Table of Contents

Program Budget and Savings Information 2
  1. Program and/or Sub-Program Name 2
  2. Sub-Program ID number 2
  3. Sub-Program Budget Table 2
  4. Sub-program Net Impacts Table 2
  5. Sub-Program Cost Effectiveness (TRC) 2
  6. Sub-Program Cost Effectiveness (PAC) 2
  7. Type of Sub-Program Implementer (Core, Third Party, or Partnership) 3
  8. Market Sector (including multi-family, low income, etc) 3
  9. Sub-program Type (Non-resource, Resource Acquisition, Market Transformation) 3
  10. Intervention Strategies (Upstream, Downstream, Midstream, Direct Install, Non-Resource, Finance, etc) 3

Program Implementation Plan Narrative 3
  1. Program Description 3
  2. Program Delivery and Customer Service 4
  3. Program Design and Best Practices 5
  4. Evaluation, Measurement and Verification (EM&V) 12
  5. Pilots 14
  6. Additional Information 15

Support Documents 15
  1. Program Manuals and Program Rules 15
  2. Program Logic Model 18
  3. Process Flow Chart 19
  4. Incentive Tables, Workpapers, Software Tools 20
  5. Quantitative Program Targets 20
  6. Diagram of Program 21
Program Budget and Savings Information

1. Program and/or Sub-Program Name
MCE Home Energy Report Program (formerly Single Family Comprehensive Program)

2. Sub-Program ID number
MCE07

3. Sub-Program Budget Table

<table>
<thead>
<tr>
<th>MCE07: Home Energy Report</th>
<th>2022</th>
<th>2023</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administration</td>
<td>$110,817</td>
<td>$121,012</td>
</tr>
<tr>
<td>Marketing, Education, and Outreach</td>
<td>$-</td>
<td>$-</td>
</tr>
<tr>
<td>Implementation (Direct Install Non-Incentives)</td>
<td>$332,421</td>
<td>$402,499</td>
</tr>
<tr>
<td>Incentives</td>
<td>$-</td>
<td>$-</td>
</tr>
<tr>
<td>Total</td>
<td>$443,238</td>
<td>$523,511</td>
</tr>
</tbody>
</table>

4. Sub-program Net Impacts Table

<table>
<thead>
<tr>
<th>Total Units</th>
<th>2022</th>
<th>2023</th>
</tr>
</thead>
<tbody>
<tr>
<td>Projected Net Savings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treatment Group</td>
<td>142,000</td>
<td>134,900</td>
</tr>
<tr>
<td>Net kW</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Net kWh Reduced</td>
<td>1,567,491</td>
<td>2,969,063</td>
</tr>
<tr>
<td>Total System Benefits</td>
<td>$173,232</td>
<td>$334,972</td>
</tr>
</tbody>
</table>

5. Sub-Program Cost Effectiveness (TRC)

<table>
<thead>
<tr>
<th>Year</th>
<th>TRC</th>
</tr>
</thead>
<tbody>
<tr>
<td>2022</td>
<td>0.39</td>
</tr>
<tr>
<td>2023</td>
<td>0.64</td>
</tr>
</tbody>
</table>

6. Sub-Program Cost Effectiveness (PAC)

<table>
<thead>
<tr>
<th>Year</th>
<th>PAC</th>
</tr>
</thead>
<tbody>
<tr>
<td>2022</td>
<td>0.39</td>
</tr>
<tr>
<td>2023</td>
<td>0.64</td>
</tr>
</tbody>
</table>
7. Type of Sub-Program Implementer (Core, Third Party, or Partnership)
Third Party

8. Market Sector (including multi-family, low income, etc)
Single Family

9. Sub-program Type (Non-resource, Resource Acquisition, Market Transformation)
Behavioral, Retrocomissioning, Operational (BRO)

10. Intervention Strategies (Upstream, Downstream, Midstream, Direct Install, Non-Resource, Finance, etc)
Downstream

Program Implementation Plan Narrative

1. Program Description
As authorized by D. 18-05-041, MCE launched Home Energy Program (formerly Single Family Comprehensive Program) (HER Program), which offers behavior intervention strategies to residential participants with the goal of achieving short-term energy and budget savings that can persist and produce long-term behaviors. This will be achieved by fostering participant engagement, ensuring participant satisfaction, and providing energy education and upgrades through regular and participant-specific touch points in the form of Home Energy Reports (HERs) and a web-based education portal.

Program Goals
MCE provides a downstream program that selects eligible customers and assigns them to a treatment group to receive HERs at regular intervals to encourage energy- and money-saving behavioral changes or to act as a control group for the program. The program’s treatment group will receive a series of HERs, energy budget reports and alerts, as well as access to a web portal where they can learn about additional savings potential.

