2024-2025 Utah Home Energy Report Program Evaluation, Verification, and Measurement Report

Prepared for:

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Acronyms

The following acronyms are used throughout this report.

EM&V - Evaluation, Measurement, and Verification
HER - Home Energy Report
kWh – kilowatt hour
RCT - Randomized Control Trial
RMP - Rocky Mountain Power
RR - Realization Rate

Glossary of Terms

The following terms are used in this report.

Baseline consumption A customer's electricity use prior to receiving HERs, used to characterize typical energy use and support comparison or tier assignment.

Behavioral program An energy efficiency program designed to influence customer behavior through information, feedback, and motivation rather than direct installation of measures.

Billing regression analysis A statistical method that estimates energy savings by comparing billing data over time between treated and untreated customers while controlling for factors such as weather.

Claimed savings (ex-ante savings) Energy savings calculated prior to evaluation using predefined assumptions or deemed savings values; typically used for program planning and reporting.

Comparison group (untreated group) Customers who do not receive HERs and are used as a counterfactual to estimate what treated customers' energy use would have been absent the program.

Consumption tier A classification of customers based on annual electricity use, used to assign appropriate deemed savings percentages.

Counterfactual A representation of what energy consumption would have been if the program didn't exist; typically established using an untreated comparison group.

Deemed Savings Estimated energy savings calculated using predetermined savings percentages applied to observed energy use rather than directly measured impacts.

Evaluated savings (ex-post savings) Savings estimates derived through evaluation methods after program implementation, reflecting adjustments for data quality, realization rates, or empirical findings.

Evaluation, Measurement, and Verification (EM&V) The set of activities conducted to assess program implementation, customer experience, and energy savings performance.

Home Energy Report (HER) A personalized report provided to residential customers that presents information on household energy use, peer comparisons, and energy-saving tips.

Intervention date The date on which a customer first begins receiving HERs.

Move-out A customer account that closes due to relocation, resulting in removal from the program or analysis dataset.

Process evaluation An evaluation component focused on program design, implementation, customer experience, and engagement rather than direct measurement of energy savings.

Randomized Control Trial (RCT) An experimental evaluation design in which customers are randomly assigned to treated and control groups to allow causal estimation of program impacts.

Realization Rate (RR) The ratio of evaluated savings to claimed savings.

Statistical equivalence A condition in which treated and untreated groups have similar baseline characteristics, enabling valid comparison for program impact estimation.

Theoretical untreated usage An estimate of the energy consumption that would have occurred without program participation, derived mathematically under the deemed savings framework.

Treated customer A residential customer who received HERs during the evaluation period.

Untreated customer A residential customer who did not receive HERs and serves as part of a comparison group.

Validity testing Statistical test used to determine whether treated and untreated groups are sufficiently similar to support regression-based savings estimation.

1 Executive Summary

This report presents the results of the 2024–2025 Evaluation, Measurement, and Verification (EM&V) of Rocky Mountain Power's (RMP) Home Energy Report (HER) Program in Utah. The evaluation assesses program energy impacts and customer experience using a deemed savings framework supported by historical empirical evidence and a customer process evaluation.

1.1 Key Findings

Evaluated energy savings totaled 211,428,198 kWh over the 2024–2025 period — 102,182,659 kWh in 2024 and 109,245,539 kWh in 2025 — representing an overall realization rate of 92 percent as reported in Table 1-1.

Table 1-1: Program Energy Savings (kWh) and Realization Rate

Year	Claimed Savings (kWh)	Evaluated Savings (kWh)	Realization Rate
2024	116,178,000	102,182,659	88%
2025	114,076,103	109,245,539	96%
Total	**230,254,103**	**211,428,198**	**92%**

Because the program is currently implemented without a statistically valid untreated comparison group, savings could not be empirically verified using industry-standard billing regression analysis during this evaluation cycle.

Evaluated savings were therefore calculated by applying established deemed savings percentages to participant billing data and adjusting those results using average realization rates from prior evaluation periods (2020–2023) when empirical verification was possible.

Customer survey results indicate high levels of engagement and satisfaction with the reports, though behavioral and purchasing differences between treated and untreated customers could not be determined since no email addresses were available for untreated customers.

The absence of a viable counterfactual continues to limit savings verifiability and introduces ongoing uncertainty in confidence and regulatory defensibility of reported impacts.

1.2 Impact Evaluation Summary

Historically, RMP's HER program savings were empirically validated through a randomized control trial (RCT) design that compared treated customers to a statistically equivalent group of untreated customers. In 2020, the program transitioned to a deemed savings framework to expand participation, removing the maintained control group.

For the 2024–2025 evaluation period, the Evaluator assessed whether a group of untreated customers could be formed using available billing data to be used as a valid comparison group. Validity testing showed that treated and untreated customers were not statistically equivalent in baseline energy consumption across multiple cohorts. As a result, a regression-based impact analysis could not be conducted.

Evaluated savings were therefore determined by:

1. Applying deemed savings percentages by consumption tier and duration of treatment to evaluation period billing data, and
2. Adjusting the resulting deemed savings using the average realization rate (94 percent) observed during the 2020–2023 evaluations.

This approach reflects the best available empirical evidence linking deemed savings estimates to historically measured program impacts, but it does not represent direct measurement of savings achieved during 2024–2025.

1.3 Process Evaluation Summary

The process evaluation is based on a customer survey of HER recipients conducted in January 2026. Only treated customers were surveyed.

Results indicate strong customer engagement, with more than 80 percent of respondents reporting that they read most or all the reports and a large majority found the information easy to understand. Customers generally perceive the reports as valuable and informative, particularly the usage history and home comparisons. Overall satisfaction with the HERs is high.

Despite positive engagement, some challenges remain. A subset of respondents expressed concerns about the accuracy of the information, particularly appliance-level estimates, and comparisons to similar homes. Awareness and use of the online energy portal are limited, with most non-users indicating they were unaware of the tool.

In terms of outcomes, 39 percent of respondents reported adopting energy-saving behaviors as a result of the reports, and many indicated the HERs were influential in those decisions. However, consistent with prior findings, self-reported behavior changes and purchasing decisions suggest moderate influence rather than strong incremental impacts. Overall, the process evaluation indicates that the program is well received and supports

energy-saving actions, but opportunities exist to improve perceived accuracy and increase customer engagement with supplemental tools such as the online portal.

1.4 Cost Effectiveness Summary

The HER program passed the Total Resource Cost (TRC), PacifiCorp Total Resource Cost (PTRC), and Utility Cost Test (UCT). These results confirm that the program delivers energy savings in a cost-effective manner and remains a valuable component of Pacific Power's demand side management portfolio.

1.5 Conclusions

The 2024–2025 evaluation finds that the HER program generated energy savings when evaluated under a deemed savings framework. However, the absence of a statistically valid untreated comparison group materially constrains the ability to empirically verify savings.

Various factors contributed to both realization rate reductions and increases. Factors that had a negative impact on the realization rate included: billing data was not available for all customers who the Implementer listed as treated; extreme outlier bills were removed from evaluated savings; evaluated savings were not calculated for customers who received no HERs during the evaluation period. One factor had a positive impact on the realization rate: evaluated savings were included for customers who received paper reports in 2024; claimed savings did not. Additionally, there is a single factor that had an unknown impact on the realization rate: pre-treatment billing data was not available to determine consumption tier; therefore, consumption tier assignments were made using post-treatment billing data. The Evaluator does not know how the Implementer determined consumption tier assignment for each customer and if its methodology differed from the Evaluators, which would have influenced the savings calculation.

1.6 Recommendations

To strengthen future program performance and evaluation robustness, the Evaluator highlights the need to:

- Reestablish and maintain a statistically valid untreated comparison group;
- Address structural drivers of realization rate erosion, including data integration, account eligibility screening, and report delivery thresholds; and
- Increase pre-treatment period duration to determine baseline energy use for consumption tier assignment.

Absent these changes, reported savings will continue to represent projections informed by past performance rather than directly measured outcomes.

2 Introduction and Purpose of Study

Qualus LLC (formerly ADM Associates Inc., which was acquired by Qualus LLC in July 2025), (the Evaluator) is under contract with RMP to perform evaluation, measurement, and verification (EM&V) services to determine the energy savings (kWh) that resulted from RMP's HER program in Utah during 2024 and 2025.

This report presents the Evaluator's impact evaluation of the energy savings (kWh) that resulted from the program and the Evaluator's process evaluation of the program focusing on customer survey results regarding the program's implementation and the Evaluator's observations about the program.

2.1 HER Program Description

The purpose of the HER program is to reduce residential energy use by providing customers with personalized reports of their home energy consumption and information intended to support energy-saving behaviors.

Participating customers received either two emailed reports per month or four paper reports per year. Some customers received both paper and emailed reports. For email customers, one report each month presents the customer's energy use disaggregated by appliance category and a second monthly report that compares the customer's energy use to that of similar homes and offers behavioral energy-saving tips.

2.2 Program Savings Measurement and Verification

Historically, HER program energy savings were estimated using a randomized control trial (RCT) design. Under this design, the energy use of customers receiving reports (the treatment group) was compared to the energy use of a statistically equivalent group of untreated customers (the control group). This approach allowed evaluators to empirically attribute observed differences in energy consumption to the program.

In 2020, RMP changed the HER program from an RCT design which maintained separate treatment and control groups to a program design that relies on a deemed percentage to calculate program savings. Under this approach, claimed savings are calculated by applying predetermined savings percentages to each treated customer's energy use. These deemed savings percentages were derived from historical analyses of HER programs, including prior evaluations of RMP's program when statistically valid control groups were in place.

The deemed savings approach allowed the program to be offered to a larger population because reports were not withheld from a subset of customers to maintain a control group.

However, this design change increased the challenge of empirically measuring or directly verifying program savings.

Without a contemporaneous, statistically appropriate, control group of untreated customers, there is no counterfactual benchmark against which to compare the energy consumption of participating customers. As a result, changes in observed energy use cannot be isolated from other factors that influence consumption, including:

- Weather variability
- Changes in customer behavior unrelated to the HER program
- Broader market or economic conditions
- Equipment upgrades or home improvements
- Participation in other RMP energy efficiency programs

Because these external influences cannot be separated from program effects in the absence of a valid control group, actual savings attributable to the HER program cannot be independently verified. Deemed savings therefore represent projected savings based on historical performance rather than measured savings achieved during the evaluation period.

