# Mendota Group


# Implementation Plan

## Grid-Responsive Incentive Design Market Access Program (GRID-MAP)

**First Filing Date: 04/10/2025**

**Revision Filing Date: N/A**

# Table of Contents

# 1. Program Overview

The Grid-Responsive Incentive Design Market Access Program (GRID-MAP) provides opportunities for residential and commercial customers to significantly reduce energy use, realize bill savings, and help maintain electric system reliability. The program incorporates new and innovative strategies to increase customer participation, applies proven approaches to engage contractors, provides an attractive incentive structure based on Total System Benefit (TSB) as measured by Normalized Metered Energy Consumption (NMEC) savings methodologies, and leverages the company's customized software platform to improve efficiency and effectiveness.

# 2. Program Attributes

| Budget and Savings | | Information |
|---|---|---|
| 1 | Program Name | Grid-Responsive Incentive Design Market Access Program (GRID-MAP) |
| 2 | Program ID number | SCE_3P_2025MAP_001 |
| 3 | Program Implementer | Mendota Group, LLC |
| 4 | Portfolio Administrator | Southern California Edison |
| 5 | Program Implementer Type (IOU Core, Third-Party Solicited, REN/CCA) | Third-Party Solicited |
| 6 | Portfolio Segment (Resource Acquisition, Equity, Market Support, or Codes and Standards)[1] | Resource Acquisition |
| 7 | Total Program Budget | $19,999,997 |
| 8 | Program Budget by Year | 2025 - $5,605,104<br>2026 - $7,197,163<br>2027 - $7,197,730 |
| 9 | Program Duration (Start Date - End Date) | 04/15/25 - 12/31/28 |
| 10 | Total System Benefit (TSB)<br>(Total Program TSB and TSB by Program Year) | 2025 - $5,909,532<br>2026 - $8,417,181<br>2027 - $8,424,133<br>Total - $22,750,665 |
| 11 | $CO_2$ (Lifecycle, First Year, Net, Gross) | Lifecycle - 85,567.0 Tons ($CO_2$)<br>First Year - 9,776.5 Tons ($CO_2$) |
| 12 | KW (First Year, Net, Gross) | Net - 21,554<br>Gross - 22,704 |

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

| Budget and Savings | | Information |
|---|---|---|
| 12 | KWh (Lifecycle, First Year, Net, Gross) | Lifecycle (Net) - 285,507,341<br>Lifecycle (Gross) - 301,155,584<br>First Year (Net) - 25,016,684<br>First Year (Gross) - 29,399,687 |
| 13 | Therms (Lifecycle, First Year, Net, Gross) | Lifecycle (Net) - 1,466,700<br>Lifecycle (Gross) - 1,488,493<br>First Year (Net) - 117,655<br>First Year (Gross) - 119,092 |
| 14 | Program Cost Effectiveness: Total Resource Cost (TRC): (Total TRC and TRC by Year) | 2025 - 1.10<br>2026 - 1.15<br>2027 - 1.17<br>Total - 1.12 |
| 15 | Program Cost Effectiveness: Program Administrator Cost (PAC): (Total PAC and PAC by Year) | 2025 - 1.21<br>2026 - 1.26<br>2027 - 1.27<br>Total - 1.22 |
| 16 | Market Sector(s) (i.e., residential, commercial, industrial, agricultural, public or cross-cutting) If multi-sector, provide estimated % of the total budget for each sector) | Commercial (92%)<br>Residential (8%)[2] |
| 17 | Program Type (i.e., Non-resource, Resource) | Resource |
| 18 | Delivery Type(s) (i.e., Upstream-Manufactured, Midstream-Distributor, Midstream-Retail, Downstream, Downstream - Direct Install,[3] Codes & Standards)[4] | Downstream |
| 19 | Intervention Strategies (e.g., Strategic Energy Management (SEM), Market Access Program (MAP), Direct Install, Incentive, Finance, Audit, Technical Assistance, Advocacy, Training, Marketing and Outreach, etc.) | Market Access Program |
| 20 | M&V Methods (e.g., Deemed, Custom, NMEC – Population, NMEC – Site, SEM M&V, Randomized Controlled Trial (RCT), Other (if applicable, describe Other M&V method)) | NMEC - Population<br>NMEC - Site |

[2] Percentage distribution are estimates and subject to change.
[3] https://cedars.sound-data.com/deer-resources/deemed-measure-packages/guidance/.
[4] Database for Energy Efficiency Resources (DEER) 2026 Delivery Types.

# 3. Implementation Plan Narrative

## 1. Program Description

The Grid-Responsive Incentive Design Market Access Program (GRID-MAP) provides commercial, and residential customers opportunities to increase the efficiency of the buildings in which they work and live. The GRID MAP program incorporates strategies that provide an incentive structure based on NMEC savings methodologies and uses a market access approach that uses Aggregators as the primary means of generating projects. The market access approach allows all qualified contractors the ability to participate in GRID-MAP under a standard set of terms. The program also leverages a customized software platform to improve the program's efficiency and effectiveness by allowing aggregators to scope projects, evaluate scenarios, submit applications and documents, and retrieve information online.

## 2. Performance Tracking

The Primary Performance Metrics are:

- Total System Benefit (TSB) ($)
- Total Resource Cost (TRC) Ratio

| Year | Goal TRC | Goal TSB |
|---|---|---|
| 2025 | 1.10 | $5,909,352 |
| 2026 | 1.15 | $8,417,181 |
| 2027 | 1.17 | $8,424,133 |
| Total | 1.15 | $22,750,666 |

The following Indicators are used to track program progress:

- Forecasted TSB to date ($)
- Actual/Forecasted peak demand savings (kW)
- Actual/Forecasted energy savings (kWh)
- Total incentive budget reserved ($)
- Payments to Aggregators to date ($)

## 3. Program Delivery and Customer Services

GRID-MAP leverages a market access model, which provides opportunity for projects that incorporate a broad array of measures and services that successfully demonstrate Total System Benefit (TSB) based on normalized, metered energy use during the performance period. Primary program participants are termed Aggregators because they aggregate multiple energy saving projects as a means of diversifying their risk since projects receive payments based on TSB produced. This performance-based approach both encourages novel approaches to saving energy and promotes whole building energy solutions. Aggregators employ a variety of strategies to encourage customer participation, with few limits on the mechanisms that can be used to advance projects. These mechanisms can include external financing,

using incentives to reduce measure first cost, combining with other Distributed Energy Resources (DERs) such as energy storage, demand response, and transportation electrification opportunities. Customers can also opt to self-aggregate, bearing the risks of underperformance themselves.

The program will be open to participation by Southern California Edison commercial and residential sector customers. GRID-MAP will enroll any Aggregator that meets Program requirements and enters into a program participation agreement. Incentive levels are aligned with savings that provide the most value to the utility electric and gas systems. Aggregators receive information through and upload information to the program's online application. The custom-built application enables Aggregators to obtain project incentive estimates and better understand what makes a project successful. The program website also includes program-specific and general energy efficiency program information, training materials, and frequently asked questions. The program uses the CalEnviroScreen mapping tool to identify DAC regions.

The program will primarily rely on Aggregators and community-based organizations (CBOs) to help drive projects with underserved customer groups, including those located in Disadvantaged Communities (DACs) and those that qualify as Hard-to-Reach (HTR). Projects located in DACs and HTR customers will receive bonus incentives, as will projects that employ Disadvantaged Workers.

GRID-MAP will use targeted marketing to notify and raise awareness among Aggregators regarding the program's offerings and benefits. Information about the program will be provided through outreach events and a dedicated website. Aggregators are expected to offer technical and financial assistance (e.g. audits, project definition, installer selection, financing) to customers to produce projects that generate cost-effective TSB.

Unlike many third-party EE programs, GRID-MAP is not limited by Implementer resources. Rather customers are acquired by Aggregators based on the standard terms set by the program. Aggregators will be allowed to seek project approvals as soon as the program is launched, and multiple Aggregators may enroll one or more projects simultaneously.

The program may leverage SCE's coordination with its overlapping Regional Energy Networks (SoCalREN, 3C-REN, and I-REN) to exchange program information (notably, regarding SoCalREN's Whole Building Comprehensive Multifamily Program and SoCalREN, 3C-REN, and I- REN Workforce Education and Training programs) and facilitate collaboration. Mendota Group will also work with other implementers to create coordination plans with SCE's Energy Advisor and Simplified Savings program implementers. These coordination plans will detail ways that programs can work with customers and trade allies to ensure they receive maximum benefit while minimizing overlap.

