluate any projects where the new pump was controlled by a variable speed drive. If such a condition exists in the future, Cadmus recommends logging pump demand (kW) over a period of 6 weeks to determine the expected pump load profile.

Recommendation: The Cadmus team recommends increasing deemed savings for prescriptive VFD projects to match the Cadmus *2014 Variable Speed Drive Loadshape Project* report for HVAC fan projects (with savings shown in Table 5).

Table 5. Deemed Energy Savings for HVAC Fan Projects

HVAC Fan Motor Type	Deemed Energy Savings (kWh/year/hp) ^a
Supply Fan Motor	2,033
Return Fan Motor	1,788
Exhaust Fan Motor	1,788

^a Deemed savings values based on the Cadmus 2014 *Variable Speed Drive Loadshape Project* report, created for NEEP. Available online: <http://www.neep.org/variable-speed-drive-loadshape-study-final-report>

For central equipment (e.g., hot/chilled water pumps, condenser water pumps, cooling tower fans), the team recommends using average savings from the 2016 PA TRM. Using average energy-savings factors, operating hours, and a default load factor of 75% from the PA TRM, and assuming a motor full-load efficiency of 93% (i.e., the National Electrical Manufacturers Association’s premium efficiency for a 20-horsepower motor), a deemed savings factor results: 1,191 kWh per year, per horsepower.

Recommendation: The Cadmus team recommends implementing a minimum hours of use requirement for prescriptive VFD projects. Requesting expected use data minimizes the chance that prescriptive VFDs will be installed on HVAC equipment with minimal use.

Marketing and Outreach

Recommendations:

- Increase consistency with direct calls to action at the end of all collateral pieces.
- Consider adding graphs, charts, images, and even video to convey information and reduce the need for reading copy-heavy communications materials.
- Consider purchasing the domain “wattsmart.com.” and redirect to “wattsmart.com”; due to the frequency of “wattsmart.com” used to complete a sentence in ad copy, some consumers will not realize that the “.” at the end of the URL in the copy is a period for the sentence end, not part of the URL.
- For the Museum of the Mountain Mad radio spot, Cadmus recommends saying the URL at least twice in a 60-second spot.
- For the Museum of the Mountain Mad digital/social ads, consider adding the time period applicable for the savings shown.
- For the MAVERIK mobile ad, consider incorporating a savings message to inspire further action by the consumer.

- Consider running additional TV spots during colder months (TV watching increases during these cooler months with less daylight).

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.

Small Business Direct Install

Recommendation: Cadmus recommends RMP review Willdan's customer satisfaction feedback periodically throughout 2019 to ensure the customer satisfaction progress already achieved by Willdan, continues until both Willdan and RMP are satisfied the quality of program delivery has stabilized and meets RMP's and Willdan's expectations. Cadmus also recommends customer and contractor satisfaction be evaluated again in the next evaluation period to confirm progress or identify any lingering concerns.

Nonparticipants

Recommendation: Review the marketing strategy and consider increasing marketing outreach to nonparticipants, both through RMP branding efforts and through sector outreach by program administrators. Consider increasing customer segmentation efforts to help trade allies target eligible customers. Target the two largest nonparticipant business sectors (Retail, and Accommodation) 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 **watt**smart 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], and Midstream)
- 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. RMP also contracted with Willdan Energy Services to provide customer outreach, energy assessment, and engineering services for oil and gas sector projects.

The **watt**smart 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.

The **watt**smart 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 launched in November 2016 to replace the SBL offering.

Through the Midstream offering, RMP targets the lighting maintenance market by offering customers instant point-of-purchase incentives on qualified LEDs, reduced wattage fluorescent lamps, and retrofit kits purchased through a participating lighting distributor. Customers purchasing through a nonparticipating distributor do not receive an instant discount, but they may apply to RMP for post-purchase incentives. Nexant also manages the participating distributors delivering this 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 noted 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.

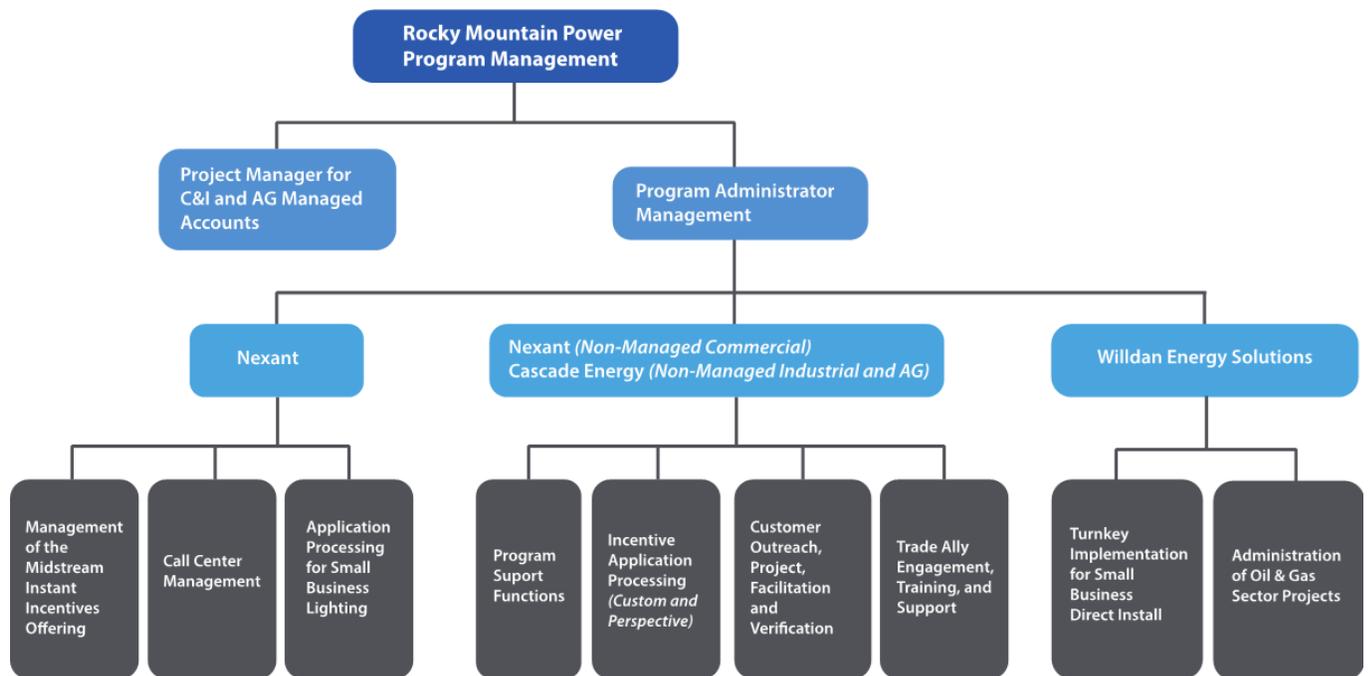
Program Delivery

The RMP program manager, who oversees the **wattsmart** Business program, is responsible for contracting with and managing the program’s administrators (i.e., Willdan Energy Solutions, Cascade Energy, and Nexant, Inc.). In addition, the program manager oversees internal DSM 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.⁴ Willdan conducts all outreach and delivery for the SBDI offering to RMP customers (with assistance from RMP marketing staff) as well as and outreach and administration for oil and gas customers, while RMP delivers Energy Management offerings through a 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 provides an overview of the program management responsibilities.

Figure 1. wattsmart Business Program Delivery Roles



⁴ Managed accounts (typically larger than 1 MW) are handled individually by a RMP project manager. Non-managed accounts typically are less than 1 MW.

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 6 lists evaluation goals, along with corresponding evaluation activities employed to achieve those goals.

Table 6. Evaluation Objectives and Activities

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

Data Collection and Evaluation Activities

The Cadmus team performed on-site visits and engineering analysis for 81 projects, seeking to achieve 90% confidence and ±10% precision at the portfolio level. The team’s process evaluation included a thorough review of data tracking and of program operation and marketing materials. 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.⁵

⁵ Participants are customers completing a measure or project through the program during the 2016 and/or 2017 evaluation periods. Partial participants are customers initiating a project through the program during the same period, but not completing that project. Nonparticipants are customers never initiating or completing a project through the program (at least not in 2016 or 2017).

Impact Sampling and Extrapolation Methodology

Through the Wyoming **wattsmart** Business program, RMP provides incentives for 30 measure types, shown in Table 7. The Cadmus team stratified these 30 measure types into the table’s seven strata. The team designed the sampling plan for 2016 and 2017 combined participation, seeking to achieve approximately $\pm 20\%$ precision at 80% confidence per strata and to meet $\pm 10\%$ precision at 90% confidence at the nonresidential portfolio level. To account for the wide range of project sizes, the team created a plan that divided each end-use strata into a selected group, from which the team hand-selected a few very large sites, combining these with random samples from the remaining projects.

Table 7 shows total project counts and energy savings reported in the tracking database as well as total reported energy savings and sampled projects.

Table 7. Wyoming 2016–2017 wattsmart Business Program Impact Sampling

Strata	Measure Type	Number of Incentivized Projects	Reported Energy Savings (kWh)	Unique Sampled Projects
Irrigation	Irrigation Pumps	4	152,218	8
	Water Distribution Equipment	14		
Compressed Air	Compressed Air	3	1,078,279	3
	Custom	4		
HVAC	Controls and Thermostats	2	2,271,548	13
	Cooling	22		
	Custom	3		
	Heat Pump	3		
	Motors	17		
Lighting	Controls	71	24,825,584	16
	Custom	299		
	Exterior Lighting	39		
	General Illuminance	541		
	Lighting	47		
	Non-General Illuminance	56		
Motor Systems	Custom	34	25,764,518	20
	Electronically Commutated Motor	9		
	Green Motor Rewinds	91		
Oil and Gas	Custom	2	10,636,539	10
	Oil & Gas	4		
	Pumps	28		

Strata	Measure Type	Number of Incentivized Projects	Reported Energy Savings (kWh)	Unique Sampled Projects
Other	Clothes Washers	1	1,568,206	11
	Controls	2		
	Cooking Equipment	2		
	Custom	5		
	Dishwashers	4		
	Grocery Refrigeration	8		
	Holding Cabinet	4		
	Ice Machine	3		
	Insulation	3		
	Lighting	3		
	Office Equipment	1		
	Roof	7		
	Windows	8		
Total		1,344	66,296,892	81

The team divided sampled projects into two categories: selected and random. Per the name, random projects were chosen randomly, with evaluated results extrapolated to the rest of the strata’s population. The team also selected projects with the highest claimed energy savings per strata. These projects were evaluated individually, with the results included within each strata, but the team did not extrapolate associated realization rates to the population. Figure 2 shows how the team applied realization rates for selected and random sites within the HVAC strata to the population. This methodology was applied to each strata.

Figure 2. Realization Rate Extrapolation HVAC Example

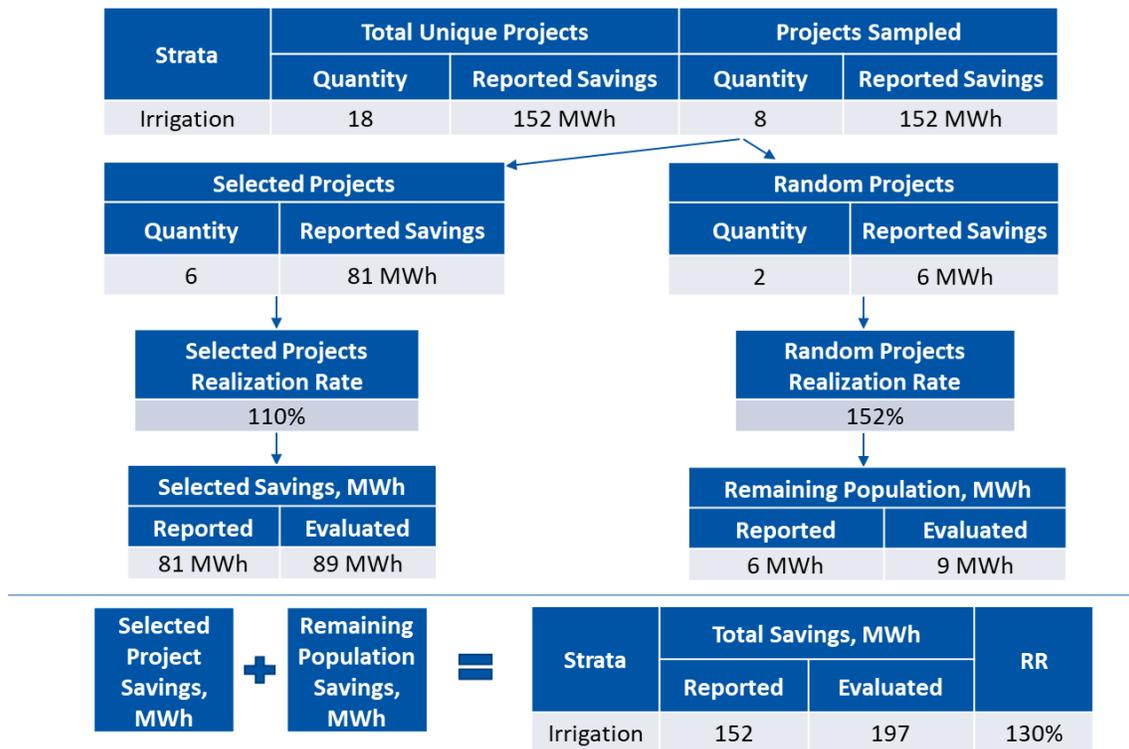


Table 8 shows the total quantity of projects sampled, the associated reported energy savings, and the percentage that these samples represented from the population.

Table 8. Wyoming 2016–2017 wattsmart Business Program Impact Sampling Summary

Strata	Sample Type	Unique Projects Sampled	Reported Energy Savings (kWh)		Percentage kWh Sampled
			Sampled Projects	All Projects	
Irrigation	Selected	6	81,343	87,110	57%
	Random	2	5,767		
Compressed Air	Selected	3	560,752	560,752	52%
	Random	0	N/A		
HVAC	Selected	4	1,072,424	1,445,636	64%
	Random	9	373,212		
Lighting	Selected	0	N/A	186,666	1%
	Random	16	186,666		
Motor Systems	Selected	5	14,310,344	18,502,553	72%
	Random	15	4,192,209		
Oil and Gas	Selected	4	3,729,547	5,051,826	48%
	Random	6	1,322,279		
Other	Selected	4	678,618	844,382	54%
	Random	7	165,764		
Total				26,678,925	40%

Process Sample Design and Data Collection Methods

In conducting the process evaluation, the Cadmus team grouped projects into five categories, defined through conversations with RMP to achieve RMP’s reporting objectives:

- **watt**smart Business (including projects receiving Typical Upgrades incentives or Custom Analysis incentives)
- SBL
- SBDI
- Midstream
- Energy Management

The team developed samples for three customer populations—participants, partial participants, and nonparticipants—using a simple random sampling within each category.⁶ The team defined participants as customers completing Typical Upgrades, Custom Analysis, SBL, SBDI, Midstream 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 or SBDI projects through the program in 2016 or 2017, but not completing those projects. Due to the small sampling frame, the team did not stratify these customers by measure category or other strata. Rather, the team called a census of these respondents. The 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 9 shows the final sample disposition for each data collection activity.⁷ The Surveys section of the Process Evaluation chapter provides a detailed methodology for each surveyed population.

⁶ At RMP’s request, given other planned or ongoing survey activity, all managed accounts were removed from the populations prior to stratification or sampling.

⁷ Cadmus contracted with VuPoint Research to conduct the participant, partial participant, and nonparticipant surveys. A third-party research company, VuPoint’s experience includes 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 achieving the designated quota for each customer segment or exhausting the sample.

Table 9. Wyoming 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
Irrigation	17	15	10	4
Compressed Air	8	5	5	1
HVAC	24	18	12	3
Lighting (other than Midstream, SBL or SBDI)	320	241	27	27
Motor Systems	29	13	9	4
Oil and Gas	6	5	4	1
Other ^a	26	10	8	0
Participant Surveys Small Business Lighting (SBL)	55	53	30	13
Participant Surveys (SBDI)	127	114	43	24
Participant Surveys (Midstream)	18	18	14	4
Participant Survey (Energy Management)	3	2	2	0
Participant Subtotal	633	494	164	81
Partial Participant Surveys				
wattsmart Business	202	9	9	2
SBDI		10	10	3
Nonparticipant Surveys	12,086	8,061	68	68
Total Surveys	12,921	8,574	251	154

^a Other included: Building Shell, Electronics, Food Service Equipment, Appliances, and Refrigeration.

^b The team based the sampling frame on unique customers with contact information, after removing duplicates and managed accounts. Partial participant and nonparticipant populations also were limited to those with a status of Void or Cancelled.

Impact Evaluation

This section provides the **wattsmart** Business program’s impact evaluation findings, resulting from the Cadmus team’s data analysis. This incorporated the following activities:

- Participant surveys
- Partial participant surveys
- Nonparticipant surveys
- Net-to-gross analysis
- Site visits
- Engineering measurements
- Site-level billing analysis

This section addresses two evaluated saving values: gross and net. 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).⁸ Net savings are program savings, net of what would have occurred in the program’s absence. These savings provide observed impacts attributable to the program.

To determine evaluated gross savings, the Cadmus team applied Steps 1 through 4, as shown in Table 10. The team applied the fifth step to determine evaluated net savings.

Table 10. Impact Steps to Determine Evaluated Gross and Net Savings

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

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

Step 2: The team selected a sample of sites from the RMP program database, followed by stratifying the distribution of measures among sampled sites, primarily by end-use type: lighting, HVAC, motor systems, compressed air, irrigation, oil and gas, and other measures. The team completed 81 site visits

⁸ These reports are available online:
[http://www.pacificorp.com/content/dam/pacificorp/doc/Energy_Sources/Demand_Side_Management/2016/2016_WY_Annual_DSM_Report_\(7-13-17\).pdf](http://www.pacificorp.com/content/dam/pacificorp/doc/Energy_Sources/Demand_Side_Management/2016/2016_WY_Annual_DSM_Report_(7-13-17).pdf); and
http://www.pacificorp.com/content/dam/pacificorp/doc/Energy_Sources/Demand_Side_Management/2017/WY_20000-264-EA-16_2017_WY_Annual_DSM_Report_6-25-18.pdf

and desk reviews as part of the 2016 and 2017 program evaluation. Site visits were performed to verify measure installation.

Step 3: The team reviewed all project documentation; developed an evaluation, measurement, and verification plan; and performed site visits to verify the installation, specifications, and operation of incented measures. The team installed light loggers at eight sites and power metering equipment at five sites within the sample.

Step 4: The team reviewed measure savings assumptions, equations, and inputs, including a billing analysis for selected measures. For complicated or custom measures, the team conducted an engineering analysis using the appropriate measurement and verification option within the International Performance Measurement and Verification Protocol. For sites with light loggers or power meters installed, the team used logger data to determine the hours of use (HOU) or power consumption for the metered equipment types. In some instances, the customer provided trend data from their building management system (BMS), which the team used to determine equipment load profiles, HOU, and performance characteristics.

Step 5: The team used participant surveys to calculate freeridership using an industry-standard self-report methodology. In addition, the team surveyed partial participants and nonparticipants to determine if nonparticipant spillover (NPSO) could be credited to the program (which otherwise was not incented).

Site Visits and Engineering Measurements

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

At each site visit, the team used a data collection form and performed the following tasks:

- Verified the installation and operation of equipment receiving incentives, confirming that installed equipment met program eligibility requirements and verifying that the quantity of installed measures matched program documentation
- Collected additional data to inform the savings analyses and performed a detailed review of site project files to collect additional data for each site
 - Where applicable, the team interviewed facility personnel involved with the project, gathering information (e.g., equipment type replaced, hours of operation) that could not be verified on site or through documentation reviews or metering

Overall Evaluated Gross Savings Results

Table 11 presents reported and evaluated gross savings for the 2016 and 2017 program years, indicating a 91% overall realization rate.

Table 11. Reported and Evaluated Gross Savings by Program Year

Program Year	Program Savings (kWh)		Gross Program Realization Rate
	Reported	Evaluated Gross	
2016	33,568,715	30,780,244	91.7%
2017	32,728,177	29,532,119	90.2%
Total	66,296,892	60,312,363	91.0%

Table 12 provides evaluation results for reported and evaluated gross savings, along with realization rates and precision by measure type.

Table 12. Reported and Evaluated Gross wattsmart Business Program Savings by Measure Category (2016–2017)

Strata	Program Savings (kWh)		Realization Rate	Precision ^a
	Reported	Evaluated Gross		
Irrigation	152,218	197,438	130%	53.4%
Compressed Air	1,078,279	1,078,279	100%	0%
HVAC	2,271,548	2,349,679	103%	30.5%
Lighting	24,825,584	23,067,188	93%	7.7%
Motor systems	25,764,518	24,062,620	93%	16.8%
Oil and Gas	10,636,539	8,124,076	76%	16.7%
Other	1,568,206	1,433,082	91%	6.6%
Total	66,296,892	60,312,363	91.0%	9.3%

^aPrecision at the strata level targeted 20% at 80% confidence, and the overall total at 10% precision at 90% confidence.

Evaluated Gross Savings Results by Strata

Lighting

RMP provides incentives for six types of lighting projects: controls, custom, exterior lighting, general illuminance, lighting, and non-general illuminance. These projects apply to renovations or new construction, and involve high-efficiency lighting technologies (e.g., CFLs, LEDs, induction fixtures, occupancy sensors).

For the 2016 and 2017 years, RMP incented 2,680 lighting measures within 930 unique projects, reporting 24,825,584 kWh in energy savings. Incented lighting projects accounted for 37.4% of all reported energy savings in Wyoming. Evaluated energy savings for the lighting strata were 23,067,188 kWh, with a 93% realization rate.

Methodology

The Cadmus team evaluated 16 lighting projects, accounting for 0.8% of all reported energy savings within the lighting strata. RMP used prescriptive calculations for all evaluated projects, and used the FinAnswer Express prescriptive lighting calculator to determine incentive amounts for all lighting

projects in Wyoming.⁹ The FinAnswer Express calculator documents customer information, project locations, light fixture specifications, energy-saving calculations, and financial information. Critical inputs used to calculate energy savings included the following:

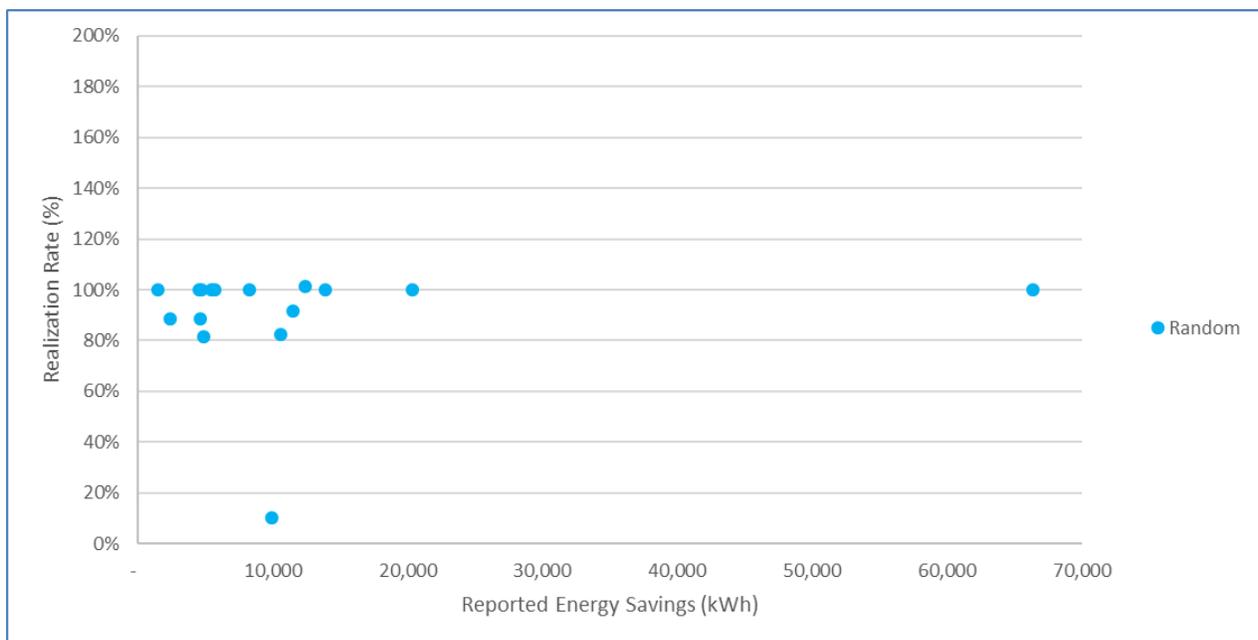
- Lighting operation schedule
- Space name, type, area, and condition
- Baseline lighting fixture location, type, quantity, controls, and wattage
- Proposed lighting fixture location, type, quantity, controls, and wattage

The Cadmus team reviewed the FinAnswer Express calculator methodology and assumptions to determine the applicability for each sampled project. The team also performed site visits at each sampled project to inspect and document installed lighting equipment.