During the two prior evaluation cycles (2020–2021 and 2022–2023), the Evaluator constructed ad hoc, statistically equivalent comparison groups of untreated customers using available billing data. These comparison groups supported regression-based analyses that enabled empirical verification of program savings, despite the program's deemed ex-ante savings design.

For the current evaluation cycle, the Evaluator assessed the untreated customer data provided by RMP to determine if it could be used to form a statistically valid comparison group. This assessment involved calculating and comparing average monthly energy consumption for treated and untreated customers. Industry-standard protocols require that treated and untreated groups demonstrate statistical equivalence of energy use in at least ten of twelve months to support a valid comparison. The untreated customer data did not meet this criterion and therefore cannot be used to empirically verify program savings.

This outcome is less than ideal. In each of the previous two evaluations, the Evaluator recommended that the program Implementer rebuild and maintain untreated customer groups capable of supporting savings verification. These recommendations were not implemented. As a result, the current program design does not support empirical savings verification using accepted evaluation methods.

Because savings cannot be empirically verified, evaluated savings for the HER program were determined using the methodology proposed by Cadmus in 2020 with the application of the average realization rate derived from the 2020–2023 period. These realization rates represent the best empirical evidence of the difference between savings calculated using the deemed method and empirically verified savings calculated using a regression analysis.

2.3 Data Provided

The Evaluator received the following data to support the analysis:

- Customer data for treated and untreated customers was provided by program Implementer Bidgely.
- Pre- and post-treatment monthly billing data for treated and untreated customers was provided by RMP.

The Evaluator notes that the customer data supplied by the Implementer did not include a unique customer identifier that was also stored in RMP's billing database. Multiple data requests were required before adequate billing data was provided to the Evaluator.

2.4 Evaluation Objectives

The Evaluator identified the following research objectives for the 2024 and 2025 HER program evaluation:

- Evaluate program savings impacts to gain insight on program performance.
- Assess customer satisfaction with the HER program and awareness of their individual energy consumption and other energy efficiency programs.
- Identify program highlights and opportunities for program improvement.

2.5 Note on terms

Because RMP has implemented a deemed program model to calculate claimed savings rather than an RCT model, the Evaluator references *treated* and *untreated* customers rather than treatment and control groups.

3 Impact Evaluation Approach

The National Renewable Energy Laboratory's Uniform Methods Project behavioral chapter[1] recommends the use of RCTs to estimate savings for behavioral based programs like RMP's HER program. It emphasizes that "it must be possible to isolate the treatment effect when measuring savings." Isolating treatment effect requires a valid counterfactual comparison group. As such, the Evaluator approached the evaluation from this perspective while cognizant of the fact that RMP's claimed savings were calculated using a deemed model.

During the previous two evaluation cycles, the Evaluator was able to establish a quasi-control group used in a regression analysis. Those evaluation results give us a basis for comparing regression analysis results to the deemed calculation. Thus, the Evaluator used the process illustrated in Figure 3-1 to determine how to calculate program savings.

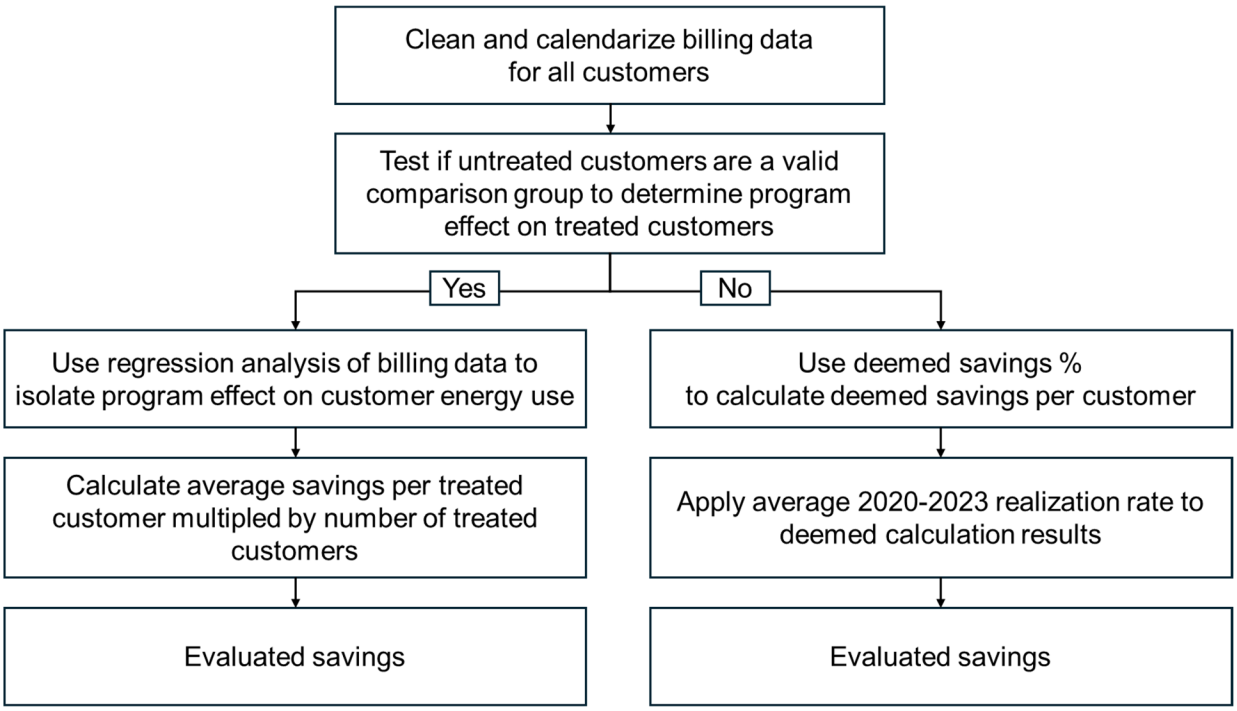

Figure 3-1: Methodology Selection Process

The Evaluator first analyzed treated and untreated customers' 2024 and 2025 billing data to test if untreated customers' data could be used as a counterfactual to calculate the savings that resulted from program effect. Unlike the previous two evaluation cycles, the comparison of treated and untreated customer billing data did not pass the validation test indicating that the untreated customer data could not be used to calculate the program

[1] https://www.nrel.gov/docs/fy18osti/70472.pdf, Chapter 17: Residential Behavior Evaluation Protocol, pg. 2.

effect on treated customers. Consequently, the Evaluator used a modified version of the deemed savings methodology that was proposed in 2020 to calculate evaluated savings documented below.

3.1 Step 1: Data Preparation and Cleaning

This section describes the data cleaning steps that the Evaluator performed to calculate evaluated savings.

3.1.1 Calendarization

Customers' monthly billing periods are not all the same. For example, one customer's June bill may run from May 16th to June 17th, while another customer's bill may run from May 20th to July 5th. To make the monthly billing data consistent between customers and to represent each month accurately, the Evaluator calendarized the data into monthly bills.

Calendarization is the process of correcting monthly billing data to match calendar dates. For example, if 15 days in a billing period belonged to June and 15 days belonged to July; 50 percent of the billed usage would be attributed to June and 50 percent to July. The proportionated usage and number of days in each calendar month are then summed to generate a calendarized usage value and the number of billed days for that month. Equation 3-1 was used to calculate monthly usage by calendar month:

Equation 3-1: Monthly Billing Data Calculation

$$Monthly\ usage_m = \sum_{i}^{n} \left(\frac{Usage_i}{Billing\ days_i} \times Month\ days_i \right)$$

Where:

i = *Bill containing the month of interest.*

n = *Last bill containing the month of interest.*

m = *The month of interest.*

$Monthly\ usage$ = *The calendarized monthly usage for a given month.*

$Usage$ = *The bill's total usage.*

$Month\ days$ = *The number of days belonging to the month of interest m in the bill.*

$Billing\ days$ = *The total number of days in the billing period.*

3.1.2 Data cleaning

After calendarization was completed, an average daily usage value was calculated by dividing the monthly usage by the number of billed days in a month. Additionally, billing data was filtered using the following criteria:

- Removed all customers without any of the following: intervention date, customer number, premise number, or email address (unless they received paper reports).
- Removed customers who received no HERs.
- Removed bills with date range that included the intervention date.
- Removed bills with dates after a customer's move-out date.
- Removed bills with dates prior to a customer's move-in date.
- Removed customer bills with average daily energy use greater than 3 times the interquartile range (84 kWh). This level of consumption is considered a statistically extreme outlier. Further discussion on this topic can be found in Section 4.5.
- Removed bills with more than 90 days before calendarization or less than 10 days after calendarization.

After data preparation and cleaning, the Evaluator tested the validity of using the untreated customers as a comparison group.

3.2 Step 2: Validity Testing

Consistent with best practices for impact evaluation of behavior programs, the Evaluator tested the validity of untreated customers as possible comparison group(s). A regression analysis that compares treated and untreated groups to determine program effect requires that the untreated group is a statistically valid comparison group. Validity is tested by examining energy consumption of the treated group before treatment to the energy consumption by the untreated group. Monthly energy consumption is tested for statistically significant differences between the treated and untreated groups using a simple two-tailed T-test.

To compare the two groups, the Evaluator divided treated and untreated customers into intervention cohorts. Each cohort included treated customers with intervention dates within a specific period. Pre-treatment billing data was required for each cohort to establish a baseline energy consumption before the intervention. The comparison customer group included untreated customers with billing data in the same pre-treatment period.

The Evaluator completed T-tests at the 95 percent confidence level to determine the average daily energy use in each of the pre-treatment months for the treated and untreated cohorts. If the two groups (treated and untreated) did not have statistically similar energy use for ten or more months of the year, the validity test failed.

3.3 Step 3: Calculate Deemed Savings

Due to failing the validity testing, the process of using a statistically rigorous regression-based approach to estimate savings was not feasible. Therefore, the Evaluator calculated savings using a modified deemed methodology using billing data from the evaluated program years and the deemed savings values documented in 2020[2].

The percentages were applied to billing data provided by RMP. Billing data was filtered as documented in section 3.1.2. Deemed savings percentages are reported in Table 3-1.