## 4. Program Design and Best Practices

GRID-MAP has been designed to overcome market barriers commonly faced by energy efficiency participants. The following table summarizes the strategies used to address these barriers.

| Market Barriers | Strategies to Overcome Barriers |
|---|---|
| **Limited Incentives and Project Approval Risks**: Traditional incentives are insufficient to reduce project costs to levels required for customer approvals. The Custom review process puts projects at risk. | NMEC enables claiming all metered savings and expedites the review process. |

| Market Barriers | Strategies to Overcome Barriers |
|---|---|
| **Poor Workforce Participation**: Large implementers dominate EE programs and general contractor workforce does not participate. | Combination of the MAP design, GRID Application, and aggregator support provide both higher incentives and reduced effort to participate. |
| **Large Scale Needed**: Most 3P EE programs focus only on large projects yet many of SCE's HTR customers are SMBs. | Population-Based NMEC is easily scalable and allows participation by small customers and program aggregator support encourages small innovative projects. |
| **Misaligned Incentives**: Incentive designs ignore time-based value of energy. | TSB-Based Incentives: Aligns customer incentives with grid needs based on the timing of delivered savings. |
| **Program Complexity**: EE programs tend to be complicated. Customers and contractors need a tool to make participation simple and quick. | The online GRID Platform provides a streamlined pathway for contractors to test measure mixes, see incentive estimates, upload required docs, submit projects, and track quarterly or semi-annual incentive payments. |
| **Lack of Capital**: Customers face capital constraints and incentives are insufficient to motivate energy-saving investments. | An installation payment addresses installer and customer cashflow issues. Higher incentives result from payment on full measured savings. The program's design also leverages other sources, including financing. |
| Identified projects are not cost-effective based on TRC. | Provides a tiered incentive structure based on cost-effectiveness which pays higher incentives for projects that meet cost-effectiveness thresholds. |
| **DAC, HTR and Underserved**: Serving these customers is more challenging and many programs do not adequately serve them. | Provides a DAC/HTR/Underserved bonus to encourage installing projects that qualify as DAC, HTR or Underserved. |

## 5. Innovation

The market access approach allows for incorporating innovative measures into energy efficiency programs, since this approach allows experimentation with measures and customer offerings without going through lengthy solicitation processes. Also, the market access approach will be used to enable integrated demand side management (IDSM) opportunities. Specifically, the program will promote demand-response programs (notably SCE's Base Interruptible Program, the Scheduled Load Reduction Program, the Critical Peak Pricing Program, Auto-DR, the Summer Discount Plan, and Heat Pump Water Heater DR programs) , Self-Generation Incentive Program (SGIP) battery storage, Transportation Electrification (TE) opportunities - including vehicle-to-grid, and Water-Energy opportunities through local water agencies. Further, the program will coordinate with SCE's Energy Advisor and Simplified Savings program implementers as both plan to provide IDSM technical assistance. For example, the Energy Advisor program will provide IDSM technical assistance wherein customers will receive free energy management with a focus on Demand Response integration and Time-of-Use rate support. Per D. 18-05-041 and reaffirmed by D. 23-06-055, the program will not pay for capital costs associated with

non-EE equipment but use funds for operational and outreach efforts. Other benefits to the energy efficiency portfolio of the market access approach include:

- Providing a streamlined pathway for energy efficiency aggregators to participate in energy efficiency portfolios and deliver projects, especially enabling smaller aggregators to participate more easily;
- Allowing for market innovation that can be fast-paced and implemented quickly by aggregators;
- Rewarding aggregators based on the benefits their projects delivery to the grid (based on TSB), thus encouraging aggregators to maximize the TSB of their projects;
- Encouraging market competition, because aggregators compete for customers, which will result in continuous improvements to the program delivery and customer experience, and
- Minimizing ratepayer risk because aggregators are only paid based on measured savings.

In addition to the general market access benefits described above, GRID-MAP has been designed with the following innovations:

- While incentive rates are based on and proportional to TSB, GRID-MAP offers a simplified incentive structure that is easier for Aggregators to understand and explain to customers. Rather than 8760 rates during a calendar year, GRID-MAP averages these rates into 36 rates that reflect Super Peak, Peak, and Off-Peak periods during each of the twelve months.
- The program offers an Installation Payment as an advance on the project earned incentive. Aggregators can use this payment to provide customers with an upfront fixed incentive or an initial advance on future earnings.
- The GRID Application has been designed and refined to enable Aggregators to evaluate potential projects quickly and once submitted to track progress of individual projects and their overall portfolio of projects.

## 6. Pilots

The program does not have any pilot elements.

## 7. Workforce Education & Training (WE&T) [5]

The program is not a Workforce, Education and Training Program.

## 8. Workforce Standards [6]

**a. HVAC Measures:** Participating aggregators must adhere to all requirements for workforce standards established by the Commission.[7] As part of the program participation agreement process, aggregators affirm qualifications and licensure to perform the proposed work.
**b. Advanced Lighting Control Measures:** Participating aggregators must adhere to all requirements for workforce standards established by the Commission.[8] As part of the program

[5] D.18-05-041, Page 20-21 and Ordering Paragraph 7.
[6] D.18-10-008, Ordering Paragraph 1-2 and Attachment B, Section A-B, Page B-1.
[7] D.18-10-008
[8] D.18-10-008

participation agreement process, aggregators will affirm qualifications and licensure to perform the proposed work.

## 9. Disadvantaged Worker Plan: [9]

The program will encourage aggregators to implement projects that can demonstrate they are using Disadvantaged Workers (DAWs) to install the project. Specifically, the program provides an additional bonus to incentive rates for projects that can demonstrate they are using disadvantaged workers to install the project. The GRID platform will include a flag for projects that use DAWs, enabling the program to track and report these projects.

## 10. Market Access Programs:

Participation in any NMEC program will preclude additional EE downstream retrofit projects during the 12-month evaluation period. Mendota Group will work with Southern California Edison to ensure that other third-party downstream retrofit program implementers are aware that customers who participate in a market access program are not permitted to participate in another utility EE program during the market access program's performance period.

GRID-MAP can have a positive impact on other EE programs. In many cases, other downstream EE programs are unable to provide sufficient incentive amounts to persuade customers to move forward with EE projects, but if those programs can leverage GRID-MAP funds for the below-code savings, then the combined incentive may be sufficient to meet the customers' payback requirements to approve the project. To this end, customers who participate in another utility upstream or downstream program are eligible to also participate in GRID-MAP for the same project; however, to ensure there is no double dipping or double counting, with each application to the program, Mendota Group staff assess whether the proposed measures are part of a Statewide program and whether the project is participating in another PA local program. The following Statewide programs have the potential to overlap: Statewide HVAC, Plug Load and Appliance, Midstream Water Heating, and Food Service programs. GRID-MAP will accommodate projects that include SW program measures by subtracting the deemed SW program savings from the savings on which the GRID incentives are based (no double counting). Local programs of interest include SCE's Simplified Savings and Energy Advisor programs.

Consistent with the California Public Utilities Commission's Decision 23-06-055, which emphasized that "the market access approach represents a particular opportunity in the … commercial downstream retrofit market because those markets include project types targeted by the federal Inflation Reduction Act (IRA) of 2022, making it possible to leverage federal funds", GRID-MAP will encourage program participants to access state and federal funds. The residential portion of GRID-MAP may provide opportunities to work with the IRA's Home Efficiency Rebates (HOMES) program, which includes an element that pays incentives based on measured savings (performance).

## 11. Additional Information

Not applicable.

