Evaluation, Verification and Measurement Report
Wattsmart Homes Program
Idaho

PROGRAM YEARS 2019-2020

Prepared for:

Rocky Mountain Power

November 2021

Prepared by:

ADM Associates, Inc.

3239 Ramos Circle

Sacramento, CA 95827

916-363-8383

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1 Executive Summary

ADM Associates, Inc. (ADM) is under contract with PacifiCorp to perform evaluation, measurement, and verification (EM&V) services to determine the energy savings (kWh) that resulted from Rocky Mountain Power's 2019-2020 Wattsmart Homes Program in Idaho. This report documents ADM's findings.

Program year 2019 (PY 2019) and program year 2020 (PY 2020) coincide with the respective calendar years. The purpose of this report is to present ADM's impact evaluation of the energy savings (kWh) that resulted from the program and ADM's process evaluation of the program, focusing on participant and program staff perspectives regarding the program's implementation and ADM's observations about the program.

1.1 Description of Programs

ADM determined the evaluated energy (kWh) savings achieved through Rocky Mountain Power's 2019-2020 Wattsmart Homes Program in Idaho. Rocky Mountain Power contracted with Guidehouse to assess program cost-effectiveness. The results of the cost-effectiveness assessment are also included in this report. For the process evaluation, ADM gained an in-depth understanding of program operations, challenges and evaluation needs through Rocky Mountain Power and implementation contractor key staff interviews, complemented with program documentation review and program participant surveys.

The program provides financial incentives (discounts, rebates, and free products) for Rocky Mountain Power residential customers to install energy efficient products. The program leverages relationships with manufacturers, distributors, and retailers to ensure effective program implementation and optimize participation.

The onset of the covid-19 pandemic occurred 15 months into the 24-month evaluation period. In response, Rocky Mountain Power increased the number of energy saving products distributed through foodbanks to target its customers who were hardest hit by the economic downturn to help them reduce their energy costs. The foodbank distributions were a quick-response approach to assisting customers during an acute crisis.

Products included in the program are reported in Table 1-1.

Table 1-1: Quantities of Measures
Delivered through Program by Measure Category

Measure Category	2019	2020	2019-2020
Appliances	**33**	**24**	**57**
Clothes Washer - Electric DHW & Electric Dryer	33	24	57
Building Shell	**9,550**	**10,620**	**20,170**
Attic Insulation	6,470	8,294	14,764
Wall Insulation	696	-	696
Windows Tier 1	1,486	2,259	3,745
Windows Tier 2	898	67	965
Electronics	**725**	**9,318**	**10,043**
Advanced Power Strips - IR Sensing	725	-	725
Advanced Power Strips - Occupancy Sensing	-	9,318	9,318
Energy Kits	**374**	**16**	**390**
Best Kit	193	9	202
LED Kit	181	7	188
HVAC	**598**	**276**	**874**
Central Air Conditioner	3	3	6
Duct Sealing and/or Insulation	35	-	35
Evaporative Cooler	1	2	3
Furnace Fan	5	-	5
Heat Pump - Air Source	2	-	2
Heat Pump - Ductless	87	34	121
Thermostat	465	237	702
Lighting	**81,893**	**71,527**	**153,420**
LED	81,893	71,527	153,420
Water Heating	**6,288**	**4,669**	**10,957**
Faucet Aerators	3,139	-	3,139
Heat Pump Water Heater	10	10	20
Low Flow Shower Head	3,139	4,659	7,798
Whole Home	**38**	**18**	**56**
New Home - Performance Path	28	11	39
New Homes - Energy Star Manufactured	10	7	17
Grand Total	**99,499**	**96,468**	**195,967**

1.2 Impact Evaluation Results

The Wattsmart program resulted in a net evaluated savings 3,242,976 kWh during the evaluation period with an 64 percent realization rate and a 90 percent net-to-gross ratio. Gross and net evaluated savings (kWh) are presented in Table 1-2 through Table 1-4.

Table 1-2: Total Program Savings by Measure Category 2019-2020

Measure	Quantity	Claimed Saving (kWh)	Gross Evaluated Savings (kWh)	Realization Rate	NTG	Net Evaluated Savings (kWh)	% Total Program Savings
Lighting	153,420	3,019,522	1,713,594	57%	87%	1,498,842	46%
HVAC	874	807,803	807,195	100%	89%	717,596	22%
Water Heating	10,957	682,590	417,301	61%	99%	413,277	13%
Electronics	10,043	808,860	423,984	52%	97%	410,285	13%
Whole Home	56	149,856	155,037	103%	88%	136,433	4%
Energy Kits	390	113,625	62,549	55%	87%	54,327	2%
Building Shell	20,170	14,669	8,969	61%	88%	7,893	0.2%
Appliances	57	6,110	4,914	80%	88%	4,324	0.1%
Grand Total	**195,967**	**5,603,035**	**3,593,542**	**64%**	**90%**	**3,242,976**	**100%**

Table 1-3: Total Program Savings by Measure Category 2019

Measure	Quantity	Claimed Saving (kWh)	Gross Evaluated Savings (kWh)	Realization Rate	NTG	Net Evaluated Savings (kWh)	% Total Program Savings
Lighting	81,893	1,474,117	840,549	57%	81%	680,424	40%
HVAC	598	652,847	652,239	100%	89%	579,840	34%
Water Heating	6,288	302,701	188,765	62%	99%	186,718	11%
Electronics	725	156,600	114,160	73%	88%	100,461	6%
Whole Home	38	101,865	107,046	105%	88%	94,200	6%
Energy Kits	374	108,156	59,661	55%	87%	51,808	3%
Building Shell	9,550	8,513	8,073	95%	88%	7,104	0.4%
Appliances	33	3,615	3,089	85%	88%	2,718	0.2%
Total	**99,499**	**2,808,414**	**1,973,582**	**70%**	**86%**	**1,703,274**	**100%**

Table 1-4: Total Program Savings by Measure Category 2020

Measure	Quantity	Claimed Saving (kWh)	Gross Evaluated Savings (kWh)	Realization Rate	NTG	Net Evaluated Savings (kWh)	% Total Program Savings
Lighting	71,527	1,545,405	873,044	56%	94%	818,419	53%
Electronics	9,318	652,260	309,824	48%	100%	309,824	20%
Water Heating	4,669	379,889	228,537	60%	99%	226,558	15%
HVAC	276	154,956	154,956	100%	89%	137,756	9%
Whole Home	18	47,991	47,991	100%	88%	42,232	3%
Energy Kits	16	5,469	2,888	53%	87%	2,519	0.2%
Appliances	24	2,495	1,825	73%	88%	1,606	0.1%
Building Shell	10,620	6,156	896	15%	88%	788	0.1%
Total	**96,468**	**2,794,621**	**1,619,960**	**58%**	**95%**	**1,539,702**	100%

1.3 Process Evaluation Results

ADM made the following key findings during its process analysis.

- Energy efficient measures that were distributed through foodbanks were generally well received.
- The nature of the foodbank program did not include the ability to control for duplicate deliveries or collect field data to verify installation rates.
- Foodbanks were better equipped than senior centers to distribute large quantities of measures.
- The technical reference library (TRL) is a key program reference resource that documents ex ante savings values for all versions of all measures included in the program. Maintaining TRL version control, timeliness and completeness is a challenge. Rocky Mountain Power has initiated process improvements to address these challenges..
- Rocky Mountain Power receives and maintains program tracking dataset. Additional information, such as upstream sales details, downstream product model specifications, and new home model details, are maintained by the implementer.
- Some data elements required to verify that measures met efficiency requirements were missing from the program tracking dataset which impacted some measure category realization rates.
- Rocky Mountain Power attribution for upstream program discounts is relatively low.
- Customers general satisfaction with the Rocky Mountain Power as a utility company was high.
- Thirty-four percent of general customer survey respondents indicated their income was below the federal poverty level.

1.4 Cost Effectiveness Results

Guidehouse estimated the cost-effectiveness results for the program based on 2019 and 2020 costs and savings estimates provided by PacifiCorp. Cost-effectiveness was tested using the 2017 and 2019 IRP decrement for all measure categories. The program passes the cost-effectiveness for the PCT test.

The onset of the covid-19 pandemic occurred 15 months into the 24-month evaluation period. In response, Rocky Mountain Power increased its distribution of energy saving products through foodbanks to target its customers who were hardest hit by the economic downturn to help them reduce their energy costs. The foodbank distributions were a quick-response approach to assisting customers during an acute crisis.

Cost effectiveness results are presented separately for:

- Total program excluding measures distributed through foodbanks
- Measures distributed through foodbanks
- Total program

Program cost effectiveness results are reported in Table 1-5 through Table 1-7.

Table 1-5: Cost-Effectiveness Results – PY2019-2020
Excluding Measures Distributed through Foodbanks

Cost-Effectiveness Test	Levelized $/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	$0.1115	$1,684,708	$946,662	-$738,046	0.56
Total Resource Cost Test (TRC) No Adder	$0.1115	$1,684,708	$860,602	-$824,106	0.51
Utility Cost Test (UCT)	$0.0593	$895,502	$860,602	-$34,901	0.96
Rate Impact Test (RIM)		$2,519,936	$860,602	-$1,659,334	0.34
Participant Cost Test (PCT)		$1,446,194	$2,354,791	$908,597	1.63
Lifecycle Revenue Impacts ($/kWh)					$0.0000019035

Table 1-6: Cost-Effectiveness Results – PY2019-2020 for Measures Distributed through Foodbanks

Cost-Effectiveness Test	Levelized $/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	$0.1535	$1,884,568	$629,793	-$1,254,775	0.33
Total Resource Cost Test (TRC) No Adder	$0.1535	$1,884,568	$572,539	-$1,312,029	0.30
Utility Cost Test (UCT)	$0.0659	$809,979	$572,539	-$237,440	0.71
Rate Impact Test (RIM)		$2,160,659	$572,539	-$1,588,120	0.26
Participant Cost Test (PCT)		$1,362,635	$1,638,726	$276,091	1.20
Lifecycle Revenue Impacts ($/kWh)					$0.0000163517

Table 1-7: Total Program Level Cost-Effectiveness Results – PY2019-2020

Cost-Effectiveness Test	Levelized $/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	$0.1241	$3,372,502	$1,576,455	-$1,796,047	0.47
Total Resource Cost Test (TRC) No Adder	$0.1241	$3,372,502	$1,433,141	-$1,939,361	0.42
Utility Cost Test (UCT)	$0.0604	$1,649,476	$1,433,141	-$216,335	0.87
Rate Impact Test (RIM)		$4,624,589	$1,433,141	-$3,191,449	0.31
Participant Cost Test (PCT)		$2,640,122	$3,969,422	$1,329,300	1.50
Lifecycle Revenue Impacts ($/kWh)					$0.0000035219

1.5 Conclusions and Recommendations

ADM makes the following conclusions and recommendations from its evaluation.

1.5.1 Conclusions

Rocky Mountain Power's 2019-2020 Wattsmart Homes Program in Idaho resulted in 3,242,976 kWh of net savings with a 64 percent realization rate and a 90 percent net-to-gross ratio, as reported in Table 1-8.

Table 1-8: Total Program Savings by Year

Year	Claimed Saving (kWh)	Gross Evaluated Savings (kWh)	Realization Rate	NTG	Net Evaluated Savings (kWh)
2019	2,808,414	1,973,582	70%	86%	1,703,274
2020	2,794,621	1,619,960	58%	95%	1,539,702
Grand Total	**5,603,035**	**3,593,542**	**64%**	**90%**	**3,242,976**

Lighting measures accounted for 46 percent of program savings; HVAC measures accounted for 22 percent, collectively representing 68 percent of total savings. Measures that were distributed through the foodbank distribution program (APSs, flow control measures, and LEDs) accounted for 49 percent of total program savings. This represents the continuing importance of lighting and HVAC measures on the residential program and the impact the rapid-response foodbank program had during the pandemic. A comparison of savings during this and the previous evaluation are reported in Table 1-9.

Table 1-9: Total Program Savings by Measure Category Compared to 2017-2018

Measure Category	2019-2020					2017-2018		
	Claimed Saving (kWh)	Gross Evaluated Savings (kWh)	Realization Rate	% Total Program Savings	Net Evaluated Savings (kWh)	Net Savings (kWh)	% Program Savings	Realization Rate
Lighting	3,019,522	1,713,594	57%	46%	1,498,842	1,154,823	26%	66%
HVAC	807,803	807,195	100%	22%	717,596	1,674,995	38%	90%
Water Heating	682,590	417,301	61%	13%	413,277	621,810	14%	100%
Electronics	808,860	423,984	52%	13%	410,285	14,031	0.3%	100%
Whole Home	149,856	155,037	103%	4%	136,433	40,687	0.9%	100%
Energy Kits	113,625	62,549	55%	2%	54,327	841,158	19%	87%
Building Shell	14,669	8,969	61%	0.2%	7,893	28,415	0.6%	100%
Appliances	6,110	4,914	80%	0.1%	4,324	24,998	0.6%	100%
Grand Total	5,603,035	3,593,542	64%	100%	3,242,976	**4,400,917**	**100%**	**82%**

1.5.2 Recommendations

ADM recommends that Rocky Mountain Power consider the following actions.

Create separate measures definitions for products distributed through alternative distribution channels

ADM recommends that Rocky Mountain Power track measures that are distributed through foodbanks as separate measures with modified installation rates.

Create measures that reflect programmatic design

Measures that were distributed through foodbanks were recorded as separate components in the program tracking data. ADM recommends that Rocky Mountain Power create measures that reflect program design (for example, foodbank kits like starter kits) so that they can be tracked and evaluated as a distinct program.

Update ex ante savings to reflect electric water heater market saturation

Ex ante savings for water saving measure include the percentage of electric water heaters as a key variable. Customer surveys and the US Energy Information Administration Residential Energy Consumption Survey all point to a lower percentage of electric water

heaters than the ex ante percentage in RTF reference files. ADM recommends that Rocky Mountain Power updates ex ante estimates of the percentage of customers with electric water heaters.

Consider repeat recipients of kits distributed through foodbanks and community centers

Staff at foodbanks where measures were distributed indicated that there is a high degree of client retention at food assistance programs resulting in households receiving more than one kit. ADM recommends that when distributing measures without collecting recipient data, Rocky Mountain Power account for duplication of recipients when estimating savings.

Add data elements to tracking and reporting

Rocky Mountain Power relies on implementation partners to collect and store critical data that is required to evaluate the program and verify the resulting energy savings. ADM recommends that Rocky Mountain Power adds the following data elements to its internal program tracking datasets:

- Product manufacturer and model numbers, or minimally efficiency specifications
- Sales or distribution location for all upstream measures
- Baseline conditions (specifics varies by measure)

Add process controls to program implementation

ADM recommends that Rocky Mountain Power work with program implementers to revise program controls to ensure that all data elements required to verify savings are included in the dataset and that program eligibility requirements are met for all measures.

Evaluate program on an annual basis

ADM recommends that Rocky Mountain Power implement annual rather than biannual program evaluations. Annual evaluations would allow Rocky Mountain Power to monitor program controls and data collection throughout the program year, allowing the utility to respond to program performance midcycle.

Add TRL version control process

The TRL is a complex set of documents that provides the basis for program planning and evaluation. ADM recommends that Rocky Mountain Power implement a more stringent version control process to ensure that complete, accurate TRL data is maintained.

ADM notes that as of June 2021 the Technical Reference Library (TRL) was replaced with an upgraded Measure Library (ML) with enhanced functionality that includes a quality control process to verify that all measure versions include reference documents.

2 Introduction and Purpose of Study

ADM Associates, Inc. (ADM) is under contract with PacifiCorp to perform evaluation, measurement, and verification (EM&V) services to determine the energy savings (kWh) that resulted from Rocky Mountain Power's 2019-2020 Wattsmart Homes Program in Idaho. This report documents ADM's findings.

Program year 2019 (PY 2019) and program year 2020 (PY 2020) coincide with the respective calendar years. The purpose of this report is to present ADM's impact evaluation of the energy savings (kWh) that resulted from the program and ADM's process evaluation of the program focusing on participant and program staff perspectives regarding the program's implementation and ADM's observations about the program.

2.1 Description of Programs

The program provides financial incentives (discounts, rebates, and free products) for Rocky Mountain Power residential customers to install energy efficient products. The program leverages relationships with manufacturers, distributors, and retailers to ensure effective program implementation and optimize participation. Products included in the program are reported in Table 2-1.

Table 2-1: Quantities of Measures
Delivered through Program by Measure Category

Measure Category	2019	2020	2019-2020
Appliances	**33**	**24**	**57**
Clothes Washer - Electric DHW & Electric Dryer	33	24	57
Building Shell	**9,550**	**10,620**	**20,170**
Attic Insulation	6,470	8,294	14,764
Wall Insulation	696	-	696
Windows Tier 1	1,486	2,259	3,745
Windows Tier 2	898	67	965
Electronics	**725**	**9,318**	**10,043**
Advanced Power Strips - IR Sensing	725	-	725
Advanced Power Strips - Occupancy Sensing	-	9,318	9,318
Energy Kits	**374**	**16**	**390**
Best Kit	193	9	202
LED Kit	181	7	188
HVAC	**598**	**276**	**874**
Central Air Conditioner	3	3	6
Duct Sealing and/or Insulation	35	-	35
Evaporative Cooler	1	2	3
Furnace Fan	5	-	5
Heat Pump - Air Source	2	-	2

Heat Pump - Ductless	87	34	121
Thermostat	465	237	702
Lighting	**81,893**	**71,527**	**153,420**
LED	81,893	71,527	153,420
Water Heating	**6,288**	**4,669**	**10,957**
Faucet Aerators	3,139	-	3,139
Heat Pump Water Heater	10	10	20
Low Flow Shower Head	3,139	4,659	7,798
Whole Home	**38**	**18**	**56**
New Home - Performance Path	28	11	39
New Homes - Energy Star Manufactured	10	7	17
Total	**99,499**	**96,468**	**195,967**

Table 2-2 reports the methods by which the program provides incentives to customers for each measure category.

Table 2-2: Incentive Delivery Method

Measure Category	Incentive Delivery
HVAC	Post purchase rebate application
Energy Kits	Free kit requested for mail delivery
Whole Home	Post installation rebate application
Lighting	Point-of-sale pricing Distribution through foodbanks and senior centers
Electronics	Distribution through foodbanks and senior centers
Water Heating	Post purchase rebate application (HPWHs) Distribution through foodbanks and senior centers (flow control)
Appliances	Post purchase rebate application
Building Shell	Post purchase rebate application

Upstream LED lighting measures were offered at a discounted price at the point of sale. The program paid the discount incentive to the manufacturer. These point-of-sale incentives did not require the consumer to apply for the financial benefit; it is an efficient and cost-effective means to encourage customers to purchase relatively high-volume, low-cost measures such as LEDs.

Upstream discounts were also offered on evaporative coolers and room air conditioners.

Rocky Mountain Power offered incentives to contractors for building single family homes that exceeded Idaho's energy efficiency building standards.

Additional appliances and HVAC measures were processed through a post-purchase application form designed to verify that incentives were delivered only for eligible measures. HVAC measures were sold as downstream measure through trade allies.

Rocky Mountain Power also offered customers the opportunity to request free Starter Kits comprised of energy saving lighting and water saving measures through an online application process.

And finally, Rocky Mountain Power provided free advanced power strips, low-flow showerhead, faucet aerators and LEDs distributed through community centers such as foodbanks and senior centers.

2.2 Impact Evaluation Objectives

The primary objective of the impact evaluation is to determine the gross and net energy savings (kWh) that resulted from the program. Gross energy savings reflect the estimated amount of energy savings resulting from the installation of measures that incentives were paid for. Net energy savings reflect gross savings multiplied by evaluated net-to-gross (NTG) ratios. Net-to-gross ratios estimate the percentage of savings that would have occurred in the absence of the program.

ADM completed the following steps to determine the evaluated gross and net energy savings (kWh) that resulted from the program.

- Reviewed and reconciled program tracking data to the claimed savings reported in 2019 and 2020 annual reports.
- Administered customer surveys to determine actual installation rates at the measure level. Online surveys were administered for both program participants and non-participant Rocky Mountain Power customers.
- Determined gross unit energy savings (UES), which incorporated verified variables.
- Net-to-gross ratios were calculated by measure category and in some categories with greater granularity.
- Achieved a minimum precision of better than ±10 percent with 90 percent statistical confidence (“90/10 precision”) for gross realized savings estimates.
- Provided comprehensive documentation and transparency for all evaluation tasks.
- Estimated leakage rates for lighting measures using geospatial analysis.
- Provided inputs for cost benefit analyses.
- Provided ongoing technical reviews and guidance throughout the evaluation cycle.
- ADM did not conduct on-site verification or equipment monitoring as part of this evaluation.

2.3 Process Evaluation Objectives

The purpose of the process evaluation is to gain an in-depth understanding of program operations and challenges and its evaluation needs. ADM conducted key staff interviews with Rocky Mountain Power and implementers, reviewed program documentation and conducted participant and non-participant surveys. The process evaluation was designed to answer the following research questions.

- What are key barriers and drivers to program success in Rocky Mountain Power's Idaho service territory?
- How can those be addressed to improve program operations in the future?
- How well did Rocky Mountain Power staff, implementation staff, participants, and trade allies work together?
- How do participants learn about the program? What percentage is contacted directly by Rocky Mountain Power or implementation staff? What percentage hears about the program through another avenue and then contacts Rocky Mountain Power?
- Were program participants satisfied with their experiences?

3 Impact Evaluation

The Wattsmart program resulted in a net evaluated savings of 3,242,976 kWh during the evaluation period with a 64 percent realization rate. Gross and net evaluated savings (kWh) are presented in Table 3-1 through Table 3-3. Detailed impact evaluation results and analysis methodology for each measure category are included in subsequent sections.

Table 3-1: Total Program Savings by Measure Category 2019-2020

Measure	Quantity	Claimed Saving (kWh)	Gross Evaluated Savings (kWh)	Realization Rate	NTG	Net Evaluated Savings (kWh)	% Total Program Savings
Lighting	153,420	3,019,522	1,713,594	57%	87%	1,498,842	46%
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Measure	Quantity	Claimed Saving (kWh)	Gross Evaluated Savings (kWh)	Realization Rate	NTG	Net Evaluated Savings (kWh)	% Total Program Savings
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Water Heating	6,288	302,701	188,765	62%	99%	186,718	11%
Electronics	725	156,600	114,160	73%	88%	100,461	6%
Whole Home	38	101,865	107,046	105%	88%	94,200	6%
Energy Kits	374	108,156	59,661	55%	87%	51,808	3%
Building Shell	9,550	8,513	8,073	95%	88%	7,104	0.4%
Appliances	33	3,615	3,089	85%	88%	2,718	0.2%
Total	**99,499**	**2,808,414**	**1,973,582**	**70%**	**86%**	**1,703,274**	**100%**

Table 3-3: Total Program Savings by Measure Category 2020

Measure	Quantity	Claimed Saving (kWh)	Gross Evaluated Savings (kWh)	Realization Rate	NTG	Net Evaluated Savings (kWh)	% Total Program Savings
Lighting	71,527	1,545,405	873,044	56%	94%	818,419	53%
Electronics	9,318	652,260	309,824	48%	100%	309,824	20%
Water Heating	4,669	379,889	228,537	60%	99%	226,558	15%
HVAC	276	154,956	154,956	100%	89%	137,756	9%
Whole Home	18	47,991	47,991	100%	88%	42,232	3%
Energy Kits	16	5,469	2,888	53%	87%	2,519	0.2%
Appliances	24	2,495	1,825	73%	88%	1,606	0.1%
Building Shell	10,620	6,156	896	15%	88%	788	0.1%
Total	**96,468**	**2,794,621**	**1,619,960**	**58%**	**95%**	**1,539,702**	100%

3.1 Impact Evaluation Approach

ADM's evaluated unit energy savings (UES) for each measure takes into consideration savings values presented in TRL reference files. TRL reference files generally rely on the Regional Technical Forum's (RTF) library of measures maintained by the Northwest Power and Conservation Council to verify and evaluate energy efficiency savings.

When applicable, ADM incorporated verified variables such as in service rates (ISRs) and hours of use (HOUs) in place of ex ante variables used in the calculation of RTF values.

When determining savings that resulted from some HVAC measures, in addition to reporting evaluated savings based on values sourced from TRL reference files, ADM completed a usage data analysis to provide insights to consider for future program design.

ADM reviewed a census of program tracking data, associated savings values, input assumptions and calculations contained in the Technical Resource Library (TRL) files provided by Rocky Mountain Power. ADM issued data requests as needed to ensure that all data was collected that could be reasonably expected or required for this evaluation.

ADM surveyed a representative sample of known participants and employed a general population survey to collect information from customers who purchased upstream measures.

ADM completed the following activities as part of the evaluation, measurement and verification process.

- ADM reviewed a census of program tracking dataset for completeness, consistency, and compliance with the provided TRL files.

- Review of measure savings assumptions and calculations maintained in the Technical Reference Library (TRL). The TRL files include measure savings assumptions, calculations, source papers or files (e.g. from the Regional Technical Forum), and additional documentation that together comprise the generally accepted rules and guidance for evaluating the program.
- ADM reviewed all TRL documentation and include in this report any errors, missing data, or data inconsistencies identified during ADM's review.
- ADM includes a list of TRL reference files that it used in this evaluation in Appendix A.
- ADM requested program tracking data, TRL reports and reference files, in addition to other program data and verification, as necessary.
- ADM collected primary data from Rocky Mountain Power customers through three online surveys; one to customers who received energy kits, one to the general customer population to collect data about upstream measures, and a third to collect data from customers who received incentives for HVAC measures.

3.1.1 Sample Design

ADM achieved a sampling precision of ±10 percent or better with 90 percent statistical confidence – or "90/10 precision" – for gross realized savings estimates at the measure category level for all significant measures, including lighting and HVAC measure categories.

For upstream lighting measures, for which participants are not known, ADM employed a General Population Survey where the sampling frame is the population of Rocky Mountain Power residential customers in Idaho with valid email address, excluding known participants in any energy efficiency programs that Rocky Mountain Power implemented in 2019 or 2020. Four hundred customers responded to the survey. These responses were used to collect data used in the impact analysis for lighting measures and to determine non-participant net-to-gross spillover savings.

For starter kits, the sampling frame is the population of participants who received a kit for whom the tracking dataset includes valid email addresses. Twenty-eight starter kit program participants completed an online survey.

A census of HVAC tracking data was reviewed in detail, and an alternative analysis was completed using a census of billing data from customers who received a smart thermostat incentive.

ADM included the following datasets in its evaluation:

- Census review of all measures in the program tracking dataset to ensure appropriate use of UES values sourced from TRL files.
- Review of a sample of HVAC measure manufacturer model numbers and specifications to verify that measures met the criteria established in the TRL reference files.
- Census review of lighting measures by manufacturer and product model number to verify that lighting products for which incentives were paid met the efficiency criteria established in the TRL reference files.
- Census review of heat pump water heater and other appliance manufacturer model numbers and specifications to verify that measures for which incentives were paid met efficiency criteria established in the TRL reference files.
- A sample of program participants who received energy kits was surveyed for measure installation rates, installation location, and process evaluation responses.
- A sample of Rocky Mountain Power residential customers who were not known to have participated in any downstream or request-by-mail Wattsmart program offering was surveyed using a general customer population survey to determine measure installation rates, installation location, and process evaluation responses for upstream lighting measures. Survey response rates are reported in Table 3-4.

Table 3-4: Survey Sample Response Size

Survey	Number of Survey Invites Sent	Number of Completed Surveys	Response Rate
General Population Survey	7980	400	5%
Energy Kits Survey	526	28	5%
HVAC Participant Survey	447	92	20%

3.1.2 Impact Evaluation Approach by Measure Category

Table 3-5 shows the methodology used to calculate evaluated savings for each measure category. ADM reviewed TRL UES values, their assumptions and calculations, modeling files, and additional information contained in the TRL reference files and underlying Regional Technical Forum (RTF) files. Additional reference sources are indicated in the descriptions of evaluated savings for some measure categories. ADM calculated NTG values from participant surveys for all major measure categories. A program-wide average NTG was calculated for remaining small-savings categories.

Table 3-5: Impact Evaluation Methodology Approach by Measure

Measure Category	Impact Evaluation Methodologies	Inputs to Gross Evaluated Savings
HVAC	Unit Energy Savings Review	• TRL reference files verified savings values • Customer billing data
Energy Kits	Unit Energy Savings Review	• TRL reference files verified savings values • Energy Kits Survey
Whole Homes	Model Review	• Project files
Lighting	Unit Energy Savings Review	• TRL reference files verified savings values • General population survey
Water Heating	Unit Energy Savings Review	• TRL reference files verified savings values
Appliances	Unit Energy Savings Review	• TRL reference files verified savings values
Building Shell	Unit Energy Savings Review	• TRL reference files verified savings values

3.2 Foodbank Distribution Program

The onset of the covid-19 pandemic occurred 15 months into the 24-month evaluation period. In response, Rocky Mountain Power increased its distribution of energy saving products through foodbanks to target its customers who were hardest hit by the economic downturn to help them reduce their energy costs. The foodbank distributions were a quick-response approach to assisting customers during an acute crisis.

