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

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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 throughout 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 in the absence of the program; 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, used to adjust projected impacts to reflect evaluation findings.

**Statistical equivalence** A condition in which treated and untreated groups have similar baseline characteristics, enabling valid comparison for 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 tests 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 Wyoming. 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 15.8 million kWh over the 2024–2025 period—8.1 million kWh in 2024 and 7.7 million kWh in 2025—representing an overall realization rate of 79 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 | 10,146,000 | 8,097,937 | 80% |
| 2025 | 9,736,000 | 7,695,914 | 79% |
| **Total** | **19,882,000** | **15,793,852** | **79%** |

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 were modest, and concerns about report accuracy persist among a subset of participants.

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 an untreated customer group could be reconstructed using available data. 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 tenure to post-treatment billing data, and
2. Adjusting the resulting deemed savings using the average realization rate (90 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 draws on a customer survey administered in January 2026 to treated and untreated customers. Survey findings indicate:

- Most treated respondents report reading and understanding the HERs and value the information provided.
- Overall satisfaction with the reports is high, and some customers attribute behavioral changes or energy-efficient purchases to the HER.
- Differences in self-reported behaviors and purchases between treated and untreated customers are modest, suggesting limited measurable incremental influence under the current program design.
- Trust in the accuracy of home comparisons and appliance-level estimates remains a key concern among dissatisfied participants.
- Awareness and use of the online energy portal are low, representing an opportunity to strengthen customer engagement.

## 1.4 Cost Effectiveness Summary

The HER program passed all applicable cost-effectiveness tests, including the Total Resource Cost (TRC), PacifiCorp Total Resource Cost (PTRC), Rate Impact Test (RIM), 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 continues to generate 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, contributing to realization rate reductions and increased reliance on historical adjustments.

## 1.6 Recommendations

To strengthen future program performance, regulatory confidence, and evaluability, the evaluation 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
- Improve transparency around consumption tier assignment and enhance customer trust in reported information.

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 Corporation (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 Wyoming 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 on their home energy consumption and information intended to support energy-saving behaviors.

Participating customers receive two emailed reports per month. 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 eliminates the ability to empirically measure or directly verify 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. Reported 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 an ad hoc statistically equivalent comparison group of untreated customers using available billing data. This comparison group 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 whether 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 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 average realization rates 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.

The inability to empirically verify savings reflects that program design decisions did not preserve a statistically valid untreated comparison group necessary for verification.

## 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.

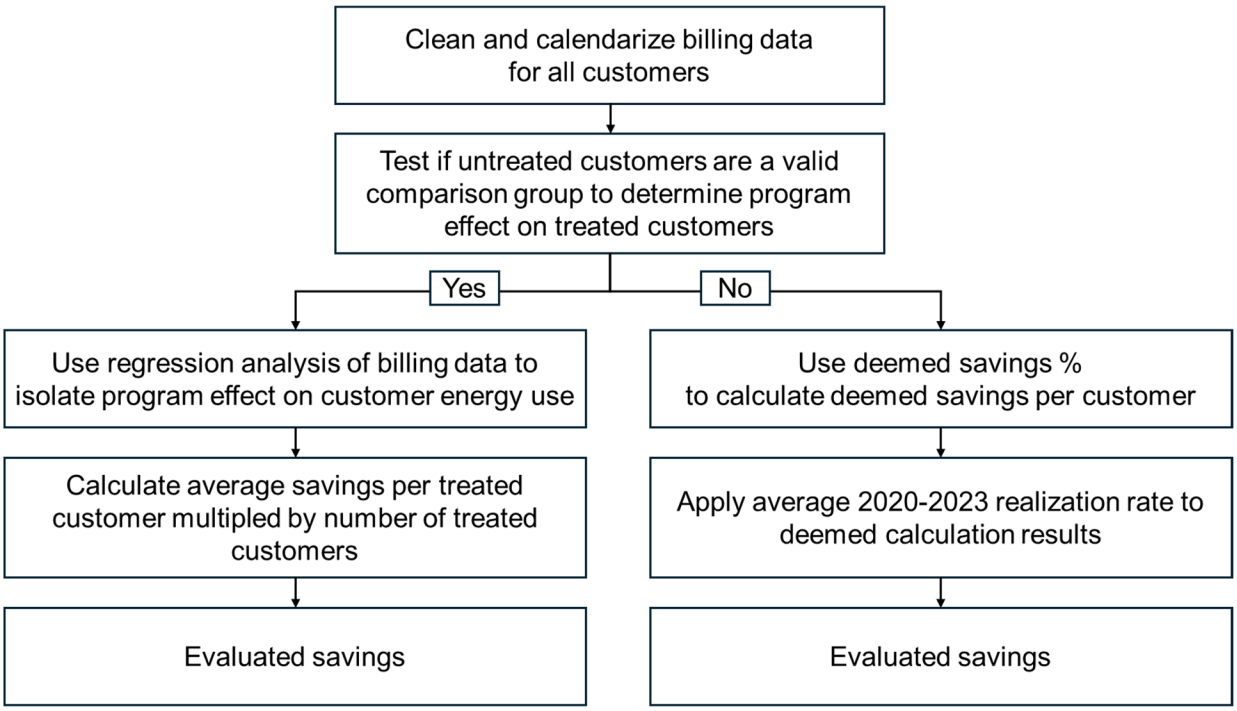


*Figure 3-1: Methodology Selection Process*

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 deemed savings methodology proposed in 2020 to calculate evaluated savings.

## 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, data was filtered using the following criteria:

- Removed all customers without any of the following: intervention date, customer number, premise number, or email address.
- 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 above (79 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 the untreated customers as a comparison group. 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 treatment group to the untreated group, 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 based on the deemed savings values documented in 2020. Deemed savings percentages are reported in Table 3-1.

