Southern California Edison

Implementation Plan

Residential Behavioral Program

First Filing Date: 4/20/2021

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Table of Contents

1. Program Budget and Savings Information

1. Program and/or Sub-Program Name

Residential Behavioral Program

2. Program and/or Sub-Program ID Number

SCE_3P_2020RCI_002

3. Program and/or Sub-Program Budget Table

	2022	2023	2024	2025	Total
Administration	$413,142	$506,946	$529,941	$50,874	$1,500,903
Marketing	$165,620	$373,745	$404,032	$39,759	$983,156
Direct Implementation	$9,749,795	$11,792,968	$12,314,544	$1,181,225	$35,038,532
Incentive	$200,000	$200,000	$200,000	$0	$600,000
Total	$10,528,557	$12,873,659	$ 13,448,517	$1,271,858	$38,122,591

4. Program and/or Sub-Program Gross Impacts Table

	2021	2022	2023	2024	Total
Gross kWh	0	127,511,799	141,663,928	147,200,764	416,376,491
Gross kW	0	44,657	46,852	48,206	139,715

5. Program and/or Sub-Program Cost-Effectiveness (TRC)

Delivery Period Year	Expected TRC Ratio
2021	N/A
2022	1.31
2023	1.23
2024	1.39

6. Program and/or Sub-Program Cost-Effectiveness (PAC)

Delivery Period Year	Expected PAC Ratio
2021	N/A
2022	1.29
2023	1.22
2024	1.37

7. Type of Program and/or Sub-Program Implementer

Program Implementer	
PA-delivered	☐

Program Implementer	
Third Party-Delivered	☒
Partnership	☐

8. **Market Sector**

SCE Business Plan Sector	Yes
Residential	☒
Commercial	☐
Industrial	☐
Agricultural	☐
Public	☐
Cross-Cutting	☐

9. **Program and/or Sub-Program Type**

Program Type	
Resource	☒
Non-Resource	☐

10. **Market Channels and Intervention Strategies:**

Market Channels	
Upstream	☐
Midstream	☐
Downstream	☒
Intervention Strategies	
Direct Install	☐
Incentive	☐
Finance	☐
Audit	☐
Technical Assistance	☐

Market Channels	
Other	☒

11. **Campaign Goals and Timeline:**

The primary goals for the three-year program are to achieve the savings targets cost-effectively by delivering Home Energy Reports to residential customers with the approved Randomized-Controlled Trial (RCT) design and measurement and verification (M&V) methodology. For the 2021 program year, the goals are to conduct the necessary program set-up activities in order to launch the program in early 2022. The activities include IT setup, M&V planning, analytics platform configuration, marketing approvals and training the customer call center. Key milestones for the program for 2021-2024 are listed below.

Goal/Milestone	Estimated Completion Date
Data Transfer Complete from SCE to 3rd Party Implementer	October 15, 2021
Program M&V Plan Submitted for Approval	October 25, 2021
Program M&V Plan Approved	November 10, 2021
Home Energy Report Configuration Complete	November 1, 2021
Home Energy Report Samples Approved	November 15, 2021
Upload Program Manual to CEDARS	December 1, 2021
3rd Party Implementer Data Integration Complete	December 1, 2021
3rd Party Implementer Finalizes Treatment and Control Groups	December 15, 2021
Launch Home Energy Reports to Customers in Treatment Groups	January 5, 2022
Additional Treatment Wave Added to Program	January 3, 2023
Additional Treatment Wave Added to Program	January 2, 2024

2. Implementation Plan Narrative

1. **Program Description**

The Residential Behavioral Program will drive adoption of behavioral changes in households through personalized Home Energy Reports (HERs) and Energy Advisor support. This Residential Behavioral Program will target residential customers across SCE's service territory for behavioral treatment to generate robust, cost-effective energy savings. The objective is to amplify residential energy savings by delivering direct, relatable interventions with lasting impact for SCE customers and better connect hard-to-reach (HTR), low-to-moderate income (LMI) and disadvantaged communities (DAC) segments to SCE.

The program will deliver paper and email HERs to residential customers, including a wave of participants that are HTR, LMI, and/or located in DACs. The program design will also

incorporate additional tactics or channels, such as rewards and voice technology, to reach customers and meet the program objectives.