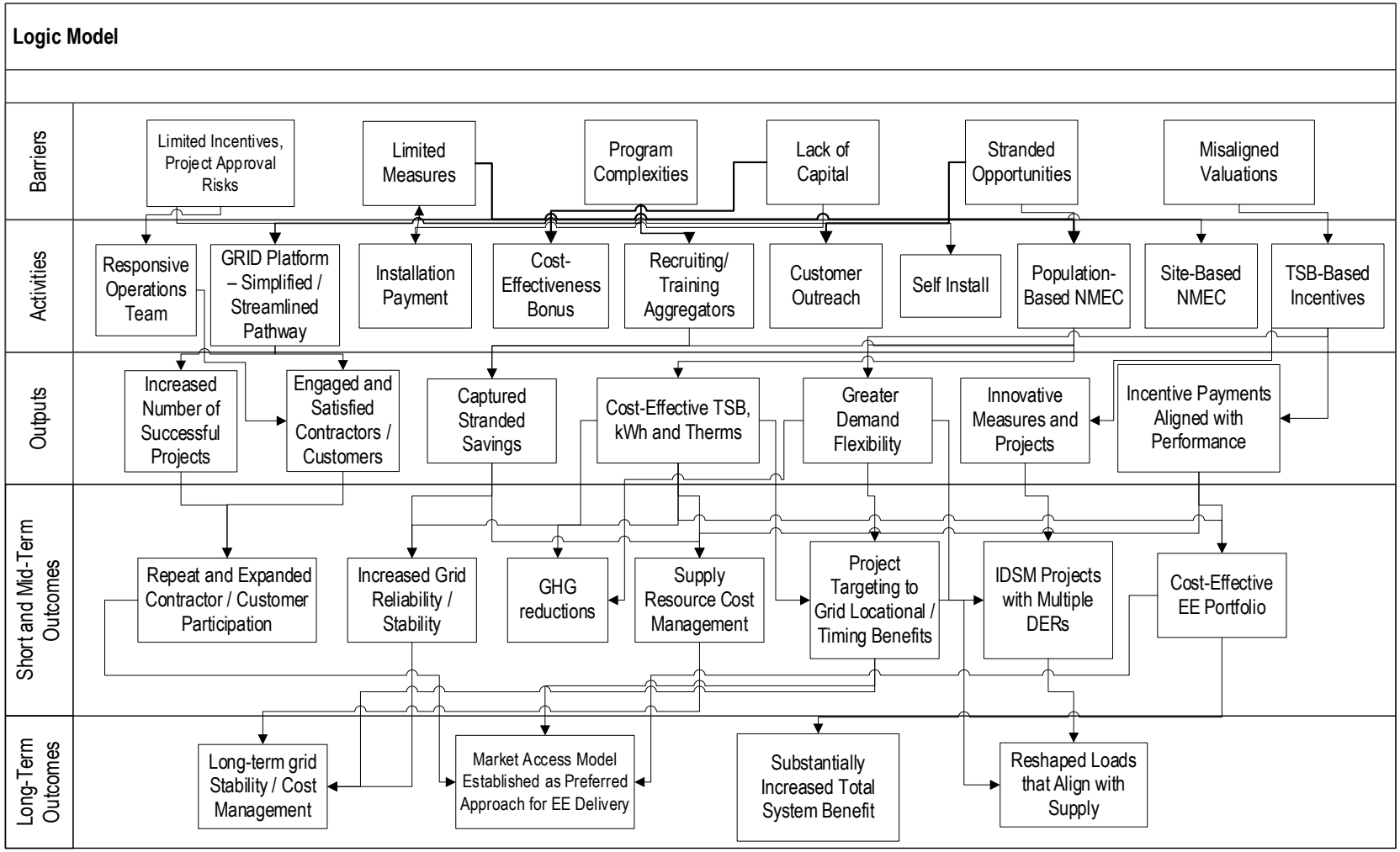
[9] D.18-10-008, Attachment B, Section D, page B-9.

