2023-2024
Utah Wattsmart Homes Program
Evaluation, Measurement & Verification Report

Prepared for:

Rocky Mountain Power

November 21, 2025

ADM, a Qualus Company
100 Colonial Center Parkway, Suite 400
Lake Mary, FL 32746-4772

ADM Associates merged with Qualus LLC on June 15, 2025,
and is now doing business as ADM, a Qualus Company

Table of Contents

Acronyms & Glossary of Terms ii
1 Introduction and Purpose of Study 1
1.1 Description of Programs 1
1.2 Evaluation Objectives 3
2 Impact Evaluation 4
2.1 Impact Evaluation Approach 6
2.2 Data Review and Verification 7
2.3 Sample Design 9
2.4 Determination of Impact Methodology 11
2.5 Multifamily Whole Building Projects 12
2.6 Heating, Ventilation, and Air Conditioning (HVAC) 18
2.7 Transportation 26
2.8 Low-Impact Measures 31
2.9 New Homes 33
3 Process Evaluation 37
3.1 Review of Program Materials and Staff Interviews 37
4 Cost-Effectiveness Results 40
4.1 Cost Effectiveness Inputs 40
4.2 Cost-effectiveness Results 41
5 Conclusions and Recommendations 43
5.1 Conclusions 43
5.2 Recommendations 45
Appendix A: Engine Block Heater Controller Participant Survey 47
Appendix B: HVAC Participant Survey 50

Acronyms & Glossary of Terms

The following acronyms and terms are used throughout this report.

AHRI – Air-Conditioning, Heating, and Refrigeration Institute

Claimed savings – Energy savings calculated based on forecasts rather than actual results; used for program and portfolio planning purposes; energy savings included in RMP's annual reports. Used interchangeably with ex-ante savings.

Deemed savings – An estimate of energy savings for an adopted efficiency measure or practice developed from a set of assumptions that reflects an typical installation scenario.

Downstream distribution channel – Financial incentives to purchase energy efficient products are offered to customers post purchase by submitting a rebate application. The incentive is paid at the end point, or downstream, in the distribution channel.

EM&V – Evaluation, measurement, and verification

Evaluated savings – Savings estimates that are based on verified program results rather than forecasts. Used interchangeably with ex-post savings.

Ex-ante savings – Energy savings calculated based on forecasts rather than actual results; used for program and portfolio planning purposes; energy savings included in RMP's annual reports. Used interchangeably with claimed savings.

Ex-post savings – Savings estimates that are based on verified program results rather than forecasts. Used interchangeably with evaluated savings.

HVAC – Heating, ventilation, and air conditioning

ISR – In-service rate

IRP – Integrated Resource Plan

ML – Measure Library

NTG – Net-to-gross is a metric used in energy efficiency program evaluations to quantify the savings achieved by program participants compared to what would have been achieved without the program. It is calculated by dividing net savings by gross savings, providing insight into the effectiveness of the program in promoting energy efficiency.

Realization rate – The ratio of evaluated savings to claimed savings (ex-post savings divided by ex-ante savings).

RTF – Regional Technical Forum

TMY3 – Typical meteorological year (TMY) data set 3 derived from the 1991-2005 National Solar Radiation Data Base (NSRDB)

Upstream distribution channel – financial incentives are offered through discounts on energy efficient products or services at retail stores. RMP pays incentives to retailers, distributors, or manufacturers who pass incentives on to customers. The incentive is paid at the beginning, or upstream, point in the distribution channel.

UES – Unit energy savings

1 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 (RMP) 2023-2024 Wattsmart Homes Program in Utah. This report documents ADM's findings. 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 that considers program operations.

1.1 Description of Programs

The program provides financial incentives (discounts, rebates, and free products) to RMP 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 1-1.

Table 1-1: Quantities Delivered through Wattsmart Homes Program

Measure Category	2023	2024	Total
Multifamily Whole Building Projects			
Whole Building	110	101	211
HVAC	88	84	172
Lighting	22	9	31
Building Shell	3	7	10
Appliances	1	4	5
Water Heating	-	6	6
Existing Homes			
HVAC	19,906	19,214	39,120
Transportation	1,021	100	1,121
Building Shell	2,018	2,576	4,594
Water Heating	35	50	85
Energy Kits	316	-	316
Appliances	16	226	242
Lighting	8	35	43
Electronics	5	65	70
New Homes			
Whole Building	3,472	4,142	7,614
HVAC	1,884	1,906	3,790
Water Heating	9	15	24
Total	**28,914**	**28,540**	**57,454**

Multifamily project and building shell quantities reported as number of projects. All other quantities are numbers of measures incentivized.

Table 1-2 reports the methods by which the program provides incentives to customers for each measure category.

Table 1-2: Incentive Delivery Method

Measure Category	Incentive Delivery
Appliances	Customer post-purchase rebate application
Building Shell	Customer post-purchase rebate application Trade ally rebate application
Energy Kits	Customer requests free kit online for mail delivery
Electronics/Lighting	Customer post-purchase rebate application
HVAC	Customer post-purchase rebate application Trade ally rebate application
Transportation	Free distribution at special events Customer post-purchase rebate application
Water Heating	Post-purchase rebate application
New Homes	Customer post-purchase rebate application Trade ally rebate application

1.2 Evaluation Objectives

The objective of the impact evaluation is to determine gross and net energy savings (kWh) that resulted from the program. The purpose of the process evaluation is to gain an understanding of the program and its challenges. The evaluation was completed through key staff interviews with RMP and implementation contractors complemented with program documentation review.

2 Impact Evaluation

The 2023-2024 Wattsmart Homes Program results are reported in Table 2-1 through Tabel 2-3. Analysis methodologies are included in subsequent sections.

Table 2-1: Total Program Savings 2023-2024

Measure Category	Qty	Claimed Savings (kWh)	Gross Evaluated Savings (kWh)	Realization Rate	NTG	Net Evaluated Savings (kWh)	% of Net Evaluated Program Savings
Multifamily Whole Building Projects	**435**	**52,636,963**	**52,672,037**	**100.1%**	**83%**	**43,937,320**	**50%**
Whole Building	211	33,164,168	33,177,016	100.0%	75%	24,923,423	28%
HVAC	172	18,504,869	18,525,749	100.1%	98%	18,169,762	21%
Lighting	31	464,561	465,835	100.3%	76%	352,250	0.4%
Building Shell[a]	10	365,907	365,584	99.9%	97%	354,030	0.4%
Water Heating	6	133,201	133,628	100.3%	100%	133,628	0.2%
Appliances	5	4,256	4,227	99.3%	100%	4,227	0.005%
Existing Homes Measures	**4,505,530**	**45,554,139**	**43,011,400**	**94.4%**	**84%**	**36,259,814**	**41%**
HVAC	39,120	42,674,089	40,909,164	95.9%	84%	34,271,344	39%
Transportation	1,121	1,706,033	928,219	54.4%	94%	870,549	1%
Building Shell[a]	4,464,533	986,362	986,362	100.0%	95%	939,221	1%
Water Heating	85	123,096	123,096	100.0%	95%	117,222	0.1%
Appliances	242	35,234	35,234	100.0%	95%	33,553	0.04%
Energy Kits	316	23,644	23,644	100.0%	95%	22,516	0.03%
Lighting	43	3,293	3,293	100.0%	95%	3,136	0.004%
Electronics	70	2,387	2,387	100.0%	95%	2,273	0.003%
New Homes Program	**11,428**	**12,045,726**	**11,839,599**	**98.3%**	**73%**	**8,642,907**	**10%**
Whole Building	7,614	7,934,952	7,859,600	99.1%	73%	5,737,508	6%
HVAC	3,790	4,042,812	3,912,037	96.8%	73%	2,855,787	3%
Water Heating	24	67,962	67,962	100.0%	73%	49,612	0.1%
Total	**4,517,393**	**110,236,828**	**107,523,036**	**97.5%**	**83%**	**88,840,041**	**100%**

[a]Building shell measure quantities are reported in number of projects for Multifamily Whole Building Projects and in square feet for Existing Homes Measures.

Table 2-2: Total Program Savings 2023

Measure Category	Qty	Claimed Savings (kWh)	Gross Evaluated Savings (kWh)	Realization Rate	NTG	Net Evaluated Savings (kWh)	% of Net Evaluated Program Savings
Multifamily Whole Building Projects	**224**	**25,118,830**	**25,132,892**	**100.1%**	**84%**	**21,085,058**	**52%**
Whole Building	110	15,506,002	15,509,224	100.0%	76%	11,815,679	29%
HVAC	88	9,413,132	9,424,034	100.1%	97%	9,114,162	23%
Lighting	22	193,973	193,949	100.0%	77%	149,533	0.4%
Building Shell[a]	3	4,488	4,457	99.3%	100%	4,457	0.01%
Appliances	1	1,236	1,227	99.3%	100%	1,227	0.003%
Existing Homes Measures	**1,898,010**	**20,730,707**	19,199,761	92.6%	85%	**16,302,080**	**40%**
HVAC	19,906	18,658,194	17,855,193	95.7%	84%	15,033,923	37%
Transportation	1,021	1,573,361	845,416	53.7%	94%	792,890	2%
Building Shell[a]	1,876,703	422,794	422,795	100.0%	95%	402,553	1%
Water Heating	35	49,945	49,945	100.0%	95%	47,562	0.1%
Energy Kits	316	23,644	23,644	100.0%	95%	22,516	0.1%
Appliances	16	2,209	2,209	100.0%	95%	2,104	0.01%
Lighting	8	388	388	100.0%	95%	369	0.001%
Electronics	5	171	171	100.0%	95%	162	0.0004%
New Homes Program	**5,365**	**4,238,558**	**4,165,079**	**98.3%**	**73%**	**3,040,508**	**8%**
Whole Building	3,472	2,627,805	2,605,372	99.1%	73%	1,901,922	5%
HVAC	1,884	1,585,265	1,534,218	96.8%	73%	1,119,980	3%
Water Heating	9	25,488	25,488	100.0%	73%	18,606	0.05%
Total	**1,903,599**	**50,088,095**	**48,497,732**	**96.8%**	**83%**	**40,427,646**	**100%**

[a]Building shell measure quantities are reported in number of projects for Multifamily Whole Building Projects and in square feet for Existing Homes Measures.

Table 2-3: Total Program Savings 2024

Measure Category	Qty	Claimed Savings (kWh)	Gross Evaluated Savings (kWh)	Realization Rate	NTG	Net Evaluated Savings (kWh)	% of Net Evaluated Program Savings
Multifamily Whole Building Projects	**211**	**27,518,133**	**27,539,146**	**100.1%**	**83%**	**22,852,262**	**47%**
Whole Building	101	17,658,167	17,667,792	100.1%	74%	13,107,744	27%
HVAC	84	9,091,738	9,101,714	100.1%	99%	9,055,600	19%
Building Shell[a]	7	361,419	361,127	99.9%	97%	349,574	0.7%
Lighting	9	270,588	271,885	100.5%	75%	202,718	0.4%
Water Heating	6	133,201	133,628	100.3%	100%	133,628	0.3%
Appliances	4	3,020	2,999	99.3%	100%	2,999	0.006%
Existing Homes Measures	**2,607,520**	**24,823,432**	**23,811,639**	**95.9%**	**84%**	**19,957,734**	**41%**
HVAC	19,214	24,015,895	23,053,971	96.0%	83%	19,237,421	40%
Building Shell[a]	2,587,830	563,568	563,567	100.0%	95%	536,668	1%
Transportation	100	132,672	82,803	62.4%	94%	77,658	0%
Water Heating	50	73,151	73,151	100.0%	95%	69,660	0.1%
Appliances	226	33,025	33,025	100.0%	95%	31,449	0.07%
Lighting	35	2,905	2,905	100.0%	95%	2,766	0.01%
Electronics	65	2,217	2,217	100.0%	95%	2,111	0.004%
New Homes Program	**6,063**	**7,807,168**	**7,674,520**	**98.3%**	**73%**	**5,602,399**	**12%**
Whole Building	4,142	5,307,147	5,254,228	99.0%	73%	3,835,586	8%
HVAC	1,906	2,457,547	2,377,818	96.8%	73%	1,735,807	4%
Water Heating	15	42,474	42,474	100.0%	73%	31,006	0.06%
Total	**2,613,794**	**60,148,732**	**59,025,304**	**98.1%**	**82%**	**48,412,395**	**100%**

[a]Building shell measure quantities are reported in number of projects for Multifamily Whole Building Projects and in square feet for Existing Homes Measures.

