Implementation Plan

Customer Home Engagement for Energy Reduction (CHEER) Program

DRAFT

Program Implementer: Oracle America, Inc.

Portfolio Administrator: Southern California Edison

Date: mm/dd/yyyy

Version: 1.0

Table of Contents

1. Program Overview

Provide a brief description of the program (3-5 sentences).

Oracle's Customer Home Engagement for Energy Reduction (CHEER) program serves 2.3 million residential single- and multi-family households across Southern California Edison's (SCE) service territory. As a resource acquisition program, the CHEER program sends Home Energy Reports to SCE residential customers to generate impactful Total System Benefits (TSB), energy savings, and demand reductions for SCE ratepayers.

Home Energy Reports (HERs) are user-friendly print and e-mail communications that provide personalized information to customers about their energy use. HERs include a neighbor comparison, energy history information, tips, and marketing modules. The goals of a HER are to give customers actionable insights about their energy and motivate them to lower their electricity usage.

All current SCE Opower HER program recipients will remain in the Program and continue to receive treatment. For the CHEER program, Oracle will expand the HER program first with eligible high users (those with the largest TSB potential), and then with priority customer groups (e.g., HTR/DAC customers). Implementer does not plan to treat all customers in SCE's territory because 1) it has prioritized the most cost-effective households, 2) it has factored in Opower and SCE-specific eligibility requirements, and 3) it needs to reserve some customers for control groups in the randomized control trials.

As customers in the existing program become inactive (move out of their homes) or unsubscribe from the program, Implementer will launch annual refill waves to maintain the program size. Implementer will work with SCE to select customers that meet SCE's selection criteria and target the customers SCE wants to engage most. All customers who are not selected for the initial treatment population can be considered for future refill waves.

EXISTING AND FUTURE WAVES*

Wave	Launch Date	Active HHs as of end of 2024
Opower 2	Mar, 2014	40,000
Opower 3	Sep, 2015	86,000
Opower 4	Mar, 2016	112,000
Opower 5	Apr, 2017	279,000
Opower 6	Apr, 2018	255,000
Opower 7	Sep, 2018	161,000
Opower 8	Sep, 2019	435,000
Opower 9	Apr, 2020	115,000
Additional households at launch	TBD	1,000,000

Throughout the life of the program, it will monitor wave performance and decommission any waves that are not performing as expected and replace those households within the next refill wave. There will be

more than 2.3M households in the program at launch to account for attrition throughout the program year. Implementer will continue to launch more waves throughout the program to maintain households at approximately 2.3M on average and ensure it can meet its TSB targets.

2. Program Attributes

Budget and Savings			
1	Program Name		Customer Home Engagement for Energy Reduction Program
2	Program ID Number		SCE_3P_2025R_001
3	Program Implementer		Oracle America, Inc.
4	Portfolio Administrator		SCE
5	Program Implementer Type		Third Party-Solicited
6	Portfolio Segment[1]		Resource Acquisition
7	Total Program Budget		$22,667,464
8	Program Budget by Year	2025	$2,910,853
		2026	$5,928,870
		2027	$6,612,974
		2028	$7,214,766
9	Program Duration		6/1/2025 - 12/31/2028
10	TSB by Total and Program Year	Total	$48,490,288
		2025	$6,226,903
		2026	$12,683,052
		2027	$14,146,490
		2028	$15,433,844
11	CO_2	Lifecycle	144,333
		First Year	21,424
		Net	144,333
		Gross	144,333
12	KW (demand reduction)	First Year	19,900
		Net	94,800
		Gross	94,800
12	KWh (energy savings)	Lifecycle	426,427,300

[1] D.21-05-031 Ordering Paragraph 2.

Budget and Savings			
		First Year	61,978,000
		Net	426,427,300
		Gross	426,427,300
13	Therms (Lifecycle, First Year, Net, Gross)		NA
14	Program Cost Effectiveness: Total Resource Cost (TRC) Ratio	Total	2.14
		2025	2.14
		2026	2.14
		2027	2.14
		2028	2.14
15	Program Cost Effectiveness: Program Administrator Cost (PAC) Ratio	Total	2.14
		2025	2.14
		2026	2.14
		2027	2.14
		2028	2.14
16	Market Sector(s)		Residential
17	Program Type		Resource
18	Delivery Type(s)[2]		Downstream
19	Intervention Strategies		Behavioral Audits
20	M&V Methods		Randomized Controlled Trials (RCT)

3. Implementation Plan Narrative

1. **Program Description**

Describe the program, its primary purpose (resource acquisition, equity, market support, or codes and standards), rationale, and its objectives.

For the Customer Home Engagement for Energy Reduction (CHEER) program, we expand the Home Energy Reports (HERs) population to 2.3 million households to engage residential single-family and multi-family customer segments and generate impactful savings and TSB results for SCE.