# 4. Supporting Documents

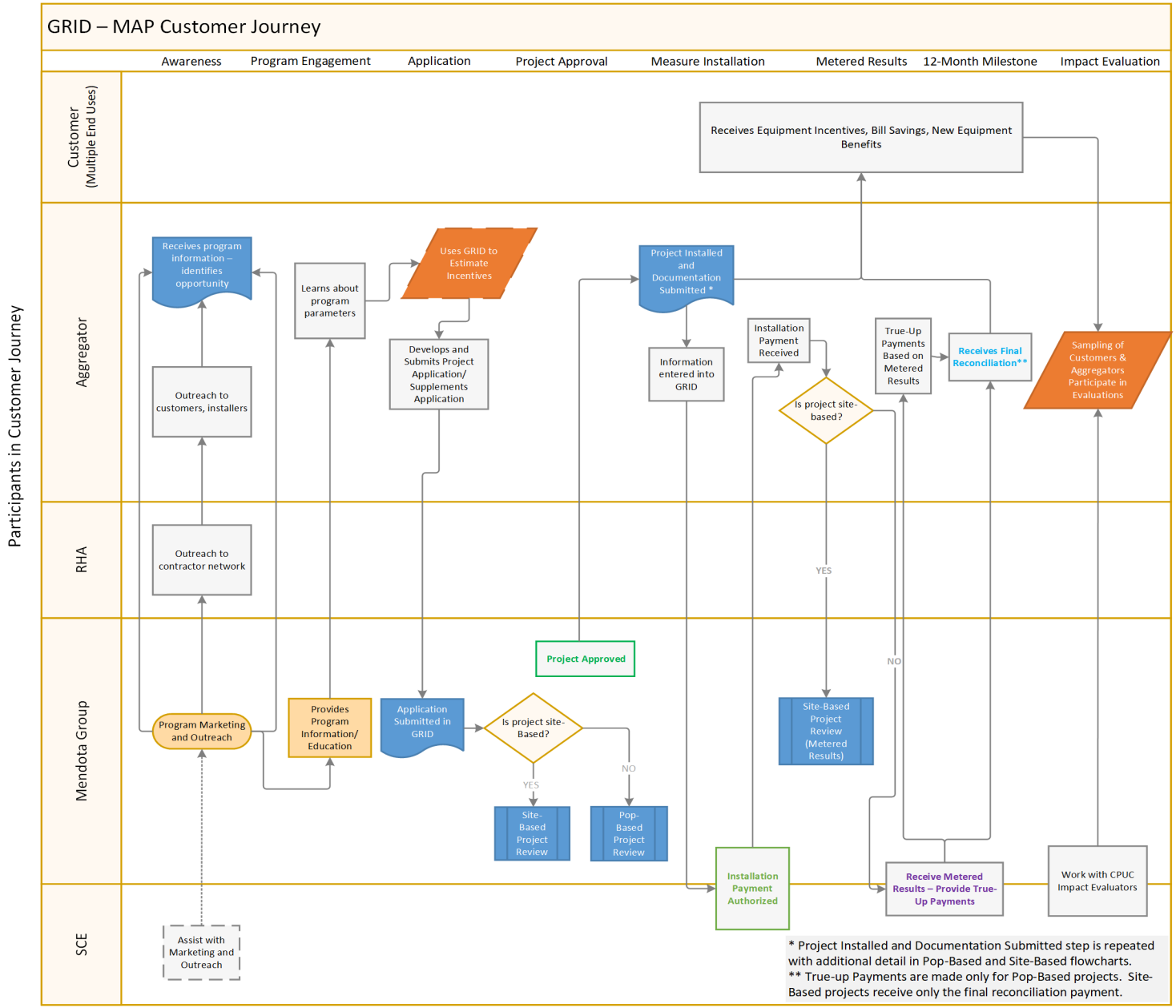
## 1. Program Manuals and Program Rules

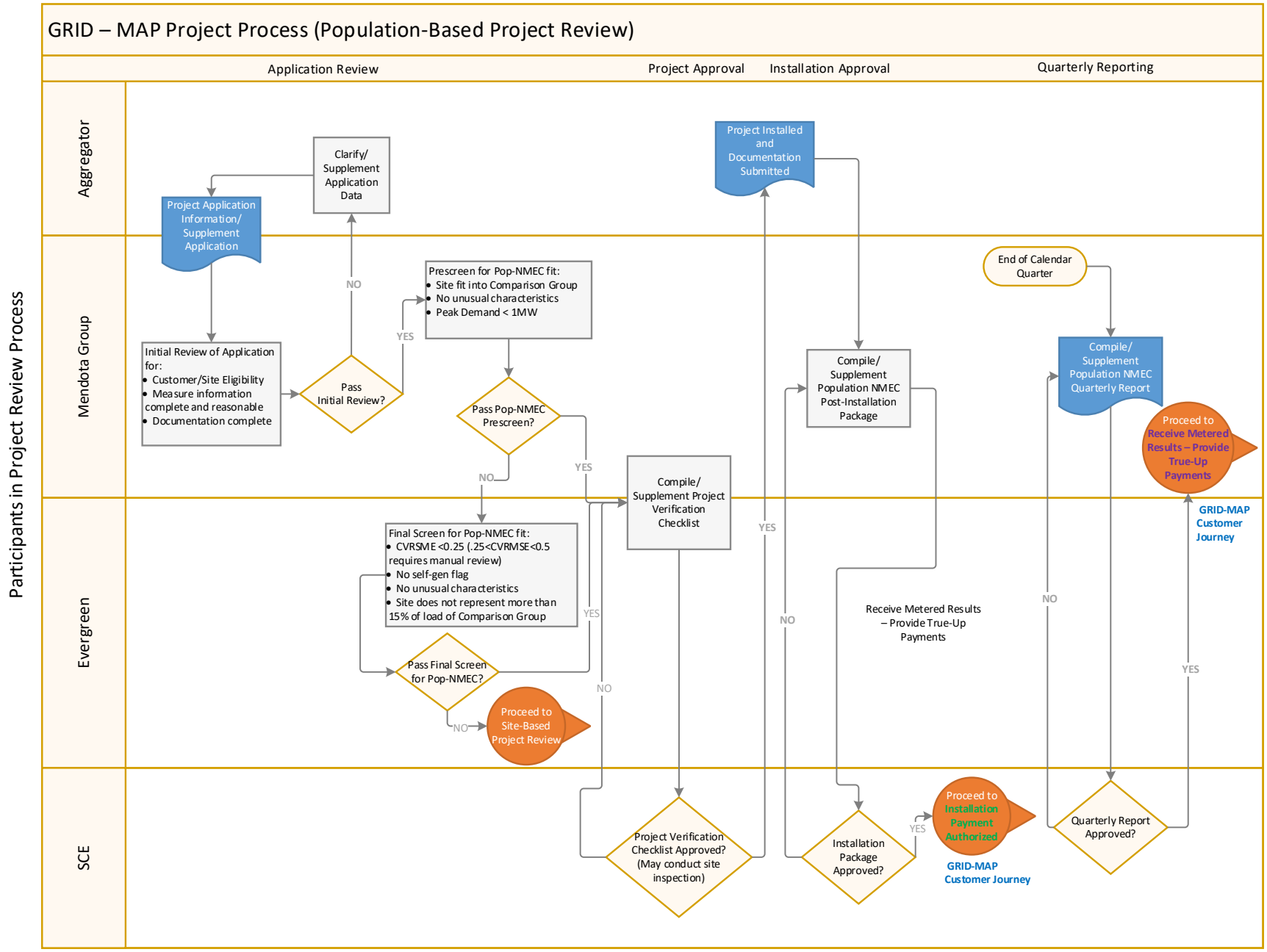
The Program Manual is attached to this Implementation Plan.

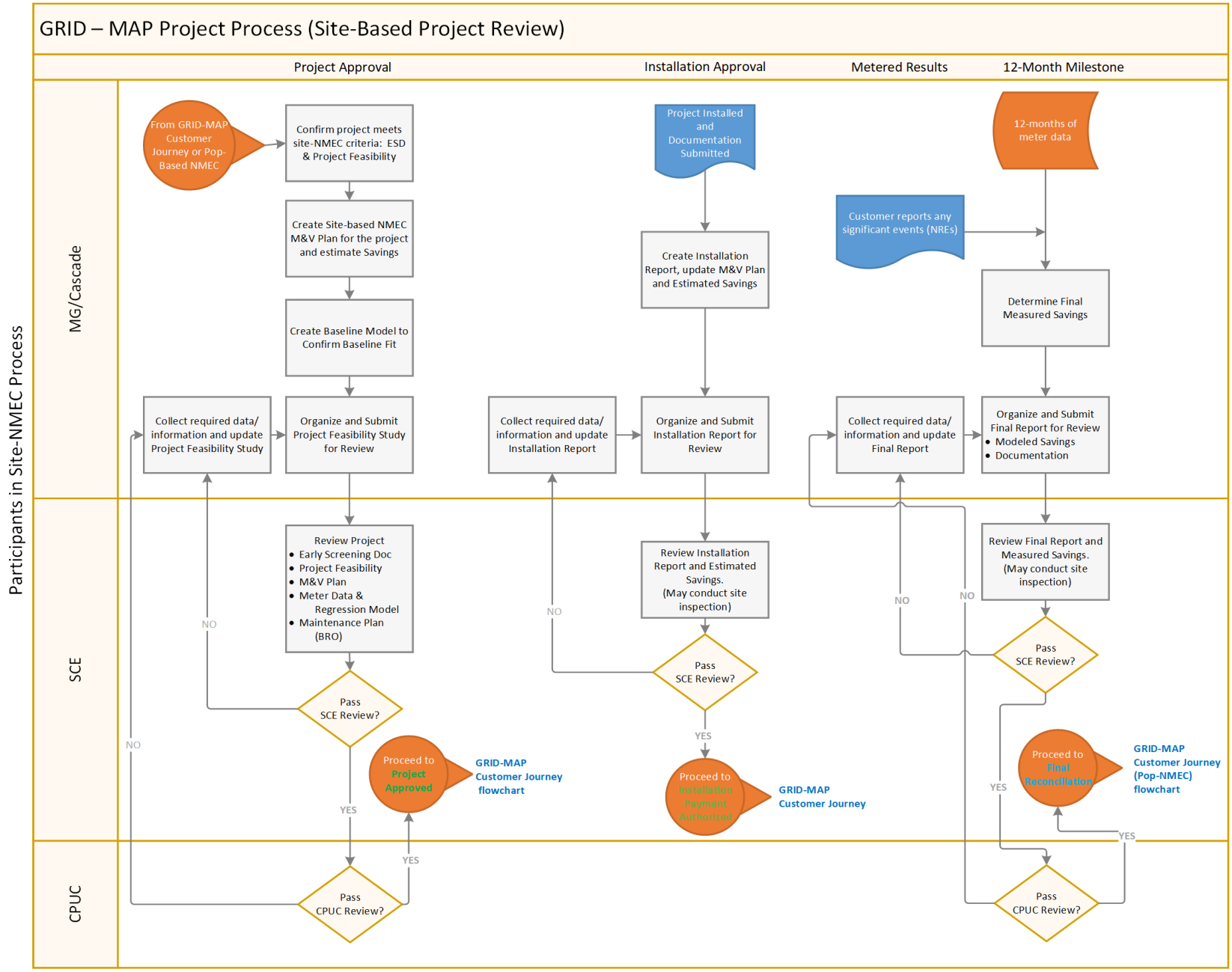
## 2. Program Theory and Program Logic Model



## 3. Process Flow Chart




GRID – MAP Project Process (Population-Based Project Review)
Application Review
Project Approval
Installation Approval
Quarterly Reporting
Participants in Project Review Process
Aggregator
Mendota Group
Evergreen
SCE
Project Application Information/ Supplement Application
Clarify/ Supplement Application Data
Initial Review of Application for:
• Customer/Site Eligibility
• Measure information complete and reasonable
• Documentation complete
Pass Initial Review?
NO
YES
Prescreen for Pop-NMEC fit:
• Site fit into Comparison Group
• No unusual characteristics
• Peak Demand < 1MW
Pass Pop-NMEC Prescreen?
NO
YES
Final Screen for Pop-NMEC fit:
• CVRSME <0.25 (.25<CVRMSE<0.5 requires manual review)
• No self-gen flag
• No unusual characteristics
• Site does not represent more than 15% of load of Comparison Group
Pass Final Screen for Pop-NMEC?
YES
NO
Proceed to Site-Based Project Review
Compile/ Supplement Project Verification Checklist
Project Verification Checklist Approved? (May conduct site inspection)
NO
YES
Project Installed and Documentation Submitted
Compile/ Supplement Population NMEC Post-Installation Package
Installation Package Approved?
NO
YES
Receive Metered Results – Provide True-Up Payments
Proceed to Installation Payment Authorized
GRID-MAP Customer Journey
End of Calendar Quarter
Compile/ Supplement Population NMEC Quarterly Report
Quarterly Report Approved?
NO
YES
Proceed to Receive Metered Results – Provide True-Up Payments
GRID-MAP Customer Journey