Table 3-1: Deemed Percentages by Consumption Tiers and Duration of Treatment

Consumption Tier	Consumption Range	Program Year 1	Program Year 2	Program Year 3+
Tier 1	< 4,047	0.6%	1.0%	1.0%
Tier 2	> 4,047 to < 7,027	0.7%	1.3%	1.5%
Tier 3	> 7,027 to < 10,356	1.2%	2.4%	2.4%
Tier 4	> 10,356	1.4%	2.2%	2.5%

Deemed percentages of savings are based on 1) consumption and 2) duration of treatment. The consumption tiers listed in the deemed model are based on pre-treatment energy consumption. However, insufficient pre-treatment consumption data was provided to the Evaluator for many customers who were added to the program from 2022 to 2025, and many legacy customers' pre-treatment consumption data were over five years old. Therefore, the Evaluator used current energy use to determine each customer's consumption tier. The threshold consumption levels were modified to reflect this adjustment.

The Evaluator took the following steps to determine which deemed savings percentage to apply for each monthly customer bill.

1. Determine annual consumption for each customer using Equation 3-2. For customers with a complete year of billing data, this is the sum of their monthly usage. For those with less than a year of billing data, annual consumption is an estimate of annualized energy usage calculated using an annual consumption curve.

[2] RMP contracted with Cadmus in 2020 to develop a deemed savings model. The complete memo is included in the 2020-2021 Utah Home Energy Report Program Evaluation, Measurement, and Verification Report.

Equation 3-2: Annual Energy Consumption

$$Estimated\ Annual\ Usage = \frac{\sum_{i=1}^{n}(Actual\ Monthly\ Usage)_i}{\sum_{i=1}^{n}(Month's\ Percent\ Share\ of\ Annual\ Usage)_i}$$

Where:

i = *month of interest*

n = *number of months of billing data in the year*

Example:

March, April, May, and June billing data are available for a customer with energy use of 547, 553, 565, 571, respectively. Table 3-2 provides an example annual energy use curve[3].

Table 3-2: Example of Annual Usage Curve

Month	% of Annual Usage
Jan	6%
Feb	6%
Mar	7%
Apr	7%
May	8%
Jun	10%
Jul	13%
Aug	13%
Sep	10%
Oct	8%
Nov	6%
Dec	6%
Total	**100%**

Annual estimated energy use is the sum of energy use across all available months divided by the sum of the weights for each month.

$$Estimated\ Annual\ Usage\ = \frac{(547 + 553 + 565 + 571)}{(.07\ +\ .07\ +\ .08\ +\ .10)}$$

[3]A curve for which the average percentage of annual consumption is indicated for each month to reflect consumption seasonality, calculated using calendarized billing data summed by month for all customers with a full year of billing data.

$$Estimated\ Annual\ Usage\ = \frac{2{,}236}{0.32}$$

$$Estimated\ Annual\ Usage\ = 6{,}988$$

The customer is expected to have an annual usage of approximately 6,988 kWh based on the four months of available billing data.

2. Calculate Weighted Threshold Percentage using Equation 3-3 and Table 3-3 for each consumption tier.

Equation 3-3: Weighted Threshold Percentage

$$Weighted\ Threshold\ Percentage_j = \frac{\sum_{i=1}^{3}(n_i * s_{ij})}{\sum_{i=1}^{3} n_i}$$

Where:

i = *The program year (either 1, 2, or 3+)*
j = *The consumption tier (either 1, 2, or 3)*
n = *The number of months in program year i*
s = *The deemed savings rate for program year i for consumption tier j*

Table 3-3: Program Year Determination

Program Year	Months since intervention date
1	0-12
2	13-24
3+	25+

Example: Customer is in Program Year 1 for 6 months and Program Year 2 for 6 months of evaluated year (see Table 3-3). Deemed savings for consumption Tier 1 for Program Year 1 are 0.6% and 1.0% for Program Year 2. Deemed savings for consumption Tier 2 for Program Year 1 are 0.7% and 1.3% for Program Year 2. Deemed savings for consumption Tier 3 for Program Year 1 are 1.2% and 2.4% for Program Year 2. Determine the threshold percentage for each consumption tier:

$$Weighted\ Threshold\ Percentage_1 = \frac{(6\ months\ *\ 0.6\%\ +\ 6\ months\ *\ 1.0\%)}{12\ months}$$

$$= 0.8\%$$

$$Weighted\ Threshold\ Percentage_2 = \frac{(6\ months\ *\ 0.7\%\ +\ 6\ months\ *\ 1.3\%)}{12\ months}$$

$$= 1.0\%$$

$$Weighted\ Threshold\ Percentage_3 = \frac{(6\ months\ *\ 1.2\%\ +\ 6\ months\ *\ 2.4\%)}{12\ months}$$
$$= 1.8\%$$

3. Calculate the Post-treatment Consumption Tier Threshold for the customer using Equation 3-4.

Equation 3-4: Post-treatment Consumption Tier Threshold

$$Post-treatment\ Consumption\ Tier\ Threshold_j = Pre-treatment\ Tier\ Threshold_j * (1 - Weighted\ Threshold\ Percentage_j)$$

Example:

$$Post-treatment\ Consumption\ Tier\ Threshold_1 = 4{,}047\ kWh * (1 - 0.008) = 4{,}014\ kWh$$

$$Post-treatment\ Consumption\ Tier\ Threshold_2 = 7{,}027\ kWh * (1 - 0.010) = 6{,}957\ kWh$$

$$Post-treatment\ Consumption\ Tier\ Threshold_3 = 10{,}356\ kWh * (1 - 0.018) = 10{,}170\ kWh$$

4. Determine which consumption tier the customer falls into by comparing the customer's annual consumption to the Post-treatment Consumption Tier Threshold values (instead of the pre-treatment consumption tier threshold values included in Table 3-1). If their consumption is lower than the Tier 1 threshold, they are in Tier 1. If their consumption is higher than the Tier 1 threshold but lower than the Tier 2 threshold, they are in Tier 2. If consumption is higher than the Tier 2 consumption but less than the Tier 3 consumption, they are in Tier 3. Finally, if consumption is above the Tier 3 threshold, then they are in Tier 4.

   Example: In the example above, the customer's annual consumption of 6,988 kWh is over the Post-treatment Consumption Tier 2 Threshold of 6,957 kWh and below the Post-treatment Consumption Tier 3 Threshold of 10,170 kWh. Therefore, this customer falls into Consumption Tier 3.

5. Calculate the customer energy savings for each bill using Equation 3-5.

Equation 3-5: Deemed Savings Equation[4]

$$Customer\ Savings_i = Billed\ Energy\ Usage_i * \left(\left(\frac{1}{1 - deemed\ savings\ \%_i}\right) - 1\right)$$

Where:

$i = Billed\ month$

While the consumption tier is constant for the evaluation year for a given customer, the deemed savings may change depending on the Program Year for the given month. Savings were calculated using actual billed energy use.

3.4 Step 4: Adjust Using Past Realization Rate Average

Realization Rates from the 2020-2023 HER evaluations reflect the difference between savings calculated using deemed methodology (claimed savings) and an empirically verified analysis using a regression approach (evaluated savings). These realization rates represent the difference between the industry-standard approach to validating savings using billing analysis that isolates program effect, and the deemed approach which estimates current program performance on past program performance. After calculating deemed savings as documented above, the Evaluator applied the average realization rate from 2020-2023 to adjust for this difference.

Table 3-4: Realization Rates from 2020-2023 Evaluations

Evaluation Period	Realization Rate
2020-2021	93%
2022-2023	95%
Average	94%

[4] See Appendix B for derivation.

4 Impact Evaluation Results

Total program savings were calculated by determining the appropriate deemed percentage savings for each customer based on the customer's annual energy use and the duration for which the customer had been treated. After determining the deemed savings percentage to use for each customer bill, the customer's monthly energy use was multiplied by the deemed savings percentage to determine savings for that month. These savings were then summed annually for 2024 and 2025 to acquire a deemed savings calculation. That value was then multiplied by the average realization rate from the 2020-2023 evaluations to determine the final evaluated savings.

4.1 Step 1: Data Preparation and Cleaning Results

The Evaluator prepared and cleaned billing data provided by RMP prior to calculating deemed savings. The following table represents the unique number of treated customers throughout the billing cleaning stages.

Table 4-1: Treated Customer Count After Restrictions

Restriction Detail	Treated Customer Count
Start	813,916
Removed customers with missing premises	813,916
Removed customers with missing customer ID's	813,916
Removed customers outside the state of Utah	813,916
Removed treated customers without intervention date	813,916
Remove treatment customers who did not receive reports but had claimed savings	813,916
Removed customers with no billing data	753,813
Removed bills with more than 90 days duration	753,810
Removed bills that occur after move-out date	753,810
Removed bills that occur before move-in date	753,810
Removed outlier bills above 3 * IQR[a] (84 kWh) daily usage	752,797
Removed bills overlapping the intervention date	752,711
Calendarized data and removed bills with fewer than 10 days	752,116
Removed bills outside the analysis years of 2024 and 2025	750,524

[a]Interquartile range.

The Evaluator conducted calendarization adjustments for each monthly bill. The resulting data was adjusted monthly bills with associated consumption and bill duration for each month the customer remained active.

Then, the Evaluator split the billing data up into intervention cohorts based on treatment start dates. This defined pre-treatment periods for treated customers and allowed the Evaluator to identify untreated customers with billing data in the same pre-treatment period. Five intervention cohorts were defined in Table 4-2.

Table 4-2: Intervention Cohort Treatment Start Date Ranges

Intervention Cohort	Treatment Start Date Range
1	July 2021 – June 2022
2	July 2022 – Dec 2022
3	Jan 2023 – Dec 2023
4	Jan 2024 – Dec 2024
5	Jan 2025 – May 2025

4.2 Step 2: Validity Testing Results

After data preparation and cleaning, the Evaluator tested each cohort to determine whether untreated comparison customers had statistically similar baseline consumption, allowing their use in regression analysis to isolate the treatment effect. This test compared treated and untreated customers' consumption over 12 pre-treatment months for each cohort. As shown in the tables below, all cohorts failed validity testing because the groups had significantly different average daily energy use.