Customers have been enrolled into the program in compliance with the measurement and verification (M&V) plan filed with the California Public Utilities Commission (CPUC) and all current CPUC behavioral Normalized Metered Energy Consumption (NMEC) program rules and requirements. The program will

---

2 The HER Program will initially target electricity consumption behavior changes until MCE can gain access to its participants’ historical and current, ongoing natural gas consumption data
3 Per Administrative Law Judges’ Ruling Issuing Draft Revised Rulebook for Normalized Metered Energy Consumption and Inviting Comments on Population-Level Rules, Measurement Methods and Calculation Software filed August 29, 2019, final rules for NMEC programs has not yet been finalized.
monitor participant eligibility on an ongoing basis, removing participants who no longer wish to participate or otherwise become ineligible to participate.

The MCE HER Program goals are to:

- Establish a cost-effective residential behavioral program to educate participants on their energy consumption behavior and motivate them to save energy and money over the short- and long-term
- Validate participant savings using meter-based energy savings calculation methods and Randomized Control Trial (RCT) to measure NMEC savings

2. Program Delivery and Customer Service
Participants receive digital HERs as well as a host of additional access to resources and recommendations for energy saving solutions. The following table details each component of the participant experience and associated benefits.

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Similar Home Comparison</td>
<td>Performed at whole-home level for similar homes</td>
<td>Drive energy savings through social benchmarking</td>
</tr>
<tr>
<td>Monthly Summary: Appliance Itemization</td>
<td>Energy Bill Itemization for customers. The itemization covers electric appliances</td>
<td>Customers can see where their energy dollars go</td>
</tr>
<tr>
<td>Monthly Summary: Personalized Recommendations</td>
<td>Highly personalized recommendations engine driven by energy itemization, home profile, ease of use, savings impact, season, type and ownership of home. This covers electric use, and it includes the potential cost savings of each particular action</td>
<td>Drive energy savings by empowering customers with curated set of actionable recommendations with highest savings impact; Drive interest and adoption of targeted offers</td>
</tr>
<tr>
<td>Smart Shop</td>
<td>Web-based portal with Next Best Interactions (NBI) including but not limited to links to energy saving rebates and programs, education, and energy efficiency professionals</td>
<td>Connect program participants directly with opportunities for energy savings</td>
</tr>
</tbody>
</table>

---

4 See Program Delivery and Customer Service, p. 7 for eligibility criteria
MCE’s HER Program will use NMEC to measure energy savings. MCE will also use an RCT methodology to compare participants in the program to a control group’s consumption and savings over time. The NMEC RCT approach applies NMEC savings calculation rules, and complies with behavioral program evaluation best practices by using an RCT.

These two methods are used in conjunction by first selecting non-participants randomly from within the intended treated population, using stratification to ensure equivalency between the two groups and then by calculating NMEC meter-based savings for both participants and non-participants. Then, the difference of differences will be calculated between the two groups to arrive at adjusted gross savings.

Using an NMEC RCT design will allow for two things: prevent capturing and paying for naturally occurring efficiency by comparing the treated and control groups, and prevent selection bias in participant enrollment toward participants who have the highest propensity to save energy even without a behavioral intervention. Moreover, this approach allows specific participant tracking across different programs to avoid double counting of savings.

As a Community Choice Aggregator (CCA) serving Marin, Contra Costa, Napa and Solano Counties, MCE serves several of the same customers as Pacific Gas and Electric (PG&E). Subsequently, there is the risk that customers could inadvertently participate in an MCE program and a similar PG&E program; when this occurs, both program providers claim the savings-this is called double-dipping. To prevent double dipping, MCE and PG&E actively share customer information on customers that have received program incentives or rebates on an ongoing, regular basis.

In addition to delivery methods designed specifically to address participants’ needs through a cost-effective and personalized approach, MCE provides customer service. Customer satisfaction through interactions that are timely and that provide meaningful information with actionable recommendations is the cornerstone of the HER Program. Participants will have access to modernized digital programs like the web portal, including the Smart Shop, and digital HERs that have benefits beyond measurable behavioral energy efficiency (EE); they can also contribute to an increase in customer satisfaction, an improved customer experience, and a move to EE upgrades. Participants will also have access to customer service representatives from MCE via phone or email at all times.

3. Program Design and Best Practices

The HER Program is designed to drive energy awareness and consumption reduction through a behavioral program design and using NMEC savings calculations. Program objectives will be achieved by providing digital home energy reports that address barriers to action for residential customers through modeling energy use at the home level and providing reports that call out end uses, costs, and recommendations for improvements.