2. Program Delivery and Customer Services

The program will deliver savings through a downstream approach that interacts with residential customers through multiple channels. Home Energy Reports will be delivered to customers through paper and email channels. The program uses appliance-level disaggregation capabilities and behavioral science expertise to provide SCE's customers with paper and email HERs that deliver deeper, longer-term savings. The reports will provide feedback on their consumption and customized recommendations to save energy. Highly trained Energy Advisor coaches will help coach SCE customers to interpret their home's energy data and translate it into actionable information. Energy Advisors will conduct outbound targeted campaigns and be available to customers for inbound phone calls and emails.

The program uses the approved meter-based RCT experimental design and M&V methodology to calculate savings. The program compares "waves" of treatment and control groups – two populations that are statistically equivalent and randomly selected – to measure and attribute savings to the program treatment. Customers may have been treated by a HER measure in prior program years, and the program will preserve some existing waves.

The program design will also incorporate additional tactics or channels to drive energy-saving behavior changes by customers and meet the program objectives, such as rewards and voice technology. The program will reward customers for taking action to save energy and engage with the program. The rewards will be targeted towards supporting customers in the HTR, LMI and DAC segments and generally come in the form of gift cards that can be mailed or emailed to customers. Rewards will be fulfilled on an ongoing basis by a customer care team which will also handle any inquiries about the program. The program will also offer a small subset of customers the ability to use their smart voice assistant to access their HER information, in order to test this channel's effectiveness and understand the potential impact of this technology to drive SCE customers' behavioral energy savings.

In 2021, program startup activities will be conducted in order to launch the program in early 2022. The 2021 set-up activities will include: establishing the data transfer, configuring the reports and analytics platform, getting materials approved for SCE branding, developing the M&V Plan, establishing the treatment and controls groups, and setting up and training the customer call center. There will be no program delivery or customer services in 2021.

3. Program Design and Best Practices

Once launched in 2022, the Residential Behavioral Program will provide relevant, personalized energy usage tips and insights that proactively enable customers to save energy and lower their bills. Best practices from 50+ evaluated Home Energy Report utility programs have been employed to develop the program design. The program design will be fully operationalized as part of the preparation activities in 2021.

Customers have varying levels of knowledge and experience with energy efficiency and many do not understand how their behavior influences their home's energy consumption. The program

provides customers with easy low- and no-cost behavioral changes they can implement that will yield measurable savings in their home. Personalized recommendations reduce some of the uncertainty customers have with determining the best actions to take to conserve energy. The program reaches customers through multiple channels to make information easy to access and drive continuous engagement, including direct mail, email, and phone.

A HER "wave" is a group of customers randomly selected into a treatment or control group. Customers in the treatment group receive the HER measure. Treatment and control groups from existing HER measure waves will be maintained, consistent with best practices to drive continued savings from customers that have already ramped up to their peak savings rates, and also to avoid M&V challenges from re-randomizing the selection of customers into treatment and control groups who were previously in a wave. For new waves, the program will target residential customers across SCE's service territory that were not previously considered good targets for behavioral treatment, including the HTR and LMI customers, and those customers located in DACs. We leverage customer propensity analysis and disaggregation-based scoring for customer targeting to drive behavioral savings from these traditionally underserved sectors.

To overcome the split incentive barrier for renters, our reports focus on low- and no-cost energy saving behaviors that even tenants can implement, allowing them to realize savings even when they are unable to make upgrades to their homes or equipment. The reports clearly answer customer questions—such as "How am I doing?" and "What can I do about it?"—tied to clear ways customers can act to lower usage.

HERs and Energy Advisor coaching provide customers valuable insights into the benefits of energy efficiency in a concise, clear, and actionable package along with personalized energy-saving recommendations that customers can put into effect immediately. Highly trained Energy Advisors provide one-on-one coaching that creates a personal connection with customers and will drive deeper behavior change, leading to increased energy savings. The reports also promote other SCE programs, resources, and educate customers on the value that energy efficiency and demand response programs can provide.

The program will evaluate customer satisfaction levels. Customers in the treatment group will be surveyed to determine program satisfaction levels. Customers in the treatment and control group will be surveyed to compare rates of overall satisfaction with the utility, which enables the program to attribute differences to the treatment effect.