Table 4-3: Cohort 1 Validity Testing T-Test Results

Pre-treatment Month	Treated Group Average Daily Usage (kWh/day)	Untreated Group Average Daily Usage (kWh/day)	Average Daily Usage Difference (kWh/day)	P-value	Statistically Significant Difference[5]
Jan	16.7	17.4	-0.7	0	Yes
Feb	15.9	16.6	-0.7	0	Yes
Mar	14.8	15.7	-0.9	0	Yes
Apr	13.8	14.9	-1.1	0	Yes
May	15.5	16.9	-1.5	0	Yes
Jun	19.2	20.3	-1.2	0	Yes
Jul	19.4	20.3	-0.9	0	Yes
Aug	20.0	20.9	-0.9	0	Yes
Sep	17.1	18.5	-1.4	0	Yes
Oct	14.6	15.8	-1.2	0	Yes
Nov	15.6	16.3	-0.7	0	Yes
Dec	16.9	17.5	-0.6	0	Yes

[5] Statistically significant if $p<0.05$

The p-values for Cohort 1 were all statistically significant, indicating the untreated group was not a valid comparison group.

Table 4-4: Cohort 2 Validity Testing T-Test Results

Pre-treatment Month	Treated Group Average Daily Usage (kWh/day)	Untreated Group Average Daily Usage (kWh/day)	Average Daily Usage Difference (kWh/day)	P-value	Statistically Significant Difference[a]
Jan	15.8	17.1	-1.3	0	Yes
Feb	15.3	16.5	-1.2	0	Yes
Mar	14.4	15.6	-1.2	0	Yes
Apr	13.5	14.7	-1.2	0	Yes
May	14.9	16.0	-1.1	0	Yes
Jun	18.0	19.2	-1.3	0	Yes
Jul	20.1	20.4	-0.3	0.02	Yes
Aug	19.7	20.6	-0.8	0	Yes
Sep	16.8	18.1	-1.3	0	Yes
Oct	13.6	15.0	-1.4	0	Yes
Nov	14.0	15.3	-1.4	0	Yes
Dec	15.5	16.9	-1.4	0	Yes

[a]Statistically significant if $p<0.05$

The p-values for Cohort 2 were all statistically significant, indicating the untreated group was not a valid comparison group.

The Evaluator also tested billing data from Cohorts 3 and 4 to determine if valid comparison groups existed. A year's worth of pre-treatment billing data is required to determine a customer's baseline energy usage. As of August 2022, the median length of pre-treatment billing data available was around 131 to 143 days, which is insufficient to determine a customer's baseline energy use. Therefore, there was insufficient pre-treatment data for these cohorts, and they were excluded from the test.

Table 4-5: Cohort 5 Validity Testing T-Test Results

Pre-treatment Month	Treated Group Average Daily Usage (kWh/day)	Untreated Group Average Daily Usage (kWh/day)	Average Daily Usage Difference (kWh/day)	P-value	Statistically Significant Difference[a]
Jan	18.6	21.4	-2.8	0	Yes
Feb	17.5	20.2	-2.7	0	Yes
Mar	16.5	19.1	-2.6	0	Yes
Apr	15.4	17.8	-2.4	0	Yes
May	17.4	20.2	-2.9	0	Yes
Jun	26.0	29.8	-3.8	0	Yes
Jul	31.4	35.8	-4.5	0	Yes
Aug	28.2	32.2	-3.9	0	Yes
Sep	21.4	24.4	-2.9	0	Yes
Oct	17.7	20.0	-2.3	0	Yes
Nov	18.3	20.3	-2.0	0	Yes
Dec	19.8	21.9	-2.1	0	Yes

[a] Statistically significant if $p<0.05$

The p-values for Cohort 5 were all statistically significant, indicating the untreated group was not a valid comparison group.

4.3 Step 3: Deemed Savings Results

After determining that a regression-based approach would not properly capture savings due to the invalid comparison groups, the Evaluator opted to use the deemed savings approach using billing data from the evaluated program years. The Evaluator did not receive billing data for 9 percent of customers who were included in claimed savings; therefore, savings were not able to be calculated for them. The annual savings are reported in Table 4-6.

Table 4-6: Annual Evaluated Deemed Savings

Evaluation Year	Evaluated Deemed Savings (kWh)
2024	108,704,956
2025	116,218,658
Total	**224,923,614**

Table 4-7 presents verified deemed savings by consumption tier, and Table 4-8 represents verified deemed savings by consumption tier and the number of years a customer has been in the program.

Table 4-7: Evaluated Deemed Savings by Consumption Tier

Evaluation Year	Consumption Tier	Verified Deemed Savings (kWh)	Customers in Group	Proportion in Group
2024	Tier 1	1,544,040	90,164	14.1%
	Tier 2	9,117,643	157,660	24.7%
	Tier 3	27,586,622	160,849	25.2%
	Tier 4	70,456,651	230,775	36.1%
2025	Tier 1	1,812,196	103,522	14.5%
	Tier 2	10,648,401	180,882	25.3%
	Tier 3	30,773,698	184,115	25.8%
	Tier 4	72,984,363	245,471	34.4%

Table 4-8: Verified Deemed Savings by Consumption Tier 2024-2025

Consumption Tier	Years in Program	Verified Deemed Savings (kWh)
Tier 1	1	713,600
	2	789,219
	3+	1,853,417
Tier 2	1	2,360,599
	2	3,696,573
	3+	13,708,871
Tier 3	1	4,458,571
	2	9,292,251
	3+	44,609,498
Tier 4	1	6,796,964
	2	14,140,492
	3+	122,503,559

Table 4-9: Verified Deemed Savings by Consumption Tier 2024

Consumption Tier	Years in Program	Verified Deemed Savings (kWh)
Tier 1	1	324,359
	2	487,191
	3+	732,490
Tier 2	1	1,081,241
	2	2,389,641
	3+	5,646,761
Tier 3	1	2,058,692
	2	6,274,805
	3+	19,253,126
Tier 4	1	3,213,672
	2	9,847,681
	3+	57,395,298

Table 4-10: Verified Deemed Savings by Consumption Tier 2025

Consumption Tier	Years in Program	Verified Deemed Savings (kWh)
Tier 1	1	389,241
	2	302,028
	3+	1,120,927
Tier 2	1	1,279,358
	2	1,306,932
	3+	8,062,110
Tier 3	1	2,399,880
	2	3,017,446
	3+	25,356,372
Tier 4	1	3,583,291
	2	4,292,810
	3+	65,108,261

4.4 Step 4: Adjustment Using Past Realization Rates Results

The Evaluator adjusted the evaluated deemed savings by the average of the 2020-2023 realization rates to reflect the average difference between savings calculated using the deemed savings percentages proposed in 2020 and the verified savings calculated during those years using a billing analysis as reported in Table 4-11.

Table 4-11: Adjusted Program Saving

Year	Claimed Savings (kWh)	Evaluated Deemed Savings	Average of Past Realization Rates	Evaluated Savings (kWh)	Realization Rate
2024	116,178,000	108,704,956	94%	102,182,659	88%
2025	114,076,103	116,218,658	94%	109,245,539	96%
Total	**230,254,103**	**224,923,614**	**94%**	**211,428,197**	**92%**

4.5 Discussion of Realization Rates

The HER program resulted in deemed evaluated savings of 211,428,198 kWh during the 2024-2025 evaluation period with a realization rate of 92 percent (see Table 4-12).

Table 4-12: Program Energy Savings (kWh) and Realization Rate

Year	Claimed Savings (kWh)	Evaluated Savings (kWh)	Realization Rate
2024	116,178,000	102,182,659	88%
2025	114,076,103	109,245,539	96%
Total	**230,254,103**	**211,428,198**	**92%**

The difference between the claimed and evaluated annual energy savings is likely the result of the following factors. See Table 4-13 for impact of each factor.

Removal of outlier bills: The Evaluator removed bills with daily consumption above three times the interquartile range (~84 kWh/day) since they are statistically extreme outliers. Cadmus' analysis, on which deemed values are based, identified customers with energy consumption above 1.5 times the interquartile range as statistical outliers. Deemed percent savings estimates do not appear to be intended for customers with annual consumption values that are statistical outliers. Therefore, the Evaluator excluded these bills. This had a negative effect on the realization rate.

Removal of customers who received no reports during a program year: The 2020 analysis that established the deemed savings percentages includes the following statement: "With a deemed saving approach, Rocky Mountain Power would claim savings equal to a percentage of a customer's consumption if the customer received a minimum number of energy reports during the program year." As such, the Evaluator removed customers who did not receive any reports during the program year. This had a negative effect on the realization rate.

Partial customer billing data: The Evaluator calculated savings for treated customers for whom billing data was provided by RMP. Billing data was not available for 9 percent

of the customers and therefore could not be calculated. This had a negative effect on the realization rate.

The consumption tier for each customer: As described in section 3.3, the method for determining the consumption tier for a customer was based on their post-treatment annual consumption in the evaluation year. Determination of consumption tiers may differ between Implementer and Evaluator. As indicated in the deemed methodology recommendation memo, consumption tier should be determined by pre-treatment annual consumption. Less than a year of pre-treatment baseline consumption data was provided for a significant number of customers. Therefore, the Evaluator established a method to estimate annual consumption based on current billing data. Without knowing how the Implementer determined consumption tiers, the Evaluator could not determine how this impacted the realization rate.

Paper reports savings in 2024: The Evaluator calculated savings for customers who received paper HERs in the mail and did not receive emailed HERs. The Implementer did not include claimed savings for these 28,036 customers. This had a positive effect on the realization rate.

Application of average 2020-2023 realization rates. The 2020-2023 program evaluations were able to complete a regression analysis of billing data to empirically verify program savings. Realization rates from those years reflect the difference between savings calculated using deemed savings method and verified savings calculated using billing data. The Evaluator has applied an average of those realization rates (94 percent) to adjust the deemed savings to reflect an average expected difference between deemed savings estimates and actual savings that would have been verified if statistically valid comparison groups had been available. This had a negative impact on evaluated savings.

Table 4-13: Savings Effected by Most Significant Realization Rate Factors

Reason	2024		2025	
	kWh	% of Claimed Savings	kWh	% of Claimed Savings
Removal of outliers[a]	12,685,330	11%	12,152,660	11%
No billing data was available for the customer- email customers	5,629,096	5%	4,097,193	4%
No billing data was available for customer - paper customers	249,827	~0%	265,650	~0%
Received no reports during program year	81,077	~0%	63,018	~0%
No email address	0	0%	103,945	~0%

[a]Calculated kWh estimate using same method as deemed savings methodology, so the value may differ from claimed savings.