Participant Group

MCE has chosen participants for this program consistent with CPUC direction for downstream, meter-based programs serving existing buildings. MCE’s Residential SF Comprehensive Program adopts an

---

5 California Public Utilities Commission, August 25, 2016. Decision Providing Guidance for Initial Energy Efficiency Rolling Portfolio Business Plan Filings (D.16.08.019) p. 49 Table 1
existing conditions baseline with the following requirements to provide ample historical consumption data:

- Eligible projects must have at least 12 months of baseline energy consumption data in the form of hourly electricity consumption. The baseline period selected involves the 12 months immediately before the implementation of EE measures (Baseline Period Dates)
- Data sufficiency must conform to CalTRACK methods

To be eligible for MCE’s HER Program, MCE screens and continuously monitors program participants for the following:

- Project site must be located in the MCE service area
- Customer must not be a current PG&E Home Energy Report program participant
- Property must be a single family structure with a single meter for each fuel
- Customer must have 12 months of consecutive consumption data for the same account
- Mixed-used sites are eligible if residential space represents at least 50% of conditioned space and have received electric distribution service from MCE or PG&E and natural gas service from PG&E
- Property must not have installed solar at least 12 months prior to participation in program
- Model fit needs to be < 1.0 CVRMSE (MCE will conduct analysis at intake)
- Customer must not be a current participant in MCE’s Single Family Direct Install program
- Customer must have never opted out to receive communications i.e. HERs, CARE/Low-Income Programs

Control Group

For behavior-based interventions, a control group was used for determining savings impacts. Treatment and control participants’ consumption data were analyzed using the CalTRACK methods and executed with the OpenEEmeter software. MCE considered CPUC guidance provided in the Large Population Level Energy Efficiency Program Design Method Checklist in designing the control group.

Once the program ineligible customers were removed from the potential participant pool, approximately 70,000-80,000 customers were chosen to participate using the Randomized Control Test (RCT) methodology; approximately 30,000 other customers were chosen to comprise a control group. In 2022, approximately 76,000 additional treatment and 40,000 control participants were added to the program.

Scope for Home Energy Program (formerly Single Family Comprehensive Program)

This table illustrates the specifications of the Home Energy Report program.

---

6 CalTRACK Methods, see Section 2 on Data Management http://docs.caltrack.org/en/latest/methods.html
7 California Public Utilities Commission Rolling Portfolio Guidance Website: https://www.cpuc.ca.gov/general.aspx?id=6442456320
<table>
<thead>
<tr>
<th>Area</th>
<th>Scope</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of Participants</td>
<td>MCE generates reports for approximately 142,000 treatment group participants. Up to an additional 70,000 control group participants have been identified and compared with the treatment group. Control group participants are representative when randomly selected within the same zip codes as treatment participants at a proportional distribution</td>
</tr>
<tr>
<td>Report Frequency</td>
<td>Each participant receives a one time welcome email, two monthly email reports, and two seasonal emails until they become ineligible or unsubscribe</td>
</tr>
<tr>
<td>(digital)</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Customer Selection</td>
<td>MCE’s program-eligible participants are used to build a treatment group; Program participants were be chosen in compliance with the M&amp;V Plan and approved CPUC requirements</td>
</tr>
<tr>
<td>Report content</td>
<td>HERs include the following content:</td>
</tr>
<tr>
<td></td>
<td>- Appliance cost itemization</td>
</tr>
<tr>
<td></td>
<td>- Education and outreach about complementary programs</td>
</tr>
<tr>
<td></td>
<td>- Similar home energy consumption comparison</td>
</tr>
<tr>
<td></td>
<td>- Personalized energy- and cost-saving recommendations</td>
</tr>
<tr>
<td>Channel and Delivery</td>
<td>Consumption summary sent early (e.g., Day 6) in a billing cycle, summarizing what happened in the previous billing cycle, including bill amounts, itemization, and recommendations at whole house and appliance category level; Similar Home Comparison will be sent around Day 12; Seasonal Alerts will be sent biannually</td>
</tr>
<tr>
<td>Unsubscribing</td>
<td>Program participants are able to unsubscribe from receiving HERs through the program’s website and by contacting MCE’s contact center; MCE provides support directly to participants and will unsubscribe participants using the web portal or support ticket</td>
</tr>
</tbody>
</table>

Sample Paper HER (2 sided)

Home Energy Reports

In addition to receiving a digital version of their HER, participants will receive alerts and notifications that are timed to users’ billing cycle. These digital touch points will be optimized for relevancy and timing to best suit the participant by providing a clear next best action for the participant, increasing the likelihood of the participant adopting the energy-saving tip or signing up for a promoted program. This
facilitates a more interactive and engaging relationship with the participant, leading to higher satisfaction and program participation.