Measures that were distributed through foodbanks appear in the program tracking data as individual measures rather than as kits. In order to gain a more comprehensive perspective on the measures that were distributed through foodbanks, Table 3-6 summarizes the collective impact of these kit components. Foodbank kit components resulted in 1,584,652 kWh savings accounting for 49 percent of total program savings, with a 56 percent realization rate and 100 percent net-to-gross ratio, as reported in Table 3-6.

Table 3-6: Foodbank Program Savings

Measure	Quantity	Claimed Saving (kWh)	Gross Evaluated Savings (kWh)	Realization Rate	NTG	Net Evaluated Savings (kWh)	% Total Program Savings
LED General Purpose: 9 watts - Retail - ID - 3 - FOODBANK	51,224	729,942	411,517	56%	100%	411,517	13%
LED Downlight: 11 watts - Retail - ID - 4 - FOODBANK	11,416	520,455	315,832	61%	100%	315,832	10%
Advanced Power Strip - Occupancy Sensing - Owner Install - ID - 2	9,318	652,260	309,824	48%	100%	309,824	10%
Low-Flow Shower Head - Any DHW - 1.50 GPM - Midstream - ID - 2	4,659	363,402	212,050	58%	100%	212,050	7%
LED Specialty - Candelabra: 5 watts - Retail - ID - 3 - FOODBANK	11,416	284,601	163,717	58%	100%	163,717	5%
Low-Flow Shower Head - Any DHW - 1.50 GPM - Midstream - ID - 1	3,139	244,842	142,868	58%	100%	142,868	4%
Faucet Aerators - Any DHW - 1.0 GPM or Less - Midstream - ID - 1	3,139	40,807	28,844	71%	100%	28,844	1%
Total	**94,311**	**2,836,309**	**1,584,652**	**56%**	100%	**1,584,652**	**49%**

Impact analysis details for each component are described in later sections.

3.2.1 Discussion of Realization Rates

Foodbank kit component claimed savings were generally based on distribution channels with higher in-service rates (ISRs) than would be expected for unrequested giveaway measures. For example, the ex ante ISR for showerheads was designated for retail sales. Additionally, the realization rate for water saving measures was reduced by evaluated percentage of electric water heaters in the service area.

3.3 Measure version numbers

Measures are included in the following tables with their version numbers; for example, *LED Downlight: 10 watts - Retail - ID – 1* indicates version 1 of the measure.

3.4 Lighting

A total of 153,420 LED lighting measures were distributed through the program resulting in net savings of 1,498,842 kWh accounting for 46 percent of total program savings, with a realization rate of 57 percent and an 87 percent net-to-gross ratio. Sixty-four percent of the LEDs were distributed for free through foodbanks and senior centers.

ADM reviewed claimed savings included in tracking data and ex ante savings values reported in TRL reference files. It also calculated in-service rates (ISRs) and hours of use (HOUs) for lighting measures using responses from a general population survey emailed to Rocky Mountain Power customers. Additionally, ADM calculated and applied a leakage rate and net-to-gross ratios to gross evaluated savings to calculate net evaluated savings. Total program savings from lighting measures are reported in Table 3-7.

Table 3-7: Total Lighting Program Savings by Year

Program Year	Quantity	Claimed Savings (kWh)	Gross Evaluated Savings (kWh)	Realization Rate	NTG	Net Evaluated Savings (kWh)
2019	81,893	1,474,117	840,549	57%	81%	680,424
2020	71,527	1,545,405	873,044	56%	94%	818,419
Total	**153,420**	**3,019,522**	**1,713,594**	**57%**	**87%**	**1,498,842**

3.4.1 Tracking data verification

ADM reviewed program tracking data to evaluate:

- if the tracking dataset included duplicate or erroneous data entries,
- if data entries in the program tracking dataset included all necessary fields for savings calculations,
- if claimed energy savings match the applicable TRL source documents and calculations,
- if specific product model numbers sold through the program met the requirements of the measure definition as documented in the TRL reference files,
- if upstream lighting measures were sold through retail stores in the service area
- if measures distributed through foodbanks and senior centers were distributed within the service area,
- if all measures delivered to foodbanks and senior were distributed to their clients.

ADM found the following in the dataset:

- Lighting measures that were distributed for free through foodbanks and senior centers had claimed savings calculated using an in-service rate (ISR) estimated for retail sales distribution.

3.4.2 Ex ante review

ADM verified that the UES claimed in the program tracking dataset matched the savings indicated in the TRL reference documents. ADM added three new measures to record measures distributed for free through foodbanks and community centers.

3.4.3 Evaluated Unit Energy Savings

Unit energy savings (UES) were evaluated for each lighting measure sold through the upstream program using ex ante savings (kWh) values from the indicated reference file for each version of each measure. Evaluated UESs reflect ISRs and HOUs collected from general population survey responses. The total gross evaluated savings by measure is the product of the evaluated UES and the quantity of the measure sold through the program as documented in the program tracking data.

Total net savings for lighting measures applies an evaluated leakage rate and the evaluate net-to-gross ratio. The leakage rate reflects an estimate of the percentage of bulbs sold through the program that are not installed in the service area (buyers who live outside the service area have purchase the bulbs from participating retail stores).

ADM calculated ISRs and HOUs from customer survey responses for each of four categories of lighting measures: standard bulbs, specialty bulbs, downlights and fixtures.

In Service Rates (ISR)

For lighting measures that were sold through retail stores, ISRs were calculated using Equation 3-1 using responses gathered from a 2020 General Population Survey of Rocky Mountain Power customers in the service area.

Equation 3-1: Lighting Measures In-Service Rate

$$ISR = (Qty\ currently\ installed + (Qty\ stored/3))/Qty\ Purchased$$

For measures that were distributed for free through foodbanks and community centers, an installation rate of 80.3 percent was used, as indicated in the *Illinois Statewide Technical Reference Manual for Energy Efficiency version 10* for free bulbs distributed through foodbanks.

Hours of Use (HOU)

ADM used a weighted average HOU calculated for each lighting measure type (standard bulbs, specialty bulbs, downlights, and fixtures), using locations identified in the general population survey. Hours per room were drawn from Residential Lighting End-Use Consumption Study (*DNV KEMA Energy and Sustainability, Pacific Northwest National Laboratory, December 2012)*.

Unit and Total Evaluated Savings

Evaluated UES for lighting measures are included in Table 3-8. Total gross and net evaluated program savings for lighting measures, by measure, are reported in Table 3-9 through Table 3-11.

Table 3-8: Lighting Unit Energy Savings (UES) by Measure

Measure Name - Measure Version	Ex ante UES (kWh)	Ex ante HOU	Ex post HOU	Ex ante ISR	Ex post ISR	Evaluated UES (kWh)	Realization Rate	Source	NTG
LED Downlight: 10 watts - Retail - ID - 4	39.18	2.34	1.73	98%	95%	28.09	72%	1	75%
LED Downlight: 11 watts - Retail - ID - 4	45.59	2.34	1.73	98%	95%	32.69	72%	1	75%
LED Downlight: 11 watts - Retail - ID - 4 - FOODBANK	45.59	2.34	1.73	98%	80%	27.67	61%	2	100%
LED Downlight: 12 watts - Retail - ID - 4	37.75	2.34	1.73	98%	95%	27.07	72%	1	75%
LED Downlight: 13 watts - Retail - ID - 4	37.04	2.34	1.73	98%	95%	26.56	72%	1	75%
LED Downlight: 14 watts - Retail - ID - 4	36.33	2.34	1.73	98%	95%	26.05	72%	1	75%
LED Downlight: 15 watts - Retail - ID - 4	35.62	2.34	1.73	98%	95%	25.54	72%	1	75%
LED Downlight: 16 watts - Retail - ID - 4	42.03	2.34	1.73	98%	95%	30.14	72%	1	75%
LED Downlight: 5 watts - Retail - ID - 4	49.86	2.34	1.73	98%	95%	35.75	72%	1	75%
LED Downlight: 6 watts - Retail - ID - 4	49.15	2.34	1.73	98%	95%	35.24	72%	1	75%
LED Downlight: 7 watts - Retail - ID - 4	16.38	2.34	1.73	98%	95%	11.74	72%	1	75%
LED Downlight: 8 watts - Retail - ID - 4	26.36	2.34	1.73	98%	95%	18.90	72%	1	75%
LED Downlight: 9 watts - Retail - ID - 4	39.89	2.34	1.73	98%	95%	28.60	72%	1	75%
LED Fixture - ENERGY STAR - ID - 2	40.94	2.34	1.55	100%	91%	24.57	60%	2	87%
LED General Purpose: 10 watts - Retail - ID - 4	23.51	2.34	1.61	98%	78%	12.80	54%	1	75%
LED General Purpose: 11 watts - Retail - ID - 4	22.79	2.34	1.61	98%	78%	12.40	54%	1	75%
LED General Purpose: 12 watts - Retail - ID - 4	22.08	2.34	1.61	98%	78%	12.02	54%	1	75%
LED General Purpose: 15 watts - Retail - ID - 5	19.94	2.34	1.61	98%	78%	10.85	54%	1	75%
LED General Purpose: 16 watts - Retail - ID - 4	26.36	2.34	1.61	98%	78%	14.35	54%	1	75%
LED General Purpose: 17 watts - Retail - ID - 2	39.18	2.34	1.61	98%	78%	21.32	54%	1	75%
LED General Purpose: 18 watts - Retail - ID - 2	38.46	2.34	1.61	98%	78%	20.93	54%	1	75%
LED General Purpose: 5 watts - Retail - ID - 2	27.07	2.34	1.61	98%	78%	14.73	54%	1	75%
LED General Purpose: 6 watts - Retail - ID - 2	16.38	2.34	1.61	98%	78%	8.91	54%	1	75%
LED General Purpose: 7 watts - Retail - ID - 3	15.67	2.34	1.61	98%	78%	8.53	54%	1	75%
LED General Purpose: 8 watts - Retail - ID - 3	14.96	2.34	1.61	98%	78%	8.14	54%	1	75%
LED General Purpose: 9 watts - Retail - ID - 3	14.25	2.34	1.61	98%	78%	7.76	54%	1	75%
LED General Purpose: 9 watts - Retail - ID - 3 - FOODBANK	14.25	2.34	1.61	98%	80%	8.03	56%	1	100%
LED Specialty - 3-Way: 3,8,18 watts - Retail - ID - 2	37.04	2.34	1.64	98%	79%	20.83	56%	3	75%
LED Specialty - Candelabra: 2 watts - Retail - ID - 3	16.38	2.34	1.64	98%	79%	9.21	56%	1	75%
LED Specialty - Candelabra: 4 watts - Retail - ID - 3	14.96	2.34	1.64	98%	79%	8.41	56%	1	75%
LED Specialty - Candelabra: 5 watts - Retail - ID - 3	24.93	2.34	1.64	98%	79%	14.02	56%	1	75%
LED Specialty - Candelabra: 5 watts - Retail - ID - 3 - FOODBANK	24.93	2.34	1.64	98%	80%	14.34	58%	2	100%
LED Specialty - Globe: 4 watts - Retail - ID - 3	14.96	2.34	1.64	98%	79%	8.41	56%	1	75%
LED Specialty - Globe: 5 watts - Retail - ID - 2	24.93	2.34	1.64	98%	79%	14.02	56%	1	75%
LED Specialty - Globe: 6 watts - Retail - ID - 2	24.22	2.34	1.64	98%	79%	13.62	56%	1	75%

Table 3-9: Lighting Program Savings by Measure 2019-2020

Measure - Version	Quantity	Claimed Savings (kWh)	Gross Evaluated Savings (kWh)	Realization Rate	Leakage	NTG	Net Evaluated Savings (kWh)
LED Downlight: 10 watts - Retail - ID - 4	1,865	73,071	52,393	72%	2%	75%	38,594
LED Downlight: 11 watts - Retail - ID - 4	(4,854)	(221,294)	(158,672)	72%	2%	75%	(116,883)
LED Downlight: 11 watts - Retail - ID - 4 - FOODBANK	11,416	520,455	315,832	61%	0%	100%	315,832
LED Downlight: 12 watts - Retail - ID - 4	128	4,832	3,465	72%	2%	75%	2,552
LED Downlight: 13 watts - Retail - ID - 4	636	23,557	16,891	72%	2%	75%	12,443
LED Downlight: 14 watts - Retail - ID - 4	364	13,224	9,482	72%	2%	75%	6,985
LED Downlight: 15 watts - Retail - ID - 4	100	3,562	2,554	72%	2%	75%	1,881
LED Downlight: 16 watts - Retail - ID - 4	62	2,606	1,868	72%	2%	75%	1,376
LED Downlight: 5 watts - Retail - ID - 4	54	2,692	1,931	72%	2%	75%	1,422
LED Downlight: 6 watts - Retail - ID - 4	94	4,620	3,313	72%	2%	75%	2,440
LED Downlight: 7 watts - Retail - ID - 4	1,835	30,057	21,552	72%	2%	75%	15,876
LED Downlight: 8 watts - Retail - ID - 4	2,729	71,936	51,580	72%	2%	75%	37,995
LED Downlight: 9 watts - Retail - ID - 4	1,686	67,255	48,223	72%	2%	75%	35,522
LED Fixture - ENERGY STAR - ID - 2	670	27,430	16,462	60%	2%	87%	14,003
LED General Purpose: 10 watts - Retail - ID - 4	9,066	213,142	116,002	54%	2%	75%	85,451
LED General Purpose: 11 watts - Retail - ID - 4	11,485	261,743	142,453	54%	2%	75%	104,936
LED General Purpose: 12 watts - Retail - ID - 4	972	21,462	11,681	54%	2%	75%	8,604
LED General Purpose: 15 watts - Retail - ID - 5	1,441	28,734	15,638	54%	2%	75%	11,520
LED General Purpose: 16 watts - Retail - ID - 4	7,767	204,738	111,429	54%	2%	75%	82,082
LED General Purpose: 17 watts - Retail - ID - 2	1	39	21	54%	2%	75%	16
LED General Purpose: 18 watts - Retail - ID - 2	564	21,691	11,806	54%	2%	75%	8,696
LED General Purpose: 5 watts - Retail - ID - 2	1,908	51,650	28,110	54%	2%	75%	20,707
LED General Purpose: 6 watts - Retail - ID - 2	5,256	86,093	46,856	54%	2%	75%	34,516
LED General Purpose: 7 watts - Retail - ID - 3	4,798	75,185	40,919	54%	2%	75%	30,142
LED General Purpose: 8 watts - Retail - ID - 3	1,171	17,518	9,534	54%	2%	75%	7,023
LED General Purpose: 9 watts - Retail - ID - 3	28,413	404,885	220,358	54%	2%	75%	162,323
LED General Purpose: 9 watts - Retail - ID - 3 - FOODBANK	51,224	729,942	411,517	56%	0%	100%	411,517
LED Specialty - 3-Way: 3,8,18 watts - Retail - ID - 2	70	2,593	1,458	56%	2%	75%	1,074
LED Specialty - Candelabra: 2 watts - Retail - ID - 3	220	3,604	2,027	56%	2%	75%	1,493
LED Specialty - Candelabra: 4 watts - Retail - ID - 3	3,246	48,560	27,308	56%	2%	75%	20,116
LED Specialty - Candelabra: 5 watts - Retail - ID - 3	(4,615)	(115,052)	(64,700)	56%	2%	75%	(47,660)
LED Specialty - Candelabra: 5 watts - Retail - ID - 3 - FOODBANK	11,416	284,601	163,717	58%	0%	100%	163,717
LED Specialty - Globe: 4 watts - Retail - ID - 3	88	1,316	740	56%	2%	75%	545
LED Specialty - Globe: 5 watts - Retail - ID - 2	1,614	40,237	22,628	56%	2%	75%	16,668
LED Specialty - Globe: 6 watts - Retail - ID - 2	530	12,837	7,219	56%	2%	75%	5,318
Total	**153,420**	**3,019,522**	**1,713,594**	**57%**		**87%**	**1,498,842**

Table 3-10: Lighting Program Savings by Measure 2019

Measure - Version	Quantity	Claimed Savings (kWh)	Gross Evaluated Savings (kWh)	Realization Rate	Leakage	NTG	Net Evaluated Savings (kWh)
LED Downlight: 10 watts - Retail - ID - 4	555	21,745	15,592	72%	2%	75%	11,485
LED Downlight: 11 watts - Retail - ID - 4	529	24,117	17,292	72%	2%	75%	12,738
LED Downlight: 12 watts - Retail - ID - 4	99	3,737	2,680	72%	2%	75%	1,974
LED Downlight: 13 watts - Retail - ID - 4	408	15,112	10,836	72%	2%	75%	7,982
LED Downlight: 14 watts - Retail - ID - 4	175	6,358	4,559	72%	2%	75%	3,358
LED Downlight: 16 watts - Retail - ID - 4	38	1,597	1,145	72%	2%	75%	844
LED Downlight: 5 watts - Retail - ID - 4	54	2,692	1,931	72%	2%	75%	1,422
LED Downlight: 6 watts - Retail - ID - 4	53	2,605	1,868	72%	2%	75%	1,376
LED Downlight: 7 watts - Retail - ID - 4	1,397	22,883	16,407	72%	2%	75%	12,086
LED Downlight: 8 watts - Retail - ID - 4	1,934	50,980	36,554	72%	2%	75%	26,927
LED Downlight: 9 watts - Retail - ID - 4	290	11,568	8,295	72%	2%	75%	6,110
LED Fixture - ENERGY STAR - ID - 2	420	17,195	10,319	60%	2%	87%	8,778
LED General Purpose: 10 watts - Retail - ID - 4	4,818	113,271	61,648	54%	2%	75%	45,412
LED General Purpose: 11 watts - Retail - ID - 4	6,145	140,045	76,219	54%	2%	75%	56,145
LED General Purpose: 12 watts - Retail - ID - 4	665	14,683	7,991	54%	2%	75%	5,887
LED General Purpose: 15 watts - Retail - ID - 5	841	16,770	9,127	54%	2%	75%	6,723
LED General Purpose: 16 watts - Retail - ID - 4	4,492	118,409	64,444	54%	2%	75%	47,471
LED General Purpose: 18 watts - Retail - ID - 2	243	9,346	5,086	54%	2%	75%	3,747
LED General Purpose: 5 watts - Retail - ID - 2	1,040	28,153	15,322	54%	2%	75%	11,287
LED General Purpose: 6 watts - Retail - ID - 2	2,956	48,419	26,352	54%	2%	75%	19,412
LED General Purpose: 7 watts - Retail - ID - 3	3,208	50,269	27,359	54%	2%	75%	20,154
LED General Purpose: 8 watts - Retail - ID - 3	15	224	122	54%	2%	75%	90
LED General Purpose: 9 watts - Retail - ID - 3	19,962	284,459	154,816	54%	2%	75%	114,042
LED General Purpose: 9 watts - Retail - ID - 3 - FOODBANK	28,392	404,586	228,092	56%	0%	100%	228,092
LED Specialty - 3-Way: 3,8,18 watts - Retail - ID - 2	16	593	333	56%	2%	75%	246
LED Specialty - Candelabra: 2 watts - Retail - ID - 3	24	393	221	56%	2%	75%	163
LED Specialty - Candelabra: 4 watts - Retail - ID - 3	1,300	19,448	10,937	56%	2%	75%	8,056
LED Specialty - Candelabra: 5 watts - Retail - ID - 3	953	23,758	13,361	56%	2%	75%	9,842
LED Specialty - Globe: 4 watts - Retail - ID - 3	78	1,167	656	56%	2%	75%	483
LED Specialty - Globe: 5 watts - Retail - ID - 2	462	11,518	6,477	56%	2%	75%	4,771
LED Specialty - Globe: 6 watts - Retail - ID - 2	331	8,017	4,508	56%	2%	75%	3,321
Total	**81,893**	**1,474,117**	**840,549**	**57%**		**81%**	**680,424**

Table 3-11: Lighting Program Savings by Measure 2020

Measure - Version	Quantity	Claimed Savings (kWh)	Gross Evaluated Savings (kWh)	Realization Rate	Leakage	NTG	Net Evaluated Savings (kWh)
LED Downlight: 10 watts - Retail - ID - 4	1,310	51,326	36,802	72%	2%	75%	27,109
LED Downlight: 11 watts - Retail - ID - 4	(5,383)	(245,411)	(175,965)	72%	2%	75%	(129,621)
LED Downlight: 11 watts - Retail - ID - 4 - FOODBANK	11,416	520,455	315,832	61%	0%	100%	315,832
LED Downlight: 12 watts - Retail - ID - 4	29	1,095	785	72%	2%	75%	578
LED Downlight: 13 watts - Retail - ID - 4	228	8,445	6,055	72%	2%	75%	4,461
LED Downlight: 14 watts - Retail - ID - 4	189	6,866	4,923	72%	2%	75%	3,627
LED Downlight: 15 watts - Retail - ID - 4	100	3,562	2,554	72%	2%	75%	1,881
LED Downlight: 16 watts - Retail - ID - 4	24	1,009	723	72%	2%	75%	533
LED Downlight: 6 watts - Retail - ID - 4	41	2,015	1,445	72%	2%	75%	1,064
LED Downlight: 7 watts - Retail - ID - 4	438	7,174	5,144	72%	2%	75%	3,789
LED Downlight: 8 watts - Retail - ID - 4	795	20,956	15,026	72%	2%	75%	11,069
LED Downlight: 9 watts - Retail - ID - 4	1,396	55,686	39,928	72%	2%	75%	29,412
LED Fixture - ENERGY STAR - ID - 2	250	10,235	6,142	60%	2%	87%	5,225
LED General Purpose: 10 watts - Retail - ID - 4	4,248	99,870	54,354	54%	2%	75%	40,039
LED General Purpose: 11 watts - Retail - ID - 4	5,340	121,699	66,234	54%	2%	75%	48,790
LED General Purpose: 12 watts - Retail - ID - 4	307	6,779	3,689	54%	2%	75%	2,718
LED General Purpose: 15 watts - Retail - ID - 5	600	11,964	6,511	54%	2%	75%	4,796
LED General Purpose: 16 watts - Retail - ID - 4	3,275	86,329	46,984	54%	2%	75%	34,610
LED General Purpose: 17 watts - Retail - ID - 2	1	39	21	54%	2%	75%	16
LED General Purpose: 18 watts - Retail - ID - 2	321	12,346	6,719	54%	2%	75%	4,950
LED General Purpose: 5 watts - Retail - ID - 2	868	23,497	12,788	54%	2%	75%	9,420
LED General Purpose: 6 watts - Retail - ID - 2	2,300	37,674	20,504	54%	2%	75%	15,104
LED General Purpose: 7 watts - Retail - ID - 3	1,590	24,915	13,560	54%	2%	75%	9,989
LED General Purpose: 8 watts - Retail - ID - 3	1,156	17,294	9,412	54%	2%	75%	6,933
LED General Purpose: 9 watts - Retail - ID - 3	8,451	120,427	65,542	54%	2%	75%	48,280
LED General Purpose: 9 watts - Retail - ID - 3 - FOODBANK	22,832	325,356	183,425	56%	0%	100%	183,425
LED Specialty - 3-Way: 3,8,18 watts - Retail - ID - 2	54	2,000	1,125	56%	2%	75%	829
LED Specialty - Candelabra: 2 watts - Retail - ID - 3	196	3,210	1,805	56%	2%	75%	1,330
LED Specialty - Candelabra: 4 watts - Retail - ID - 3	1,946	29,112	16,371	56%	2%	75%	12,060
LED Specialty - Candelabra: 5 watts - Retail - ID - 3	(5,568)	(138,810)	(78,061)	56%	2%	75%	(57,502)
LED Specialty - Candelabra: 5 watts - Retail - ID - 3 - FOODBANK	11,416	284,601	163,717	58%	0%	100%	163,717
LED Specialty - Globe: 4 watts - Retail - ID - 3	10	150	84	56%	2%	75%	62
LED Specialty - Globe: 5 watts - Retail - ID - 2	1,152	28,719	16,151	56%	2%	75%	11,897
LED Specialty - Globe: 6 watts - Retail - ID - 2	199	4,820	2,710	56%	2%	75%	1,997
Total	**71,527**	**1,545,405**	**873,044**	**56%**		**94%**	**818,419**

Table 3-8 Sources: (1) HES_ID_LEDs.xlsx; (2) 01-30-2014_ID_HES_Fixtures_Brief.xlsx; (3) HES-Lighting-MASTER Source Workbook_2012-2016 v3.9.3.xlsm; (ISRs and HOUs) 2020 ADM General Population Survey and Illinois Statewide Technical Reference Manual Version 10. (HOU – all distribution channels). Bulb location in home; ADM General Population Survey 2020, HOU by location: Residential Lighting End-Use Consumption Study (DNV KEMA Energy and Sustainability, Pacific Northwest National Laboratory; December 2012).

3.4.4 Discussion of Realization Rates

Realization rates other than 100 percent are the result of evaluated ISRs and HOUs that differed from ex ante values (see Table 3-8).

ISRs

For all lighting measures sold through retail stores, evaluated ISRs were lower than ex ante ISRs lowering realization rates.

For lighting measures distributed through foodbanks, ADM calculated the evaluated savings using an ISR of 80.3 percent sourced from *2019 Illinois Statewide Technical Reference Manual for Energy Efficiency Version 10.*

HOUs

For all lighting measures, evaluated HOUs were lower than ex ante HOUs lowering realization rates. Hours per room were drawn from Residential Lighting End-Use Consumption Study (*DNV KEMA Energy and Sustainability, Pacific Northwest National Laboratory; December 2012)*. Room locations were drawn from ADM's 2020 general population survey

3.4.5 Leakage analysis

Leakage is an estimate of the percentage of measures sold through the program that were purchased by residents who live outside Rocky Mountain Power's service area. ADM assessed leakage using geo-mapping data of participating and non-participating retailers combined with general population survey responses.

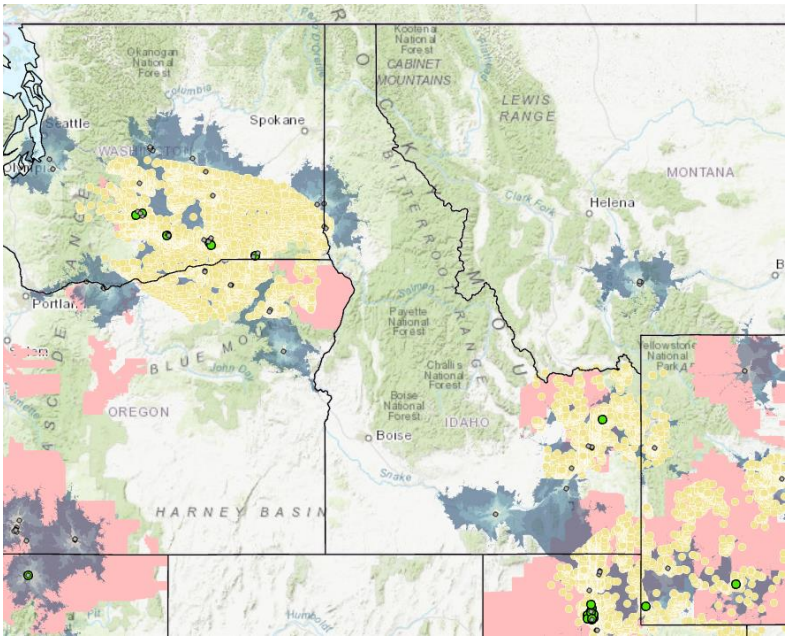
First, ADM mapped 60-minute drive-time areas surrounding both participating and non-participating (competing) retailers[1] (see Figure 3-1). If retailers had overlapping areas, ADM assumed that customers purchased measures from the closest store and modified retailers' drive-time areas.

Second, ADM determined the total population in each retailer's drive time area and the percentage of the population in each area that are Rocky Mountain Power customers[2.]

1 2020 data. Safe Graph Data: https://marketplace.arcgis.com/listing.html?id=3425348e4bee4059af2b353e52df43c2

2 2010 Census block data from Environmental System Research Institute (ESRI).

Figure 3-1: Sample Leakage Analysis Map



Retailer (green dot), Drive time areas (blue), Rocky Mountain Power service area (pink), census block population (yellow).

Third, ADM modified drive-time areas established in step one using general population survey[3] responses to define drive-time range categories to assess how many consumers were willing to drive and shop at each participating retail store. Drive-time behavior survey results are included in Table 3-12. Within each drive-time category, ADM calculated the percentage of the population that lives in Rocky Mountain Power's service area.

Table 3-12: Drive Time Results from General Population Survey

Retail Type	0-5	5-10	10-15	15-20	20-25	25-30	30-40	40-50	50-60	60+
DIY	4%	6%	13%	19%	11%	6%	25%	8%	1%	7%
Big Box	6%	12%	21%	18%	13%	5%	15%	4%	1%	6%
Member	6%	7%	10%	15%	14%	6%	25%	8%	1%	8%
Discount	11%	23%	23%	16%	11%	2%	9%	2%	0%	2%

Fourth, for each drive-time category indicated in Table 3-12 for each retailer, ADM calculated the predicted population that was willing to drive to and shop at the retailer, and what percentage of that population was Rocky Mountain Power customers.