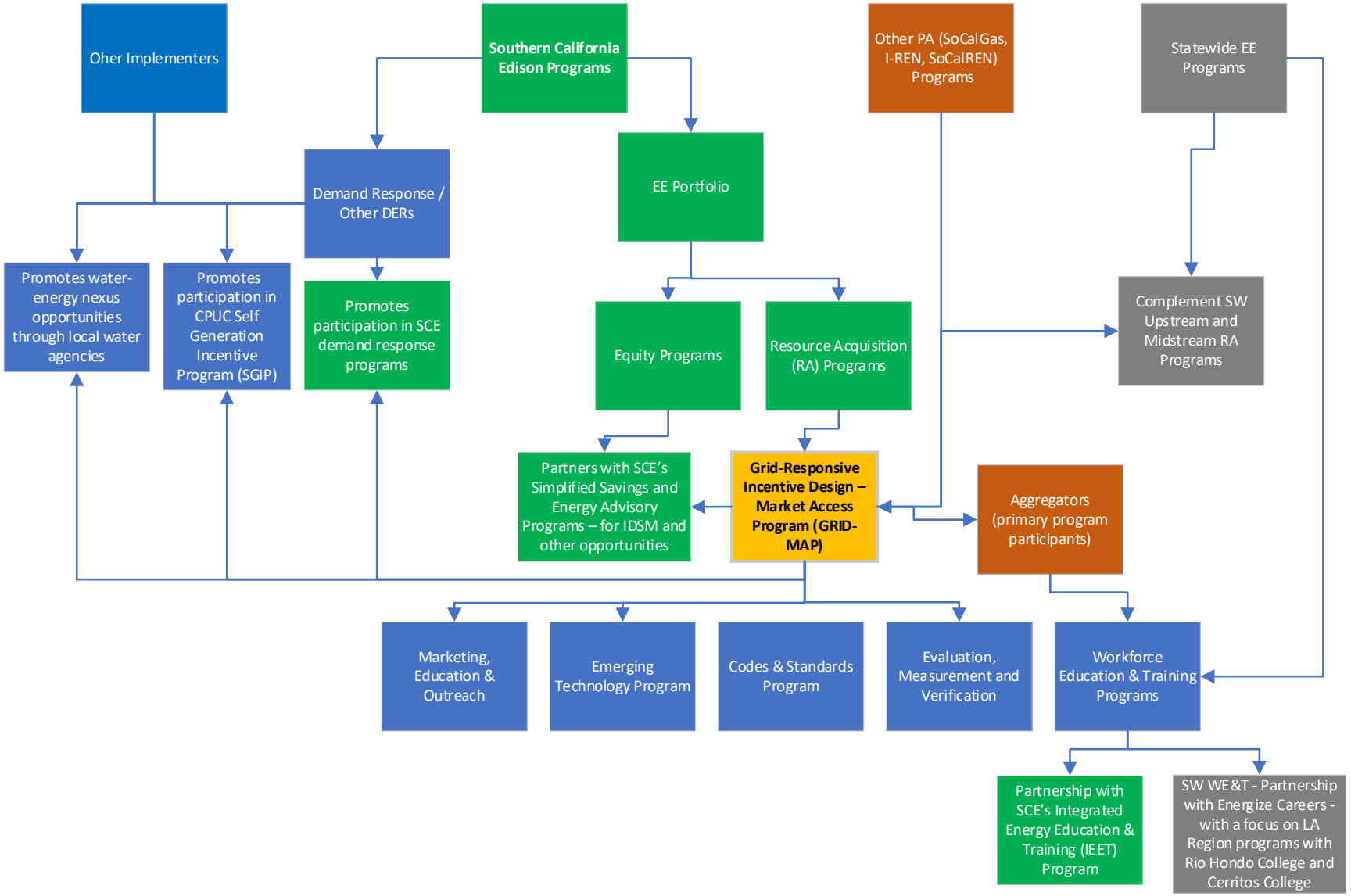

GRID – MAP Project Process (Site-Based Project Review)
Project Approval
Installation Approval
Metered Results
12-Month Milestone
Participants in Site-NMEC Process
MG/Cascade
SCE
CPUC
From GRID-MAP Customer Journey or Pop-Based NMEC
Confirm project meets site-NMEC criteria: ESD & Project Feasibility
Create Site-based NMEC M&V Plan for the project and estimate Savings
Create Baseline Model to Confirm Baseline Fit
Collect required data/ information and update Project Feasibility Study
Organize and Submit Project Feasibility Study for Review
Review Project
Early Screening Doc
Project Feasibility
M&V Plan
Meter Data & Regression Model
Maintenance Plan (BRO)
Pass SCE Review?
NO
YES
Proceed to Project Approved
GRID-MAP Customer Journey flowchart
Pass CPUC Review?
NO
YES
Project Installed and Documentation Submitted
Create Installation Report, update M&V Plan and Estimated Savings
Collect required data/ information and update Installation Report
Organize and Submit Installation Report for Review
Review Installation Report and Estimated Savings. (May conduct site inspection)
Pass SCE Review?
NO
YES
Proceed to Installation Payment Authorized
GRID-MAP Customer Journey
12-months of meter data
Customer reports any significant events (NREs)
Determine Final Measured Savings
Collect required data/ information and update Final Report
Organize and Submit Final Report for Review
Modeled Savings
Documentation
Review Final Report and Measured Savings. (May conduct site inspection)
Pass SCE Review?
NO
YES
Proceed to Final Reconciliation
GRID-MAP Customer Journey (Pop-NMEC) flowchart
Pass CPUC Review?
YES

## 4. Measures and Incentives

| Measure Category | Expected Percentage of Total TSB |
|---|---|
| HVAC | 34% |
| Lighting | 37% |
| Refrigeration | 24% |

Incentive rates will be posted on the program website and included in various program materials. Incentive rates may be updated from time to time.

## 5. Diagram of Program



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

Not Applicable. See Item 7.

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

The M&V Plan is attached to this Implementation Plan.

8. **Multi-DER IDSM Pilots only:** [10]

Not Applicable.

9. **SEM Programs only:**

Not Applicable.

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

# Mendota Group

# Program Manual

## Grid-Responsive Incentive Design Market Access Program (GRID-MAP)

**First Filing Date: 04/10/2025**

**Revision Filing Date: N/A**

# Table of Contents

# 1.0 Introduction

The Grid-Responsive Incentive Design Market Access Program (GRID-MAP) is designed to cost-effectively maximize TSB using the market access approach. The program uses population-based NMEC (pop-NMEC) to determine savings, with site-based NMEC for customers where pop-NMEC is not appropriate.

The program uses a market access approach that activates contractors to work with customers and other trade professionals in identifying projects that save energy and reduce peak demand. GRID MAP streamlines the participation process, provides customized financial incentives calibrated to align with each project's contribution to utility system benefits, and delivers quantifiable meter-based savings.

The program utilizes population-level NMEC rules and methodologies to determine verified energy savings. A pay-for-performance payment structure based on Total System Benefit (TSB) incentivizes aggregators to identify energy efficiency projects that deliver measurable savings.

The primary program objective is to maximize TSB through energy efficiency actions. General program objectives include:

- Open access to qualified aggregators to facilitate wider contractor and customer participation.
- Provide incentives aligned with the value to the grid.
- Provide technical and financial assistance to customers to achieve energy savings.
- Utilize NMEC methodologies to pay aggregators based on delivered savings, thus expanding the measures available for implementation.
- Streamline the participation process through a primary population-based NMEC savings methodology, a robust aggregator-facing tool (the GRID application), and responsive customer service.
- Flexible by offering a site-based NMEC approach should pop-based NMEC not be appropriate for a given project/site.

# 2.0 Eligibility Requirements

## 2.1 Measure Eligibility

A key program feature is that virtually all energy saving measures -- are eligible to participate in the program. Although there is no minimum amount of energy savings that participating measures must produce, measures that do not produce measured (metered) savings compared to the prior year's normalized energy usage will not receive incentives. This performance-based approach both encourages novel approaches to saving energy and promotes whole building energy solutions. Whole building energy projects that can demonstrate higher percentage

reductions in a building's energy use have a higher probability of rising above the statistical "noise" associated with projects that save a smaller percentage of a building's energy use.