HER Program participants will also have access to a suite of online solutions through a digital platform, which will itemize participants’ energy bills and provide personalized energy efficiency recommendations specific to a home.

In addition to listing and prioritizing energy-savings tips, the portal also presents the annual savings potential for each recommendation for all major appliance categories specific to each home. For example, knowing that optimizing AC usage could save $430 per year is far more likely to motivate a consumer than providing standard and generic savings that likely reflect average instead of actual usage.

The portal detailed energy usage insight for participants. The energy usage page provides the ability for MCE’s participants to view their energy usage breakdown annually or by billing cycle.

The following table describes the types of alerts and notifications program participants receive.
The HER Program focuses on data analysis to itemize energy bills and generate recommendations that target behavioral change and motivate participants to save energy. The primary market barrier for the residential customer sector is lack of information and awareness about energy use and how their behavior impacts their energy usage. Proactive delivery of this information to participants via HERs is intended to address this gap, while testing various methods of education delivery, and serve as a cost-effective way to achieve savings. This and other barriers addressed by the HER Program are listed below.

### Market Barriers and Solutions

<table>
<thead>
<tr>
<th>Barrier</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Difficulty providing personalized end use data and recommendations</td>
<td>Regular reports that include energy consumption and saving potential</td>
</tr>
<tr>
<td>Lack of information/awareness of end use consumption</td>
<td>Energy disaggregation tool identifies key energy-consuming appliances in the home</td>
</tr>
</tbody>
</table>
MCE uses a state-of-the-art energy consumption analysis tool and web portal to provide participant education and incentive to make energy saving changes in their homes. By using only energy consumption data (no in-home devices or any additional hardware) the HER Program software will detect the presence and estimate the energy usage of 11 different product categories: always on (baseload), heating, cooling, pool pump, water heating, lighting, refrigeration, electric vehicle, cooking, laundry and entertainment. The adoption of this tool can not only increase energy savings, but can also drive targeted demand response programs and achieve more efficient grid optimization. It enables the personalized experience that consumers expect.

There are many established data points and reports in the industry that document the efficacy of behavioral programs. Links to three industry reports are included for reference.


<table>
<thead>
<tr>
<th>Category</th>
<th>Calculation Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of understanding of similar home performance norms</td>
<td>HER compares participant’s home to similar homes</td>
</tr>
<tr>
<td>Behavior programs to date have not measured actual at-the-meter savings</td>
<td>HER Program uses Normalized Metered Energy Consumption (NMEC) data to measure savings</td>
</tr>
<tr>
<td>Many residential customers do not trust program providers</td>
<td>MCE is a trusted non-profit agency</td>
</tr>
<tr>
<td>Personalized assessments are expensive and time-consuming</td>
<td>Program tools allow home energy use disaggregation digitally, eliminating the need for and cost of an in-home assessment</td>
</tr>
</tbody>
</table>

---

8 The term “similar homes” refers to a group of homes in close proximity to the consumer, with similar usage patterns, appliances, and other metadata. Criteria are:
- Number of homes in the comparison cluster
- Type of customer’s home
- Minimum and Maximum sizes of homes in the cluster
- Zip code of the customer’s home
- Home heating type
<table>
<thead>
<tr>
<th><strong>Applicable Measure Codes</strong></th>
<th>Behavioral program, no Database of Energy Efficiency Resources (DEER) measure codes apply</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Measure Description</strong></td>
<td>MCE’s HER Program seeks to develop a scalable model for residential interventions that leverages rapidly emerging market actors and products while minimizing administrative and implementation costs; Measure Treatment: The program is designed to offer maximum flexibility for upgrade options and include operational and behavioral interventions. As a result, there is no list of required measures and the list of eligible measures is treated as non-exclusive. Customers with solar PV or who add solar PV while enrolled must provide verifiable production data to calculate energy savings for that site or strict eligibility criteria will be applied that require the implementer to drop the participant</td>
</tr>
<tr>
<td><strong>Base Case Description</strong></td>
<td>Base case is existing building conditions. Utility claimable energy savings will be determined using experimental design analyses that control for exogenous factors such as naturally occurring savings attributable to building standards and natural adoption.</td>
</tr>
<tr>
<td><strong>Base Case Energy Consumption</strong></td>
<td>Whole building or meter-level hourly and daily electricity (kWh)</td>
</tr>
<tr>
<td><strong>Measure Energy Consumption</strong></td>
<td>Not applicable</td>
</tr>
<tr>
<td><strong>Energy Savings (Base Case – Measure)</strong></td>
<td>Net savings are to be reported as portfolio-level aggregate avoided energy use based on the control group analysis. The size of both the participant group and the control group must be large enough to support the estimation of net savings that are sufficiently precise to meet the enhanced level of rigor for the Gross Energy Impact Protocol as contained in the California Energy Efficiency Evaluation Protocols. Savings claims shall be estimated using one year of post-implementation metered energy consumption</td>
</tr>
<tr>
<td><strong>Costs Common Units</strong></td>
<td>$ per kWh</td>
</tr>
<tr>
<td><strong>Base Case Equipment Cost ($/unit):</strong></td>
<td>Not applicable - behavioral program</td>
</tr>
<tr>
<td><strong>Measure Equipment Cost ($/unit):</strong></td>
<td>Not applicable - behavioral program</td>
</tr>
<tr>
<td><strong>Gross Measure Cost ($/unit):</strong></td>
<td>Not applicable - behavioral program</td>
</tr>
<tr>
<td><strong>Measure Incremental Cost ($/unit):</strong></td>
<td>Not applicable</td>
</tr>
</tbody>
</table>
4. Evaluation, Measurement and Verification (EM&V)