Findings

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

Figure 3. Lighting Sample Results



One site exhibited a realization rate less than 80%. For remaining sites, the Cadmus team did not find (or found nominal) differences between calculated savings and the savings. Table 13 provides specific details for sites achieving greater than 120% or less than 80% realization rates.

⁹ Between 2013 and 2015, RMP combined a number of programs under the **wattsmart** Business Program umbrella: the Energy FinAnswer program rolled into the Custom Analysis delivery channel, and the FinAnswer Express Program rolled into the Typical Upgrades delivery channel within the **wattsmart** Business Program.

Table 13. Lighting Sample Detailed Findings

Project	Project Measures	Reported kWh	Evaluated kWh	Site Realization Rate	Notes
58175041003001-A	Small business direct install	9,888	999	10%	Fixtures installed in two buildings occupied only during the summer months, resulting in lower HOU than reported.

HVAC

RMP incented 107 HVAC measures within 35 unique projects. These projects consisted of unitary air conditioners, heat pumps, packaged terminal heat pump controls, chillers, evaporative cooling systems, indirect/direct evaporative cooling systems, and economizers. RMP reported 2,271,548 kWh in energy savings, accounting for 3.4% of all reported energy savings during the 2016 and 2017 program years. Evaluated energy savings for the HVAC strata were 2,349,679 kWh, with a 103% realization rate.

Methodology

The Cadmus team evaluated 13 HVAC projects, accounting for 63.6% of all reported energy savings within the HVAC strata. Of evaluated projects, RMP used prescriptive calculations for 12 projects and custom calculations for one project.

RMP used one of two prescriptive calculators to determine energy savings and incentive amounts for prescriptive HVAC projects:

1. RMP HVAC Calculator
2. RMP FinAnswer Express Chiller Calculator

These prescriptive calculators documented customer information, project locations, equipment specifications, and energy savings calculations.

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

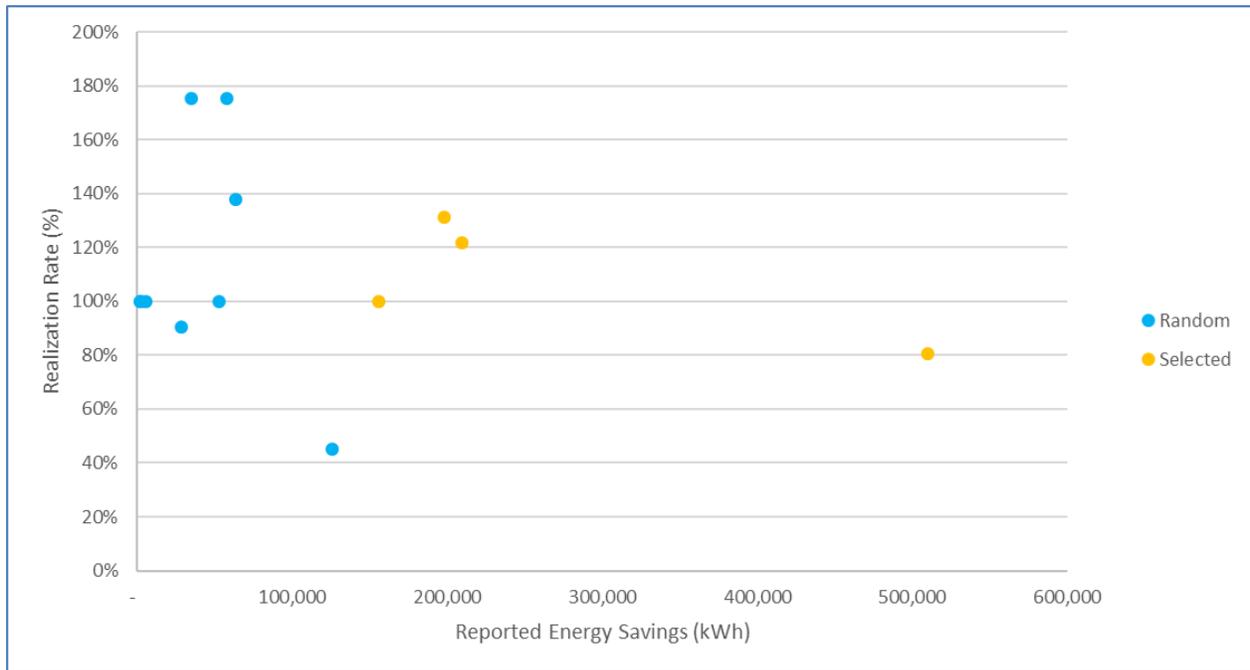
For the project where the administrator used custom calculations, the team reviewed the contractor’s energy analysis report and savings verification report for the energy-savings methodology, inputs, assumptions, and accuracy. Where site findings (including analyses of building management trend data) deviated from claimed equipment quantities, performance specifications, or operation characteristics, the team recreated the custom calculations using the updated information.

For projects where RMP incentivized VFDs installed on HVAC ventilation equipment (e.g., supply fans, return fans, exhaust fans), the Cadmus team evaluated savings using deemed savings amounts identified within the VSD load-shape study.¹⁰

Findings

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

Figure 4. HVAC Sample Results



One site exhibited a realization rate less than 80%, and five sites exhibited realization rates greater than 120%. For the remaining sites, the Cadmus team found no (or nominal) differences between savings and calculated savings. Table 14 provides specific details for sites achieving realization rates greater than 120% or less than 80%.

¹⁰ These deemed savings values were based on the Cadmus' 2014 *Variable Speed Drive Loadshape Project Report* for NEEP. Available online: <http://www.neep.org/variable-speed-drive-loadshape-study-final-report>

Table 14. HVAC Sample Detailed Findings

Project	Project Measures	Reported kWh	Evaluated kWh	Site Realization Rate	Notes
WSBWY_66923	HVAC fans and pumps VFDs	125,749	56,529	45%	17 of 25 VFDs serving AHUs ran at 100% speed
WSBWY_66318	HVAC fans and pumps VFDs, chillers	209,078	254,633	122%	Three of 21 VFDs ran at 100% speed. 18 VFDs evaluated using deemed savings from NEEP loadshape study.
WSBWY_72487	HVAC fans and pumps VFDs, chillers	198,134	260,341	131%	VFDs, heat pumps, chillers; VFDs serving HVAC fans achieved high savings due to NEEP values
WYFX1_001100_2	HVAC fans and pumps VFDs, chillers	63,669	87,638	138%	Evaluated using deemed savings from NEEP loadshape study
WSBWY_69845	HVAC fans and pumps VFDs	58,000	101,650	175%	Evaluated using deemed savings from NEEP loadshape study
WSBWY_70175	HVAC fans and pumps VFDs	34,800	60,990	175%	Evaluated using deemed savings from NEEP loadshape study

Further explanation follows for a few of the more atypical measure-level realization rates within the evaluated projects:

- For projects where VFDs are applied to HVAC fans, RMP uses deemed savings of 1,160 kWh/hp. The Cadmus team evaluated these projects by referencing the 2014 NEEP VSD loadshape study¹⁰ and applying the deemed savings specific to HVAC supply fans, return fans, and exhaust fans. The deemed values from the NEEP loadshape study are based on 13 months of hourly metered data from 191 supply and return fans in the northeast. The study represents the most recent and applicable study of the energy savings impact of variable speed drives on HVAC fans. The revised deemed savings amounts were higher than RMP’s deemed savings value.
- One project (WSBWY_66923) involved installation of 25 variable frequency drives (VFDs) serving HVAC equipment at a high-security facility. While on site, Cadmus observed 17 of the 25 VFDs running at 100% speed. Cadmus reviewed the BMS with the facility staff and determined that VFDs were installed and used for balancing the system during initial installation. Once balanced, the VFDs maintained constant speeds regardless of loads. As VFDs only save energy when running below 100% speed, 17 of the VFDs observed at this facility did not save energy.

Motor Systems

RMP provides incentives for several types of motor systems projects—green motor rewinds, motor upgrades, and VFDs—serving commercial HVAC and industrial processes. RMP incented 150 measures within 134 projects, and reported 25,764,518 kWh in energy savings for the 2016 and 2017 program years. Incentivized motor systems projects accounted for 38.9% of all reported energy savings in Wyoming. Evaluated energy savings for the motor systems strata were 24,062,620 kWh, with a 93% realization rate.

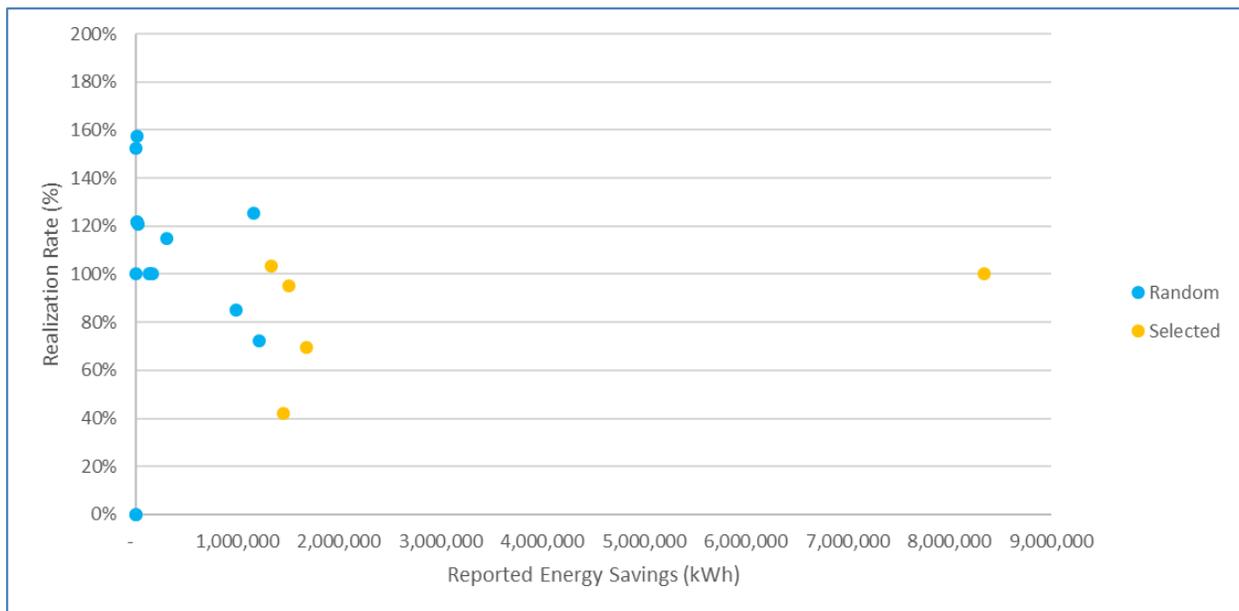
Methodology

The Cadmus team evaluated 20 motor systems projects, accounting for 71.8% of all reported energy savings within the motor systems strata. Of 20 evaluated projects, RMP determined claimed savings using prescriptive calculations for 14 projects and custom calculations for six projects.

For projects where RMP’s implementation contractor used custom calculations to determine energy savings, the team reviewed energy-analysis reports and savings-verification reports for the 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 updated information. The team installed power metering equipment, collecting coincident trend data for two custom projects and site trend data for five additional custom projects. The team analyzed these data to develop load profiles and to determine equipment operating hours.

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

Figure 5. Motor Systems Sample Results



Five sites achieved realization rates below 80%, and six sites achieved realization rates above 120%. The team found no (or nominal) differences in reported savings for the remaining sites. Table 15 provides specific details for sites with realization rates greater than 120% or less than 80%.

Table 15. Motor System Sample Results

Project	Project Measure	Reported kWh	Evaluated kWh	Site Realization Rate	Notes
WYFX1_001231	Green motor rewinds	804	0	0%	Unable to locate motor.
WYFX1_001375	Green motor rewinds	1,052	0	0%	Unable to locate motor. Staff on site mentioned that small motors are often

Project	Project Measure	Reported kWh	Evaluated kWh	Site Realization Rate	Notes
					gathered from a warehouse and installed without proper inventory recording.
WBWY_99444	Compressor Rotor Upgrade	1,449,955	610,127	42%	This project involved the installation of a high-efficiency rotor serving a 4,500 hp compressor for the solvay soda ash production process. The high-efficiency rotor uses slightly less energy, but provides a greater suction power. Savings were evaluated as metered performance before and after the project. Actual metered consumption reduced only slightly.
WBWY_85771	Pump motor retrofit	1,677,000	1,167,560	70%	Water Shutoff Project.
WBWY_85769	Pump motor retrofit	1,213,000	875,670	72%	Water Shutoff Project
WSBWY_70203	Green Motor Rewinds	24,172	29,150	121%	1,000 hp motor found installed. Power logging indicated it operated at ~80% of maximum capacity.
WSBWY_70830	Green Motor Rewinds	17,065	20,753	122%	700 hp motor found installed. Power logging indicated it operated at ~80% of maximum capacity.
WSBWY_69415	Green Motor Rewinds	14,689	17,864	122%	600 hp motor found installed. Power logging indicated it operated at ~80% of maximum capacity.
WBWY_85770	Pump motor retrofit	1,162,000	1,459,450	126%	New pump produces less flow, so baseline pump normalized down by about 20%.
WYFX1_001323_2	Green Motor Rewinds	5,935	9,053	153%	Found on site, running 24/7. The RTF calculator assumed 5,743 HOU.
WSBWY_72283	Electronically commutated motor	13,752	21,656	157%	ECM motors serving exhaust fans. No RTF calculator exists for the exhaust fan size observed. Evaluated savings utilize the methodology outlined in the Arkansas TRM.

Further explanation follows for a few of the more atypical measure-level realization rates within the evaluated projects:

- The Cadmus team evaluated five Water Shutoff projects, incentivized in Wyoming. These projects involved modification to an oil extraction process and installation of a new smaller pump to replace the existing larger pump. These projects resulted in a change in oil production as well as a decrease in energy consumption due to a smaller pump replacing a larger pump. Reported savings for these projects were based on normalizing energy use for the new pump, based on oil production. The team evaluated these projects by comparing energy reduction seen at the utility meter, and considered the change in oil production as an ancillary benefit. As such,

realized energy savings were typically lower than reported due to differences in normalized energy savings and metered energy savings.

- Two motors incentivized for green motor rewind projects could not be located during site visits. Energy savings from these projects are achieved by performing green motor rewinds, resulting in higher motor efficiencies than a normal rewind process. However, savings would be realized only upon placing the motor back in service. As neither motor was found in service, no savings could be realized.

Compressed Air

RMP provides incentives for several types of compressed air projects:

- VFDs serving air compressors
- Air dryers
- Compressed air system setpoint and sequence optimizations
- Air leak reduction
- Zero-loss condensate drains

RMP incented seven measures within seven projects and reported 1,078,279 kWh in energy savings for the 2016 and 2017 program years, accounting for 1.6% of all reported energy savings in Wyoming.

Evaluated energy savings for the compressed air strata were 1,078,279 kWh with a 100% realization rate.

Methodology

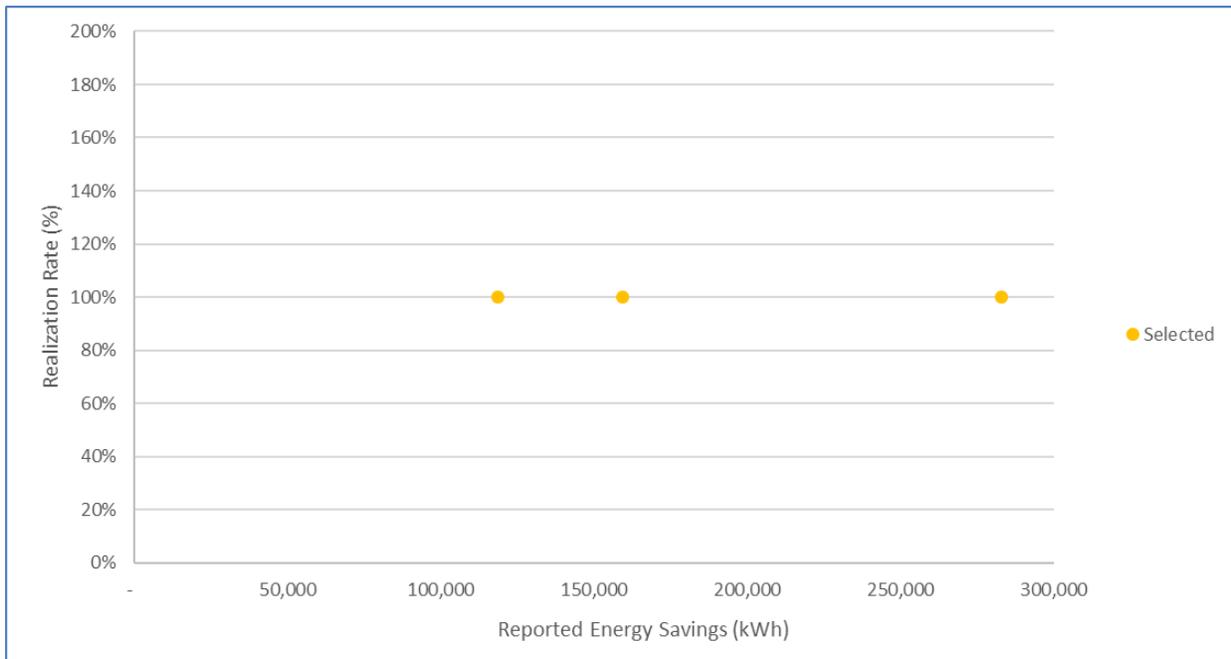
The Cadmus team evaluated three compressed air projects, accounting for 52% of all reported energy savings within the strata. RMP used prescriptive calculations for all evaluated projects.

The team performed site visits to inspect and document installed system specifications and operational setpoints. In evaluating the custom projects, the team reviewed energy-analysis reports and savings-verification reports for their methodology and accuracy, and used site findings to revise calculation inputs where variations occurred.

Findings

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

Figure 6. Compressed Air Sample Results



The Cadmus team found no differences between calculated savings and reported savings, with no sites having realization rates above 120% or below 80%.

Irrigation

RMP provides incentives for multiple types of Irrigation projects:

- Pivots and linear irrigation systems
- Pump upgrades
- System redesigns
- VFDs
- Irrigation hardware upgrades
- Wheel line/hand-line equipment

RMP provided incentives for 40 measures in 18 unique projects, and reported 152,218 kWh in energy savings for the 2016 and 2017 program years. Incented Irrigation projects accounted for 0.2% of all reported energy savings in Wyoming. Evaluated energy savings for the Irrigation strata were 197,438 kWh, with a 130% realization rate.

Methodology

The Cadmus team evaluated eight irrigation projects, accounting for 57.2% of reported energy savings within the Irrigation strata. From evaluated projects, RMP used deemed savings for one project, prescriptive calculations for five projects, and custom calculations for two projects.

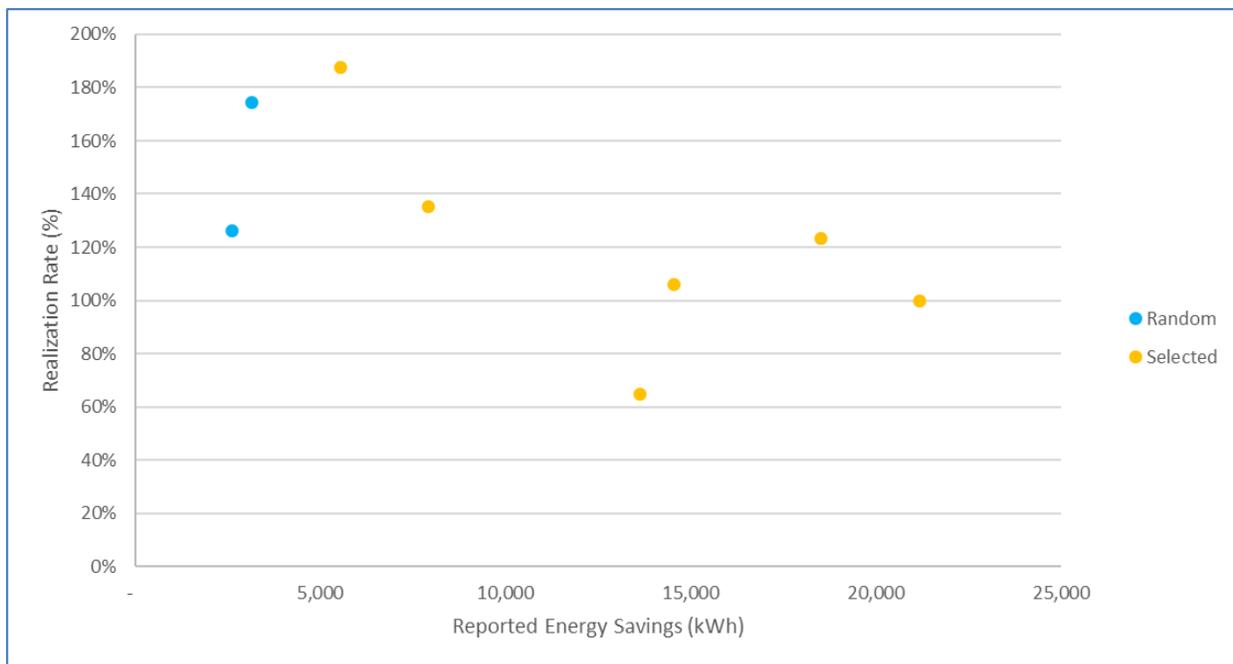
The majority of projects evaluated by the team involved upgrading or replacing irrigation hardware equipment (e.g., gaskets, sprinklers, nozzles, hoses, regulators). These projects claimed savings using a deemed savings value per unit. The team evaluated these projects, using the savings methodology provided within RTF’s irrigation hardware measure. Critical inputs to these calculations included the quantity of equipment, hours of operation per season, and pump pressure.

Two projects involved the installation of a VFD on an irrigation pump. The team evaluated savings by updating the prescriptive Irrigation Pump VFD Savings Estimator v1.4 calculators, based on site findings.

Findings

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

Figure 7. Irrigation Sample Results



Five sites exhibited realization rates greater than 120%, and one site exhibited a realization rate below 80%. Table 16 provides specific details related to these projects.

Table 16. Irrigation Sample Detailed Findings

Project	Project Measures	Reported kWh	Evaluated kWh	Site Realization Rate	Notes
WYC01513	Irrigation Hardware	13,625	8,826	65%	Observed site-specific system pressure and flow setpoints used to update the RTF irrigation calculator.
WYC01469	Irrigation Hardware	18,520	22,817	123%	Observed site-specific system pressure and flow setpoints used to update the RTF irrigation calculator.