The resulting leakage percentage is the share of residents who are willing to drive to participating retailers who are not Rocky Mountain Power customers. ADM calculated lighting program leakage by weighting each store's leakage by its ex post savings (kWh).

3 ADM conducted the general population survey in 2020.

ADM estimated that 2 percent of the upstream lighting measures sold at participating retailers were purchased by residents living outside of Rocky Mountain Power's service area. Leakage was not considered for measures distributed through foodbanks.

3.4.6 Net to Gross Ratio

The net-to-gross (NTG) analysis estimates the share of program activity that would have occurred in the absence of the program (free ridership) and additional energy savings that were the result of the program for which the customer did not received an incentive (spillover). See Equation 3-2.Equation 3-2: Net to Gross Calculation

Equation 3-2: Net to Gross Calculation

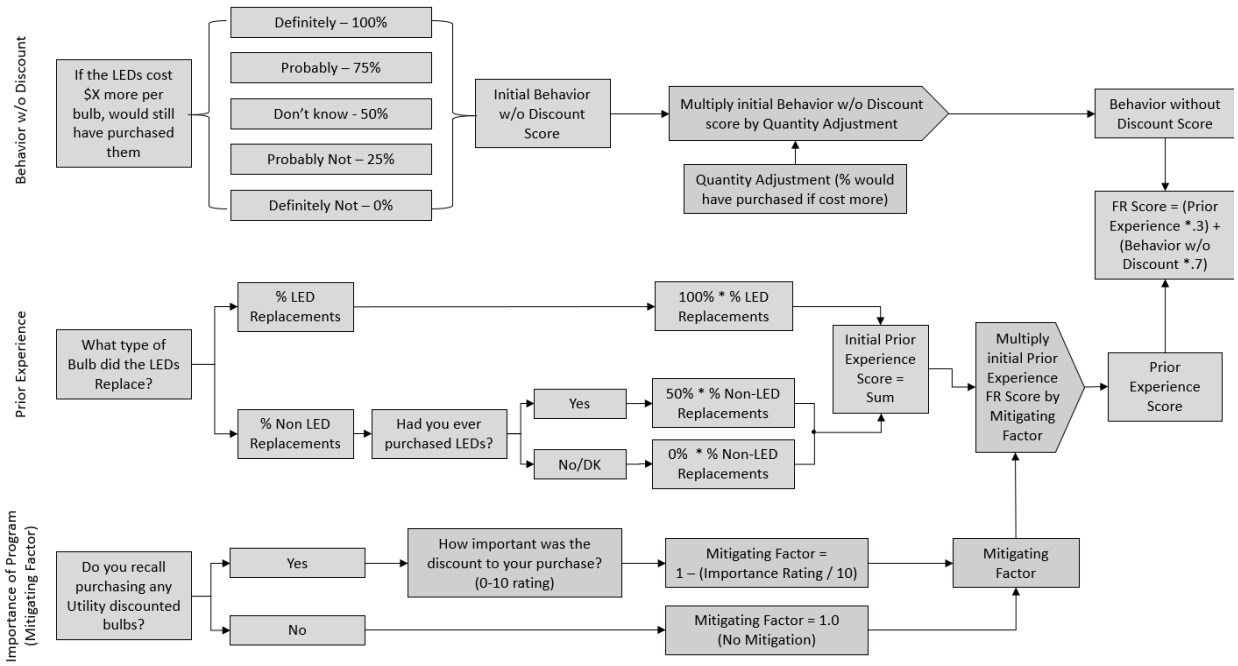
$$NTG = 1 - Freeridership\ rate + Spillover\ rate$$

ADM surveyed Rocky Mountain Power customers who purchased discounted upstream lighting measures to determine both free ridership and spillover estimates.

3.4.6.1 Free ridership

Free ridership was estimated using the methodology illustrated in Figure 3-2.

Figure 3-2: Free Ridership Methodology for Lighting



3.4.6.2 Spillover

Spillover estimates energy saving that resulted from additional measures without receiving a program incentive. ADM calculated both participant and non-participant spillover.

To assess participant spillover savings, survey respondents were asked whether they implemented any additional energy saving measures for which they did not receive a program incentive. Respondents were also asked to provide information on the attributes of the measures implemented for use in estimating the associated energy savings.

Participants who report implementing one or more efficiency measures are then asked two questions for use in developing a spillover score:

SO1: On a scale of 1 to 5, where 1 represents “not important” and 5 represents “very important”, how important was your experience with the Wattsmart program in your decision to purchase the items you just mentioned?

SO2: On a scale of 1 to 5, where 1 represents “very unlikely” and 5 represents “very likely” how likely would you have been to make the additional purchases you just mentioned even if you had not participated in the Wattsmart program?

The response to these questions were used to develop a spillover score as follows:

Spillover = Average (SO1, 5 – SO2)

All the associated measure savings were considered attributable to the program if the resulting score was equal to or greater than 4.

3.4.6.3 Net-to-Gross Results

Results of the net-to-gross (NTG) analysis for lighting measures are included in Table 3-13. No lighting participant spillover savings were reported in the General Population Survey. A non-participant spillover of 1 percent was reported. ADM used a NTG ratio of 100 percent reflecting that customers dependent on food assistance are less likely to install energy efficiency measures absent the program.

Table 3-13: Lighting Net-to-Gross Results

Measure Type	Free Ridership	Participant Spillover	Non-participant Spillover	NTG
LED Bulbs	26%	0	1%	75%
LED Fixtures	14%	0	1%	87%
FOODBANK	N/A	N/A	N/A	100%

3.5 HVAC

Rocky Mountain Power offered customers financial incentives to install energy efficient HVAC measures in their homes during the evaluation period. HVAC measures resulted in 717,596 kWh of net savings, accounting for 22 percent of total program savings. The overall realization rate for HVAC measures was 99.9 percent and the net-to-gross ratio was 89 percent. HVAC measures included smart thermostats, duct sealing and/or insulation, heat pumps, furnace fans, and rooftop central air conditioners. Sixty-two percent of HVAC savings resulted from smart thermostats. HVAC program savings are reported in Table 3-14 through Table 3-16.

Table 3-14: HVAC Program Savings by Measure Sub Type 2019-2020

Measure Category	Quantity	Claimed Savings (kWh)	Gross Evaluated Savings (kWh)	Realization Rate	NTG	Net Evaluated Savings (kWh)
Thermostat	702	501,457	501,457	100%	89%	445,795
Heat Pump - Ductless	121	188,155	188,155	100%	89%	167,270
Duct Sealing and/or Insulation	35	101,277	100,669	99%	89%	89,495
Heat Pump - Air Source	2	12,634	12,634	100%	89%	11,232
Furnace Fan	5	2,640	2,640	100%	89%	2,347
Evaporative Cooler	3	1,104	1,104	100%	89%	981
Central Air Conditioner	6	536	536	100%	89%	476
Total	**874**	**807,803**	**807,195**	**99.9%**	89%	**717,596**

Table 3-15:HVAC Program Savings by Measure Sub Type 2019

Measure Category	Quantity	Claimed Savings (kWh)	Gross Evaluated Savings (kWh)	Realization Rate	NTG	Net Evaluated Savings (kWh)
Thermostat	465	400,622	400,622	100%	89%	356,153
Heat Pump - Ductless	87	135,038	135,038	100%	89%	120,049
Duct Sealing and/or Insulation	35	101,277	100,669	99%	89%	89,495
Heat Pump - Air Source	2	12,634	12,634	100%	89%	11,232
Furnace Fan	5	2,640	2,640	100%	89%	2,347
Evaporative Cooler	1	368	368	100%	89%	327
Central Air Conditioner	3	268	268	100%	89%	238
Total	**598**	**652,847**	**652,239**	**99.9%**	89%	**579,840**

Table 3-16:HVAC Program Savings by Measure Sub Type 2020

Measure Category	Quantity	Claimed Savings (kWh)	Gross Evaluated Savings (kWh)	Realization Rate	NTG	Net Evaluated Savings (kWh)
Thermostat	237	100,835	100,835	100%	89%	89,642
Heat Pump - Ductless	34	53,117	53,117	100%	89%	47,221
Evaporative Cooler	2	736	736	100%	89%	654
Central Air Conditioner	3	268	268	100%	89%	238
Total	**276**	**154,956**	**154,956**	**100%**	89%	**137,756**

3.5.1 Tracking data verification

ADM reviewed program tracking data to evaluate:

- if program tracking dataset included duplicate or erroneous data entries.
- if program tracking dataset included all necessary fields for savings calculations.
- if claimed energy savings match the applicable TRL source documents and calculations.
- if installed measure model numbers or measure specifications reported in implementer's tracking data and/or application data met efficiency requirements documented in the TRL.

3.5.2 Ex ante review

ADM compared ex ante values in TRL reference documents with claimed savings included in program tracking data and verified that the claimed savings represented savings documented in TRL reference documents. ADM confirmed all claimed saving values in the reference documents.

3.5.3 Evaluated savings

Evaluated savings were calculated using UES values included in the TRL reference files for all HVAC measures for which ADM could verify savings through a review of the program data. Program data confirmed all savings values were appropriately assigned; however, ADM found that manufactured home duct sealing measures were assigned savings for homes of "any size", not based on the home's actual square footage. To assign savings by each manufactured home's assessed square footage, ADM gathered data from publicly available resources[4] and updated evaluated savings for homes that could be categorized as single wide (≤ 1,000 square feet) or double/triple wide (> 1,000

[4] Zillow and Trulia.

square feet) based on the RTF file specifications. For manufactured homes ADM could not find data for, savings for a home of "any size" were used, per RTF file guidelines. UES are reported in Table 3-17. Total HVAC savings are reported in Table 3-18 through Table 3-20.

Table 3-17: HVAC Unit Energy Savings (UES) by Measure

Measure - Version	Average Claimed UES	Average Evaluated UES	Realization Rate
Central Air Conditioner			
Central Air Conditioner – ID - 3	89	89	100%
Duct Sealing and/or Insulation			
Manufactured Home - Duct Sealing - Direct Install - Test Only - ID - 2	0	0	NA
Manufactured Home - Duct Sealing - Direct Install - Test, Crossover Replacement, Seal and Insulate - ID - 2	3,267	3,349	103%
Manufactured Home - Duct Sealing - Direct Install - Test, Seal and Insulate - ID - 2	3,267	3,228	99%
Evaporative Cooler			
Evaporative Cooler - Min 3,500 CFM - Self Install - ID - 1	368	368	100%
Furnace Fan			
95% Gas Furnace with ECM Blower - ID - 2	528	528	100%
Heat Pump - Air Source			
Heat Pump Conversion - Tier 2 - Electric FAF with CAC - ID - 3	6,493	6,493	100%
Heat Pump Conversion - Tier 2 - Electric FAF without CAC - ID - 3	6,141	6,141	100%
Heat Pump – Ductless			
Ductless Heat Pump - ID - 2	1,516	1,516	100%
Ductless Heat Pump - ID - 3	1,516	1,516	100%
New Homes Ductless Heat Pump - ID - 1	3,089	3,089	100%
Thermostat			
Smart Thermostat - CAC Only - ID - 1	162	162	100%
Smart Thermostat - CAC Only - ID – 2	162	162	100%
Smart Thermostat - CAC Only - Instant Rebates - ID - 2	162	162	100%
Smart Thermostat - Electric FAF - ID – 2	572	572	100%
Smart Thermostat - Electric FAF - Instant Rebates - ID - 2	604	604	100%
Smart Thermostat - Electric FAF w/ CAC - ID - 2	623	623	100%
Smart Thermostat - Electric FAF w/ CAC - Instant Rebates - ID - 2	766	766	100%
Smart Thermostat - Electric Heat Pump - ID - 2	1,223	1,223	100%
Smart Thermostat - Electric Heat Pump - Instant Rebates - ID - 2	1,143	1,143	100%
Smart T-stat w/ ASHP - ID - 1	1,063	1,063	100%
Smart T-stat w/ EFAF - ID - 1	1,330	1,330	100%
Smart T-stat w/ EFAF + CAC - ID - 1	1,448	1,448	100%
Smart_Tstat_W/Any_Gas_Instant_Rebates - ID - 1	162	162	100%
Smart_Tstat_w/ASHP_Instant_Rebates - ID - 1	1,063	1,063	100%
Smart_Tstat_W/EFAF_CAC_Instant_Rebates - ID - 1	1,448	1,448	100%
Smart_Tstat_w/EFAF_Instant_Rebates - ID - 1	1,330	1,330	100%

Table 3-18: HVAC Program Savings by Measure 2019-2020

Measure – Version	Quantity	Claimed Savings (kWh)	Gross Evaluated Savings (kWh)	Realization Rate
95% Gas Furnace with ECM Blower - ID - 2	5	2,640	2,640	100%
Central Air Conditioner - ID - 3	6	536	536	100%
Ductless Heat Pump - ID - 2	44	66,704	66,704	100%
Ductless Heat Pump - ID - 3	74	112,184	112,184	100%
Evaporative Cooler - Min 3,500 CFM - Self Install - ID - 1	3	1,104	1,104	100%
Heat Pump Conversion - Tier 2 - Electric FAF with CAC - ID - 3	1	6,493	6,493	100%
Heat Pump Conversion - Tier 2 - Electric FAF without CAC - ID - 3	1	6,141	6,141	100%
Manufactured Home - Duct Sealing - Direct Install - Test Only - ID - 2	4	-	-	NA
Manufactured Home - Duct Sealing - Direct Install - Test, Crossover Replacement, Seal and Insulate - ID - 2	5	16,335	16,747	103%
Manufactured Home - Duct Sealing - Direct Install - Test, Seal and Insulate - ID - 2	26	84,942	83,922	99%
New Homes Ductless Heat Pump - ID - 1	3	9,267	9,267	100%
Smart Thermostat - CAC Only - ID - 1	23	3,726	3,726	100%
Smart Thermostat - CAC Only - ID - 2	31	5,022	5,022	100%
Smart Thermostat - CAC Only - Instant Rebates - ID - 2	111	17,982	17,982	100%
Smart Thermostat - Electric FAF - ID - 2	91	52,060	52,060	100%
Smart Thermostat - Electric FAF - Instant Rebates - ID - 2	31	18,724	18,724	100%
Smart Thermostat - Electric FAF w/ CAC - ID - 2	43	26,800	26,800	100%
Smart Thermostat - Electric FAF w/ CAC - Instant Rebates - ID - 2	41	31,406	31,406	100%
Smart Thermostat - Electric Heat Pump - ID - 2	2	2,446	2,446	100%
Smart Thermostat - Electric Heat Pump - Instant Rebates - ID - 2	5	5,715	5,715	100%
Smart T-stat w/ ASHP - ID - 1	4	4,252	4,252	100%
Smart T-stat w/ EFAF - ID - 1	9	11,970	11,970	100%
Smart T-stat w/ EFAF + CAC - ID - 1	39	56,472	56,472	100%
Smart_Tstat_W/Any_Gas_Instant_Rebates - ID - 1	90	14,580	14,580	100%
Smart_Tstat_w/ASHP_Instant_Rebates - ID - 1	12	12,756	12,756	100%
Smart_Tstat_W/EFAF_CAC_Instant_Rebates - ID - 1	97	140,456	140,456	100%
Smart_Tstat_w/EFAF_Instant_Rebates - ID - 1	73	97,090	97,090	100%
Total	**874**	**807,803**	**807,195**	**99.9%**

Table 3-19: HVAC Program Savings by Measure 2019

Measure - Version	Quantity	Claimed Savings (kWh)	Gross Evaluated Savings (kWh)	Realization Rate
95% Gas Furnace with ECM Blower - ID - 2	5	2,640	2,640	100%
Central Air Conditioner - ID - 3	3	268	268	100%
Ductless Heat Pump - ID - 2	44	66,704	66,704	100%
Ductless Heat Pump - ID - 3	41	62,156	62,156	100%
Evaporative Cooler - Min 3,500 CFM - Self Install - ID - 1	1	368	368	100%
Heat Pump Conversion - Tier 2 - Electric FAF with CAC - ID - 3	1	6,493	6,493	100%
Heat Pump Conversion - Tier 2 - Electric FAF without CAC - ID - 3	1	6,141	6,141	100%
Manufactured Home - Duct Sealing - Direct Install - Test Only - ID - 2	4	0	0	NA
Manufactured Home - Duct Sealing - Direct Install - Test, Crossover Replacement, Seal and Insulate - ID - 2	5	16,335	16,747	103%
Manufactured Home - Duct Sealing - Direct Install - Test, Seal and Insulate - ID - 2	26	84,942	83,922	99%
New Homes Ductless Heat Pump - ID - 1	2	6,178	6,178	100%
Smart Thermostat - CAC Only - ID - 1	23	3,726	3,726	100%
Smart Thermostat - CAC Only - ID - 2	9	1,458	1,458	100%
Smart Thermostat - CAC Only - Instant Rebates - ID - 2	4	648	648	100%
Smart Thermostat - Electric FAF - ID - 2	83	47,228	47,228	100%
Smart Thermostat - Electric FAF - Instant Rebates - ID - 2	2	1,208	1,208	100%
Smart Thermostat - Electric FAF w/ CAC - ID - 2	20	9,182	9,182	100%
Smart Thermostat - Electric FAF w/ CAC - Instant Rebates - ID - 2	1	766	766	100%
Smart Thermostat - Electric Heat Pump - ID - 2	0	160	160	100%
Smart T-stat w/ ASHP - ID - 1	4	4,252	4,252	100%
Smart T-stat w/ EFAF - ID - 1	9	11,970	11,970	100%
Smart T-stat w/ EFAF + CAC - ID - 1	39	56,472	56,472	100%
Smart_Tstat_W/Any_Gas_Instant_Rebates - ID - 1	90	14,580	14,580	100%
Smart_Tstat_w/ASHP_Instant_Rebates - ID - 1	12	12,756	12,756	100%
Smart_Tstat_W/EFAF_CAC_Instant_Rebates - ID - 1	97	140,456	140,456	100%
Smart_Tstat_w/EFAF_Instant_Rebates - ID - 1	72	95,760	95,760	100%
Total	**598**	**652,847**	**652,239**	**99.9%**

Table 3-20: HVAC Program Savings by Measure 2020

Measure - Version	Quantity	Claimed Savings (kWh)	Gross Evaluated Savings (kWh)	Realization Rate
Central Air Conditioner - ID - 3	3	268	268	100%
Ductless Heat Pump - ID - 3	33	50,028	50,028	100%
Evaporative Cooler - Min 3,500 CFM - Self Install - ID - 1	2	736	736	100%
New Homes Ductless Heat Pump - ID - 1	1	3,089	3,089	100%
Smart Thermostat - CAC Only - ID - 2	22	3,564	3,564	100%
Smart Thermostat - CAC Only - Instant Rebates - ID - 2	107	17,334	17,334	100%
Smart Thermostat - Electric FAF - ID - 2	8	4,832	4,832	100%
Smart Thermostat - Electric FAF - Instant Rebates - ID - 2	29	17,516	17,516	100%
Smart Thermostat - Electric FAF w/ CAC - ID - 2	23	17,618	17,618	100%
Smart Thermostat - Electric FAF w/ CAC - Instant Rebates - ID - 2	40	30,640	30,640	100%
Smart Thermostat - Electric Heat Pump - ID - 2	2	2,286	2,286	100%
Smart Thermostat - Electric Heat Pump - Instant Rebates - ID - 2	5	5,715	5,715	100%
Smart_Tstat_w/EFAF_Instant_Rebates - ID - 1	1	1,330	1,330	100%
Total	**276**	**154,956**	**154,956**	**100%**

3.5.4 Discussion of Realization Rates

Evaluated savings for the HVAC measure category resulted in 99.9 percent realization rate as ADM only found discrepancies in the claimed savings for manufactured home duct sealing records. For duct sealing, 45 percent of records were attributed higher evaluated savings (realization rate of 106 percent) and 29 percent of records were attributed lower evaluated savings (realization rate of 88 percent).

3.5.5 Net to Gross Ratio

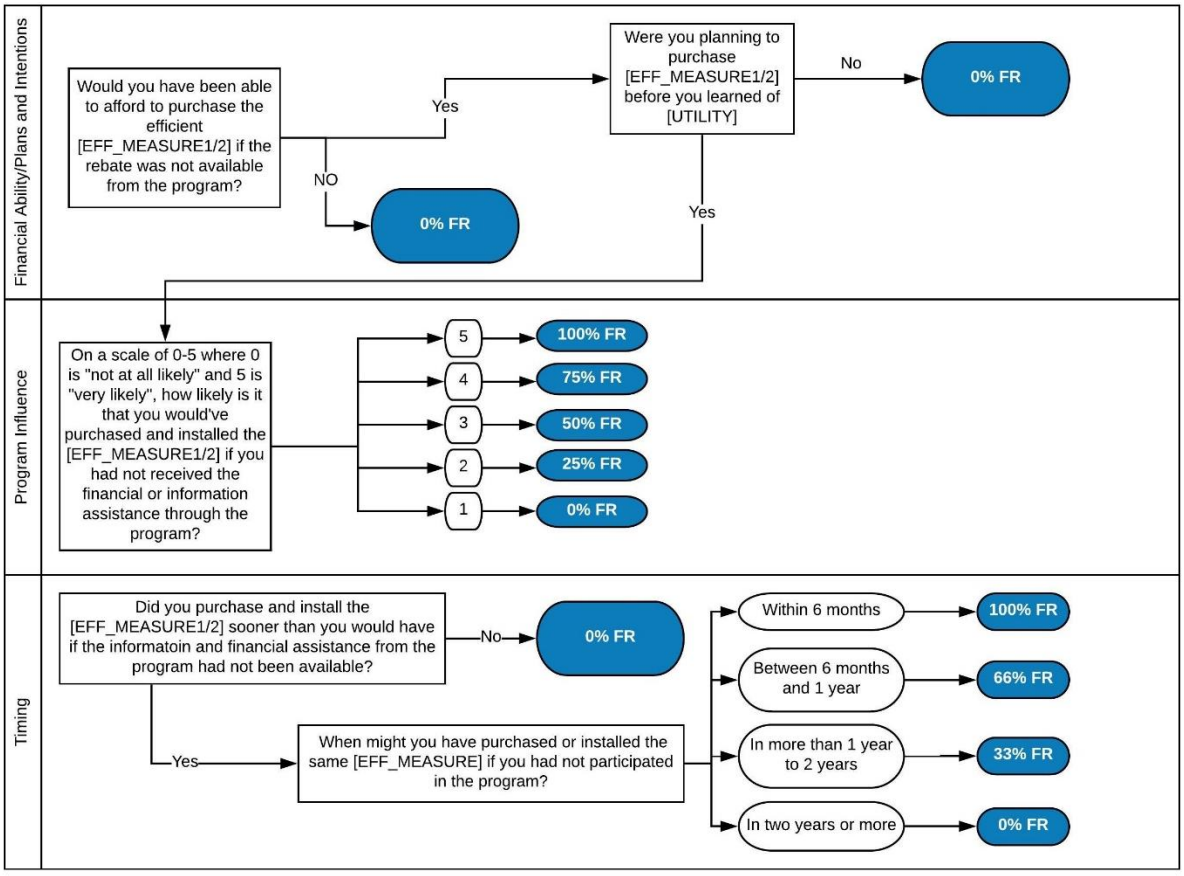
ADM surveyed a sample of program participants to determine Net-to-Gross (NTG) ratio for HVAC program offerings. NTG is calculated using Equation 3-3. Free ridership estimates the percentage of participants who would have installed the measure if they had not received a discount through the program. Spillover estimates the percentage of additional energy saving that participants generated by installing additional measures without an incentive as a result of the influence of participation. Non-participant spillover is an estimate of savings that resulted from program influence on non-participants.

Equation 3-3: Net-to-Gross Calculation

$$Net - to - Gross\ Ratio = 1 - Free\ Ridership + Spillover$$

Figure 3-3 illustrates the methodology for calculating free ridership for HVAC measures.

Figure 3-3: HVA Free Ridership Calculation Methodology



HVAC net-to-gross results are reported in Table 3-21. Since ADM was only able to gather sufficient survey responses from customers who received discounts on smart thermostats through the program (n=67), the same NTG ratio was applied to other HVAC measures.

Table 3-21: HVAC Net-to-Gross Results

Measure Subtype	Free Ridership	Participant Spillover	Non-Participant Spillover	NTG
Smart Thermostats	12%	0.298%	1%	88.9%
Overall NTG for HVAC Measure Category				88.9%

3.5.6 Supplemental Analyses

ADM completed additional analyses of HVAC measures reported in a separate memo for Rocky Mountain Power to use for program planning purposes.

3.6 Electronics

In early 2019, Rocky Mountain Power distributed 725 Tier 2 Advanced Power Strips (APSs) through a pilot program. In 2020, Rocky Mountain Power distributed 9,318 Tier 2 Advanced Power Strips for free through food banks in ID. Each kit included two Tier 2 APSs. A total of 10,043 APSs were distributed during the evaluation period with a net savings of 410,285 kWh accounting for 13 percentage of total program savings, with a 52 percent realization rate and a 97 percent net-to-gross ratio, as reported in Table 3-22.

Table 3-22: Electronics Program Savings by Year

Year	Quantity	Claimed Savings (kWh)	Gross Evaluated Savings (kWh)	Realization Rate	NTG	Net Evaluated Savings (kWh)
2019	725	156,600	114,160	73%	88%	100,461
2020	9,318	652,260	309,824	48%	100%	309,824
Total	**10,043**	**808,860**	**423,984**	**52%**	**97%**	**410,285**

3.6.1 Tracking Data Verification

ADM reviewed program tracking data to evaluate:

- if the tracking dataset included duplicate or erroneous data entries,
- if data entries in the program tracking dataset included all necessary fields for savings calculations,
- if claimed energy savings match the applicable TRL source documents and calculations,
- if measures were distributed through foodbanks in the service area
- if foodbanks distributed all the APS they received.

ADM found the following in the dataset:

- One of 725 APSs distributed through the pilot program went to a Utah address.

3.6.2 Ex Ante Review

ADM verified that the UES claimed in the program tracking matched the documented saving as indicated in the TRL reference documents.

3.6.3 Evaluated Savings

APSs were distributed without collecting customer data, so it was not possible to conduct a verification survey. Additionally, several factors contribute to the probability that a customer who received APSs from a foodbank may not have installed it as designated in the RTF reference file to generate ex ante savings.

First, to realize energy savings from Tier 2 APSs as designated in the TRL reference file, the user must plug either a TV or desktop computer into the control outlet and plug two eligible peripheral devices into the secondary outlets. Other configurations do not qualify for documented savings. This appliance is difficult to install to meet these requirements, especially if the device was unrequested.

Second, Rocky Mountain Power distributed APSs through foodbanks in two waves approximately six months apart. Foodbank staff that ADM contacted estimated that roughly half of their customers received APSs from both distribution waves. Those homes would have received four APSs.

Third, the Rocky Mountain Power marketing material that was distributed with the APSs indicated that merely plugging electronics into the strip would reduce electricity usage. “Advanced Power Strips” can sense when your electronics are idle and will automatically switch to energy-saving mode. They are easy to use. Just plug in and lower the cost of powering your electronics.” (ID Fall 2020 Foodbank Promo marketing materials). The marketing material distributed with the APSs did not educate the customer about the correct installation practice that would result in the claimed savings.

ADM used the average (48 percent) of single family (55 percent) and multifamily (40 percent) ISRs for Tier 1 APSs in the Illinois TRM because the distribution channel (Energy Efficiency Kit, Leave Behind) was the closest match to the foodbank distribution channel Rocky Mountain Power used. For APSs distributed through the pilot program, an ISR of 73 percent was also sourced from the Illinois TRM v. 10 (Tier 2 APS, IR Only).

UESs are reported in Table 3-23; total savings for APSs are reported in Table 3-24.

Table 3-23: Electronics Program Unit Energy Savings by Measure

Measure Name - Measure Version	Ex Ante UES (kWh)	Evaluated ISR	Evaluated UES
Advanced Power Strip - IR Sensing - Owner Install - ID - 2	216	73%	157.68
Advanced Power Strip - Occupancy Sensing - Owner Installed - ID - 1	70	48%	33.25

Table 3-24: Electronics Program Savings

Measure - Version	Year	Quantity	Claimed Savings (kWh)	Gross Evaluated Savings (kWh)	Realization Rate	NTG	Net Evaluated Savings (kWh)
Advanced Power Strip - IR Sensing - Owner Install - ID - 2	2019	725	156,600	114,160	73%	88%	100,461
Advanced Power Strip - Occupancy Sensing - Owner Install - ID - 2	2020	9,318	652,260	309,824	48%	100%	309,824
Total		**10,043**	**808,860**	**423,984**	**52%**	**97%**	**410,285**

3.6.4 Discussion of Realization Rates

The evaluated ISRs, discussed above, reduced the realization rate for APSs.