All current SCE Oracle HER program recipients remain in the program and continue to receive treatment. For the CHEER program, we expand the HER program first with eligible high users (those with the largest TSB potential) and then with priority customer groups (e.g., HTR/DAC customers). We do not

[2] Database for Energy Efficiency Resources (DEER) 2026 Delivery Types.

plan to treat all eligible customers in SCE's territory because 1) it has prioritized the most cost-effective households, 2) it has factored in Oracle and SCE-specific eligibility requirements, and 3) it needs to reserve some customers for control groups in the randomized control trials.

The objective of the CHEER program is to maximize cost-effective Total System Benefit (TSB) savings, customer satisfaction, and equity. This includes:

- Utilize opt-out program enrollment to reach up to 2.3 million residential households and drive cost-effective, claimable energy savings.
- Target high-value savings opportunities by promoting daily load shifting;
- Utilize digital tools to provide continuous, cohesive, and streamlined energy management feedback to customers;
- Increase customer satisfaction and SCE program awareness rates; and
- Generate cost-effective and equitable TSB from Hard-to-Reach (HTR) and Disadvantaged Communities (DAC) customers already receiving HERs, and reach additional low-income customers.

2. Performance Tracking

List the contractual targets and the associated numeric values used to quantify and track program progress and success. This includes TSB for all relevant programs. The contractual targets may include the common metrics,[3] equity and market support indicators,[4] and for RENs, unique value metrics,[5] as relevant.

The CHEER Program targets are as follows:

	2025	2026	2027	2028	Total
MWh Savings Target	61,978	119,282	121,579	123,587	426,427
MW Target	19.9	24.5	25.1	25.3	94.8
Total System Benefit	$6,226,903	$12,683,052	$14,146,490	$15,433,844	$48,490,288
Households	2,300,000	2,300,000	2,300,000	2,300,000	2,300,000

In addition to energy savings metrics, Oracle will also report on several KPIs. These include:

- **Customer Satisfaction (CSAT):** A digital Customer Engagement Tracker survey will be delivered to a subset of treatment and control customers on an annual basis.
- **Opt-out Rates**: The percentage of treatment customers who opted not to receive HERs in any channel will be tracked and reported.
- **Customer Engagement with Digital Communications**: Open and click-through rates for the program's various digital communications will be tracked and reported

[3] D.18-05-041, Attachment A.
[4] D.23-06-055, pages 59-65, Conclusion of Law 36.
[5] D.19-12-021, pages 2, 23.

3. Program Delivery and Customer Services

Describe how the EE program will deliver offerings to the market, including program strategies/tactics, delivery types, and targeted market/customer group; how it will reach customers, including those in CPUC-defined underserved, hard-to-reach, and/or disadvantaged communities[6] (if applicable). Describe the timeline and strategy for customer acquisition. Describe all services, incentives and tools that are provided to participants. If applicable, describe planned coordination between this program and other EE programs administered by other PAs in the same sector or segment.

Program participants will be automatically enrolled in CHEER via an "opt-out" methodology, meaning customer acquisition is not applicable to this program to achieve its objectives. The program design for communicating with those selected customers will be with the explicit goal of driving energy savings, increasing achieved TSB, and increasing customer engagement. The CHEER program will reach 2.3 million SCE residential customers through paper and email channels and emphasize engaging those customers with a high propensity to save.

All components of CHEER are implemented using a randomized control trial (RCT). RCT is a type of experimental design in which members of an eligible population are randomly assigned to either a treatment group or a control group. The program intervention of HERs is then provided only to the treatment group. Savings are estimated by calculating the difference in usage between the two groups using a lagged dependent variable methodology (See the Evaluation, Measurement, and Verification (EM&V) section for additional details on RCT). Due to the RCT methodology, Oracle estimates roughly the same level of program participation in the HER treatment and control group.

For treatment customers, Oracle experience automation tailors all communication content (messaging, insights, tips, and program promotions) based on everyone's attributes. Examples of attributes include: HTR/DAC, Spanish, TOU, Solar, EV, climate zones and home type. Oracle will use these attributes for targeted market/customer group and the messaging. Also, since CHEER is implemented on an opt-out basis, the program will uniquely include large numbers of limited income and hard-to-reach (HTR) customers, in compliance with CPUC Decision D.16-11-022, which requires no less than 15% of CARE customers to receive HERs. Oracle will work closely with SCE on identifying and tailoring the messaging for HTR and CARE customers.

Once target customer groups and experiences are chosen, Oracle will collaborate with SCE to make individual customer experiences consistent across platforms and channels and provide tools to the customers. Communications can bring customers directly to SCE's online resources (e.g., deep links in emails take customers directly to specific tools online). At the direction of SCE, these digital channels also promote energy-saving products and can link customers directly to sce.com and other microsites to streamline the buying process and take advantage of SCE rebates and programs. CHEER can also focus on targeted geographies and hundreds of other customer attributes to market these products.