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

| Consumption Tier | Program Year 1 | Program Year 2 | Program Year 3+ |
|---|---|---|---|
| < 6,300 kWh/yr (Low)[a] | 0.6% | 0.6% | 1.0% |
| >= 6,300 kWh/yr (High) | 1.06% | 1.83% | 1.78% |

[a]Low consumption tier were not included in the original deemed savings percentages.

The proposed deemed savings model did not account for savings in the lower consumption tier because the RCT programs included in the analysis used to develop the deemed values included only higher-consumption customers. The implementer and RMP agreed on the deemed savings percentages shown in the table above for the lower consumption tier. These percentages were based on a deemed analysis of the RMP Utah HER program, which did include data for customers in lower consumption tiers. In the Evaluator's professional judgment, deemed savings of 0.6 percent for the first two years of treatment and 1.0 percent thereafter represent a reasonable assessment.

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 complete billing data, this is the sum of their monthly usage. For those with

incomplete billing data, annual consumption is an estimate of annualized energy usage calculated using an annual consumption curve.

*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 475, 505, 510, and 515, respectively. Table 3-2 provides an example annual energy use curve[2].

*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.

[2]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.

$$Estimated\ Annual\ Usage\ = \frac{(475\ +\ 505\ +\ 510\ +\ 515)}{(.07\ +\ .07\ +\ .08\ +\ .10)}$$

$$Estimated\ Annual\ Usage\ = \frac{2005}{0.32}$$

$$Estimated\ Annual\ Usage\ = 6{,}266$$

The customer is expected to have an annual usage of approximately 6,266 kWh based on the four months of available billing data.

2. Calculate Weighted Threshold Percentage using Equation 3-3 and Table 3-3.

*Equation 3-3: Weighted Threshold Percentage*

$$Weighted\ Threshold\ Percentage = \frac{\sum_{i=1}^{3} n_i * s_i}{\sum_{i=1}^{3} n_i}$$

Where:

$i$ = *The program year (either 1, 2, or 3+)*

$n$ = *The number of months in program year $i$*

$s$ = *The low consumption tier deemed savings rate for program year $i$*

*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 2 for 6 months and Program Year 3+ for 6 months of evaluated year (see Table 3-3). Deemed savings for Program Year 2 are 0.6% and 1.0% for Program Year 3+.

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

$$Weighted\ Threshold\ Percentage = 0.8\%$$

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

*Equation 3-4: Post-treatment Consumption Tier Threshold*

$$\textit{Post-treatment Consumption Tier Threshold} =$$
$$\textit{Pre-treatment tier threshold} * (1 - \textit{Weighted Threshold Percentage})$$

Example:

$$\textit{Post-treatment Consumption Tier Threshold} = 6{,}300\ kWh * (1 - 0.008) = 6{,}250\ kWh$$

4. Determine which consumption tier the customer falls into by comparing the customer's annual consumption to the Post-treatment Consumption Tier Threshold value (instead of the pre-treatment consumption tier threshold of 6,300 kWh included in the original deemed savings table).

   Example: In the example above, the customer's annual consumption of 6,266 kWh is greater than the Post-treatment Consumption Tier Threshold of 6,250 kWh. Therefore, this customer falls into the high consumption tier.

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

*Equation 3-5: Deemed Savings Equation*[3]

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

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 without empirical

3 See Appendix B for derivation.

verification. 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 | 86% |
| 2022-2023 | 93% |
| **Average** | **90%** |

# 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 | 89,554 |
| Removed customers with missing premises | 89,548 |
| Removed customers with missing customer ID's | 89,548 |
| Removed customers outside the state of WY | 89,548 |
| Removed treated customers without intervention date | 89,548 |
| Removed treated customers without email addresses or who received no emails. | 88,238 |
| Removed customers with no billing data | 88,064 |
| Removed bills with more than 90 days duration | 88,064 |
| Removed bills that occur after move-out date | 88,064 |
| Removed bills that occur before move-in date | 88,064 |
| Removed outlier bills above 3 * IQR[a] (79 kWh) daily usage | 87,968 |
| Removed bills overlapping the intervention date | 87,944 |
| Calendarized data and removed bills with fewer than 10 days | 87,890 |
| Removed bills outside the analysis years of 2024 and 2025 | 87,703 |

[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. Four intervention cohorts were defined:

*Table 4-2: Intervention Cohort Treatment Start Date Ranges*

| Intervention Cohort | Treatment Start Date Range |
|---|---|
| 1 | June 2020 – June 2022 |
| 2 | July 2022 – May 2023 |
| 3 | June 2023 – May 2024 |
| 4 | June 2024 – May 2025 |

## 4.2 Step 2: Validity Testing Results

After data preparation and cleaning, The Evaluator tested each cohort to determine if the untreated comparison customers had statically similar baseline consumption so that they could be used in a regression analysis to isolate the treatment effect. This validity test compared the consumption of treated and untreated customers for 12 pre-treatment months for each cohort. As shown in the tables below, all cohorts failed the validity testing because the treated and untreated 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[4] |
|---|---|---|---|---|---|
| Jan | 27.87 | 23.58 | 4.29 | 0 | Yes |
| Feb | 27.06 | 22.81 | 4.25 | 0 | Yes |
| Mar | 25.51 | 21.35 | 4.16 | 0 | Yes |
| Apr | 23.50 | 19.47 | 4.03 | 0 | Yes |
| May | 21.99 | 18.12 | 3.87 | 0 | Yes |
| Jun | 21.71 | 18.13 | 3.58 | 0 | Yes |
| Jul | 25.75 | 21.39 | 4.36 | 0 | Yes |
| Aug | 25.37 | 21.06 | 4.31 | 0 | Yes |
| Sep | 21.49 | 18.02 | 3.47 | 0 | Yes |
| Oct | 23.03 | 19.42 | 3.61 | 0 | Yes |
| Nov | 26.56 | 22.21 | 4.35 | 0 | Yes |
| Dec | 28.20 | 23.81 | 4.39 | 0 | Yes |