ADM assigned 0 savings to the pilot program record that was identified with a Utah address.

3.6.5 Net to Gross Ratio

ADM used an NTG ratio of 100 percent for APSs distributed through foodbanks and senior centers reflecting that customers relying on food assistance programs are less likely to install energy efficiency measures absent the program. A program-wide NTG of 88 percent was applied to customers who received APS through the pilot program.

3.7 Water Heating

The measure category Water Heating consists of flow control measures (low-flow showerheads and faucet aerators) and heat pump water heaters that resulted in net savings of 413,277 kWh accounting 13 percent of total program savings, with a 61 percent realization rate and a 99 percent net-to-gross ratio, as reported in Table 3-25.

Table 3-25: Water Heating Program Savings by Year

Year	Quantity	Claimed Savings (kWh)	Gross Evaluated Savings (kWh)	Realization Rate	NTG	Net Evaluated Savings (kWh)
2019	6,288	302,701	188,765	62%	99%	186,718
2020	4,669	379,889	228,537	60%	99%	226,558
Total	**10,957**	**682,590**	**417,301**	**61%**	**99%**	**413,277**

3.7.1 Flow Control Measures

Rocky Mountain Power distributed flow controlling low-flow showerheads and faucet aerators through food banks and community senior centers in the service area during the evaluation period resulting in 383,762 kWh in net savings, with a 59 percent realization rate and 100 percent net-to-gross ratio, as reported in Table 3-26.

Table 3-26: Flow Control Program Savings by Year

Year	Quantity	Claimed Savings (kWh)	Gross Evaluated Savings (kWh)	Realization Rate	NTG	Net Evaluated Savings (kWh)
2019	6,278	285,649	171,713	60%	100%	171,713
2020	4,659	363,402	212,050	58%	100%	212,050
Total	**10,937**	**649,051**	**383,762**	**59%**	**100%**	**383,762**

3.7.1.1 Ex Ante Review

ADM evaluated the UES values claimed by Rocky Mountain Power in the applicable TRL documents. ADM found that the distribution channels indicated for flow control measures distributed through community service organizations was inconsistent. Ex ante showerhead savings were based on retail distribution; aerator savings were based on by-request distribution.

3.7.1.2 Tracking Data Verification

ADM reviewed the program tracking data to verify that all flow control measures were distributed within the service area. ADM also contacted community services organizations to determine if they received and distributed all the measures reported in the tracking data.

3.7.1.3 Evaluated Savings

Rocky Mountain Power distributed low-flow showerheads and faucet aerators through food banks and senior centers throughout the service area.

Evaluated savings for these measures were determined by evaluating the ex ante ISRs and percentage of electric water heaters presented in the TRL reference files. The resulting evaluated UESs for these measures are reported in Table 3-27.

Table 3-27: UES Flow Control Measures

Measure - Version	Ex Ante UES (kWh)	Ex Ante ISR	Evaluated ISR	Ex Ante % Electric Water Heaters	Evaluated % Electric Water Heaters	Evaluated UES (kWh)	Realization Rate
Faucet Aerators - Any DHW - 1.0 GPM or Less - Midstream - ID - 1	13.00	54%	45%	56%	48%	9.19	71%
Low-Flow Shower Head - Any DHW - 1.50 GPM - Midstream - ID - 1	78.00	80%	57%	58%	48%	45.51	58%
Low-Flow Shower Head - Any DHW - 1.50 GPM - Midstream - ID - 2	78.00	80%	57%	58%	48%	45.51	58%

Sources: 2019.06.05_ID_Wattsmart_Aerators_Brief, 2019.06.05_ID Wattsmart Low Flow Showerheads Brief.xlsx, (Evaluated % electric water heaters) Residential Building Stock Assessment II Single-Family Homes Report II 2016-2017 by Northwest Energy Efficiency Alliance (NEEA); (Evaluated ISR) Illinois Statewide Technical Reference Manual Version 10.

Total gross evaluated savings is the product of the evaluated UES, and the verified quantity of measures distributed in the service area. Flow control program saving by measure are reported in Table 3-28 through Table 3-30.

Table 3-28: Flow Control Program Savings 2019-2020

Measure - Version	Quantity	Claimed Savings (kWh)	Gross Evaluated Savings (kWh)	Realization Rate	NTG	Net Evaluated Savings (kWh)
Faucet Aerators - Any DHW - 1.0 GPM or Less - Midstream - ID - 1	3,139	40,807	28,844	71%	100%	28,844
Low-Flow Shower Head - Any DHW - 1.50 GPM - Midstream - ID - 1	3,139	244,842	142,868	58%	100%	142,868
Low-Flow Shower Head - Any DHW - 1.50 GPM - Midstream - ID - 2	4,659	363,402	212,050	58%	100%	212,050
Total	**10,937**	**649,051**	**383,762**	**59%**	100%	**383,762**

Table 3-29: Flow Control Program Savings 2019

Measure - Version	Quantity	Claimed Savings (kWh)	Gross Evaluated Savings (kWh)	Realization Rate	NTG	Net Evaluated Savings (kWh)
Faucet Aerators - Any DHW - 1.0 GPM or Less - Midstream - ID - 1	3,139	40,807	28,844	71%	100%	28,844
Low-Flow Shower Head - Any DHW - 1.50 GPM - Midstream - ID - 1	3,139	244,842	142,868	58%	100%	142,868
Total	**6,278**	**285,649**	**171,713**	**60%**	**100%**	**171,713**

Table 3-30: Flow Control Program Savings 2020

Measure - Version	Quantity	Claimed Savings (kWh)	Gross Evaluated Savings (kWh)	Realization Rate	NTG	Net Evaluated Savings (kWh)
Low-Flow Shower Head - Any DHW - 1.50 GPM - Midstream - ID - 2	4,659	363,402	212,050	58%	100%	212,050
Total	**4,659**	**363,402**	**212,050**	**58%**	**100%**	**212,050**

3.7.1.4 Net to Gross Ratio

ADM used a net-to-gross ratio of 1.0 aerators and showerheads that were distributed for free through foodbanks and through senior centers reflecting that customers relying on food assistance programs are less likely to install energy efficiency measures absent the program.

3.7.1.5 Discussion of Realization Rates

The following factors impacted realization rates for starter kits.

Installation rates The ex ante ISR for showerheads (80 percent) was based on a retail distribution assumption. ADM used the ISR designated for *by request* distribution (57 percent) for the evaluated ISR. The ex ante ISR for aerators was adjusted to an evaluated value of .45, sourced from Illinois Statewide Technical Reference Manual Version 10. Evaluated ISRs reduced realization rates.

Water heater fuel The ex ante percentage of electric water heaters indicated in the RTF files for low flow showerheads is 58 percent and for aerators is 56 percent. The evaluated percentage of electric water heaters was 47.5 percent, sourced from Residential Building Stock Assessment II Single-Family Homes Report II 2016-2017 by Northwest Energy Efficiency Alliance. The evaluated value reduced the realization rate.

3.7.2 Heat Pump Water Heaters

Rocky Mountain Power offered rebates to verified customers on qualified energy efficient heat pump water heaters during the evaluation period. Rebates were issued on 8 water heaters resulting in net savings of 29,514 kWh with a 100 percent realization rate and 88 percent net-to-gross ratio, as reported in Table 3-31.

Table 3-31: Water Heater Program Savings by Year

Year	Quantity	Claimed Savings (kWh)	Gross Evaluated Savings (kWh)	Realization Rate	NTG	Net Evaluated Savings (kWh)
2019	10	17,052	17,052	100%	88%	15,006
2020	10	16,487	16,487	100%	88%	14,509
Total	**20**	**33,539**	**33,539**	**100%**	88%	**29,514**

3.7.2.1 Tracking Data Verification

ADM reviewed the program tracking data to evaluate:

- if measure requirements were met for all heat pump water heater model numbers
- if the program tracking dataset included duplicate or erroneous data entries.

ADM found that the following information was missing from the dataset:

- Tracking data did not include baseline conditions.
- Tracking data did not include installation location or conditions as indicated by measure names.

3.7.2.2 Ex Ante Review

ADM verified that the UESs claimed in the program tracking data matched the appropriate measures as indicated in the TRL reference documents.

3.7.2.3 Evaluated savings

ADM reviewed the manufacture model specifications for each heat pump water heater reported in the program tracking data and verified each met the requirements for the tier specified in the tracking data. All model numbers met or exceeded tier specifications.

ADM did not make any adjustments to claimed savings. ADM assumed an ISR of 1.0 for water heating measures as reported in Table 3-32 through Table 3-34.

Table 3-32: Heat Pump Water Heater Program Savings – 2019-2020

Measure - Version	Quantity	Claimed Savings (kWh)	Gross Evaluated Savings (kWh)	Realization Rate	NTG	Net Evaluated Savings (kWh)
HPWH Tier 2 or Above Basement 0-55gallons Self Install - ID - 1	13	22,750	22,750	100%	88%	20,020
HPWH Tier 2 or Above Indoor Electric Resistance Heat 0-55 Gallons Self Install - ID - 1	3	4,401	4,401	100%	88%	3,873
HPWH Tier 2 or Above Indoor Heat Pump 0-55 Gallons Self Install - ID - 1	3	4,803	4,803	100%	88%	4,227
New Homes HPWH Tier 3 Ducted Heat Pump 0-55 Gallons Self Install - ID - 1	1	1,585	1,585	100%	88%	1,395
Total	**20**	**33,539**	**33,539**	**100%**	**88%**	**29,514**

Table 3-33: Heat Pump Water Heater Program Savings – 2019

Measure - Version	Quantity	Claimed Savings (kWh)	Gross Evaluated Savings (kWh)	Realization Rate	NTG	Net Evaluated Savings (kWh)
HPWH Tier 2 or Above Basement 0-55gallons Self Install - ID - 1	8	14,000	14,000	100%	88%	12,320
HPWH Tier 2 or Above Indoor Electric Resistance Heat 0-55 Gallons Self Install - ID - 1	1	1,467	1,467	100%	88%	1,291
New Homes HPWH Tier 3 Ducted Heat Pump 0-55 Gallons Self Install - ID - 1	1	1,585	1,585	100%	88%	1,395
Total	**10**	**17,052**	**17,052**	**100%**	88%	**15,006**

Table 3-34: Heat Pump Water Heater Program Savings – 2020

Measure - Version	Quantity	Claimed Savings (kWh)	Gross Evaluated Savings (kWh)	Realization Rate	NTG	Net Evaluated Savings (kWh)
HPWH Tier 2 or Above Basement 0-55gallons Self Install - ID - 1	5	8,750	8,750	100%	88%	7,700
HPWH Tier 2 or Above Indoor Electric Resistance Heat 0-55 Gallons Self Install - ID - 1	2	2,934	2,934	100%	88%	2,582
HPWH Tier 2 or Above Indoor Heat Pump 0-55 Gallons Self Install - ID - 1	3	4,803	4,803	100%	88%	4,227
Total	**10**	**16,487**	**16,487**	**100%**	88%	**14,509**

3.7.2.4 Net to Gross Ratio

The heat pump water heater measure group was too small to evaluate a specific NTG value; therefore, a program-wide NTG of 88 percent was applied to this measure type.

3.8 Whole Home

Rocky Mountain Power offered financial incentives to builders who constructed new homes that exceeded Idaho State Building Code and to customers who purchased new manufactured homes that met ENERGY STAR® guidelines. Program tracking data listed 39 new homes and 17 manufactured homes, totaling 136,433 kWh of net savings, accounting for 4 percent of total program savings, with a 103 percent realization rate and a 88 percent net-to-gross ratio, as reported in Table 3-35.

Table 3-35: Whole Homes Program Savings 2019-2020

Year	Quantity	Claimed UES (kWh)	Ex Post Gross (kWh)	Realization Rate	NTG	Evaluated Net UES (kWh)
2019	38	101,865	107,046	105%	88%	94,200
2020	18	47,991	47,991	100%	88%	42,232
Total	**56**	**149,856**	**155,037**	**103%**	88%	136,433

3.8.1 Tracking data verification

ADM reviewed program tracking data to evaluate:

- if tracking dataset included duplicate or erroneous data entries,
- if data entries in the program tracking dataset included all necessary fields to calculate savings,
- if claimed energy savings matched savings as indicated in the applicable TRL source documents and calculations.

ADM found no inconsistencies in the dataset.

3.8.2 Ex ante review

New homes savings were deemed using tiered savings based on the percentage improvement over a home built to Idaho state energy code. ADM verified that the claimed energy savings matched the savings indicated in the TRL reference file[5] for the home tier reported in the program tracking data. For manufactured homes, ADM verified that claimed savings matched savings as indicated in the TRL reference file.[6]

[5] *HES_ID_New Homes Whole Homes Performance Path*

[6] 2018.12.03_ID_New_ENERGYSTAR_Manufactured_Homes_Updates_TRL_Request_2018.12.03_ID_Wattsmart_MH_New_ENERGYSTAR_Manufactured_Homes_Brief

3.8.3 Evaluated savings

New homes accounted for 53 percent of claimed savings, and manufactured homes accounted for 47 percent of savings in the category.

ADM applied a 100 percent ISR for the whole homes measure category.

New Homes – Whole Home Performance Path

For new homes, claimed savings were developed using REM/Rate™ models to compare expected annual consumption for as-built new homes with expected annual consumption for a similar home built to the Idaho State Building Code standards. Deemed savings were assigned for homes using tiered savings based on the percent improvement over a similar code-built home. Tier 1 home were, at minimum 15 percent better than code; Tier 2 homes, at minimum 30 percent better than code; and Tier 3 homes, at minimum 45 percent better than code. No Tier 3 homes were claimed in 2019 or 2020.

ADM completed the following steps to verify program savings:

1. Reviewed REM/Rate™ model files for each home in a sample of 16 homes claimed during the evaluation period.

2. Verified that expected savings for each claimed home matched the savings tier claimed for the home. All homes were found to fall into the appropriate, claimed tier, except for one home, which was claimed as Tier 1 (15 percent+ better than code), but was found to be Tier 2.

3. Reviewed REM/Rate™ User Defined Reference Home (UDRH) files used to calculate baseline energy consumption of comparable code-built homes. ADM verified that baseline models were appropriately defined and adhered to established guidelines.

New Manufactured Homes

Unit energy savings for new manufactured homes were deemed for all homes that met the ENERGY STAR, efficient manufactured homes criteria. ADM verified the TRL source document for deemed energy savings and assigned a 100 percent realization rate to the New Manufactured Homes measure category.

Savings for all Whole Homes measures are reported in Table 3-36 through Table 3-38.

Table 3-36: Whole Home Program Savings by Measure 2019-2020

Measure - Version	Qty	Claimed Savings (kWh)	Gross Evaluated Savings (kWh)	Realization Rate	NTG	Evaluated Net UES (kWh)
New Manufactured Home - Energy Star - Any Electric - ID	17	70,414	70,414	100%	88%	61,964
New Homes Whole Home Performance Path Tier 1 - ID	32	55,264	60,445	109%	88%	53,192
New Homes Whole Home Performance Path Tier 2 - ID	7	24,178	24,178	100%	88%	21,277
Total	56	149,856	155,037	103%	88%	136,433

Table 3-37: Whole Home Program Savings by Measure 2019

Measure - Version	Qty	Claimed Savings (kWh)	Gross Evaluated Savings (kWh)	Realization Rate	NTG	Evaluated Net UES (kWh)
New Manufactured Home - Energy Star - Any Electric - ID	10	41,420	41,420	100%	88%	36,450
New Homes Whole Home Performance Path Tier 1 - ID	21	36,267	41,448	114%	88%	36,474
New Homes Whole Home Performance Path Tier 2 - ID	7	24,178	24,178	100%	88%	21,277
Total	**38**	**101,865**	**107,046**	105%	88%	94,200

Table 3-38: Whole Home Program Savings by Measure 2020

Measure - Version	Qty	Claimed Savings (kWh)	Gross Evaluated Savings (kWh)	Realization Rate	NTG	Evaluated Net UES (kWh)
New Manufactured Home - Energy Star - Any Electric - ID	7	28,994	28,994	100%	88%	25,515
New Homes Whole Home Performance Path Tier 1 - ID	11	18,997	18,997	100%	88%	16,717
Total	**18**	**47,991**	**47,991**	100%	88%	42,232

3.8.4 Discussion of Realization Rates

Realization rates were impacted by the following factors:

- One New Home in the sample was categorized as Tier 1 but was found to fall into the Tier 2 savings category, with higher deemed savings.

3.8.5 Net to Gross Ratio

ADM used a program-wide NTG of 88 percent for Whole Home measures.

3.9 Starter Kits

Rocky Mountain Power supplied 390 energy saving kits, referred to as *Starter Kits* on the Rocky Mountain Power web site, at no charge to eligible customers who requested them. The kits resulted in 54,327 kWh of net savings accounting for 2 percent of program savings, with a 55 percent realization rate and an 87 percent net-to-gross ratio.

All kits contained four standard LED bulbs; customers who indicated that they had an electric water heater also received water saving aerators and low-flow showerheads for up to two bathrooms. Rocky Mountain Power customer eligibility was determined through a web-based portal where customers ordered kits.

Total starter kit savings are presented in Table 3-39 through Table 3-41.

Table 3-39: Starter Kit Program Savings 2019-2020

Measure - Version	Quantity	Claimed Savings (kWh)	Gross Evaluated Savings (kWh)	Realization Rate	NTG	Net Evaluated Savings (kWh)
Energy Savings Kit - LED - ID - 3	188	6,159	7,867	128%	78%	6,137
Energy Savings Kit - Best - 2 Bathrooms - ID - 3	153	89,080	44,115	50%	88%	38,939
Energy Savings Kit - Best - 1 Bathroom - ID - 3	49	18,387	10,567	57%	88%	9,251
Total	**390**	**113,625**	**62,549**	**55%**	87%	54,327

Table 3-40: Starter Kit Program Savings 2019

Measure - Version	Quantity	Claimed Savings (kWh)	Gross Evaluated Savings (kWh)	Realization Rate	NTG	Net Evaluated Savings
Energy Savings Kit - LED - ID - 3	181	5,930	7,574	128%	78%	5,908
Energy Savings Kit - Best - 2 Bathrooms - ID - 3	144	83,840	41,520	50%	88%	36,648
Energy Savings Kit - Best - 1 Bathroom - ID - 3	49	18,387	10,567	57%	88%	9,251
Total	**374**	**108,156**	**59,661**	**55%**	87%	51,808

Table 3-41: Starter Kit Program Savings 2020

Measure - Version	Quantity	Claimed Savings (kWh)	Gross Evaluated Savings (kWh)	Realization Rate	NTG	Net Evaluated Savings
Energy Savings Kit - LED - ID - 3	7	229	293	128%	78%	228
Energy Savings Kit - Best - 2 Bathrooms - ID - 3	9	5,240	2,595	50%	88%	2,291
Total	**16**	**5,469**	**2,888**	**53%**	87%	2,519

3.9.1 Tracking Data Verification

ADM reviewed program tracking data to evaluate:

- if tracking dataset included duplicate or erroneous data entries,
- if data entries in the program tracking dataset included all necessary fields for savings calculations
- if claimed energy savings match the applicable TRL source documents and calculations.

ADM found no inconsistencies in the dataset.

3.9.2 Ex Ante Review

ADM completed an ex ante review of each kit component to verify that claimed savings in the tracking data reflected the ex ante values in the TRL reference documents. Reference files included additional embedded reference files for each kit component. ADM found no inconsistencies in this review.

3.9.3 Evaluated Savings

To calculate evaluated savings, ADM used ISRs and percentage of recipients with electric water heaters drawn from participant survey responses. Respondents reported installation information for each component, allowing ADM to calculate ISRs for each kit component separately. Only customers who received water savings measures were consider when calculating percentage of participants with electric water heaters. ADM replaced ex ante ISRs and percentage of electric water heaters with correlated evaluated values. Starter Kit UESs are reported in Table 3-42.

Table 3-42: Starter Kit Unit Energy Savings (UES)

Kit Component	Claimed UES	Ex Ante ISR	Ex ante % Electric DHW	Evaluated ISR	Evaluated % electric DHW	Evaluated UES (kWh)	Realization Rate	NTG	Net Evaluated UES kWh/yr
Energy Savings Kit - Best - 1 Bathroom									
LED 1 (9.5 Watt)	8.19	74%		98%		10.90	133%	78%	8.50
LED 2 (9.5 Watt)	8.19	74%		97%		10.73	131%	78%	8.37
LED 3 (9.5 Watt)	8.19	74%		92%		10.20	125%	78%	7.96
LED 4 (9.5 Watt)	8.19	74%		90%		10.01	122%	78%	7.81
Aerator Kitchen (1.5 gph)	135.50	49%	81%	41%	54%	76.36	56%	89%	67.97
Aerator Bath 1 (0.5 gpm)	45.30	55%	81%	45%	54%	24.64	54%	89%	21.93
Showerhead 1 (1.5 gpm)	161.68	60%	97%	48%	54%	72.81	45%	91%	66.26
TOTAL	**375.24**					**215.65**	**57%**		**188.80**
Energy Savings Kit - Best - 2 Bathrooms									
LED 1 (9.5 Watt)	8.19	74%		98%		10.90	133%	78%	8.50
LED 2 (9.5 Watt)	8.19	74%		97%		10.73	131%	78%	8.37
LED 3 (9.5 Watt)	8.19	74%		92%		10.20	125%	78%	7.96
LED 4 (9.5 Watt)	8.19	74%		90%		10.01	122%	78%	7.81
Aerator Kitchen (1.5 gph)	135.50	49%	81%	41%	54%	76.36	56%	89%	67.97
Aerator Bath 1 (0.5 gpm)	45.30	55%	81%	45%	54%	24.64	54%	89%	21.93
Aerator Bath 2 (0.5 gpm)	45.30	55%	81%	41%	54%	22.63	50%	89%	20.14
Showerhead 1 (1.5 gpm)	161.68	60%	97%	48%	54%	72.81	45%	91%	66.26
Showerhead 2 (1.5 gpm)	161.68	60%	97%	33%	54%	50.05	31%	91%	45.55
TOTAL	**582.22**					**288.34**	**50%**		**254.50**
Energy Savings Kit – LED									
LED 1 (9.5 Watt)	8.19	74%		98%		10.90	133%	78%	8.50
LED 2 (9.5 Watt)	8.19	74%		97%		10.73	131%	78%	8.37
LED 3 (9.5 Watt)	8.19	74%		92%		10.20	125%	78%	7.96
LED 4 (9.5 Watt)	8.19	74%		90%		10.01	122%	78%	7.81
TOTAL	**32.76**					**41.84**	**128%**		**32.64**

SOURCES: (Ex ante values) KitsMSW_RMP_ID_3-30-2017.xlsx; **(**Evaluated ISR and % Electric DWH) Customer survey 2021.

3.9.4 Discussion of Realization Rates

The following factors impacted realization rates for starter kits.

LEDs

LED realization rates exceeded 100 percent because evaluated ISRs exceeded ex ante ISRs. ADM used survey data to calculate ISRs for each light bulb in the kit. The ex ante ISR for all bulbs was 74 percent; evaluated ISRs ranged from 98 to 90 percent. Realization rates over 100 percent reflect the higher ISRs.

Aerators and Showerheads

ISRs for water saving measures were calculated for each individual component. Evaluated ISRs were lower than ex ante ISRs for these components decreasing their realization rates.

Ex ante savings were based on an assumed percentage of electric water heaters. Evaluated percentage of electric water heaters for customers who received water saving measures was 54 percent reducing realization rates.

3.9.5 Net to Gross Ratio

ADM completed a net to gross analysis for starter kits using responses to the Starter Kit Participant Survey. A net-to-gross ratio captures the savings that would have occurred without the program intervention as well as additional savings that occur as result of energy saving actions participants take as a result of the program. The net to gross factor is calculated as indicated in Equation 3-4.

Equation 3-4: Net to Gross Calculation

$$Net\ to\ Gross\ Ratio = 1 - Free\ Ridership\ Rate + Spillover\ Rate$$

3.9.5.1 Free Ridership

Free ridership estimates the percentage of participant who would have installed the same energy-saving measures if they had not received them through the program. To determine free ridership scores, ADM used participant survey responses about:

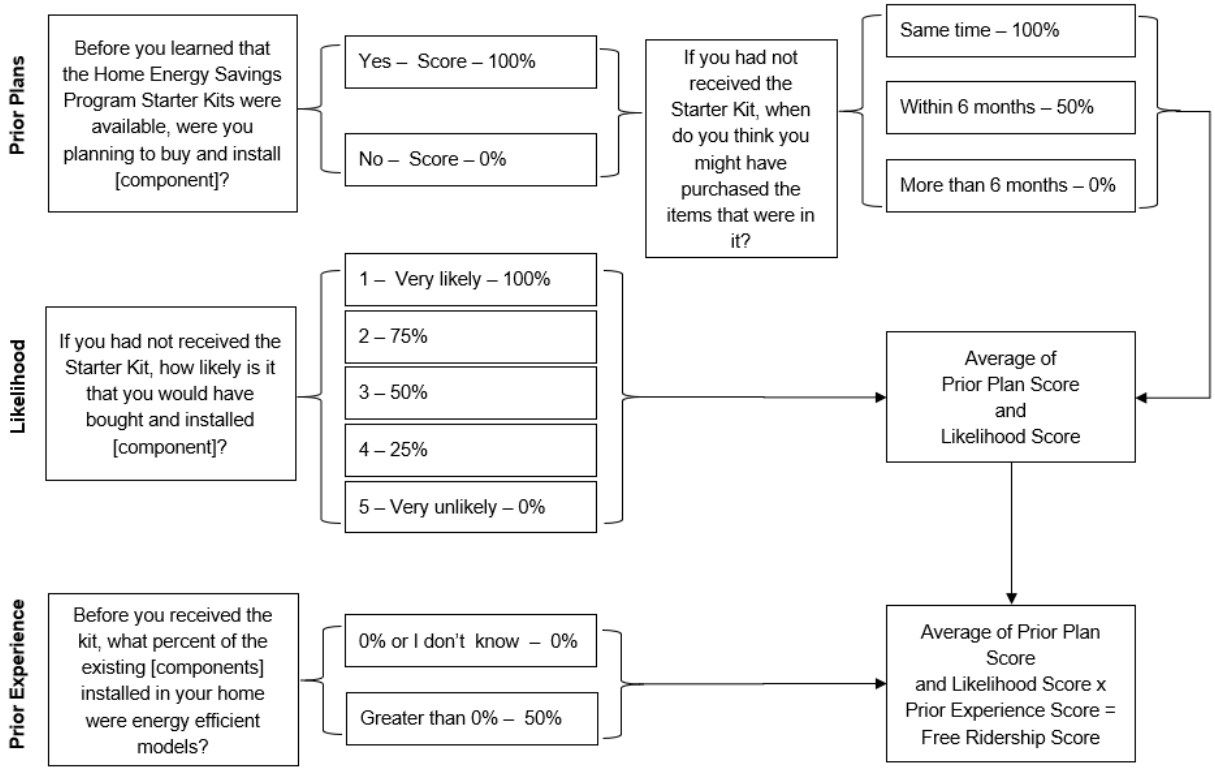
- Participant's prior plans to install kits components in their home
- Estimate of time when they would have installed the components
- Likelihood that the participant would have installed the components
- Prior installations of similar measures in the home

ADM calculated a free ridership score for each kit component using Equation 3-5 as illustrated in Figure 3-4. Each participant was assigned a free ridership score for each kit component. Participants' scores were averaged to calculate overall free ridership score for each component.

Equation 3-5:Kits Free Ridership

$$Free\ Ridership = Average\ (Prior\ Plans\ Score, Likelihood\ Score) * Previous\ experience\ adjustment$$

Figure 3-4: Kits Free Ridership Methodology



Free ridership scores by kit component are included in Table 3-43.

Table 3-43: Free Ridership Scores by Kit Component

Kit Component	Free Ridership Score
LEDs	26%
Aerators	15%
Low Flow Showerheads	13%

3.9.5.2 Spillover

Spillover represents energy savings that resulted indirectly from the program's influence on participants to implement additional energy saving measures without receiving a program incentive.

To assess participant spillover savings, survey respondents were asked whether they implemented any additional energy saving measures for which they did not receive a program incentive. Participants who report implementing one or more efficiency measures are then asked two questions used to develop a spillover score:

SO1: How important was your experience with the Wattsmart Homes Program Starter Kits when you installed [spillover measure]?

SO2: How likely would you have been to take the additional steps to save energy if you had not received the Wattsmart Homes Program Starter Kit?

Responses were collected using a 5-point Likert Scale evaluating program influence on installing the additional energy saving measures. The spillover score is the average of the responses to the two questions (see Equation 3-6).

Equation 3-6: Spillover Score for Installed Measures

$$Spillover\ Score\ =\ Average(SO1, 5 - SO2)$$

Any energy saving measures with a spillover score of 4 or greater were included in spillover savings. Spillover is represented as the percentage of total spillover savings discovered through the survey divided by the total of kit savings generated by survey respondents. This ratio is applied as the spillover rate for kits (see Equation 3-7).