Below is a description of each of the components/services provided within the CHEER program:

Home Energy Reports (HERs)

HERs (including solar HER, EV HER, and TOU HER) are user-friendly print and e-mail communications that provide personalized information to customers about their energy use. HERs include a neighbor

[6] D.23-06-055, Sections 7.2-7.3 and Conclusion of Law 30-33.

comparison, energy history information, tips, and marketing modules. The goals of a HER are to give customers actionable insights about their energy and motivate them to lower their electricity usage.

Existing HER Modules are updated at least monthly, and new modules are continuously added, which SCE will be notified by a product release email and the Oracle delivery team. Similarly, tips are regularly updated to reflect new energy efficiency learning and trends, and entirely new tips are often added to the Program. Tips are tailored for the customer based upon characteristics of each customer's home and usage. Tip savings estimates are also personalized for each customer based on their energy usage. Updates to tips are highlighted in a Product release email and by the Oracle delivery team. SCE can also make changes to tip content through Tip Manager, which is located in Oracle's provided business intelligence tool ("Inside Opower").

HERs include the following features:

- **Comparative Energy Use:** HERs will show customers how their energy use compares to that of nearby homes with similar characteristics such as home size, number of bedrooms, cooling and heating sources, and dwelling type.
- **Personal Tracker:** The Personal Tracker provides charts that display a historical view of the customer's usage-to-date with the goal of comparing the current year to the previous year.
- **Daily Peak:** The Daily Peak module displays a customer's average daily peak usage for the last month, so that customers can see which hours of the day they are using the most energy. The module includes one graph that shows peak use on the weekdays and another that shows use on the weekends.
- **Pre-Audit Home Profile (aka Easy Audit Module):** The Pre-Audit Home Profile can be included in HERs for a customer who has not yet completed the Home Energy Analysis (HEA). It is designed to show customers which of their home attributes are unknown, and to encourage them to provide these attributes to receive a more personalized report, while making it seamless for them to access the HEA.
- **Neighbor Trend**: The Neighbor Trend compares the customer (You) to two groups: "Efficient Neighbors" and "Average Neighbors." The module displays data from up to a maximum of six historical bills on a line graph, with one line each for "You," "Efficient Neighbors," and "Average Neighbors."
- **Cooling Analysis Pie Chart**: The Cooling Analysis Pie Chart displays the customer's estimated cooling usage last season as a percentage of their total energy consumption. Its purpose is to help customers better understand how they use energy during the cooling season.
- **Customized Tips**: Actionable energy saving tips that are easy to follow and lead to energy saving actions or behaviors. The tips are comprised of an illustration, a small section of text describing a recommendation or action a customer can take to save energy and the amount a customer can save if they complete the tip.
- **Marketing and Program Related Messaging:** Information and links to SCE Demand Side Management (DSM) Programs, customer rebates and other messages designed to support customers energy reduction needs.

4. Program Design and Best Practices

Describe the specific program strategies/tactics to reduce the identified market barriers for the targeted customer group and/or market actor(s) to achieve program goals and objectives. Describe how the program approach constitutes "best practices" and/or incorporates "lessons learned." Include

descriptions of key software tools that are significant to program strategy and implementation, including audit tools. Provide references where available.

Oracle applies learnings and best practices from past and present HER programs on an ongoing basis to maximize program performance. This program will include behavioral EE strategies that have evolved to address SCE's shifting portfolio needs. The CHEER program builds upon the reliability and effectiveness of a traditional behavioral EE program while introducing fresh, new, and groundbreaking innovations. Through the use of increasing digital technologies, the proposed CHEER program significantly increases the number of customers reached (including Solar and Electric Vehicle owners) and energy savings generated while optimizing savings during the times that SCE needs them most. To do so, the CHEER program provides a coordinated set of multi-channel communications for up to 2.3 million residential SCE households to engage and educate them about how to reduce, shift, and adapt their energy behavior in ways that are most impactful and beneficial for both the grid and their personal bill savings.

5. **Innovation**

(Required for all IOU EE programs designed and implemented by a third party.)[7] *Describe the innovative elements that have been incorporated into the program, i.e., advancing a technology, marketing strategy, or delivery approach in a manner different from previous efforts.*[8] *Explain how these will improve program outcomes and if relevant, minimize lost opportunities for promoting other integrated demand side management (IDSM) energy reduction efforts. Describe how the performance of these innovative elements will be measured or assessed.*

Innovative program feature	How it increases EE adoption/program participation
Peak-focused communications Brand new monthly peak-focused Home Energy Report (HER) for time-of-use (TOU) customers	The peak-focused HER uses TOU rates to motivate customers to consolidate savings at GHG-intensive times.
Complex customer reports New reports for customers whose situations include permutations of solar installations, EV ownership, and TOU rates.	Complex customers are more engaged than average utility customers, and tailoring their insights increases digital engagement and, by extension, energy savings.
Experience localization All experiences are offered in Spanish. Spanish language communications are already a part of the SCE-led behavior program, though Implementer will be introducing Spanish versions for the TOU and complex customer	SCE has a large Spanish-speaking population, and reports in Spanish maximize opportunities to engage more customers with savings potential.