Project	Project Measures	Reported kWh	Evaluated kWh	Site Realization Rate	Notes
WYC01712	Irrigation Hardware	2,614	3,297	126%	Observed site-specific system pressure and flow setpoints used to update the RTF irrigation calculator.
WYC01703	Irrigation Hardware	7,909	10,692	135%	Observed site-specific system pressure and flow setpoints used to update the RTF irrigation calculator.
WYC01520	Irrigation Hardware	3,153	5,497	174%	Observed site-specific system pressure and flow setpoints used to update the RTF irrigation calculator.
WYC01316	Irrigation Hardware	5,562	10,429	188%	Observed site-specific system pressure and flow setpoints used to update the RTF irrigation calculator.

The following explanation addresses a few of the more atypical measure-level realization rates:

- All projects involved replacing irrigation hardware (e.g., gaskets, sprinklers, nozzles, hoses, regulators). Reported savings for these projects were based on a deemed savings value per hardware type. The deemed savings' source drew upon RTF data with modifications specific to Wyoming's local conditions. The Cadmus team evaluated these projects using the RTF irrigation hardware measure's calculation methodology and associated calculation tools. The RTF calculator allowed use of site-specific project data collected during site visits to update savings calculations. Site-specific information included HOU, flow rate, and pump pressure. In general, the team determined higher energy savings for irrigation hardware projects due to increased HOU and flowrates.

Other

RMP provides incentives for projects within the "other" category (e.g., building shell measures, BMS controls, insulation, additional measures not fitting into typical categories). RMP incented 59 measures within 33 unique projects, and reported 1,568,206 kWh in energy savings for the 2016 and 2017 program years. Other incented projects accounted for 2.4% of all reported energy savings in Wyoming. Evaluated energy savings for the other strata were 1,433,082 kWh, with a 91% realization rate.

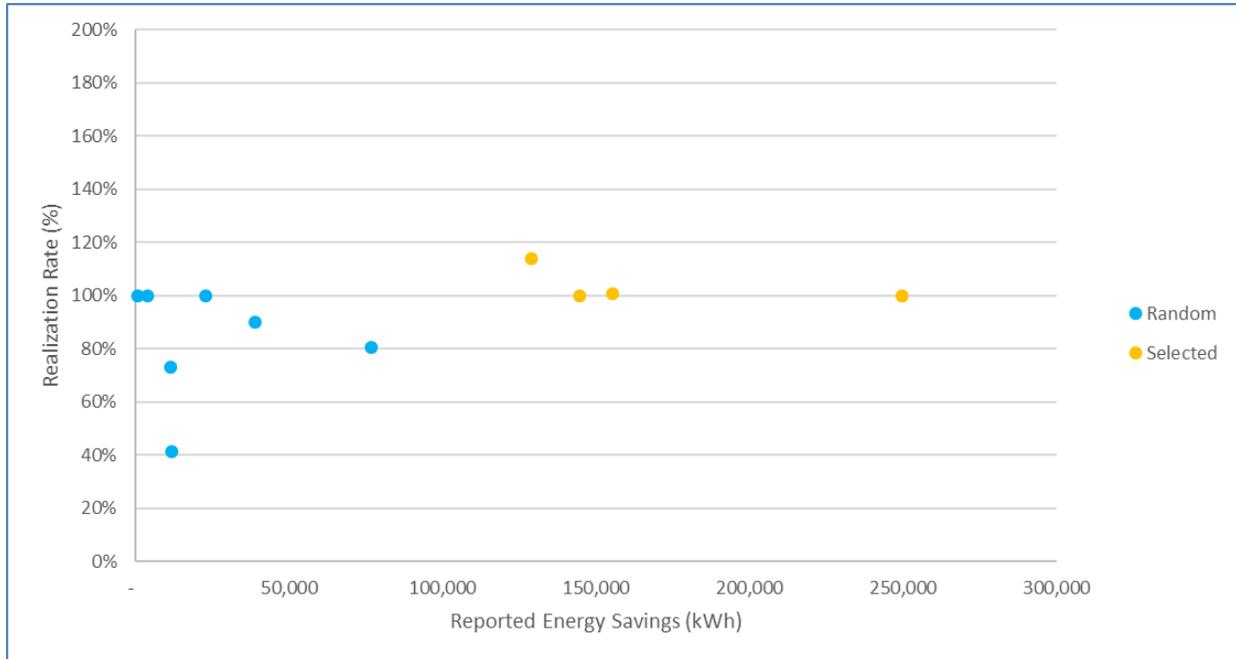
Methodology

The Cadmus team evaluated 11 projects, accounting for 53.8% of the reported energy savings within the other strata. From the evaluated projects, RMP used deemed savings for one project, custom calculations for four projects, and prescriptive calculations for six projects. Where possible, the team utilized RTF calculators for applicable measures. Where savings could not be evaluated with the RTF, the team used the Oak Ridge National Laboratory Cool Roof Calculator, the RMP refrigeration calculator, and custom calculations.

Findings

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

Figure 8. Other Sample Results



Two projects exhibited 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	Site Realization Rate	Notes
WYFX1_001228	Commercial dishwasher	11,863	4,900	41%	Savings were evaluated using MMID 2281 of Focus on Energy’s TRM for stationary, single-tank door, high-temperature electric dishwasher. Baseline energy use was 17,368; ENERGY STAR was 12,468; savings were 4,900.
WYFX1_001222	LED case lighting, anti-sweat heater controls	11,317	8,290	73%	Savings calculated using RTF calculator. Lower energy savings realized due to the prevalence of medium-temperature cases instead of low-temperature cases.

Oil and Gas

RMP provides incentives for projects within the Oil and Gas category, incenting 34 measures within 34 unique projects and reporting 10,636,539 kWh in energy savings for the 2016 and 2017 program years. All projects involved this installation of Electric Submersible Pumps (ESPs) were custom projects

associated with controls or water shutoff opportunities. Oil and Gas incented projects accounted for 16% of all reported energy savings in Wyoming. The Oil and Gas strata achieved 9,502,412 kWh in evaluated savings, with an 89% realization rate.

Methodology

The Cadmus team evaluated 10 projects, accounting for 47.5% of reported energy savings within the Oil and Gas strata. From the evaluated projects, RMP used custom calculations for five projects and prescriptive calculations for five projects.

Findings

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

Figure 9. Oil and Gas Sample Results



Four projects exhibited realization rates below 80%, and one project exhibited realization rates above 120%. Table 18 provides specific details related to those projects.

Table 18. Oil and Gas Sample Detailed Findings

Project	Project Measures	Reported kWh	Evaluated kWh	Site Realization Rate	Notes
WBWY_27802	Water Shutoff Project	389,000	0	0%	Metered demand for new pump is higher than metered demand from original pump.
WYC01371	Electric submersible pump	435,287	0	0%	Metered demand for new pump is higher than metered demand from original pump.

Project	Project Measures	Reported kWh	Evaluated kWh	Site Realization Rate	Notes
WBWY_161917	Electric submersible pump	928,260	455,290	49%	New pump 25% smaller than original pump.
WBWYC01540	Electric submersible pump	257,760	131,114	51%	New pump 39% larger than original pump.

Further explanation follows for a few of the more atypical measure-level realization rates:

- The Cadmus team evaluated eight Electrically Submersible Pump (ESP) projects in Wyoming, which involved replacement of an existing ESP with a high-efficiency ESP. No other modifications were made to the production process. Often, these projects resulted in installing a smaller or larger ESP than originally in place. This revised pump size and performance resulted in an increase or decrease in oil production. Reported savings for these projects were based on normalizing energy use for the new pump, based on oil production. Because these projects only involved a pump system efficiency improvement, Cadmus evaluated these projects by comparing equivalent equipment capacity with a 10% pump system efficiency improvement.¹¹

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).¹²

Further, in estimating NPSO, Cadmus included a series of questions from the 2016–2017 general population survey of Wyoming 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 0% of the 2016–2017 **wattsmart** Business program gross savings. Appendix B. Nonparticipant Spillover provides a detailed explanation of estimated NPSO.

Table 19 presents net savings evaluation results, shown as evaluated gross savings and NTG by program-measure strata. The measure strata freeridership estimates were weighted by their evaluated program energy savings, and spillover values were added to arrive at the program’s overall 93% NTG estimate.

¹¹ 10% pump system efficiency improvement based on Market Characterization High Efficiency Electric Submersible Pumps – Wyoming

¹² The UMP chapter covering estimation of net savings: <http://www.nrel.gov/docs/fy14osti/62678.pdf>

Table 19. wattsmart Business Program NTG Results for 2016–2017

Program Delivery Channel	Measure Responses (n)	Evaluated Gross Program Population Savings (kWh)	NTG
Irrigation	4	197,438	84%
Compressed Air	1	1,078,279	100%
HVAC	3	2,349,679	98%
Lighting	68	23,067,188	91%
Motor Systems	4	24,062,620	91%
Oil and Gas	1	8,124,076	100%
Other	0	1,433,082	93% ^b
Overall	81	60,312,363	93%^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 stratum estimate. The overall NTG estimate is the savings-weighted average of measure strata with survey respondents.

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

Methodology

This section presents a brief overview of the Cadmus team’s NTG methodology (with Appendix A. Self-Report NTG Methodology providing a more detailed explanation). To determine net savings, the team used a self-report approach and analyzed the collected data to estimate freeridership and spillover—typically considered the most cost-effective, transparent, and flexible method for estimating NTG, and, consequently, 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, in the same amount, and at the same efficiency level.

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 team scored the respondent as

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

Spillover Estimation

The Cadmus team also estimated the program activities’ indirect influence on the broader market. This estimate of program “spillover” 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 participants to install additional energy-efficient equipment beyond that incentivized by that program; NPSO 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 81 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 20 summarizes participant measure responses, along with an initial freeridership estimate calculated for each respondent.

Table 20. Measure Installations in Absence of wattsmart Business Program (n=81)

Respondent Category	n*	Percentage of Total ^a	Initial Freeridership Estimate
Would have been installed at the same efficiency and scope within the same year	18	23%	100%
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	2	3%	75%
Would have installed 75% of the equipment at a lower efficiency than installed through the program (but better than standard efficiency) within the same year	2	3%	37.5%
Would not have been installed at all	44	55%	0%
Would have been installed more than 12 months later	13	16%	0%
Would have installed 75% of the equipment within one year of the original participation date, but would have installed standard efficiency equipment	1	1%	0%

^aTotal 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 they indicated past program participation played an important role 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.

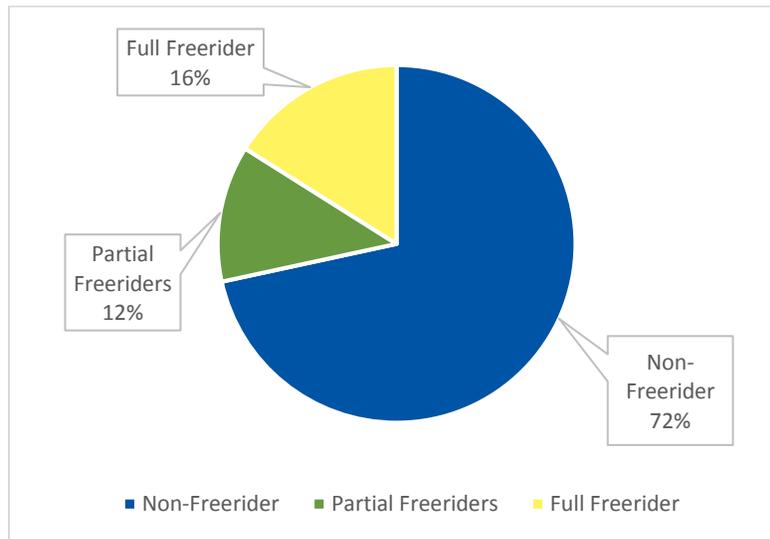
To calculate this credit, the Cadmus team reviewed respondents' ratings of the prior program's influence on a scale of 1 to 5, where 1 indicated "not important at all" and 5 indicated "extremely important." For those rating their previous participation as a 4 or 5, the team reduced their freeridership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

In addition, the team compared participants' statements about what they would have done in the program's absence to their statements regarding factors influencing their projects. Several participants' measure-specific responses (n=17) 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.

Two respondents' descriptions warranted freeridership adjustments. For example, when asked about the program's impact on their decisions to complete energy efficiency improvements, one participant stated: "It had a significant impact, having the ability to get the incentive and having it reinforce the saving and operating cost, and it has a huge impact on the approval of the project." Based on this response, the team adjusted the project's freeridership level from 50% to 25%. The team adjusted the other respondent's freeridership level from 100% to 50% based on the response: "I would say a lot, it definitely had an effect."

Based on participants' responses and after adjusting for inconsistencies and prior program experience, the team determined freeridership by respondent, as shown in Figure 10. Overall, the team identified 16% of participants as full freeriders, 72% as non-freeriders, and 12% as partial freeriders.

Figure 10. 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. Six lighting strata respondents 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 spillover percentage for a strata by dividing the sum of additional spillover savings (11,716 kWh) by total gross program savings achieved by 68 lighting measure strata respondents. This produced the results shown in Table 21.

Table 21. 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
Lighting	Fluorescent Lighting	4	1,357	1,827,903	1%
	LED Lighting	212	10,240		
	Refrigeration Lighting	1	119		

Nonparticipant Spillover

The Cadmus team used a series of questions included in the nonparticipant surveys to estimate NPSO, which refers to savings generated by customers motivated by the RMP program’s reputation, past RMP program participation, and/or the RMP program’s marketing to conduct energy efficiency installations

despite not receiving an incentive. The team estimated NPSO as 0% of total 2016–2017 **wattsmart** Business Program savings. Appendix B. Nonparticipant Spillover provides detailed NPSO analysis methods and results.

NTG Findings

As shown in Table 22, the Cadmus team calculated a program-weighted NTG of 93% 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 NPSO.

Table 22. *wattsmart* Business Program NTG Results for 2016–2017

Strata	Measure Responses (n)	Freeridership Ratio	Spillover Ratio	NTG	Evaluated Gross Program Population Savings (kWh)
Irrigation	4	16%	0%	84%	197,438
Compressed Air	1	0%	0%	100%	1,078,279
HVAC	3	2%	0%	98%	2,349,679
Lighting	68	9%	1%	92%	23,067,188
Motor Systems	4	9%	0%	91%	24,062,620
Oil and Gas	1	0%	0%	100%	8,124,076
Other	0	NA	NA	93%	1,433,082
Total	81	7%	0%	93%	60,312,363

Benchmarking NTG

The Cadmus team benchmarked RMP’s program against similar nonresidential programs. Table 23 shows freeridership, spillover, and NTG estimates reported for prior RMP program years and for other utilities offering similar programs and measures.

Table 23. NTG Benchmarking Comparisons

Utility/Region	Reported Year	Responses (n)	Freeridership %	Spillover %	NPSO	NTG
Rocky Mountain Power Wyoming 2016–2017 <i>wattsmart</i> Business Program	2018	81	7%	0%	0%	93%
Rocky Mountain Power Wyoming 2014–2015 <i>wattsmart</i> Business Program	2016	56	34%	4%	NA	70%
Rocky Mountain Power Wyoming 2011–2013 Energy FinAnswer Evaluation	2015	3	37%	1%	NA	64%
Rocky Mountain Power Wyoming 2011–2013 FinAnswer Express Evaluation	2015	189	24%	0%	NA	76%
Northeast Utility—C&I Prescriptive	2016	77	23%	0%	NA	77%
CY2016 Wisconsin Focus on Energy Nonresidential Evaluation Report—Wisconsin Statewide	2017	434	28%	1%	NA	79%

The 2016–2017 **wattsmart** Business program freeridership estimate (7%) was lower than the 2014–2015 **wattsmart** Business program freeridership estimate (34%). The 2012–2013 Energy FinAnswer Evaluation and the 2012–2013 FinAnswer Express Evaluation produced freeridership values of 37% and 24%,

respectively.¹³ These RMP program evaluations were completed using the same NTG methodology used for this evaluation.

The methodology used for the Northeast Utility C&I Prescriptive and the CY2016 Wisconsin Focus On Energy Nonresidential evaluations was comparable to that used for the 2016–2017 **wattsmart** Business program, though the designs differed.

¹³ 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 detailed findings from the Cadmus team’s process evaluation of the **wattsmart** Business program. The team based these findings on analysis of data collected through materials and database reviews, program staff interviews, and 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
- Participant and partial participant 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 24 lists the primary research questions used.

Table 24. 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 acting on each program offering? How did participant awareness and business size compare by the program delivery channel?

Methodology

The following sections provide an overview of the methodology that the Cadmus team used for process evaluation research examining program years 2016 and 2017.

Materials and Database Review

The Cadmus team conducted a review of the following:

- The Wyoming Annual Demand-Side Management 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, describing planned program updates during the 2016–2017 evaluation period

- RMP Wyoming Master 2017 Media Flowchart and web links
- 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 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 addressed 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

The Cadmus team surveyed three customer populations: participants, partial participants, and nonparticipants.

Participant Telephone Surveys

The team conducted telephone surveys with 81 participants who installed measures through the **wattsmart** Business program. The surveys included 36 participants in Typical Upgrades, four in Custom Analysis, 13 in SBL, 24 in SBDI, and four receiving Midstream incentives. The two Energy Management participants did not respond 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, distributors, program staff, and program-funded, third-party technical service providers
 - Customer satisfaction regarding specific program elements and the **wattsmart** Business program overall
 - Customers' participation challenges
- **Program influence:** freeridership and savings spillover
- **Customer information:** firmographic information

Participant Sample Detail

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

- Energy Management
- Oil and Gas
- Compressed Air
- Irrigation
- Midstream
- HVAC
- Other
- Motor Systems
- SBL
- 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 five 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 Cadmus 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 accounts designated as on hold, and 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 program annual reports and filings, stakeholder interviews, and participant survey data, this section outlines the **wattsmart** Business program's implementation and delivery during the 2016–2017 evaluation period.

Program Overview

In 2016 and 2017, RMP focused on cost-effectiveness, 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
- Added a tubular LED (TLED) re-lamp category to the Typical Upgrades and Midstream offerings
- Added a general exterior lighting retrofit measure as well as street/pole measure to the Typical Upgrades offer
- Added new incentives for exterior LED dimming controls
- Adjusted incentives for exiting lighting controls to reflect the differences in savings from interior and exterior applications

- Revised qualified HVAC specifications

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 performance feedback and coaching to vendors. Beginning in October 2017, Nexant began providing quarterly survey results reports to RMP.

Design

To benefit all small business customers, particularly those located in small rural communities, RMP restructured the SBL offering as a direct-install offer for lighting retrofits and power-strips, effective November 1, 2016. Willdan Energy Services offered turnkey services to customers agreeing to install eligible measures identified during free energy assessments of their facilities. To enhance program cost-effectiveness, the program offered SBDI to customers in a geo-targeted area during a specified window of opportunity. Participants paid 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-foot and 4-foot fixtures, accounting for 90% of its work. Willdan reported planning plans to add air-conditioning measures and rooftop controls to the program in 2018.

Implementation

In March 2017, RMP launched the **wattsmart** 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, 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 the following:

- Participation as an approved vendor for a minimum of one year
- Completion of five or more Typical Upgrades lighting projects
- Employing at least one full-time staff member holding 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 trade allies delivered industrial and irrigation measures. For Nexant, these trade allies delivered commercial measures, eligible for prescriptive or custom incentives, to small and mid-sized commercial customers (i.e., non-managed accounts) and vendors delivering the SBL offering (2016).

Administrator staff noted 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. Trade allies not reregistering to receive a **wattsmart** Business vendor designation could submit projects to the program, but were 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, however, did not require its trade allies to register with the program. Cascade also assisted industrial and irrigation 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 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 TV, radio, print, paid digital display and search advertising, direct mail, email, sponsorships, 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 mid-sized 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. Additionally, Nexant 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 irrigation trade allies 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. Cascade also found it 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, sending them a one-page application form to inform them about the program and its opportunities.

Similarly, when a trade ally identified a potential customer for the **wattsmart** 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 advising 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. Additionally, Willdan conducted outreach to RMP’s oil and gas customers.

Marketing Strategy

In 2017, in addition to supporting **wattsmart** Business program marketing through trade allies, vendors, and contractors participating in the contracted DSM delivery channel, RMP developed a new marketing campaign to educate customers about energy efficiency benefits, the availability of technical assistance, and incentives offered by RMP. In its 2017 DSM annual report,¹⁴ RMP outlined its key strategies, including the following:

- Educating customers about how the program could help them save money, reduce energy consumption, and benefit Wyoming
- Promoting behavioral changes that support conservation and motivate customers to reduce their consumption (whether through the program or independently)
- Showing how other customers benefitted through the program

The Cadmus team found the documents RMP provided did not document a set marketing strategy (comparing this to produced creative and the media flowchart would prove useful). Brand guidelines, however, were followed, and the media calendar articulated a mix of multiple touchpoints. The multiple touchpoints approach mixed well, producing easy-to-digest, impactful data, communicated through the brand’s voice and through customer testimonials.

¹⁴ Rocky Mountain Power. *Wyoming Annual Demand-Side Management Report, January 1, 2017-December 31, 2017*. Available online: http://www.pacificorp.com/content/dam/pacificorp/doc/Energy_Sources/Demand_Side_Management/2017/WY_20000-264-EA-16_2017_WY_Annual_DSM_Report_6-25-18.pdf

Marketing Messaging

Program Website Evaluation

On multiple occasions, the Cadmus team referenced information provided on the program’s website. The team considered the site’s individual program navigation clear and direct. Information provided within each measure category proved useful in achieving a high-level understanding of the steps necessary to initiate a project, while supporting brochures, case studies, detailed incentive lists, and other documents explained program requirements. In reviewing the **wattsmart** Service & Incentives for Wyoming page, the team noted the following:

- For new business decision-makers reading this page, the “Find a Vendor” button title might be too vague to explain why customers need a vendor; supporting copy, similar to that found on subpages (“Find a Vendor to help with your energy efficiency project”), might be helpful.
- For subpages, primary navigation options in the center of the page did not mirror the navigation options on the left (and vice versa).

Wattsmart Advertising and Outreach

Following interviews with RMP and the program administrators’ staff, the Cadmus team reviewed the *Rocky Mountain Power Wyoming Master 2017 Media Flowchart* and the *Wyoming DSM & wattsmart Business January to December 2017 (CCCom Update)*, along with campaign materials linked in the flowchart. Specific findings, identified through these reviews, follow.

Key Messages

Through conversations and emails with RMP program marketing staff, the team learned that RMP approached program marketing by focusing on customer case studies for use in TV, radio, and print campaigns.

Media Flowchart

- The flowchart addressed media, but it did not include timing for emails, bill inserts, or organic social media content—all items that complement media
- The flowchart included use of LinkedIn to target-specific user profiles with specific messages
- RMP leveraged residential specific and/or consumer media platforms to market commercially focused programs. Cadmus Marketing Effectiveness Audit Team feels this is a smart approach recognizing B2B/commercial decision makers and small business owners, also are general consumers, engaging them on platforms outside of a solely business specific environment.

Marketing Materials

Overall, collateral pieces, radio spots, videos, and digital assets reflected a cohesive, consistent look that solidly appeared to belong to the same brand family. Collateral materials, however, did not include a direct call to action. Communications materials were copy-heavy, incorporating few (if any) graphs, charts, images, or videos.