[4] 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[4] |
|---|---|---|---|---|---|
| Jan | 25.05 | 23.40 | 1.65 | 0 | Yes |
| Feb | 24.57 | 22.76 | 1.81 | 0 | Yes |
| Mar | 22.95 | 21.35 | 1.60 | 0 | Yes |
| Apr | 20.29 | 18.99 | 1.30 | 0 | Yes |
| May | 18.54 | 17.33 | 1.21 | 0 | Yes |
| Jun | 20.94 | 19.16 | 1.78 | 0 | Yes |
| Jul | 24.77 | 23.38 | 1.39 | 0 | Yes |
| Aug | 22.11 | 20.92 | 1.19 | 0 | Yes |
| Sep | 18.60 | 17.86 | 0.74 | 0 | Yes |
| Oct | 18.70 | 18.11 | 0.59 | 0 | Yes |
| Nov | 21.18 | 20.14 | 1.04 | 0 | Yes |
| Dec | 24.58 | 23.06 | 1.52 | 0 | Yes |

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 145 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 analysis.

## 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. The annual savings can be found in Table 4-5.

*Table 4-5: Annual Evaluated Deemed Savings*

| Evaluation Year | Evaluated Deemed Savings (kWh) |
|---|---|
| 2024 | 9,047,975 |
| 2025 | 8,598,787 |
| **Total** | **17,646,762** |

Table 4-6 presents verified deemed savings by consumption tier, and Table 4-7 represents verified deemed savings by consumption tier and the number of years a customer has been in the program.

*Table 4-6: Evaluated Deemed Savings by Consumption Tier*

| Evaluation Year | Consumption Tier | Verified Deemed Savings (kWh) | Customers in Group | Proportion in Group |
|---|---|---|---|---|
| 2024 | Low | 781,682 | 29,938 | 37.4% |
| | High | 8,266,292 | 50,146 | 62.6% |
| 2025 | Low | 829,152 | 29,275 | 37.6% |
| | High | 7,769,635 | 48,607 | 62.4% |

*Table 4-7: Verified Deemed Savings by Consumption Tier and Program Year*

| Evaluation Year | Consumption Tier | Years in Program | Verified Deemed Savings (kWh) | Customers in Group | Proportion in Group |
|---|---|---|---|---|---|
| 2024 | Low | 1 | 115,959 | 11,389 | 10.8% |
| | | 2 | 154,280 | 11,489 | 10.9% |
| | | 3+ | 511,443 | 16,777 | 15.9% |
| | High | 1 | 652,415 | 12,135 | 11.5% |
| | | 2 | 1,982,197 | 17,276 | 16.4% |
| | | 3+ | 5,631,680 | 36,244 | 34.4% |
| 2025 | Low | 1 | 106,492 | 9,292 | 10.1% |
| | | 2 | 76,458 | 7,014 | 7.7% |
| | | 3+ | 646,202 | 18,890 | 20.6% |
| | High | 1 | 574,769 | 10,003 | 10.9% |
| | | 2 | 843,735 | 9,004 | 9.8% |
| | | 3+ | 6,351,130 | 37,355 | 40.8% |

## 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 4-8.

*Table 4-8: Adjusted Program Saving*

| Year | Claimed Savings (kWh) | Evaluated Deemed Savings | Average of Past Realization Rates | Evaluated Savings (kWh) | Realization Rate |
|---|---|---|---|---|---|
| 2024 | 10,146,000 | 9,047,975 | 90% | 8,097,937 | 80% |
| 2025 | 9,736,000 | 8,598,787 | 90% | 7,695,914 | 79% |
| **Total** | **19,882,000** | **17,646,762** | **90%** | **15,793,852** | **79%** |

## 4.5 Discussion of Realization Rates

The HER program resulted in deemed evaluated savings of 15,793,852 kWh during the 2024-2025 evaluation period with a realization rate of 79 percent (see Table 4-9).

*Table 4-9: Program Energy Savings (kWh) and Realization Rate*

| Year | Claimed Savings (kWh) | Evaluated Savings (kWh) | Realization Rate |
|---|---|---|---|
| 2024 | 10,146,000 | 8,097,937 | 80% |
| 2025 | 9,736,000 | 7,695,914 | 79% |
| **Total** | **19,882,000** | **15,793,852** | **79%** |

The difference between the claimed and evaluated annual energy savings per customer is likely the result of the following factors. See Table 4-10 for impact of each factor.

**Removal of outlier bills: Removal of outlier bills:** The Evaluator removed bills with daily consumption above three times the interquartile range (~79 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 that received no reports**: 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.

**Loss of customers when matching billing and customer data**: The Evaluator matched the list of treated customers provided by the implementer with each customer's billing data provided by RMP to calculate savings. Billing data was only available for 99.7 percent of the customers. Savings cannot be calculated without billing data.

**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.

**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. The Evaluator has applied an average of those realization rates (90 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 4-10: Savings Effected by Most Significant Realization Rate Factors*

| Reason | 2024 | | 2025 | |
|---|---|---|---|---|
| | kWh | % of Claimed Savings | kWh | % of Claimed Savings |
| Removal of outliers[a] | 1,109,127 | 12.3% | 1,000,456 | 11.6% |
| No email address or received no reports | 232,631 | 2.6% | 173,155 | 2.0% |
| No match between billing and customer data | 1,951 | 0.02% | 424 | ~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 customer's experiences with the HER program and to compare treated and untreated customers' energy consumption attitudes and behaviors.