Equation 3-7: Spillover Ratio for Kits Program

$$Spillover\ Ratio = \\ Sum\ of\ savings\ from\ all\ measures\ with\ spillover\ scores \\ greater\ than\ 3\ \div\ Total\ kits\ savings\ generated\ by\ survey\ respondents)$$

The evaluated spillover for kits was 3 percent for the evaluation period (see Table 3-44).

Table 3-44: Spillover Measures Identified

Measures with Spillover Scores >= 3	Quantity	UES (kWh)	Total Energy Savings (kWh)
LEDs	34	19.68	669.12

Table 3-45: Total Claimed Savings from Survey Respondents

Kit Type Received by Survey Respondent	Ex Ante UES	Qty surveyed	Total Claimed Savings for Survey respondents
Energy Savings Kit - Best - 1 Bathroom - ID - 3	17	375	6,379
Energy Savings Kit - Best - 2 Bathrooms - ID - 3	24	582	13,973
Energy Savings Kit - LED - ID - 3	28	33	917
Total			**21,270**

Table 3-46: Starter Kit Spillover Rate

Claimed Savings (kWh)	Total Spillover Savings	Spillover Rate
21,270	669.12	3%

Net-to-gross results are presented in Table 3-47.

Table 3-47: Starter Kits Net to Gross Results by Kit Component

Kit component	Free ridership	Spillover	NTG
LEDs	26%	3%	77%
Aerators	15%	3%	88%
Low Flow Showerheads	13%	3%	91%

3.10 Building Shell

Rocky Mountain Power offered rebates to verified customers who installed insulation and windows in their homes during the evaluation period. Rocky Mountain Power provided incentives for insulation and windows in 41 homes during the evaluation period, resulting in savings of 7,893 kWh accounting for 0.2 percent of total program savings, with a 61 percent realization rate and 88 percent net-to-gross ratio, as reported in Table 3-48.

Table 3-48: Building Shell Program Savings

PY	Quantity (sq ft)	Claimed Savings (kWh)	Gross Evaluated Savings (kWh)	Realization Rate	NTG	Net Evaluated Savings
2019	9,550	8,513	8,073	95%	88%	7,104
2020	10,620	6,156	896	15%	88%	788
Total	**20,170**	**14,669**	**8,969**	**61%**	88%	**7,893**

3.10.1 Tracking Data Verification

ADM reviewed program tracking data to evaluate:

- if tracking dataset included duplicate or erroneous data entries
- if data entries in the program tracking dataset included all necessary fields for savings calculations
- if claimed energy savings match the applicable TRL source documents and calculations
- if tracking dataset includes sufficient data to calculate savings.

The following information was missing from the dataset:

- Six of 15 (40 percent) insulation records were missing baseline and efficient specifications.
- Twenty of thirty-five (57 percent) windows records were missing heating fuel information.

3.10.2 Ex Ante Review

ADM verified that ex ante savings documented in the TRL were supported by the applicable reference documents.

3.10.3 Evaluated Savings

ADM used an ISR of 100 percent for building shell measures. Because of the small percentage of program savings that resulted from home insulation, ADM did not survey program participants to verify savings calculation variables. ADM used TRL reference documents to determine evaluated savings. Savings by measure are included in Table 3-49 through Table 3-51.

Table 3-49: Building Shell Program Savings by Measure 2019-2020

Measure - Version	Quantity (sq ft)	Claimed Savings (kWh)	Gross Evaluated Savings (kWh)	Realization Rate	NTG	Net Evaluated Savings
Insulation - Attic - Electric FAF Heating System - ID - 3	3,409	2,182	1,152	53%	88%	1,014
Insulation - Attic - Electric Heat Pump Heating System - ID - 3	900	315	315	100%	88%	277
Insulation - Attic - Electric Zonal Heating System - ID - 3	6,275	3,138	1,348	43%	88%	1,186
Insulation - Attic - Self Install - Electric FAF Heating System - ID - 3	1,880	1,203	896	74%	88%	788
Insulation - Attic - Self Install - Electric Zonal Heating System - ID - 3	2,300	1,150	538	47%	88%	473
Insulation - Wall - Electric FAF Heating System - ID - 3	696	2,060	2,060	100%	88%	1,813
Window Tier 1 - U-0.30 - Electric FAF Heating System - ID - 2	732	659	493	75%	88%	434
Window Tier 1 - U-0.30 - Electric Heat Pump Heating System - ID - 2	1,493	746	69	9%	88%	60
Window Tier 1 - U-0.30 - Electric Zonal Heating System - ID - 2	1,520	1,079	368	34%	88%	324
Window Tier 2 - U-0.22 - Electric FAF Heating System - ID - 2	241	572	572	100%	88%	503
Window Tier 2 - U-0.22 - Electric FAF Heating System - ID - 3	439	1,041	757	73%	88%	667
Window Tier 2 - U-0.22 - Electric Zonal Heating System - ID - 2	60	110	110	100%	88%	96
Window Tier 2 - U-0.22 - Electric Zonal Heating System - ID - 3	225	414	291	70%	88%	256
Total	**20,170**	**14,669**	**8,969**	**61%**	88%	**7,893**

Table 3-50: Building Shell Program Savings by Measure 2019

Measure - Version	Quantity (sq ft)	Claimed Savings (kWh)	Gross Evaluated Savings (kWh)	Realization Rate	NTG	Net Evaluated Savings
Insulation - Attic - Electric FAF Heating System - ID - 3	1,800	1,152	1,152	100%	88%	1,014
Insulation - Attic - Electric Heat Pump Heating System - ID - 3	900	315	315	100%	88%	277
Insulation - Attic - Electric Zonal Heating System - ID - 3	2,695	1,348	1,348	100%	88%	1,186
Insulation - Attic - Self Install - Electric Zonal Heating System - ID - 3	1,075	538	538	100%	88%	473
Insulation - Wall - Electric FAF Heating System - ID - 3	696	2,060	2,060	100%	88%	1,813
Window Tier 1 - U-0.30 - Electric FAF Heating System - ID - 2	548	493	493	100%	88%	434
Window Tier 1 - U-0.30 - Electric Heat Pump Heating System - ID - 2	344	172	69	40%	88%	60
Window Tier 1 - U-0.30 - Electric Zonal Heating System - ID - 2	594	421	368	87%	88%	324
Window Tier 2 - U-0.22 - Electric FAF Heating System - ID - 2	241	572	572	100%	88%	503
Window Tier 2 - U-0.22 - Electric FAF Heating System - ID - 3	439	1,041	757	73%	88%	667
Window Tier 2 - U-0.22 - Electric Zonal Heating System - ID - 2	60	110	110	100%	88%	96
Window Tier 2 - U-0.22 - Electric Zonal Heating System - ID - 3	158	291	291	100%	88%	256
Total	**9,550**	**8,513**	**8,073**	**95%**	88%	**7,104**

Table 3-51: Building Shell Program Savings by Measure 2020

Measure - Version	Quantity (sq ft)	Claimed Savings (kWh)	Gross Evaluated Savings (kWh)	Realization Rate	NTG	Net Evaluated Savings
Insulation - Attic - Electric FAF Heating System - ID - 3	1,609	1,030	0	0%	88%	0
Insulation - Attic - Electric Zonal Heating System - ID - 3	3,580	1,790	0-	0%	88%	0
Insulation - Attic - Self Install - Electric FAF Heating System - ID - 3	1,880	1,203	896	74%	88%	788
Insulation - Attic - Self Install - Electric Zonal Heating System - ID - 3	1,225	613	0	0%	88%	0
Window Tier 1 - U-0.30 - Electric FAF Heating System - ID - 2	184	166	0	0%	88%	0
Window Tier 1 - U-0.30 - Electric Heat Pump Heating System - ID - 2	1,149	574	0	0%	88%	0
Window Tier 1 - U-0.30 - Electric Zonal Heating System - ID - 2	926	657	0	0%	88%	0
Window Tier 2 - U-0.22 - Electric Zonal Heating System - ID - 3	67	123	0	0%	88%	0
Total	**10,620**	**6,156**	**896**	**15%**	88%	**788**

3.10.4 Discussion of Realization Rates

No documentation was available for 26 of 51 records to verify that measure requirements established in TRL reference files were met. These records were assigned evaluated savings of 0 kWh reducing realization rates.

3.10.5 Net to Gross Ratio

ADM used a program-wide NTG ratio of 88 percent for building shell measures. The category was too small to complete a category specific NTG analysis.

3.11 Appliances

Rocky Mountain Power offered rebates to verified customers on qualified energy efficient appliances during the evaluation period. Rebates were issued on 57 appliances resulting in net savings of 4,324 kWh, accounting for 0.13 percent of program savings with an 80 percent realization rate and an 88 percent net-to-gross ratio, as reported in Table 3-52.

Table 3-52: Appliance Program Savings by Year

Program Year	Claimed Savings (kWh)	Gross Evaluated Savings (kWh)	Realization Rate	NTG	Net Evaluated Savings (kWh)
2019	3,615	3,089	85%	88%	2,718
2020	2,495	1,825	73%	88%	1,606
Total	**6,110**	**4,914**	**80%**	**88%**	**4,324**

3.11.1 Tracking Data Verification

ADM reviewed the program tracking data to evaluate:

- if measure requirements were met for all documented appliance model numbers
- if the program tracking dataset included duplicate or erroneous data entries.

ADM found the following in the dataset:

- Ten records included measures with model numbers that did not meet efficiency standards documented in TRL reference documents.

3.11.2 Ex Ante Review

ADM verified that the UES claimed in the program tracking matched the appropriate measures as indicated in the TRL reference documents.

3.11.3 Evaluated savings

ADM reviewed the manufacture model specifications for each appliance reported in the program tracking data. No evaluated savings were recorded for records with model numbers that did not meet efficiency requirements documented in the TRL reference file.

ADM assumed an ISR of 1.0 for appliances. Appliance savings are reported in Table 3-53 through Table 3-55.

.

Table 3-53: Appliance Program Savings by Measure 2019-2020

Measure - Version	Quantity	Claimed Savings (kWh)	Gross Evaluated Savings (kWh)	Realization Rate	NTG	Net Evaluated Savings (kWh)
Clothes Washers - CEE Tier 2 and Above - Electric DHW & Electric Dryer - ID - 3	23	3,519	2,601	74%	88%	2,289
Clothes Washers - CEE Tier 3 - Electric DHW & Electric Dryer - ID - 1	2	360	360	100%	88%	317
Clothes Washers - CEE Tier 3 - Gas DHW & Electric Dryer - ID - 1	7	539	462	86%	88%	406
Clothes Washers - CEE Tier 2 - Gas DHW & Electric Dryer - ID - 1	24	1,608	1,407	88%	88%	1,238
Clothes Washers - CEE Tier 2 - Electric DHW & Gas Dryer - ID - 1	1	84	84	100%	88%	74
Total	**57**	**6,110**	**4,914**	**80%**	**88%**	**4,324**

Table 3-54: Appliance Program Savings by Measure 2019

Measure - Version	Quantity	Claimed Savings (kWh)	Gross Evaluated Savings (kWh)	Realization Rate	NTG	Net Evaluated Savings (kWh)
Clothes Washers - CEE Tier 2 and Above - Electric DHW & Electric Dryer - ID - 3	13	1,989	1,530	77%	88%	1,346
Clothes Washers - CEE Tier 3 - Electric DHW & Electric Dryer - ID - 1	2	360	360	100%	88%	317
Clothes Washers - CEE Tier 3 - Gas DHW & Electric Dryer - ID - 1	6	462	462	100%	88%	406
Clothes Washers - CEE Tier 2 - Gas DHW & Electric Dryer - ID - 1	12	804	737	92%	88%	649
Total	**33**	**3,615**	**3,089**	**85%**	**88%**	**2,718**

Table 3-55: Appliance Program Savings by Measure 2020

Measure - Version	Quantity	Claimed Savings (kWh)	Gross Evaluated Savings (kWh)	Realization Rate	NTG	Net Evaluated Savings (kWh)
Clothes Washers - CEE Tier 2 and Above - Electric DHW & Electric Dryer - ID - 3	10	1,530	1,071	70%	88%	942
Clothes Washers - CEE Tier 3 - Gas DHW & Electric Dryer - ID - 1	1	77	0	0%		0
Clothes Washers - CEE Tier 2 - Gas DHW & Electric Dryer - ID - 1	12	804	670	83%	88%	590
Clothes Washers - CEE Tier 2 - Electric DHW & Gas Dryer - ID - 1	1	84	84	100%	88%	74
Total	**24**	**2,495**	**1,825**	73%	88%	1,606

3.11.4 Discussion of Realization Rates

Realization rates were negatively impacted by the 10 records for which 0 savings were assigned because the documented appliances did not meet efficiency requirements indicated in TRL reference files.

3.11.5 Net to Gross Ratio

ADM used a program-wide NTG of 88 percent for appliances. The category was too small to complete a category specific NTG analysis.

4 Process Evaluation

ADM completed a process analysis of the program which included in-depth interviews and conversations with key staff at Rocky Mountain Power and program implementers. Additional information was gathered from a general customer survey, a starter kit participant survey, an HVAC participant survey and a review of program materials. ADM also contacted foodbank staff that received kits to distribute to their clients.

4.1 Roles and Responsibilities

The Rocky Mountain Power program manager is responsible for the Wattsmart Homes Programs in Utah, Wyoming and Idaho, including oversight of the regulatory process, assessing cost effectiveness of the program, regulatory recovery, review of marketing campaigns, program participation and procedures, and design and implementation of procedures.

Rocky Mountain Power contracted with CLEAResult as the program implementer during the evaluation period. Portions of the program are implemented by additional contractors. Implementation partner responsibilities included program implementation, contract management, client management, and overseeing day-to-day operations.

4.2 Program Design and Goals

The primary purpose of the program is to achieve conservation targets. Of note during this evaluation cycle, the COVID-19 pandemic occurred during the last ten months of the evaluation period (March through December 2020).

4.3 Tracking and Reporting

Rocky Mountain Power savings documentation is comprised of the technical reference library (TRL) with its associated files and the program tracking dataset.

4.3.1 Technical Reference Library (TRL)

Ex ante program savings, as well as other measure specifications, are documented in Rocky Mountain Power's Technical Reference Library (TRL). The TRL is comprised of a list of all program measures and all versions of each measure. Measure specification are updated as required by changing regulatory and market conditions. The TRL file is maintained jointly by Rocky Mountain Power and its contracted program implementer. Each measure listed includes specifications for the measure and version number, including reference files that document UES savings values or savings calculation methodologies.

TRL reference files generally rely on Regional Technical Forum's (RTF) library of measure UESs that is maintained by the Northwest Power and Conservation Council to verify and evaluate energy efficiency savings.

Because the TRL includes multiple versions of specific measures for which the savings values can vary, the accuracy of TRL necessitates that a specific reference file is indicated for each version of each measure. ADM found that the TRL often reported reference files used for groups of measures without explicitly indicating a reference file for each specific measure complicating ex ante review of claimed savings.

4.3.2 Program Tracking Dataset

Rocky Mountain Power maintains a program tracking dataset that includes:

- Measure name and corresponding data that ties to TRL
- Record or application status and relevant dates
- For downstream measures, customer and account information

The program implementer collects and retains the following data elements that are not included in Rocky Mountain Power's dataset:

- Product manufacturer and model numbers
- Retail sales location for upstream measures
- Baseline conditions

ADM found that key program tracking data elements are retained with program implementer and are not integrated into Rocky Mountain Power's program tracking database. Program data provided by Rocky Mountain Power and the implementer included data errors and was missing key data elements as reported by measure category in *Section 3 Impact Analysis*.

4.4 Communication

Rocky Mountain Power has regular meetings with implementation staff. In addition, there are quarterly meetings and ad hoc communications. Weekly meeting topics include program status and performance, long-term strategy, day-to-day tactical decisions, and marketing activities.

4.5 Outreach

ADM interviewed representatives at the four community organizations through which Rocky Mountain Power distributed kits to collect their feedback on the program. Staff from the participating organizations shared the following feedback:

- A staff member at the mobile pantry program indicated that all the kits were distributed within a couple months of receiving them.
- The staff member had the impression that people were happy to receive the kits.
- Of the mobile pantry locations, some serve areas that are served by numerous pantries, so clients do not travel far to get to the pantry. Other mobile pantry locations are not served by other foodbanks, so people may travel 40-60 miles to come to the mobile pantry.
- A staff member at senior center reported non-systematic distribution of kits. “There are still a few around here.”
- Staff used power strips in the office and put the remaining items in a box for anyone who wanted them.
- Staff said that some senior center clients complained about the showerheads.
- Senior centers seemed less-well equipped to distribute kits than the foodbanks were.

4.6 General Population Survey

ADM administered a general population study to Rocky Mountain Power customers in Idaho to collect data from both program participants and nonparticipants. Four hundred customer completed the survey and shared their experience with Rocky Mountain Power's programs during 2019 and 2020. ADM sent customers email invitations to complete the questionnaire through an online survey platform and offered monetary incentives ($5 electronic gift card) to complete it. The survey collected data for both the process evaluation and impact analysis.

Customers were first screened for participation in the upstream lighting program. Seventy-four percent of respondents reported that they purchased ENERGY STAR® certified LED light bulbs during the evaluation period.

Table 4-1: Did you or anyone else in your home buy any LED lighting products in 2019 or 2020?

Response	Percent (n = 399)
Yes	74%
No	19%
Do not know	7%

*Multiple response questions- percentage exceeds 100%.

Eighty-nine percent of respondents bought standard LED light bulbs, 33 percent bought specialty LED bulbs, 21 percent bought LED downlights, and 19 percent purchased LED fixtures.

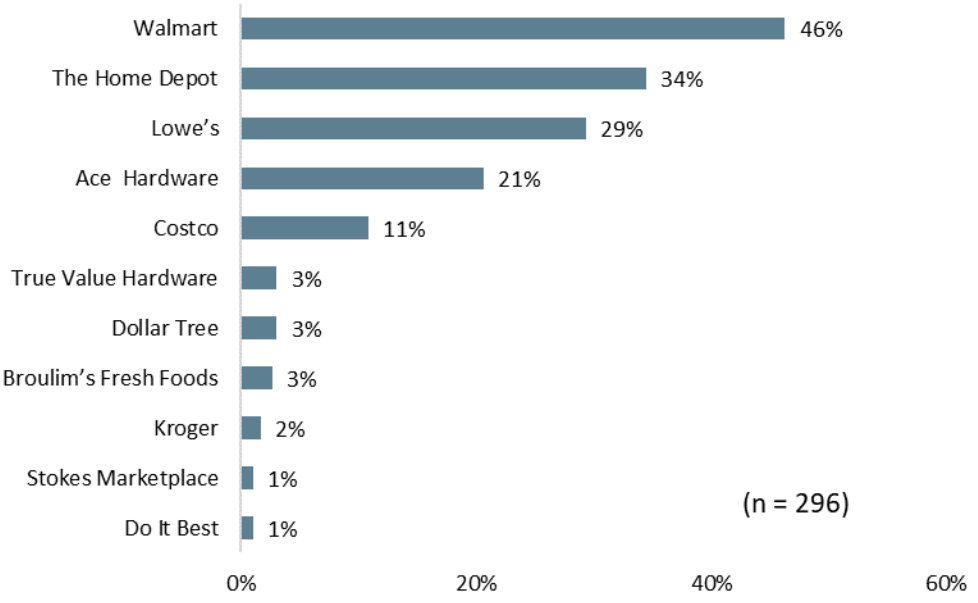
Table 4-2 What type of ENERGY STAR® LED lighting products did you buy?

Type	Percent (n = 264)
Standard LED bulb(s)	89%
Specialty LED bulb(s)	33%
LED downlight(s)	21%
LED fixture(s)	19%
Do not know	2%

*Multiple response questions- percentage exceeds 100%.

Customers who bought LED measures also had the option of purchasing their measures from various program participating retail stores throughout the Rocky Mountain Power service territory. The top retail stores among the survey respondents were Walmart (46 percent), The Home Depot (34 percent), Lowe's (29 percent), and Ace Hardware (21 percent). See Figure 4-1 for more details.

Figure 4-1 Which stores did you buy your ENERGY STAR® LED lighting from?



*Multiple response questions- percentage exceeds 100%.

Furthermore, 85 percent of respondents purchased their standard LEDs during 2020 compared to 70 percent who purchased theirs in 2019. People who purchased specialty LEDs, LED fixtures and LED downlights also bought more in 2020 than in 2019 (see Table 4-3; many of the participants bought their lights during both years).

Table 4-3 When did you buy the ENERGY STAR® LED bulbs?

LED Types	2019	2020
Standard LED bulb(s) (n = 236)	70%	85%
Specialty LED bulb(s) (n = 88)	52%	76%
LED fixture(s) (n = 49)	47%	69%
LED downlight(s) (n = 55)	56%	64%

*Multiple response questions- percentage exceeds 100%.

4.6.1 Participant Motivations for Purchasing LEDs

Survey participants stated why they decided to purchase the LEDs. The most common answer was they wanted to replace their burned-out bulbs (71 percent), followed by those who wanted to replace their working bulbs with ones that consumed less energy (41 percent). Another 29 percent indicated they had added a new light fixture in their home, and eight percent wanted to take advantage of the discount pricing. Just one percent of the respondents could not recall. Of the people who indicated "other" (n = 9), most stated

they replaced their old bulbs with LED to improve brightness (44 percent) or wanted a color change (22 percent).

Table 4-4 Why did you purchase the ENERGY STAR® LED lighting?

Response	Percent (n = 207)
To replace burned out bulbs	71%
To replace working bulbs to lower energy use	41%
To add new light fixture(s) in my home	29%
To take advantage of discounted pricing	8%
Other	4%
Do not know	1%

*Multiple response questions- percentage exceeds 100%.

Regarding the discount pricing, Table 4-5 summarizes how many people recalled if the LED measures were discounted. In general, most people indicated they did not recall a discount when they purchased the LED measures.

Table 4-5 Do you recall if the LED measures you bought were discounted?

LED Types	Yes	No	Do not recall
Standard LED bulb(s) (n = 235)	16%	49%	35%
Specialty LED bulb(s) (n = 88)	8%	59%	33%
LED fixture(s) (n = 49)	16%	59%	24%
LED downlight(s) (n = 55)	15%	53%	33%

*Multiple response questions- percentage exceeds 100%.

Of the people who recalled a discount on standard LED bulbs (n = 38), three percent remembered seeing a label or sign indicating Rocky Mountain Power provided the discount compared to the 82 percent who did not see a label and 16 percent who could not recall. For 71 percent of participants, the discount was somewhat or very important when purchasing the standard LEDs (see Table 4-6).

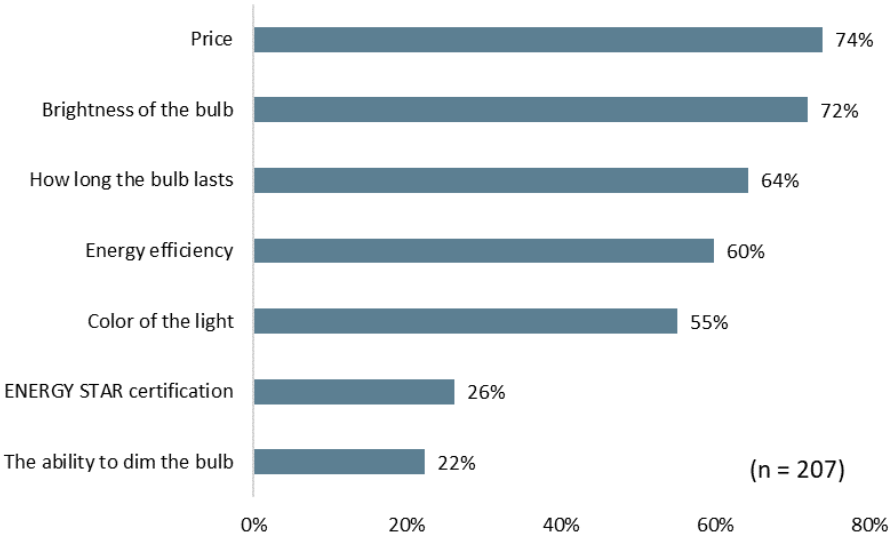
Table 4-6 How important was the discount to your purchase of ENERGY STAR® LED standard light bulbs?

Rating	Percentage (n = 38)
0- Not important	3%
1	5%
2	0%
3	0%
4	3%
5	11%
6	8%
7	13%
8	18%
9	8%
10- Very important	32%

Of the seven people who were aware of discount pricing on specialty LEDs, none remembered seeing discount signage, and 57 percent stated the discount was somewhat or very important. Of the eight people who recalled that the LED fixtures had been discounted, 63 percent stated the discount was somewhat or very important. Finally, for the eight people who recalled seeing a discount for their LED downlights, two remembered seeing discount signage, five did not, and one could not remember if they saw a discount label. Eighty-eight percent of the participants that purchased downlights stated the discount was somewhat or very important to them.

Although pricing was a significant factor when considering the purchase, it was not the only characteristic customers considered when purchasing the LED measures. Other important characteristics included the brightness of the light bulb (72 percent), the lifespan of the LED measure (64 percent), and energy efficiency (60 percent).

Figure 4-2 Which characteristic do you consider when purchasing light bulbs?



*Multiple response questions- percentage exceeds 100%.

4.6.2 Behaviors and Attitude Changes

Respondents who purchased the measures through the program also stated they made other energy efficiency-related purchases after purchasing their bulbs. Table 4-7 shows the different measures survey respondents purchased. The top measures that participants purchased were ENERGY STAR® certified appliances (23 percent), smart thermostats (23 percent), and low-flow showerheads (17 percent).

Table 4-7 After buying the discounted ENERGY STAR® lighting product, have you taken any of the following additional steps to save energy in your home?

Response	Percentage (n = 47)
Did not install any of these energy saving items	28%
Installed ENERGY STAR® certified appliances such as a refrigerator, dishwasher, clothes washer, or clothes dryer	23%
Installed a Smart Thermostat (for example, EcoBee or Nest)	23%
Installed low flow showerheads	17%
Installed low flow faucet aerators	11%
Installed an ENERGY STAR® certified heat pump water heater	11%
Installed an ENERGY STAR® central air conditioner, heat pump, or evaporative cooler	9%
Installed an ENERGY STAR® certified room air conditioner	6%
Other	15%
I don't know	11%

*Multiple response questions- percentage exceeds 100%.

Of the people who purchased the certified appliance (n = 9), 89 percent bought a dishwasher, 67 percent purchased a refrigerator, 67 percent bought a clothes dryer, and 56 percent bought a clothes washer. Most participants purchased more than one product.

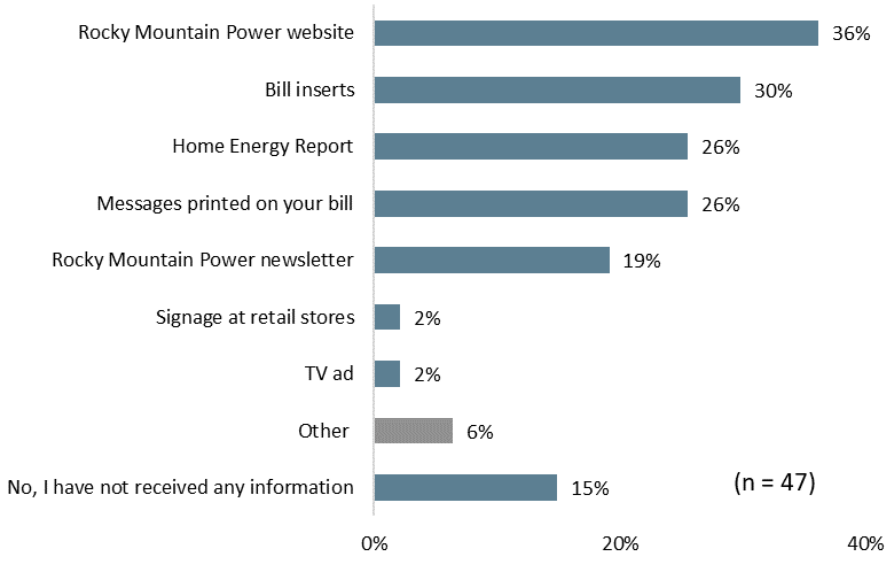
Many people who purchased the non-LED measures did not receive any incentives or rebates for their products. See the table below for more details.

Table 4-8 Did you receive an incentive or discount to buy the measure?

Measure	Yes	No	Do not Recall
Smart thermostat (n = 11)	36%	55%	9%
ENERGY STAR® certified appliance (n = 11)	18%	64%	18%
Low-flow faucet aerator (n = 5)	40%	60%	0%
Low-flow showerhead (n = 8)	25%	63%	13%
ENERGY STAR® certified water heater (n = 5)	20%	80%	0%
Room air conditioner(s) (n = 3)	33%	67%	0%
ENERGY STAR® cooling system (n = 4)	0%	100%	0%

Lastly, program participants indicated whether they had received information from Rocky Mountain Power about how to save energy in their homes. Respondents indicated that they received information from the utility's website (36 percent), through bill inserts (30 percent), from their home energy report (26 percent), or from messages printed on the bill (26 percent). See additional details in Figure 4-3.