For the duration of the program, innovative technologies and business models will be deployed that require flexible Measurement and Verification (M&V); however, to provide continuity across multiple types of interventions and program design updates, CalTRACK savings calculation methods will be used. CalTRACK provides a site-based savings calculation that can be rolled into portfolios of similarly treated buildings. An RCT M&V approach was used to determine the treated and control groups and to maximize program participation. MCE followed the RCT guidelines of the Uniform Methods Project: Residential Behavior Evaluation Protocol\(^9\) by selecting a control group from within the initial targeted participant group. The performance of the treated group is be evaluated relative to contemporaneous changes in consumption amongst a non-treated group of similar participants.

In addition to the program’s internal M&V protocols, MCE with any directive regarding third-party evaluation, measurement, and verification (EM&V) plans and fulfills all EM&V activities required by the CPUC. Existing guidance for methods appropriate for behavioral programs is limited to the direction that they are quantified using an experimental design.\(^{10}\) A stratified random sample of targeted participants was selected for a control group. The program’s participants are representative of geographical and consumption patterns of the treated population and equally likely to be candidates for high energy savings based on the targeting analysis used to select the treated participants. During the program year, As part of our evaluation of the program, Recurve performed an analysis of outliers, as well as data regarding the installation of solar panels, electric vehicles, and participation in other programs.

Analysis Procedures

MCE developed a model for each participating property and for electricity daily consumption. Building energy use was modeled as base load, heating load, and cooling load-heating and cooling load are assumed to have a linear relationship with heating and cooling demand, as approximated by heating and cooling degrees, beyond particular heating and cooling balance points. The base temperatures selected for counting heating and cooling degrees were determined for each upgrade project based on the

---


outdoor temperatures which yield the best R-squared in the regression analysis. These site specific models were the foundation for control group analysis. They formed the basis of comparison between the groups also known as “difference of differences”.

MCE calculates savings and reports them to the CPUC as avoided energy use under reporting period conditions. Baseline period energy is adjusted to reporting period conditions, using the following International Performance Measurement and Verification Protocol (IPMVP) equation: Avoided Energy Use (or Savings) = Counterfactual Baseline Energy - Reporting Period Energy

Data Quality Control
Data quality procedures conform to CalTRACK Compliance specifications, as they relate to hourly estimation methods and as published at http://docs.caltrack.org/en/latest/methods.html

Qualification Screening & Monitoring
The program screens and monitors program participation by using the program’s eligibility criteria list.

Eligibility is maintained unless the Service Account ID changes during the performance period, indicating a change in occupancy.

To ensure that savings claims are not distorted by exogenous factors, secondary data on factors like solar panel installation and electric vehicle adoption are collected. Where possible, changes in energy consumption due to vehicle charging are tracked.

To further reduce the likelihood that savings claims are distorted by exogenous factors, the top and bottom two percent of site-based savings results were removed from the aggregation in both the treatment group and the control group.

Detection of Non-Routine Events (NREs)
In the initial implementation of this program design, the occurrence of NREs is expected to be equally distributed across the control and treatment groups. In the EM&V process, this hypothesis will be examined more closely to ensure that NREs are not disproportionately affecting one group more than another.