The Evaluator's process evaluation reflects insights gained through a customer survey that collected responses from customers who received HERs (treated) and a comparison group (untreated) who did not.

The survey was administered in January 2026. The Evaluator collected a total of 208 survey responses. Table 5-1: displays response rate information.

*Table 5-1: Summary of Email Survey Response*

| Metric | Treated | Untreated | Total |
|---|---|---|---|
| Email Invite | 5,000 | 2,000 | 7,000 |
| Complete | 90 | 118 | 208 |
| Response Rate | 2% | 6% | 3% |

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).

Treated customers were presented with questions about their experience with HERs. untreated customers were only presented with questions about their attitudes and practices; they were not asked questions about the HER program.

## 5.1 Reading HERs

Three quarters of respondents reported that they read most or all the HERs they received (see Table 5-2). Eight 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 = 90) |
|---|---|
| All the reports | 46% |
| Most of the reports | 29% |
| About half of the reports | 7% |
| Only a couple of the reports | 12% |
| Haven't read any of the reports | 6% |
| 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 = 16) |
|---|---|
| Do not have the time | 38% |
| Not interested | 13% |
| The suggested tips were not applicable to my home | 38% |
| I did not find the information on the report to be valuable | 44% |
| I did not find the information in the report to be accurate | 19% |
| I did not understand them | 13% |
| Other (Please specify) | 13% |
| I don't know | 6% |

## 5.2 Perceptions Regarding HERs

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 (rating them either 4 or 5 on a 5-point scale). See Table 5-4.

*Table 5-4: Rated Ease of Understanding HER Information*

| Answer | Percent (n = 90) |
|---|---|
| 1 - Very difficult | 2% |
| 2 | 1% |
| 3 | 8% |
| 4 | 20% |
| 5 - Very easy | 69% |

## 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 (either a 4 or a 5 on a 5-point scale). Responses from the previous two evaluations cycles are provided illustrating relatively consistent ratings over the past six years.

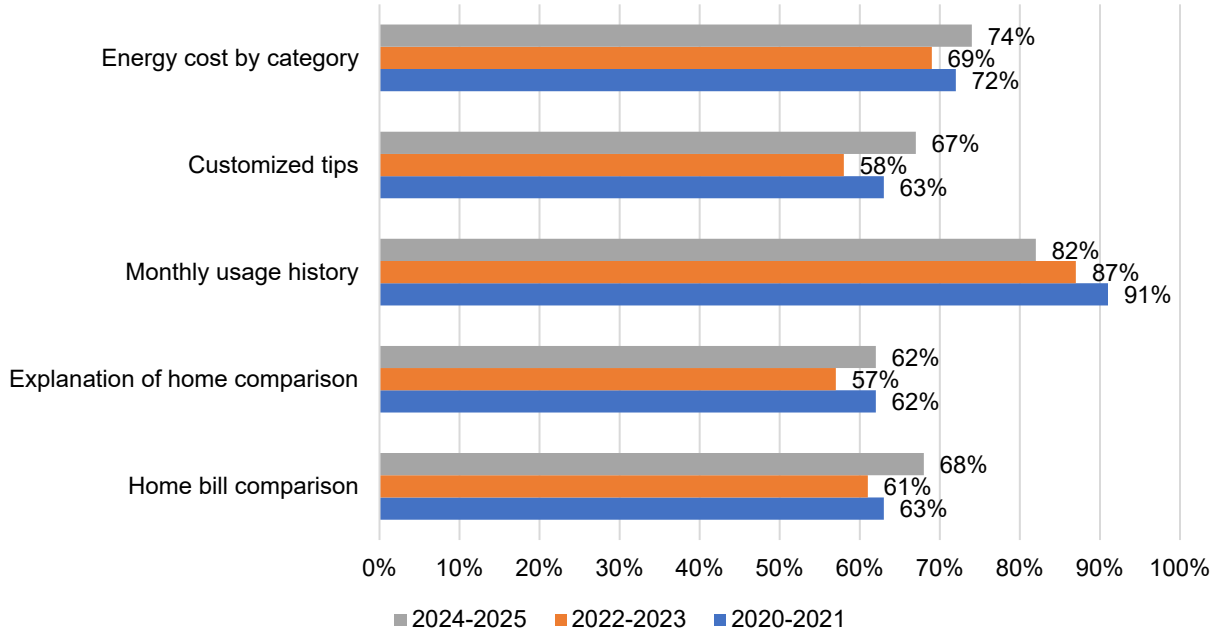


*Figure 5-1: Rated Value of HER Information*

## 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 = 90) |
|---|---|
| 1 - Not at all accurate | 6% |
| 2 | 9% |
| 3 | 21% |
| 4 | 28% |
| 5 - Very accurate | 22% |
| Don't know | 14% |

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 heating and appliance types were inaccurate.