2.1 Impact Evaluation Approach

ADM completed the following steps to evaluate the program.

- Reviewed and reconciled program tracking data to the claimed energy savings reported in the 2023 and 2024 Utah Energy Efficiency and Peak Reduction Annual Reports.
- Verified that claimed savings in tracking data matched ex-ante savings as documented in the Measure Library (ML).
- Achieved a sampling precision of better than ±10 percent with 90 percent statistical confidence (“90/10 precision”) for evaluated savings estimates by measure category.

- Determined realization rates using sample analysis of measure types that contributed more than 1.0 percent of program savings (groups identified as Measure Sub Type).
- Administered surveys for the following measure types to determine net-to-gross ratios:
  - Engine block heater controllers
  - HVAC measures
- Provided comprehensive documentation and transparency for all evaluation tasks.
- Provided ongoing technical reviews and guidance throughout the evaluation cycle.

ADM's evaluation of Unit Energy Savings (UES) for each measure referenced savings values in the ML and associated reference files. ML reference files document savings values from sources such as the Regional Technical Forum (RTF) Library of Measures that is maintained by Northwest Power and Conservation Council and past RMP program evaluation reports.

For the following measure categories, ADM reviewed program data to verify that the correct measure was claimed for the documented project conditions:

- Appliances
- Building Shell
- HVAC
- Water Heating

For example, the savings for many measures are determined by the home heating and cooling systems. In these cases, ADM reviewed the home heating system documented in the program tracking data set or the supplemental data set provided by the program implementer.

When measures specify a threshold efficiency rating for an incentivized product, ADM verified product specifications using product model numbers or Air-Conditioning, Heating, and Refrigeration Institute (AHRI) certificate numbers. When ADM found that documented product specifications or baseline conditions did not match claimed savings at the record level, ADM determined which, if any, measure included in the ML accurately reflected the conditions found and recorded ex-post saving for the correct measure.

Thus, ADM's analysis verified that the evaluated program savings are an accurate reflection of the correct prescribed deemed savings for products incentivized through the program.

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.

2.2 Data Review and Verification

ADM reviewed program tracking data to evaluate the following.

- Did the tracking dataset include duplicate or erroneous data entries?
- Did claimed energy savings match the applicable ML source documents and calculations?
- Did data entries in the program dataset include all necessary fields for savings calculations?
- Did the installed measures meet efficiency requirements documented in the ML reference files?

ADM determined that the program data includes inconsistent data fields to report the quantities of installed measures across implementation partners. The primary implementation partner reported the number of measures installed in the *Number Of Trl* data field. The remaining three implementation partners reported the number of installed measures in the *Quantity* field.

2.3 Sample Design

ADM achieved a sampling precision of ±5.6 percent at the 90 percent confidence level – exceeding 90/10 precision – for evaluated savings estimates for each measure category as reported in Table 2-4.

Table 2-4: Evaluation Sampling Plan

Measure Type	Qty	Sample Size	Claimed Savings	St Dev	Mean	CV[a,b]	% of Program Savings	Relative Precision @ 90% CI[c]
Multifamily Whole Building Projects								
Projects > 1,000,000 kWh	4	2	5,575,476	336,603	1,393,869	0.24	5%	±20%
Projects > 575,000 kWh	21	3	15,059,710	125,181	717,129	0.17	14%	±15%
Projects > 295,000 kWh	32	4	13,931,176	83,081	435,349	0.19	13%	±15%
Projects > 7,9000 kWh	84	5	13,228,936	55,395	157,487	0.35	12%	±25%
Projects > 0 kWh	146	5	4,841,665	22,317	33,391	0.67	4%	±48%
Projects = 0 kWh	4	4	0	45,508	0	0.15	0%	±0%
Existing Homes Measures								
HVAC								
Dual Fuel Heat Pump	6,983	31	31,504,348	870	4,454	0.195	28.6%	±6%
Central Air Conditioner	18,555	30	4,888,916	81	263	0.306	4.4%	±9%
Evaporative Cooler	2,107	369	2,447,702	1,169	1,159	1.008	2.2%	±8%
Ductless Heat Pump	989	36	1,879,537	1,875	1,893	0.991	1.7%	±27%
Thermostat	7,534	34	1,246,237	130	165	0.786	1.1%	±22%
Air Source Heat Pump	35	0	287,463	3,871	7,371	0.525	0.3%	±100%
Resistive Heat Controls	147	0	203,850	350	1,387	0.253	0.2%	±100%
Ducted Mini Split	13	0	110,370	975	8,490	0.200	0.1%	±100%
Room AC	468	0	60,181	169	129	1.311	0.1%	±100%
Duct Sealing and/or Insulation	124	0	20,350	53	164	0.325	0.02%	±100%
Whole-House Fan	52	0	10,003	0	192	0.200	0.01%	±100%
Ground Source Heat Pump	2	0	8,554	0	4,277	0.200	0.01%	±100%
Furnace Fan	21	0	6,552	0	312	0.200	0.01%	±100%
Exhaust Fan	1	0	27	0	27	0.200	0.00002%	±100%
Transportation								
Engine Block Heater Controls	599	25	1,706,033	578	2,848	0.203	1.5%	±7%
Building Shell								
Roof/Attic Insulation	35,543	0	745,451	171	245	0.700	0.7%	±100%
Window Upgrade	1,930	0	203,243	137	140	0.978	0.2%	±100%
Wall Insulation	79	0	31,774	605	402	1.505	0.03%	±100%
Floor Insulation	17	0	5,895	559	347	1.612	0.01%	±100%

Measure Type	Qty	Sample Size	Claimed Savings	St Dev	Mean	CV[a,b]	% of Program Savings	Relative Precision @ 90% CI[c]
Water Heating								
Heat Pump Water Heater	85	0	123,096	121	1,448	0.200	0.1%	±100%
Appliances								
Clothes Dryer	42	0	20,314	36	484	0.200	0.02%	±100%
Clothes Washer	103	0	7,550	32	73	0.434	0.01%	±100%
Room Air Cleaner	15	0	3,699	116	247	0.470	0.003%	±100%
Dishwasher	67	0	2,019	2	30	0.200	0.002%	±100%
Refrigerator	8	0	1,135	0	142	0.200	0.001%	±100%
Freezer	7	0	517	0	74	0.200	0.0005%	±100%
Energy Kits								
Best Kit	57	0	15,437	0	271	0.200	0.01%	±100%
LED Kit	259	0	8,208	0	32	0.200	0.01%	±100%
Lighting								
Smart Switch	5	0	1,633	248	327	0.761	0.001%	±100%
Lighting Occupancy Sensor	13	0	1,376	127	106	1.200	0.001%	±100%
Smart Light Switch	4	0	284	0	71	00.200	0.0003%	±100%
Electronics								
Advanced Controls	23	0	2,387	79	104	0.760	0.002%	±100%
New Homes								
Whole Building-NH								
Pay for Performance	4,926	35	7,535,171	1,731	1,530	1.132	6.8%	±31%
New Homes - HERS	894	0	373,319	459	418	1.099	0.3%	±100%
New Homes - ENERGY STAR	1,794	0	26,462	61	15	4.126	0.02%	±100%
HVAC-NH								
Dual Fuel Heat Pump	441	25	3,381,307	893	7,773	0.115	3.1%	±4%
Thermostat	3,250	0	248,214	36	99	0.359	0.2%	±100%
Air Source Heat Pump	39	0	218,008	957	5,737	0.167	0.2%	±100%
Ductless Heat Pump	37	0	137,400	1,682	3,817	0.441	0.1%	±100%
Ground Source Heat Pump	7	0	55,320	0	7,903	0.200	0.1%	±100%
Central Air Conditioner	16	0	2,563	75	183	0.409	0.002%	±100%
Water Heating-NH								
Heat Pump Water Heater	24	0	67,962	0	2,832	0.200	0.1%	±100%
Total	**87,750**	**645**	**110,236,828**	**21,992**	**2,037**	**10.797**	**100.0%**	**±5.6%**

[a]Coefficient of variance [b]In order to calculate program-level relative precision, ADM used a conservative floor CV value of 0.2 for low-impact strata (measure types) to reflect the nature of a deemed savings analysis which detects little variation. [c]Confidence interval. Note that a low relative precision (RP) value reflects higher certainty, and a high RP reflects lower certainty. This sampling plan reflects low RPs for high-impact measure types and higher RPs for low-impact measure types that contributed <1% to program savings. The 9% program-level RP meets 90/10 precision requirement for evaluated savings estimates.

Additionally, a sample of RMP residential customers who received incentives for HVAC measures or Engine Heater Controllers were surveyed. ADM invited New Homes program participants both by email and phone, though only two responded. See Table 2-5 for survey participation.

Table 2-5: 2023-2024 Utah Survey Sample Response Rates

Survey	Number of Survey Invitations Sent	Number of Completed Surveys	Response Rate
Engine Block Heater Control Survey	306	19	6%
HVAC Customer Survey			
Smart Thermostats	5,902	510	9%
Heat Pumps	6,759	793	12%
Evaporative Cooler	38	3	8%
New home builders	147	2	1%

2.4 Determination of Impact Methodology

ADM completed both gross and net impact analyses for measure categories that contributed more than 1 percent to program savings.

2.4.1 Gross Impacts

Table 2-6 shows the methodology used to calculate evaluated savings for each measure category. The primary source of savings values was the ML along with reference files included in the ML. Other sources included energy model outputs and participants surveys.

Table 2-6: Gross Impact Evaluation Methodology by Measure Type

Measure Category	Impact Evaluation Methodologies	Inputs to Evaluated Savings
Multifamily building projects	Desk Review	• Project documentation, energy model outputs
HVAC	UES Review	• Savings values from ML reference files • Model specifications (from model or AHRI #s) • Program tracking data (for home type) • Supplemental data from implementer (for baseline condition)
Transportation	UES Review	• Savings values from ML reference files • Participant survey results (for ISRs, HOUs, mode) • Weather data

Measure Category	Impact Evaluation Methodologies	Inputs to Evaluated Savings
New Homes	UES Review	• Home energy modeling outputs • Model specifications (from model or AHRI #s)
Low-impact measure types	Pass Through	• Savings values from ML

2.4.2 Net-to-Gross Ratios

Net-to-gross is a metric used in energy efficiency program evaluations to quantify the savings achieved by program participants compared to what would have occurred without the program. It provides insight into the effectiveness of the program in promoting energy efficiency. Net-to-gross calculation methodologies used to estimate free-ridership and spillover savings are included in the following sections for specific measure categories.

2.5 Multifamily Whole Building Projects

RMP offered customers financial incentives to install energy efficient measures in new and retrofitted multifamily projects during 2023-2024. Multifamily project rebates were managed by implementation contractor ICAST.