Figure 4-3 Have you received information from Rocky Mountain Power about how to save energy in your home from any of these sources?



Multiple response questions- percentage exceeds 100%.

4.6.3 Non-Participants Summary

Some of the respondents who stated they had not bought or could not recall having purchased discounted LED measures in 2019 or 2020, indicated that they participated in other Rocky Mountain Power energy efficiency programs. Six percent received a Wattsmart Homes Starter kit, four percent purchased the measures discounted by the retail store, and one percent bought the LED lighting or cooling products discounted by Rocky Mountain Power (see Table 4-9).

Table 4-9 Non-Participants: In 2019 or 2020, did you participate in any of the following Rocky Mountain Power programs that promoted energy saving?

Response	Percentage (n = 158)
No one in my home participated in any Rocky Mountain Power energy efficiency program.	90%
Received a Rocky Mountain Power Wattsmart Homes Starter Kit that included LED light bulbs and may have included low flow faucet aerators and a showerhead.	6%
Received a rebate or discount from Rocky Mountain Power energy efficient appliances, heating or cooling products, home insulation, or weatherization products and services.	4%
Purchased LED lighting products discounted by Rocky Mountain Power from a retail store.	1%

*Multiple response questions- percentage exceeds 100%.

Respondents also stated they bought other energy efficient measures in 2019 and 2020. As shown in the table below, some non-participants purchased ENERGY STAR® certified appliances (15 percent), low-flow showerheads (six percent), or ENERGY STAR® certified water heater (six percent).

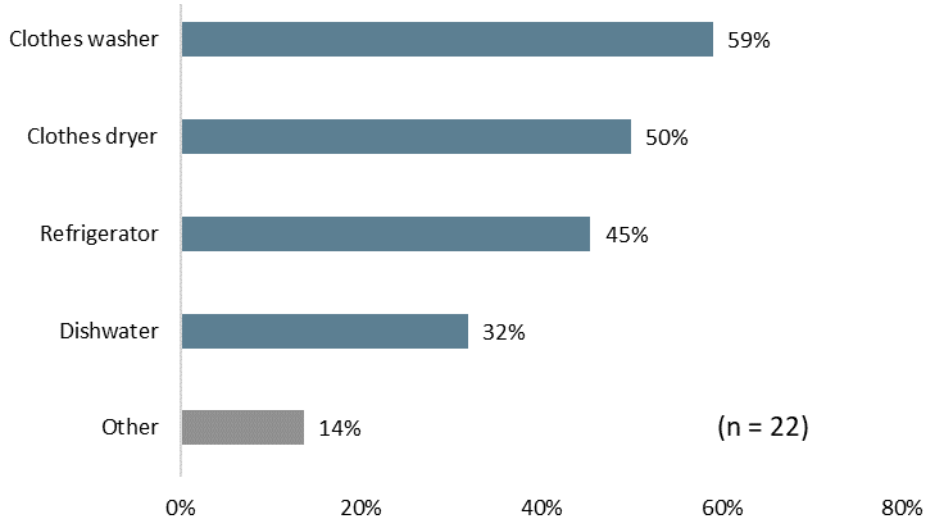
Table 4-10 Non-Participants: In 2019 and 2020, did you take any of the following steps to save energy in your home based on the information you received from Rocky Mountain Power?

Response	Percentage (n = 157)
Installed ENERGY STAR® certified appliances such as a refrigerator, dishwasher, clothes washer, or clothes dryer	15%
Installed low flow showerheads	6%
Installed an ENERGY STAR® certified water heater	6%
Installed low flow faucet aerators	4%
Installed an ENERGY STAR® certified room air conditioner	3%
Installed an ENERGY STAR® central air conditioner, an evaporative cooler, or a heat pump	2%

*Multiple response questions- percentage exceeds 100%.

Non-program participants who purchased ENERGY STAR® certified appliances gave details on what specific measures they bought. Most participants bought more than one appliance. The top two purchased appliances were clothes washers and dryers.

Figure 4-4 Non-Participants: What type of ENERGY STAR® certified appliance did you purchase?



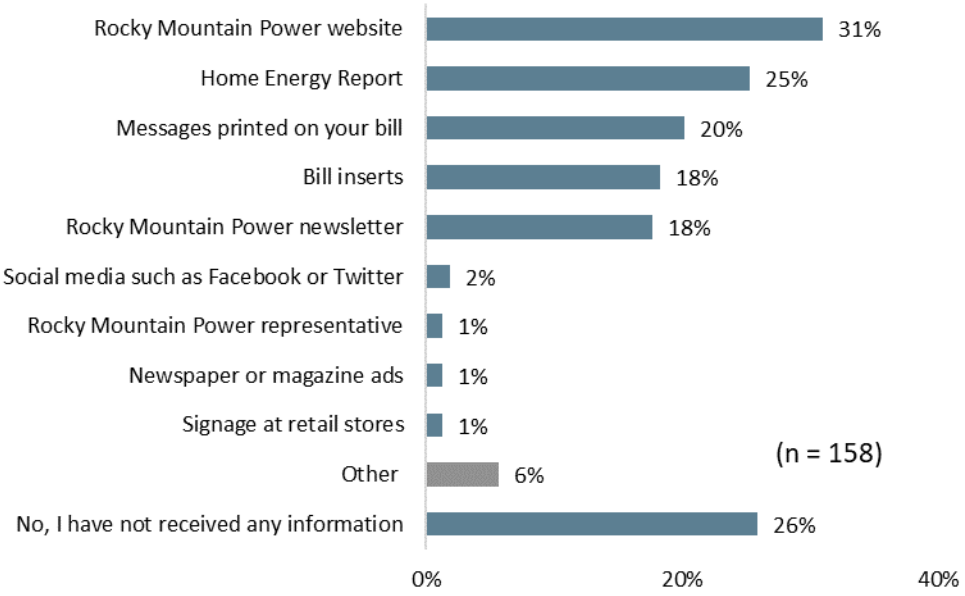
According to the respondents, not many non-participants who purchased the above measures received or recalled receiving an incentive or rebate for their products. See Table 4-11 below for more details.

Table 4-11: Did you receive an incentive or discount to buy the measure?

Measure	Yes	No	Do not recall
ENERGY STAR® certified appliance (n = 24)	8%	79%	13%
Low-flow faucet aerator (n = 7)	0%	86%	14%
Low-flow showerhead (n = 10)	0%	100%	0%
ENERGY STAR® certified water heater (n = 10)	10%	80%	10%
Room air conditioner (n = 4)	0%	100%	0%
ENERGY STAR® cooling system (n = 3)	33%	67%	0%
Smart thermostat (n = 18)	50%	33%	17%

Non-program participants indicated whether they had received information from Rocky Mountain Power about how to save energy in their homes. Most participants stated they received information from the utility, though 26 percent indicated they did not. See Figure 4-5 for details on what mode of communication customers recall.

Figure 4-5 Non-Participants: Have you received information from Rocky Mountain Power about how to save energy in your home from any of these sources?



4.6.4 Home Characteristics

Participants' home characteristics are summarized in Table 4-12. Participants reported living in single-family homes (65 percent) and owning the property (76 percent). Forty-nine percent of the survey participants' homes were built before 2000.

Fifty-two percent of respondents reported that natural gas is their primary home heating fuel. Seventy-one percent of home sizes are about 3,000 square feet or less, and 77 percent of the respondents indicated that up to four people lived in their household. Thirty-four percent of all respondents (participants and nonparticipants) indicated that they have a household income below the federal poverty level.

Table 4-12 Home Characteristics

Home Characteristics	Percentage of Respondents (n = 400)
Single-family home	65%
Apartment or condominium	16%
Manufactured or mobile home	12%
Duplex or townhouse	6%
Other	1%
Don't know	1%
Year Built	**Percentage of Respondents (n = 400)**
Before 1960	14%
1960 to 1979	20%
1980 to 1999	15%
2000 to 2009	23%
2010 or later	20%
Do not recall/Prefer not to answer	9%
Own or Rent	**Percentage of Respondents (n = 400)**
Own	76%
Rent	23%
Do not recall/Prefer not to answer	2%
What is the main fuel used for heating your home?	**Percentage of Respondents (n = 400)**
Natural Gas	52%
Electricity	32%
Propane	10%
Oil	1%
Don't heat home	1%
Other	4%
Do not recall/Prefer not to answer	1%
How large is your home?	**Percentage of Respondents (n = 400)**
Less than 1,000 square feet	16%
1,000-2,000 square feet	33%
2,000-3,000 square feet	22%
3,000-4,000 square feet	14%
Greater than 4,000 square feet	7%
Do not recall/Prefer not to answer	8%

Is English the primary language spoken in your household?	Percentage of Respondents (n = 398)
Yes	99%
No	1%
Including yourself, how many people are living in your household?	**Percentage of Respondents (n = 393)**
1	9%
2	37%
3	16%
4	15%
5	9%
6	7%
7	3%
8	1%
9	1%
10	0%
Do not recall/Prefer not to answer	2%

4.7 Starter Kits Survey

ADM surveyed Rocky Mountain Power customers who received a Starter Kit through the program. A total of 69 customers completed the questionnaire. The survey gathered data related to program awareness, measures installed, in-service rates, experience, and customers satisfaction. ADM used survey results in both the process evaluation and impact analysis.

4.7.1 Program Awareness and Enrollment Experience

Participants provided information and feedback regarding how they learned about the Starter Kits program. More than half of participants reported hearing about the program through the utility's website (54 percent), utility bills insert (20 percent), or through word-of-mouth (16 percent). A summary of survey responses appears in Table 4-13.

Table 4-13: How did respondents learn about the program?

How did you hear about these kits?	Percent of Responses (n = 69)
Rocky Mountain Power website	54%
Utility bills insert	20%
Word of mouth (friend, relative, coworker, etc.)	16%
My bill	10%
Rocky Mountain Power newsletter	1%
Social media such as Facebook or Twitter	1%
I don't know	6%

**Percentage exceeds 100%. Participants could choose more than one option.*

4.7.2 Customer Experience and Installation of Measures

Survey respondents provided feedback about their experience installing kit contents. Customers were asked if their home had an electric water heater. Forty-three percent of all the participants (n = 68) reported they used an electric water heater. In contrast, 54 percent of participants who received one of the bath kits (n = 40) stated they had an electric water heater. See the two tables below for more details.

Table 4-14 What fuel does your main water heater use?

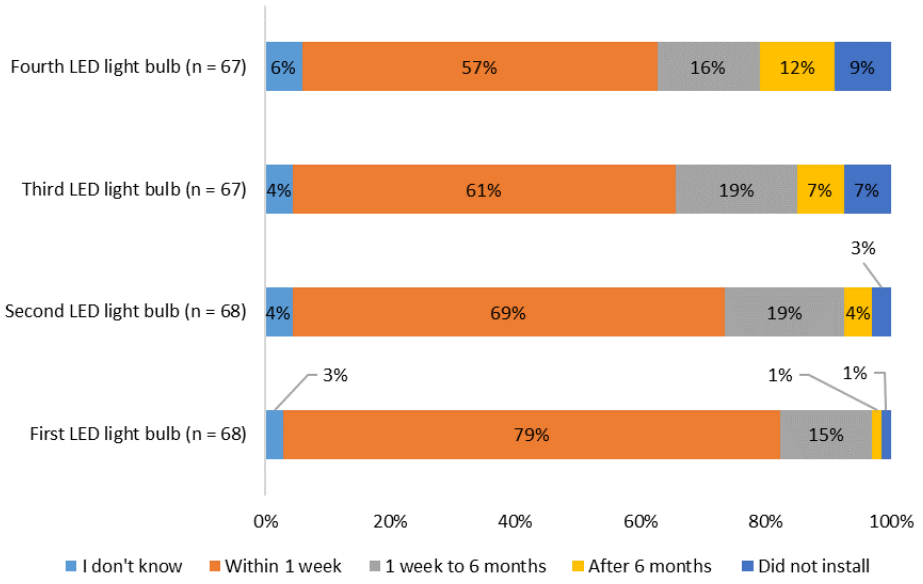
What fuel does your main water heater use?	Percent of All Kit Recipients (n = 68)
Electricity	43%
Natural gas	43%
Propane	10%
I don't know	4%

Table 4-15 What fuel does your main water heater use?

What fuel does your main water heater use?	Percent of Bath-1 and Bath-2 Kit Recipients (n = 40)
Electricity	54%
Natural gas	33%
Propane	10%
Other	3%

Respondents indicated how soon they installed their LED lightbulbs after receiving their kits. Kit recipients who had not installed the LEDs at the time of the survey stated they were waiting for their bulbs to burn out (n = 7). See Figure 4-6 for more details.

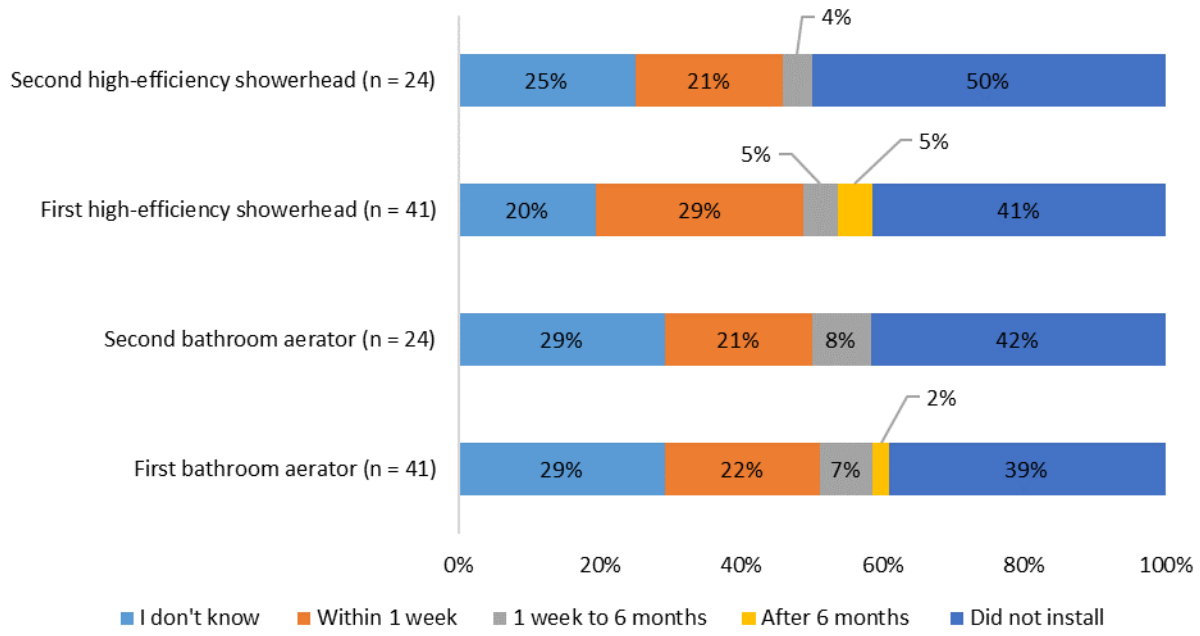
Figure 4-6 How long after receiving your kit did you install the LEDs?



Participants also indicated when they installed showerheads and aerators if they received them (see Figure 4-7). The same responses were true for people who installed kitchen

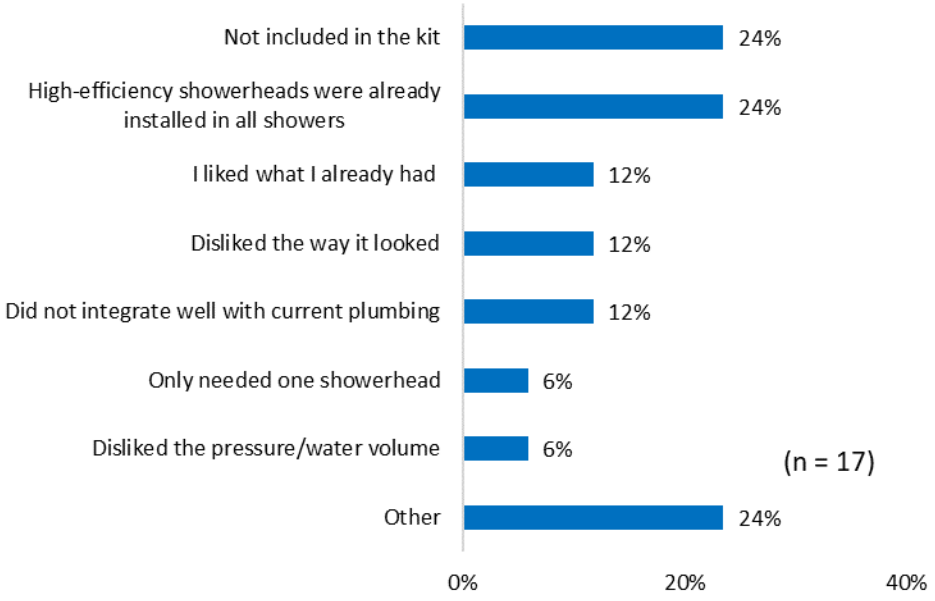
aerators: 22 percent stated they installed within a week, 41 percent had not installed them, and 29 percent were unsure.

Figure 4-7 How long after receiving your kit did you install the bathroom measures?



Reasons for not using the showerheads included the measure not being in the kit (24 percent), having already high-efficiency measures installed (24 percent), or preferring what the customer already had in their home (12 percent). See Figure 4-8 for more details. People who decided not to install the aerators stated the measure did not integrate well with current plumbing (40 percent), or the kit did not include the measure (35 percent). Other reasons included customers already having high-efficiency aerator(s) (20 percent), not liking the look of the measure (five percent), or other (20 percent).

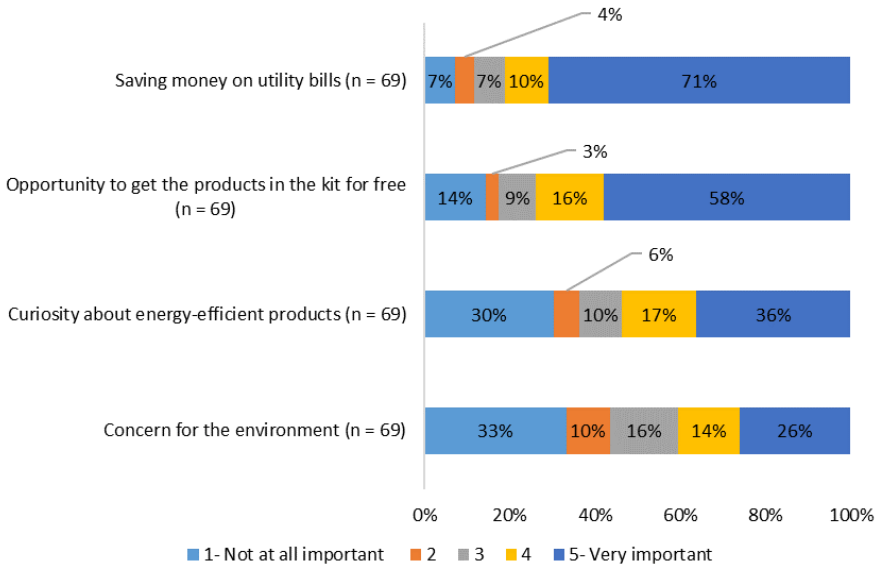
Figure 4-8 Why did you decide not to use the high-efficiency showerhead(s) included in the kit?



4.7.3 Participant Motivations

Respondents provided feedback regarding what influenced them to request the Starter Kit. Eighty-one percent of respondents ranked "saving money on utility bills" as their strongest motivation to request a kit, followed by receiving a free energy kit through the program (74 percent).

Figure 4-9: Survey respondents' Ranking of Reasons for Requesting a Starter Kit



Before learning about the kits, 72 percent of respondents stated they had intentions of installing LED lights. Only 25 percent of customers had no LEDs in their homes. Moreover, 58 percent stated they would have bought and installed the LEDs even if they had not received the energy kits. Yet, the time the customers would have taken to install the bulbs extended beyond six months. Fifty-one percent stated they would have waited up to six months or longer to install the bulbs, compared to 26 percent who would have bought them around the same time they received the energy kit.

Since receiving the kits, 43 customers reported installing additional LEDs. The number of bulbs purchased ranged from two to 50. Twelve participants indicated their bulbs had been discounted from their regular pricing, but none knew Rocky Mountain Power had sponsored the rebated measured.

Before learning about the kits, only 12 percent had any intentions of installing high-efficiency showerheads. However, 22 percent reported owning energy-efficient showerheads compared to 76 percent who stated they did not have any before receiving the kit. Only seven percent said they would have bought and installed the showerhead(s) about the same time as when they received it. Four people reported installing additional showerheads since participating in the program.

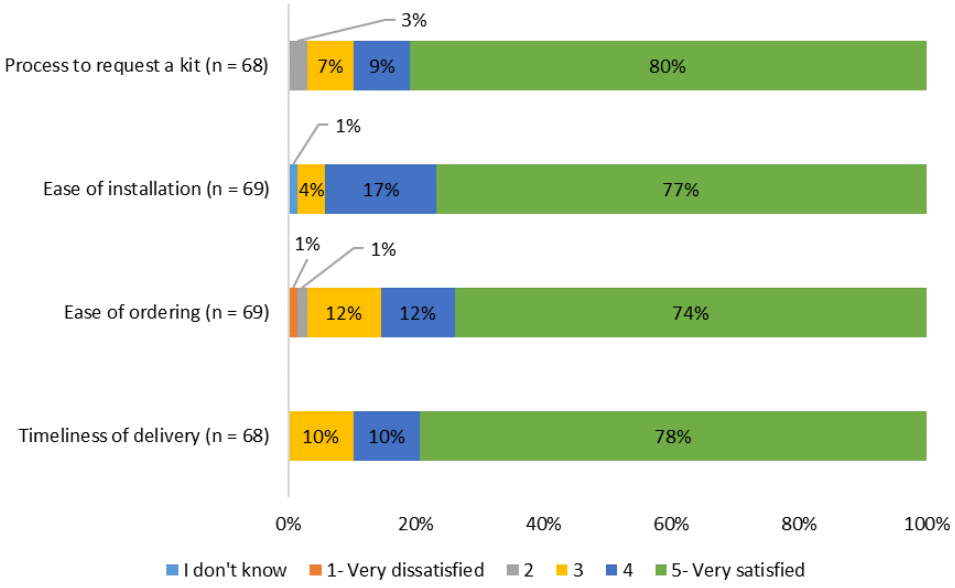
A similar trend occurred in people who installed the aerators. Only 15 percent were likely to install the measures before learning about the program. More people indicated they had no aerators installed (68 percent) before receiving the kit. Ninety-three percent thought they would take longer than six months or were unsure if they would ever install aerators in their home. Three people purchased additional aerators after participating in the program.

Customers also shared additional actions they took to save energy. For example, 22 people have purchased ENERGY STAR appliances or equipment, 10 installed a new smart thermostat, and eight installed a water heater or a water heater accessory.

4.7.4 Customer Satisfaction

Participants provided feedback regarding their level of satisfaction with specific aspects of the program and their overall experience with the Starter Kits program. Participants indicated they were satisfied with the process to request a kit (89 percent), the timeliness of delivery (88 percent), ease of ordering (86 percent), and ease of installation (94 percent). See Figure 4-10 for more details. Respondents also expressed satisfaction with content found in the kits (87 percent) and the measures' quality (86 percent).

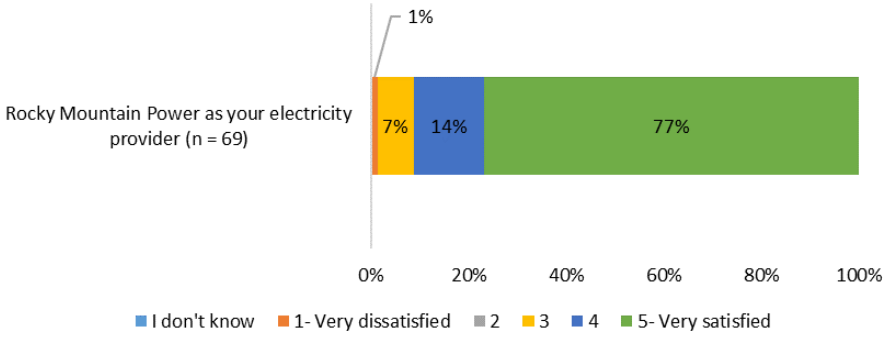
Figure 4-10: Customer Satisfaction with Starter Kit Program



Seventy percent of respondents indicated they were satisfied or very satisfied with the amount of energy savings they perceived from installing the measures.

Overall satisfaction with the Rocky Mountain Power as their utility company was 91 percent (see Figure 4-11).

Figure 4-11 Customer Satisfaction with Rocky Mountain Power



4.7.5 Home Characteristics

Participants' home characteristics are summarized in Table 4-12 Home Characteristics. Participants most often reported living in single-family homes (72 percent) and most often owned their home (77 percent). Forty-seven percent of respondents' homes were built before 2000, 42 percent were built during 2000 or later, and the remaining 12 percent were unsure. Seventy-nine percent of respondents also stated they live in a household of up to four people.

According to Starter Kit participants, electricity is the main type of fuel used to heat homes (34 percent) and water heaters (43 percent).

Table 4-16: Home Characteristics

Home Characteristics	Percentage of Respondents (n = 69)
Single-family home	72%
Apartment or condominium	14%
Manufactured or mobile home	12%
Duplex or townhouse	1%
Year Built	**Percentage of Respondents (n = 69)**
Before 1960	13%
1960-1979	22%
1980-1999	12%
2000-2009	25%
2010 or later	17%
I don't know	12%
Own or Rent	**Percentage of Respondents (n = 69)**
Own	77%
Rent	22%
Prefer not to answer	1%
What is the main fuel used for heating your home?	**Percentage of Respondents (n = 68)**
Electricity	34%
Natural Gas	44%
Propane	15%
Wood/ Wood Pellet Stove	3%
Other	1%
I don't know	3%

4.8 Process Evaluation Key Findings

ADM made the following key findings during its process analysis.

- Energy efficient measures that were distributed through foodbanks were generally well received.
- The foodbank program lacked controls for duplicate delivery and estimates for installation rates.
- Foodbanks were better equipped than senior centers to distribute large quantities of measures.
- Rocky Mountain Power launched a pilot program to distribute APSs in 2019 through which customers' names and addresses were collected. This program offered a missed opportunity to collect installation data before distributing APSs through foodbanks.
- The technical reference library (TRL) is a key program reference resource that documents ex ante savings values for all versions of all measures included in the program. Maintaining TRL version control, timeliness and completeness is a challenge for which opportunities for process improvement are available.
- Rocky Mountain Power maintains program tracking dataset. Additional information, such as upstream sales details, downstream product model specifications, and new home model details, are maintained by the implementer.
- Program tracking data did not include some data elements that were required to verify saving for some measure categories resulting in lower realization rates.
- Rocky Mountain Power attribution for upstream program discounts is relatively low.
- General customer satisfaction with the Rocky Mountain Power as their utility company was high.
- Thirty-four percent of general customer survey respondents indicated their income was below the federal poverty level.

5 Cost-Effectiveness

Guidehouse estimated the cost-effectiveness results for the program based on 2019 and 2020 costs and savings estimates provided by PacifiCorp. Cost-effectiveness was tested using the 2017 and 2019 IRP decrement for all measure categories. The program passes the cost-effectiveness for the PCT test.

The onset of the covid-19 pandemic occurred 15 months into the 24-month evaluation period. In response, Rocky Mountain Power increased its distribution of energy saving products through foodbanks to target its customers who were hardest hit by the economic downturn to help them reduce their energy costs. The foodbank distributions were a quick-response approach to assisting customers during an acute crisis.

Cost effectiveness results are presented separately for:

- Total program excluding measures distributed through foodbanks
- Measures distributed through foodbanks
- Total program

Program inputs used in the cost effectiveness analysis are included in Table 5-1.

Table 5-1: Program Inputs

Parameter	2019	2020
Discount Rate	6.57%	6.92%
Residential Line Loss	11.47%	9.06%
Residential Energy Rate ($/kWh)[1]	$0.0994	$0.1013
Inflation Rate	2.20%	2.28%

[1]Future rates determined using a 2.20% and 2.28% annual escalator.

5.1 Cost Effectiveness Results for Total Program Excluding Measures Distributed through Foodbanks 2019-2020

Table 5-2 through Table 5-5 include total program cost effectiveness results excluding measures distributed through foodbanks.