5 Process Evaluation

The purpose of the process evaluation is to provide insights into customers' experiences with the HER program. The Evaluator's process evaluation reflects insights gained through a customer survey that collected responses from customers who received HERs (treated). Email addresses were not available for untreated customers. Therefore, the Evaluator did not gather comparison data from untreated customers. The survey was administered in January 2026. The Evaluator collected a total of 166 survey responses. Table 5-1 displays response rate information.

Table 5-1: Summary of Email Survey Response

Metric	Treated
Email Invite	10,000
Complete	166
Response Rate	2%

The survey collected information about the treated customers' experiences with the HERs, satisfaction with RMP, respondents' use of RMP's online home energy report portal and customers' attitudes about energy-saving actions and efficiency actions customers have taken (e.g., behavioral changes, or installing energy efficient appliances and equipment).

5.1 Reading HERs

Over three quarters of respondents reported that they read most or all the HERs they received (see Table 5-2). Fourteen percent of respondents indicated that someone else in the household also read the reports.

Table 5-2: How often did you read the Home Energy Reports?
I read…

Portion Read	Percent (n = 166)
I read all the reports	49%
I read most of the reports	34%
I read about half of the reports	4%
I read a few of the reports	11%
I haven't read any of the reports	2%
I don't know	1%

Respondents who never or rarely read the reports were asked why they didn't. Table 5-3 includes their responses.

Table 5-3: Why didn't you read more of the Home Energy Reports?

Reason	Percent (n = 21)
Do not have the time	19%
Not interested	24%
The suggested tips were not applicable to my home	14%
I did not find the information on the report to be valuable	29%
I did not find the information in the report to be accurate	24%
I did not understand them	5%
Other (Please specify)	29%
I don't know	5%
Do not have the time	19%

5.2 Perceptions Regarding HERs Ease of Understanding

Respondents provided feedback on how easy or difficult it was to understand the information in their HERs, how accurate and valuable they believed the information to be, and their satisfaction with the report. Most survey respondents (89 percent) found the HER information on their home's energy use easy to understand (see Table 5-4).

Table 5-4: Rated Ease of Understanding HER Information

Answer	Percent (n = 166)
1 - Very difficult	1%
2	1%
3	7%
4	20%
5 - Very easy	69%
Don't know	2%

5.3 Perceived Value of Information on Home Energy Use

Most respondents perceived the various components of the HERs to be valuable, with over half scoring each of the five HER components as valuable (see Figure 5-1).[6]

[6] Rated the value a 4 or 5 on a scale from 1 (not at all valuable) to 5 (very valuable).

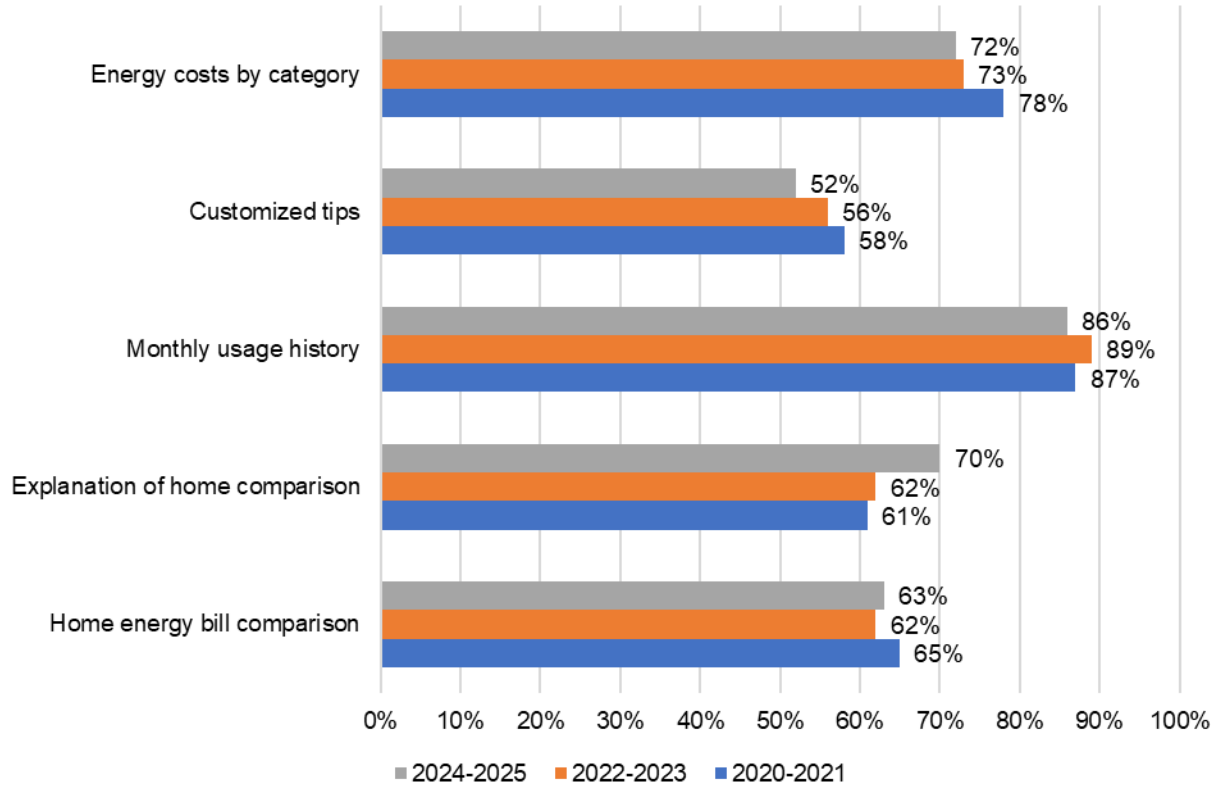

Figure 5-1: Rated Value of HER Information

5.4 Perceived Accuracy of Information on Home Energy Use

Survey respondents largely found the information on their home's energy use to be accurate (see Table 5-5).

Table 5-5: Rated Accuracy of HER Information

Answer	Percent (n = 166)
1 Not at all accurate	5%
2	7%
3	19%
4	34%
5 Very accurate	24%
I don't know	11%

The respondents who said the HER information was inaccurate (rated as a 1 or 2 on a 5-point scale) perceived the assumptions made about their home or household are inaccurate or that comparisons of their homes with others are inappropriate because of their specific circumstances. Some customers expressed distrust in the report because

the cost by category reported inaccuracies, causing the customer to distrust the entire report.

5.5 Satisfaction with HER

Most respondents rated their satisfaction with several aspects of the reports as either a 4 or 5 on a 5-point scale (see Figure 5-2).

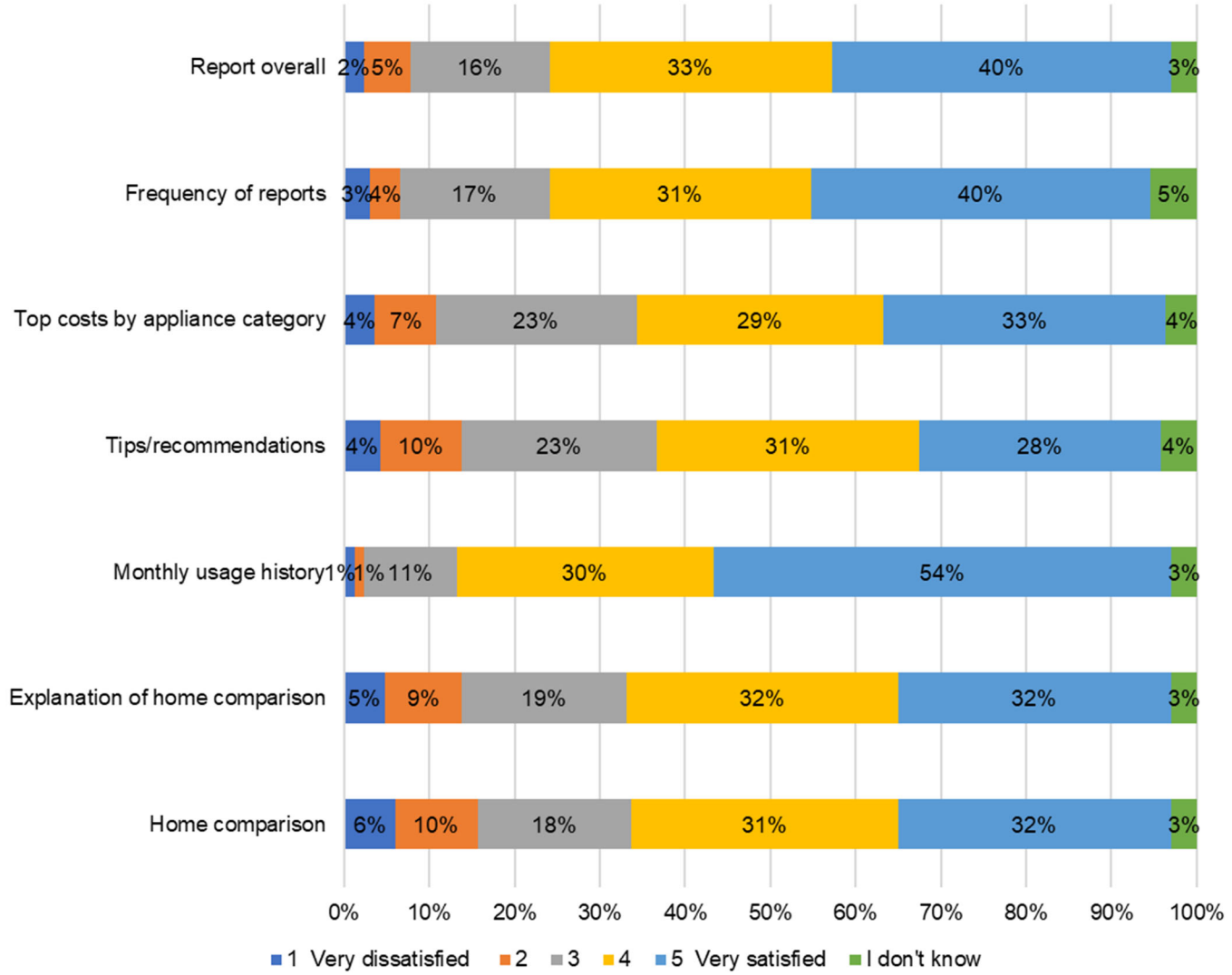

Figure 5-2: Satisfaction with HERs

The survey offered respondents an opportunity to provide recommendations on how to improve the information on the HER and to comment on reasons for dissatisfaction with their reports. The most frequent responses express a distrust in the accuracy of the report, and therefore their suggestions revolve around increasing the reports' accuracy. Several customers expressed frustration being compared to other houses when their life

circumstances (working from home, having large families, etc.) were more of a driving factor than the size of the home. Other customers expressed a dislike of receiving the reports and suggested discontinuing the program.