LED Instant Incentives Flyer

- The flyer demonstrated a good use of charts and clearly displayed header graphics
- Includes a clear call to action and a prompt to take action

Print

- While the “Thank You” print media offered a positive gesture, the ad copy recognizing partners was too small to read, which could result in an opposite effect, eliciting a negative response from partners

Thank You eBlast

- Good use of header graphics with clear headlines
- Brief and to the point, while it provided ways for readers to learn more.
- Ended with a clear call to action and links to learn more/take action

Museum of the Mountain Man (case study materials/testimonial-based materials)

- Print Ad:
 - Used clear imagery that identified the customer’s location and ended with a strong call to action
 - The savings statistic shown in the headline was vague and did not specify the savings’ time period (e.g., annual, monthly)
- Radio Spot:
 - Exhibited an effective use of sound effects, testimonials, and highlighted program benefits, capturing customer interest and providing ways to learn more
 - Through its higher volume, the announcer voiceover overpowered the customer testimonial
- TV Spot:
 - The music mirrored the radio spot for brand consistency
 - Made good use of supers (text over images/video) that reinforced key messages delivered in the voiceover
 - Used a mix of testimonial and project images without becoming too technical
 - Provided a final art card explaining how to act on this information
- Digital/Social Ads
 - All digital ads distilled the important points of the longer-format marketing/testimonial-style pieces, making it digestible with a quick scan
 - Savings period (e.g., annual, monthly) was not clearly stated

MAVERIK (Case Study Materials/Testimonial Based Material)

- Well-displayed on the website and on radio, collateral, and other outlets
- Print effectively employed data to drive interest, while including a call-to-action to encourage engagement

- Radio did a good job in using sound effects, a testimonial, and highlights of program benefits to inspire interest while ending with a way to learn more
- TV Spot:
 - Mirrored the radio spot, using the same music for good brand consistency
 - Good use of supers to reinforce key messages in the voiceover
 - Good mix of testimonial and project images (e.g., solar panels)
 - Final art card showed how to take action
- Digital/Social Ads:
 - YouTube, Facebook, and Static Digital ads did a solid job of distilling important points from the longer-format marketing pieces, making them digestible in a quick scan
 - The Mobile Ad did not incorporate a savings message to inspire further action by consumers

University of Wyoming Case Study Materials/Campaign

- Black and white and color image of the stadium was a little blurry and looked like low resolution
- Good use of a data point to intrigue the reader
- Out-of-home appeared on the brand, but the copy did not tell the reader what “being a leader in energy efficiency” meant to the person reading it; inviting the reader to learn more via the URL could supplement the message
- Print/magazine creative merchandised the data to drive interest while including a call-to-action to encourage engagement
- Digital—LinkedIn/Google/targeted business sites
 - Good use of customer testimonials, although the mobile ad provided for review was too general and lacked a strong data point to spur customer action; the Facebook and YouTube Ads, however, accomplished this

HVAC Check-Up and Midstream

- Materials were on brand via colors, but the imagery was dated, and fonts seemed off compared to previously reviewed collateral
- Good callout of URLs and toll-free numbers so customers could take action

Small Business Direct Install Program

- Video/Ad that Drives to Video:
 - Good use of video, but copy used in the post with the video did not strongly leverage a compelling takeaway from the video to drive customers to action
 - The video used still images that interrupted the flow of the preceding video shots
 - The video shots were well executed, planned, smooth pans, supers, and art cards were used well and timed to reinforce the voiceover
- Window sticker did not include a URL (which it easily could)

Optional Energy Efficiency Financing Service

- The headline competed (and was almost dwarfed) by the subhead
- Exhibited a good use of bullets, call-out boxes, and charts to break up the copy
- Side two did not include a call to action

Oil and Gas

- The letter was not too lengthy and used numbers/bullets to break up the copy; it ended with a call to action
- The straightforward application had ample room provided in the customer-filled text boxes

Irrigation Direct Mail (Letter and Application)

- The handout was text heavy, but this may have been done to consolidate it to just two 2 pages; at the end of each page, it included a good use of a call to action

Database Interface and Data Management

During the 2014–2015 program evaluation, RMP consolidated its nonresidential DSM programs under the **wattsmart** Business program umbrella, and it transitioned data management to its new Demand Side Management Central software (DSMC). During the 2016–2017 evaluation period, Nexant began using the DSMC to enter data directly into its system, then uploaded projects to RMP. Streamlining this process, 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 then 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 staffer said, overall, the program operated efficiently with one exception: program staff would benefit from a 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, with RMP data management staff saying 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 the staff managing data input for one administrator. RMP said this uptick was again declined.

Willdan reported reconciling project files monthly without issues, unless going back to adjust project inputs (which typically did 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:

- 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.
- Projects carrying a custom designation appeared in the Measure Type column. Measures containing the word “custom” in their name appeared in the columns Measure Subtype, Measure Name, and Measure Custom Name, but these designations did not match across columns or with those in the Measure Type column.

Program Challenges and Successes

For the most part, RMP program management staff and program administrators said that they had the resources necessary 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.
- Increasing customer participation due to launching 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.

Program management and implementation staff anticipated the following challenges will affect the program going forward:

- 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 incentives for lighting to incentives for lighting with controls.
- Difficulties recruiting trade allies to participate in the program (and to recruit new client participants) due to Wyoming’s dispersed population. Administrator staff also noted as much as

80% of large projects are RMP-managed accounts, which means administrators are limited to smaller customer accounts to fulfill their program savings goals.

- Resource constraints due to difficulties in recruiting trade allies from existing RMP programs to SBDI work 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 customers starting a project and their receiving checks.

Customer Response

The Cadmus team conducted process surveys with 81 **wattsmart** Business program participants: 40 receiving Typical Upgrades or Custom Analysis incentives; 24 receiving incentives through the SBDI offer; 13 receiving incentives through the SBL offer; and four receiving incentives through the Midstream pathway. The two Energy Management participants proved nonresponsive to the survey effort.

wattsmart Business Typical Upgrades and Custom Analysis

The 40 customers who participated through the Typical Upgrades (36) or Custom Analysis incentives (four) installed projects in one of six categories, with more than one-half of respondents participating in lighting projects:

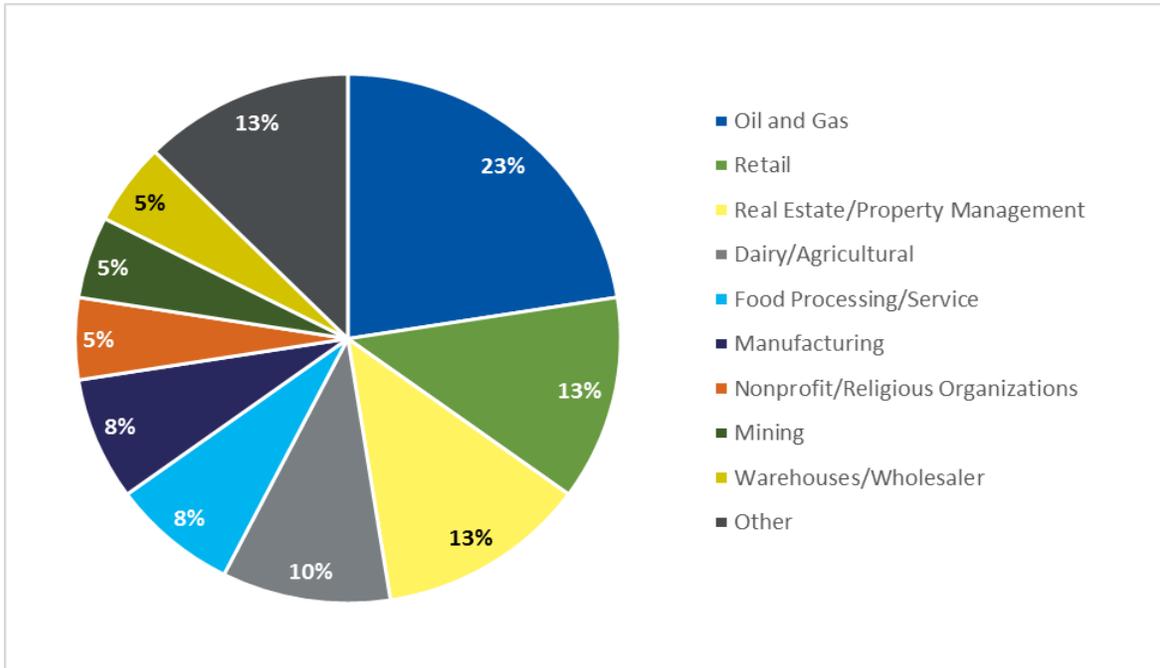
- Lighting (68%)
- Motor systems (10%)
- Irrigation (10%)
- HVAC (8%)
- Compressed Air (3%)
- Oil and Gas (3%)

Respondents reported that they most commonly worked in the oil and gas, retail, or real estate sectors (as shown in Figure 11).¹⁵ Over three-quarters of respondents (76%, n=38) said that their company owned their facilities, with 13% reporting that they leased, and 11% reporting that they both leased and

¹⁵ The Other category consisted of respondents in arts/entertainment/recreation, construction, repair/maintenance service, transportation, and banking.

owned facilities.¹⁶ While most companies had only one location (45%, n=40) or two locations (15%), 15% of respondents had companies with 10 or more locations in Wyoming.

Figure 11. Typical Upgrades and Custom Analysis Participant Respondents by Business Sector

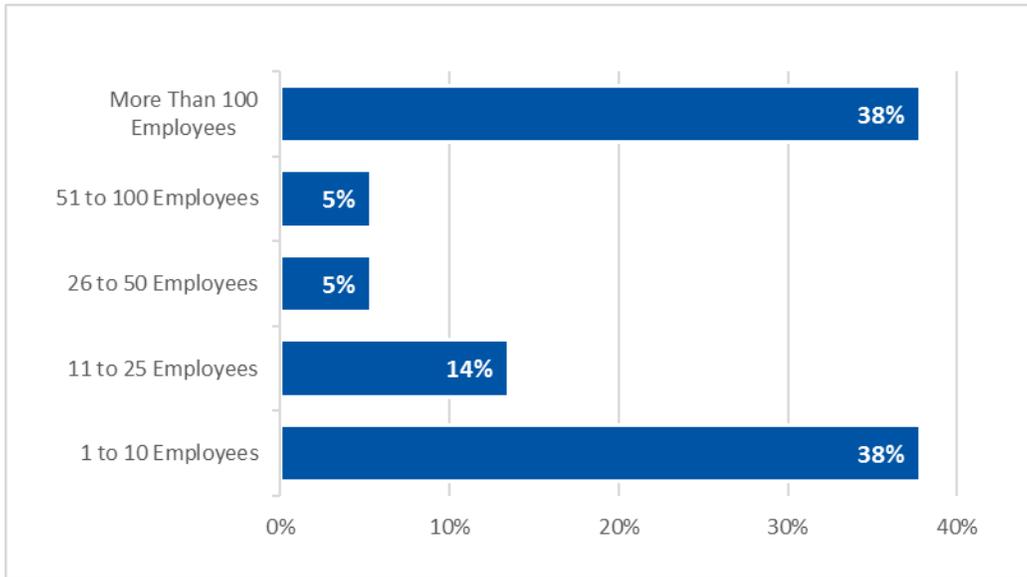


Source: RMP **wattsmart** Business Program 2016–2017. **wattsmart** Business Participant Survey QF1. Don't know and refused responses removed. (n=40)

Typical upgrades and custom participants reported that their companies (across all Wyoming locations) most commonly had one to 10 employees (38%, n=37) or more than 100 employees (38%), as shown in Figure 12.

¹⁶ 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 12. Number of Employees—Typical Upgrades and Custom Analysis Organizations

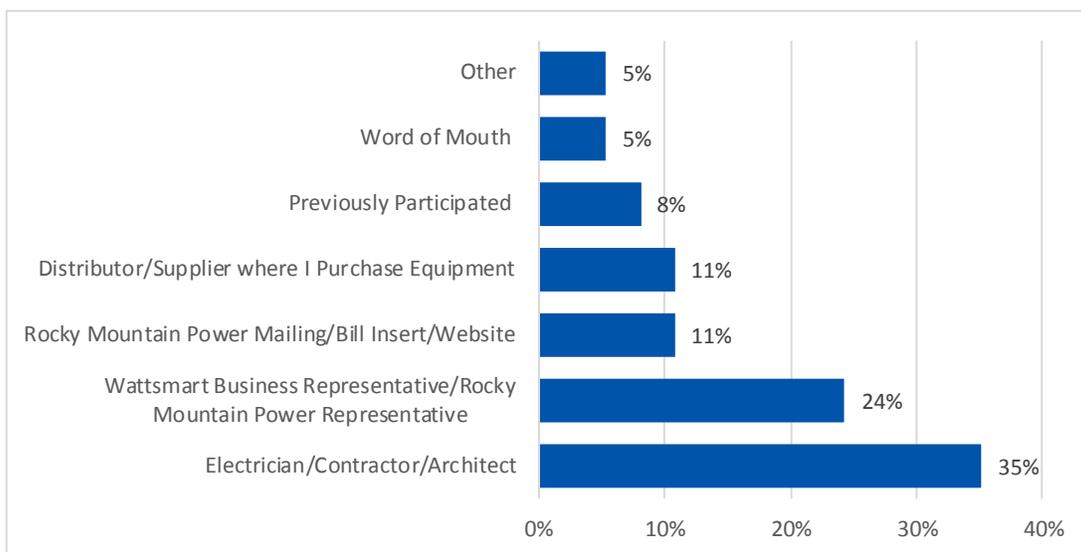


Source: RMP **wattsmart** Business Program 2016–2017. **wattsmart** Business Participant Survey QF4. Don't know and refused responses removed. (n=37)

Awareness and Communication

Participants receiving **wattsmart** Business Typical Upgrade or Custom Analysis incentives most commonly learned about the program from their contractors, electricians, or architects (35%). As shown in Figure 13, other common sources include **wattsmart** business representatives, program mailings, the website, and equipment distributors and suppliers.

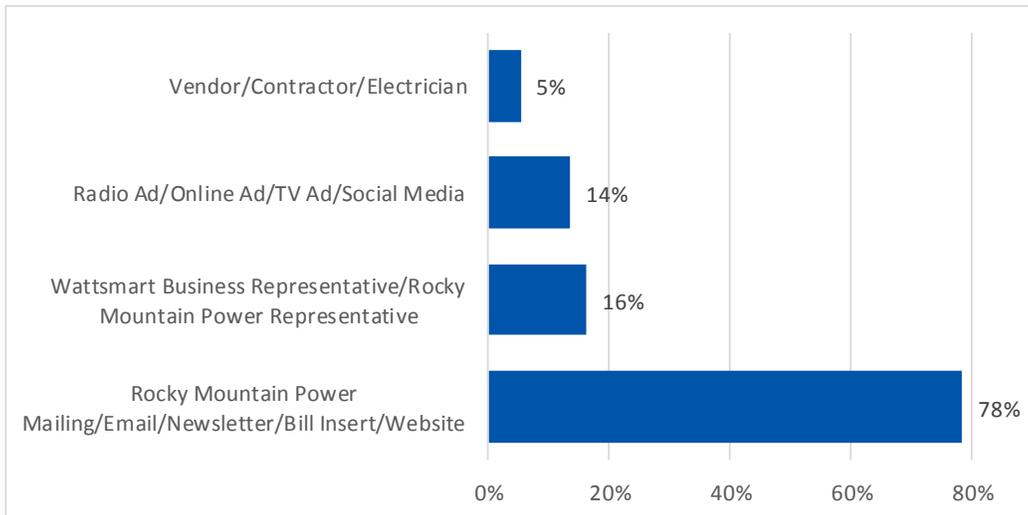
Figure 13. Typical Upgrades and Custom Analysis Participants Information Sources



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

While respondents most commonly reported learning about the program through a contractor or architect, they indicated that they preferred to stay informed about energy efficiency programs such as **wattsmart** Business through marketing pieces (e.g., emails, newsletters, bill inserts). Figure 14 shows the distribution of all preferred outreach methods reported by respondents.

Figure 14. Typical Upgrades and Custom Analysis Participants Preferred Method of Communication to Stay Informed

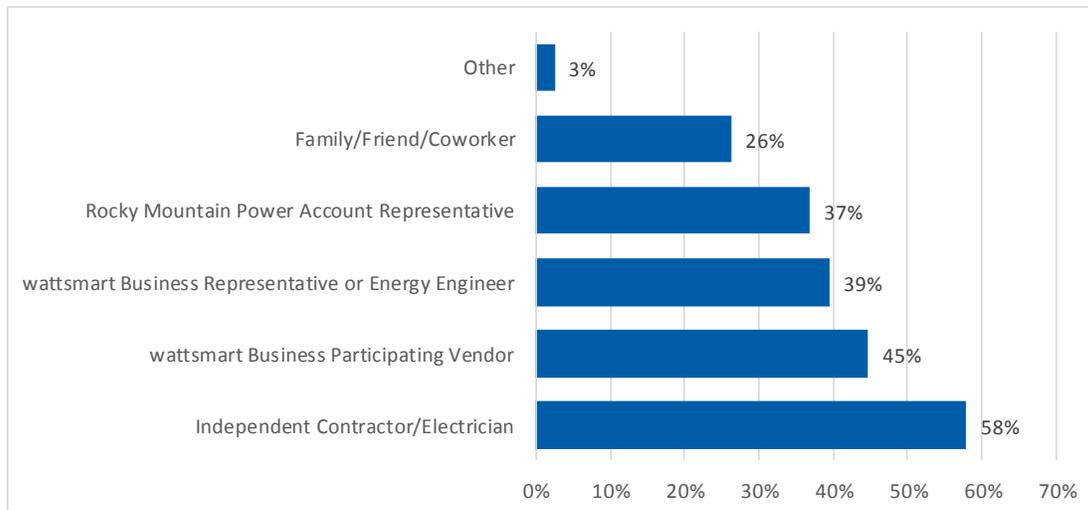


Source: RMP **wattsmart** Business Program 2016–2017 **wattsmart** Business Participant Survey QG3. Don't know and refused responses removed. Multiple responses allowed. (n=37)

Project Initiation

As shown in Figure 15, a contractor or electrician most commonly helped participants initiate their energy-efficiency projects, with 58% (n=38) of respondents receiving their help. Other common assistance sources included **wattsmart** Business participating vendors (45%) and **wattsmart** representatives (39%).

Figure 15. Typical Upgrades and Custom Analysis Participants’ Assistance Sources



Source: RMP **wattsmart** Business Program 2016–2017. **wattsmart** Business Participant Survey QC1. Don’t know and refused responses removed. Multiple responses allowed. (n=38)

The majority of participants found it either very easy (39%, n=28) or somewhat easy (57%) to complete paperwork for their applications. Four percent of respondents found it not at all easy to complete. Eight respondents provided suggestions on actions to make the paperwork easier to complete. These included the following:

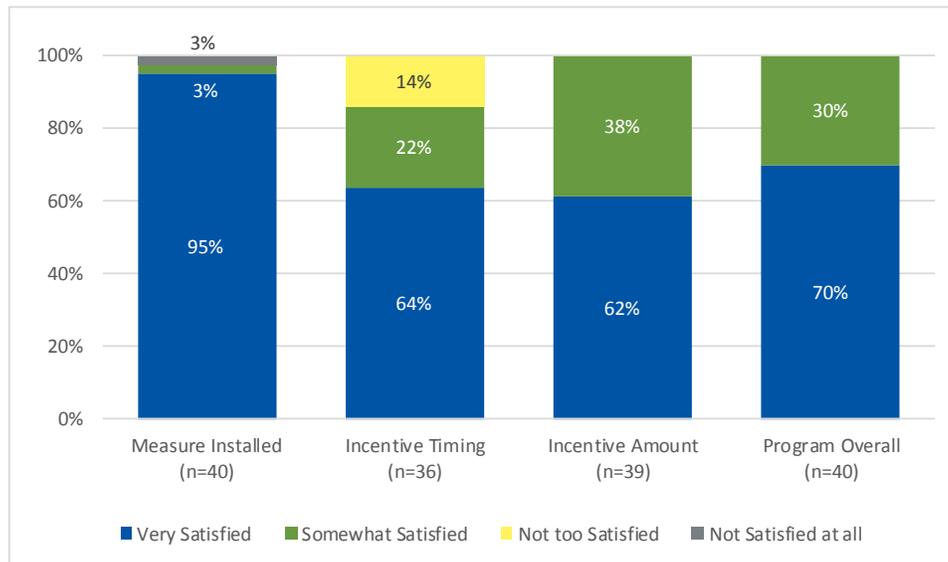
- Providing personal assistance in filling out the paperwork (three respondents)
- Generally simplifying the process (three respondents)
- Enabling online data entry and submission of applications (one respondent)
- Providing more time to complete the applications (one respondent)

Satisfaction

Participant respondents were asked to review their satisfaction with several program elements. As shown in Figure 16, respondents were most likely to report satisfaction with measures installed (95%, n=40). Three percent were somewhat satisfied with their measures, and 3% were not satisfied at all with their measures. The respondent who was somewhat satisfied installed five unitary commercial air-cooled package HVAC units, and said some units were inappropriate for the project. The respondent who was not satisfied at all said “a lot” of bulbs had already burned out; this respondent completed an LED fixture retrofit.

While all respondents were at least somewhat satisfied with the incentive amount, participant satisfaction with the time required to receive their incentive varied. Sixty-four percent (n=36) said they were very satisfied; 23% were somewhat satisfied; and 14% were not too satisfied. All respondents were at least somewhat satisfied with the time required to receive their incentives and with the program overall: 62% (n=39) and 70% (n=40), respectively, said they were *very* satisfied.

Figure 16. Participant Satisfaction Levels



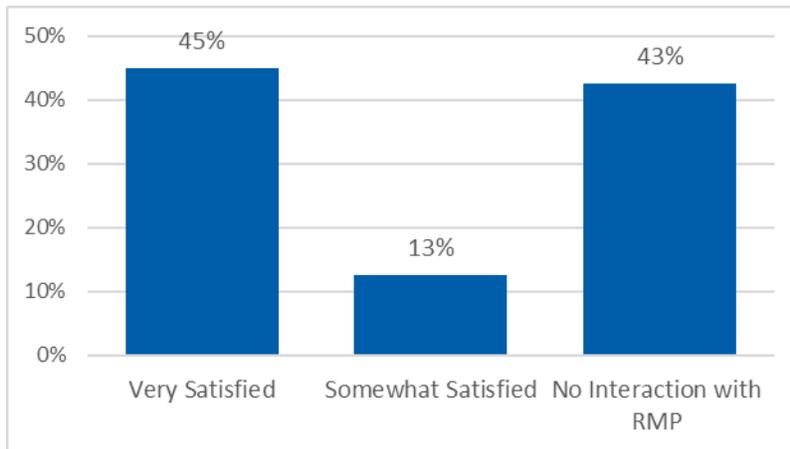
Source: RMP **wattsmart** Business Program 2016–2017. **wattsmart** Business Participant Survey QC4, QC6, QC12, and QG1. Don't know and refused responses removed.

When asked to identify the appropriate amount of time to receive the incentive, most respondents (10 out of 11) felt they should receive the incentive within a month.

Nine (n=34) Typical Upgrades participants reported using a participating vendor to install their projects: eight said they were satisfied with the vendor's work, six said they were *very satisfied*; and two were *somewhat satisfied*. Of the two participants who were *somewhat satisfied*, one cited poor communication, and the other cited cost, saying, "I think they [the contractor] were a little expensive."

When asked about their satisfaction with any interactions with RMP, nearly one-half (45%, n=40) said they were very satisfied with their utility interactions, and an additional 13% reported they were somewhat satisfied. Overall, 43% of respondents did not have any interactions with the utility, as shown in Figure 17.