Notably, projects that include deemed measures that are also eligible to receive incentives through other Program Administrator local or statewide energy efficiency programs can participate in GRID-MAP. Such projects require documentation to ensure that savings are not double-counted. GRID-MAP will remove savings claimed by other programs from calculations of its savings claims, and only pay for measured savings that exceed the amounts claimed by the other program.

Measures are verified as part of the project eligibility process prior to aggregators receiving a notice to proceed.

## 2.2 Customer eligibility

GRID-MAP targets buildings in the Commercial and Residential Sectors within the subsectors listed in the table below. The following customer requirements apply:

- must be an active SCE customer and pay the Public Purpose Program (PPP) surcharge;
- must have their own service account (i.e., no master metered properties unless the entire building is being treated);
- must agree to provide all required documentation and access to the facility for project-related audits, inspection or data gathering by SCE and the CPUC.

Eligible Subsectors for the SCE GRID-MAP Program

| Sector | Segment | NAICS Code | Description of Segment |
|---|---|---|---|
| **Primary Commercial Segments Served by Program** | | | |
| Commercial | Home Centers | 444XXX | Home Centers, Paint and Wallpaper Stores, Hardware Stores, Other Building Material Dealers, Outdoor Power Equipment Stores, Retail Nursery and Garden Centers. |
| Commercial | Pharmacies and Drug Stores | 446XXX | Pharmacies And Drug Stores<br>Cosmetics, Beauty Supplies, And Perfume Stores<br>Optical Goods Stores<br>Food (Health) Supplement Stores, All Other Health And Personal Care Stores - Retail |

| Sector | Segment | NAICS Code | Description of Segment |
|---|---|---|---|
| Commercial | Warehouse Clubs and Superstores | 452XXX | Department Stores, Warehouse Clubs and Superstores, All Other General Merchandise Stores |
| Commercial<br><br>Residential (MF Common) | Lessors of Residential and Non-Residential Buildings, Residential and Non-Residential Property Managers | 531XXX, 525XXX | Lessors Of Residential Buildings And Dwellings, Lessors Of Residential Buildings And Dwellings-Common Area Lighting, Lessors Of Residential Lessors Of Residential Buildings And Dwellings - Laundry Facilities, Lessors Of Residential Buildings And Dwellings - Recreational Facilities, Lessors Of Residential Buildings And Dwellings-Other Common Area, Lessors Of Nonresidential Buildings (Except Miniwarehouses), Outlet Centers, Malls & Shopping Centers - Operation, Lessors Of Miniwarehouses And Self Storage Units., Lessors Of Other Real Estate Property, Offices Of Real Estate Agents And Brokers, Residential Property Managers, Nonresidential Property Managers, Offices Of Real Estate Appraisers, Other Activities Related To Real Estate, Health And Welfare Funds, Other Insurance Funds, Open-End Investment Funds, Trusts, Estates, and Agency Accounts, Real Estate Investment Trusts |
| Commercial | Hospitals | 622XXX | General Medical And Surgical Hospitals,<br>Psychiatric And Substance Abuse Hospitals, Specialty (Except Psychiatric And Substance Abuse) Hospitals |
| Commercial | Hotels | 721XXX | Hotels (Except Casino Hotels) And Motels<br>Casino Hotels, Bed And Breakfast Inns, All Other Traveler Accommodation |

| Sector | Segment | NAICS Code | Description of Segment |
|---|---|---|---|
| | | | |
| **Other Commercial Segments Served by Program** | | | |
| Commercial | Wholesale Trade | 42XXXX | Wholesaling merchandise |
| Commercial | Furniture and Home Furnishings Stores | 442XXX | Furniture and Home Furnishings Stores |
| Commercial | Electronics and Appliance Stores | 443XXX | Electronics and Appliance Stores |
| Commercial | Gasoline Stations | 447XXX | Gasoline Stations |
| Commercial | Clothing and Clothing Accessories Stores | 448XXX | Clothing and Clothing Accessories Stores |
| Commercial | Sporting Goods, Hobby, Book, and Music Stores | 451XXX | Sporting Goods, Hobby, Book, and Music Stores ( |
| Commercial | Miscellaneous Store Retailers | 453XXX | Miscellaneous Store Retailers |
| Commercial | Nonstore Retailers | 454XXX | Nonstore Retailers |
| Commercial | Transportation | 48XXXX<br>491XXX<br>492XXX | Transportation of passengers and cargo |
| Commercial | Information | 51XXXX | The Information sector comprises establishments engaged in the following processes: (a) producing and distributing information and cultural products, (b) providing the means to transmit or distribute these products as well as data or communications, and (c) processing data. |
| Commercial | Financial Activities | 52XXXX<br>53XXXX | Finance, Insurance, Real Estate |
| Commercial | Professional and Business Services | 54XXXX<br>55XXXX<br>56XXXX | Professional, Scientific, and Technical Services; Management of Companies and Enterprises; Administrative and Support and |

| Sector | Segment | NAICS Code | Description of Segment |
|---|---|---|---|
| | | | Waste Management and Remediation Services |
| Commercial | Education - Private | 611XXX | Elementary And Secondary Schools (Except High Schools); Elementary-Junior High School - Private; Community College - Private; Colleges, Universities, And Professional Schools - Private |
| Commercial | Doctor Offices and Other Medical Centers | 621XXX | Offices of Physicians; Offices of All Other Medical Practitioners; Family Planning Centers; HMO Medical Centers; Medical Laboratories; Diagnostic Imaging Centers; Blood and Organ Banks |
| Commercial | Performing Arts, Spectator Sports, and Related Industries | 711XXX | Performing Arts, Spectator Sports, and Related Industries |
| Commercial | Museums, Historical Sites, and Similar Institutions | 712XXX | Museums, Historical Sites, and Similar Institutions |
| Commercial | Food Service | 722XXX | Full Service Restaurants, Limited Service Restaurants, Cafeterias, Drinking Places (Alcoholic Beverages) |
| Commercial | Other Services (except Public Administration) | 81XXXX | Repair and Maintenance; Personal and Laundry Services; Religious, Grantmaking, Civic, Professional, and Similar Organizations; Private Households |
| **Residential Segments Served by Program** | | | |
| Residential | Single Family | N/A | All, Non-ESA Qualified Single-Family Residential |
| Residential | Multi-Family | N/A | All In-Unit, Non-ESA Qualified Multi-Family-Family Residential |
| Residential | Mobile Homes | N/A | All, Non-ESA Qualified Mobile Homes |

## 2.3 Project Eligibility

GRID-MAP targets qualified customers who receive SCE electricity and pay the Public Purpose Program (PPP) surcharge. The following are more specific requirements for customers to participate in GRID-MAP:

**Universal Program Requirements**

- The customer must pay the PPP surcharge on the electric meter in which the energy-efficient equipment is being proposed.
- If the project has ex ante gas savings related to a fuel substitution project, the customer must receive their gas service from SoCalGas.
- The customer must have their own service account (i.e., no master-metered properties unless the entire property is being treated) unless they are submetered and these meters meet the current CPUC minimum requirements for submetering accuracy.
- The customer authorizes the Program and entities further authorized by SCE to access and store, for purposes related to fulfilling program requirements, pre- and post-installation metered energy use data recorded through the SCE electric meter.
- A minimum of 12 months of pre-treatment (prior to the project) hourly AMI meter data for electric is available with no more than 10% of hourly interval observations missing values (calculated as [# of Missing Hours / 8,760], noting that Implementer reserves the right to disqualify projects that have less than 10% of hourly interval observations missing if, for example, the missing values constitute more than half of hourly values for one or more of the months that produce the greatest TSB - Aug., Sep., July <2024 ACC>).
- If the proposed project has ex ante gas savings, the customer must authorize pre- and post-installation metered energy use data through their SoCalGas gas meter with a minimum of 12 months pre-treatment gas data.
- If the site participated in any other SCE-administered ratepayer-funded energy efficiency program(s) in the 12 months prior to applying, additional AMI meter data going back 12 months prior to the installation of prior program measures is required (24 months total). Sites participating in a statewide energy efficiency program administered by another IOU, or sites participating in Community Choice Aggregator (CCA) or Regional Energy Network (REN) programs are ineligible unless the Aggregator can provide sufficient information on the customer's program participation (e.g. install date, measure type) to verify that the customer is not double-dipping and the Program can obtain sufficient AMI meter data to capture 12 months of meter data prior to the first installation.
- The energy efficiency project will target 10% savings as compared to total load; cautioning installers with projects below 10% savings and typically rejecting projects with less than 5% savings1 of the customer's metered annual energy usage (electricity) at the project site.2

[1] See Effects Of Sample Size On Accuracy And Precision, page 66, https://pda.energydataweb.com/api/view/2587/PGE_NMEC_Accuracy_Assessment_Report_02-15-2022.pdf

[2] Projects with less than 10% must provide a rationale and explanation of how savings will be distinguished from normal variations in consumption.