A quarter of respondents recalled logging onto RMP's online home energy report portal. Respondents who did not report logging onto the portal cited the reasons reported in Table 5-6.

Table 5-6: Primary Reason why Customers did not log onto the Portal

Reason	Percentage of Respondents (n = 124)
Was not aware of the portal	66%
Not interested in my energy use	8%
Did not know how to access the portal	11%
Did not think the portal would provide useful information	9%
Did not have the time to use the portal	15%
Experienced technical difficulties trying to access the portal	2%
Other (Please describe)	5%

Customers who did visit the online portal generally ranked the portal contents highly. See Figure 5-3.

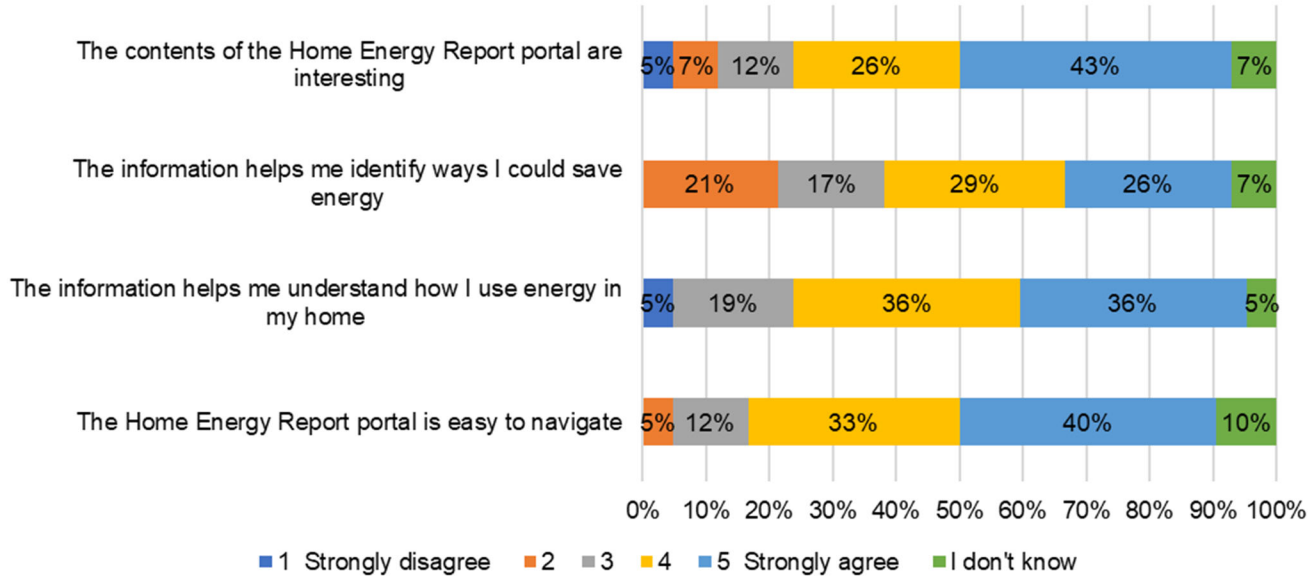

Figure 5-3:Customer assessment of the Home Energy Reports online portal

5.6 Opinion Toward Rocky Mountain Power

Respondents provided feedback on how receiving the HER had affected their opinion of RMP. Sixteen percent indicated that receiving the report had changed their opinion of RMP. Of those who indicated receiving the report had changed their opinion, most indicated it had improved their opinion (see Table 5-7).

Table 5-7: Rated Change in Satisfaction with Rocky Mountain Power

Rating	Percentage (n = 25)
5 - Greatly improved	32%
4	48%
3	8%
2	8%
1 - Greatly worsened	4%

5.7 Energy Saving Behavior

The survey asked respondents if they had adopted any actions that were recommended in the tips section of the reports. Thirty-nine percent of treated customers reported that they had changed their behavior because of the information included in the reports they received. Table 5-8 summarizes responses.

Table 5-8: Behaviors Adopted that are Included in Tips Section of Reports

Action Taken	Percent (n = 45)
I program my thermostat to save energy when I'm away from home.	68%
I don't let hot water run during routine tasks.	55%
I turn off appliances when I am not home.	50%
I use stove burners that are the right size for my pans.	42%
I use a fan instead of my air conditioner sometimes.	40%
I let dishes air dry.	39%
I use countertop appliances.	39%
I wash clothes using cold water.	32%
I turned off game consoles when not in use instead of leaving in stand-by mode.	27%
I make sure refrigerator had minimum clearance to allow operating at maximum efficiency.	23%
I installed a dimmer switch to control lighting levels.	23%
I clean my air conditioner every year.	21%
I turn off equipment in my home office on the weekends.	21%
I run ceiling fans in reverse during the winter.	21%

Action Taken	Percent (n = 45)
I use the power management features of my electronics.	19%
I use remote-controlled sockets to turn appliances off when not in use.	16%
I reduce the temperature I use to dry my clothes.	16%
I use an electric kettle instead of a pot on the stove.	16%
Other	53%

Forty-three percent of survey respondents indicate that they had installed energy saving products in 2024 or 2025. The survey then asked customers how influential the HERs were in the customers' decisions to take steps to save energy or to make energy efficient purchases. Seventy-eight percent of survey respondents who had changed their behavior indicated that the reports ranked either a 4 or 5 on a 5-point scale in importance. For customers who purchased efficient products, 38 percent scored the importance of the reports either a 4 or 5. See Figure 5-4

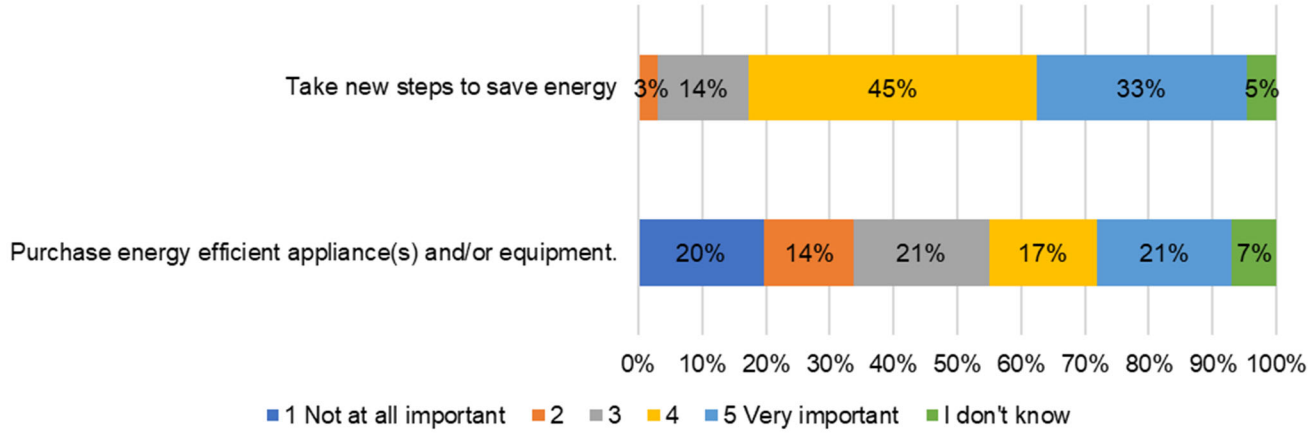

Figure 5-4: How important was the information you received in HERs in your decision save energy in your home?

5.8 Demographics

The survey collected demographic data on respondents. See Table 5-9 and Table 5-10 for details. Most respondents were white, over-55, English speaking, homeowners with some post-secondary education.

Table 5-9: Respondent Home Characteristics

Response	All Respondents (n = 249)
Own	90%
Rent	10%
Average monthly electricity bill	
$0 - $50	13%
$51 - $100	34%
$101 - $150	26%
$151 - $200	13%
$201 - $250	3%
$251 - $300	5%
$301 - $350	1%
$351 - $400	1%
$401 - $450	1%
I don’t know	1%
Prefer not to say	4%

Table 5-10: Respondent Demographics

Response	All Respondents (n = 164)
Primary Language	
English	99%
Spanish	1%
Prefer not to say	1%
Age	
25-34 years old	4%
35-44 years old	9%
45-54 years old	17%
55-64 years old	20%
65-74 years old	33%
75-85 years old	14%
86 years old or older	1%
Prefer not to answer	2%
Education	
Less than high school	1%

Response	All Respondents (n = 164)
High school graduate/GED	10%
Associates degree, vocation/technical school, or some college	23%
Four-year college degree	29%
Graduate or professional degree	34%
Prefer not to answer	4%
Less than high school	1%
Race or Ethnicity	
Asian	2%
Black/African American	1%
Caucasian/White	85%
Hispanic or Latino	2%
Pacific Islander or Native Hawaiian	1%
Other (Please specify)	1%
Prefer not to answer	10%

6 Cost Effectiveness Results

Apex estimated the cost-effectiveness results for the Utah Home Energy Report program based on 2024 and 2025 costs and savings estimates provided by RMP. Table 6-1 and Table 6-3 summarize cost-effectiveness assumptions for the HER program. Cost-effectiveness results are reported in Table 6-4 through Table 6-6.

Table 6-1: Cost-Effectiveness Analysis Inputs

Parameter	2024	2025
Discount Rate	6.77%	6.77%
Residential Line Loss	6.36%	6.36%
Residential Energy Rate ($/kWh)	$0.1063	$0.1063
Inflation Rate[a]	2.27%	2.27%

[a]To align with annual budget expectations, cost-effectiveness inputs are presented in nominal dollars.