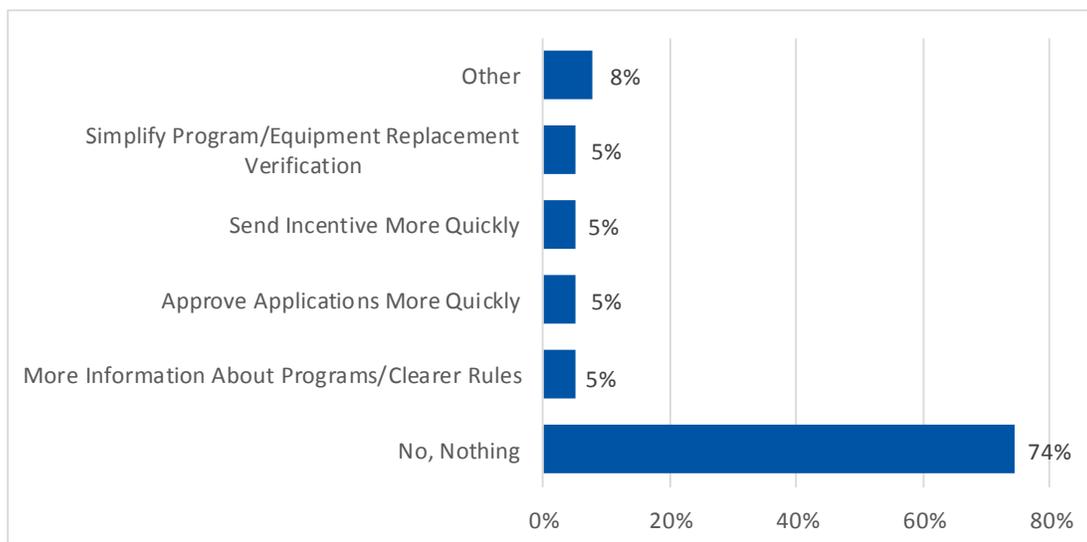
Figure 17. Satisfaction with RMP Interactions



Source: RMP **wattsmart** Business Program 2016–2017. **wattsmart** Business Participant Survey QC21. Don't know and refused responses removed. (n=40)

When asked what RMP could do to improve customer satisfaction with the program, most respondents did not offer a suggestion, but 11 participants suggested simplifying and expediting the application process and providing more information about the program and its requirements. Figure 18 shows all responses.

Figure 18. Suggestions for Program Improvement

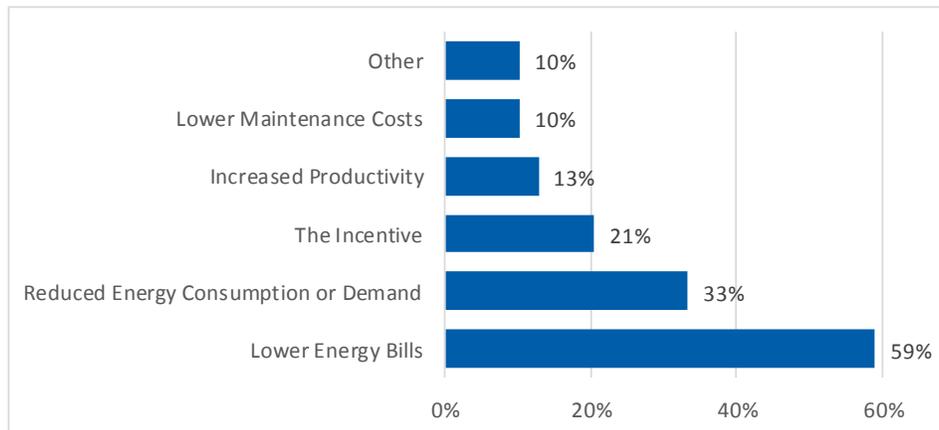


Source: RMP **wattsmart** Business Program 2016–2017. **wattsmart** Business Participant Survey QG2. Don't know and refused responses removed. (n=39)

Benefits and Challenges

When asked about benefits their company experienced due to program participation, more than one-half of participant respondents (59%, n=39) reported lower energy bills. As shown in Figure 19, respondents cited benefits such as reduced energy consumption (33%) and receiving the incentive (21%).

Figure 19. Benefits of Equipment Installed

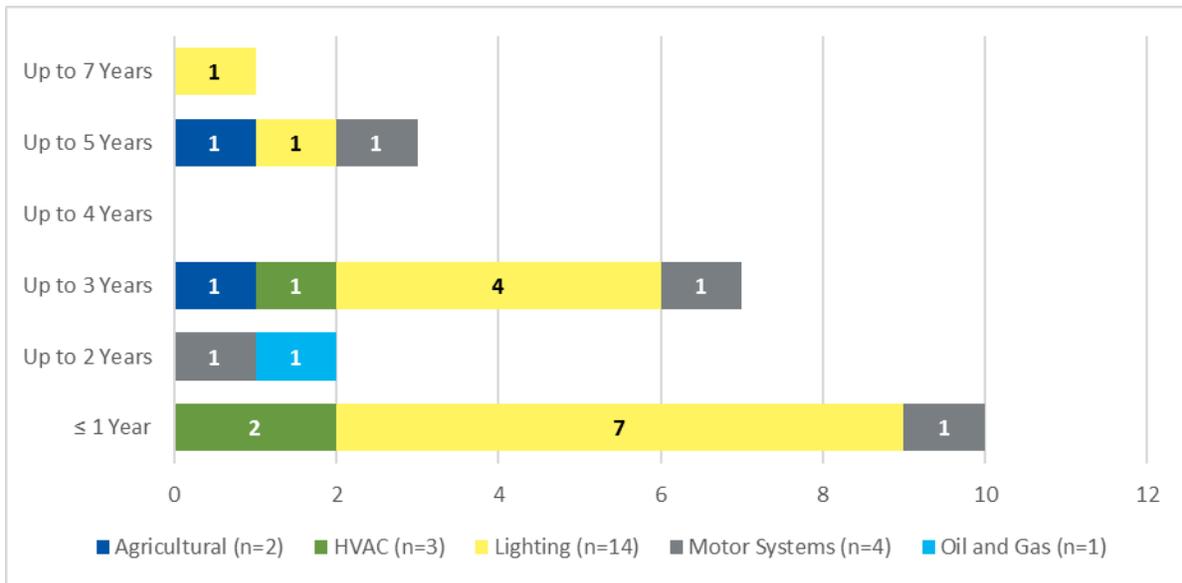


Source: RMP **wattsmart** Business Program 2016–2017. **wattsmart** Business Participant Survey QC18. Don’t know and refused responses removed. Multiple responses allowed. (n=39)

Most respondents (69%, n=39) did not report challenges with participating in the **wattsmart** Business program. Those reporting challenges most commonly cited understanding the rules, managing program timeframes, finding a vendor, and coordinating the overall project. When asked what RMP could do to help companies overcome their challenges, respondents suggested providing more information about the program, simplifying paperwork, and providing help with paperwork.

When asked what payback periods their companies sought for projects, responses varied from less than one year to seven years. Eighty-three percent of respondents reported (n=23) expecting paybacks within three years, with 43% seeking paybacks of less than one year. One additional participant (not shown in Figure 20), said the company did not consider projects using payback periods. Figure 20 shows the breakout of typical payback periods by measure category.

Figure 20. Project Payback Period Expectations

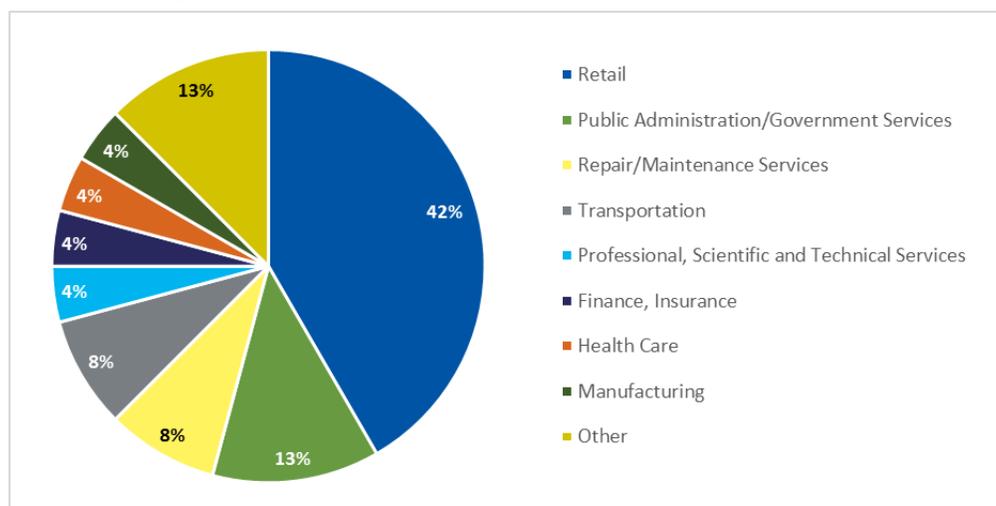


Source: RMP **wattsmart** Business Program 2016–2017. **wattsmart** Business Participant Survey QC8. Don't know and refused responses removed. (n=23).

Small Business Direct Install/Small Business Lighting

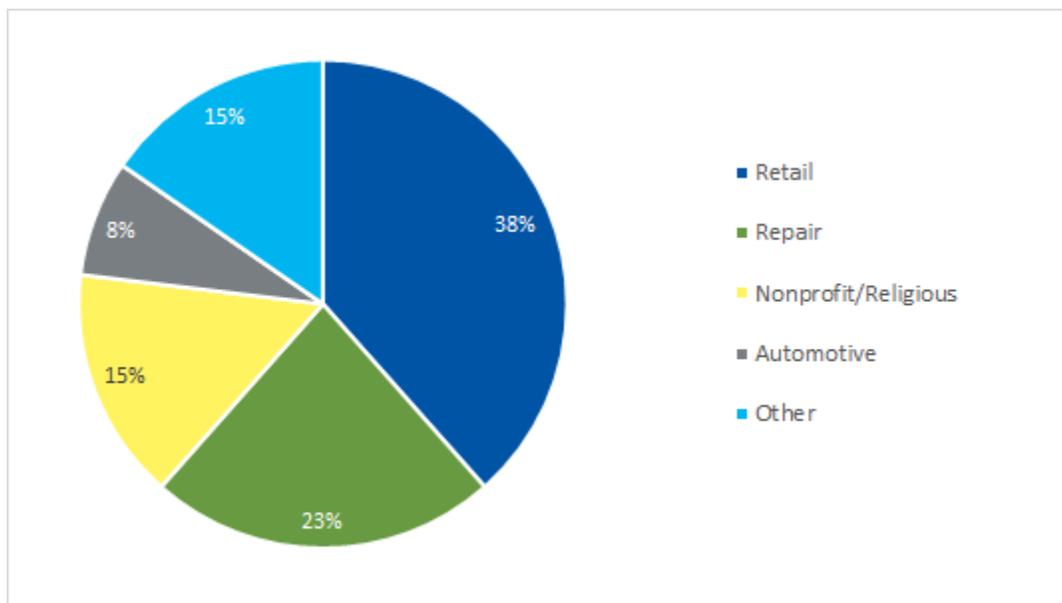
The Cadmus team surveyed 24 SBDI participants and 13 SBL participants. During 2016, RMP transitioned the SBL offering to SBDI, and now offers only SBDI. In this section, Cadmus focuses on SBDI, but shows the results of each group separately to assess how the participants' experiences with each offering were similar or where they diverged. As shown in Figure 21 and Figure 22, most SBDI participants came from the retail or public service business sectors (33% and 13%, respectively; n=24), while the most common SBL business sectors were retail and repair (38% and 23%, respectively; n=13).

Figure 21. SBDI Participant Respondents by Business Sector



Source: RMP **wattsmart** Business Program 2016–2017 SBL/SBDI Participant Survey QF1. (n=24).

Figure 22. SBL Participant Respondents by Business Sector



Source: RMP **wattsmart** Business Program 2016–2017 SBL/SBDI Participant Survey QF1. (n=13).

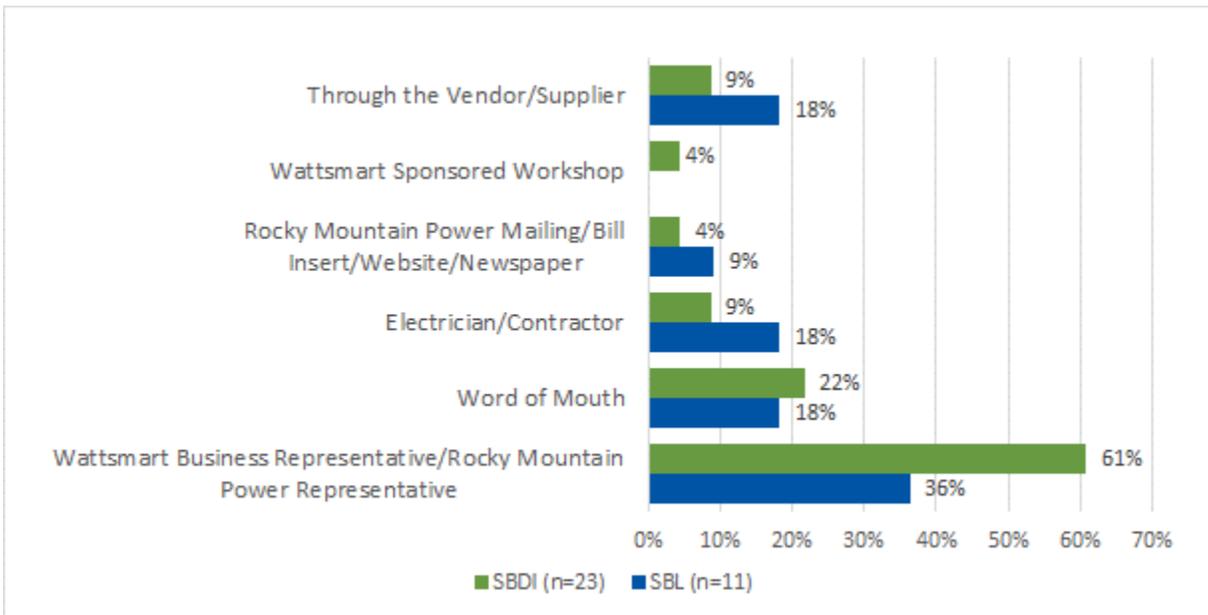
Among SBDI respondents, 87% (n=23) owned their facilities. The majority (61%, n=23) had only one facility in Wyoming, while an additional 26% had two to 10 facilities. Thirteen percent (three respondents) had more than 10 facilities (reporting 14, 33 and 97 facilities, respectively). The number of employees at each business widely varied, with one-half of SBDI respondents (50%, n=24) reporting their companies had one to 10 employees, while 17% worked for companies with more than 100 employees. The remainder (33%) reported 26 to 100 employees.

Among SBL respondent companies, 69% (n=13) owned their facilities, and all had but one facility in Wyoming. All SBL respondents reported their company had one to 25 employees, with 85% (n=13) reporting one to 10 employees, and 15% reporting 11 to 25 employees. Unlike SBDI, no SBL respondents represented companies with 100+ employees.

Awareness and Communication

SBDI and SBL participants most commonly became aware of the program through a **wattsmart** Business representative or RMP representative. Other common sources of program awareness included word-of-mouth and contractors. Figure 23 shows a breakdown of all awareness channels.

Figure 23. Sources of Program Awareness Among SBDI and SBL Participants



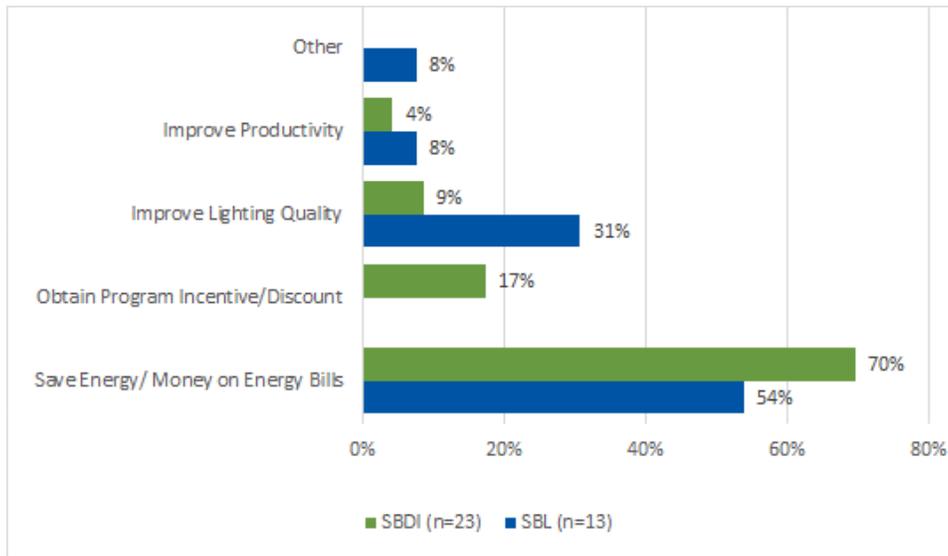
Source: RMP **wattsmart** Business Program 2016–2017. SBL/SBDI Participant Survey QB3. Don't know and refused responses removed. Multiple responses allowed.

When asked how they preferred to be informed of other energy-savings opportunities, most SBDI respondents (86%, n=22) indicated an RMP mailing, email, or bill insert, with 18% preferring direct contact with a **wattsmart** Business program representative. For SBL, all respondents (n=11) said they preferred a RMP mailing, email, or bill insert.

Motivation and Participation

Figure 24 shows the most important factors in respondent companies' decisions to participate in the **wattsmart** Business program. The majority of SBDI and SBL respondents cited saving energy or saving money on energy bills as the most significant factors in their decision-making. Other responses included the desire to receive the program incentive and to improve lighting quality in their facilities.

Figure 24. Motivation to Participate

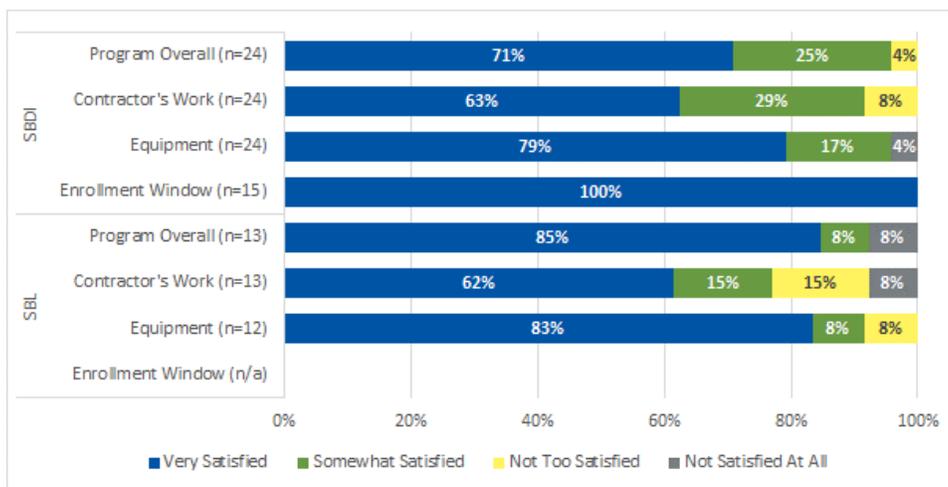


Source: RMP **wattsmart** Business Program 2016–2017. SBL/SBDI Participant Survey QC1. Don't know and refused responses removed.

Satisfaction

Respondents were asked to rate their satisfaction with several program aspects and with the program overall. As shown in Figure 25, SBDI respondents said they were most satisfied with the window of time in which they could enroll in incentives (100% were very satisfied), while respondents were least satisfied with the contractor’s work (63% were very satisfied). While the majority of SBDI and SBL respondents were very satisfied with the program overall (71% and 85%, respectively); 4% of SBDI respondents were less than satisfied (not too or not at all satisfied) with the program overall, compared to 8% of SBL respondents.

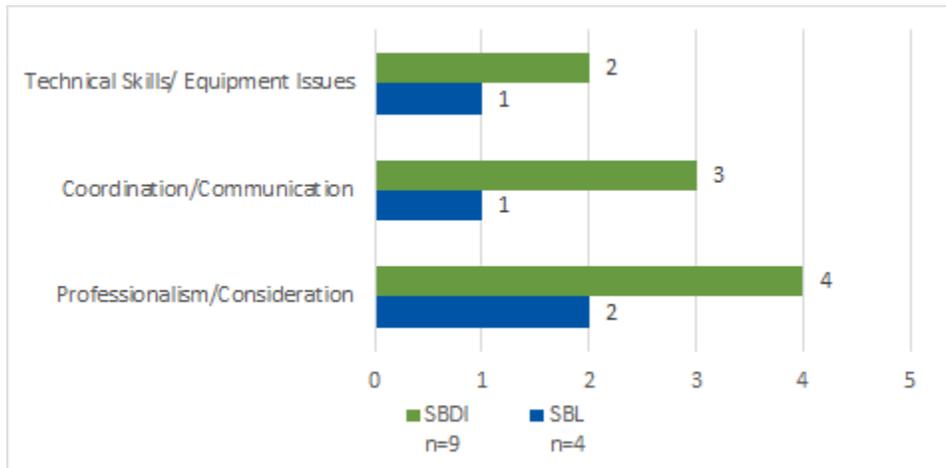
Figure 25. Customer Satisfaction Levels with SBDI and SBL Elements



Source: RMP **wattsmart** Business Program 2016–2017. SBL/SBDI Participant Survey QC6, QC8, QC15 and QG2.

Nine SBDI respondents and four SBL respondents who were *somewhat satisfied*, *not too satisfied*, or *not at all satisfied* with the contractor’s work reported specific concerns. As shown in Figure 26, most concerns addressed contractor professionalism and consideration, often taking the form of contractors leaving a mess behind, not finishing the job, or taking too long. Communication issues included contractors not identifying themselves, taking a long time to respond to calls and emails, or not responding at all. Technical skills issues included not having the right materials and cutting corners.

Figure 26. Concerns with the Contractor’s Work

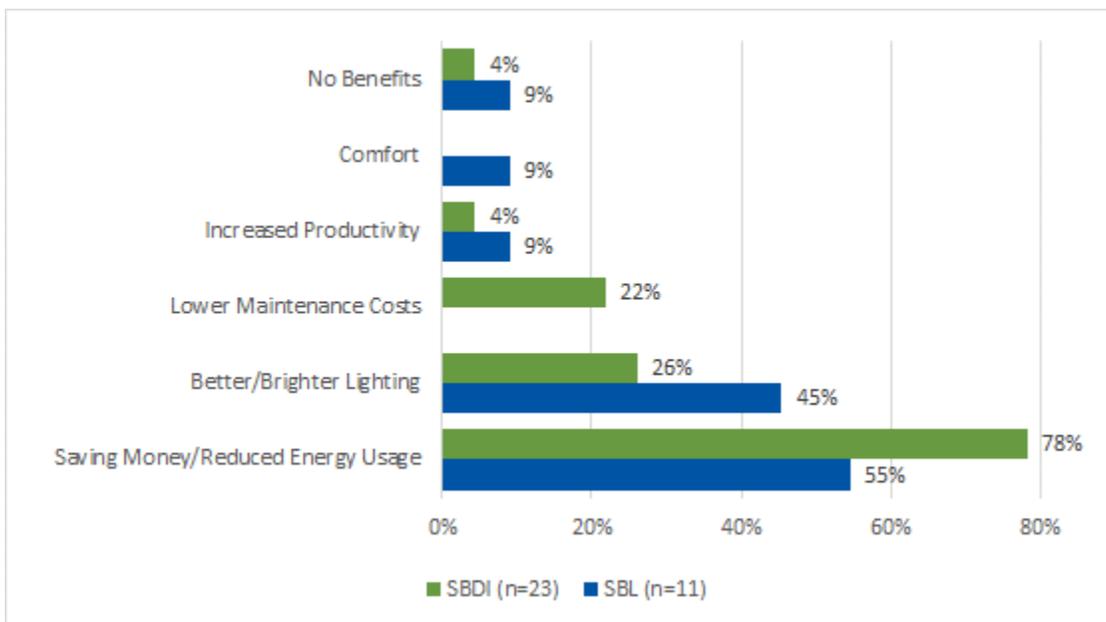


Source: RMP **wattsmart** Business Program 2016–2017. SBL/SBDI Participant Survey QC7, QC17. Don’t know and refused responses removed.