- Fuel substitution (switching from regulated natural gas to regulated electric) projects will target 10% gas savings of the customer's metered annual energy usage (therms) at the project site and 5% MMBtu savings of the customer's total combined annual energy usage (kWh and therms). Similar to efficiency projects, the Program will caution installers with projects below the savings threshold and reject projects with less than 5% gas savings and/or 2.5% MMBtu savings.
- The customer must agree to provide all required documentation and access to the facility for project-related audits, inspections, or data gathering by SCE or the CPUC.

**Characteristics that Trigger Additional Screening for Population-Based NMEC Treatment**

The following criteria must be met by a project to receive population-based NMEC treatment. If one or more of these criteria are not met in the baseline model, additional screening is performed to determine if population-based treatment is warranted. If not, a site-based NMEC approach may be offered to projects that offer substantial cost-effective savings.

- Predictable load, with a CVRMSE < 0.5 (Coefficient of the Variation of the Root Mean Square Error) and fractional savings uncertainty (FSU) < 0.25 using the ex-ante savings estimate, a confidence level of 90 percent, and bias correction.3
- The customer site has a peak electricity demand below 1 MW.

**Requirements for Population-Based NMEC Treatment**

The following criteria must be met by a project to receive population-based NMEC treatment. If one or more of these criteria are not met, a site-based NMEC approach may be offered to projects that offer substantial cost-effective savings.

- Sites with solar, storage, and/or EV charging are not eligible for incentives if any of these systems were installed or any changes to the capacity of these systems were made within the prior 12-month period (or who intend to make changes before the end of the 12-month M&V period). An exception may be made if acceptable hourly interval monitoring data is available, which enables the program to remove solar, storage, and EV charging from the net consumption recorded at the utility meter. If acceptable data, which is determined solely by Mendota Group and SCE, is not available then the project will be deemed ineligible.
- Customer does not plan to do any major renovations (e.g. replace cooling equipment, add or remove floor space or occupy an empty area) before the end of the 12-month M&V period.
- Customer is not enrolled in a wholesale demand response (DR) program under Rule 32 (GRID can account for utility-based DR).

[3]The CPUC NMEC rulebook 2.0 requires 25% FSU at 90% confidence as calculated using ASRAE Guideline 14 methods, or similar methods that achieve the same level of certainty. FSU will be calculated in accordance with CalTRACK rules 4.3.2.3 and 4.3.2.4 (which specifies the precise formula that will be used), which is based on ASHRAE Guideline 14. If aggregation is required, this will follow CalTRACK rule 4.3.2.5 https://docs.caltrack.org/en/latest/methods.html

Projects will be monitored throughout the 12-month period to ensure projects continue to meet eligibility requirements. If a project is initially qualified for participation but is later found to not meet eligibility criteria, then the project measurement period may be halted with no further incentives paid.

# 3.0 Aggregator Eligibility, Roles and Responsibilities

## 3.1 Eligibility

Individuals or organizations that meet the requirements as listed in the Aggregator Participation Agreement may participate in the program. Aggregators are participating vendors or program partners whose projects produce site energy and/or demand savings. Aggregators must verify that contractors installing equipment hold licenses for all work performed and comply with all applicable laws and permitting requirements.

## 3.2 Roles and Responsibilities

Aggregators manage interactions and relationships with trade professionals and customers. Aggregator roles and responsibilities include:

- Holds Customer Participation Agreement (e.g., Incentive, Direct Install, Letter of Authorization, etc.) with the customer;
- Follows all SCE customer privacy requirements;
- Responsible for ensuring that customer agrees to provide all required documentation (e.g. equipment details, geo-tagged pre- and post-installation photos, building permit closure, savings calculations) and access to the facility for project-related audits, inspection or data gathering by SCE or by the CPUC;
- Receives incentive payments;;
- Responsible for project performance;
- Agrees to M&V Plan requirements;
- Accountable for resolution of customer complaints, and
- Responsible for installation, warranties, and product guarantees if any.

# 4.0 Participating Contractors, Manufacturers, Retailers, Distributors, and Partners

Applicable to midstream and upstream programs. GRID-MAP is downstream.

# 5.0 Additional Services

The program will offer the following additional tools and services:

- Referrals to financing assistance (to include utility or non-utility project financing and state and federal tax incentives);
- Promote integrated demand side management (IDSM) opportunities (such as SCE's Base Interruptible Program, the Scheduled Load Reduction Program, the Critical Peak Pricing Program, Auto-DR, the Summer Discount Plan, and Heat Pump Water Heater DR programs, Self-Generation Incentive Program (SGIP) battery storage, Transportation Electrification (TE) opportunities [including vehicle-to-grid], and Water-Energy opportunities through local water agencies;
- To promote opportunities in DACs, and encourage participation from HTR and Underserved customers, will provide DAC/HTR/Underserved bonuses and leverage/coordinate with other programs (SCE's Simplified Savings, and SoCalGas, SoCalREN and I-REN Public programs);
- Customized outreach and technical assistance by aggregators to identify measures which help projects achieve maximum TSB;
- Provide incentive bonuses to projects that use disadvantaged workers to install equipment;
- promote workforce development by partnering with SCE's WE&T Integrated Energy Education & Training (IEET) Program, the Statewide WE&T program (Energize Careers - with a focus on LA Region programs with Rio Hondo College and Cerritos College), and programs offered by SoCalREN, I-REN, and SoCalGas to encourage Aggregators to employ workers trained through that program.

## 6.0 Audits

Audits are not an element of the program except as an Aggregator may use them to identify potential measures. No audit report is required as part of the program; however, Aggregators do provide information and documentation normally associated with an "audit" to define the pre and post installation equipment.

## 7.0 Program Quality Assurance Provisions

Quality Assurance (QA) procedures for site-based projects will differ from population-based projects. The GRID application incorporates numerous data validations to assist aggregators in submitting error-free project applications. Various values (e.g. weighted EUL, expected savings, expected incentives) are calculated by the GRID application, which uses a standard algorithm rather than relying on numerous calculation methods provided by aggregators. GRID calculations are validated by program staff using independent calculations and are available for SCE review.

The program's M&V subcontractor employs robust analytical methods and data quality protocols. These methods and protocols include detailed outlier identification, manual data review processes, and non-routine event detection ensuring high data quality prior to the NMEC analysis.

The following sections summarize specific QA procedures for population-based and site-based NMEC projects.

*Population-Based NMEC QA Procedures*

For each population-based NMEC project, the program will conduct the following QA processes:

- Implementer will review the project data entered into GRID and work with the Aggregator to clarify data entries or remedy documentation deficiencies. Based on the submitted data and historic variability of the sites load, Implementer will determine the suitability of the population-based NMEC approach and if suitable, continue the process as described in the next bullets.
- From the project data submitted in GRID, Implementer will create a Program Verification Checklist for SCE approval for each project. Implementer will work with Aggregator to fully address any deficiencies in documentation until the project receives SCE approval.
- Project installation can only occur after SCE's approval of the Population NMEC Program Verification Checklist.
- After project installation, the Aggregator will submit actual installation information, data, and documentation. The GRID platform will then recalculate estimated savings and incentives based on the actual equipment installed. Implementer will review the project data entered into GRID and work with the Aggregator to clarify data entries or remedy documentation deficiencies.
- From the project data submitted in GRID, Implementer will create a Post-Installation Package that represents the actual project installed for SCE approval for each project. Implementer will work with Aggregator to fully address any deficiencies identified by SCE.
- Implementer will report actual measured savings for each project as part of each applicable Population NMEC Quarterly Report for SCE review and approval. Implementer will work to revise any calculations to fully address any deficiencies identified by SCE.