Table 6-2: Home Energy Report Annual Program Costs, Nominal – 2024-2025

Program Year	Program Delivery	Utility Admin	Program Development	Total Utility Cost
2024	$1,516,737	$26,134	$36,085	$1,578,956
2025	$2,041,245	$20,491	$0	$2,061,736
Total Program	**$3,557,982**	**$46,625**	**$36,085**	**$3,640,692**

Table 6-3: Program Savings

Program Year	Gross kWh Savings	Realization Rate	Adjusted Gross kWh Savings at Site	Net to Gross Ratio	Net kWh Savings at Site	Measure Life (years)
2024	116,178,000	88%	102,182,659	100%	102,182,659	1
2025	114,076,103	96%	109,245,539	100%	109,245,539	1
2024-2025	**230,254,103**	**92%**	**211,428,198**	**100%**	**211,428,198**	**1**

Table 6-4: Home Energy Report Program Cost-Effectiveness Results 2024-2025

Cost-Effectiveness Test	Levelized $/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/ Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	$0.016	$3,640,692	$26,218,325	$22,577,633	7.20
Total Resource Cost Test (TRC) No Adder	$0.016	$3,640,692	$23,838,121	$20,197,429	6.55
Utility Cost Test (UCT)	$0.016	$3,640,692	$23,802,036	$20,161,344	6.54
Participant Cost Test (PCT)		$0	$22,474,819	$22,474,819	NA
Rate Impact Test (RIM)		$26,115,509	$23,802,036	($2,313,473)	0.91
Lifecycle Revenue Impacts ($/kWh)					$0.00040
Discounted Participant Payback (years)					0.00

Table 6-5: Home Energy Report Program Cost-Effectiveness Results 2024

Cost-Effectiveness Test	Levelized $/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/ Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	$0.015	$1,578,956	$16,731,589	$15,152,633	10.60
Total Resource Cost Test (TRC) No Adder	$0.015	$1,578,956	$15,213,816	$13,634,860	9.64
Utility Cost Test (UCT)	$0.015	$1,578,956	$15,177,731	$13,598,775	9.61
Participant Cost Test (PCT)		$0	$10,862,018	$10,862,018	NA
Rate Impact Test (RIM)		$12,440,973	$15,177,731	$2,736,759	1.22
Lifecycle Revenue Impacts ($/kWh)					$0.00055
Discounted Participant Payback (years)					0.00

Table 6-6: Home Energy Report Program Cost-Effectiveness Results 2025

Cost-Effectiveness Test	Levelized $/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/ Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	$0.018	$2,061,736	$9,486,735	$7,424,999	4.60
Total Resource Cost Test (TRC) No Adder	$0.018	$2,061,736	$8,624,305	$6,562,569	4.18
Utility Cost Test (UCT)	$0.018	$2,061,736	$8,624,305	$6,562,569	4.18
Participant Cost Test (PCT)		$0	$11,612,802	$11,612,802	NA
Rate Impact Test (RIM)		$13,674,537	$8,624,305	($5,050,232)	0.63
Lifecycle Revenue Impacts ($/kWh)					$0.00060
Discounted Participant Payback (years)					0.00

7 Conclusions and Recommendations

Based on the preceding impact and process analyses and evaluations, The Evaluator offers the following conclusions and recommendations for consideration in future program planning.

7.1 Conclusions

The Evaluator reached the following conclusions based on its impact and process evaluations.

The program generated deemed energy savings in 2024 and 2025 of 211,428,198 kWh with an overall realization rate of 92 percent for the evaluation period.

Evaluated savings were calculated using deemed savings percentages rather than using a regression analysis that compares treated and untreated customers and isolates the treatment effect to verify savings.

The realization rate of 92 percent was the result of the following factors:

- Removal of bills with statistically extreme outlier consumption levels. This decreased the realization rate.
- Billing data was not available for all customers that the Implementer listed as treated. Evaluated savings were calculated from billing data. This decreased the realization rate.
- The Evaluator did not calculate savings for any customers who did not receive HERs during the evaluation year. This decreased the realization rate.
- The Evaluator calculated savings for customers who received paper HERs in the mail and did not receive emailed reports. The Implementer did not calculate claimed savings for these customers in 2024. This increased the realization rate.
- If there is a difference between how the Evaluator and the Implementer determined consumption tier, this will have impacted the realization rate. However, the Evaluator cannot determine if a difference exists nor how it impacted the realization rate.
- Application of average 2020-2023 realization rates to adjust for historic deemed versus verified savings calculated using a regression analysis of billing data. This decreased the realization rate.

The absence of a valid comparison group is the primary limitation affecting confidence in results. Validity testing demonstrated that treated and untreated customers were not statistically equivalent, preventing use of regression-based billing analysis. As a result, savings estimates rely on historical realization rates rather than current-period empirical verification, limiting evaluation robustness.

Customer survey responses indicate customers were satisfied with the program. Most HER treated customers were satisfied with the reports and found the various components useful. Furthermore, customers said receiving the reports had improved their opinion of RMP.

Customer engagement with HERs is strong, though behavioral impacts are moderate. Survey results indicate that most participants read the reports regularly, found them easy to understand, and viewed them as valuable. Reported behavioral changes suggest the program influences energy-saving actions, but the magnitude of incremental impact appears modest.

Awareness and use of the online energy portal are limited, with only a minority of customers reporting accessing the online portal highlighting a key opportunity to improve customer engagement.

Survey results highlight concerns about report relevance and applicability (e.g., household-specific circumstances) and reinforce the need to improve perceived accuracy and personalization to increase program effectiveness.

Process findings may not fully represent the broader population. Survey respondents skew toward older, homeowner, and English-speaking customers, which may limit generalizability of engagement and satisfaction findings across the full participant population.

It was not possible to survey untreated customers. Email addresses were not available for any untreated customers; therefore, no survey responses are available as a basis for behavioral comparison between treated and untreated customers.

7.2 Recommendations

Based on the 2024–2025 impact and process evaluation findings, the Evaluator offers the following recommendations to improve program evaluability, reduce realization rate erosion, and strengthen confidence in reported savings. Recommendations are prioritized according to their influence on realization rates and the ability to empirically validate savings.

Reestablish a statistically valid untreated comparison group. Reestablishing and maintaining a statistically valid untreated comparison group is the most critical recommendation. Without a valid counterfactual, savings cannot be empirically verified using industry-standard billing analysis and must continue to rely on historical realization rates.

RMP and the Implementer should ensure that untreated customers have no prior exposure to HERs, are comparable to treated customers in baseline consumption and geography and are replenished over time to account for attrition. Ongoing monitoring of

baseline equivalence is necessary to preserve evaluability. Absent this step, future savings claims will remain projections rather than measured outcomes.

Reduce structural drivers of realization rate erosion. Several identifiable factors materially reduced evaluated savings relative to claimed savings. Addressing these issues upstream would improve alignment between claimed and evaluated results.

Key actions include:

- Exclude outliers from claimed savings unless and until further investigation is completed into the treatment effect on these extreme high-consumption accounts.
- Enforcing minimum report delivery thresholds before claiming savings.
- Improving customer–billing data integration through consistent use of unique customer identifiers.

These actions would stabilize realization rates independent of changes to savings methodology.

Improve transparency and consistency in consumption tier assignment. Uncertainty in consumption tier assignment may contribute to differences between claimed and evaluated savings. The Evaluator recommends adopting and documenting a consistent tiering methodology, preserving pre-treatment billing data where feasible, and providing tier-level reporting to support transparency and evaluation review.

Address accuracy perceptions to support engagement and persistence. While secondary to realization rate impacts, process findings indicate that concerns about report accuracy may weaken customer engagement. Improving explanations of home comparisons and appliance disaggregation assumptions, and refining personalization of tips, may support longer-term engagement and savings persistence.

Increase awareness and strategic use of the online portal. Low portal awareness represents a missed opportunity to reinforce HER messaging. The portal should be more prominently promoted within report communications and positioned as a complement to the HERs that provides deeper insight into usage and savings opportunities.

Appendix A: Treated Customer Survey

A.1 Participant and Control Group Survey

1. Thank you for taking our customer survey. Do you recall receiving Home Energy Reports like the one below from Rocky Mountain Power? They include information about your home energy use and tips on how you can save energy. You would have received them either by email or mail.

    - Yes
    - No

2. About how many Home Energy Reports do you recall receiving during the year? Your best guess is fine. [Numeric response]

3. How often did you read the Home Energy Reports in 2024 and 2025?

    - I read all the reports
    - I read most of the reports
    - I read about half of the reports
    - I read a few of the reports
    - I haven't read any of the reports
    - I don't know

4. Why didn't you read more of the Home Energy Reports

    - Do not have the time
    - Not interested
    - The suggested tips were not applicable to my home
    - I did not find the information on the report to be valuable
    - I did not find the information in the report to be accurate
    - I didn't understand them
    - Other (Please specify)
    - I don't know

5. Has anyone else in your household read the reports?

    - Yes
    - No
    - Not applicable
    - don't know

6. Using the scale below, please rate how easy or difficult it is to understand the information in your Home Energy Reports. [1 = VERY DIFFICULT AND 5 = VERY EASY]

7. How accurate do you believe the information in your Home Energy Reports is about your home energy usage? [1=NOT AT ALL ACCURATE AND 5=VERY ACCURATE]

8. What do you think is inaccurate in your Home Energy Reports? [OPEN-ENDED]

9. How valuable are the following types of information included in your Home Energy Reports? [1=NOT AT ALL VALUABLE TO 5=VERY VALUABLE]

    - Home energy bill comparison
    - Explanation of home comparison
    - Monthly usage history
    - Customized tips
    - Energy costs by category

10. Please rate your satisfaction with the following aspects of the Home Energy Reports

    - Home comparison
    - Explanation of home comparison
    - Monthly usage history
    - Tips/recommendations
    - Top costs by appliance category
    - Frequency of reports
    - Report overall

11. How could we improve the Home Energy Reports? [OPEN-ENDED]

12. Have the Home Energy Reports changed your opinion of Rocky Mountain Power?

    - Yes
    - No
    - I don’t know

13. How have the Home Energy Reports changed your opinion of Rocky Mountain Power?
    [1 = GREATLY WORSENED, 5 = GREATLY IMPROVED]

14. Rocky Mountain Power offers its customers access to an online portal where you can see your home's energy usage along with insights and tips. In the past 12 months, have you accessed this online portal?