Multifamily projects included savings generated from whole building measures and prescriptive measures from the following categories: HVAC, lighting, building shell, appliances and water heating. All savings claimed from multifamily projects were evaluated using a stratified sample plan.

Energy savings for prescriptive measures were calculated using a savings calculator maintained by ICAST that draws from the Illinois Technical Reference Manual and Missouri TRM. Savings for whole buildings were calculated using energy modeling software applications.

ADM reviewed the prescriptive measure energy calculator, as well as its inputs and assumptions. For energy modeled measures, ADM reviewed model parameters and project inputs to verify that they accurately reflected the building specifications, as well as matched an agreed upon baseline model using 2015 IECC standards.

Multifamily projects resulted in a total of 43,937,320 kWh of net evaluated savings. Multifamily projects accounted for 50 percent of total net evaluated program savings, with a 100.1 percent realization rate and an 83 percent NTG ratio. Multifamily project savings results are reported in Table 2-7 through Table 2-9.

Table 2-7: Multifamily Project Savings 2023-2024

Measure Category	Quantity	Claimed Savings (kWh)	Gross Evaluated Savings (kWh)	Realization Rate	NTG	Net Evaluated Savings (kWh)
Whole Building						
Whole Building	211	33,164,168	33,177,016	100%	75%	24,923,423
Other Measure Categories						
HVAC	172	18,504,869	18,525,749	100%	98%	18,169,762
Building Shell	10	365,907	365,584	100%	97%	354,030
Lighting	31	464,561	465,835	100%	76%	352,250
Water Heating	6	133,201	133,628	100%	100%	133,628
Appliances	5	4,256	4,227	99%	100%	4,227
Total	**435**	**52,636,963**	**52,672,037**	**100%**	**83%**	**43,937,320**

Table 2-8: Multifamily Project Savings 2023

Measure Category	Qty	Claimed Savings (kWh)	Gross Evaluated Savings (kWh)	Realization Rate	NTG	Net Evaluated Savings (kWh)
Whole Building						
Whole Building	110	15,506,002	15,509,224	100%	76%	11,815,679
Other Measure Categories						
HVAC	88	9,413,132	9,424,034	100%	97%	9,114,162
Lighting	22	193,973	193,949	100%	77%	149,533
Building Shell	3	4,488	4,457	99%	100%	4,457
Appliances	1	1,236	1,227	99%	100%	1,227
Total	**224**	**25,118,830**	**25,132,892**	**100%**	**84%**	**21,085,058**

Table 2-9: Multifamily Project Savings 2024

Measure Category	Qty	Claimed Savings (kWh)	Gross Evaluated Savings (kWh)	Realization Rate	NTG	Net Evaluated Savings (kWh)
Whole Building						
Whole Building	101	17,658,167	17,667,792	100%	74%	13,107,744
Other Measure Categories						
HVAC	84	9,091,738	9,101,714	100%	99%	9,055,600
Building Shell	7	361,419	361,127	100%	97%	349,574
Lighting	9	270,588	271,885	100%	75%	202,718
Water Heating	6	133,201	133,628	100%	100%	133,628
Appliances	4	3,020	2,999	99%	100%	2,999
Total	**211**	**27,518,133**	**27,539,146**	**100%**	**83%**	**22,852,262**

2.5.1 A Note about Fuel Substitution Heat Pumps

ADM notes that RMP claims energy savings attributable to heat pumps which replace existing and functional gas furnaces, as allowed by Utah statute through H.B. 326 (2020 General Session). Energy savings attributable to heat pumps with fuel substitution includes gas savings. Fuel substitution evaluated savings from dual fuel heat pumps or heat pumps which replace existing and functional gas furnaces, includes a conversion of gas savings to kWh. RMP considers that H.B. 326 allows all attributable energy savings, including gas savings, to be reported in units of kWh.

2.5.2 Sampling Plan

ADM achieved a sampling precision of ±10 percent or better at the 90 percent confidence level – or 90/10 precision – for multifamily projects by using a stratified sampling plan shown in Table 2-10. Strata 1 through 5 were defined by ranges of claimed savings for unique projects. Stratum 1 contains projects with the highest per-project savings; stratum 5 contains projects with the lowest per-project savings.

Table 2-10: Multifamily Sampling Plan 2023-2024

Strata	Number of Projects	Sample Size	Claimed Savings	St Dev	Mean	CV	% of Program Savings	Relative Precision
Projects > 1,000,000 kWh	4	2	5,575,476	336,603	1,393,869	0.24	10.6%	±0.20
Projects > 575000 kWh	21	4	15,059,710	125,181	717,129	0.17	28.6%	±0.13
Projects > 295,000 kWh	32	5	13,931,176	83,081	435,349	0.19	26.5%	±0.13
Projects > 7,9000 kWh	84	8	13,228,936	55,395	157,487	0.35	25.1%	±0.19
Projects > 0 kWh	146	5	4,841,665	22,317	33,391	0.67	9.2%	±0.54
Totals	**287**	**24**	**52,636,963**				**100%**	**±8.86%**

[a]This stratum included two projects that were removed from program results with reconciliation transaction that records that reversed claimed savings. These projects were isolated in this stratum so they would not impact other strata results.

2.5.3 Verification of Tracking Data

ADM reviewed program tracking data to verify that it did not include duplicate entries and to confirm that claimed savings matched savings documented in the ML.

2.5.4 Review of Claimed Savings

ADM reviewed tracking data to determine if tracking data accurately reflect savings estimates made by project calculators or energy models and reviewed incentivized product specifications to verify that they met measure eligibility requirements.

2.5.5 Determination of Evaluated Savings

ADM reviewed energy models and savings calculators to determine if inputs, assumptions, and calculations were appropriate. ADM adjusted ex-ante calculations to determine ex-post savings for sampled projects.

Project savings and realization rates were determined for each stratum of the data sample. The realization rate determined for the stratum was then applied to all projects in the stratum.

A description of each adjustment that ADM made is included below. Table 2-11 indicates which adjustments were made for each sampled project.

Calculation adjustments by project

Table 2-11 indicates which of these adjustments were made for each reviewed project.

Table 2-11: Project Level Realization Rates

External Project Id	Strata	Ex-Ante Savings (kWh)	Ex-Post Savings (kWh)	Realization Rate	Adjustments Made in Savings Calculations
HESUT_499068	1	1,049,467	1,049,467	100%	No difference
HESUT_507311	1	1,764,208	1,764,208	100%	No difference
HESUT_471262	2	891,233	891,233	100%	No difference
HESUT_479533	2	804,570	804,570	100%	No difference
HESUT_501107	2	648,496	648,496	100%	No difference
HESUT_507303	2	730,255	730,255	100%	No difference
HESUT_465362	3	519,600	519,600	100%	No difference
HESUT_475336	3	530,906	531,158	100%	No difference
HESUT_484566	3	574,957	574,957	100%	No difference
HESUT_502319	3	347,123	347,123	100%	No difference
HESUT_512283	3	573,677	573,677	100%	No difference
HESUT_471258	4	191,806	188,353	98%	Small modeling differences
HESUT_496239	4	90,682	90,682	100%	No difference
HESUT_508117	4	176,646	176,646	100%	No difference
HESUT_508119	4	240,284	242,730	101%	Difference in derating baseline
HESUT_508909	4	155,283	155,283	100%	No difference
HESUT_508912	4	145,517	145,517	100%	No difference
HESUT_508913	4	150,524	158,764	105%	Difference in derating baseline
HESUT_512285	4	263,314	263,314	100%	No difference
HESUT_493426	5	17,473	17,473	100%	No difference
HESUT_499527	5	45,312	45,312	100%	No difference
HESUT_501106	5	61,433	61,433	100%	No difference
HESUT_507307	5	58,101	58,101	100%	No difference
HESUT_508915	5	33,834	32,317	96%	Small modeling differences
HESUT_467582	6	48,006	48,006	100%	No difference
HESUT_469286	6	28,318	28,318	100%	No difference
HESUT_509502	6	(48,006)	(48,006)	100%	No difference
HESUT_509503	6	(28,318)	(28,318)	100%	No difference

ADM calculated the realization rate for each stratum based on sample evaluation results. The realization rate for the stratum was applied to all projects in the stratum as reported in Table 2-12.

Table 2-12: Program and Strata Level Realization Rates

Sampling Strata	Sum of Ex-Ante kWh Savings	Sum of Ex-Post kWh Savings	Realization Rate
1	5,575,476	5,575,476	100%
2	15,059,710	15,059,708	100%
3	13,931,176	13,932,552	100%
4	13,228,936	13,296,605	101%
5	4,841,665	4,807,696	99%
Totals	**52,636,963**	**52,672,037**	**100%**

2.5.6 Discussion of Realization Rates

The savings calculation adjustments are explained below.

HESUT_471258: Savings were estimated using REM/Rate energy modeling software. ADM found that window U-Values and solar heat gain coefficients did not match as-built program documentation. Adjustments to these model inputs lowered realization rate. Ex-ante heat pump SEER values were conservative compared to as-built specifications. However, this can be due to specific configuration changes and so were left as is.

HESUT_508119: This site included prescriptive measures. ADM found that the baseline air conditioning unit was not derated for its age. This was corrected and led to a slight increase in savings, leading to a higher realization rate.

HESUT_508913: This site included prescriptive measures. ADM found that the baseline air conditioning unit was not derated for its age. This was corrected and led to a slight increase in savings, leading to a higher realization rate.

HESUT_508915: Savings were estimated using REM/Rate energy modeling software. The user defined reference home (UDRH) used to calculate claimed savings had small baseline variances from the as-build project including building envelope values and gas baseline efficiencies. ADM modified the UDRH to reflect these changes which resulted in slightly lower annual kWh savings.

2.5.7 Net-to-Gross Ratio

Separate NTG ratios were determined for low-income and market rate multifamily projects. An NTG ratio of 100 percent was applied to low-income multifamily projects reflecting that customers with economic hardships were not likely to install energy efficient measures in the absence of the program.

No program participants completed a 2025 builders survey that was provided to program implementation partners to integrate into the project completion process. Therefore, ADM used NTG ratio of 72 percent for market rate multifamily projects calculated using 2023 builders survey responses and phone interviews using the process described below.

Free ridership

ADM included responses from the 2021-2022 and 2019-2020 evaluation surveys. A total of 15 builders provided NTG input. Free ridership of 28 percent was determined for multifamily project responses and 27 percent for single family projects using the process illustrated in Figure 2-1

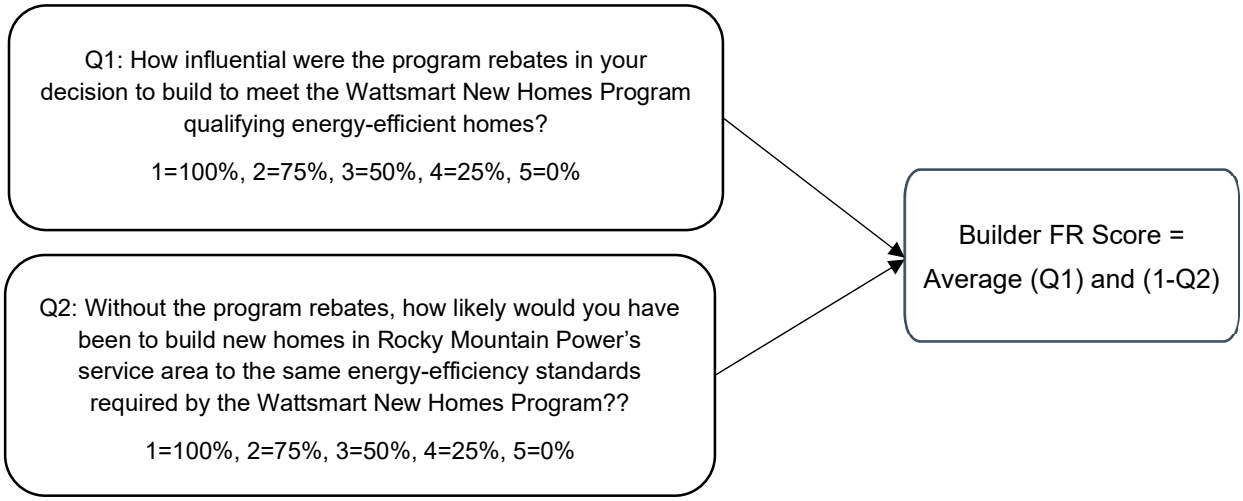

Figure 2-1: Ridership Score Determination

2.6 Heating, Ventilation, and Air Conditioning (HVAC)

RMP offered customers financial incentives to install energy efficient HVAC measures in existing single-family and manufactured homes during 2023-2024. HVAC measures included heat pumps, air conditioners, evaporative coolers, smart thermostats, ventilation fans, controls, and duct sealing. Dual fuel heat pumps contributed 74 percent of gross evaluated HVAC savings.