## 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).

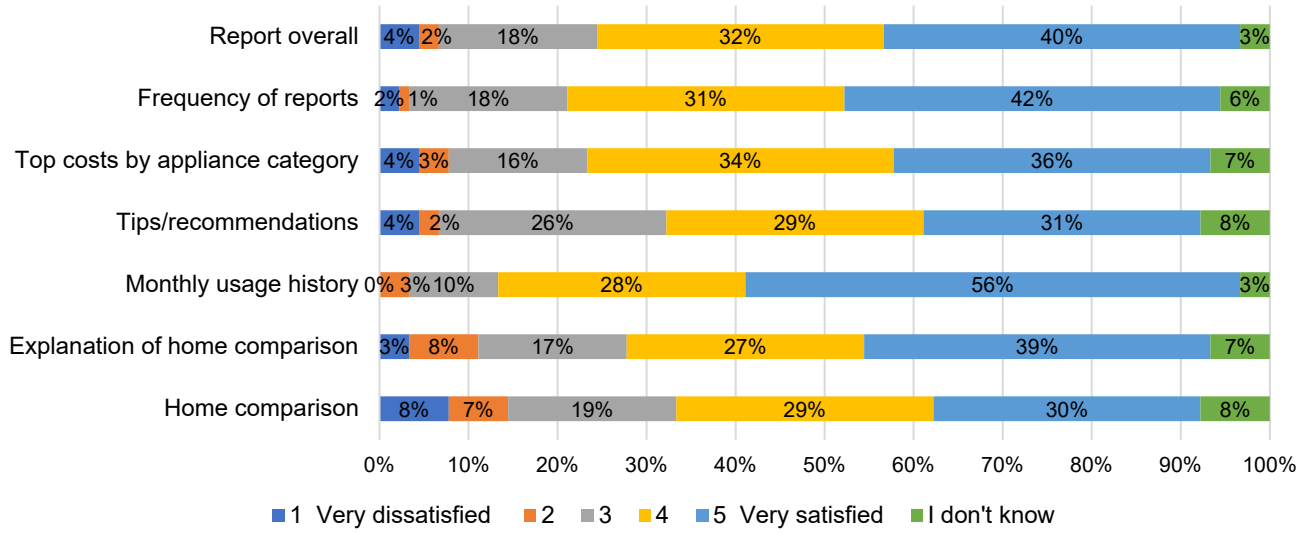


*Figure 5-2: Satisfaction with HERs*

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.

Twenty-three percent of treated 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 = 78) |
|---|---|
| Was not aware of the portal | 57% |
| Not interested in my energy use | 6% |
| Did not know how to access the portal | 13% |
| Did not think the portal would provide useful information | 6% |
| Did not have the time to use the portal | 13% |
| Experienced technical difficulties trying to access the portal | 3% |
| Other | 7% |
| I don't know | 9% |

## 5.6 Opinion of Rocky Mountain Power

Respondents provided feedback on how receiving the HER had affected their opinion of RMP. Seventeen 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 RMP*

| Rating | Percentage (n = 15) |
|---|---|
| 5 - Greatly improved | 33% |
| 4 | 40% |
| 3 | 20% |
| 2 | 0% |
| 1 - Greatly worsened | 7% |

## 5.7 Beliefs and Attitudes about Energy Efficiency

Survey respondents generally endorsed positive beliefs and attitudes about energy efficiency. Customers were asked to indicate their alignment with statements using a scale from 0 (strongly disagree) to 10 (strongly agree). Figure 5-3 represents the average response for treated and untreated customers for each statement.

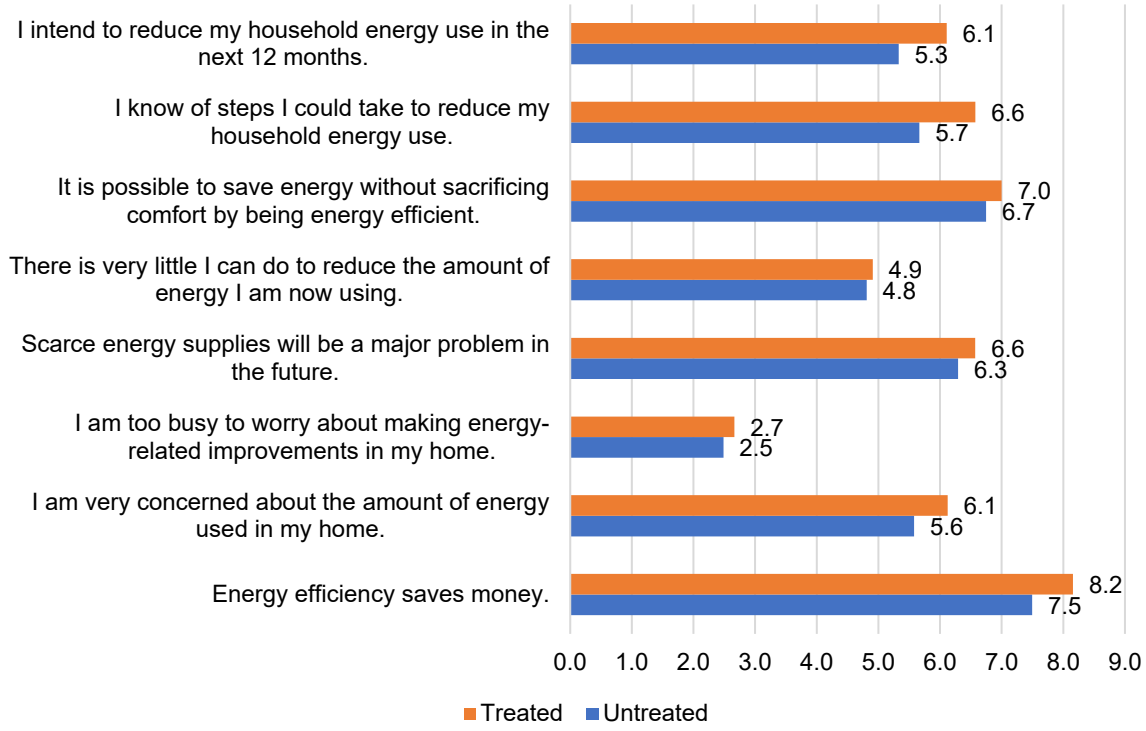


*Figure 5-3: Treated vs Untreated Customers' Beliefs and Attitudes about Energy Efficiency Average score (0=Strongly disagree, 10= Strongly agree)*

## 5.8 Energy Saving Behavior

Fifty percent of treated customers reported that they had changed their behavior because of the reports they received. The survey asked respondents if they had adopted any actions that were recommended in the tips section of the reports. Table 5-8 summarizes a comparison of treated and untreated customers' responses.