4. **Innovation**

The innovation design will be finalized as part of the planning activities in 2021. Innovations may include the following:

- **Drive deeper behavioral savings from more segments of customers:** The program will use disaggregated advanced metering infrastructure (AMI) analytics to expand customer strata beyond typical high-energy behavioral target groups, expand customer uptake, and tap into new savings opportunities. A wave of HTR, DAC and/or LMI customers will be included in the program. The program uses machine learning to recalibrate messaging with real-time insights and performance-based nudging.

- **Leverage new channels and tactics for behavioral interventions:** Energy Advisors proactively coach and nudge residential energy interest and investment with outbound calls to customers, assisting them with new energy habits and actions. The program will also incent customer action and drive loyalty using small rewards by offering customers the ability to earn and redeem gift cards. To increase cost effectiveness, the strategy reduces the reliance on more technology platforms and instead focuses on rewarding customers directly for persistent savings and participation. Voice technology is an untapped channel in behavioral programs and will be used with a small subset of customers to grab new customer interaction and drive energy-saving behaviors.
- **Holistic customer experience:** Unlike first- generation HERs generated from a software platform in a set and forget fashion, this program marries technology and customer care with a high-touch outreach approach that provides a holistic customer experience. This new and unique delivery approach ultimately drives greater on-going participation resulting in deeper savings.

5. Metrics

The Residential Behavioral Program will have several Key Performance Indicators (KPIs) integrated into the program to measure and track program success. These KPIs will be the primary assessment of the program's performance once launched. The majority of the KPIs will be tracked monthly or quarterly throughout the three-year cycle. Metrics will include:

Category	Metric/Indicator	Description
Program Performance	Energy Savings (kWh, kW)	Net annual and lifecycle energy savings achieved vs forecasted
Program Performance	Customers Treated and Reports Sent	Number of customers with active accounts in treatment group waves; Actual number of reports sent to customers by paper and email channels
Program Performance	TRC Calculation	TRC actual vs. forecasted
Program Performance	TRC ratio / Levelized cost	[Incentive/non-incentive] spend based on paid [incentive/non-incentive] spend vs. forecasted [incentive/non-incentive] spend
Program Performance	Customer Satisfaction and Service	Resolution of complaints or inquiries and timeliness of resolution; Overall program customer satisfaction rating of 80% or higher
Program Performance	Hard to Reach and Disadvantaged Communities	Percentage of customers in hard to reach or disadvantaged communities
Implementer Administrative Performance	Program Data Quality	Home energy reports are sent to treatment group customers and not sent to control group customers; Correct personalized data display on customer reports
Marketing Performance	Unsubscribes or opt outs	The average unsubscribe rate across direct mail and email campaigns

Marketing Performance	Open Rates	Email open rates
Supply Chain	Diverse Business Enterprises (DBE) Spend	To date DBE spending as percent of total spend / DBE % commitment compared to goal
Sector Level	Greenhouse Gas Emissions	MT CO2eq Net kWh savings
Sector Level	Depth of interventions	Average savings per participant

Since there is no program delivery to customers in 2021, the metrics of success will be timely achievement of milestones in order to prepare for program launch in 2022. See 2021 milestones identified in **Campaign Goals and Timeline** above.

6. For Programs Claiming To-Code Savings

This section is not applicable to this program.

7. Pilots

This section is not applicable to this program.

8. Workforce Education & Training (WE&T) [1]

This section is not applicable to this program, as it does not involve workforce education and training.

9. Workforce Standards[2]

This section is not applicable to this program. According to D.18-10-008[3], the workforce standards are applied to large non-residential projects involving the installation, modification, repair, or maintenance of heating, ventilation, and air-conditioning measures, as well as lighting controls. This requirement is not applicable to the proposed program as the program does not involve the installation of physical measures.

10. Disadvantaged Worker Plan:[4]

This section is not applicable to the program, as it does not involve the installation of physical measures.

11. Additional Information

No additional information has been requested by any CPUC decision or ruling.

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1 D.18-05-041, Page 20-21 and Ordering Paragraph 7.
2 D.18-10-008, Ordering Paragraph 1-2 and Attachment B, Section A-B, Page B-1.
3 D.18-10-008, Page 2 and Ordering Paragraph 1.
4 D.18-10-008, Attachment B, Section D, page B-9.

3. Supporting Documents

Attach all the following documents as PDF-format files to this file:

1. **Program Manuals and Program Rules**

   A Program Manual will be developed and uploaded to CEDARS prior to program launch in 2022. The Program Manual will include the required applicable information including eligible measures, customer eligibility requirements, additional services, and program metrics.