ADM reviewed product specifications based on model numbers and reviewed baseline heating and cooling systems provided as supplementary data by the program implementer.

A total of 39,120 HVAC measures were incentivized, resulting in 34,271,344kWh of net evaluated savings. HVAC measures accounted for 39 percent of total net evaluated program savings, with a 96 percent realization rate and an 84 percent NTG ratio. HVAC measure savings results are reported in Table 2-13 through Table 2-15.

Table 2-13: HVAC Savings 2023-2024

Measure Type	Qty	Claimed Savings (kWh)	Gross Evaluated Savings (kWh)	Realization Rate	NTG	Net Evaluated Savings (kWh)
Heat Pump						
Dual Fuel Heat Pump	6,971	31,504,348	30,466,402	97%	82%	24,916,800
Ductless Heat Pump	986	1,879,537	1,847,159	98%	82%	1,510,414
Air Source Heat Pump	35	287,463	287,463	100%	95%	273,276
Ducted Mini Split	13	110,370	110,370	100%	95%	105,103
Ground Source Heat Pump	2	8,554	8,554	100%	95%	8,146
Cooling						
Central Air Conditioner	18,555	4,888,916	4,415,425	88%	100%	4,307,782
Evaporative Cooler	3,563	2,447,702	2,449,138	100%	82%	1,999,925
Room AC	1,131	60,181	60,181	100%	95%	57,217
Controls and Thermostats						
Thermostat	7,515	1,246,237	1,131,335	91%	76%	863,388
Resistive Heat Controls	151	203,850	203,850	100%	95%	194,123
Ducting						
Duct Sealing and/or Insulation	124	20,350	20,349	100.0%	95%	19,378
Ventilation						
Whole-House Fan	52	10,003	10,003	100%	95%	9,525
Furnace Fan	21	6,552	6,552	100%	95%	6,239
Exhaust Fan	1	27	27	100%	95%	26
Total	**39,120**	**42,674,089**	**40,909,164**	**96%**	**84%**	**34,271,344**

Table 2-14: HVAC Program Savings 2023

Measure Type	Qty	Claimed Savings (kWh)	Gross Evaluated Savings (kWh)	Realization Rate	NTG	Net Evaluated Savings (kWh)
Heat Pump						
Dual Fuel Heat Pump	2,815	13,158,827	12,725,297	97%	82%	10,406,096
Ductless Heat Pump	431	847,537	832,936	98%	82%	681,310
Air Source Heat Pump	19	164,677	164,677	100%	95%	156,761
Ducted Mini Split	11	92,239	92,239	100%	95%	87,838
Cooling						
Central Air Conditioner	9,899	2,501,002	2,258,780	88%	100%	2,203,714
Evaporative Cooler	1,929	1,046,456	1,047,070	100%	82%	855,020
Room AC	1,003	53,370	53,370	100%	95%	50,739
Controls and Thermostats						
Thermostat	3,646	631,206	573,009	91%	76%	437,337
Resistive Heat Controls	114	153,900	153,900	100%	95%	146,556
Ventilation						
Whole-House Fan	23	4,424	4,424	100%	95%	4,213
Furnace Fan	9	2,808	2,808	100%	95%	2,674
Ducting						
Duct Sealing and/or Insulation	7	1,748	1,748	100%	95%	1,664
Total	**19,906**	**18,658,194**	**17,855,193**	**96%**	**84%**	**15,033,923**

Table 2-15: HVAC Program Savings 2024

Measure Type	Qty	Claimed Savings (kWh)	Gross Evaluated Savings (kWh)	Realization Rate	NTG	Net Evaluated Savings (kWh)
Heat Pump						
Dual Fuel Heat Pump	4,156	18,345,521	17,741,105	97%	82%	14,510,704
Ductless Heat Pump	555	1,032,000	1,014,222	98%	82%	829,104
Air Source Heat Pump	16	122,786	122,786	100%	95%	116,515
Ducted Mini Split	2	18,131	18,131	100%	95%	17,265
Ground Source Heat Pump	2	8,554	8,554	100%	95%	8,146
Cooling						
Central Air Conditioner	8,656	2,387,914	2,156,645	88%	100%	2,104,068
Evaporative Cooler	1,634	1,401,245	1,402,068	100%	82%	1,144,905
Room AC	128	6,811	6,811	100%	95%	6,478
Controls and Thermostats						
Thermostat	3,869	615,031	558,325	91%	76%	426,051
Resistive Heat Controls	37	49,950	49,950	100%	95%	47,566
Ducting						
Duct Sealing and/or Insulation	117	18,602	18,602	100%	95%	17,714
Ventilation						
Whole-House Fan	29	5,578	5,578	100%	95%	5,312
Furnace Fan	12	3,744	3,744	100%	95%	3,565
Exhaust Fan	1	27	27	100%	95%	26
Total	**19,214**	**24,015,895**	**23,053,971**	**96%**	**83%**	**19,237,421**

2.6.1 Verification of Tracking Data

ADM reviewed program tracking data to verify that it did not include duplicate entries and to confirm that claimed savings matched savings documented in the ML.

2.6.2 Review of Claimed Savings

ADM reviewed incentivized product specification and baseline conditions to verify that they met measure eligibility requirements. When product specifications or baseline conditions did not meet measure requirements, ADM identified an alternative qualifying measure whenever possible.

Heat Pumps

ADM reviewed AHRI certificate numbers and baseline heating and cooling system data to determine if incentivized measures met eligibility requirements documented in the ML.

Central Air Conditioner

ADM reviewed outside unit model numbers for efficiency specifications. Project documentation did not include inside unit model numbers or installation zip code, both of which are required to definitively determine if incentivized measures meet eligibility requirements as documented in the ML.

Central Air Conditioner incentives were provided through a midmarket distribution channel with trade allies who did not provide customer address or inside unit or furnace model numbers. To verify if a specific outdoor model met eligibility requirements, the implementer pulled a list of all matched systems for the specific outdoor model number from the AHRI database. If 40 percent or more of the AHRI matches met the minimum efficiency for the manufacturer-rated seer, the implementer approved the model number. Models with fewer than 40 percent of matches meeting the threshold were assigned to a lower tier or were disqualified from receiving incentives if it fell below the minimum efficiency threshold for the lowest incentive.

ADM used this same process to review each outdoor model number.

Evaporative Cooler

ADM reviewed evaporative cooler specifications by model numbers to determine if incentivized measures met eligibility requirements documented in the ML.

Thermostat

ADM reviewed model numbers and heating and cooling systems to determine if incentivized measures met eligibility requirements as documented in the ML.

2.6.3 Determination of Evaluated Savings

Evaluated savings equal the UES documented in the ML for the correct measure identified using program data and supplemental data, multiplied by the quantity indicated in the program data.

2.6.4 Discussion of Realization Rates

The following findings resulted in a 96 percent realization rate for the HVAC measure category.

Heat Pumps

ADM reviewed a sample of 67 heat pump records. One record resulted in no savings because the baseline requirements were not met, and no eligible measure was included

in the ML. Another claimed measure did not meet efficiency requirements. ADM's review resulted in a 97 percent realization rate for heat pumps.

Central Air Conditioners

ADM sampled 30 records to verify that the outdoor unit model number was rated up to the efficiency standard. Additionally, ADM sampled 20 records to determine if at least 40 percent of possible matches with inside units would meet efficiency standards. In three cases, less than 40 percent of pairings listed by AHRI met the measure eligibility requirements. Two cases qualified for a lower tier level. One case did not meet any measures' eligibility requirements. The resulting realization rate for central air conditioners was 88 percent.

Thermostats

ADM conducted a desk review on a sample of 34 thermostat records. Four records resulted in reduced savings because the claimed measure heating and cooling system requirements were not met. ADM identified corrected measures for each record. ADM's review resulted in a 91 percent realization rate for thermostats.

Evaporative Coolers

ADM conducted a desk review of 1,298 records and found three for which additional savings could be claimed. The resulting realization rate for evaporative coolers was 100.4 percent.

2.6.5 Net-to-Gross Ratio

Heat pumps and smart thermostats

ADM surveyed[1] a sample of program participants (n=793) to determine the net-to-gross ratio for heat pump and smart thermostat program offerings. ADM's survey determined free ridership and spillover rates separately for heat pumps and thermostats. Only three customers who received incentives for evaporative coolers responded to the survey. Therefore, ADM could not calculate a NTG value specifically for evaporative coolers. Instead, weighted average of NTGs for heat pumps and thermostats was used as a proxy value for evaporative coolers.

Free ridership estimates the percentage of participants who would have installed the measure if they had not received a discount for through the program. Spillover estimates the percentage of additional measures that participants installed without an incentive because of the influence of participation. Net-to-gross is calculated using Equation 2-1 as shown in Table 2-16.

[1] ADM conducted an online survey in January 2025. Participant received up to 4 emailed invitations to complete the survey.

Equation 2-1: Net-to-Gross Ratio Calculation

$$NTG = 1 - Free\ Ridership + Spillover$$

Table 2-16: HVAC NTG Ratios

Measure Category	Free ridership	Spillover	NTG Ratio
Heat Pumps	22%	4%	82%
Thermostats	27%	4%	77%
Evaporative coolers			82%

Free Ridership

Free ridership was determined through HVAC customer survey responses using the process illustrated in Figure 2-2. The first question included the value of the incentive that the customer received.