Benefits and Challenges

The majority of respondents (96% of SBDI participants, n=23; and 91% of SBL participants, n=11) could identify several benefits from participating in the **wattsmart** Business program. As shown in Figure 27, the majority of SBDI and SBL respondents cited saving money and reducing energy usage as a benefit (78% and 55%, respectively). Other benefits SBDI participants perceived included improving lighting appearance and lowering maintenance costs. SBL respondents noted increased productivity and comfort in their facilities.

Figure 27. Customer-Reported Benefits of Equipment Installed Through SBDI and SBL



Source: RMP **wattsmart** Business Program 2016–2017. SBL/SBDI Participant Survey: QD16. Don’t know and refused responses removed. Multiple responses allowed.

When asked if they had encountered any challenges in participating in the **wattsmart** Business program, more than one-half of SBDI participants (54%, n=24) and the majority of SBL participants (85%, n=13) replied that they had not. Of SBDI participants identifying challenges, they most commonly cited issues identified with the contractor/installer. These included contractors not installing the equipment correctly (three respondents), contractors not cleaning the work area (two respondents), and communication issues (two respondents). Other challenges included having to rearrange a space to provide access for installers (one respondent), having to work around the contractor’s schedule (one respondent), bulbs that burned out quickly after installation (one respondent), and unspecified issues with the installer after the equipment installation (one respondent). Two SBL respondents noted challenges with the program, including dealing with “bureaucracy” and contractors that reassigned staff, creating confusion for the customer.

When asked what RMP could do to help overcome these challenges, SBDI respondents’ suggestions included providing better information about the program (three respondents), requiring contractors to clean up the construction area (one respondent), including 8-foot lamps in the program (one respondent), completing the warranty work (one respondent), and following up to ensure measures perform as expected (one respondent). The SBL respondent that noted a challenge with bureaucracy suggested making it easier for trade allies to process projects. When asked for suggestions that could help improve the **wattsmart** Business program overall, participants’ responses were similar to those above regarding overcoming program challenges. SBDI respondents suggested including more light bulb types (one respondent), providing a before-and-after estimation of energy usage on bills (one respondent), more active RMP oversight (one respondent), and improved site cleanup (one respondent). One SBL participant suggested using local contractors.

Midstream

The Cadmus team received responses from four Midstream offering participants, working in the healthcare, retail, and hospitality industries. All worked for companies with one location and owning their own facilities. One respondent worked for a company of 11 to 25 employees; the other three worked for companies with 26 to 50 employees.

Awareness and Communication

Three of four Midstream respondents reported that their organization learned about the program and incentives from a vendor, distributor, or supplier where they purchased lighting equipment. The other respondent was aware of the incentives as he was an energy audit manager.

Two respondents said an email, newsletter, or bill insert from RMP would be the best way to stay informed about opportunities available through the **wattsmart** Business program. The other two respondents thought that contact with a **wattsmart** Business or RMP representative would be the best way to inform customers.

Motivation and Satisfaction

Midstream respondents reported that their reasons for purchasing bulbs included replacing burned out bulbs (two respondents), updating lighting as part of ongoing maintenance (one respondent), and buying light bulbs as part of a larger lighting retrofit project (one respondent).

Three of four respondents said they purchased light bulbs directly from a distributor; the other respondent purchased light bulbs through their contractor. Of the three purchasing light bulbs from a distributor, two found it was very easy to find a distributor offering the instant discount; the other found it somewhat easy. All three respondents purchasing bulbs directly from a distributor said the distributor provided assistance with the selection of bulbs purchased, while the one purchasing through the contractor did not receive assistance with the selection of bulbs purchased. Two of the three who received help said they were very satisfied with the help they received, while the third was somewhat satisfied.

Overall, three respondents were very satisfied with the incentive amount and with the **wattsmart** Business program overall. One retail respondent who reported being not too satisfied with the incentive amount, but somewhat satisfied with the program overall, said he preferred the incentive paid 50% or more of bulb costs, and he would like RMP to come to his facility to help identify opportunities for building improvements.

Partial Participants

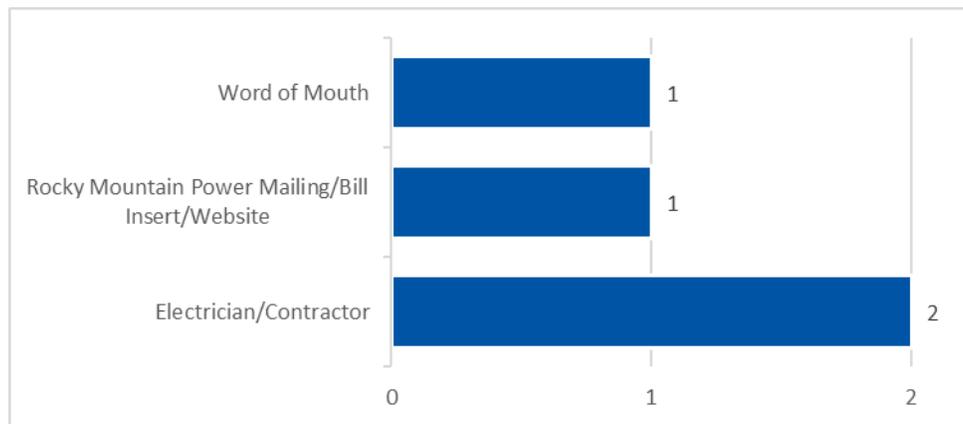
The Cadmus team received results from five partial participants: two who considered (or began) lighting retrofits, and three with SBDI lighting measures. Two respondents worked in the mining industry, and one respondent each worked in food service, oil and gas, or self-storage. Four of five respondents worked for a company with only one location, and four of five owned their own facilities. One mining company and the self-storage company each employed 10 or fewer staff. The food service business

employed 11 to 25 staff, the Oil and Gas business employed 101 to 200 staff, and the second mining company employed more than 500 people. All businesses used natural gas for space heating; two also used gas to heat water, two used electricity, and one did not heat water.

Awareness

Respondents most commonly learned about the program through their electricians or contractors. As shown in Figure 28, other respondents learned about **wattsmart** Business program incentives through RMP mailings or bill inserts, or through word-of-mouth (one respondent could not recall). All respondents (n=5) said the best ways for RMP to keep them informed about incentives for energy-efficiency improvements were through newsletters, bill inserts, or the utility website.

Figure 28. How Partial Participants Learned About the **wattsmart Business Program**



Source: RMP **wattsmart** Business Program 2016–2017. **wattsmart** Business Participant Survey QC1. Don't know and refused responses removed. Multiple responses allowed. (n=4)

Motivation and Barriers

Partial participants reported that their company's most important motivating factors when making energy-efficient upgrade decisions were saving money on energy bills (four of five) and reducing energy usage (one of five).

Two respondents reported that they completed the initiated project, even though not through the **wattsmart** Business program. When the other three were asked why they did not complete their project, one said the type of equipment offered though the program did not meet the company's needs; another noted that the cost was too high; and the final respondent reported that the SBDI program contractor did not show up to complete the project or return phone calls.¹⁷

¹⁷ In 2017, RMP teamed with HBC Energy Capital, which helps match customers to lending partners that can provide financing options for their energy efficiency projects.

When asked how likely it was that they would request an incentive from the program in the next six months, one respondent was very likely to do so, one was somewhat likely, one was not too likely, and two respondents said they were not at all likely to reach out.

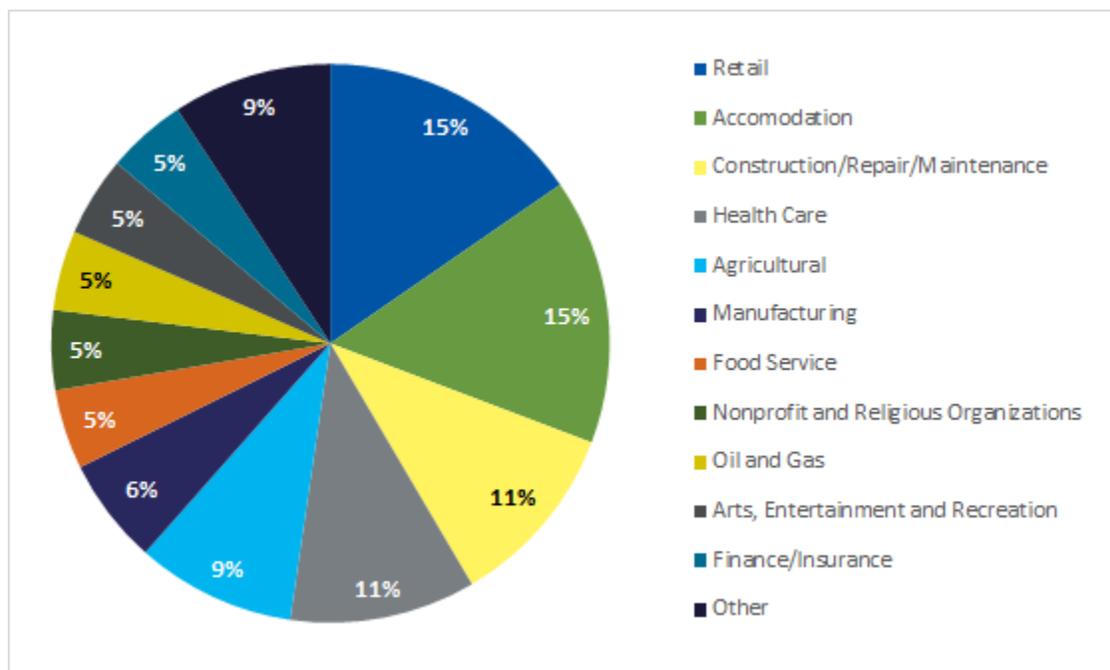
Satisfaction

Though no partial participants reported being very satisfied with the program, three respondents said they were somewhat satisfied. The other two respondents were not too satisfied or not satisfied at all with the program. When asked what RMP could do to improve their experiences with the program, respondents suggested better and more communication, a larger selection of eligible equipment, better timelines, and completing the projects they start (i.e., maintaining communication and cooperation with customers).

Nonparticipants

The Cadmus team received response from 68 nonparticipants who never completed a project through the program or had not done so within the past two years. Nonparticipants reported that they most commonly worked in the retail or accommodations sectors. Figure 29 shows the breakdown of all nonparticipant respondents' industry types.

Figure 29. Nonparticipant Respondents by Business Sector



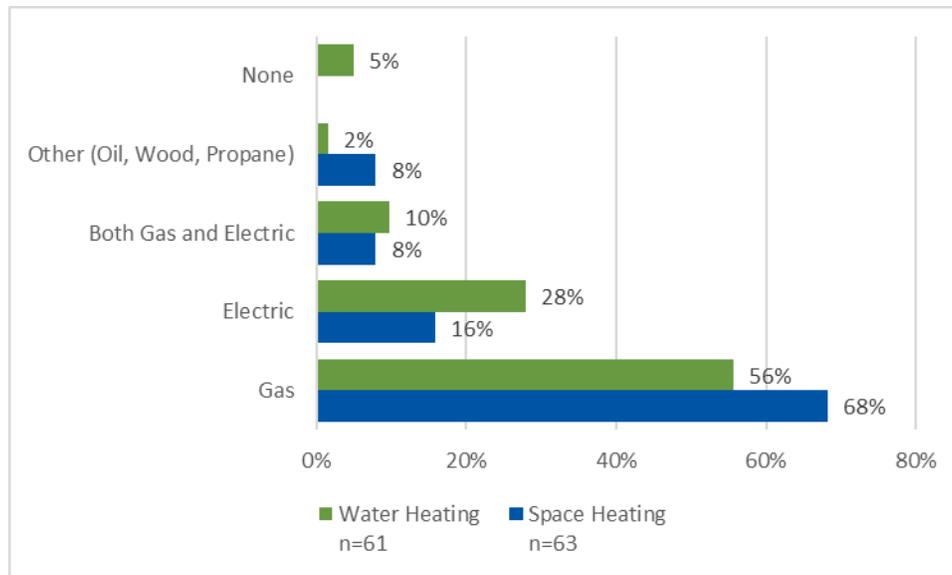
Source: RMP *wattsmart* Business Program 2016–2017. Nonparticipant-Partial Participant Survey QF1. Don't know and refused responses removed. (n=65).

Most nonparticipant respondents operated one location (69%, n=65). An additional 26% worked for companies with two to five locations, 3% worked for companies with more than five locations, and 2% (one participant) operated their business from their home and did not report a facility. Seventy-seven percent (n=65) owned their own facilities. The majority (79%, n=63) of respondents' companies had one

to 10 employees, with an additional 11% working for a company with 11 to 25 employees. Only 3% worked for a company with more than 100 employees.

When asked about the fuel they used for space and water heating, 68% (n=63) reported using gas for space heating, and 56% (n=61) used gas for water heating. As shown in Figure 30, 16% of respondents' facilities used electric for space heating, and 28% used electricity for water heating. The remaining facilities used oil or wood for space heating or propane for water heating.

Figure 30. Fuel Used for Heating

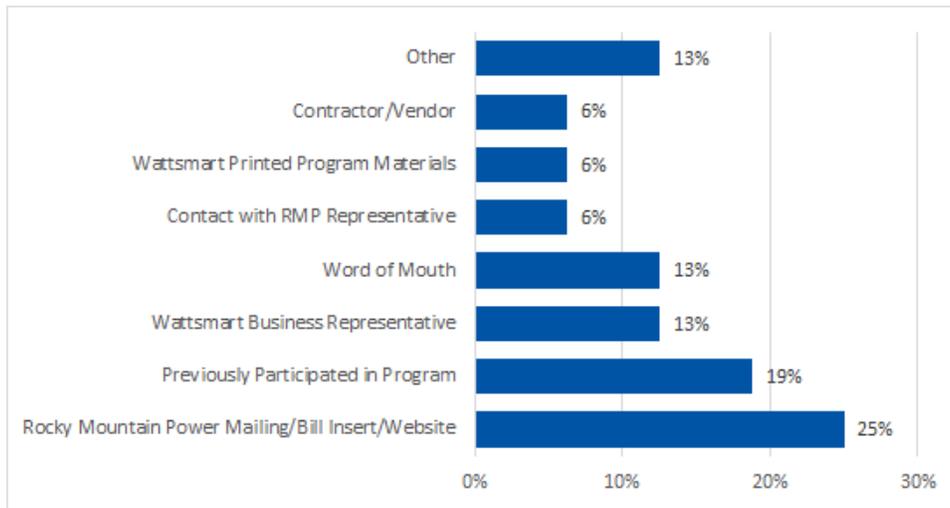


Source: RMP **watt**smart Business Program 2016–2017. Nonparticipant-Partial Participant Survey QF5, QF6. Don't know and refused responses removed. (n=63).

Awareness

Overall, slightly less than one-third (29%, n=66) of respondents knew RMP offered technical assistance and incentives prior to participating in the survey. Of those who had heard of the program, respondents most commonly said they learned of the program through a mailing, bill insert, the program website, or previously participated in the program or received an incentive from RMP. Figure 31 shows the frequency for different sources of program awareness.

Figure 31. Nonparticipants Source of Awareness of *wattsmart* Business Program

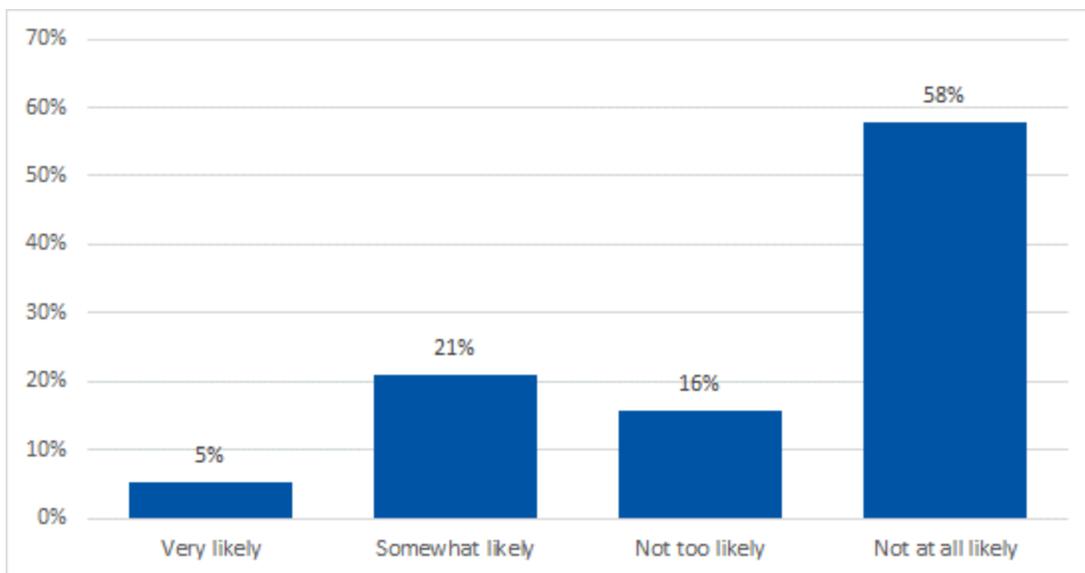


Source: RMP *wattsmart* Business Program 2016–2017. Nonparticipant-Partial Participant Survey QC3. Don't know and refused responses removed. (n=16).

Most customers preferred to be kept informed about the program through a mailing, bill insert, or the website, which aligns with how nonparticipant respondents originally heard about the program. Other suggestions included email, phone, and direct contact with a *wattsmart* Business program representative.

As shown in Figure 32, a small percentage of nonparticipants (26%, n=19) said they were likely to participate in the program during the next six months. Only 5% indicated they were very likely to request an incentive for an energy efficiency project.

Figure 32. Nonparticipants' Likelihood of Participating in *wattsmart* Business Program

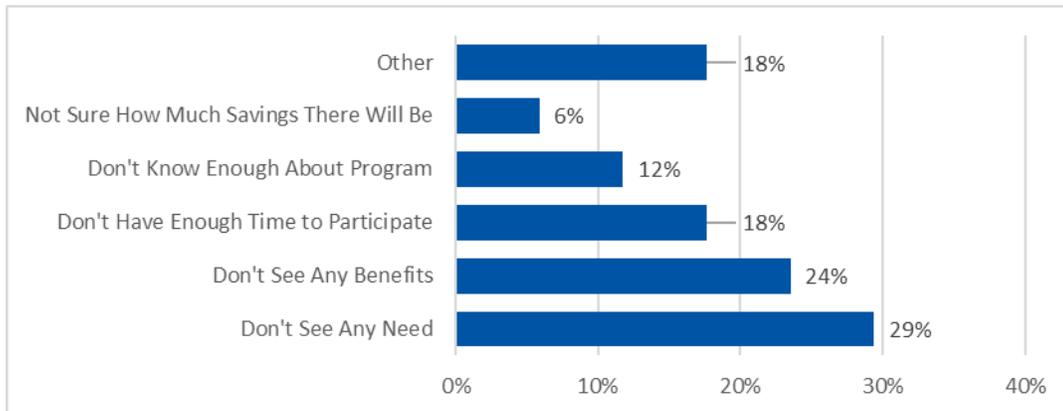


Source: RMP *wattsmart* Business Program 2016–2017. Nonparticipant-Partial Participant Survey QC4. Don't know and refused responses removed. (n=19).

Motivation

As shown in Figure 33, among 19 nonparticipants saying they were aware of the program, 17 provided reasons for not yet participating. Most respondents did not see a need within their company to participate (29%) or did not perceive any benefits (24%). Reasons categorized as other included not owning the building, the building being in a remote location, and one respondent applied for incentives but did not qualify.

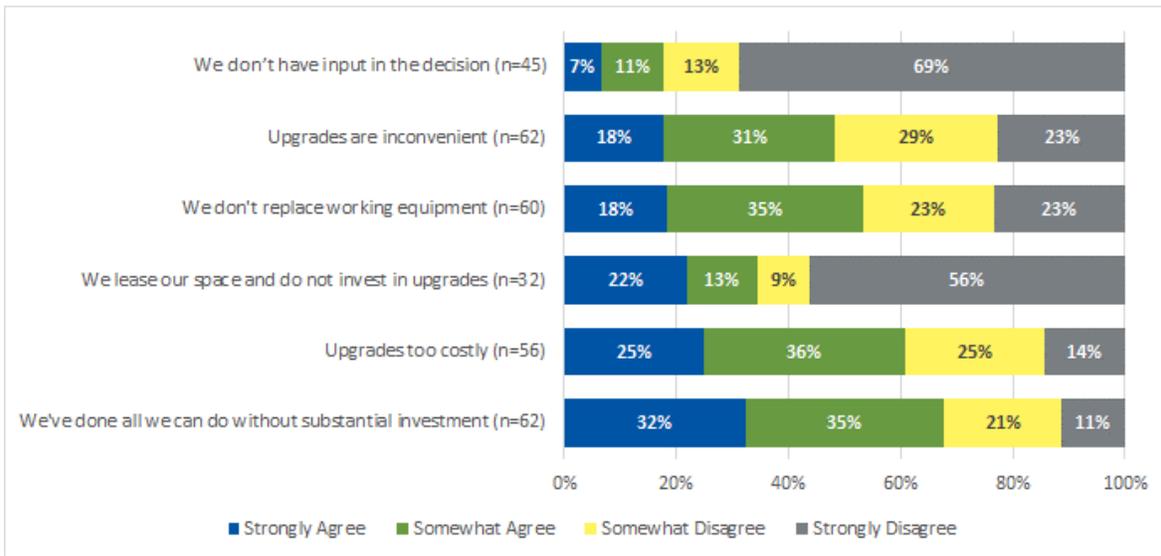
Figure 33. Reason for not yet Participating Among Those Aware of the Program



Source: RMP *wattsmart* Business 2016–2017. Nonparticipant-Partial Participant Survey QD13. Don't know and refused responses removed. Multiple responses allowed. (n=17).

To further explore nonparticipant attitudes about making energy efficiency upgrades, the Cadmus team asked respondents to what extent they agreed with the barrier statements shown in Figure 34. Respondents most strongly agreed (67% strongly or somewhat agreed) with the statement that they felt they had done all that they could without substantial investments in energy-efficiency (n=62). Respondents agreed least (82% either strongly or somewhat disagreed) with the statement that decisions about equipment upgrades were made at the corporate level, thus the respondent's facility did not have input into those decisions (n=45).