Table 5-2: Program Costs by Year
Excluding Measures Distributed through Foodbanks

Year	Engineering Costs	Utility Admin	Program Delivery	Program Dev.	Incentives	Total Utility Costs	Gross Customer Costs
2019	$0	$9,778	$344,391	$20,363	$285,340	$659,871	$1,077,644
2020	$0	$3,798	$126,057	$5,496	$100,279	$235,631	$368,549
2019-2020	$0	$13,576	$470,449	$25,859	$385,619	$895,502	$1,446,194

Table 5-3: Program Savings by Year
Excluding Measures Distributed through Foodbanks

Year	Gross kWh Savings	Realization Rate	Adjusted Gross kWh Savings	Net to Gross Ratio	Net kWh Savings	Measure Life
2019	2,118,179	74%	1,573,777	83%	1,303,469	13
2020	648,547	67%	435,113	82%	354,855	14
2019-2020	2,766,725	73%	2,008,890	83%	1,658,324	13

Table 5-4: Program Benefit/Cost Ratios by Year
Excluding Measures Distributed through Foodbanks

Program Year	PTRC	TRC	UCT	RIM	PCT
Without Non Energy Benefits					
2019	0.58	0.53	1.00	0.34	1.68
2020	0.51	0.47	0.86	0.34	1.49
2019-2020	0.56	0.51	0.96	0.34	1.63
With Non Energy Benefits					
2019	1.31	1.26	1.00	0.34	2.53
2020	2.30	2.25	0.86	0.34	3.61
2019-2020	1.57	1.52	0.96	0.34	2.80

Table 5-5: Program Cost-Effectiveness Results – PY2019-2020
Excluding Measures Distributed through Foodbanks

Cost-Effectiveness Test	Levelized $/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	$0.1115	$1,684,708	$946,662	-$738,046	0.56
Total Resource Cost Test (TRC) No Adder	$0.1115	$1,684,708	$860,602	-$824,106	0.51
Utility Cost Test (UCT)	$0.0593	$895,502	$860,602	-$34,901	0.96
Rate Impact Test (RIM)		$2,519,936	$860,602	-$1,659,334	0.34
Participant Cost Test (PCT)		$1,446,194	$2,354,791	$908,597	1.63
Lifecycle Revenue Impacts ($/kWh)					$0.0000019035

5.2 Cost Effectiveness Results for Total Program Measures Distributed through Foodbanks 2019-2020

Cost effectiveness results reported in Table 5-6 through Table 5-9 include only measures distributed through foodbanks.

Table 5-6: Program Costs for Measures Distributed through Foodbanks

Year	Engineering Costs	Utility Admin	Program Delivery	Program Dev.	Incentives	Total Utility Costs	Gross Customer Costs
2019	$0	$3,186	$105,414	$6,635	$37,600	$152,836	$224,300
2020	$0	$15,094	$369,758	$21,845	$250,446	$657,143	$1,138,335
2019-2020	$0	$18,281	$475,172	$28,480	$288,046	$809,979	$1,362,635

Table 5-7: Program Savings for Measures Distributed through Foodbanks

Measure Category	Gross kWh Savings	Realization Rate	Adjusted Gross kWh Savings	Net to Gross Ratio	Net kWh Savings	Measure Life
2019	690,235	58%	399,805	100%	399,805	11
2020	2,146,074	55%	1,184,847	100%	1,184,847	10
2019-2020	2,836,309	56%	1,584,652	100%	1,584,652	10

Table 5-8: Benefit/Cost Ratios for Measures Distributed through Foodbanks

Measure Category	PTRC	TRC	UCT	RIM	PCT
Without Non Energy Benefits					
2019	0.48	0.44	0.98	0.29	1.81
2020	0.30	0.27	0.64	0.26	1.08
2019-2020	**0.33**	**0.30**	**0.71**	**0.26**	**1.20**
With Non Energy Benefits					
2019	3.67	3.62	0.98	0.29	6.63
2020	0.92	0.89	0.64	0.26	1.92
2019-2020	1.41	1.38	0.71	0.26	2.70

Table 5-9: Cost-Effectiveness Results – PY2019-2020 for Measures Distributed through Foodbanks

Cost-Effectiveness Test	Levelized $/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	$0.1535	$1,884,568	$629,793	-$1,254,775	0.33
Total Resource Cost Test (TRC) No Adder	$0.1535	$1,884,568	$572,539	-$1,312,029	0.30
Utility Cost Test (UCT)	$0.0659	$809,979	$572,539	-$237,440	0.71
Rate Impact Test (RIM)		$2,160,659	$572,539	-$1,588,120	0.26
Participant Cost Test (PCT)		$1,362,635	$1,638,726	$276,091	1.20
Lifecycle Revenue Impacts ($/kWh)					$0.0000163517

5.3 Cost Effectiveness Results for Total Program

Table 5-10 through Table 5-13 include total program cost effectiveness results, including measures distributed through foodbanks.

Table 5-10: Total Program Costs by Year

Year	Engineering Costs	Utility Admin	Program Delivery	Program Dev.	Incentives	Total Utility Costs	Gross Customer Costs
2019	$0	$12,964	$449,805	$26,998	$322,940	$812,707	$1,301,945
2020	$0	$16,366	$470,089	$23,684	$326,630	$836,768	$1,338,177
2019-2020	$0	$29,329	$919,894	$50,682	$649,570	$1,649,476	$2,640,122

Table 5-11: Total Program Savings by Year

Year	Gross kWh Savings	Realization Rate	Adjusted Gross kWh Savings	Net to Gross Ratio	Net kWh Savings	Measure Life
2019	$0	$12,964	$449,805	$26,998	$322,940	$812,707
2020	$0	$16,366	$470,089	$23,684	$326,630	$836,768
2019-2020	$0	$29,329	$919,894	$50,682	$649,570	$1,649,476

Table 5-12: Total Program Benefit/Cost Ratios by Year

Year	PTRC	TRC	UCT	RIM	PCT
Without Non Energy Benefits					
2019	0.56	0.51	0.99	0.33	1.70
2020	0.39	0.35	0.75	0.29	1.31
2019-2020	0.47	0.42	0.87	0.31	1.50
With Non Energy Benefits					
2019	1.20	1.15	0.99	0.33	2.48
2020	0.91	0.87	0.75	0.29	2.01
2019-2020	1.04	1.00	0.87	0.31	2.24

Table 5-13: Total Program Level Cost-Effectiveness Results – PY2019-2020

Cost-Effectiveness Test	Levelized $/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	$0.1241	$3,372,502	$1,576,455	-$1,796,047	0.47
Total Resource Cost Test (TRC) No Adder	$0.1241	$3,372,502	$1,433,141	-$1,939,361	0.42
Utility Cost Test (UCT)	$0.0604	$1,649,476	$1,433,141	-$216,335	0.87
Rate Impact Test (RIM)		$4,624,589	$1,433,141	-$3,191,449	0.31
Participant Cost Test (PCT)		$2,640,122	$3,969,422	$1,329,300	1.50
Lifecycle Revenue Impacts ($/kWh)					$0.0000035219

6 Conclusions and Recommendations

ADM makes the following conclusions and recommendations from its evaluation.

6.1 Conclusions

Rocky Mountain Power's 2019-2020 Wattsmart Homes Program in Idaho resulted in 3,242,976 kWh of net savings with a 64 percent realization rate and 90 percent net-to-gross ratio as reported in Table 6-1.

Table 6-1: Total Program Savings by Year

Year	Claimed Saving (kWh)	Gross Evaluated Savings (kWh)	Realization Rate	NTG	Net Evaluated Savings (kWh)
2019	2,808,414	1,973,582	70%	86%	1,703,274
2020	2,794,621	1,619,960	58%	95%	1,539,702
Grand Total	**5,603,035**	**3,593,542**	**64%**	**90%**	**3,242,976**

Lighting measures accounted for 46 percent of program savings and HVAC measures accounted for 22 percent, collectively representing 68 percent of total savings. Measures that were distributed through the foodbank distribution program (APSs, flow control measures, and LEDs) accounted for 49 percent of total program savings. This represents the continuing importance of lighting and HVAC measures on the residential program and the impact the rapid-response foodbank program had during the pandemic. A comparison of savings during this and the previous evaluation are reported in Table 6-2.

Table 6-2: Total Program Savings by Measure Category Compared to 2017-2018

Measure Category	2019-2020				2017-2018			
	Claimed Saving (kWh)	Gross Evaluated Savings (kWh)	Realization Rate	% Total Program Savings	Net Evaluated Savings (kWh)	Net Savings (kWh)	% Program Savings	Realization Rate
Lighting	3,019,522	1,713,594	57%	46%	1,498,842	1,154,823	26%	66%
HVAC	807,803	807,195	100%	22%	717,596	1,674,995	38%	90%
Water Heating	808,860	417,301	61%	13%	413,277	621,810	14%	100%
Electronics	682,590	423,984	52%	13%	410,285	14,031	0.3%	100%
Whole Home	149,856	155,037	103%	4%	136,433	40,687	0.9%	100%
Energy Kits	113,625	62,549	55%	2%	54,327	841,158	19%	87%
Building Shell	14,669	8,969	61%	0.2%	7,893	28,415	0.6%	100%
Appliances	6,110	4,914	80%	0.1%	4,324	24,998	0.6%	100%
Total	**5,603,035**	**3,593,542**	**64%**	**100%**	**3,242,976**	**4,400,917**	**100%**	**82%**

6.2 Recommendations

ADM recommends that Rocky Mountain Power consider the following actions.

Create separate measures definitions for products distributed through alternative distribution channels

ADM recommends that Rocky Mountain Power track measures that are distributed through foodbanks as separate measures with modified installation rates.

Create measures that reflect programmatic design

Measures that were distributed through foodbanks were recorded as separate components in the program tracking data. ADM recommends that Rocky Mountain Power create measures that reflect program design (for example, foodbank kits like starter kits) so that they can be tracked and evaluated as a distinct program.

Update ex ante savings to reflect electric water heater market saturation

Ex ante savings for water saving measure include the percentage of electric water heaters as a key variable. Customer surveys and the US Energy Information Administration Residential Energy Consumption Survey all point to a lower percentage of electric water heaters than the ex ante percentage in RTF reference files. ADM recommends that Rocky Mountain Power updates ex ante estimates of the percentage of customers with electric water heaters.

Consider repeat recipients of kits distributed through foodbanks and community centers

Staff at foodbanks where measures were distributed indicated that there is a high degree of client retention at food assistance programs resulting in households receiving more than one kit. ADM recommends that when distributing measures without collecting recipient data, Rocky Mountain Power account for duplication of recipients when estimating savings.

Add data elements to tracking and reporting

Rocky Mountain Power relies on implementation partners to collect and store critical data that is required to evaluate the program and verify the resulting energy savings. ADM recommends that Rocky Mountain Power adds the following data elements to its internal program tracking datasets:

- Product manufacturer and model numbers, or minimally efficiency specifications
- Sales or distribution location for all upstream measures
- Baseline conditions (specifics varies by measure)

Add process controls to program implementation

ADM recommends that Rocky Mountain Power work with program implementers to revise program controls to ensure collection of all data elements required to verify program eligibility requirements are met for all measures.

Evaluate program on an annual basis

ADM recommends that Rocky Mountain Power implement annual rather than biannual program evaluations. Annual evaluations would allow Rocky Mountain Power to monitor program controls and data collection throughout the program year, allowing the utility to respond to program performance midcycle.

Add TRL version control process

The TRL is a complex set of documents that provides the basis for program planning and evaluation. ADM recommends that Rocky Mountain Power implement a more stringent version control process to ensure that complete, accurate TRL data is maintained.

ADM notes that as of June 2021 the Technical Reference Library (TRL) was replaced with an upgraded Measure Library (ML) with enhanced functionality that includes a quality control process to verify that all measure versions include reference documents.

Appendix A – TRL Reference Files

Measure Name - Measure Version	ADM confirmed ref doc
Appliances	
Clothes Washers - CEE Tier 2 - Electric DHW & Gas Dryer - ID - 1	HES_ID_Clothes Washers.xlsx
Clothes Washers - CEE Tier 2 - Gas DHW & Electric Dryer - ID - 1	HES_ID_Clothes Washers.xlsx
Clothes Washers - CEE Tier 2 and Above - Electric DHW & Electric Dryer - ID - 3	HES_ID_Clothes Washers.xlsx
Clothes Washers - CEE Tier 3 - Electric DHW & Electric Dryer - ID - 1	HES_ID_Clothes Washers.xlsx
Clothes Washers - CEE Tier 3 - Gas DHW & Electric Dryer - ID - 1	HES_ID_Clothes Washers.xlsx
Building Shell	
Insulation - Attic - Electric FAF Heating System - ID - 3	HES_ID_Attic Insulation.xlsx
Insulation - Attic - Electric Heat Pump Heating System - ID - 3	HES_ID_Attic Insulation.xlsx
Insulation - Attic - Electric Zonal Heating System - ID - 3	HES_ID_Attic Insulation.xlsx
Insulation - Attic - Self Install - Electric FAF Heating System - ID - 3	HES_ID_Attic Insulation.xlsx
Insulation - Attic - Self Install - Electric Zonal Heating System - ID - 3	HES_ID_Attic Insulation.xlsx
Insulation - Wall - Electric FAF Heating System - ID - 3	HES_ID_Wall Insulation
Window Tier 1 - U-0.30 - Electric FAF Heating System - ID - 2	HES_ID_Windows.xlsx
Window Tier 1 - U-0.30 - Electric Heat Pump Heating System - ID - 2	HES_ID_Windows.xlsx
Window Tier 1 - U-0.30 - Electric Zonal Heating System - ID - 2	HES_ID_Windows.xlsx
Window Tier 2 - U-0.22 - Electric FAF Heating System - ID - 2	2015.12.02_ID_HES_Windows_Brief.xlsx
Window Tier 2 - U-0.22 - Electric FAF Heating System - ID - 3	2015.12.02_ID_HES_Windows_Brief.xlsx
Window Tier 2 - U-0.22 - Electric Zonal Heating System - ID - 2	2015.12.02_ID_HES_Windows_Brief.xlsx
Window Tier 2 - U-0.22 - Electric Zonal Heating System - ID - 3	2015.12.02_ID_HES_Windows_Brief.xlsx
Electronics	
Advanced Power Strip - IR Sensing - Owner Install - ID - 2	HES_ID_Advanced Power Strips.xlsx
Advanced Power Strip - Load Sensing - Owner Install - ID - 2	HES_ID_Advanced Power Strips.xlsx
Advanced Power Strip - Occupancy Sensing - Owner Install - ID - 2	HES_ID_Advanced Power Strips.xlsx
Energy Kits	
Energy Savings Kit - Best - 1 Bathroom - ID - 3	KitsMSW_RMP_ID_3-30-2017.xlsx
Energy Savings Kit - Best - 2 Bathrooms - ID - 3	KitsMSW_RMP_ID_3-30-2017.xlsx
Energy Savings Kit - LED - ID - 3	KitsMSW_RMP_ID_3-30-2017.xlsx

HVAC	
95% Gas Furnace with ECM Blower - ID - 2	
Central Air Conditioner - ID - 3	HES_ID_CAC.xlsx
Ductless Heat Pump - ID - 2	2015.12.02_ID_HES_Ductless_Heat_Pump_Brief
Ductless Heat Pump - ID - 3	2015.12.02_ID_HES_Ductless_Heat_Pump_Brief.xlsx
Evaporative Cooler - >= 3,500 CFM - Midstream - Retail - UT - 2	
Evaporative Cooler - Min 3,500 CFM - Self Install - ID - 1	HES_ID_Evaporative Cooler.xlsx
Heat Pump Conversion - Tier 2 - Electric FAF with CAC - ID - 3	HES_ID_HP Conversion & BPIS.xlsx
Heat Pump Conversion - Tier 2 - Electric FAF without CAC - ID - 3	HES_ID_HP Conversion & BPIS.xlsx
Manufactured Home - Duct Sealing - Direct Install - Test Only - ID - 2	HES_ID_MH Duct Sealing.xlsx
Manufactured Home - Duct Sealing - Direct Install - Test, Crossover Replacement, Seal and Insulate - ID - 2	HES_ID_MH Duct Sealing.xlsx
Manufactured Home - Duct Sealing - Direct Install - Test, Seal and Insulate - ID - 2	HES_ID_MH Duct Sealing.xlsx
New Homes Ductless Heat Pump - ID - 1	HES_ID_New Homes Ductless Heat Pump
Smart Thermostat - CAC Only - ID - 1	2019.09.09_ID_Wattsmart_SF_Smart_Tstat_Brief.xlsx
Smart Thermostat - CAC Only - ID - 2	2019.09.09_ID_Wattsmart_SF_Smart_Tstat_Brief.xlsx
Smart Thermostat - CAC Only - Instant Rebates - ID - 2	2019.09.09_ID_Wattsmart_SF_Smart_Tstat_Brief.xlsx
Smart Thermostat - Electric FAF - ID - 2	2019.09.09_ID_Wattsmart_SF_Smart_Tstat_Brief.xlsx
Smart Thermostat - Electric FAF - Instant Rebates - ID - 2	2019.09.09_ID_Wattsmart_SF_Smart_Tstat_Brief.xlsx
Smart Thermostat - Electric FAF w/ CAC - ID - 2	2019.09.09_ID_Wattsmart_SF_Smart_Tstat_Brief.xlsx
Smart Thermostat - Electric FAF w/ CAC - Instant Rebates - ID - 2	2019.09.09_ID_Wattsmart_SF_Smart_Tstat_Brief.xlsx
Smart Thermostat - Electric Heat Pump - ID - 2	2019.09.09_ID_Wattsmart_SF_Smart_Tstat_Brief.xlsx
Smart Thermostat - Electric Heat Pump - Instant Rebates - ID - 2	2019.09.09_ID_Wattsmart_SF_Smart_Tstat_Brief.xlsx
Smart T-stat w/ ASHP - ID - 1	HES_ID_Smart Thermostat.xlsx
Smart T-stat w/ EFAF - ID - 1	HES_ID_Smart Thermostat.xlsx
Smart T-stat w/ EFAF + CAC - ID - 1	HES_ID_Smart Thermostat.xlsx
Smart_Tstat_W/Any_Gas_Instant_Rebates - ID - 1	2018.08.14_ID_Wattsmart_SF_Smart_Tstat_Instant_Rebate_Brief.xlsx
Smart_Tstat_w/ASHP_Instant_Rebates - ID - 1	HES_ID_Smart Thermostat.xlsx
Smart_Tstat_W/EFAF_CAC_Instant_Rebates - ID - 1	HES_ID_Smart Thermostat.xlsx
Smart_Tstat_w/EFAF_Instant_Rebates - ID - 1	HES_ID_Smart Thermostat.xlsx

Lighting	
LED Downlight: 10 watts - Retail - ID - 4	HES_ID_LEDs.xlsx
LED Downlight: 11 watts - Retail - ID - 4	HES_ID_LEDs.xlsx
LED Downlight: 12 watts - Retail - ID - 4	HES_ID_LEDs.xlsx
LED Downlight: 13 watts - Retail - ID - 4	HES_ID_LEDs.xlsx
LED Downlight: 14 watts - Retail - ID - 4	HES_ID_LEDs.xlsx
LED Downlight: 15 watts - Retail - ID - 4	HES_ID_LEDs.xlsx
LED Downlight: 16 watts - Retail - ID - 4	HES_ID_LEDs.xlsx
LED Downlight: 5 watts - Retail - ID - 4	HES_ID_LEDs.xlsx
LED Downlight: 6 watts - Retail - ID - 4	HES_ID_LEDs.xlsx
LED Downlight: 7 watts - Retail - ID - 4	HES_ID_LEDs.xlsx
LED Downlight: 8 watts - Retail - ID - 4	HES_ID_LEDs.xlsx
LED Downlight: 9 watts - Retail - ID - 4	HES_ID_LEDs.xlsx
LED Fixture - ENERGY STAR - ID - 2	01-30-2014_ID_HES_Fixtures_Brief.xlsx
LED General Purpose: 10 watts - Retail - ID - 4	HES_ID_LEDs.xlsx
LED General Purpose: 11 watts - Retail - ID - 4	HES_ID_LEDs.xlsx
LED General Purpose: 12 watts - Retail - ID - 4	HES_ID_LEDs.xlsx
LED General Purpose: 15 watts - Retail - ID - 5	HES_ID_LEDs.xlsx
LED General Purpose: 16 watts - Retail - ID - 4	HES_ID_LEDs.xlsx
LED General Purpose: 17 watts - Retail - ID - 2	HES_ID_LEDs.xlsx
LED General Purpose: 18 watts - Retail - ID - 2	HES_ID_LEDs.xlsx
LED General Purpose: 5 watts - Retail - ID - 2	HES_ID_LEDs.xlsx
LED General Purpose: 6 watts - Retail - ID - 2	HES_ID_LEDs.xlsx
LED General Purpose: 7 watts - Retail - ID - 3	HES_ID_LEDs.xlsx
LED General Purpose: 8 watts - Retail - ID - 3	HES_ID_LEDs.xlsx
LED General Purpose: 9 watts - Retail - ID - 3	HES_ID_LEDs.xlsx
LED Specialty - 3-Way: 3,8,18 watts - Retail - ID - 2	HES-Lighting-MASTER Source Workbook_2012-2016 v3.9.3.xlsm
LED Specialty - Candelabra: 2 watts - Retail - ID - 3	HES_ID_LEDs.xlsx
LED Specialty - Candelabra: 4 watts - Retail - ID - 3	HES_ID_LEDs.xlsx
LED Specialty - Candelabra: 5 watts - Retail - ID - 3	HES_ID_LEDs.xlsx
LED Specialty - Globe: 4 watts - Retail - ID - 3	HES_ID_LEDs.xlsx
LED Specialty - Globe: 5 watts - Retail - ID - 2	HES_ID_LEDs.xlsx
LED Specialty - Globe: 6 watts - Retail - ID - 2	HES_ID_LEDs.xlsx

Water Heating	
Faucet Aerators - Any DHW - 1.0 GPM or Less - Midstream - ID - 1	2019.06.05_ID_Wattsmart_ Aerators_Brief.xlsx
HPWH Tier 2 or Above Basement 0-55gallons Self Install - ID - 1	HES_ID_Heat Pump Water Heaters_3_23_17.xlsx
HPWH Tier 2 or Above Indoor Electric Resistance Heat 0-55 Gallons Self Install - ID - 1	HES_ID_Heat Pump Water Heaters_3_23_17.xlsx
HPWH Tier 2 or Above Indoor Heat Pump 0-55 Gallons Self Install - ID - 1	HES_ID_Heat Pump Water Heaters_3_23_17.xlsx
Low-Flow Shower Head - Any DHW - 1.50 GPM - Midstream - ID - 1	2019.06.05-ID_Wattsmart Low Flow Showerheads_Briel.xlsx
Low-Flow Shower Head - Any DHW - 1.50 GPM - Midstream - ID - 2	2019.06.05-ID_Wattsmart Low Flow Showerheads_Briel.xlsx
New Homes HPWH Tier 3 Ducted Heat Pump 0-55 Gallons Self Install - ID - 1	HES_ID_New Homes Heat Pump Water Heaters.xlsx
Whole Home	
New Homes Whole Home Performance Path Tier 1 - ID - 1	HES_ID_New Homes Whole Homes Performance Path.xlsx
New Homes Whole Home Performance Path Tier 2 - ID - 1	HES_ID_New Homes Whole Homes Performance Path.xlsx
New Manufactured Home - Energy Star - Any Electric - ID - 1	2018.12.03_ID_New_ENERGYSTAR_Manufactured_Homes_Updates

Appendix B – General Population Survey

1. Did you or anyone else in your home buy any LED lighting products in 2019 or 2020?

   - Yes
   - No
   - I don’t recall

2. Which stores did you buy your ENERGY STAR LED lighting from (consider only in-store purchases, not online purchases)? Select all that apply.

   - Ace Hardware
   - Broulim’s Fresh Foods
   - CostCo
   - Do It Best
   - Dollar Tree
   - Downey Food Center
   - The Home Depot
   - Kroger
   - Lowe’s
   - Stokes Marketplace
   - Thomas Market Inc
   - True Value Agri
   - True Value Hardware
   - Walmart
   - Other (Please specify)
   - I don’t know

3. What type of ENERGY STAR LED lighting products did you buy? Select all that apply.

   - Standard LED bulb(s)
   - Specialty LED bulb(s)
   - LED fixture(s)
   - LED downlight(s)
   - I don’t know

Standard LED bulbs

4. When did you buy the ENERGY STAR standard LED bulbs? Select all that apply

    - 2019
    - 2020

5. How many ENERGY STAR standard LED bulbs did you buy during 2019-2020?

    - [numeric]
    - I don't know

6. Of the [LEDStandardQtyBought] bulbs you bought, how many are currently:

    - Installed [numeric]
    - In storage [numeric]
    - Discarded or given away [numeric]

7. Of the [LEDStandardQtyInstalled] bulbs that you have installed, how many replaced LEDs and how many replaced bulbs that were not LEDs?

    - Number of replaced LED bulbs [numeric]
    - Number of replaced bulbs that were not LEDs (CFL, incandescent, halogen, etc.) [numeric]
    - Number installed in new lamps or fixtures [numeric]
    - I don't know

8. If the ENERGY STAR LED standard light bulbs you bought had cost $0.85 more each, would you still have bought them? (Definitely, Probably, Don't know, Probably not, Definitely not.)

9. You indicated that you bought [LEDStandardQtyBought] ENERGY STAR standard LED bulbs. How many fewer would you have bought if they had cost $0.85 more each?

    - [numeric]
    - I don't know

10. Do you recall if the ENERGY STAR standard LED bulbs you bought were discounted?

    - Yes, there were discounted
    - No, they were not discounted
    - I don't remember

11. Do remember seeing a label or sign letting customers know that the discount was provided by Rocky Mountain Power?

    - Yes
    - No
    - I don’t remember

12. How important was the discount to your purchase of ENERGY STAR LED standard light bulbs?

    - (Scale 0-10, 0 = Not important, 10 = Very important)

13. Were any of the ENERGY STAR standard LED bulbs you purchased in 2019 or 2020 installed in a business or commercial building?

    - Yes
    - No
    - I don’t know

14. Approximately how many of the ENERGY STAR standard LED bulbs you purchased were installed in a business or commercial building?

    - Quantity: [numeric]

15. How many of the [LEDStandardQtyInstalled] installed standard LED bulbs are in each of the following locations?

    - Bathroom: _____
    - Bedroom: _____
    - Dining room: _____
    - Exterior: _____
    - Garage: _____
    - Hallway: _____
    - Kitchen: _____
    - Living room: _____
    - Office: _____
    - Other room: _____
    - Installed at building other than home: _____
    - Don’t know

16. Had you bought any LED light bulbs before 2019?

    - Yes
    - No
    - I don’t know

Specialty LED bulbs

17. When did you buy the ENERGY STAR specialty LED bulbs? Select all that apply.

    - 2019
    - 2020

18. How many ENERGY STAR specialty LED bulbs did you buy during 2019-2020?

    - [numeric]
    - I don't know

19. Of the [LEDSpecialtyQtyBought] bulbs you bought, how many are currently:

    - Installed [numeric]
    - In storage [numeric]
    - Discarded or given away [numeric]

20. Of the [LEDSpecialtyQtyInstalled] bulbs that you have installed, how many replaced LEDs, and how many replaced bulbs that were not LEDs?

    - Number of replaced LED bulbs [numeric]
    - Number of replaced bulbs that were not LEDs (CFL, incandescent, halogen, etc.) [numeric]
    - Number installed in new lamps or fixtures [numeric]
    - I don't know

21. If the ENERGY STAR specialty LED light bulbs you bought had cost $1.30 more each, would you still have bought them?

    - Definitely
    - Probably
    - Don't know
    - Probably not
    - Definitely not

22. You indicated that you bought [LEDSpecialtyQtyBought] ENERGY STAR specialty LED bulbs. How many fewer would you have bought if they had cost $1.30 more each?

    - [numeric]
    - I don't know

23. Do you recall if the ENERGY STAR specialty LED bulbs you bought were discounted?

- Yes, there were discounted
- No, they were not discounted
- I don't remember

24. Do remember seeing a label or sign letting customers know that the discount was provided by Rocky Mountain Power?

- Yes
- No
- I don't remember

25. How important was the discount to your purchase of ENERGY STAR specialty LED light bulbs? (Scale 0-10, 0 = Not important, 10 = Very important)

26. Were any of the ENERGY STAR specialty LED bulbs you purchased in 2019 or 2020 installed in a business or commercial building?

- Yes
- No
- I don't know

27. Approximately how many of the ENERGY STAR specialty LED bulbs you purchased were installed in a business or commercial building?

- Quantity: ___
- I don't know

28. How many of the [LEDSpecialtyQtyInstalled] specialty LED bulbs that are installed are in your home are in each of the following locations?

- Bathroom: _____
- Bedroom: _____
- Dining room: _____
- Exterior: _____
- Garage: _____
- Hallway: _____
- Kitchen: _____
- Living room: _____
- Office: _____
- Other room: _____
- Installed at building other than home: _____
- Don't know

29. Had you ever bought any LED light bulbs before 2019?

- Yes
- No
- I don't know

LED fixtures

30. When did you buy the ENERGY STAR LED fixtures? Select all that apply.

- 2019
- 2020

31. How many ENERGY STAR LED fixtures did you buy during 2019-2020?

- [numeric]
- I don't know

32. Of the [LEDFixtureQtyBought] bulbs you bought, how many are currently:

- Installed [numeric] [LEDFixtureQtyInstalled]
- In storage [numeric]
- Discarded or given away [numeric]

33. Of the [LEDFixtureQtyInstalled] bulbs that you have installed, how many replaced LEDs and how many replaced bulbs that were not LEDs?