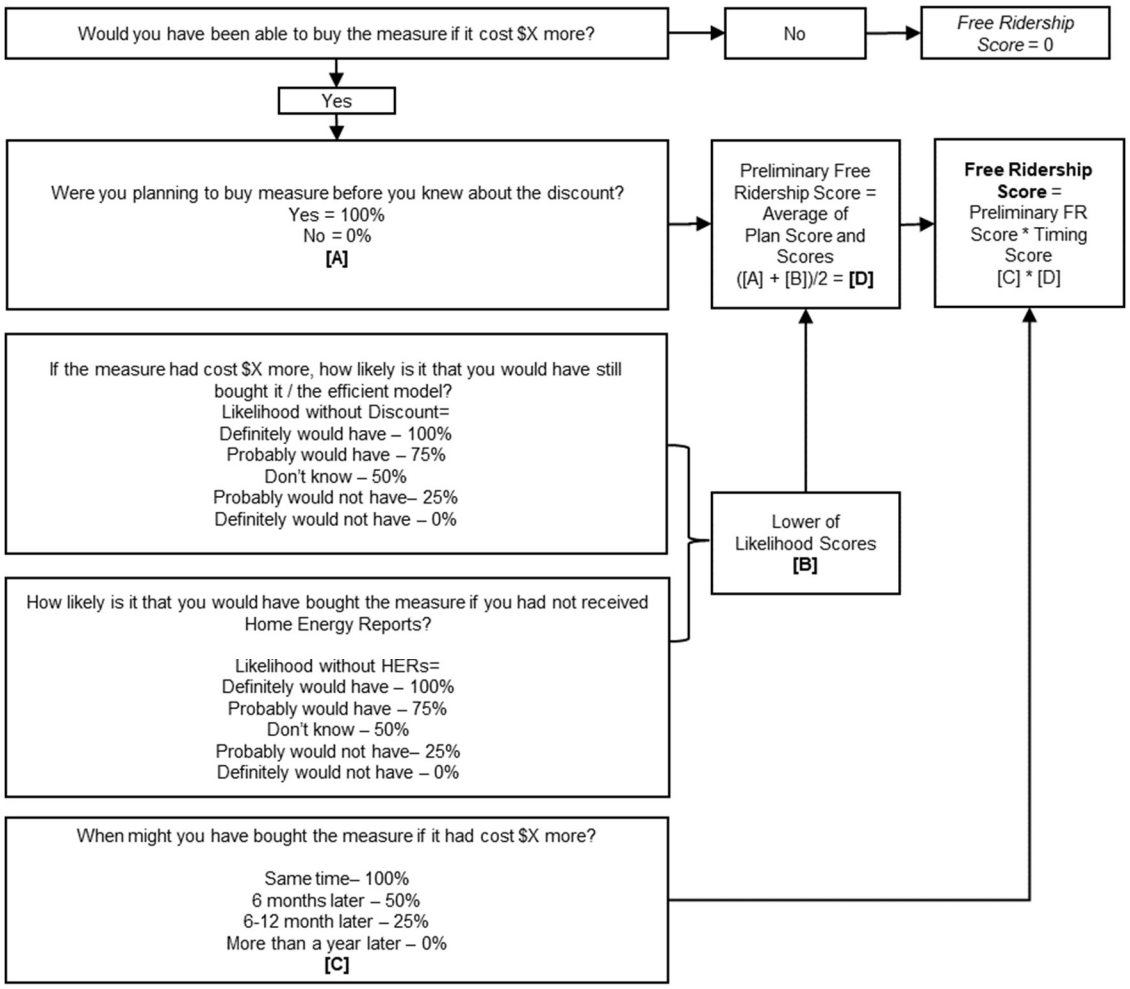

Figure 2-2: HVAC Free Ridership Determination

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 the discount you received on the [HVAC Measure] in your decision to buy the additional energy-saving product?

SO2: If you had not received a discount on the [HVAC Measure], how likely is it that you would still have purchased and installed the additional energy saving product(s)?

Responses were collected using a 5-point Likert Scale evaluating program influence on installing additional energy saving measures. The spillover score is the average of the responses to the two questions (see Equation 2-2).

Equation 2-2: Spillover Score for Installed Measures

$$Spillover\ Score\ =\ Average(SO1, 6 - SO2)$$

Central Air Conditioners

Claimed savings for midstream central air conditioners, as documented in the ML, uses market practice, rather than building code, as baseline efficiency. In ADM's judgment, the market practice baseline captures an estimate of savings that would have resulted in the absence of the program. Therefore, ADM used an NTG of 1.0 for central air conditioner measures.

Other HVAC Measures

For measure types that contributed less than one percent of claimed savings, a program-wide weighted average was used.

2.7 Transportation

RMP offered free engine block heater controllers at special events and offered post-purchase rebates for controllers during 2023-2024. Program data included records for 1,121 controllers resulting in total net evaluated savings of 870,549 kWh. Transportation measures accounted for 1 percent of total net evaluated program savings, with a 54 percent realization rate and a 94 percent NTG ratio. Transportation measure category savings are reported in Table 2-17.

Table 2-17: Transportation Savings by Year 2023-2024

Year	Quantity	Total Claimed Savings (kWh)	Total Gross Evaluated Savings (kWh)	Realization Rate	NTG	Total Net Evaluated Savings (kWh)
2023	1,021	1,573,361	845,416	54%	94%	792,890
2024	100	132,672	82,803	62%	94%	77,658
Total	**1,121**	**1,706,033**	**928,219**	**54%**	**94%**	**870,549**

2.7.1 Review of Claimed Savings

ADM evaluated the UES values claimed by RMP to verify that claimed savings in each record were supported by the applicable ML documents for the claimed measure. Savings values reported in the tracking data matched the values reported in reference files included in the ML for the claimed measures.

Two versions of the measure were included in the program tracking data. The earlier measure version used an ex-ante UES based on a measure provided by the RFT. Ex-ante savings for a later version of the measure is based on an updated analysis provided in the 2021-2022 Utah Wattsmart Homes program evaluation.

2.7.2 Determination of Evaluated Savings

To determine the evaluated UES, ADM used the methodology used by RTF with verified variable values. ADM summed the consumption for each hour that the engine block heater is in use during the year both with and without the controller. The annual savings equals the sum of the baseline hourly consumption of the engine block heater minus the sum of the hourly consumption using the controller (the efficient condition).

The following ex-ante variables were used to calculate evaluated savings.

Weather Data

ADM calculated evaluated savings using TMY3 hourly weather data from Salt Lake City, UT to determine which hours of the year the heater is on when using the controller in each operating mode.

Savings Curves

The savings algorithm programmed into the controller determines the percentage of time the heater is turned on at any given ambient temperature; warmer temperatures require the heater to be on a smaller percentage of time to keep the engine warm.

ADM used the algorithms programmed into the specific model controller distributed through the program. The model has two operating modes, maintain ready and timed ready. In both modes, the controller turns the heater on only when temperatures are below a set point (39°F) and modulates the percentage of power used based on the temperature; the heater is used at a higher rate at lower ambient temperatures.

In maintain ready mode, the heater strength is modulated based on the ambient temperature (see Figure 2-3).

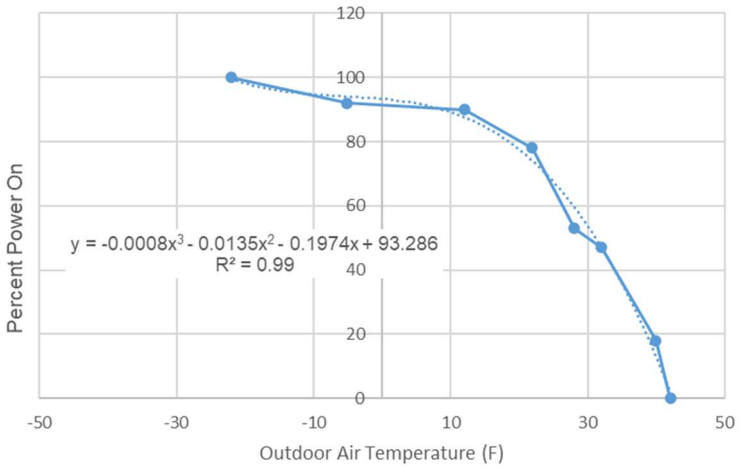

Figure 2-3: Maintain Ready Control Settings[2]

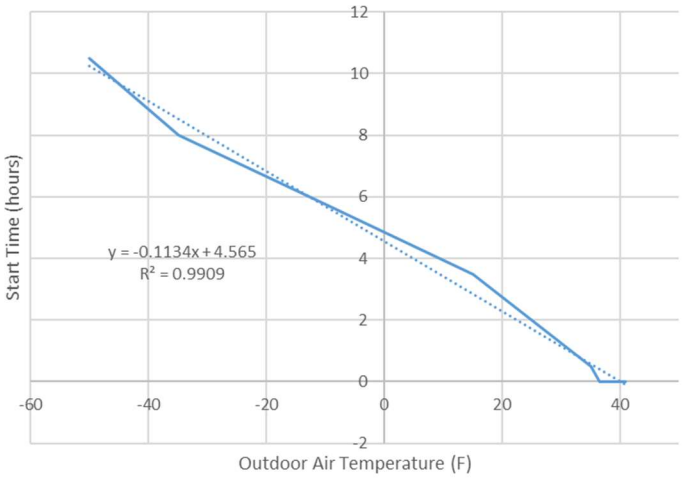

Figure 2-4: Timed Ready Control Settings[2]

In timed ready mode, the algorithm determines how many hours the heater will be on at full power before the specified ready time (see Figure 2-4).

Operating Mode

ADM surveyed customers who received controllers to determine the percentage of controller users who use each operating mode. ADM determined the percentage of users selecting each operating mode from survey responses.

[2] Source: Bostic Motors Inc.

Table 2-18: Customer Reported Operating Mode

Maintain Ready	Timed Ready
29%	71%

Plug-in Time

ADM surveyed customers to determine the percentage of customers who used their engine block heater for each hour of the day during cold-weather months to determine baseline plug-in time, as reported in Table 2-19.

Table 2-19: Percentage of Engine Block Heaters Plugged In During Each Hour of the Day

Hour Starting	Ex-post % of users who reported using heater
12:00 AM	86%
1:00 AM	86%
2:00 AM	86%
3:00 AM	87%
4:00 AM	87%
5:00 AM	89%
6:00 AM	92%
7:00 AM	92%
8:00 AM	13%
9:00 AM	7%
10:00 AM	3%
11:00 AM	3%
12:00 PM	3%
1:00 PM	3%
2:00 PM	3%
3:00 PM	3%
4:00 PM	3%
5:00 PM	75%
6:00 PM	75%
7:00 PM	76%
8:00 PM	77%
9:00 PM	79%
10:00 PM	80%
11:00 PM	86%

Evaluated UES

ADM calculated evaluated savings as reported in Table 2-20 and Table 2-21.

Table 2-20: Ex-post Weighted Average Engine Block Heater Controller

	Baseline consumption (kWh)	Maintain-ready mode	Timed-ready mode	Weighted Average Savings (kWh)
Participant Use		29%	71%	
Consumption (kWh)	1,558	826	225	
Savings		732	1,334	1,159

Table 2-21: Ex-post Engine Block Heater Controller UES

Measure	Ex-post UES (kWh)	ISR	Gross Evaluated UES (kWh)	NTG	Net Evaluated UES (kWh)
Revised Engine Block Heater Controller	1,159	71%	828	94%	777

To determine ISR, customers were asked to confirm how many controllers they received and how many of the controllers they received were in use.

2.7.3 Net-to-Gross Determination

To determine a net-to-gross ratio for controllers, the survey[3] asked questions to determine if customers who received free or discounted controllers would have purchased them in the absence of the program.

Fifteen percent of customers were aware of Engine Block Heater Controllers before they received them at an event or learned about the rebate (see Table 2-22).

Table 2-22: Before receiving the engine block heater controller or the rebate from Rocky Mountain Power, did you know that controllers were available for engine block heaters?

Answer	%	Count
Yes	15%	14
No	85%	77
Total	**100%**	**91**

Sixty-four percent of customers who were aware of the controllers before receiving one reported that they *likely would not have* or *definitely would not have* bought the controller

[3] Survey results collected from all three RMP states were included in the NTG analysis.

in the absence of the program. Twenty-nine percent indicated that they *likely would have* purchased the controller anyway. See Table 2-23.

Table 2-23: If you had not received the engine block heater controller or the rebate from Rocky Mountain Power, would you have purchased one anyway?

Answer	% (n=14)	FR score
Definitely would not have (FR=0.0)	0%	0.00
Likely would not have (FR=0.25)	64%	0.17
Likely would have (FR=0.75)	29%	0.23
Definitely would have (FR=1)	0%	0.00
Weighted Total		**0.38**

Free Ridership was calculated using the following equation.