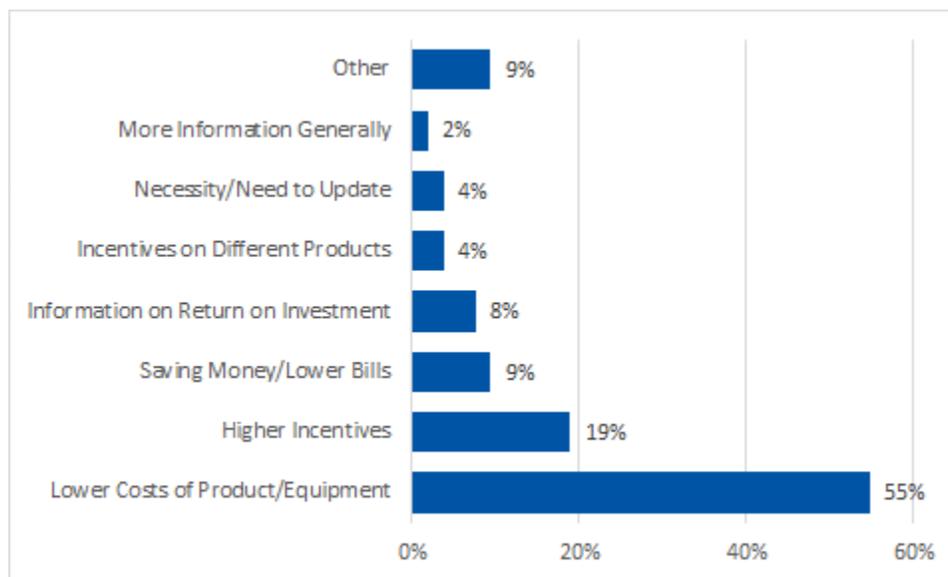
Figure 34. Attitudes About Energy Efficiency Improvements—Nonparticipants



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

Nonparticipants were asked to identify factors that they felt would motivate businesses (such as their own) to make more energy-efficient purchases or upgrades. As shown in Figure 35, respondents commonly identified lowering product and equipment costs, increasing incentive levels, and saving money or lowering utility bills.

Figure 35. Factors that Would Motivate More Energy Efficiency Upgrades



Source: Source: RMP **wattsmart** Business Program 2016–2017. Nonparticipant-Partial Participant Survey QD9. Don't know and refused responses removed. Multiple responses allowed. (n=53).

Respondents split evenly (n=60) regarding whether they calculated a return on investment for upgrades using savings gained from energy-efficiency, with one-half saying they included those savings and one-half saying they did not.

When asked what the utility could do to help businesses participate in the **wattsmart** Business program, respondents most commonly suggested providing more information (51%, n=47). This included general requests for information about the program and qualification requirements. Other suggestions included increasing advertising (13%), expanding or increasing incentives (9%), reducing energy costs (4%), reducing and simplifying paperwork (2%); 8% offered suggestions not within RMP's control; and 13% of respondents could not identify a suggestion.

Cost-Effectiveness

In assessing the **wattsmart** Business program's cost-effectiveness, the Cadmus team analyzed program benefits and costs from five different perspectives, using Cadmus' DSM Portfolio Pro model.¹⁸ The California Standard Practice Manual for assessing DSM program cost-effectiveness describes the benefit/cost ratios for the following five tests:

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

Table 25 summarizes the five tests' components.

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

Table 25. 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 decreased revenues
PCT	Present value of bill savings and incentives received	Incremental measure and installation costs

^a These tests include avoided line losses.

Table 26 provides selected cost analysis inputs for each year, including evaluated energy savings, discount rate, line loss, inflation rate, 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 RMP 2015 Integrated Resource Plan.

Table 26. Selected Cost Analysis Inputs

Input Description	2016	2017	Total
Evaluated Gross Energy Savings (kWh/year) ^a	30,780,244	29,532,119	60,312,363
Discount Rate	6.66%	6.66%	N/A
Commercial Line Loss	8.90%	8.90%	N/A
Industrial Line Loss	5.61%	5.61%	N/A
Irrigation Line Loss	9.28%	9.28%	N/A
Inflation Rate ^b	1.9%	1.9%	N/A
Total Program Costs	\$7,222,650	\$7,744,863	\$14,967,513

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

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

The **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.¹⁹

For all analyses, the team used avoided costs associated with the RMP 2015 IRP Eastside Class 2 DSM Decrement Values.²⁰

¹⁹ See Appendix C for detailed cost-effectiveness inputs and results at the measure category level.

²⁰ PacifiCorp’s *Class 2 DSM Decrement Study* details the IRP decrements. Dated April 20, 2015, the report is available online: http://www.pacificorp.com/content/dam/pacificorp/doc/Energy_Sources/Demand_Side_Management/2015/2015_Class_2_DSM_Decrement_Study.pdf

The Cadmus team analyzed **wattsmart** Business program cost-effectiveness for net savings by incorporating the evaluated freeridership and spillover.

Table 27 presents the 2016 and 2017 program years' cost-effectiveness analysis results, including the evaluated NTG (but not accounting for non-energy benefits [except those represented by the 10% conservation adder included in the PTRC test]). For this scenario, the **wattsmart** Business program proved cost-effective from all perspectives, except the RIM test. The primary criterion for assessing cost-effectiveness in Wyoming is the TRC, which achieved a 1.31 benefit/cost ratio for the combined years' net savings.

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

Table 27. wattsmart Business Program Cost-Effectiveness Summary of 2016 and 2017 Net Savings

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC	\$0.053	\$27,706,765	\$39,889,380	\$12,182,615	1.44
TRC	\$0.053	\$27,706,765	\$36,263,073	\$8,556,308	1.31
UCT	\$0.028	\$14,483,917	\$36,263,073	\$21,779,156	2.50
RIM		\$55,661,678	\$36,263,073	(\$19,398,606)	0.65
PCT		\$23,193,990	\$52,721,994	\$29,528,004	2.27
Lifecycle Revenue Impacts (\$/kWh)				\$0.000156652	
Discounted Participant Payback (years)					4.04

Table 28 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 included in the PTRC test). For this scenario, the **wattsmart** Business program proved cost-effective from all perspectives except the RIM test.

Table 28. wattsmart Business Program Cost-Effectiveness Summary of 2016 Net Savings

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC	\$0.055	\$15,377,875	\$20,467,286	\$5,089,411	1.33
TRC	\$0.055	\$15,377,875	\$18,606,624	\$3,228,749	1.21
UCT	\$0.026	\$7,222,651	\$18,606,624	\$11,383,973	2.58
RIM		\$29,216,905	\$18,606,624	(\$10,610,282)	0.64
PCT		\$13,418,664	\$27,998,955	\$14,580,291	2.09
Lifecycle Revenue Impacts (\$/kWh)				\$0.000097448	
Discounted Participant Payback (years)					4.22

Table 29 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 test). Also for this scenario, the **wattsmart** Business program proved cost-effective from all perspectives except the RIM test.

Table 29. wattsmart Business Program Cost-Effectiveness Summary of 2017 Net Savings

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC	\$0.050	\$13,149,995	\$20,715,606	\$7,565,611	1.58
TRC	\$0.050	\$13,149,995	\$18,832,369	\$5,682,374	1.43
UCT	\$0.030	\$7,744,866	\$18,832,369	\$11,087,503	2.43
RIM		\$28,205,995	\$18,832,369	(\$9,373,626)	0.67
PCT		\$10,426,362	\$26,369,593	\$15,943,231	2.53
Lifecycle Revenue Impacts (\$/kWh)				\$0.000075696	
Discounted Participant Payback (years)					2.85

Conclusions and Recommendations

RMP, in collaboration with its administrators—Cascade Energy, Nexant, and Willdan Energy Solutions—successfully delivered energy efficiency incentives and services to its 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. Cadmus found no significant differences in overall satisfaction levels between participants in two of the three contracted DSM delivery channels (e.g., **wattsmart** Business and SBDI).²¹

Customers in the Typical Upgrades and Custom Incentives, SBL and SBDI offerings recognized and reported multiple benefits from their participation, and participants in each group reported saving money and reducing consumption. While most participants in each offering—Typical Upgrades and Custom Analysis, SBDI, and SBL—reported no participation challenges, each group reported some challenges. These included the following:

- Understanding the program rules
- Scheduling and completing their projects within program-designated timeframes
- Finding a vendor
- Coordinating the overall project
- Issues with contractor performance and communication

Participants' suggestions for improving their program experiences indicated a need for RMP and administrators to focus on better and more frequent communications between participants and program representatives (e.g., administrators, contractors, trade allies), and more oversight of the SBDI installation contractors. Additional suggestions included simplification of the application process, providing a wider selection of lighting, and providing savings verification. These suggestions remained consistent among partial participants (primarily Typical Upgrades and SBDI customers), who, reporting lower satisfaction levels than participants who completed their projects and received incentives through the program, also suggested better communication, a larger selection of equipment, more time to complete the projects, and better contractor performance.

Nonparticipants were largely unaware of the program. RMP may benefit by increasing targeted outreach to nonparticipants, not only to raise awareness of the incentives and technical services offered, but to overcome nonparticipants' preconception that they see no need to participate, have done all they can do to increase energy efficiency without substantial investments, and their lack of understanding regarding how they might benefit from the program.

²¹ Response rates for Midstream participants were too low to calculate statistical significance.

The 2016 and 2017 program evaluation yielded an overall gross realization rate of 91%, with a precision of $\pm 9.3\%$ at 90% confidence. Realization rates and precision varied to some degree within each of the seven measure categories. The team calculated 70% NTG for the program overall.

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

Savings Considerations

Conclusion—Water Shutoff

The Cadmus team evaluated five Water Shutoff projects. These projects involved modification to an oil extraction process and installation of a new smaller pump to replace the existing larger pump. These projects resulted in a change in oil production as well as a decrease in energy consumption due to a smaller pump replacing a larger pump. Reported savings for these projects were based on normalizing energy use for the new pump based on oil production. The team evaluated these projects by comparing the energy reduction at the utility meter and considering the change in oil production as an ancillary benefit. As such, realized energy savings were typically lower than reported due to the difference in normalized energy savings and metered energy savings.

Recommendation—Water Shutoff

The Cadmus team recommends reporting energy savings as the measured reduction in demand (before and after the project is implemented) multiplied by the annual hours of use. While it is expected that well production (barrels of oil extracted) may increase or decrease with varying success from these projects, an increase in oil production is considered an ancillary benefit and does not impact first year energy savings reported by RMP.

Cadmus did not evaluate any projects where the new pump was controlled by a variable speed drive. If such a condition exists in the future, Cadmus recommends logging pump demand (kW) over a period of six weeks to determine the expected pump load profile.

Conclusion—Electrically Submersible Pumps

The Cadmus team evaluated eight Electrically Submersible Pump (ESP) projects. These projects involved replacement of an existing ESP with a high-efficiency ESP. No other modifications were made to the production process. Often, these projects resulted in smaller or larger ESPs installed than those originally in place. This revised pump size and performance resulted in an increase or decrease in oil production. Reported savings for these projects were based on normalizing energy use for the new pump, based on oil production. Because these projects only involved a pump system efficiency

improvement, Cadmus evaluated these projects by comparing equivalent equipment capacity with a 10% pump system efficiency improvement.²²

Recommendation—Electrically Submersible Pumps

The Cadmus team makes the following recommendations for high efficiency electric submersible pumps serving oil and gas applications:

1. Collect performance metrics for both the new high efficiency ESP and an equivalent standard efficiency ESP. Performance metrics include motor size (hp), annual hours of operation (hrs/year), nameplate motor efficiency (%), pump efficiency at design point (%), and specific gravity.
 - Where baseline pump performance metrics are not provided, use 60% pump efficiency (per ESP Market Characterization report Sept, 2014)
2. Measure pump demand (kW) before and after installation.

Conclusion—Prescriptive VFDs

RMP’s deemed savings value for prescriptive VFD projects does not account for motor end-use. All nine deemed VFD motor systems projects in the evaluation sample used RMP’s deemed value to determine savings. To evaluate energy savings for fan motor projects, the Cadmus team used deemed savings values from Cadmus’ *2014 Variable Speed Drive Loadshape Project* report, created for the Northeast Energy Efficiency Partnership (NEEP), which led to realization rates greater than 100% for all deemed fan VFD projects. Deemed savings from Cadmus’ study varied based on motor use (e.g., supply, return, exhaust). To evaluate energy savings for the two deemed pump motor VFD projects, the team referenced the 2016 PA TRM.

Recommendation—Prescriptive VFDs

Based on evaluation findings, the Cadmus team recommends increasing deemed savings for prescriptive VFD projects to match the Cadmus *2014 Variable Speed Drive Loadshape Project* report for HVAC fan projects (with savings shown in Table 30).

Table 30. Deemed Energy Savings for HVAC Fan Projects

HVAC Fan Motor Type	Deemed Energy Savings (kWh/year/hp) ^a
Supply Fan Motor	2,033
Return Fan Motor	1,788
Exhaust Fan Motor	1,788

^a Deemed savings values based on the Cadmus 2014 *Variable Speed Drive Loadshape Project* report, created for NEEP. Available online: <http://www.neep.org/variable-speed-drive-loadshape-study-final-report>

²² The 10% pump system efficiency improvement was based on Market Characterization High-Efficiency Electric Submersible Pumps—Wyoming.

For central equipment (e.g., hot/chilled water pumps, condenser water pumps, cooling tower fans), the team recommends using average savings from the 2016 PA TRM. Using average energy-savings factors, operating hours, and a default load factor of 75% from the PA TRM, and assuming a motor full-load efficiency of 93% (i.e., the National Electrical Manufacturers Association’s premium efficiency for a 20-horsepower motor), a deemed savings factor results: 1,191 kWh per year, per horsepower.

Recommendation—Prescriptive VFDs

The Cadmus team recommends implementing a minimum hours of use requirement for prescriptive VFD projects. Requesting expected use data minimizes the chance that prescriptive VFDs will be installed on HVAC equipment with minimal use.

Marketing and Outreach

Conclusion

RMP’s marketing efforts reflect a multiple touch-points approach, which the Cadmus team found easy to understand, impactful, and—for the most part—brand consistent. Additionally, RMP’s **wattsmart** Business program participants reported learning about program incentives from multiple sources, including RMP’s mailings, email, and website.

At the same time, many RMP customers not participating in the program remained unaware, even in general terms, that RMP offered technical assistance and incentives. Among the 36% of nonparticipants that reported installing energy-efficient equipment (predominately lighting) without receiving financial or technical assistance from a utility, vendor, or other organization, only three said general information that RMP provided about energy efficiency proved very important in their decisions to install the equipment; none said information from RMP program staff or contractors was very important. This low awareness among the general nonparticipant population provides RMP with an opportunity to increase awareness and participation through additional customer segmentation (discussed below under Nonparticipants) and through continued branding and broad outreach efforts. The team provides the following recommendations for fine-tuning the program website, collateral, and creative used to promote energy efficiency and, specifically, the program.

Recommendation

- Increase consistency with direct calls to action at the end of all collateral pieces.
- Consider adding graphs, charts, images, and even video to convey information and reduce the need for reading copy-heavy communications materials.
- The URL “wattsmart.com” is frequently used to complete a sentence in the ad copy. Some consumers will not realize that the “.” at the end of the URL in the copy is a period for the sentence end, not technically part of the URL. Consider purchasing the domain “wattsmart.com.” and redirect to “wattsmart.com”

- For the Museum of the Mountain Man radio spot, Cadmus recommends saying the URL at least twice in a 60-second spot.
- For the Museum of the Mountain Man digital/social ads, consider adding the time period applicable to the savings shown.
- For the MAVERIK mobile ad, consider incorporating a savings message to inspire further action by the consumer.
- Consider running additional TV spots during colder months (TV watching increases during cooler months with less daylight).

Data Management

Conclusion

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

Recommendation

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

Small Business Direct Install

Conclusion

While Willdan reaches the small business customer, and participants report somewhat high satisfaction levels with equipment they installed, 46% of participants reported challenges with program participation. These challenges focused on three areas:

- Issues with incomplete work by the contractor
- Sites left messy or dirty
- Contractors who were difficult to reach or nonresponsive to the customer's repeated calls

Following the evaluation activities, Willdan described a contractor vetting process implemented in 2018 through which they are securing local contractors with strong community reputation, providing on-site training, troubleshooting, and emphasizing customer satisfaction. Additionally, Willdan reports they are measuring contractor performance based upon customer interaction and feedback, before, during and after the installation, using customer feedback to nuance contractor training.

Recommendation

Cadmus recommends RMP review Willdan's customer satisfaction feedback periodically throughout 2019 to ensure the customer satisfaction progress already achieved by Willdan, continues until both

Willdan and RMP are satisfied the quality of program delivery has stabilized and meets RMP's and Willdan's expectations. Cadmus also recommends customer and contractor satisfaction be evaluated again in the next evaluation period to confirm progress or identify any lingering concerns.

Nonparticipants

Conclusion

With only 29% of customers aware that RMP offers technical assistance and incentives, and with customers reporting they did not participate as they did not see a need within their buildings or did not grasp the program's benefits, RMP has an opportunity to pick up new participants through raising customers' awareness of the program. While not all projects will prove sufficiently cost-effective to engage with the program, gaining a small percentage of the total nonparticipating C&I customer base represents a large opportunity.

Recommendation

Cadmus recommends RMP review the marketing strategy and consider increasing marketing outreach to nonparticipants, both through RMP branding efforts, and sector outreach by program administrators. Consider increasing any existing customer segmentation efforts to help trade allies target eligible customers. Target the two largest nonparticipant business sectors (Retail, and Accommodation) 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-Report 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 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.http://www.pacificcorp.com/content/dam/pacificcorp/doc/Energy_Sources/Demand_Side_Management/DSM_WY_EnergyFinAnswer_Report_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 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 Rocky Mountain Power 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.

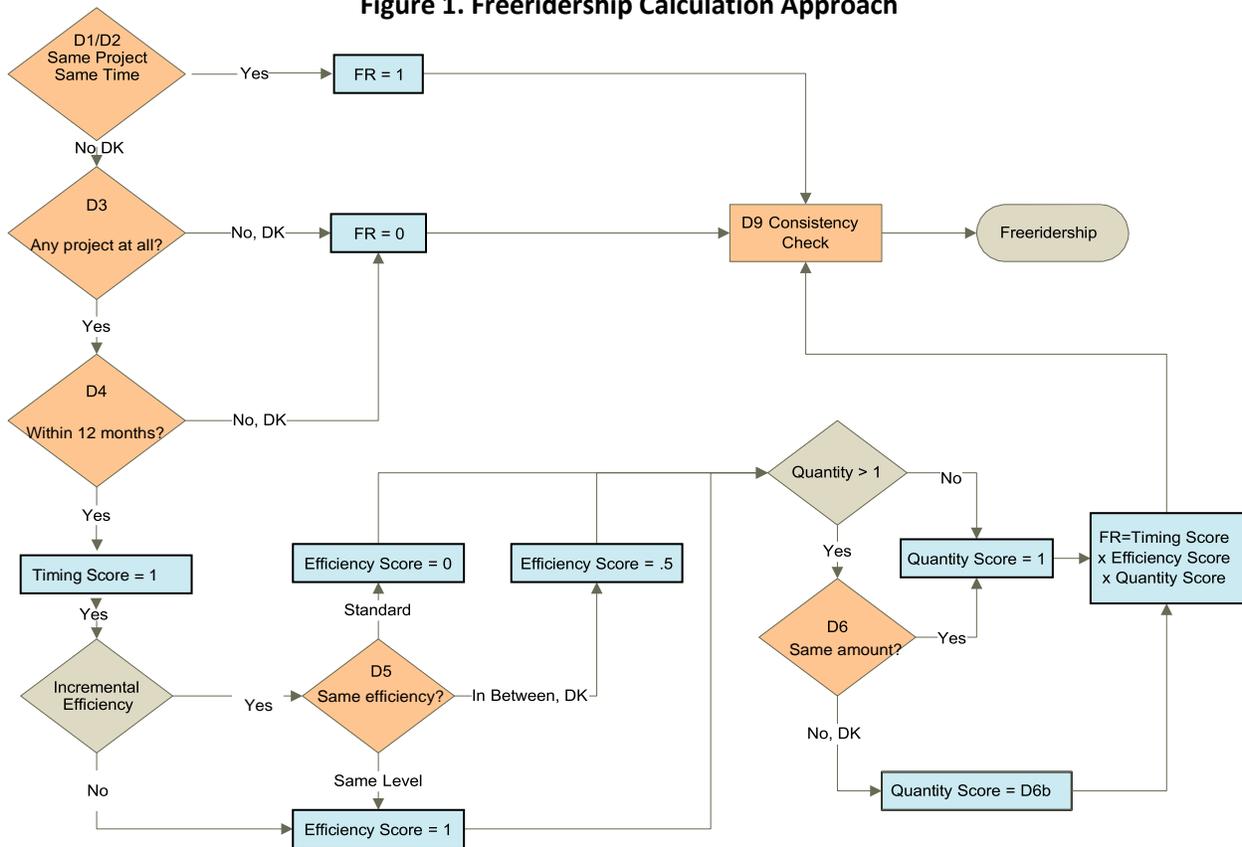
After adjusting the initial freeridership ratio for past program participation, a series of consistency check questions were reviewed. These questions asked about the influence of the program's interventions (e.g., financial incentives, technical assistance) and address the counter-factual (e.g., what 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 free-ridership by 50%

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 Rocky Mountain Power 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 8,061 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 5,074 kWh.

Table 2. NPSO Response Summary

Reported Spillover Measure Type	Quantity	Unit Energy Savings (kWh) ¹	Total Savings (kWh)
Refrigerator	1	856 per unit	856
Lighting	15	281 per unit	4,218
Total	16		5,074

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 Wyoming to be 0% (H). Table 3 below details the analysis steps. The first step is taking the total sample

spillover savings from the 68 respondents (5,074 kWh (A)) and dividing it by the total sample usage (15,799,051 kWh (C)). This results in the Sample NPSO 0.0% (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 (570,112,483 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 (183,112 kWh (F)). This savings is then divided by the total gross program kWh savings (60,312,363 (G)) found in the 2016-2017 **wattsmart** Business Evaluation to calculate the NPSO of 0%.

Table 3. Wyoming NPSO *wattsmart* Results

Variable	Metric	Value	Source
A	Total kWh Spillover Savings from Survey Respondents	5,074	Survey data / Engineering Analysis
B	Total Nonparticipant Customers Surveyed	68	Survey disposition
C	Sample Usage	15,799,051	Rocky Mountain Power Customer Database
D	Sample NPSO	0.0%	$A \div C$
E	Total Population Usage kWh	570,112,483	Rocky Mountain Power Customer Database
F	NPSO kWh Savings Applied to Population	183,112	$D \times E$
G	Total Gross Program Evaluated kWh Savings	60,312,363	2016-2017 wattsmart Business Evaluation
H	NPSO as a Percentage of Total 2016-2017 wattsmart Business Evaluated kWh Savings	0%	$F \div G$

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 UTILTIY]**
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) Instant Incentives-Lighting (Midstream) Participant Survey

Researchable Questions		
Key Research Topics	Areas of Investigation	Related Questions
Screening	Project initiation process	C1, C8
Marketing and Outreach	Program awareness	B1-B3
	Future communication preferences	G3
Barriers	Obstacles to installing high-efficiency lighting	C2-C5
Satisfaction	Assess satisfaction with distributor/contractor and instant discount	C6-C7, C9-C10, G1, G2
Freeridership and Spillover	Assess net savings	Sections D and E
Firmographics	Determine building and company characteristics of participants	Section F

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

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

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 or energy manager or the person who is familiar with your participation in the [INSERT UTILITY] Instant 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 VOICE MAIL]
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 [INSERT 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 [INSERT UTILITY]'s wattsmart Business Instant Incentive Lighting Program. [INSERT UTILITY] is actively seeking your opinions to help improve energy efficiency programs and to better understand how to assist customers in saving money and energy. This call may be monitored or recorded for quality assurance 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 5-7 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 its 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 lighting including **[MEASURE1]**, for **[INSERT 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]**
(MEASURE1 IS INCORRECT [Correct: _____]) **[CALL THIS VARIABLE C_MEASURE1]**
 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 A1. 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 new **[MEASURE1/C_MEASURE1]**? The incentive was in the form of check from the utility or an instant discount on your 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 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. Midstream (Instant Incentives)

Thank you. I'd like to ask you about the lamps you purchased through the Instant Incentive program.