    - Yes, I visited the portal within the last 30 days
    - Yes, I visited the portal more than 30 days ago
    - No, I do not recall visiting the portal

15. Why haven't you visited the online portal? (Please select all that apply) [MULTISELECT]

    - Was not aware of the portal
    - Not interested in my energy use
    - Did not know how to access the portal
    - Did not think the portal would provide useful information
    - Did not have the time to use the portal
    - Experienced technical difficulties trying to access the portal
    - Other (Please describe)
    - Don't know

16. Using the scale below, how much do you agree or disagree with the following statements about the portal? [1 = 1 (Strongly disagree), 5 = 5 (Strongly agree),

    - The Rocky Mountain Power Home Energy Reports website was easy to navigate
    - The information helped me understand how I use energy in my home
    - The information helped me identify ways that I could save energy
    - The contents of the Rocky Mountain Power Home Energy Reports website are interesting

A.2 Energy Efficiency Behaviors: Treated Customers

17. Have you changed how you do things to save energy based on information you learned from your Home Energy Reports in 2024 or 2025?

    - Yes
    - No
    - I don't know

18. Which of the following have you started doing because of the Home Energy Reports you received?

- I wash clothes using cold water.
- I use the power management features of my electronics.
- I clean my air conditioner every year.
- I turn off appliances when I am not home.
- I turn off equipment in my home office on the weekends.
- I program my thermostat to save energy when I'm away from home.
- I don't let hot water run during routine tasks.
- I use remote-controlled sockets to turn appliances off when not in use.
- I use a fan instead of my air conditioner sometimes.
- I use remote-controlled sockets to turn appliances off when not in use.
- I open curtains so the sun can heat my home during cold weather.
- I run ceiling fans in reverse during the winter.
- I let dishes dry air.
- I reduce the temperature I use to dry my clothes.
- I make sure refrigerator had minimum clearance to allow operating at maximum efficiency.
- I installed a dimmer switch to control lighting levels.
- I turned off game consoles when not in use instead of leaving in stand-by mode.
- I use an electric kettle instead of a pot on the stove.
- I use countertop appliances.
- I use stove burners that are the right size for my pans.
- Other

19. What did you do to change how you save energy?

    [OPEN-ENDED]

20. Did you install these or any other energy saving products in 2024 or 2025? (Please select all that apply)

- Smart thermostat (e.g., Nest, Lyric, Ecobee, Sensi)
- Energy efficient windows or doors
- Attic, floor, or wall insulation
- Advanced power strips
- Low flow faucet aerators or showerheads
- ENEGY STAR central air conditioner
- ENERY STAR room air conditioner
- ENERGY STAR clothes dryer
- ENERGY STAR clothes washer
- ENERGY STAR refrigerator

- ENERGY STAR stand-alone freezer
- ENERGY STAR heat pump water heater
- ENERGY STAR heat pump
- Other (Please specify)

21. How important was the information on your Home Energy Reports when you decided to [1=NOT AT ALL IMPORTANT TO 5=VERY IMPORTANT]

    - Take new steps to save energy
    - Purchase energy efficient appliance(s) and/or equipment.

22. Did you get a rebate on the product you purchased?

A.3 Energy Efficiency Behaviors: Untreated Customers

23. Did you take any action to reduce energy use in your home in 2024 or 2025?

    - Yes
    - No
    - I don’t know

24. Which of the following have you started doing because of the Home Energy Reports you received?

    - I wash clothes using cold water.
    - I use the power management features of my electronics.
    - I clean my air conditioner every year.
    - I turn off appliances when I am not home.
    - I turn off equipment in my home office on the weekends.
    - I program my thermostat to save energy when I'm away from home.
    - I don't let hot water run during routine tasks.
    - I use remote-controlled sockets to turn appliances off when not in use.
    - I use a fan instead of my air conditioner sometimes.
    - I use remote-controlled sockets to turn appliances off when not in use.
    - I open curtains so the sun can heat my home during cold weather.
    - I run ceiling fans in reverse during the winter.
    - I let dishes air dry.
    - I reduce the temperature I use to dry my clothes.
    - I make sure refrigerator had minimum clearance to allow operating at maximum efficiency.
    - I installed a dimmer switch to control lighting levels.

- I turned off game consoles when not in use instead of leaving in stand-by mode.
- I use an electric kettle instead of a pot on the stove.
- I use countertop appliances.
- I use stove burners that are the right size for my pans.
- Other

25. What did you do to change how you save energy? [OPEN-ENDED]

26. Did you install these or any other energy saving products in 2024 or 2025? (Please select all that apply)

- Smart thermostat (e.g., Nest, Lyric, Ecobee, Sensi)
- Energy efficient windows or doors
- Attic, floor, or wall insulation
- Advanced power strips
- Low flow faucet aerators or showerheads
- ENEGY STAR central air conditioner
- ENERY STAR room air conditioner
- ENERGY STAR clothes dryer
- ENERGY STAR clothes washer
- ENERGY STAR refrigerator
- ENERGY STAR stand-alone freezer
- ENERGY STAR heat pump water heater
- ENERGY STAR heat pump
- Other (Please specify)

27. How important was the information on your Home Energy Reports when you decided to [1=NOT AT ALL IMPORTANT TO 5=VERY IMPORTANT]

- Take new steps to save energy
- Purchase energy efficient appliance(s) and/or equipment.

28. Did you get a rebate on the product you purchased?

Energy Attitudes and Behaviors: Treated and Untreated

29. Did you take action to reduce energy use in your home before 2024?

- Yes
- No
- I don’t know

30. What did you do to save energy before 2024? [OPEN ENDED]

31. In 2021 did your household enroll in a Time of Use energy plan with Rocky Mountain Power?

    - Yes
    - No
    - Don't know

32. How much do you agree or disagree with the following statements? [0 = STRONGLY DISAGREE, 10 = STRONGLY AGREE]

    - Energy efficiency saves money.
    - I am not very concerned about the amount of energy used in my home.
    - I am too busy to worry about making energy-related improvements in my home.
    - Scarce energy supplies will be a major problem in the future.
    - There is very little I can do to reduce the amount of energy I am now using.
    - It is possible to save energy without sacrificing comfort by being energy efficient.
    - I know of steps I could take to reduce my household energy use
    - I intend to reduce my household energy use in the next 12 months

A.4 Demographics

33. Finally, please answer a few questions about your household.

34. Do you rent or own your home?

    - Rent
    - Own
    - Prefer not to answer

35. Which of the following best describes your home?

    - Single-family home
    - Manufactured or mobile home
    - Duplex or triplex
    - Apartment in an apartment building or complex
    - Condominium or townhome
    - Other (Please specify)
    - I don't know

36. When was your home built?

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

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

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

38. 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

39. Approximately how much is your average monthly electric bill?

- $0-$50
- $51-$100
- $101-$150
- $151-$200
- $201-$250
- $251-$300
- $301-$350
- $351-$400
- $401-$450

- $450 or more
- Don’t know
- Prefer not to say

40. What is the primary language spoken in your home?

- English
- Spanish
- Chinese
- German
- Native American language
- Vietnamese
- Russian
- Tagalog
- Hmong
- Korean
- African language
- French
- Japanese
- Other (Please specify)
- Prefer not to answer

41. How would you characterize the community that you live in?

- Urban (relatively densely populated area)
- Rural (sparsely populated open area)
- Suburban (area outside downtown of city, primarily residential area)
- Other (Please specify)
- I don’t know

42. How old are you?

- Under 18 years old
- 18-24 years old
- 25-34 years old
- 35-44 years old
- 45-54 years old
- 55-64 years old
- 65-74 years old
- 75-85 years old
- 86 years old or older

- Prefer not to answer

43. Which of the following best describes the highest level of education you've completed in school?

- Less than high school
- High school graduate/GED
- Associates degree, vocation/technical school, or some college
- Four-year college degree
- Graduate or professional degree
- I don't know
- Prefer not to answer

44. Part of our goal in this survey is to help Rocky Mountain Power ensure it is serving everyone in its territory. To help us better understand who Rocky Mountain Power is serving, we are interested in the ethnicity of survey respondents. I identify my ethnicity as… (Please Select All that Apply)

- Asian
- Black/African American
- Caucasian/White
- Hispanic or Latino
- Native American or Alaska Native
- Pacific Islander or Native Hawaiian
- Middle Eastern or North African
- Other (Please specify)
- Prefer not to answer

45. Including yourself, how many people are living in your household? [DROP DOWN BOX – 1-12, 13 or more, 99. Prefer not to answer – Establishes CUTOFF]

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

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

Appendix B: Deemed Savings Equation

Under the deemed savings methodology, program savings are estimated by relating observed post-treatment energy use to the energy consumption that would have occurred in the absence of the program (referred to as *theoretical untreated usage*). This appendix documents the derivation of the deemed savings equation used in this evaluation.

Two equivalent expressions define energy savings due to treatment:

Equation B-1: Savings as a percentage of untreated usage

$$kWh\ savings = Theoretical\ Untreated\ Usage \times Deemed\ Savings\ Percentage$$

Equation B-2: Savings as the difference between untreated and treated usage

$$kWh\ savings = Theoretical\ Untreated\ Usage - Actual\ Treated\ Usage$$

B.1 Solving for Theoretical Untreated Usage

Because both expressions represent the same savings, they can be set equal:

$$Theoretical\ Untreated\ Usage - Actual\ Treated\ Usage = Theoretical\ Untreated\ Usage \times Deemed\ Savings\ Percentage$$

Rearranging terms:

$$Theoretical\ Untreated\ Usage \times (\mathbf{1} - Deemed\ Savings\ Percentage) = Actual\ Treated\ Usage$$

Solving for Theoretical Untreated Usage yields:

$$\text{Theoretical Untreated Usage} = \frac{\text{Actual Treated Usage}}{\mathbf{1} - \text{Deemed Savings Percentage}}$$

B.2 Final Deemed Savings Equation

To calculate savings directly from observed treated usage, substitute the expression for theoretical untreated usage into Equation B-2:

$$kWh\ savings = \frac{Actual\ Treated\ Usage}{\mathbf{1} - Deemed\ Savings\ Percentage} - Actual\ Treated\ Usage$$

Simplifying:

$$kWh\ savings = Actual\ Treated\ Usage \times \left(\frac{\mathbf{1}}{\mathbf{1} - Deemed\ Savings\ Percentage} - \mathbf{1}\right)$$

This final expression is the Deemed Savings Equation applied in the impact evaluation. It allows program savings to be calculated using observed post-treatment energy consumption and the applicable deemed savings percentage, without requiring direct observation of untreated energy use.