Force Majeure
In rare instances, a project site may be impacted by an act of God (i.e. fire, flooding, etc.), in which case, an adjustment may be considered.

For purposes of these protocols, gaming is defined as the practice of (a) intentionally inflating the incidence of NREs that are financially favorable to the implementer; or (b) disguising the impact of NREs to resemble expected energy savings. Examples of gaming practices include participant recruitment to focus on participants that expect future reductions in baseline energy consumption; installation of secondary heating sources or power generation fueled by non-metered fuels; and fraudulent reporting to disguise non-routine changes to energy consumption baselines as true energy savings.

Gaming is a version of fraud. Penalties for gaming will be consistent with penalties for other kinds of fraud as specified in the implementer contract terms and conditions. The following prohibitions and requirements shall apply:
1. Implementer shall not systematically target, recruit, or enroll participants who have experienced a non-routine change in baseline consumption within the prior twelve months.

2. Implementer shall not systematically target, recruit, or enroll participants who expect to experience a decline in energy consumption due to non-routine events within the coming twelve months.

3. Implementer shall not recommend nor implement any changes to the Participant’s facility that would qualify as a Non-Routine Event.

4. Implementer may request that the M&V Provider make non-routine adjustments to their project portfolio but under no circumstances shall Portfolio Managers make such adjustments themselves.

5. Implementer shall enroll all projects in their P4P portfolio within 30 days of any claimable energy efficiency interventions.

In the absence of documented fraudulent activity, NREs within the performance period do not in and of themselves constitute a gaming issue. NREs become a cause for concern when the frequency of consumption-reducing NREs becomes so high that their occurrence cannot be explained by random selection. The threshold for determining gaming concerns shall be determined as follows:

1. For a portfolio with n participants, recruited from a universe of N eligible participants, determine the frequency, K, of the Non-Routine event in question within the population N. Assume all participants have an equal probability of experiencing a Non-Routine Event, p = K/N.

2. If the implementer’s expected frequency of NREs is np and the actual frequency is k, estimate the probability that k NREs would occur through random selection of n participants from the population of N eligible participants. If that probability is less than 50 percent with 90 percent confidence, then investigate to determine if gaming has occurred. If the probability is less than 10 percent with 90 percent confidence, then gaming is presumed to have occurred unless the Ally can prove otherwise.

Savings Claims Requirements

Monthly savings claims are aggregated at the program level. These will be provided as a rolled up version of the program progress and comport with the definitions of installation date, commitments, expenditures and gross and net first year savings for all fuel types. No changes will be necessary for the timelines for submitting savings claims. Quarterly savings claims are the most detailed savings claims submitted to the CPUC. This behavioral program will provide an aggregated savings claim (not site specific custom or deemed) for a 1 year EUL. MCE will maintain records on the uncertainty criteria for the portfolio of savings claimed. It will be available for inclusion in the quarterly report if NMEC reporting requirements require.

5. Pilots

There are no pilots planned for this program.
6. Additional Information
No additional information has been added.

Support Documents

1. Program Manuals and Program Rules
This program manual provides an overview of MCE’s Home Energy Report (formerly Single Family Comprehensive Program (HER Program)) requirements. The manual describes the program’s policies and procedures and provides a framework for managing and implementing the program. The manual describes eligibility requirements, additional services and quality assurance provisions.

Program Goals
MCE provides a downstream program that selects eligible customers and assigns them to a treatment group to receive HERs at regular intervals to encourage energy- and money-saving behavioral changes or to act as a control group for the program. The program’s treatment group will receive a series of HERs, energy budget reports and alerts, as well as access to a web portal where they can learn about additional savings potential.

Customers have been enrolled into the program in compliance with the measurement and verification (M&V) plan filed with the California Public Utilities Commission (CPUC) and all current CPUC behavioral normalized metered energy consumption (NMEC) program rules and requirements. The program will monitor participant eligibility on an ongoing basis, removing participants who no longer wish to participate or otherwise become ineligible to participate.

The HER Program goals are to:

- Establish a cost effective residential behavioral program to educate participants on their energy consumption behavior and motivate participants to save energy over the short- and long-term
- Validate participant savings using meter-based energy savings calculation methods and Randomized Control Trial (RCT) to measure Normalized Metered Energy Consumption (NMEC) savings

1. Eligible Measures or Measure Eligibility
Not applicable to this program. For participating customers, this behavioral program provides HERs that include a snapshot of energy consumption and a similar homes comparison.