2. **Program Theory [5] and Program Logic Model [6]**

   Program Activities

   The Residential Behavioral Program uses AMI disaggregation analytics to target a broad portion of SCE's customer base, including HTR and DAC customers. Targeting a broader customer base helps overcome the barrier of shrinking availability of eligible high-energy-using customers for behavioral programs and contributes to meeting SCE goals to help customers reduce their energy burden. The Program will analyze the performance of existing HER measure treatment and control group waves.

   Machine learning analytics, personalization, and disaggregation modeling are employed to produce customized HERs that show customers how to capture energy savings potential by adopting conservation behaviors at home. The program design augments email and paper reports with Energy Advisors, rewards, and voice application to provide additional behavioral interventions and channels for deeper engagement. Tracking systems are implemented to enable the pay-for-performance structure.

   For the rewards activity, select customers identified by the program analytics as having the highest propensity to respond to the offers will receive additional nudges to help them save energy and engage in other identified high-priority actions. Collectively, the program tactics apply many proven behavioral science principles including normative comparisons, timely feedback or reminders, and defaults, as well as innovative downstream channels (voice assistance, outbound phone), small direct (rewards), and feedback approaches (disaggregation). In particular, the Energy Advisor and rewards activities help overcome barriers faced by HTR and DAC customers.

   Program Outputs

   The customer targeting activity results in the output of customer cohorts who receive the other program activities, as well as control groups for the randomized control trial (RCT) evaluation method. If existing customer HER waves are identified as performing well in terms of generating savings, the treatment wave will be preserved with a goal to drive even deeper savings from that wave of customers. The treatment group receives customized email and/or paper HERs containing digestible peer and historical comparisons, actual end-use disaggregation, and

[5] The expected causal relationships between program goals and program activities in a way that allows the reader to understand why the proposed program activities are expected to result in the accomplishment of the program goals. A well-developed program theory can (and should) also describe the barriers that will be overcome in order to accomplish the goals and clearly describe how the program activities are expected to overcome those barriers. *California Evaluation Framework*, June 2004.

[6] The graphical representation of the program theory showing the flow between activities, their outputs, and subsequent short-term, intermediate, and long-term outcomes. *California Evaluation Framework*, June 2004.

actionable recommendations of how to save energy. This energy usage feedback information and savings tips are delivered across multiple channels including email, print, voice, and outbound phone on frequent intervals in order to increase the salience and timeliness of information for customers.

The machine learning analytics, personalization, and disaggregation activity provide the platform for Energy Advisors to conduct one-on-one coaching sessions with customers. It also provides the engine to support the use of the voice channel that provides a growing customer segment which uses smart speaker devices the ability to access personalized energy information and tips. Select customers earn points for taking certain actions—such as providing an email address or saving energy—and redeem those points for small rewards, typically in the form of gift cards. The tracking systems activity supports the RCT-based pay-for-performance structure output.