[7] D.16-08-019, Section 5.2 and Conclusion of Law 26.

[8] See "Innovation and Integrated Demand Side Management (IDSM) References" document at https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/demand-side-management/energy-efficiency/rolling-portfolio-program-guidance.

Innovative program feature	How it increases EE adoption/program participation
reports, which will be new to the program.	
Focus on SCE's high-priority customer segments. Report tracks with distinct verbiage, insights, tips, and program promotions by geography, home type, and HTR/DAC status. Targeting by HTR/DAC status is not currently a part of the SCE-led behavioral program. CARE enrollment is used to determine verbiage, insights, tips, and program promotions in the SCE-led behavioral program.	Customers respond better when they receive relevant EE recommendations and experiences tailored to their HTR/DAC status, location, and home type. Implementer's customer surveys had measured that when low-income eligible customers received low-income reports, they were 22% more likely than non-low-income customers to say that the reports helped inform them of how to better manage their energy usage. They were also 18% more likely to say that they took an action to save money.
Carbon insights GHG insights integrated into customer reports This is not currently a part of the SCE-led behavioral program.	Giving customers a sense of "personal agency" is critical to measurable energy savings; summing up community GHG savings shows customers how their actions factor into a larger environmental impact. Implementer inputs the total kWh savings into the EPA Greenhouse Gas Equivalency calculator to calculate community GHG reduction tied to SCE's behavioral program. We also have the ability to apply hourly emissions factors to SCE's hourly kWh savings for more time granular GHG reduction.

Technology innovation

Innovative program feature	How it increases EE adoption/program participation
Appliance disaggregation Disaggregated insights in web features and communications We were recently awarded three new patents, bringing our total number of disaggregation patents to fifteen between 2014 and 2023, and our total number of utility customer engagement patents to 68. Guidehouse acknowledged our recent breakthroughs and leadership in applied machine learning by naming Implementer #1 in both Smart Meter Analytics and AI for DER Integration.	Opower appliance disaggregation encourages EE actions by helping customers identify the biggest energy users in their homes. We then make energy-saving actions easy by pairing insights with related tips and program recommendations. The 'What Uses Most' module currently shows SCE HER recipients their appliance energy use and surface energy savings tips based on that breakdown (e.g., Opower disaggregation identifies customers with inefficient heating and promotes a rebated heat pump at the right energy-saving moment and nudges them to upgrade.) These types of modules have been very successful across other Implementer implementations, including: Driving a 5X higher participation rate among recipients of disaggregation powered Opower communications in an in-home energy improvement program.

Innovative program feature	How it increases EE adoption/program participation
This is currently a part of the SCE-led behavioral program, but new appliance disaggregation capabilities will be included in the future.	Tripling weatherization program adoption rates when using Opower communications with disaggregation insights. Motivating tens of thousands of additional customers to complete Home Energy Audits.

Delivery approach innovation

Innovative program feature	How it increases EE adoption/program participation
Updated measurement curve Implementer worked with a California utility to update the HER program load curves to be an allocation of two load shapes, using hourly electric usage data from the utility's program. This is now reflected in the updated HER workpaper, SWWB004-02). This is not currently a part of the SCE-led behavioral program.	Allowing a blended load curve enables each utility to select the load curves and percent allocation that fit their customers' annual savings shape. Not only does this more accurately reflect the impact of HER programs at each utility, but it also results in a higher TSB. For example, after analyzing its hourly usage data, a California utility went from 100% Refrigerator-Freezer to a blend of 80% Refrigerator-Freezer and 20% HVAC. This increased their TSB because the HVAC curve included the peak savings that the HER program drives.

Metrics associated with innovation

The success of the program innovation delivered in the CHEER program will be reflected in the program's overall performance metrics, particularly energy savings, cost-effectiveness, and opt-out rate.

6. Pilots

If applicable, describe any pilot elements or projects that are part of this program, including what is being tested and why and addressing the potential for successes to be identified, replicated and scaled more broadly. Describe how lessons learned in the pilot will be gathered, applied, and shared.

There will be no pilots as a part of the CHEER program.

7. Workforce Education & Training (WE&T) [9]

(Applicable to WE&T programs only.) Describe how the program will support workforce, education, and training to:

a. Expand/initiate partnerships with entities that do job training and placement.