2. Customer Eligibility Requirements
To determine eligibility for MCE’s HER Program, MCE screens and continuously monitors program participants for the following:

- Project site must be located in the MCE service area
• Customer must not be a current PG&E Home Energy Report program participant
• Property must be a single family structure with a single meter for each fuel
• Customer must have 12 months of consecutive consumption data for the same account
• Mixed-used sites are eligible if residential space represents at least 50% of conditioned space and have received electric distribution service from MCE or PG&E and natural gas service from PG&E
• Property must not have installed solar at least 12 months prior to participation in program
• Model fit needs to be < 1.0 CVRMSE (MCE will conduct analysis at intake)
• Customer must not be a current participant in MCE’s Single Family Direct Install program
• Customer must have never opted out to receive communications i.e. HERs, CARE/Low-Income Programs

Once the program ineligible customers were removed from the potential participant pool, approximately 70,000-80,000 customers were to participate using the Randomized Control Test (RCT) methodology; approximately 30,000 other customers were chosen to comprise a control group. In 2022, approximately 76,000 additional treatment and 40,000 control participants were added to the program.

3. Contractor Eligibility Requirements

Not applicable to this program. This behavioral program provides a HER that includes a snapshot of energy consumption and a similar homes comparison.

4. Participating Contractors, Manufacturers, Retailers, Distributors

Not applicable to this program as it is not an upstream or midstream incentive and/or buy down program.

5. Additional Services

Achieving customer satisfaction through interactions that are timely and that provide meaningful information with actionable recommendations is the cornerstone of the HER Program. Participants have access to modernized digital programs like the web portal and digital HER that have benefits beyond measurable behavioral energy efficiency (EE); they can also contribute to an increase in customer satisfaction and an improved customer experience. Participants also have access to customer service representatives from MCE via phone or email at all times.

Program Components and Benefits

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Similar Home Comparison</td>
<td>Performed at whole-home level for similar homes.</td>
<td>Drive energy savings through social benchmarking.</td>
</tr>
</tbody>
</table>
Appliance Itemization

Energy Bill Itemization for customers. The itemization covers electric consumption. Customers can see where their energy dollars go.

Annual View with Similar Home Comparison

Customers can see their usage over time and how they compare to similar homes on a month-over-month basis. Customers can see changes over months and across seasons, further driving energy savings through additional social benchmarking.

Personalized Recommendations

Highly personalized recommendations engine driven by energy itemization, home profile, ease of use, savings impact, season, type and ownership of home. This covers electric consumption, and it includes the potential cost savings of each particular action. Drive energy savings by empowering customers with curated set of actionable recommendations with highest savings impact. Drive interest and adoption of targeted offers.

6. Audits

Not applicable to this program - no audits are required as this is a behavioral program.

7. Sub-Program Quality Assurance Provisions

Quality assurance for savings calculations are performed by a third party implementer (Recurve) using CalTRACK savings calculation methods. For the duration of the program, innovative technologies and business models are deployed that require flexible Measurement and Verification (M&V); however, to provide continuity across multiple types of interventions and program design updates, CalTRACK savings calculation methods are used. For the initial deployment of the program, a Randomized Control Trial (RCT) M&V approach was used to determine the treated and control groups and to maximize program participation. MCE follows the RCT guidelines of the Uniform Methods Project: Residential Behavior Evaluation Protocol by selecting a control group from within the initial targeted participant group. The performance of the treated group is evaluated relative to contemporaneous changes in consumption among a non-treated (control) group of similar participants.

In addition to the program’s internal M&V protocols, MCE complies with any directive regarding third-party EM&V plans and fulfills all EM&V activities required by the CPUC. Existing guidance for methods appropriate for behavioral programs is limited to the direction that they are quantified using an experimental design. Stratified random samples of targeted participants were selected for control groups. These samples are representative of geographical and consumption patterns of the treated population and equally likely to be candidates for high energy savings based on the targeting analysis used to select the treated participants. On an ongoing basis, we do not expect there to be any significant
difference between the exogenous effects on energy use in the treated versus the control group. However, as part of our evaluation of the program, we perform analyses of outliers, as well as data regarding the installation of solar panels, electric vehicles, and participation in other programs.