Program Outcomes

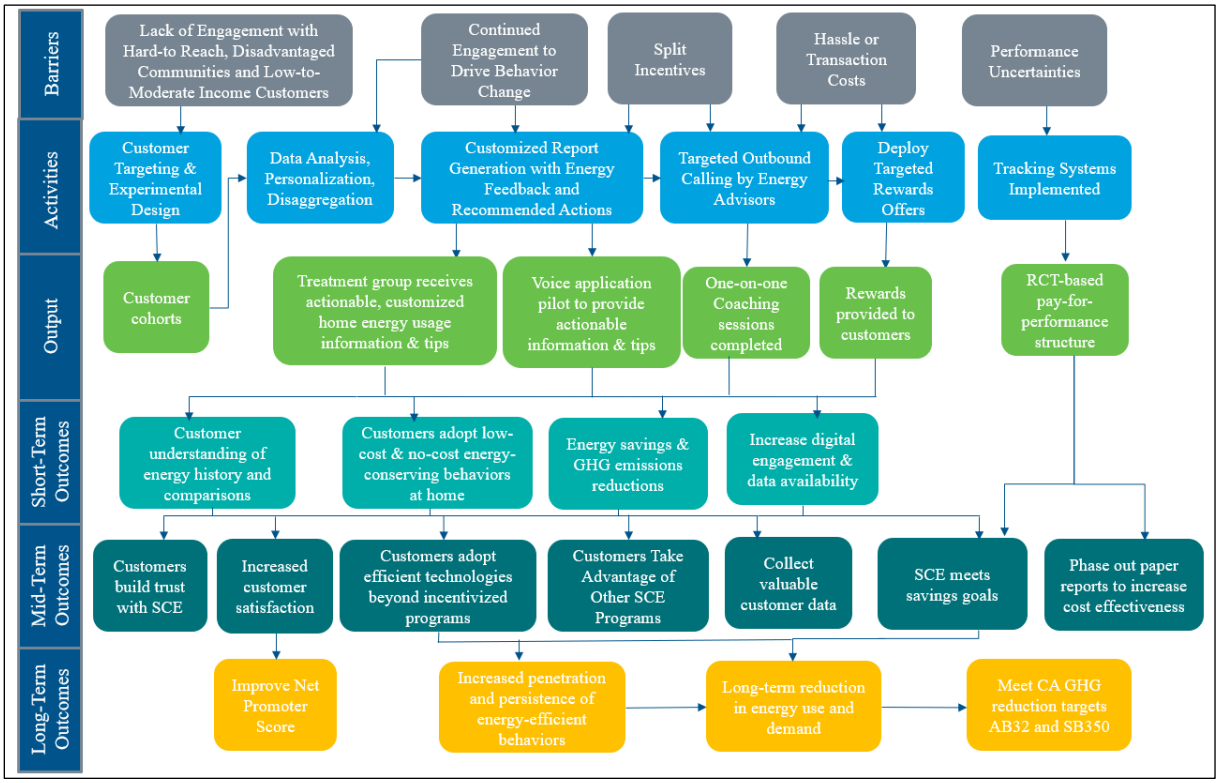
The short-term outcomes of the HERs, voice application, Energy Advisor, and rewards program outputs are increasing customers' understanding of their energy history and comparisons and adoption of energy-saving behaviors at home. The behavioral changes result in energy and demand reductions in the short-term. The HERs, voice application, Energy Advisor, and rewards also increase digital engagement and customer data—such as email addresses or home characteristics—available to SCE and the program in the short-term.

The program outputs, in particular the rewards and Energy Advisors, will help build customer trust with SCE and increase Net Promoter Score customer satisfaction metrics typically measured by the utility and/or third parties such as JD Power in the mid-term. As the activities continue over the program lifecycle, the adoption rate and saturation of low-cost and no-cost energy-conserving behaviors will increase. Customers will take advantage of other SCE programs and adopt efficient technologies outside of incentivized programs, and SCE will meet its savings goals.

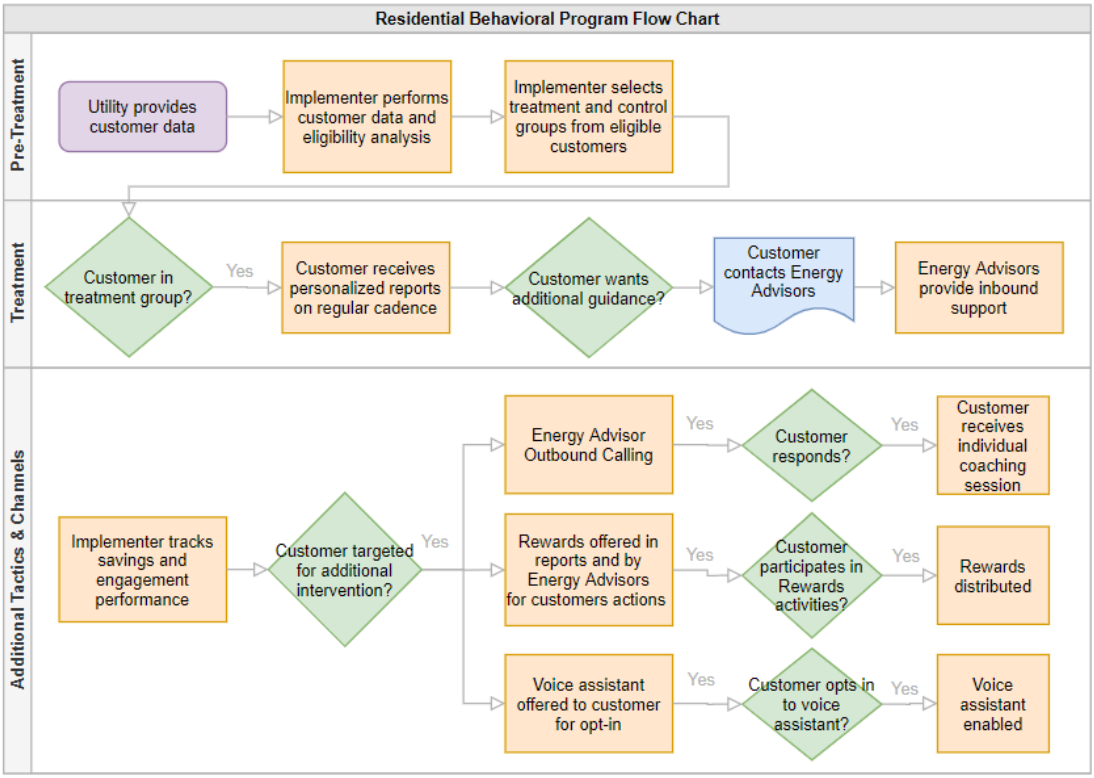
The rewards, voice application, and Energy Advisor tactics create a positive feedback loop by increasing the data available to SCE and the program, providing valuable information to support personalization, and targeting across multiple channels. The RCT-based pay-for-performance structure helps support SCE meeting its savings goals and phasing out paper reports to increase cost-effectiveness in the mid-term.