*Free Ridership = % Measure Awareness * Free Ridership Score*
*0.15 * 0.38 = 0.06*

No spillover was identified. Net-to-Gross ratio was calculated using the following equation:

1 – Free Ridership = Net to Gross ratio
1 – 0.04 = 0.94

2.8 Low-Impact Measures

The following low-impact measure categories each generated 1 percent or less of total program claimed savings during 2023-2024:

- Building Shell (Insulation, Windows)
- Heat Pump Water Heaters
- Appliances (Clothes Washers, Clothes Dryers, Room Air Cleaners, Dishwashers, Refrigerators, Freezers)
- Energy Kits
- Lighting (Smart Light Switches, Occupancy Sensors)
- Electronics (Smart Plugs)

Because of the small contribution these measures made to program savings, the realization rate was assumed to be 100 percent and a program-wide NTG ratio was applied. Low-impact measure categories collectively accounted for 1.3 percent of total net evaluated program savings. ADM used a 95 percent NTG ratio for low-impact measures. This was used as a program-wide NTG equal to the weighted average of

high-impact, existing single-family home measure types. Low-impact measure categories savings are reported in Table 2-24 through Table 2-26.

Table 2-24: 2023-2024 Low Impact Measure Category Program Results

Measure Category	Qty	Total Claimed Savings (kWh)	Total Gross Evaluated Savings (kWh)	RR[b]	NTG	Total Net Evaluated Savings (kWh)	% Program Net Evaluated Savings
Building Shell[a]	4,464,533	986,362	986,362	100%	95%	939,221	1.1%
Water Heating	85	123,096	123,096	100%	95%	117,222	0.1%
Appliances	242	35,234	35,234	100%	95%	33,553	0.04%
Energy Kits	316	23,644	23,644	100%	95%	22,516	0.03%
Lighting	43	3,293	3,293	100%	95%	3,136	0.004%
Electronics	70	2,387	2,387	100%	95%	2,273	0.003%
Total	**4,465,289**	**1,174,017**	**1,174,017**	**100%**	**95%**	**1,117,921**	**1.3%**

[a]Building shell quantities are reported in Square Feet to calculate savings. [b]Realization Rate

Table 2-25: 2023 Low Impact Measure Category Program Results

Measure Category	Qty	Total Claimed Savings (kWh)	Total Gross Evaluated Savings (kWh)	RR[b]	NTG	Total Net Evaluated Savings (kWh)	% Program Net Evaluated Savings
Building Shell	1,876,703	422,794	422,795	100%	95%	402,553	1%
Water Heating	35	49,945	49,945	100%	95%	47,562	0.1%
Energy Kits	316	23,644	23,644	100%	95%	22,516	0.1%
Appliances	16	2,209	2,209	100%	95%	2,104	0.01%
Lighting	8	388	388	100%	95%	369	0.001%
Electronics	5	171	171	100%	95%	162	0.0004%
Total	**1,877,083**	**499,152**	**499,152**	**100%**	**95%**	**475,267**	**1.2%**

[a]Building shell quantities are reported in Square Feet to calculate savings. [b]Realization Rate

Table 2-26: 2024 Low Impact Measure Category Program Results

Measure Category	Qty	Total Claimed Savings (kWh)	Total Gross Evaluated Savings (kWh)	RR[b]	NTG	Total Net Evaluated Savings (kWh)	% Program Net Evaluated Savings
Building Shell	2,587,830	563,568	563,567	100%	95%	536,668	1%
Water Heating	50	73,151	73,151	100%	95%	69,660	0.1%
Appliances	226	33,025	33,025	100%	95%	31,449	0.1%
Lighting	35	2,905	2,905	100%	95%	2,766	0.01%
Electronics	65	2,217	2,217	100%	95%	2,111	0.004%
Total	**2,588,206**	**674,865**	**674,865**	**100%**	**95%**	**642,655**	**1.3%**

[a]Building shell quantities are reported in Square Feet to calculate savings. [b]Realization Rate

2.9 New Homes

RMP offered customers financial incentives to build energy efficiency new homes and to install energy efficient heat pumps in newly constructed single-family and multifamily housing units during 2023-2024.

Two New Homes program measure types contributed more than one percent of program savings: Pay for Performance whole homes and Dual Fuel Heat Pumps. ADM conducted desks reviews for a sample of each of these measure types. The remaining measure types in the New Homes program each contributed less than one percent of programs savings, therefore ADM assumed at 100 percent realization rate for the measure subtype.

A total of 11,428 New Homes program measures were incentivized. The New Homes measures resulted in net evaluated savings of 8,642,907 kWh, accounting for 10 percent of total net evaluated program savings with a 96 percent realization rate and a 73 percent NTG ratio. New Homes results are reported in Table 2-27 through Table 2-29.

Table 2-27: 2023-2024 New Homes Program Results

Measure Category	Qty	Total Claimed Savings (kWh)	Total Gross Evaluated Savings (kWh)	Realization Rate	NTG	Total Net Evaluated Savings (kWh)
Pay for Performance	4,926	7,535,171	7,459,819	99%	73%	5,445,668
Dual Fuel Heat Pump	441	3,381,307	3,241,411	96%	73%	2,366,230
Home Energy Ratings	894	373,319	373,319	100%	73%	272,523
Thermostat	3,250	248,214	248,214	100%	73%	181,196
Air Source Heat Pump	39	218,008	227,129	104%	73%	165,804
Ductless Heat Pump	37	137,400	137,400	100%	73%	100,302
Heat Pump Water Heater	24	67,962	67,962	100%	73%	49,612
Ground Source Heat Pump	7	55,320	55,320	100%	73%	40,384
ENERGY STAR Certificate	1,794	26,462	26,462	100%	73%	19,317
Central Air Conditioner	16	2,563	2,563	100%	73%	1,871
Total	**11,428**	**12,045,726**	**11,839,599**	**98%**	**73%**	**8,642,907**

Table 2-28: 2023 New Homes Program Results

Measure Category	Qty	Total Claimed Savings (kWh)	Total Gross Evaluated Savings (kWh)	Realization Rate	NTG	Total Net Evaluated Savings (kWh)
Pay for Performance	1,830	2,243,252	2,220,819	99%	73%	1,621,198
Dual Fuel Heat Pump	163	1,233,792	1,182,746	96%	73%	863,404
Home Energy Ratings	830	373,319	373,319	100%	73%	272,523
Thermostat	1,661	124,655	124,655	100%	73%	90,998
Ductless Heat Pump	22	86,516	86,516	100%	73%	63,157
Air Source Heat Pump	15	82,419	82,419	100%	73%	60,166
Ground Source Heat Pump	7	55,320	55,320	100%	73%	40,384
Heat Pump Water Heater	9	25,488	25,488	100%	73%	18,606
ENERGY STAR Certificate	812	11,234	11,234	100%	73%	8,201
Central Air Conditioner	16	2,563	2,563	100%	73%	1,871
Total	**5,365**	**4,238,558**	**4,165,079**	**98%**	**73%**	**3,040,508**

Table 2-29: 2024 New Homes Program Results

Measure Category	Qty	Total Claimed Savings (kWh)	Total Gross Evaluated Savings (kWh)	Realization Rate	NTG	Total Net Evaluated Savings (kWh)
Pay for Performance	3,096	5,291,919	5,239,000	99%	73%	3,824,470
Dual Fuel Heat Pump	278	2,147,515	2,058,665	96%	73%	1,502,825
Air Source Heat Pump	24	135,589	144,710	107%	73%	105,638
Thermostat	1,589	123,560	123,560	100%	73%	90,198
Ductless Heat Pump	15	50,884	50,884	100%	73%	37,145
Heat Pump Water Heater	15	42,474	42,474	100%	73%	31,006
ENERGY STAR Certificate	982	15,228	15,228	100%	73%	11,116
Home Energy Ratings[a]	64	-	-	-	-	-
Total	**6,063**	**7,807,168**	**7,674,520**	**98%**	**73%**	**5,602,399**

[a]No savings were claimed for these measures.

2.9.1 Verification of Tracking Data

ADM reviewed program tracking data and supplemental data from the implementer to determine if incentivized measures met measure requirements as documented in the ML.

2.9.2 Review of Claimed Savings

ADM evaluated the UES values claimed by RMP to verify that claimed savings in each record were supported by the applicable ML documents for the claimed measure.

2.9.3 Determination of Evaluated Savings

For prescriptive measures, evaluated savings equal the UES documented in the ML for the specified measure multiplied by the quantity indicated in the program data. For records in which measure eligibility requirements were not met, ADM determined if another measure was available that met the installed measure specifications. For Pay for Performance measures, the evaluated savings equals the savings indicated in the energy modeling output provided by the program implementer.

2.9.4 Discussion of Realization Rates

One reviewed record for heat pumps included an incentivized heat pump model that did not meet eligibility requirements. No measure was identified that match installed measure specifications; therefore, no savings were counted for that measure. The resulting realization rate for heat pumps was 96 percent.

One record for a Pay for Performance measure did not match the energy model output for the incentivized home. Evaluated savings equal the energy model output for that record, resulting in a 99 percent realization rate.

ADM's review of New Homes measures resulted in a 96 percent realization rate.

2.9.5 Net-to-Gross Ratio

ADM invited all builders in the program tracking data to complete a survey to collect NTG data; ADM also attempted to reach 43 builders via phone. Only two builders responded to the survey. Therefore, ADM added the new responses to the previous evaluation's analysis which resulted in a 73 percent New Homes NTG.

.

3 Process Evaluation

3.1 Review of Program Materials and Staff Interviews

ADM completed a process analysis of the program which included semi-monthly meetings with RMP's Wattsmart Homes Program Manager and Evaluation Manager, conversations with implementation staff and surveys of customers who received engine block heater controllers or HVAC measure incentives. ADM also reviewed program materials.

3.1.1 Roles and Responsibilities

The RMP program manager is responsible for the Wattsmart Homes programs in Utah, Wyoming, and Idaho including oversight of the regulatory process, assessment of program cost effectiveness, review and approval of marketing campaigns, program participation and procedures, and design and implementation of procedures.

Evergreen was the primary implementation partner during 2023-2024. The New Homes Program and midmarket Central Air Conditioners were managed by Resource Innovations, and a minimal number of program records were residual data from the 2022 program year that were managed by CLEAResult and AM Conservation. Implementation partners are responsible for day-to-day program operations, for reviewing measure eligibility, and for maintaining the ML, among other responsibilities.

3.1.2 Program Design and Goals

RMP operates the Wattsmart Homes program to communicate the value of energy efficiency, to provide information regarding low-cost, no-cost energy efficiency measures and to educate customers on the availability of technical assistance, services, and incentives. The overall goal is to engage customers to reduce their energy usage through behavioral changes as well as changes in equipment, appliances, and structures.

Customers were offered incentives to install efficient central air conditioners through midmarket trade allies. Downstream residential measures included post-purchase product rebates available through the RMP website.

RMP also offered home builders incentives to build more energy efficient homes with and install efficient appliances and heat pumps.

3.1.3 Communication

RMP used earned media, customer communications, paid media, and program-specific media to communicate the value of energy efficiency, provide information regarding low-cost, no-cost energy efficiency measures and to educate customers on the availability of technical assistance, services, and incentives. RMP communicated to its customers through newsletters, bill inserts, email, social media (Facebook and Twitter), its website,

and paid media. Paid media includes the following channels: TV, digital streaming services, radio, print, digital media, and social media.

RMP had weekly meetings with implementation staff and frequent ad hoc communication. Weekly meeting topics include program status and performance, long-term strategy, day-to-day tactical decisions, and marketing activities. RMP program staff and implementer staff worked closely with each other and are in nearly daily communication about program operations and performance.