C1. Did your company purchase your lamps direct from a distributor or through your contractor? **[DO NOT READ LIST; RECORD ONE ANSWER]?**

1. (Contractor)
2. (Distributor)
3. (Other) **[SPECIFY: _____]**
98. (Don't know)
99. (Refused)

[IF C1= 2]

C2. How easy was it to find a distributor offering the instant discount? 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=3 OR 4]

C3. What would have made it easier?

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

C4. How easy was it to find the **[MEASURE1/C_MEASURE1]** product you wanted to purchase? 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 C4=3 OR 4]

C5. What would have made it easier?

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

[ASK C6 IF C1=1 OR 2 [IF C1 = 3, 98, 99 SKIP TO C8]

- C6. Did the **[INSERT RESPONSE FROM C1]** provide assistance with the selection of the lamps you purchased?
1. (Yes)
 2. (No)
 98. (Don't Know)
 99. (Refused)

[IF C6 = 1]

- C7. How satisfied were you with their help? Would you say you were...? **[READ LIST]**
1. Very satisfied
 2. Somewhat satisfied
 3. Not too satisfied
 4. Not satisfied at all
 98. (Don't know)
 99. (Refused)
- C8. When you made this purchase of the **[MEASURE1/C_MEASURE1]**, were you...? **[RECORD ONE RESPONSE]**
1. Replacing burned out lamps
 2. Relamping an area of your facility as part of ongoing maintenance
 3. Purchasing lamps for a larger lighting retrofit project
 4. Or some other reason **[SPECIFY _____]**
- C9. Thinking about the incentive you received, how satisfied were you with the amount of the incentive? Would you say you were...? **[READ LIST]**
1. Very satisfied
 2. Somewhat satisfied
 3. Not too satisfied
 4. Not satisfied at all
 98. (Don't know)
 99. (Refused)

[IF C9=3 OR 4]

- C10. What incentive amount would have been enough for you to say you were very satisfied?
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 **[UTILITY]** incentive **[IF C6 = 1 OR 2 READ "AND ASSISTANCE FROM THE DISTRIBUTOR OR CONTRACTOR"]**, would you have still purchased **[MEASURE1/C_MEASURE1]**?
1. (Yes)
 2. (No) **[SKIP TO D3]**
 98. (Don't know) **[SKIP TO D3]**
 99. (Refused) **[SKIP TO D3]**
- D2. Without the **[UTILITY]** incentive **[IF C6 = 1 OR 2 READ "AND ASSISTANCE FROM THE DISTRIBUTOR OR CONTRACTOR"]**, would you have still purchased the **[MEASURE1/C_MEASURE1]** 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 **[UTILITY]** incentive **[IF C6 = 1 OR 2 READ "AND ASSISTANCE FROM THE DISTRIBUTOR OR CONTRACTOR"]**, would you have purchased any **[MEASURE1/C_MEASURE1]**?
1. (Yes)
 2. (No) **[SKIP TO D7]**
 98. (Don't know) **[SKIP TO D7]**
 99. (Refused) **[SKIP TO D7]**
- D4. Without the **[UTILITY]** incentive **[IF C6 = 1 OR 2 READ "AND ASSISTANCE FROM THE DISTRIBUTOR OR CONTRACTOR"]**, In terms of timing, when would you have purchased the **[MEASURE1/C_MEASURE1]**? **[READ LIST]**
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 purchased more, less, or the same amount of **[MEASURE1/C_MEASURE1]** without the incentive **[IF C6 = 1 OR 2 READ “AND ASSISTANCE FROM THE DISTRIBUTOR OR CONTRACTOR”]**?

1. (More)
D5. a. Compared to the installed amount, how much more? **[RECORD PERCENTAGE: _____]**
2. (Less)
D5. b. Compared to the installed amount, how much less? **[RECORD PERCENTAGE: _____]**
3. (Same)
98. (Don't know)
99. (Refused)

D6. Prior to hearing about the program, was the cost of **[MEASURE1/C_MEASURE1]** included in your organization's most recent capital or maintenance budget?

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

D7. In your own words, can you please describe what impact the **[UTILITY]** instant incentive offer **[IF C6 = 1 OR 2 READ “AND ASSISTANCE FROM THE DISTRIBUTOR OR CONTRACTOR”]** had on your decision to purchase **[MEASURE1/C_MEASURE1]**?

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

D8. With the instant incentive, your company received a discount of, **[CUSTOMER INCENTIVE]** for purchasing **[MEASURE_1/C_MEASURE1]**.

For this **[MEASURE_1/C_MEASURE1]** purchase, on a scale from 1 to 5, with 1 being not important at all and 5 being extremely important, how important was each of the following factors in deciding which lamps to purchase. 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 distributor or contractor
2. Information provided by **[UTILITY]** on energy saving opportunities
3. The **[UTILITY]** discount or incentive
4. Familiarity with this type of lighting
5. 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 E8]**
98. (Don't know) **[SKIP TO E8]**
99. (Refused) **[SKIP TO E8]**

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 UTILITIY]**
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]** Instant Incentive 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 other 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 Instant Incentive 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 Instant Incentive 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 community event)
4. (Utility mailing, emailing, newsletter w/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: _____]**)
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 WATTSMART BUSINESS OFFER INCENTIVES FOR? _____]**)
4. (Increasing the incentive amount)
5. (Simplify the application process) **[ASK: IN WHAT WAY? _____]**)
6. (Simplify the website) **[ASK: IN WHAT WAY? _____]**)
7. (Provide quicker approval on applications)
8. (Send incentive check out faster)
9. (Other **[SPECIFY: _____]**)
10. (No, nothing)
98. (Don't know)
99. (Refused)

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 savings. Net results apply the evaluated NTG to evaluated gross savings. Table E1 shows cost-effectiveness inputs for Wyoming’s Wattsmart program.

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

Input Description	2016	2017	Total
Average Measure Life*			
Irrigation	14.7	12.8	13.4
Other	11.5	9.9	10.3
Motor Systems	13.4	14.9	14.0
HVAC	9.5	15.4	13.0
Compressed Air	13.3	14.3	13.7
Lighting	13.8	13.6	13.7
Oil and Gas	11.2	7.0	8.5
Evaluated Net Energy Savings (kWh/year)**			
Irrigation	59,486	106,362	165,848
Other	336,884	995,883	1,332,766
Motor Systems	12,821,205	9,075,779	21,896,984
HVAC	963,590	1,339,096	2,302,686
Compressed Air	648,384	429,895	1,078,279
Lighting	10,725,114	10,496,699	21,221,813
Oil and Gas	2,968,579	5,155,497	8,124,076
Total Utility Cost (including incentives)***			
Irrigation	\$16,561	\$12,128	\$28,689
Other	\$236,862	\$507,188	\$744,050
Motor Systems	\$2,598,608	\$2,101,706	\$4,700,314
HVAC	\$699,964	\$227,889	\$927,853
Compressed Air	\$130,239	\$42,864	\$173,103
Lighting	\$2,446,887	\$3,472,536	\$5,919,423
Oil and Gas	\$1,093,530	\$1,380,555	\$2,474,085
Incentives			
Irrigation	\$6,814	\$11,276	\$18,090
Other	\$61,136	\$299,966	\$361,102
Motor Systems	\$2,043,714	\$1,283,818	\$3,327,532
HVAC	\$87,061	\$131,733	\$218,794
Compressed Air	\$79,028	\$25,531	\$104,559
Lighting	\$1,727,381	\$1,939,016	\$3,666,397
Oil and Gas	\$208,927	\$651,092	\$860,019
Commercial Retail Rate	\$0.085	\$0.084	N/A



Industrial Retail Rate	\$0.061	\$0.059	N/A
Irrigation Retail Rate	\$0.078	\$0.079	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.

Irrigation

Table E2, Table E3, and Table E4 show the irrigation end-use category cost-effectiveness results for net evaluated savings. The agricultural end-use category proved cost-effective from all test perspectives (Table E2).

**Table E2. Wyoming Irrigation 2016-2017 Net
(2015 Decrement East Commercial Cooling 14% – Load Shape Irrigation)**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	\$0.043	\$69,195	\$223,895	\$154,699	3.24
TRC	\$0.043	\$69,195	\$203,540	\$134,345	2.94
UCT	\$0.017	\$27,932	\$203,540	\$175,609	7.29
RIM		\$170,752	\$203,540	\$32,788	1.19
PCT		\$69,821	\$187,410	\$117,590	2.68
Lifecycle Revenue Impacts (\$/kWh)					(\$0.000000311)
Discounted Participant Payback (years)					3.97

**Table E3. Wyoming Irrigation 2016 Net
(2015 Decrement East Commercial Cooling 14% – Load Shape Irrigation)**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	\$0.065	\$41,057	\$87,706	\$46,650	2.14
TRC	\$0.065	\$41,057	\$79,733	\$38,676	1.94
UCT	\$0.026	\$16,561	\$79,733	\$63,172	4.81
RIM		\$73,108	\$79,733	\$6,625	1.09
PCT		\$37,273	\$74,132	\$36,859	1.99
Lifecycle Revenue Impacts (\$/kWh)					(\$0.000000061)
Discounted Participant Payback (years)					5.49

**Table E4. Wyoming Irrigation 2017 Net
(2015 Decrement East Commercial Cooling 14% – Load Shape Irrigation)**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	\$0.029	\$30,013	\$145,259	\$115,246	4.84
TRC	\$0.029	\$30,013	\$132,053	\$102,041	4.40
UCT	\$0.012	\$12,128	\$132,053	\$119,925	10.89
RIM		\$104,147	\$132,053	\$27,906	1.27
PCT		\$34,715	\$120,823	\$86,108	3.48
Lifecycle Revenue Impacts (\$/kWh)					(\$0.000000279)
Discounted Participant Payback (years)					2.18

Other

Table E5, Table E6, and Table E7 show the other end-use category cost-effectiveness results for net evaluated savings. The other end-use category proved cost-effective from the UCT and PCT test perspectives (Table E5). In 2016, The other end-use category proved cost-effective only from the PCT test perspective (Table E7).

**Table E5. Wyoming Other 2016-2017 Net
(2015 Decrement East Commercial Cooling 14% – Load Shape HVAC)
(2015 Decrement East Plug Load 71% – Load Shape Commercial Plug Load)
(2015 Decrement East Industrial 40% – Load Shape Industrial)
(2015 Decrement East Water Heating 53% – Load Shape Water Heating)**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	\$0.103	\$1,031,781	\$931,011	(\$100,770)	0.90
TRC	\$0.103	\$1,031,781	\$846,373	(\$185,408)	0.82
UCT	\$0.071	\$712,380	\$846,373	\$133,993	1.19
RIM		\$1,504,776	\$846,373	(\$658,403)	0.56
PCT		\$711,583	\$1,194,410	\$482,827	1.68
Lifecycle Revenue Impacts (\$/kWh)					\$0.000005317
Discounted Participant Payback (years)					4.82

**Table E6. Wyoming Other 2016 Net
(2015 Decrement East Commercial Cooling 14% – Load Shape HVAC)
(2015 Decrement East Plug Load 71% – Load Shape Commercial Plug Load)
(2015 Decrement East Industrial 40% – Load Shape Industrial)**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	\$0.095	\$283,934	\$192,909	(\$91,025)	0.68
TRC	\$0.095	\$283,934	\$175,372	(\$108,562)	0.62
UCT	\$0.079	\$236,862	\$175,372	(\$61,490)	0.74
RIM		\$469,094	\$175,372	(\$293,722)	0.37



PCT	\$116,352	\$310,848	\$194,495	2.67
Lifecycle Revenue Impacts (\$/kWh)	\$0.000002973			
Discounted Participant Payback (years)	2.09			

**Table E7. Wyoming Other 2017 Net
(2015 Decrement East Commercial Cooling 14% – Load Shape HVAC)
(2015 Decrement East Industrial 40% – Load Shape Industrial)
(2015 Decrement East Water Heating 53% – Load Shape Water Heating)**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	\$0.107	\$797,654	\$787,259	(\$10,395)	0.99
TRC	\$0.107	\$797,654	\$715,690	(\$81,964)	0.90
UCT	\$0.068	\$507,188	\$715,690	\$208,502	1.41
RIM		\$1,104,658	\$715,690	(\$388,968)	0.65
PCT		\$634,873	\$942,407	\$307,534	1.48
Lifecycle Revenue Impacts (\$/kWh)	\$0.000003141				
Discounted Participant Payback (years)	5.33				

Motor Systems

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

**Table E8. Wyoming Motor Systems 2016-2017 Net
(2015 Decrement East Industrial 40% – Industrial Machinery General)**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	\$0.044	\$9,384,728	\$15,384,234	\$5,999,506	1.64
TRC	\$0.044	\$9,384,728	\$13,985,668	\$4,600,939	1.49
UCT	\$0.021	\$4,569,081	\$13,985,668	\$9,416,587	3.06
RIM		\$19,309,735	\$13,985,668	(\$5,324,067)	0.72
PCT		\$8,860,458	\$19,445,890	\$10,585,432	2.19
Lifecycle Revenue Impacts (\$/kWh)	\$0.000048275				
Discounted Participant Payback (years)	4.31				

**Table E9. Wyoming Motor Systems 2016 Net
(2015 Decrement East Industrial 40% – Industrial Machinery General)**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	\$0.047	\$5,942,814	\$8,818,847	\$2,876,033	1.48
TRC	\$0.047	\$5,942,814	\$8,017,134	\$2,074,320	1.35
UCT	\$0.021	\$2,598,608	\$8,017,134	\$5,418,526	3.09
RIM		\$11,300,839	\$8,017,134	(\$3,283,705)	0.71

PCT	\$5,920,791	\$11,606,605	\$5,685,814	1.96
Lifecycle Revenue Impacts (\$/kWh)				\$0.000031585
Discounted Participant Payback (years)				1.99

**Table E10. Wyoming Motor Systems 2017 Net
(2015 Decrement East Industrial 40% – Industrial Machinery General)**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	\$0.039	\$3,671,146	\$7,002,642	\$3,331,496	1.91
TRC	\$0.039	\$3,671,146	\$6,366,038	\$2,694,892	1.73
UCT	\$0.022	\$2,101,706	\$6,366,038	\$4,264,332	3.03
RIM		\$8,542,288	\$6,366,038	(\$2,176,250)	0.75
PCT		\$3,135,448	\$8,361,381	\$5,225,933	2.67
Lifecycle Revenue Impacts (\$/kWh)					\$0.000019733
Discounted Participant Payback (years)					1.63

HVAC

Table E11, Table E12, and

Table E13 show the HVAC end-use category cost-effectiveness results for net evaluated savings. The HVAC end-use category proved cost-effective from all perspectives except for the RIM (Table E11). In 2016, the HVAC end-use category only proved cost effective from the UCT and PCT perspectives (Table E12). In 2017, the HVAC end-use category proved cost effective from all test perspectives (Table E13).

**Table E11. Wyoming HVAC 2016-2017 Net
(2015 Decrement East Com Cooling 14% – Load Shape HVAC)**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	\$0.104	\$2,227,641	\$2,892,913	\$665,272	1.30
TRC	\$0.104	\$2,227,641	\$2,629,921	\$402,280	1.18
UCT	\$0.043	\$913,623	\$2,629,921	\$1,716,298	2.88
RIM		\$2,865,984	\$2,629,921	(\$236,063)	0.92
PCT		\$1,555,700	\$2,202,773	\$647,073	1.42
Lifecycle Revenue Impacts (\$/kWh)					\$0.000002052
Discounted Participant Payback (years)					8.23

**Table E12. Wyoming HVAC 2016 Net
(2015 Decrement East Com Cooling 14% – Load Shape HVAC)**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	\$0.132	\$1,009,138	\$971,883	(\$37,256)	0.96
TRC	\$0.132	\$1,009,138	\$883,530	(\$125,609)	0.88
UCT	\$0.091	\$699,964	\$883,530	\$183,566	1.26



RIM		\$1,388,101	\$883,530	(\$504,572)	0.64
PCT		\$404,322	\$789,242	\$384,920	1.95
Lifecycle Revenue Impacts (\$/kWh)					\$0.000006189
Discounted Participant Payback (years)					3.79

**Table E13. Wyoming HVAC 2017 Net
(2015 Decrement East Com Cooling 14% – Load Shape HVAC)**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	\$0.088	\$1,299,655	\$2,048,971	\$749,316	1.58
TRC	\$0.088	\$1,299,655	\$1,862,701	\$563,046	1.43
UCT	\$0.016	\$227,889	\$1,862,701	\$1,634,812	8.17
RIM		\$1,576,309	\$1,862,701	\$286,391	1.18
PCT		\$1,228,060	\$1,507,672	\$279,612	1.23
Lifecycle Revenue Impacts (\$/kWh)					(\$0.000003734)
Discounted Participant Payback (years)					5.82

Compressed Air

Table E14, Table E15, and Table E16 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

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	\$0.035	\$360,111	\$743,670	\$383,559	2.07
TRC	\$0.035	\$360,111	\$676,064	\$315,952	1.88
UCT	\$0.016	\$170,427	\$676,064	\$505,637	3.97
RIM		\$885,105	\$676,064	(\$209,041)	0.76
PCT		\$292,650	\$817,643	\$524,993	2.79
Lifecycle Revenue Impacts (\$/kWh)					\$0.000001895
Discounted Participant Payback (years)					3.26

perspectives except for the RIM (

Table E14).

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	\$0.035	\$360,111	\$743,670	\$383,559	2.07
TRC	\$0.035	\$360,111	\$676,064	\$315,952	1.88
UCT	\$0.016	\$170,427	\$676,064	\$505,637	3.97
RIM		\$885,105	\$676,064	(\$209,041)	0.76
PCT		\$292,650	\$817,643	\$524,993	2.79
Lifecycle Revenue Impacts (\$/kWh)					\$0.000001895
Discounted Participant Payback (years)					3.26

Lifecycle Revenue Impacts (\$/kWh)	\$0.000001895
Discounted Participant Payback (years)	3.26

**Table E14. Wyoming Compressed Air 2016-2017 Net
(2015 Decrement East Industrial 40% – Load Shape Industrial Machinery General)**

**Table E15. Wyoming Compressed Air 2016 Net
(2015 Decrement East Industrial 40% – Load Shape Industrial Machinery General)**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	\$0.049	\$309,914	\$442,407	\$132,493	1.43
TRC	\$0.049	\$309,914	\$402,188	\$92,274	1.30
UCT	\$0.021	\$130,239	\$402,188	\$271,949	3.09
RIM		\$567,130	\$402,188	(\$164,942)	0.71
PCT		\$258,703	\$515,919	\$257,216	1.99
Lifecycle Revenue Impacts (\$/kWh)					\$0.000001587
Discounted Participant Payback (years)					4.55

**Table E16. Wyoming Compressed Air 2017 Net
(2015 Decrement East Industrial 40% – Load Shape Industrial Machinery General)**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
PTRC (TRC + 10% Conservation Adder)	\$0.012	\$53,541	\$321,327	\$267,787	6.00
TRC	\$0.012	\$53,541	\$292,116	\$238,575	5.46
UCT	\$0.010	\$42,864	\$292,116	\$249,252	6.81
RIM		\$339,152	\$292,116	(\$47,036)	0.86
PCT		\$36,208	\$321,819	\$285,611	8.89
Lifecycle Revenue Impacts (\$/kWh)					\$0.000000426
Discounted Participant Payback (years)					0.68

Lighting

Table E17, Table E18, and Table E19 show the lighting end-use category cost-effectiveness results for net evaluated savings. The lighting end-use category proved cost-effective from all perspectives except for the RIM (Table E17).



**Table E17. Wyoming Lighting 2016-2017 Net
(2015 Decrement East Commercial Lighting 53% – Load Shape Commercial Lighting)**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit /Cost Ratio
PTRC (TRC + 10% Conservation Adder)	\$0.054	\$11,314,244	\$15,633,711	\$4,319,467	1.38
TRC	\$0.054	\$11,314,244	\$14,212,465	\$2,898,220	1.26
UCT	\$0.027	\$5,702,593	\$14,212,465	\$8,509,872	2.49
RIM		\$24,957,377	\$14,212,465	(\$10,744,913)	0.57
PCT		\$9,953,232	\$24,474,436	\$14,521,204	2.46
Lifecycle Revenue Impacts (\$/kWh)	\$0.000102035				
Discounted Participant Payback (years)	3.84				

**Table E18. Wyoming Lighting 2016 Net
(2015 Decrement East Commercial Lighting 53% – Load Shape Commercial Lighting)**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/ Cost Ratio
PTRC (TRC + 10% Conservation Adder)	\$0.058	\$6,404,111	\$8,039,031	\$1,634,921	1.26
TRC	\$0.058	\$6,404,111	\$7,308,210	\$904,100	1.14
UCT	\$0.022	\$2,446,887	\$7,308,210	\$4,861,323	2.99
RIM		\$12,655,272	\$7,308,210	(\$5,347,062)	0.58
PCT		\$6,178,918	\$12,823,452	\$6,644,534	2.08
Lifecycle Revenue Impacts (\$/kWh)	\$0.000051432				
Discounted Participant Payback (years)	4.57				

**Table E19. Wyoming Lighting 2017 Net
(2015 Decrement East Commercial Lighting 53% – Load Shape Commercial Lighting)**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/ Cost Ratio
PTRC (TRC + 10% Conservation Adder)	\$0.049	\$5,237,148	\$8,100,485	\$2,863,337	1.55
TRC	\$0.049	\$5,237,148	\$7,364,078	\$2,126,929	1.41
UCT	\$0.033	\$3,472,536	\$7,364,078	\$3,891,542	2.12
RIM		\$13,121,425	\$7,364,078	(\$5,757,348)	0.56
PCT		\$4,025,683	\$12,426,939	\$8,401,256	3.09
Lifecycle Revenue Impacts (\$/kWh)	\$0.000054673				
Discounted Participant Payback (years)	2.11				

Oil and Gas

Table E17, Table E18, and Table E19 show the recommissioning end-use category cost-effectiveness results for net evaluated savings. The Oil and Gas end-use category proved cost-effective from all perspectives except for the RIM (Table E17).

**Table E20. Wyoming Oil and Gas 2016-2017 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)	\$0.060	\$3,319,064	\$4,079,947	\$760,882	1.23
TRC	\$0.060	\$3,319,064	\$3,709,043	\$389,978	1.12
UCT	\$0.043	\$2,387,881	\$3,709,043	\$1,321,161	1.55
RIM		\$5,967,949	\$3,709,043	(\$2,258,907)	0.62
PCT		\$1,750,547	\$4,399,432	\$2,648,885	2.51
Lifecycle Revenue Impacts (\$/kWh)	\$0.000023894				
Discounted Participant Payback (years)	2.54				

**Table E21. Wyoming Oil and Gas 2016 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)	\$0.054	\$1,386,908	\$1,914,503	\$527,595	1.38
TRC	\$0.054	\$1,386,908	\$1,740,457	\$353,549	1.25
UCT	\$0.043	\$1,093,530	\$1,740,457	\$646,927	1.59
RIM		\$2,763,361	\$1,740,457	(\$1,022,904)	0.63
PCT		\$502,305	\$1,878,758	\$1,376,453	3.74
Lifecycle Revenue Impacts (\$/kWh)	\$0.000010355				
Discounted Participant Payback (years)	1.57				

**Table E22. Wyoming Oil and Gas 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)	\$0.065	\$2,060,838	\$2,309,663	\$248,824	1.12
TRC	\$0.065	\$2,060,838	\$2,099,693	\$38,855	1.02
UCT	\$0.043	\$1,380,555	\$2,099,693	\$719,138	1.52
RIM		\$3,418,014	\$2,099,693	(\$1,318,321)	0.61
PCT		\$1,331,375	\$2,688,551	\$1,357,176	2.02
Lifecycle Revenue Impacts (\$/kWh)	\$0.000019018				
Discounted Participant Payback (years)	2.11				