The increased penetration and persistence of energy-efficient behaviors lead to long-term energy and demand reductions and contribute to meeting long-term California EE policies and greenhouse gas (GHG) reduction targets. The program outputs also contribute to increases in SCE's Net Promoter Score — the percentage of customers rating their likelihood to recommend the company to a friend or colleague as 9 or 10 — in the long-term.

Program Logic Model



3. Process Flow Chart



4. Incentive Tables, Workpapers, Software Tools[7]

Provide a summary table of measures and incentive levels, along with links to the associated workpapers.

#	Measure	Incentive Level	
1	Home Energy Reports	0	
2			
3			

#	Workpaper Name	Short Description	URL link or location name
1	SWWB004-01 Home Energy Reports (HERs)	Home Energy Reports statewide workpaper Phase 1 submission for 2020 effective 1/1/2020	http://deeresources.net/workpapers SWWB004-01 Home Energy Reports_02062020.pdf
2			

[7] Per D.19-08-009, for fuel substitution measures where the incentive exceeds the Incremental Measure Cost (IMC), the CPUC requires submission of a workpaper addendum using a separate template. Third-party implementers can request the template from their Contract Manager. SCE Program Managers should refer to the E-PPICs Smart Sheet.

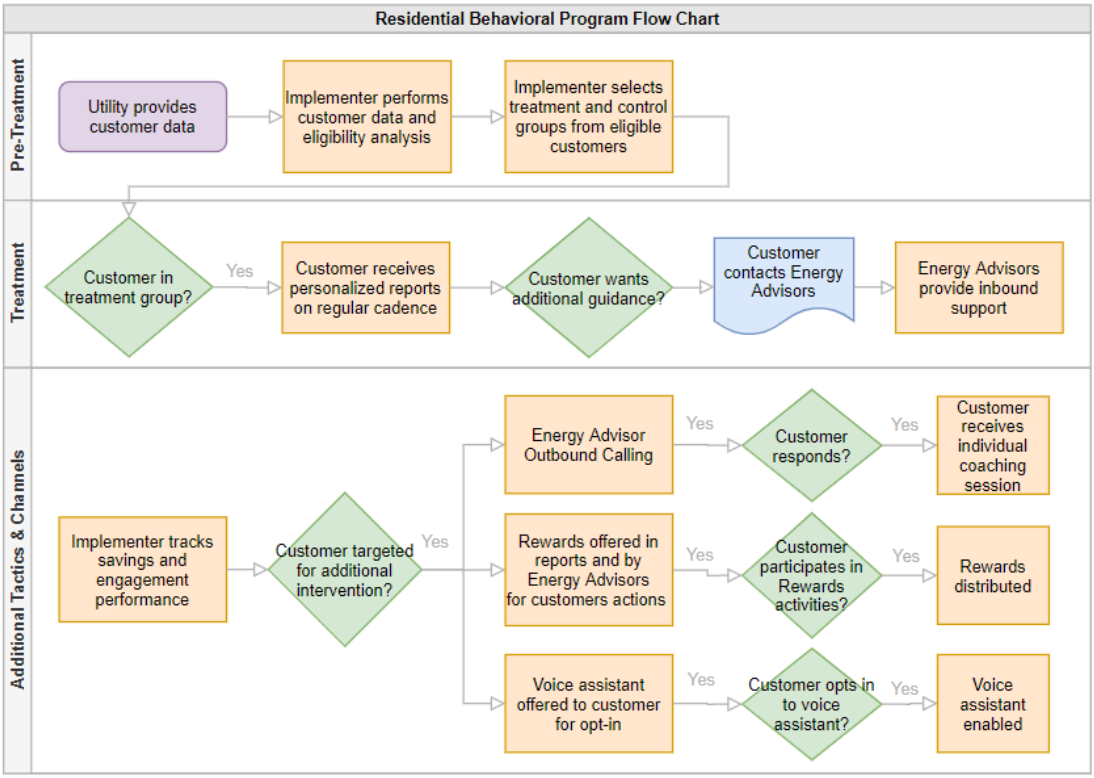
#	Workpaper Name	Short Description	URL link or location name
3			