[9] D.18-05-041, Page 20-21 and Ordering Paragraph 7.

b. Require placement experience for any new partners in the workforce, education, and training programs and new solicitations.

c. Require "first source" hiring from a pool of qualified candidates before looking more broadly, beginning with self-certification; and

d. Facilitate job connections by working with implementers and contractor partners and utilizing energy training centers.

Not applicable, as there is no WE&T component to the Program.

8. Workforce Standards [10]

Identify all relevant workforce standards that the Implementer deems applicable to the Program, including any specific skills certification and/or broader occupational training and experience for the following:

a. HVAC Measures: Installation, modification, or maintenance of non-residential HVAC measures with an incentive of $3,000 or more are required to be installed by workers or technicians that meet one of the following criteria:

1. Enrolled in and/or completed an accredited HVAC apprenticeship, or

2. Completed more than five years of work experience at the journey level per California Department of Industrial Relations definition, passed competency tests, and received specific credentialed training, or

3. Has a C-20 HVAC contractor license issued by the California Contractor's State Licensing Board.

b. Advanced Lighting Control Measures:

i. Installation of non-residential lighting control measures with an incentive of $2,000 are required to be installed by installation technicians who have completed an International Association of Lighting Management companies (NALMCO) Certified Lighting Controls Professional (CLCP) certification.

Not applicable as program is delivered via Home Energy Reports.

9. Disadvantaged Worker Plan: [11]

(Applicable for programs that directly involve the installation, modification, repair, or maintenance of EE equipment.) Describe how the program will provide Disadvantaged Workers with improved access to career opportunities in the EE industry and the method that will be used for tracking this population in order to satisfy metric reporting requirements.

Not applicable as the program is delivered via Home Energy Reports.

[10] D.18-10-008, Ordering Paragraph 1-2 and Attachment B, Section A-B, Page B-1.
[11] D.18-10-008, Attachment B, Section D, page B-9.

10. **Market Access Programs:**

(Applicable to market access programs only.) Describe how the market access program interacts with the rest of the PA's EE portfolio. Describe the possible impacts with downstream retrofit programs. [12]

Not applicable, as this is not a market access program.

11. **Additional Information**

Describe additional information required by CPUC decision, resolution, or ruling, as applicable. Indicate decision, resolution, or ruling and page numbers.

None.

[12] D.23-06-055, Ordering Paragraph 26.

4. Supporting Documents

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

12. **Program Manuals and Program Rules**

All programs must have manuals[13] uploaded in CEDARS to clarify the eligibility requirements and rules of the program for implementers and customers. Program rules must comply with CPUC policies and rules. At minimum, these manuals should include:

#	Information Required	Short Description
1	**Eligible Measures or measure eligibility, if applicable**	Provide requirements for measure eligibility or a list of eligible measures
2	**Customer Eligibility Requirements**	Provide requirements for program participation (for example, annual energy use, peak kW demand, NAICS Code)
3	**Contractor Eligibility Requirements**	List any contractor (and/or developer, manufacturer, retailer or other "participant") or sub-contractor eligibility requirements. (For example: specific required trainings, specific contractor accreditations, and/or specific technician certifications required.)
4	**Participating Contractors, Manufacturers, Retailers, Distributors, and Partners**	For upstream or midstream incentives and/or buy-down programs indicate these, if applicable.
5	**Additional Services**	Briefly describe any additional sub-program delivery and measure installation and/or marketing & outreach, training, and/or other services provided, if not yet described above.
6	**Audits**	Indicate whether: • Pre- and post-audits are required. • Funding or incentive levels have been set for audits. • Eligibility requirements for audit incentives • Which demand-side resources will be included within the audit's scope, and • Who will perform the audit.
7	**Program Quality Assurance Provisions**	Please list quality assurance and quality control requirements, including accreditations and/or certification or other credentials.
8	**Other Program Metrics**	List all documentation and data used to calculate Program Metrics.