- Number of replaced bulbs that were LEDs [numeric]
- Number of replaced bulbs that were not LEDs (CFL, incandescent, halogen, etc) [numeric]
- Number installed in new lamps or fixtures [numeric]

34. If the ENERGY STAR LED fixtures you bought had cost $2.85 more each, would you still have bought them?

- Definitely
- Probably
- Don't know
- Probably not
- Definitely not

35. You indicated that you bought [LEDFixtureQtyBought] ENERGY STAR LED fixtures. How many fewer would you have bought if they had cost $2.85 more each?

- [numeric]
- I don't know

36. Do you recall if the ENERGY STAR LED fixtures you bought were discounted?

- Yes, there were discounted
- No, they were not discounted
- I don't remember

37. Do remember seeing a label or sign letting customers know that the discount was provided by Rocky Mountain Power?

- Yes
- No
- I don't remember

38. How important was the discount to your purchase of ENERGY STAR LED fixtures?

- (Scale 0-10, 0 = Not important, 10 = Very important)

39. Were any of the ENERGY STAR LED fixtures you purchased in 2019-2020 installed in a business or commercial building?

- Yes
- No
- I don't know

40. Approximately how many of the ENERGY STAR LED fixtures you purchased were installed in a business or commercial building?

- Quantity: ___

41. How many of the [LEDFixtureQtyInstalled] LED fixtures that are installed are in your home are in each of the following locations?

- Bathroom: _____
- Bedroom: _____
- Dining room: _____
- Exterior: _____
- Garage: _____
- Hallway: _____
- Kitchen: _____
- Living room: _____
- Office: _____
- Other room: _____
- Installed in a building other than home: _____
- Don't know

42. Had you bought any LED light bulbs before 2019?

- Yes
- No
- I don’t know

LED downlight

43. When did you buy the ENERGY STAR LED downlight? Select all that apply.

- 2019
- 2020

44. How many ENERGY STAR LED downlights did you buy during 2019-2020?

- [numeric]
- I don’t know

45. Of the [LEDDownlightQtyBought] bulbs you bought, how many are currently:

- Installed [numeric] [LEDDownlightQtyInstalled]
- In storage [numeric]
- Discarded or given away [numeric]

46. Of the [LEDDownlightQtyInstalled] LED downlights that you have installed, how many replaced LEDs, how many replaced bulbs that were not LEDs, and how many went in new fixtures?

- Number of replaced bulbs that were LEDs [numeric]
- Number of replaced bulbs that were not LEDs (CFL, incandescent, halogen, etc) [numeric]
- Number installed in new fixtures [numeric]
- I don’t know

47. If the ENERGY STAR LED downlights you bought had cost $1.70 more each, would you still have bought them?

- Definitely
- Probably
- Don’t know
- Probably not
- Definitely not

48. You indicated that you bought [LEDDownlightQtyBought] ENERGY STAR LED downlights. How many fewer would you have bought if they had cost $1.70 more each?

- [numeric]
- I don't know

49. Do you recall if the ENERGY STAR LED downlights you bought were discounted?

- Yes, there were discounted
- No, they were not discounted
- I don't remember

50. Do remember seeing a label or sign letting customers know that the discount was provided by Rocky Mountain Power?

- Yes
- No
- I don't remember

51. How important was the discount to your purchase of ENERGY STAR LED downlights?

- (Scale 0-10, 0 = Not important, 10 = Very important)

52. Were any of the ENERGY STAR LED downlights you purchased in 2019 or 2020 installed in a business or commercial building?

- Yes
- No
- I don't know

53. Approximately how many of the LED downlights you purchased were installed in a business or commercial building?

- Quantity: ___
- I don't know

54. How many of the [LEDDownlightQtyInstalled] LED downlights that are installed in each of the following locations?

- Bathroom: _____
- Bedroom: _____
- Dining room: _____
- Exterior: _____

- Garage: _____
- Hallway: _____
- Kitchen: _____
- Living room: _____
- Office: _____
- Other room: _____
- Installed at building other than home: _____
- Don’t know

55. Had you bought any LED lights before 2019?

- Yes
- No
- I don’t know

LED Lighting Process

56. Which characteristic do you consider when purchasing light bulbs? Select all that apply.

- Price
- Energy efficiency
- ENERGY STAR certification
- Brightness of the bulb
- How long the bulb lasts
- The ability to dim the bulb
- Color of the light
- Other (please specify)
- I don’t know

57. Why did you purchase the ENERGY STAR LED lighting? Select all that apply.

- To replace burned out bulbs
- To replace working bulbs to lower energy use
- To add new light fixture(s) in my home
- To take advantage discounted pricing
- Other (please specify)
- I don’t know

Upstream Participant Spillover

58. After buying the discounted ENERGY STAR lighting product have you taken any of the following additional steps to save energy in your home? Select all the apply.

- Installed an ENERGY STAR certified appliance such as a refrigerator, dishwasher, clothes washer, or clothes dryer
- Installed low flow faucet aerators
- Installed low flow showerheads
- Installed an ENERGY STAR certified heat pump water heater
- Installed water heater jacket, blanket, or insulation
- Installed an ENERGY STAR certified room air conditioner
- Installed an ENERGY STAR central air conditioner, heat pump, or evaporative cooler
- Installed a Smart Thermostat (for example, EcoBee or Nest)
- Other (please specify)
- I don't know

Spillover: ENERGY STAR Appliance

59. Did you receive an incentive or discount to buy the ENERGY STAR appliance?

- Yes
- No
- I don't know

60. Rate how important the discount you received on the ENERGY STAR LED lighting product was in your decision to purchase the ENERGY STAR appliance? [ApplianceSO1] [1-5 scale]

- Not important (1) Somewhat important (3) Very important (5)

61. If you had not received the discount on the LEDs, how likely is it that you still would have bought the ENERGY STAR appliance? [ApplianceSO2] [1-5 scale]

- Very likely (1) Unsure (3) Very unlikely (5)

62. What kind of ENERGY STAR certified appliance did you purchase?

- Refrigerator
- Dishwater
- Clothes washer
- Clothes dryer
- Other (Please specify)
- I don't know

Spillover: LOW FLOW AERATORS

63. Did you receive an incentive or discount to buy the low flow aerator(s)?

- Yes
- No
- I don't know

64. Rate how important the discount you received on the ENERGY STAR LED lighting product was in your decision to purchase the low flow aerator(s)? [AeratorO1] [1-5 scale]

- Not important (1) Somewhat important (3) Very important (5)

65. If you had not received the discount on the LEDs how likely is it that you still would have bought the low flow aerator(s)? [AeratorSO2]

- Very likely (1) Unsure (3) Very unlikely (5)

66. How many low flow faucet aerators did you install in bathroom sinks?

- [numeric]
- I don't know

67. How many low flow faucet aerators did you install in kitchen sinks?

- Quantity: [numeric]
- I don't know

Spillover: Low flow showerheads

68. Did you receive an incentive or discount to buy the low flow showerhead(s)?

- Yes
- No
- I don't know

69. Rate how important the discount you received on the ENERGY STAR LED lighting product was in your decision to purchase the low flow showerhead(s)? [ShowerheadO1] [1-5 scale]

- Not important (1) Somewhat important (3) Very important (5)

70. If you had not received the discount on the LEDs, how likely is it that you still would have bought the low flow aerator(s)? [ShowerheadSO2] [1-5 scale]

- Very likely (1) Unsure (3) Very unlikely (5)

71. How many low flow showerheads did you install?

- [numeric]
- I don't know

Spillover: Heat pump water heater

72. Did you receive an incentive or discount to buy the ENERGY STAR certified heat pump water heater?

- Yes
- No
- I don't know

73. Rate how important the discount you received on the ENERGY STAR LED lighting product was in your decision to buy the ENERGY STAR water heater? [WaterHeaterSO1] [1-5 scale]

- Not important (1) Somewhat important (3) Very important (5)

74. If you had not received the discount on the LEDs, how likely is it that you still would have bought the ENERGY STAR water heater? [WaterHeaterSO2] [1-5 scale]

- Very likely (1) Unsure (3) Very unlikely (5)

75. What type of ENERGY STAR water heater did you install?

- Natural gas storage tank water heater
- Electric storage tank water heater
- Heat pump water heater
- Natural gas tankless water heater
- Electric tankless water heater
- Other (please specify)
- I don't know

76. What type of water heater did you replace?

- Natural gas storage tank water heater
- Electric storage tank water heater
- Heat pump water heater
- Natural gas tankless water heater
- Electric tankless water heater
- Other (please specify)
- I don't know

Spillover: Water heater jacket, blanket, or insulation

77. Did you receive an incentive or discount to buy the water heater jacket, blanket or insulation?

- Yes
- No
- I don't know

78. Rate how important the discount you received on the ENERGY STAR LED lighting product was in your decision to buy the water heater jacket, blanket or insulation? [WHInsulSO1] [1-5 scale]

- Not important (1) Somewhat important (3) Very important (5)

79. If you had not received the discount on the LEDs, how likely is it that you still would have bought the water heater jacket, blanket or insulation? [WHInsulSO2] [1-5 scale] Scale: Very likely (1) Unsure (3) Very unlikely (5)

Spillover water heating fuel

80. What kind of water heating system do you have?

- Natural gas storage tank water heater
- Electric storage tank water heater
- Heat pump water heater
- Natural gas tankless water heater
- Electric tankless water heater
- Other (please specify)
- I don't know

Spillover: Central cooling system

81. What type of new ENERGY STAR certified cooling system did you install?

- Central air conditioner
- Heat pump
- Evaporative cooler
- I don't know

82. Did you receive an incentive or discount to buy the ENERGY STAR cooling system?

- Yes
- No
- I don't know

83. Rate how important the discount you received on the ENERGY STAR LED lighting product was in your decision to buy the ENERGY STAR certified central cooling system? [CentralCoolingSO1] [1-5 scale]

- Not important (1) Somewhat important (3) Very important (5)

84. If you had not received the discount on the LEDs, how likely is it that you still would have bought the ENERGY STAR certified central cooling system? [CentralCoolingSO2] [1-5 scale] Very likely (1) Unsure (3) Very unlikely (5)

85. What kind of cooling system did you buy?

- Brand [text response]
- Model number[text response]
- BTUs [numeric]
- Energy Efficiency Ratio (SEER) of room air conditioner [numeric]

86. Heat pumps also have a Heating Seasonal Performance Factor (HSPF) rating which indicates how efficient the heat pump is. What is the HSPF is for the heat pump you installed?

- HSPF rating: ___
- I don't know

87. What type of cooling appliance did your new evaporative cooler replace?

- An existing evaporative cooler
- A room air conditioner
- Central air conditioning
- An electric fan
- I did not have a cooling appliance before
- I don't know

Spillover: Smart Thermostat

88. Did you receive an incentive or discount to buy the smart thermostat?

- Yes
- No
- I don't know

89. Rate how important the discount you received on the ENERGY STAR LED lighting product was in your decision to buy the smart thermostat? [SmartThermSO1] [1-5 scale] Not important (1) Somewhat important (3) Very important (5)

90. If you had not received the discount on the LEDs, how likely is it that you still would have bought the smart thermostat? [SmartThermSO2] [1-5 scale] Very likely (1) Unsure (3) Very unlikely (5)

91. What kind of heating system do you have?

- Electric forced air furnace
- Electric forced air furnace plus central AC
- Heat pump
- Gas forced air furnace plus central AC
- I don't know

Leakage

92. How long you would drive in minutes to reach each of the following types of stores?

- Grocery: ____
- Do-It-Yourself or DIY retailer (e.g. Home Depot, Lowe's etc.): ____
- Mass merchant (e.g. Walmart, Target): ____
- Warehouse Club (e.g. Costco, Sam's Club): ____

Non-Participant Questions

93. In 2019 or 2020, did you participate in any of the following Rocky Mountain Power programs that promoted energy saving? Select all that apply.

- Purchased LED lighting products discounted by Rocky Mountain Power from a retail store.
- Received a rebate or discount from Rocky Mountain Power energy efficient appliances, heating or cooling products, or home insulation or weatherization products and services.
- Received a rebate or discount from Rocky Mountain Power on energy efficient products included in a new home that you purchased.
- Received a Rocky Mountain Power Wattsmart Homes Starter Kit that included LED light bulbs and may have included low flow faucet aerators and a showerhead.
- No one in my home participated in any Rocky Mountain Power energy efficiency program.

94. Have you received information from Rocky Mountain Power about how to save energy in your home from any of these sources? Select all apply.

- Signage at retail stores
- Newspaper or magazine ads
- Bill inserts

- Messages printed on your bill
- Rocky Mountain Power website
- TV ad
- Rocky Mountain Power representative
- Rocky Mountain Power newsletter
- Community event
- Social media such as Facebook or Twitter
- Home Energy Report
- Other (please specify)
- No I have not received any information from Rocky Mountain Power about how to save energy

95. In 2019 and 2020, have you taken any of the following steps to save energy in your home based on information you received from Rocky Mountain Power? Select all the apply.

    - Installed an ENERGY STAR certified appliance such as a refrigerator, dishwasher, clothes washer, or clothes dryer
    - Installed low flow faucet aerators
    - Installed low flow showerheads
    - Installed an ENERGY STAR certified heat pump water heater
    - Installed water heater jacket, blanket, or insulation
    - Installed an ENERGY STAR certified room air conditioner
    - Installed an ENERGY STAR central air conditioner, heat pump, or evaporative cooler
    - Installed a Smart Thermostat (for example, EcoBee or Nest)
    - Other (please specify)
    - I have not taken any of these energy saving actions
    - I don't know

Non Participant Spillover: ENERGY STAR Appliance

96. Did you receive an incentive or discount to buy the ENERGY STAR appliance?

    - Yes
    - No
    - I don't know

97. Rate how important energy efficiency information from Rocky Mountain Power was in your decision to purchase the ENERGY STAR appliance? [ApplianceNPSO1] [1-5 scale] Not important (1) Somewhat important (3) Very important (5)

98. If you had not received energy efficiency information from Rocky Mountain Power, how likely is it that you still would have bought the ENERGY STAR

appliance? [ApplianceNPSO2] [1-5 scale] Very likely (1) Unsure (3) Very unlikely (5)

99. What kind of ENERGY STAR certified appliance did you purchase?

- Refrigerator
- Dishwater
- Clothes washer
- Clothes dryer
- Other (Please specify.)
- I don't know

Non Participant Spillover: Low Flow Aerators

100. Did you receive an incentive or discount to buy the low flow aerator(s)?

- Yes
- No
- I don't know

101. Rate how important energy efficiency information from Rocky Mountain Power was in your decision to purchase the low flow aerator(s)? [AeratorNPSO1] [1-5 scale]

- Not important (1) Somewhat important (3) Very important (5)

102. If you had not received energy efficiency information from Rocky Mountain Power, how likely is it that you still would have bought the low flow aerator(s)? [AeratorNPSO2] [1-5 scale]

- Very likely (1) Unsure (3) Very unlikely (5)

103. How many low flow faucet aerators did you install in bathroom sinks?

- [numeric]
- I don't know

104. How many low flow faucet aerators did you install in kitchen sinks?

- [numeric]
- I don't know

Non Participant Spillover: Low flow showerheads

105. Did you receive an incentive or discount to buy the low flow showerhead(s)?

- Yes
- No
- I don't know

106. Rate how important energy efficiency information from Rocky Mountain Power was in your decision to purchase the low flow showerhead(s)? [ShowerheadNPO1] [1-5 scale]

- Not important (1) Somewhat important (3) Very important (5)

107. If you had not received energy efficiency information from Rocky Mountain Power, how likely is it that you still would have bought the low flow aerator(s)? [ShowerheadNPSO2] [1-5 scale]

- Very likely (1) Unsure (3) Very unlikely (5)

108. How many low flow showerheads did you install?

- Quantity: ___
- I don't know.

Non Participant Spillover: Heat pump water heater

109. Did you receive an incentive or discount to buy the ENERGY STAR certified water heater?

- Yes
- No
- I don't know

110. Rate how important energy efficiency information from Rocky Mountain Power was in your decision to buy the ENERGY STAR water heater? [WaterHeaterNPSO1] [1-5 scale]

- Not important (1) Somewhat important (3) Very important (5)

111. If you had not received energy efficiency information from Rocky Mountain Power, how likely is it that you still would have bought the ENERGY STAR water heater? [WaterHeaterNPSO2] [1-5 scale]

- Very likely(1) Unsure (3) Very unlikely (5)

112. What type of ENERGY STAR water heater did you install?

- Natural gas storage tank water heater
- Electric storage tank water heater
- Heat pump water heater
- Natural gas tankless water heater
- Electric tankless water heater
- Other (please specify)
- I don't know

113. What type of water heater did you replace?

- Natural gas storage tank water heater
- Electric storage tank water heater
- Heat pump water heater
- Natural gas tankless water heater
- Electric tankless water heater
- Other (please specify)
- I don't know

Non Participant Spillover: Water heater jacket, blanket, or insulation

114. Did you receive an incentive or discount to buy the water heater jacket, blanket or insulation?

- Yes
- No
- I don't know

115. Rate how important energy efficiency information from Rocky Mountain Power was in your decision to buy the water heater jacket, blanket or insulation? [WHInsulNPSO1] [1-5 scale]

- Not important (1) Somewhat important (3) Very important (5)

116. If you had not received energy efficiency information from Rocky Mountain Power, how likely is it that you still would have bought the water heater jacket, blanket or insulation? [WHInsulNPSO2] [1-5 scale]

- Very likely (1) Unsure (3) Very unlikely (5)

Non Participant Spillover: Water heating fuel

117. What type of water heater do you have?

- Natural gas storage tank water heater
- Electric storage tank water heater

- Heat pump water heater
- Natural gas tankless water heater
- Electric tankless water heater
- Other (please specify)
- I don't know

Non Participant Spillover: Central cooling system

118. What type of new cooling system did you install?

    - Central air conditioner
    - Heat pump
    - Evaporative cooler
    - I don't know

119. Did you receive an incentive or discount to buy the ENERGY STAR certified central cooling system?

    - Yes
    - No
    - I don't know

120. Rate how important energy efficiency information from Rocky Mountain Power was in your decision to buy the cooling system? [CentralCoolingNPSO1] [1-5 scale]

    - Not important (1) Somewhat important (3) Very important (5)

121. If you had not received energy efficiency information from Rocky Mountain Power, how likely is it that you still would have bought the cooling system? [CentralCoolingNPSO2] [1-5 scale]

    - Very likely (1) Unsure (3) Very unlikely (5)

122. What kind of cooling system did you buy?

    - Brand [text response]
    - Model number[text response]
    - BTUs [numeric]
    - Energy Efficiency Ratio (SEER) of room air conditioner [numeric]

123. Heat pumps also have a Heating Seasonal Performance Factor (HSPF) rating which indicates how efficient the heat pump is. What is the HSPF is for the heat pump you installed?

- HSPF rating: ___
- I don't know

124. What type of cooling appliance did your new cooling system replace?

- An existing evaporative cooler
- A room air conditioner
- Central air conditioning
- An electric fan
- I did not have a cooling appliance before
- I don't know

Non Participant Spillover: Smart Thermostat

125. Did you receive an incentive or discount to buy the smart thermostat?

- Yes
- No
- I don't know

126. Rate how important energy efficiency information from Rocky Mountain Power was in your decision to buy the smart thermostat? [SmartThermNPSO1] [1-5 scale]

- Not important (1) Somewhat important (3) Very important (5)

127. If you had not received energy efficiency information from Rocky Mountain Power, how likely is it that you still would have bought the smart thermostat? [SmartThermNPSO2] [1-5 scale]

- Very likely (1) Unsure (3) Very unlikely (5)

128. What kind of heating system do you have?

- Electric forced air furnace
- Electric forced air furnace plus central AC
- Heat pump
- Gas forced air furnace plus central AC
- I don't know

Home Demographics

129. Which of the following best describes your home?

- Manufactured or mobile home
- Single-family home
- Duplex or townhouse
- Apartment or condominium
- Other (please specify)
- I don’t know

130. Do you own or rent your home?

- Own
- Rent
- Prefer not to answer

131. When was your home built?

- Before 1960
- 1960-1979
- 1980-1999
- 2000-2009
- 2010 or later
- I don't know

132. How large is your home?

- Less than 1,000 square feet
- 1,000-2,000 square feet
- 2,000-3,000 square feet
- 3,000-4,000 square feet
- Greater than 4,000 square feet
- I don't know

133. What is the main fuel used for heating your home?

- Electricity
- Natural Gas
- Propane
- Oil
- Don’t heat home
- Other (Please specify)
- I don’t know

134. Is English the primary language spoken in your household?

- Yes
- No

135. Including yourself, how many people are living in your household?

136. Is your annual household income over or under [CUTOFF]?

- Over
- Under
- I don't know
- Prefer not to answer

Thank you

137. Thank you for your valuable feedback. In exchange for you time, we'd like to send you a $5 electronic gift card that you can use at one of dozens of retailers. We will email your gift card to:

- [Email]

If you would like us to send it to a different email address, enter it here:

- [GCemail]

On behalf of Rocky Mountain Power, thank you for your time and feedback! If you have any questions regarding this survey or the status of your gift card, email adm-surveys@pacificorp.com. Have a great day!

Appendix C – Starter Kit Survey

Our records indicate that you received a Rocky Mountain Power Wattsmart Homes Program Starter Kit in 2019. Starter Kits contain four LED light bulbs, and customers with electric water heating also receive high-performance showerheads and kitchen and bathroom faucet aerators. Did you receive Wattsmart Homes Program Starter Kit in the mail?

- Yes
- No
- I don't know

138. What fuel does your main water heater use?

- Electricity
- Natural gas
- Propane
- Other (Please specify)
- I don’t know

139. How satisfied were you with the following aspects of your Wattsmart Homes Program Starter Kit?

- Ease of ordering
- Ease of installation
- Quality of components
- Timeliness of delivery
- Process to request a kit
- Kit contents
- Energy savings that resulted from install kit
- Rocky Mountain Power as your electricity provider

140. Why were you dissatisfied?

- [OPEN-ENDED]

141. How important were each the following reasons for requesting a kit?

- Saving money on utility bills
- Concern for the environment
- Curiosity about energy-efficient products
- Opportunity to get the products in the kit for free

142. How did you hear about the Starter Kits?

- Newspaper/magazine/print media
- Utility bill insert
- My bill
- Rocky Mountain Power website
- Word of mouth (friend, relative, coworker, etc.)
- Contractor or plumber
- TV ad
- Rocky Mountain Power representative
- Rocky Mountain Power newsletter
- Retailer/store
- Community event
- Social media such as Facebook or Twitter
- Home Energy Report
- Other (Please specify)
- I don't know

143. How long after receiving your kit did you install its contents?

- First LED light bulb
- Second LED light bulb
- Third LED light bulb
- Fourth LED light bulb
- Kitchen aerator
- Bathroom aerator
- High-efficiency showerhead
- Second high-efficiency showerhead

144. Why did you decide not to use all the LEDs yet? [SELECT ALL THAT APPLY]

- Waiting for current lights to burn out
- Not the correct wattage
- Disliked the color tone/quality of the emitted light
- Did not fit into my fixtures
- Other (Please specify)

145. Why did you decide not to use the faucet aerator(s) that came in your kit? [SELECT ALL THAT APPLY]

- Faucet aerators were already installed in all sinks
- Did not integrate well with current plumbing
- Disliked the pressure/water volume
- Disliked the way it looked
- Other (Please specify)

146. Why did you decide not to use the high-efficiency shower head(s) included in the kit? [SELECT ALL THAT APPLY]

- High-efficiency showerheads were already installed in all showers
- Did not integrate well with current plumbing
- Disliked the pressure/water volume
- Disliked the way it looked
- Other (Please specify)

147. Before you learned that the Starter Kits were available, were you planning to buy and install LED light bulbs?

- Yes
- No
- I don't know

148. Before you received the kit, what percent of lights in your home were LED bulbs?

- 0%
- 25%
- 50%
- 75%
- 100%
- I don't know

149. If you had not received the Starter Kit, how likely is it that you would have bought and installed the items you received

- LED light bulb
- Faucet aerator
- High-efficiency showerhead

150. If you had not received the Starter Kit, when do you think you might have purchased the items that were in it?

- LED light bulb
- Faucet aerator
- High-efficiency showerhead

151. Before you received the kit, what percent of sinks in your home had faucet aerators installed?

- 0%
- 25%
- 50%
- 75%

- 100%
- I don’t know

152. Before you received the kit, what percent of showers in your home had high-efficiency showerheads installed?

- 0%
- 25%
- 50%
- 75%
- 100%
- I don’t know

153. Since receiving your Home Starter Kit, have you taken any of the following additional steps to save energy? [SELECT ALL THAT APPLY]

- Installed additional LED Light Bulbs
- Installed an ENERGY STAR® appliance such as a refrigerator, dishwasher, clothes washer, or clothes dryer.
- Installed water heater jacket, blanket, or insulation
- Installed additional low flow faucet aerators
- Installed additional low flow showerheads
- Installed an ENERGY STAR® room air conditioner
- Installed an energy efficient water heater
- Installed an energy efficient central air conditioner, heat pump, or evaporative cooler
- Installed a Smart Thermostat (for example, EcoBee or Nest)
- Other (Please specify)
- I have not taken any additional energy saving steps
- I don’t know

154. How many LEDs have you purchased and installed?

- Quantity: ___
- I don’t know

155. Were any of the additional LED bulbs you purchased discounted from their normal price?

- Yes
- No
- I don’t know

156. Do you know if Rocky Mountain Power sponsored the discount for the light bulb(s) you purchased?

- Yes, the discount was sponsored by Rocky Mountain Power
- No, the discount was not sponsored by Rocky Mountain Power
- I don't know

157. What kind of appliance did you purchase?

- Appliance type: ___
- I don't know

158. How many low flow faucet aerators did you install in bathroom sinks?

- Quantity: ___
- I don't know

159. How many low flow faucet aerators did you install in kitchen sinks?

- Quantity: ___
- I don't know

160. How many low flow showerheads did you install?

- Quantity: ___
- I don't know

161. How many ENERGY STAR® room air conditioners did you install?

- Quantity: ___
- I don't know

162. What type of water heater did you install?

- Natural gas storage tank water heater
- Electric storage tank water heater
- Heat pump water heater
- Natural gas tankless water heater
- Electric tankless water heater
- Other (Please specify)
- I don't know

163. Was the new central cooling system that you installed an air conditioner, heat pump, evaporative cooler?

- Air conditioner
- Heat pump
- Evaporative cooler
- I don't know

164. Air conditioners and heat pumps have an energy efficiency rating called Seasonal Energy Efficiency Ratio (SEER) that is displayed on the Energy Guide label. What is the SEER rating of the unit you installed?

- SEER rating: ___
- I don't know

165. Heat pumps have an energy efficiency rating called a Heating Seasonal Performance Factor (HSPF) that is displayed on the Energy Guide label. What is the HSPF of the unit you installed?

- HSPF rating: ___
- I don't know

166. Evaporative coolers have an energy efficiency rating called an Energy Efficiency Ratio (EER) that is displayed on the Energy Guide label. What is the EER of the unit you installed?

- EER rating: ___
- I don't know

167. What kind of heating system do you have?

- Air source heat pump
- Electric forced air furnace
- Electric forced air furnace plus central air conditioner
- Gas forced air furnace plus central air conditioner
- I don't know

168. Did you receive a Rocky Mountain Power incentive, rebate, or discount when you [Q153 SPILL_MEASURE]?

- Yes
- No
- I don't know

169. How important was your experience with Starter Kits when you [SPILL_MEASURE]?

170. How likely would you have been to take the additional steps to save energy if you had ***not*** received the Starter Kit?

171. Which of the following best describes your home?

- Manufactured or mobile home

- Single-family home
- Duplex or townhouse
- Apartment or condominium
- Other (please specify)
- Don’t know

172. When was your home built?

- Before 1960
- 1960-1979
- 1980-1999
- 2000-2009
- 2010 or later
- Don't know

173. Do you own or rent your home?

- Own
- Rent
- Prefer not to answer

174. What is the main fuel used to heat your home?

- Electricity
- Natural gas
- Propane
- Oil
- Other (Please specify)
- Don’t heat home
- Don’t know

175. What fuel does your main water heater use?

- Electricity
- Natural gas
- Propane
- Other (Please specify)
- Don’t know

176. Including yourself, how many people are living in your household?

177. Is your annual household income over or under [CUTOFF]?

- Over
- Under
- Don’t know
- Prefer not to answer

178. We appreciate your time and would like to send you a $5 electronic gift card to thank you. We will send it to [EMAIL]. If you would like us to send your gift card to a different address, please enter the new address below. You should receive an email with the link to your gift card within 10 days.

- Please send my gift card to the above email address.
- Please send my electronic gift card to the following email address: __
- I do not wish to receive a gift card

If you have questions regarding this survey or would like to know the status of your gift card, you can send an email to adm-surveys@admenergy.com. On behalf of Rocky Mountain Power, thank you for participating. Have a great day!