5. Quantitative Program Targets

See section 1.3-1.6 for program budget and goals. Additional quantitative targets will be identified pending final program design/data provided by SCE and this plan will be updated.

6. Diagram of Program

This program does not require linkages to other areas.



7. Evaluation, Measurement, and Verification (EM&V)

Since there is no program activity to customers in 2021, there will be no savings to evaluate. The program will create the M&V Plan and finalize by November 2021 in advance of the launch in January 2022.

HER programs employ a randomized control trial (RCT) experimental design that ensures comparisons of treatment and control groups are valid from a statistical standpoint. Savings are determined through a billing analysis which determines the difference between the treatment and control group average energy use. Decision 10-04-029[8] established the evaluation, measurement, and

[8] Decision 10-04-029, Page 40-42.

verification (EM&V) processes for savings claims of behavior-based programs based on experimental design. The SWWB004-01 Home Energy Reports (HERs) procedural workpaper outlines the M&V methodology for this measure. To calculate the energy savings, the treatment group will be compared with a randomly selected control group of customers that does not receive interventions using a regression model consistent with behavioral M&V protocols.[9] Savings calculations will be reported monthly and a true-up is performed at each year-end. Savings are verified on a periodic basis by a third-party evaluation firm.

After the program is launched, process evaluation activities in the form of a customer satisfaction survey and Energy Advisor interaction with customers will be conducted to track program satisfaction. The results will be used to identify any areas for potential improvement.

8. **Normalized Metered Energy Consumption (NMEC)**

NMEC is not applicable to this program.

[9] Stewart, J. and Todd, A [2017]. The Uniform Methods Project: Methods for Determining Energy Efficiency Savings for Specific Measures Chapter 17: Residential Behavior Evaluation Protocol. National Renewable Energy Laboratory.

APPENDIX. List of Acronyms and Abbreviations

Term	Definition
AMI	Advanced metering infrastructure
C&S	Codes & Standards
CALCTP	California Advanced Lighting Controls Training Program
CEDARS	California Energy Data and Reporting System
CPUC	California Public Utilities Commission
DAC	Disadvantaged Communities
DBE	Disadvantaged Business Enterprise
DEER	Database for Energy Efficient Resources
DSM	Demand-Side Management
EE	Energy Efficiency
EE PRG	Energy Efficiency Procurement Review Group
EM&V	Evaluation, Measurement & Verification
ET	Emerging Technologies
EUL	Effective Useful Life
FSU	Fractional Savings Uncertainty
GHG	Greenhouse Gas Emissions
HER	Home Energy Report
HTR	Hard-to-Reach
HVAC	Heating, Ventilation, & Air Conditioning
IOU	Investor-Owned Utility
IP	Implementation Plan
kW, kWh	kilowatts, kilowatt-hours
KPI	Key performance indicator
LMI	Low-to-Moderate Income
MT CO2eq	Metric Ton of Carbon Dioxide Equivalent
M&V	Measurement & Verification (or, sometimes, Validation)
NPS	Net Promoter Score
NMEC	Normalized Metered Energy Consumption
PA	Program Administrator
PAC	Program Administrator Cost
RCT	Randomized Control Trial
RFA	Request for Abstract
RFP	Request for Proposal
SCE	Southern California Edison

Term	Definition
TRC	Total Resource Cost
WE&T	Workforce Education & Training