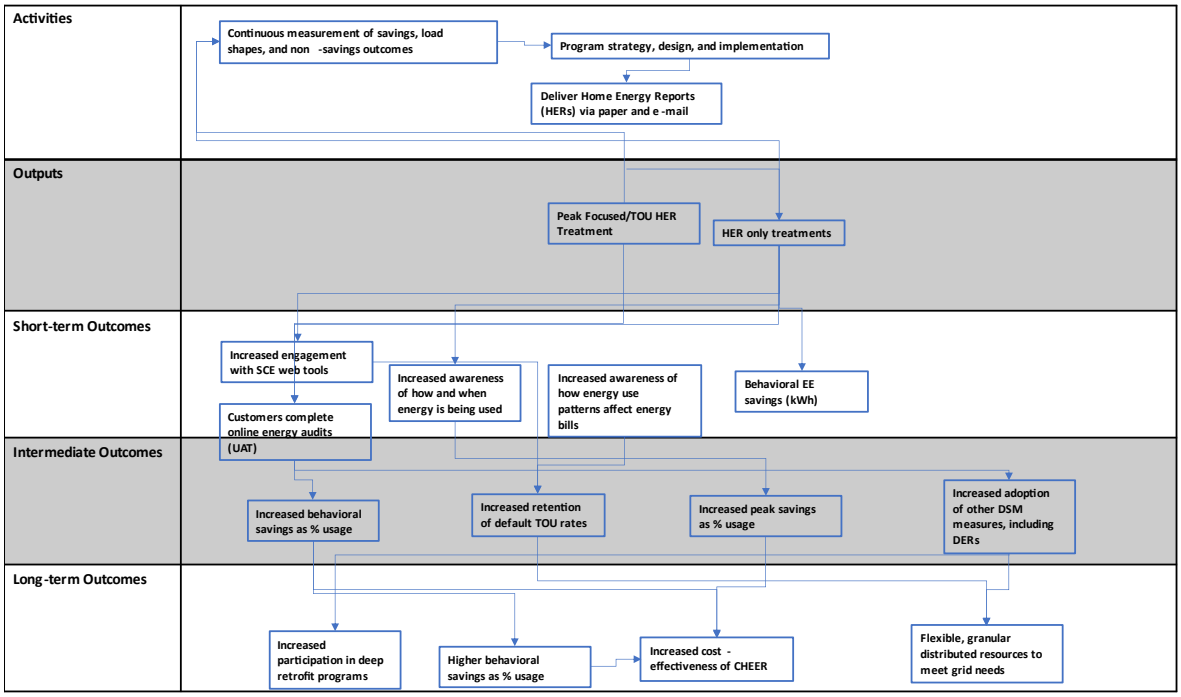
~~The CHEER program does not have a manual.~~

Have included the manual.

[13] "Manuals" are defined as materials given to implementers and customers, not internal process documents.

13. Program Theory and Program Logic Model [14]

Program Theory and Logic Models should visually represent and explain the underlying program design and theory of change, supporting the program intervention approach and strategies and demonstrating how these lead to outcomes.

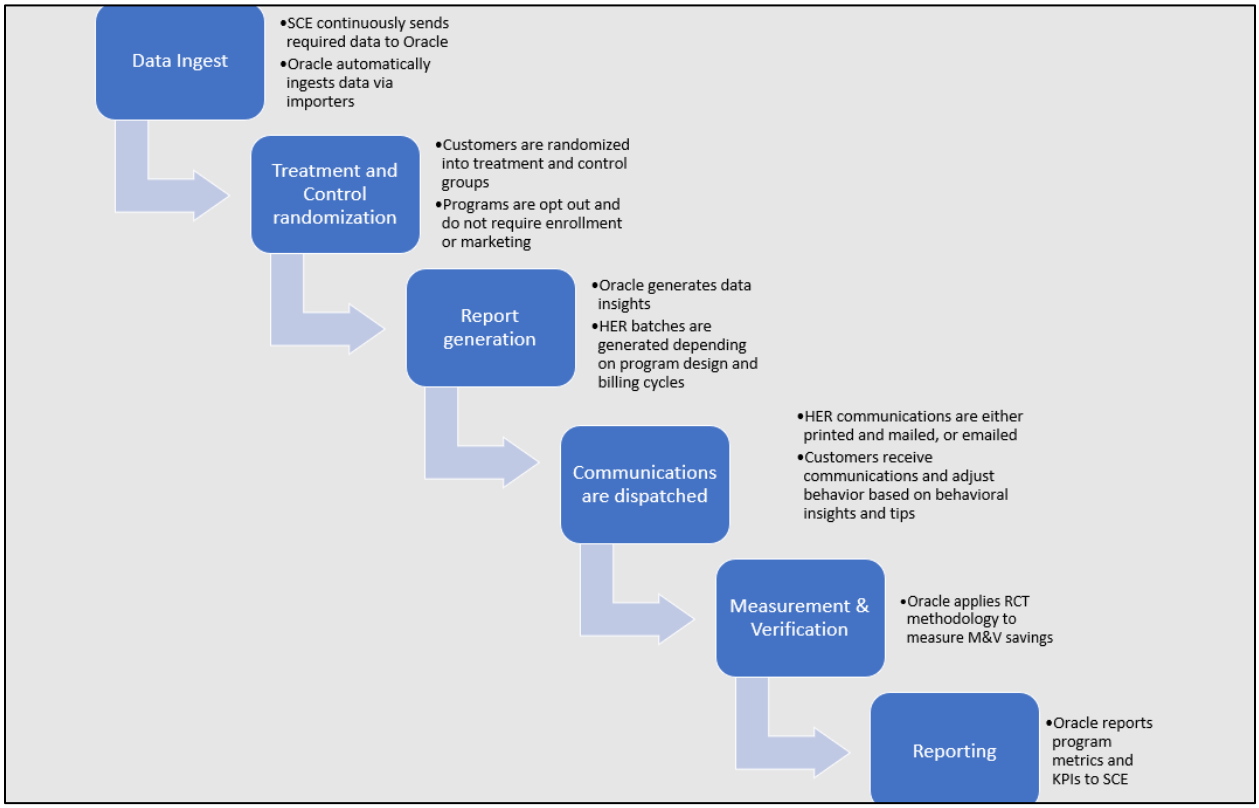


14. Process Flow Chart

Provide a process flow chart that describes the administrative and procedural components of the program. For example, the flow chart might describe:

- *How a customer submits an application*
- *How the Implementer screens the application*
- *The application approval or disapproval process*
- *Verification of purchase or installation*
- *Incentive processing and payment, and*
- *Any quality control activities.*

[14] 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.



15. **Measures and Incentives**

For deemed measures, provide a summary table of measures and customer incentive levels, along with links to the associated CPUC-approved measure packages.[15] *For programs utilizing custom or meter-based methods, list the measures expected to provide the majority of program savings and percent TSB achieved of each.*

#	Measure	Incentive Level	Link to Measure Package
1	SWWB004-02 Home Energy Reports		https://www.caetrm.com/measure/SWWB004/02/

16. **Diagram of Program**

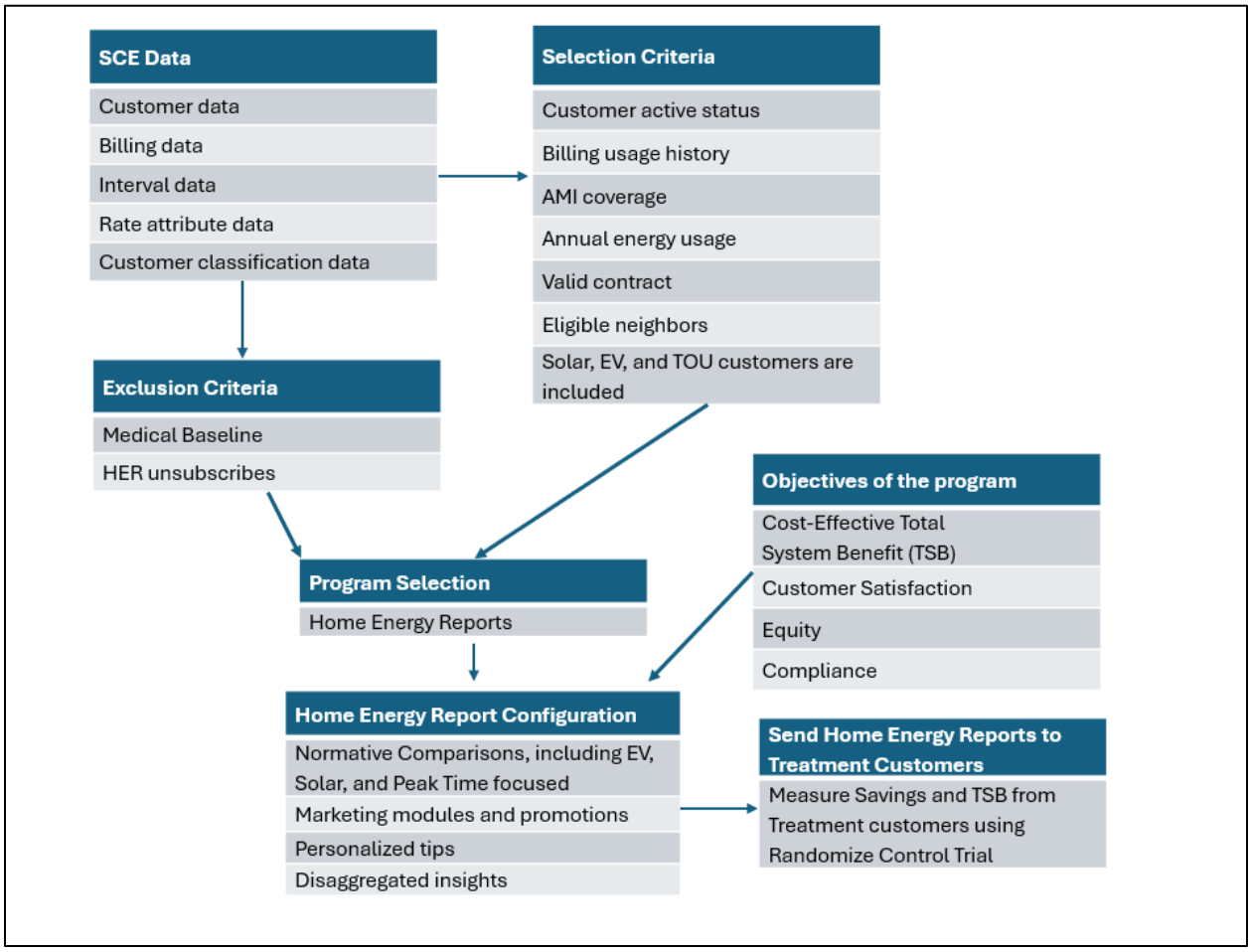
Provide a one-page diagram of the program visually illustrating the program's relevant direct linkages to areas such as:

- *Statewide and individual IOU marketing and outreach*
- *Workforce Education and Training (WE&T) programs*

[15] See California Electronic Technical Reference Manual (eTRM).