*Table 5-8: Treated vs Untreated Customers*
*Behaviors Included in Tips Section of Reports*

| Action Taken | Treated (n = 90) | Untreated (n = 118) |
|---|---|---|
| I use the power management features of my electronics. | 22% | 28% |
| I clean my air conditioner every year. | 24% | 40% |
| I turn off appliances when I am not home. | 53% | 58% |
| I turn off equipment in my home office on the weekends. | 20% | 18% |
| I program my thermostat to save energy when I'm away from home. | 51% | 62% |
| I don't let hot water run during routine tasks. | 51% | 58% |
| I use a fan instead of my air conditioner sometimes. | 47% | 56% |
| I use remote-control sockets to turn appliances off when not in use. | 11% | 6% |
| I run ceiling fans in reverse during the winter. | 29% | 41% |
| I let dishes air dry. | 47% | 44% |
| I reduce the temperature I use to dry my clothes. | 22% | 27% |
| I make sure refrigerator had minimum clearance to allow operating at maximum efficiency. | 40% | 40% |
| I installed a dimmer switch to control lighting levels. | 16% | 17% |
| I turned off game consoles when not in use instead of leaving in stand-by mode. | 22% | 22% |
| I use an electric kettle instead of a pot on the stove. | 18% | 24% |
| I use countertop appliances. | 49% | 50% |
| I use stove burners that are the right size for my pans. | 56% | 69% |

Figure 5-4 provides a graphic comparison of the treated and untreated customers' responses about energy saving behaviors.

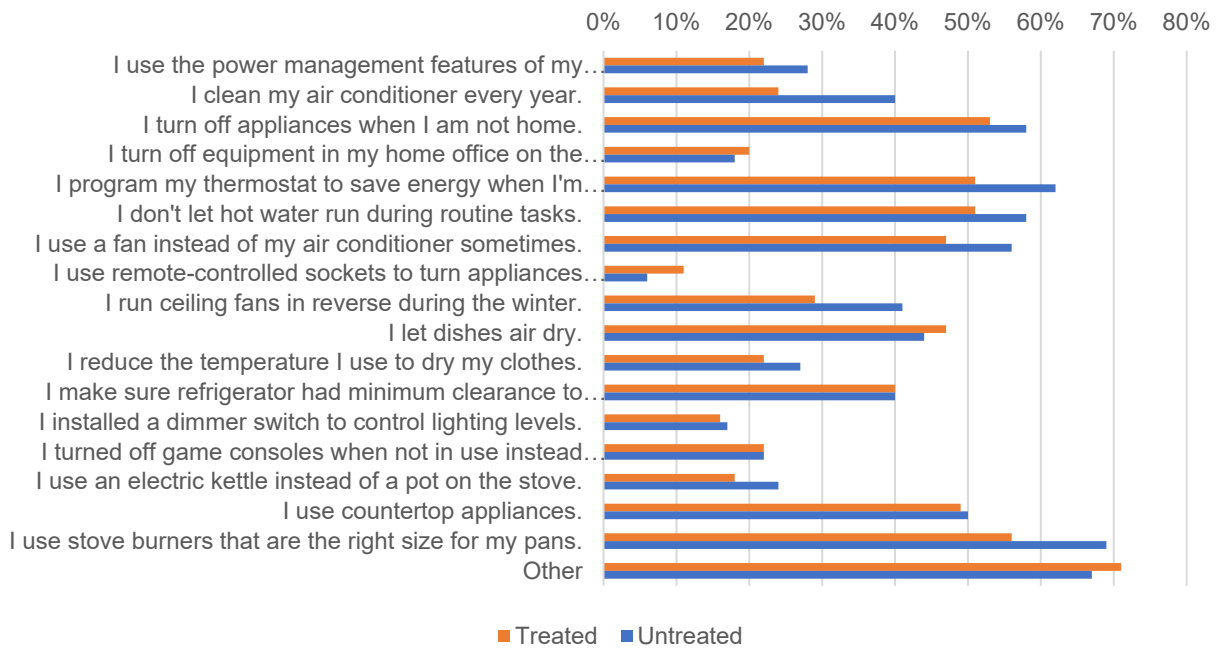


*Figure 5-4: Treated vs Untreated Customers Behaviors Included Tips Section of Reports*

## 5.9 Energy Saving Purchases

Forty-three percent of treated customers said they had installed one or more energy efficient items in 2024 or 2025, and 56 percent of these respondents said the information in the reports had been important in their decision-making to make the purchase(s). The survey also asked untreated customers if they had purchased energy efficient products. Table 5-9 compares responses from treated and untreated customers, and Figure 5-5 provides a visual comparison of responses from each group.