3.1.4 Tracking and Reporting

RMP savings documentation is comprised of the ML and its associated files, and the program data uploaded to RMP by the implementer. Additional program data is collected and managed by the implementer, though not transferred to RMP. ADM used program tracking data provided by RMP and supplemental data provided by RMP's various implementation partners to complete this program evaluation. More complete supplementary data was available to ADM than was provided in previous evaluation cycles.

Program Tracking Dataset

RMP maintains a program tracking data set that includes:

- Measure name and version
- Record or application status and relevant dates
- Customer and account information

The following data elements were provided by the implementer for the evaluation process:

- Product manufacturer, model numbers, efficiency ratings
- Baseline and efficient conditions

Measure Library

Ex-ante measure savings, as well as measure specifications, are documented in RMP's ML. The ML is comprised of records about all program measures and all versions of each measure. Measure specifications are updated as required by changing regulatory and market conditions. The ML file is maintained jointly by RMP and its contracted program implementer. Each measure listed includes specifications requirements for the measure including reference files that document UES values or savings calculation methodologies.

ML reference files are frequently briefs that summarize relevant measures included in the RTF library of measures maintained by Northwest Power and Conservation Council to verify and evaluate energy efficiency savings. RTF reference files include the basis for unit energy savings values. RTF reference documents are frequently updated.

ADM reviewed two measure sub-types (dual fuel heat pumps and ductless heat pumps) for which the implementer provided incentives and recorded savings in baseline conditions that did not meet eligibility requirements included in the ML. RMP and the implementer provided ADM with documentation verifying that the eligibility requirements used in program operations matched savings calculation methodologies in the ML. RMP indicated that eligibility requirements included in the ML were in error and will be corrected.

4 Cost-Effectiveness Results

ICF estimated the cost-effectiveness of' Rocky Mountain Power's energy efficiency portfolio in Utah in 2023 and 2024. Rocky Mountain Power provided cost estimates; savings estimates are based on the EM&V analysis included in this report. The program passed Utility Cost Test (UCT).

The 2023 cost-effectiveness analysis used hourly values derived from PacifiCorp's 2021 Integrated Resource Plan (IRP) Preferred Portfolio "P02-MM-CETA." The 2024 cost-effectiveness analysis used annual values derived from PacifiCorp's 2023 IRP Preferred Portfolio. Avoided costs were provided by PacifiCorp and converted into annual values using Utah load shapes from these IRPs.

Program inputs used in the cost effectiveness analysis are included in Table 4-1 through Table 4-3.

4.1 Cost Effectiveness Inputs

Program inputs used in the cost effectiveness analysis are included in Table 4-1 through Table 4-3.

Table 4-1: Program Inputs

Parameter	2023	2024
Discount Rate	6.77%	6.77%
Residential Line Loss	6.36%	6.36%
Residential Energy Rate ($/kWh)	$0.11	$0.12
Inflation Rate	2.27%	2.27%

Table 4-2: Program Costs by Year

Year	Program Delivery	Utility Admin	Program Development	Incentives	Total Utility Budget	Gross Customer Costs
2023	$5,261,785	$192,868	$1,079,618	$17,135,906	$23,670,177	$83,372,508
2024	$5,701,998	$229,362	$126,566	$20,420,418	$26,478,345	$140,548,783
2023-2024	**$10,963,784**	**$422,230**	**$1,206,184**	**$37,556,324**	**$50,148,522**	**$223,923,752**

Table 4-3: Program Savings by Year

Year	Gross kWh Savings	Realization Rate	Adjusted Gross kWh Savings	Net to Gross Ratio	Net kWh Savings	Measure Life
2023	50,088,095	97%	48,497,732	83%	40,427,646	19
2024	60,148,732	98%	59,025,304	82%	48,412,395	20
2023-2024	**110,236,828**	**97%**	**107,343,024**	**83%**	**88,706,522**	**19**

4.2 Cost-effectiveness Results

Cost-effectiveness results are reported in Table 4-4 through Table 4-6.

Table 4-4: Program Cost-Effectiveness Results – 2023-2024

Cost-Effectiveness Test	Levelized $/kWh	Costs	Benefits	Net Benefits	Benefit/ Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	$0.23	$236,515,950	$128,867,352	($107,648,598)	0.54
Total Resource Cost Test (TRC) No Adder	$0.23	$236,515,950	$117,152,138	($119,363,812)	0.50
Utility Cost Test (UCT)	$0.05	$50,148,522	$117,152,138	$67,003,616	2.34
Participant Cost Test (PCT)		$268,182,937	$200,561,107	($67,621,831)	0.75
Rate Impact Test (RIM)		$213,153,305	$117,152,138	($96,001,167)	0.55
Lifecycle Revenue Impacts ($/kWh)					$0.00028
Discounted Participant Payback (years)					24.95

Table 4-5: Program Cost-Effectiveness Results – 2023

Cost-Effectiveness Test	Levelized $/kWh	Costs	Benefits	Net Benefits	Benefit/ Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	$0.19	$89,906,779	$43,155,774	($46,751,006)	0.48
Total Resource Cost Test (TRC) No Adder	$0.19	$89,906,779	$39,232,522	($50,674,258)	0.44
Utility Cost Test (UCT)	$0.05	$23,670,177	$39,232,522	$15,562,344	1.66
Participant Cost Test (PCT)		$100,291,730	$84,155,057	($16,136,673)	0.84
Rate Impact Test (RIM)		$90,689,328	$39,232,522	($51,456,806)	0.43
Lifecycle Revenue Impacts ($/kWh)					$0.00023
Discounted Participant Payback (years)					21.71

Table 4-6: Program Cost-Effectiveness Results – 2024

Cost-Effectiveness Test	Levelized $/kWh	Costs	Benefits	Net Benefits	Benefit/ Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	$0.26	$146,606,709	$85,933,377	($60,673,333)	0.59
Total Resource Cost Test (TRC) No Adder	$0.26	$146,606,709	$78,121,252	($68,485,458)	0.53
Utility Cost Test (UCT)	$0.05	$26,478,345	$78,121,252	$51,642,907	2.95
Participant Cost Test (PCT)		$167,891,208	$116,682,724	($51,208,484)	0.69
Rate Impact Test (RIM)		$122,740,650	$78,121,252	($44,619,399)	0.64
Lifecycle Revenue Impacts ($/kWh)					$0.00031
Discounted Participant Payback (years)					27.31

5 Conclusions and Recommendations

ADM provides the following conclusions and recommendations from its evaluation of the 2023-2024 Utah Wattsmart Homes program.

5.1 Conclusions

ADM draws the following conclusions from its 2023-2024 Utah Wattsmart Homes program evaluation.

- RMP's 2023-2024 Wattsmart Homes program resulted in a net evaluated savings of 88,840,041 kWh with a 98 percent realization rate and an 83 percent NTG ratio, as reported in Table 5-1.

Table 5-1: Total Program Savings by Year

Measure Categories	Claimed Savings (kWh)	Gross Evaluated Savings (kWh)	Realization Rate	NTG	Net Evaluated Savings (kWh)
2023	**50,088,095**	**48,497,732**	**97%**	**83%**	**40,427,646**
Existing Homes	20,730,707	19,199,761	93%	85%	16,302,080
MF Whole Building	25,118,830	25,132,892	100%	84%	21,085,058
New Homes	4,238,558	4,165,079	98%	73%	3,040,508
2024	**60,148,732**	**59,025,304**	**98%**	**82%**	**48,289,133**
Existing Homes	24,823,432	23,811,639	96%	84%	19,957,734
MF Whole Building	27,518,133	27,539,146	100%	83%	22,852,262
New Homes	7,807,168	7,674,520	98%	73%	5,602,399
Total	**110,236,828**	**107,523,036**	**98%**	**83%**	**88,840,041**

- Whole building (new homes and multifamily projects) and heat pumps represent a growing proportion of program savings. They account for 59 and 40 percent of program savings respectively. The remaining measure categories collectively account for 1 percent of program net savings. See Figure 5-1 and Figure 5-2.
- Realization rates and NTG ratios trended up slightly in 2023-2024. See Figure 5-1.
- The supplementary data provided by RMP's primary implementation partner reflected improved program data management over prior evaluation years, particularly for heat pump measures.

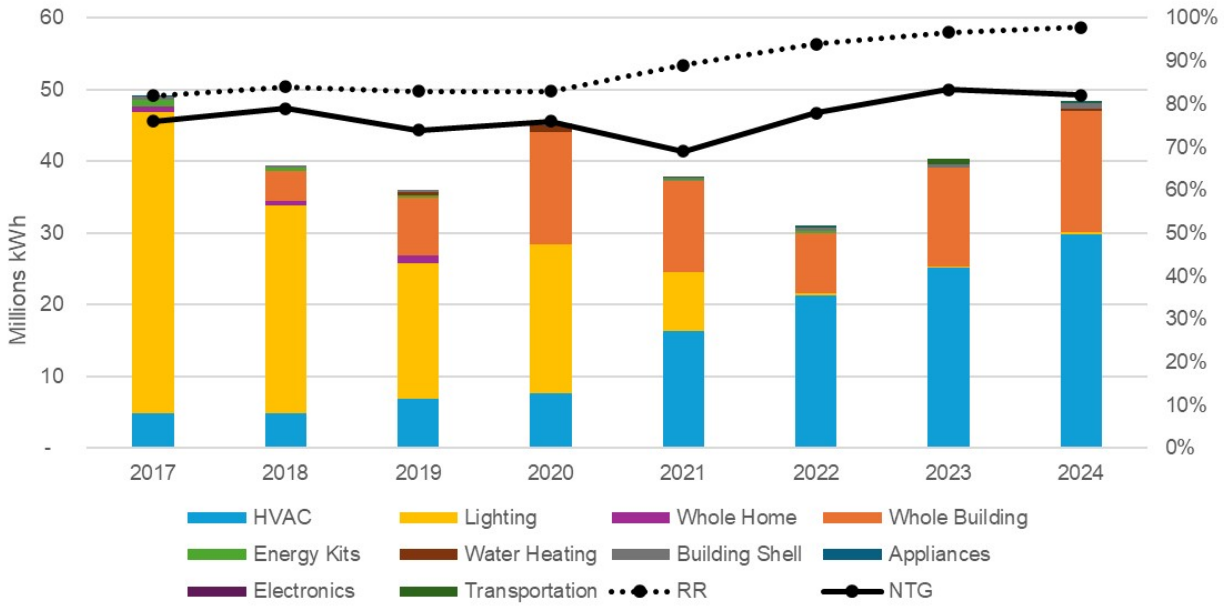

Figure 5-1: Net Programs Savings (kWh) 2017-2024

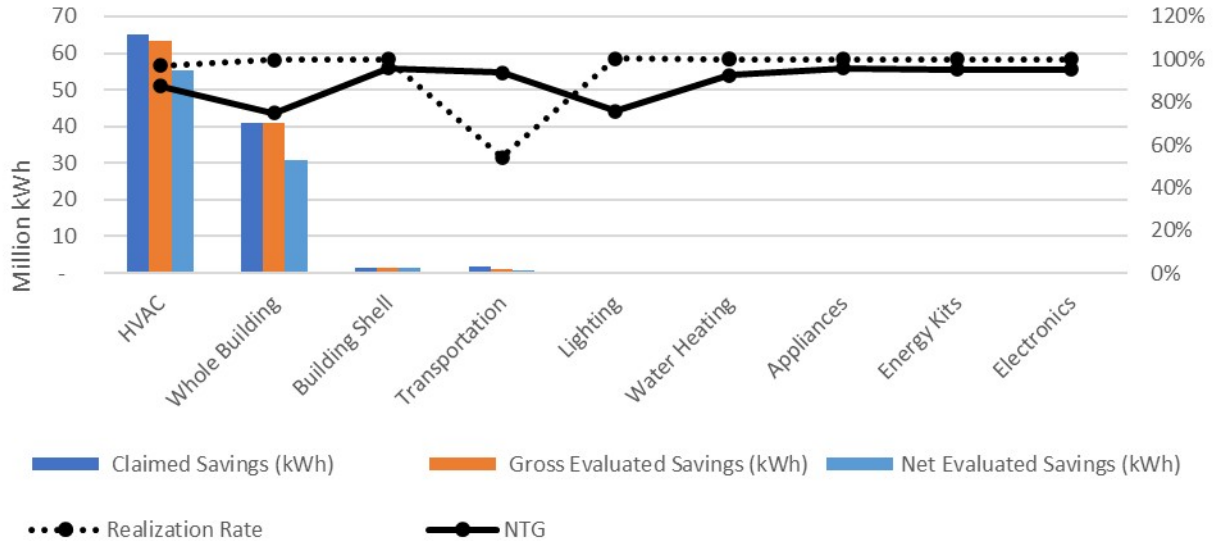

Figure 5-2: 2023-2024 Program Net Savings (kWh) by Measure Category

- RMP reported program data from four implementation partners during 2023-2024. Implementation partners were inconsistent in how they reported the quantity of incentivized measures in program records. Three partners reported quantity in the *Quantity* field while the main implementer used the *Number Of Trl* field.