**Product Testing**

Quality Assurance for the HER Program was conducted with comprehensive testing of the digital reports prior to the launch of the program. It will be repeated for any additional participant tranches as they enter the program. This testing included both manual and automation testing. The following test cycles were performed as part of the implementation:

- **HER Configuration** - performed by the implementer to ensure that the configured features meet the program requirements as envisioned in the scope
- **Data Integration Testing** - performed by the implementer to ensure data accuracy and report flows

**User Acceptance Testing (UAT)** - performed by MCE to validate and sign off on program prior to launch-testing occurs in dedicated test environments for internal testing and UAT environment for MCE to tes

### 2. Program Logic Model

<table>
<thead>
<tr>
<th>Activity</th>
<th>Description</th>
<th>Output</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Program Design</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Customer Selection</td>
<td>Select potential list of target customers based on pre-defined criteria that will meet or exceed savings goals</td>
<td>Eligible customer accounts</td>
</tr>
<tr>
<td>Setup Treatment and Control</td>
<td>Randomized assignment to treatment and control</td>
<td>Final list of treatment and control customers</td>
</tr>
<tr>
<td><strong>Program Pre Launch</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Product Configuration</td>
<td>Configuration of the different components of the solution</td>
<td>Final product configurations</td>
</tr>
<tr>
<td>Quality Assurance (QA) of Solution</td>
<td>Test functionality of product to ensure it behaves as expected</td>
<td>Solution ready for launch</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>-------------------------------------------------------------</td>
<td>---------------------------</td>
</tr>
<tr>
<td>Launch readiness</td>
<td>Setup solution in production; ensure readiness of both implementer and MCE stakeholders to support the solution after go live</td>
<td>Solution ready to be launched to MCE’s customers</td>
</tr>
</tbody>
</table>

### Program Performance Assessment

<table>
<thead>
<tr>
<th>Go Live</th>
<th>Launch program</th>
<th>Customers start receiving Home Energy Reports every month</th>
</tr>
</thead>
<tbody>
<tr>
<td>Savings Measurement</td>
<td>Calculate EE savings on a monthly basis post launch using CalTrack methodology</td>
<td>EE Savings (per household and aggregated) are available</td>
</tr>
<tr>
<td>Review Savings</td>
<td>Review savings numbers and compare with forecasts. If required, take remediation actions to mitigate savings gaps</td>
<td>Enhanced treatment groups / revised forecasts</td>
</tr>
<tr>
<td>P4P</td>
<td>Pay the implementer for the recognized EE savings</td>
<td>Payment received</td>
</tr>
</tbody>
</table>

### 3. Process Flow Chart

The diagram outlines the process flow for the program. Participants will be selected at the beginning based on the Qualification Screening & Monitoring criteria and will then be treated with home energy reports. Savings will be measured on a monthly basis using CalTrack.
4. Incentive Tables, Workpapers, Software Tools
The following table outlines the software components used for this program.

<table>
<thead>
<tr>
<th>#</th>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Data Analytics Platform</td>
<td>The data analytics platform leverages the consumption and billing metadata to develop key data elements such as appliance itemization, similar home comparison and personalized recommendations used for the reports, web portal and Smart Shop</td>
</tr>
<tr>
<td>3</td>
<td>Email Alerts Engine</td>
<td>This module is responsible for delivering the email alerts</td>
</tr>
<tr>
<td>4</td>
<td>Web Engine</td>
<td>This module is responsible for hosting all the web pages relevant to the program including the participant facing portal, the preferences portal, utility console and Smart Shop</td>
</tr>
</tbody>
</table>

5. Quantitative Program Targets
The table below provides the number of participants to whom home energy reports will be delivered as well as the targeted electricity and gas savings for the group.
### Total Units

<table>
<thead>
<tr>
<th>Projected Net Savings</th>
<th>2020</th>
<th>2021</th>
<th>2022</th>
<th>2023</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment Group</td>
<td>69,531</td>
<td>66,054</td>
<td>142,000</td>
<td>134,900</td>
</tr>
<tr>
<td>Net kW</td>
<td>407</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Net kWh Reduced</td>
<td>4,072,319</td>
<td>7,585,693</td>
<td>1,567,491</td>
<td>2,969,063</td>
</tr>
</tbody>
</table>

#### 6. Diagram of Program

This diagram visually illustrates the program linkages to areas such as: statewide and individual Investor-Owned Utilities (IOU) marketing and outreach, Workforce, Education and Training (WE&T) programs, Emerging Technologies and Codes and Standards, Coordinated approaches across IOUs, and Integrated efforts across Demand Side Management (DSM) measures.
**WE&T programs**
As part of MCE’s 10-year business plan, program design can be augmented to connect participants with WE&T contractor education program participants.

**Statewide and Individual ME&O**
Program design focuses on regular outreach that will highlight complementary MCE EE programs.

**Coordinated Approaches Across IOUs (with PG&E):**
1. Joint Cooperation Memo; Regular customer data sharing to prevent double-dipping
2. Innovative behavior program design to address information gaps

**Emerging Technologies and Codes and Standards**
Program design focuses on behavior shifts that may result in upgrades to meet new energy codes and standards.