*Table 5-9: Treated vs Untreated Customers*
*Energy Efficient Purchases*

| Energy Efficient Purchase | Treated (n=90) | Untreated (n=118) |
|---|---|---|
| Smart thermostat | 14% | 10% |
| Energy efficient windows or doors | 16% | 16% |
| Attic, floor, or wall insulation | 8% | 14% |
| Advanced power strips | 14% | 15% |
| Low flow faucet aerators or showerheads | 12% | 11% |
| ENEGY STAR central air conditioner | 2% | 9% |
| ENERGY STAR clothes dryer | 12% | 22% |
| ENERGY STAR clothes washer | 11% | 23% |
| ENERGY STAR refrigerator | 12% | 20% |
| ENERGY STAR stand-alone freezer | 6% | 9% |
| ENERGY STAR heat pump water heater | 4% | 3% |
| ENERGY STAR heat pump | 2% | 4% |
| Other | 2% | 4% |
| None of the above | 57% | 40% |

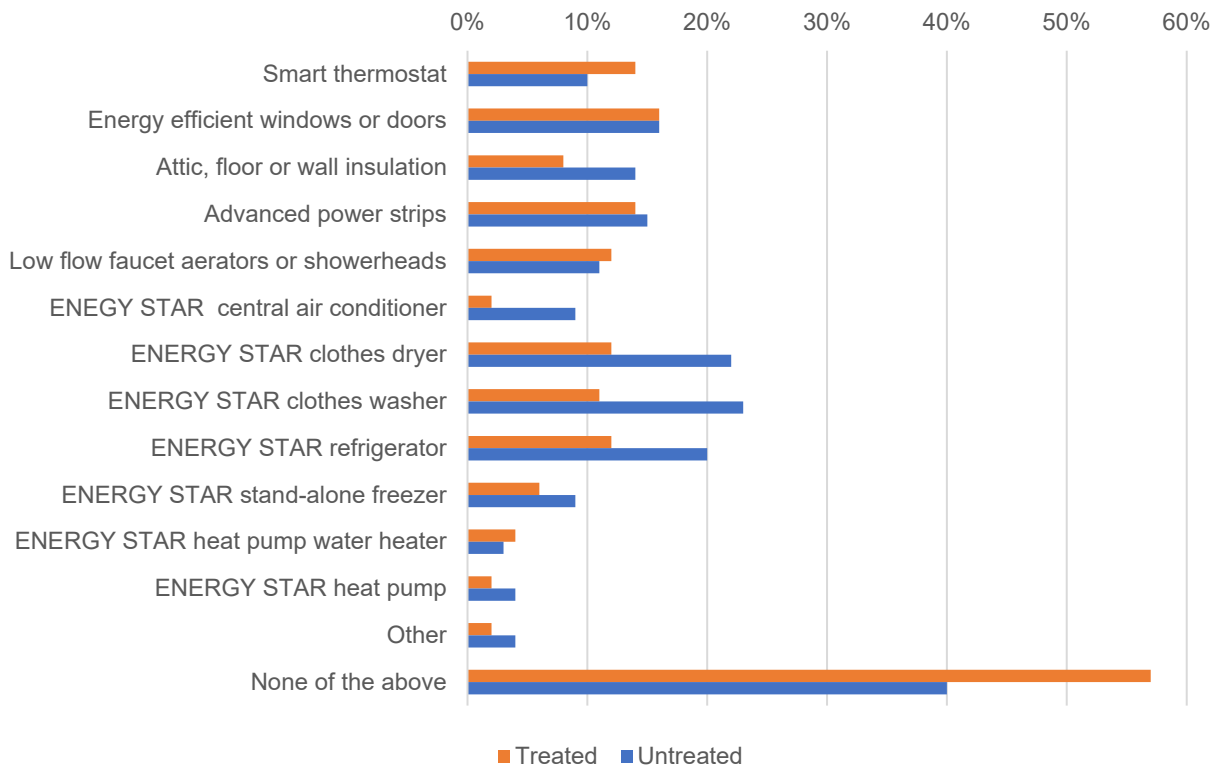


*Figure 5-5: Treated vs Untreated Customers Energy Efficient Purchases*

## 5.10 Demographics

The survey collected demographic data on respondents. See Table 5-10 and Table 5-11 for details. Most respondents were white, over-65, English speaking, homeowners with some post-secondary education.

*Table 5-10: Respondent Home Characteristics*

| Response | All Respondents (n = 208) |
|---|---|
| Own | 90% |
| Rent | 10% |
| **Average monthly electricity bill** | |
| $0 - $50 | 3% |
| $51 - $100 | 37% |
| $101 - $150 | 26% |
| $151 - $200 | 19% |
| $201 - $250 | 4% |
| $251 - $300 | 1% |
| $301 - $350 | 1% |
| $351 - $400 | 0% |
| $401 - $450 | 0% |
| $450 or more | 1% |
| I don't know | 2% |
| Prefer not to say | 4% |

*Table 5-11: Respondent Demographics*

| Response | All Respondents (n = 208) |
|---|---|
| **Primary Language** | |
| English | 99% |
| Prefer not to say | 1% |
| **Age** | |
| 25-34 years old | 1% |
| 35-44 years old | 4% |
| 45-54 years old | 10% |
| 55-64 years old | 19% |
| 65 years old or older | 62% |
| Prefer not to answer | 4% |
| **Education** | |
| Less than high school | 1% |
| High school graduate/GED | 17% |
| Associates degree, vocation/school, or some college | 35% |
| Four-year college degree | 18% |
| Graduate or professional degree | 23% |
| Prefer not to answer | 4% |

| Response | All Respondents (n = 208) |
|---|---|
| **Race or Ethnicity** | |
| Asian | 1% |
| Black/African American | 1% |
| Caucasian/White | 86% |
| Hispanic or Latino | 1% |
| Native American or Alaska Native | 2% |
| Other (Please specify) | 3% |
| Prefer not to answer | 10% |

## 5.11 Interpretation Considerations

Process evaluation findings should be interpreted with caution due to a low survey response rate and a respondent pool skewed toward older, English-speaking homeowners. Reported behaviors and satisfaction levels may not be fully representative of the broader participant population. As such, survey results provide qualitative insight into customer perceptions but should not be interpreted as precise measures of incremental program impacts.