- The ML and corresponding reference files document a multitude of variables about each measure included in the program including but not limited to: ex-ante UES, financial incentives, methodologies for calculating ex-ante savings, and baseline eligibility conditions. For a limited number of measures (supplemental ductless heat pumps and dual fuel heat pumps), the ML did not accurately reflect the eligibility requirements used in the implementation of the program. For these measures, the *Eligibility Case Description* lags requirements implemented by the program. RMP provided explanations for adjusted program qualifications and indicated their intent to update the ML to reflect program implementation practices.
- Supplementary data provided for midstream central air conditions did not definitively verify if incentivized units met eligibility criteria because only outside unit model numbers were provided.

5.2 Recommendations

ADM provides the following recommendations to improve program implementation.

Standardize data element used by all implementation partners to report quantity of measures installed. ADM recommends that all implementation partners use the *Quantity* field to indicate the number of measure units for which RMP is claiming savings. In the 2023-2024 program dataset, the primary implementer used *Number Of Trl* while other implementers reported quantity of units installed in *Quantity* field. RMP power reports that correctively action has already been taken on this issue.

Add required data elements to Central Air Conditioner incentive applications. Supplementary data for midstream air conditioners did not include all data elements required to provide a rigorous review of incentivized measures efficiency rating. ADM recommends that RMP requires its implementation partner to collect and provide either AHRI certificate or an inside unit model number, furnace model number, and an installation zip code to document that the incentivized measures meet eligibility requirements.

Update ML to reflect accurate eligibility requirements for all measures. As the comprehensive resource that reflects program ex-ante measure savings and eligibility requirements, the ML should be updated in real time with program changes.

Complete evaluations annually to improve responsiveness to evaluation results. When evaluations are conducted on a two-year cycle, significant delays occur between evaluations and updates to ex-ante savings. Annual evaluations would likely improve realization rates by shortening the time between evaluation and ex-ante UES updates.

Include implementers in effort to survey home builders. Builders survey participant levels are typically very low, making it difficult to acquire accurate net-to-gross data for new homes and multifamily project measures. Builders may be more likely to complete a participant survey if program implementers encourage builders to complete a survey as part of the rebate application process. ADM recommends improving the survey process to improve response rates.

Appendix A: Engine Block Heater Controller Participant Survey

1. Our records show that you received [Qty received] engine block heater controllers. Is this correct?

   - Yes
   - No
   - No, I received a different number
   - I don’t know

2. How many engine block heater controllers or rebates did you receive?

3. How many diesel vehicles do you have?

4. During cold weather, how many of the [Qty received] engine block heater controller(s) do you use?

5. How do you use the engine block heat controller(s)? [Response matrix for each controller received.]

   - I use the controller on a personal vehicle
   - I use the controller on a commercial vehicle
   - I use the controller on an agricultural vehicle
   - I use the controller on something other than a vehicle [Fill in]
   - I don’t use the controller
   - I don’t know

6. Why don’t you use the engine block heater controller?

   - I don’t have an engine block heater
   - I can’t figure out how to use the controller
   - The controller does not work
   - I want my vehicle ready all the time
   - Other [Open ended]

7. How frequently do you use your engine block heater(s) during cold weather months? Please select all that apply if you have more than one controller.

    - Every day
    - 3-4 days a week
    - Once a week
    - 2 times a month
    - Once a month or less

8. How frequently do you use the controller when you use the engine block heater?

    - Scale from 100% of the time to 0% of the time

9. What mode do you use the controller in?

    - Timed ready
    - Maintain ready
    - I don't know

10. What month do you typically START using an Engine Block Heater?

    - [DROP DOWN BOX: Month (September-December)]

11. What month do you typically STOP using an Engine Block Heater?

    - [DROP DOWN BOX: Month (January-June)]

12. Before receiving the engine block heater controller, did you normally plug your engine block heater in at 5 p.m. and leave it plugged in without any timing controls until 8 a.m.?

    - Yes
    - No
    - I don’t recall

    If no:

13. How did you start and stop your engine block heater before using the controller?

    - I used a timer
    - I manually plugged it in and unplugged so it was only plugged in when I wanted it on
    - Other (please explain)

14. Before receiving the engine block heater controller, on a normal day, what hour of the day would you turn your Engine Block Heater on?

    - [DROP DOWN BOX: Time of Day]

15. Before receiving the engine block heater controller, on a normal day, what hour of the day would you turn- your Engine Block Heater off?

    - [DROP DOWN BOX: Time of Day]

16. After receiving the engine block heater controller, on a normal day, what hour of the day would you turn your engine block heater on?

17. After receiving the engine block heater controller, on a normal day, what hour of the day would you turn your engine block heater off?

18. Before receiving the engine block heater controller from Rocky Mountain Power, did you know that controllers were available for engine block heaters?

    - Yes
    - No

19. If you had not received the engine block heater controller or the rebate from Rocky Mountain Power, would you have purchased one?

    - Definitely would have
    - Don’t know
    - Definitely would not have

20. How influential was the Rocky Mountain Power rebate (or giveaway) in your decision to get an engine block heater controller? 5-point scale Not influential at all to Extremely influential.

21. Has receiving the controller or the rebate for the controller influenced you to take any other actions to save energy?

    - Yes
    - No

22. What additional energy saving actions have you taken?

Thank you for participating in the engine block heater controller customers survey!

Appendix B: HVAC Participant Survey

Welcome! Thank you for taking this survey. Your feedback is very important to us and will help us improve the programs and services we offer to customers like you.

1. Our records indicate that you received a discount from Rocky Mountain Power on a high-efficiency model heat pump in 2022 or 2023. Is this correct?

   - Yes
   - No
   - I don't know

2. Would you have been able to buy the high-efficiency model heat pump without the discount?

   - Yes
   - No

3. Were you planning on buying the high-efficiency model heat pump before you knew about the discount?

   - Yes
   - No

4. If the high-efficiency model heat pump had cost $${e://Field/HP} more, how likely is it that you would have still bought the same energy-efficient model?

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

5. Rocky Mountain Power provides customers with energy efficiency information online, through the media, and in monthly utility bills. How likely is it that you would have bought the same energy-efficient model heat pump if you had not received energy efficiency information from Rocky Mountain Power?

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

6. If you had not received the discount, would you have bought the high efficiency model heat pump at the same time?

   - Yes, I would have bought it at the same time
   - No, I would have bought it 6 months later than I did
   - No, I would have bought it 6 months to a year later than I did
   - No, I would have bought it more than a year later than I did
   - No, I would not have bought it at all

7. If you had not received the discount, what would you have purchased?

   - The same model heat pump
   - A less efficient model heat pump
   - A gas furnace and central air conditioner
   - A gas furnace with no central air conditioner
   - An electric furnace with central air conditioner
   - An electric furnace without central air conditioner
   - Other (please specify)

     _____
   - Don't know

8. Our records indicate that you received a discount from Rocky Mountain Power on an evaporative cooler in 2022 or 2023. Is this correct?

   - Yes
   - No
   - I don't know

9. Would you have been able to buy the evaporative cooler without the discount?

   - Yes
   - No

10. Were you planning on buying the evaporative cooler before you knew about the discount?

    - Yes
    - No

11. If the evaporative cooler had cost $${e://Field/EvapCooler} more, how likely is it that you would have still bought the same energy-efficient model?

    - Definitely would have

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

12. Rocky Mountain Power provides customers with energy efficiency information online, through the media, and in monthly utility bills. How likely is it that you would have bought the same evaporative cooler if you had not received energy efficiency information from Rocky Mountain Power?

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

13. If you had not received the discount, would you have bought the evaporative cooler at the same time?

    - Yes, I would have bought it at the same time
    - No, I would have bought it 6 months later than I did
    - No, I would have bought it 6 months to a year later than I did
    - No, I would have bought it more than a year later than I did
    - No, I would not have bought it at all

14. If you had not received the discount, what would you have purchased?

    - The same model evaporative cooler
    - A less efficient model evaporative cooler
    - A central air conditioner
    - Room air conditioner
    - Other (please specify)

      _____

    - Don't know

15. Our records indicate that you received a discount from Rocky Mountain Power on a smart thermostat in 2022 or 2023. Is this correct?

    - Yes
    - No
    - I don't know

16. Would you have been able to buy the smart thermostat without the discount?

    - Yes
    - No

17. Were you planning on buying the smart thermostat before you knew about the discount?

    - Yes
    - No

18. If the smart thermostat had cost $${e://Field/Thermostat} more, how likely is it that you would have still bought the same smart thermostat?

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

19. Rocky Mountain Power provides customers with energy efficiency information online, through the media, and in monthly utility bills. How likely is it that you would have bought the same smart thermostat if you had not received energy efficiency information from Rocky Mountain Power?

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

20. If you had not received the discount, would you have bought the smart thermostat at the same time?

    - Yes, I would have bought it at the same time
    - No, I would have bought it 6 months later than I did
    - No, I would have bought it 6 months to a year later than I did
    - No, I would have bought it more than a year later than I did
    - No, I would not have bought it at all

21. After receiving the discount(s), have you bought and installed any of the following energy-saving products without receiving a discount or rebate to do so? Select all that apply.

- ENERGY STAR refrigerator
- ENERGY STAR dishwasher
- ENERGY STAR clothes washer
- ENERGY STAR clothes dryer
- ENERGY STAR room air filter
- ENERGY STAR heat pump
- ENERGY STAR central air conditioner
- ENERGY STAR room air conditioner
- Evaporative cooler
- ENERGY STAR bathroom exhaust fan
- Smart thermostat (for example, EcoBee or Nest)
- ENERGY STAR heat pump water heater
- Home insulation
- Energy efficient replacement windows
- Engine block heater controller
- I have not
- I don't know

22. How important was the discount(s) you received in your decision to buy the additional energy-saving product?

    - 1 - Not at all important
    - 2
    - 3
    - 4
    - 5 - Extremely important

23. Q28 If you had not received a discount on the heating and cooling product(s) (heat pump, thermostat, and/or evaporative cooler), how likely is it that you would have still purchased and installed the additional energy saving product(s)?

    - 1 - Not at all likely
    - 2
    - 3
    - 4
    - 5 - Extremely likely