- *Emerging Technologies (ET) and Codes and Standards (C&S), and*
- *Integrated efforts across Demand Side Management (DSM) programs.*

CHEER Program Diagram



17. **Program Measurement and Verification (M&V):**

(Applicable and required for all programs except those solely utilizing NMEC methods, which are addressed in item 7 below.) Describe M&V efforts that the program will execute to evaluate program progress, ensure accurate and compliant assessment and reporting, and provide critical documentation to support ex-post evaluation (EM&V), including:

a. *Data collection strategies embedded in the design of the program or intervention to support near-term feedback, and internal performance analysis during deployment.*

b. *Methods that will be used to quantify and report against the program's performance metrics.*

c. *Process evaluation, additional data collection and/or other planned efforts supporting future EM&V of the program by independent evaluators.*

d. *New downstream Resource Acquisition retrofit programs targeting the residential or commercial sectors that will not utilize a meter-based M&V method (i.e., NMEC, SEM M&V, Randomized Control Trial or other meter-based method) must justify why meter-based methods are not used for feasibility or cost-effectiveness reasons.*[16]

Energy savings will be assessed using an experimental design whereby a target group of similar households is randomly assigned to receive the reports ("treatment") or not ("control"). The random assignment ensures that the treatment and control groups are equivalent from a statistical standpoint such that the experimental design establishes whether the desired effects are more likely to occur in the intervention (or treatment) group due to the program. Households in the treatment and control groups are treated in the same fashion with respect to utility interactions outside of this intervention (such as exposure to marketing programs and recruitment to demand response programs).

The impacts of home energy reports have been tested in several jurisdictions across the nation by independent program evaluators. These evaluation findings are based on the results of randomized controlled trial (RCT) experiments, which are considered as the most effective way to establish causality between a treatment and its effect. This experimental design isolates the unique impact of comparative usage. To reduce sampling error and thereby improve the representativeness of the sample of each of these experiments, each IOU utilizes stratified sample frames.

Savings from the HER program result from actions that vary from household to household. They may be divided into three types of actions:

1. Behavioral changes or practices that affect equipment use (e.g., switching off lights, unplugging unused appliances, and adjusting thermostat settings to limit heating and cooling);
2. Behavioral changes in the purchase and installation of primarily low-cost equipment not rebated by IOU energy efficiency incentives programs (e.g., timers, replacement lamps, low-flow faucet aerators); and
3. Behavioral changes in the purchase and installation of energy efficient equipment rebated by IOU energy efficiency incentive programs (e.g., smart thermostats).

Since households exhibit large variations in energy usage and savings are small (between 1.0% and 3.0% for electricity), large treatment and control groups are necessary to produce an un-biased savings estimate

[16] D.23-06-055, Ordering Paragraph 20.

with a high level of statistical precision. Because the set of household's characteristics for each experiment is unique, savings are calculated on an ex-post basis using billing analysis and demand response impact assessment. Regression models are based on the "difference-of-differences" (DID) approach, whereby the average change in energy consumption between pre- and post-periods among the treatment group is subtracted from the average change in energy consumption between the pre- and post-periods among the control group. The difference between these two pre/post differences yields the impact of the program.

The program will utilize the same M&V approach as SCE's current Home Energy Report program, which has been prescribed by multiple CPUC decisions, including D.10-04-029, which requires behavior-based programs to use experimental design methodologies as outlined in the California Evaluation Protocols. This program has been evaluated using the RCT methodology at least seven times at SCE alone, and Implementer has a proven track record of measuring savings verified by these valuations within +/- 10%. This methodology, documented in the statewide workpaper, SWWB004-02, "Home Energy Reports", has been in place since 2009 for evaluating the Home Energy Reports programs across all IOUs.

18. **Normalized Metered Energy Consumption (NMEC) Program M&V Plan:**

If NMEC is applicable, provide a detailed Program-level M&V plan, with required content as specified in the most recently updated NMEC Rulebook.

Not applicable

19. **Multi-DER IDSM Pilots only:** [17]

Provide the specific ex ante approach, tools, and methodologies to ensure evaluability.

Not applicable

20. **SEM Programs only:**

Provide additional supporting documents as described in the SEM Program Implementation Plan Checklist (Appendix B).

Not applicable

[17] D.23-06-055, pages 77-80.