# 6 Cost Effectiveness Results

Apex estimated the cost-effectiveness results for the Wyoming HER program based on 2024 and 2025 costs and savings estimates provided by RMP. Table 6-1 through Table 6-4 report cost-effectiveness analysis inputs 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 | 9.06% | 9.06% |
| Residential Energy Rate ($/kWh) | $0.10 | $0.1013 |
| 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, 2024-2025*

| Program Year | Program Delivery | Utility Admin | Program Development | Incentives | Total Utility Budget |
|---|---|---|---|---|---|
| 2024 | $97,576 | $5,977 | $2 | $0 | $103,555 |
| 2025 | $97,301 | $13,780 | $0 | $0 | $111,080 |
| **Total Program** | **$194,877** | **$19,757** | **$2** | **$0** | **$214,635** |

*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 |
|---|---|---|---|---|---|---|
| 2024 | 10,146,000 | 80% | 8,097,937 | 100% | 8,097,937 | 1 |
| 2025 | 9,736,000 | 79% | 7,695,914 | 100% | 7,695,914 | 1 |
| **2024-2025** | **19,882,000** | **80%** | **15,793,851** | **100%** | **15,793,851** | **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 | $0.006 | $214,635 | $2,701,695 | $2,487,060 | 12.59 |
| Total Resource Cost Test (TRC) No Adder | $0.006 | $214,635 | $2,456,086 | $2,241,451 | 11.44 |
| Utility Cost Test (UCT) | $0.006 | $214,635 | $2,456,084 | $2,241,449 | 11.44 |
| Participant Cost Test (PCT) | | $0 | $4,143,340 | $4,143,340 | N/A |
| Rate Impact Test (RIM) | | $4,357,973 | $2,456,084 | ($1,901,888) | 0.56 |
| Lifecycle Revenue Impacts ($/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 | $0.006 | $103,555 | $1,764,570 | $1,661,015 | 17.04 |
| Total Resource Cost Test (TRC) No Adder | $0.006 | $103,555 | $1,604,155 | $1,500,600 | 15.49 |
| Utility Cost Test (UCT) | $0.006 | $103,555 | $1,604,153 | $1,500,598 | 15.49 |
| Participant Cost Test (PCT) | | $0 | $2,124,403 | $2,124,403 | N/A |
| Rate Impact Test (RIM) | | $2,227,957 | $1,604,153 | ($623,804) | 0.72 |
| Lifecycle Revenue Impacts ($/kWh) | | | | | $0.00012 |
| c | | | | | 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 | $0.007 | $111,080 | $937,125 | $826,045 | 8.44 |
| Total Resource Cost Test (TRC) No Adder | $0.007 | $111,080 | $851,932 | $740,852 | 7.67 |
| Utility Cost Test (UCT) | $0.007 | $111,080 | $851,932 | $740,852 | 7.67 |
| Participant Cost Test (PCT) | | $0 | $2,018,937 | $2,018,937 | N/A |
| Rate Impact Test (RIM) | | $2,130,016 | $851,932 | ($1,278,084) | 0.40 |
| Lifecycle Revenue Impacts ($/kWh) | | | | | $0.00011 |
| 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 15,793,852 kWh** with an overall realization rate of 79 percent for the evaluation period.

**Evaluated savings were calculated using deemed savings percentages** rather than an empirical validation of program savings using a regression analysis that compares treated and untreated customers and isolates the treatment effect.

**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.

**The realization rate of 79 percent was the result of the following factors:**

- Removal of outlier bills
- Removal of customers that received no reports
- Less than 100% matching of customer data from the implementer to available billing data
- Determination of consumption tier for each customer (the implementer might have used a different method. This is unclear since pre-treatment data is not available for all customers.)
- Application of average 2020-2023 realization rates to adjust for historic deemed vs actual savings

**Customer engagement with HERs is strong.** Approximately three-quarters of treated respondents reported reading most or all the reports, and most found the information easy to understand.

**Perceived value and satisfaction are high, but trust in accuracy is a recurring concern.** Most respondents rated HER components as valuable and expressed overall satisfaction; however, dissatisfaction and open-ended comments frequently cited concerns about the accuracy of home comparisons and appliance assumptions.

**Behavioral differences between treated and untreated customers are modest.** While 50 percent of treated customers reported changing behavior due to the reports, treated

and untreated customers reported similar rates of many energy-saving behaviors, suggesting limited measurable differentiation attributable solely to the HERs.

**HERs appear to influence some purchasing decisions, but not at levels clearly distinct from untreated customers.** Forty-three percent of treated respondents reported purchasing energy-efficient equipment, and more than half of those purchasers said the HERs were important in their decision-making; however, untreated customers reported comparable or higher purchase rates for several measures.

**Awareness and use of the online energy portal are low.** Only 23 percent of treated respondents recalled using the portal. The primary barrier was lack of awareness, not dissatisfaction, indicating an underutilized engagement tool.

**Customer perceptions of RMP are modestly positively influenced.** A minority of respondents reported a change in opinion of RMP, but among those who did, the change was generally positive.

**Survey results reflect an older, homeowner-dominated respondent pool.** Respondents were primarily over age 65, homeowners, and English-speaking, which may limit how representative process findings are of the broader customer population.

## 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 and Untreated 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:

$$\begin{aligned} &Theoretical\ Untreated\ Usage - Actual\ Treated\ Usage \\ &\quad = Theoretical\ Untreated\ Usage \times Deemed\ Savings\ Percentage \end{aligned}$$

Rearranging terms:

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

Solving for Theoretical Untreated Usage yields:

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

## 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.