*Site-Based NMEC QA Procedures*

For each site-based NMEC project, the program will conduct the following QA processes:

- Implementer will review the project data entered into GRID and work with the Aggregator to clarify data entries or remedy documentation deficiencies. Based on the submitted data and historic variability of the sites load, Implementer will determine the suitability of the population-based NMEC approach and if not suitable for pop-based NMEC determine the suitability for site-based NMEC. If appropriate the process will continue as described in the next bullets.
- Implementer will work with Aggregator to create an Early Screening Document that describes the planned measures and a Project Feasibility Study, which will include detailed estimated savings using methods including building simulations and custom calculations, EUL projects, and project influence narratives. Additionally, a project specific M&V plan will be developed.
- From this effort, Implementer will submit a Project Feasibility Study for SCE approval for each project. Implementer will work with Aggregator to fully address any deficiencies in either package until the project receives SCE approval.
- Following SCE approval, the project will be added to the ED's Custom Project Review list.
- Equipment purchase cannot occur until after Mendota Group receives SCE approval.
- Project installation can only occur after the project is released from the Custom Review process.

- After project installation, the Aggregator will submit actual installation information, data, and documentation. Implementer will then recalculate estimated savings and incentives based on the actual equipment installed and make any necessary adjustments to the M&V Plan.
- Implementer will create a Post-Installation Report that represents the actual project installed for SCE approval for each project. This package will include a comparison between the post-installation project and that initially submitted in the Project Feasibility Study. Implementer will work with Aggregator to fully address any deficiencies identified by SCE.
- After the 12-month monitoring period, Implementer will report actual measured savings and TSB for each project to SCE for review and approval as a Second Post Installation Report. Implementer will work to revise any calculations to fully address any deficiencies identified by SCE.

## 8.0 Other Program metrics

The program's metrics include:

- Measured Benefits - TSB (Dollars)
- Estimated Benefits – TSB (Dollars)
- Project Pipeline – TSB (Dollars)
- Energy Savings (kWh, , therms for fuel switching)
- Schedule Adherence
- Cost Management (TRC ratio)

# Mendota Group


# M&V Plan

## Grid-Responsive Incentive Design Market Access Program (GRID-MAP)

**First Filing Date: 04/10/2025**

**Revision Filing Date: N/A**

# Table of Contents

# 1. Introduction

## a. Program Description

The GRID Market Access Program (GRID-MAP or Program) program primarily leverages population-based NMEC, supplemented by site-based NMEC as needed, to innovatively and cost-effectively maximize claimable energy savings and Total System Benefit (TSB) for the residential and commercial sectors. Specific eligible subsectors will be listed and updated in other program documents, but all subsectors will be measured consistently as described by this Measurement and Verification (M&V) Plan. The Program will leverage the Mendota Group's (Implementer) existing processes and GRID system to maximize customer participation, keep program implementation costs low, and cost-effectively achieve TSB goals with a performance-based approach that allocates a large portion of Program budget to customer incentives.

The GRID Market Access Program offers qualified contractors the opportunity to provide SCE customers with energy efficiency (EE) project options not available through conventional EE programs to achieve energy savings and demand reductions. The Program uses both population-based NMEC and site-based NMEC rules and methodologies to determine energy savings but is designed primarily as a population-based NMEC program. A pay-for-performance (PFP) payment structure incentivizes the Implementer, Aggregator, contractors, and customers to find energy-efficiency projects that deliver[1]:

- Maximum Total System Benefit,
- Measurable total electric energy savings (kWh, net, annualized, lifetime), and
- Total electric demand reductions (kW, net), and, if applicable
- Total natural gas energy savings (therms, net, annualized, lifetime).[2]

To achieve TSB goals, GRID-MAP provides:

- Open access to qualified Aggregators to facilitate wider contractor and customer participation,
- Incentives aligned with value to the grid,
- Technical assistance to customers to achieve energy savings,
- Objective measurement of success that utilizes NMEC methodologies to pay Aggregators based on metered savings, thus expanding the measures available for implementation.

Decision 23-06-055, OP 20 directs that NMEC or other meter-based savings evaluation methods are required for new, downstream, resource acquisition, and commercial sector programs eligible to use the NMEC rules. GRID-MAP meets this requirement. The vast majority of GRID-MAP projects will be evaluated using population-based NMEC. Projects that do not meet population-based NMEC requirements will be considered for site-based NMEC.

[1] The Program's primary participants will be Aggregators. Aggregators are entities or individuals that have entered into an agreement with the Implementer pursuant to which such entity or individual (a) participates in the Program and (b) either installs or facilitates the Installation of a Project at a Customer Site. An Aggregator is a market participant and not a subcontractor to Implementer.

[2] GRID-MAP may incentivize fuel substitution if the proposed project delivers total system benefit. For these projects, M&V will involve measurement of the project's impact on both electricity and gas. For electric energy efficiency projects, M&V will focus on electric energy savings and demand reductions.

This M&V Plan provides technical details regarding the energy savings estimates that are the basis for incentives. The NMEC procedures used to settle with Aggregator are the same procedures we will use to report program performance. The program-level achievements are simply the sum of the performance estimates across each calendar quarter for all participating Aggregators.

## b. Summary of Key M&V Plan Elements

An overview of the key elements of this M&V Plan is provided in Table 1.

**Table 1: M&V Plan Overview**

| M&V Consideration | Planned Approach |
|---|---|
| Settlement Population Definition (Calendar Quarter) | All projects for a given Aggregator with fewer than 365 days (one year) of savings accrued during a given calendar quarter. |
| Analytical Method(s) | **Population-Based NMEC:** Individual premise regression using the OpenEE hourly model.[3] The OpenEE model includes 168 hour-of-week coefficients for each month as well as temperature bins.<br>We will use a comparison group to measure exogenous change from pre to post that are not attributable to the program. The comparison group will align on the primary drivers of changes in energy consumption over time: industry group, climate, and size. Preliminary segments are described under Ex-Post NMEC Methods.<br>The reported savings will be the incremental savings achieved by participants, above and beyond any exogenous change exhibited by the comparison group.<br>**Site-Based NMEC:**<br>Site-based NMEC projects will be developed and documented using a regression model and savings quantification within Excel. Spreadsheets will use industry standards for multivariate linear regression analyses, such as Microsoft Excel's 'linest' function. Completed models will be loaded into Gazebo to streamline data management, performance monitoring, and progress visualization. In compliance with open-source expectations, Gazebo licenses will be provided to any reviewer needing access.<br><br>Baseline and performance period models will be developed to account for the energy usage of each facility. Model selection is not always simply based on the best statistics; a model is selected based on a combination of model statistics, ease of data acquisition, physical conditions at the site, and what makes intuitive sense to the facility operators.<br><br>Energy savings within the project boundary will be calculated using a model based on performance period data under normalized conditions. Performance period models will use the same modeling approach as was used for the baseline model development. Energy |

[3] https://www.recurve.com/how-it-works/caltrack-hourly-methods

| | |
|---|---|
| | savings within the project boundary will be calculated by applying the following equation:<br>**Energy Savings = Normalized Baseline Period Energy Use – Normalized Performance Period Energy Use**<br>Where:<br>• Normalized Baseline Period Energy Use = energy consumption calculated using the Baseline Model and weather data for each independent variable. Consumption will be normalized to the actual weather conditions in the post-period.<br>• Normalized Performance Period Energy Use = energy consumption calculated for the performance period using the performance period model, adjusted for non-routine events as necessary.<br>Models will be developed using an Excel-based workbook template, which streamlines the process of testing candidate variables for statistical significance and comparing and documenting performance of hypothesis models. Once a model is selected, it will be loaded into Gazebo software to facilitate customer communication, sharing, and ongoing tracking. |
| Contractors | Mendota Group, Evergreen Economics, and Cascade Energy |
| Calculation Software | R and PostgreSQL |
| Data Collection Strategies | Upfront capture of typical efficiency attributes:<br>• project location<br>• project installation start and completion date<br>• equipment type, quantity, capacity, and specifications<br>Quarterly or monthly capture of electric and gas consumption data for participants and consumption data and metadata for comparison group (for matching) to support quarterly reporting<br>Back-end consolidation of participant meter data, performance estimates, and incentive payments |
| Performance Metrics | Hourly kWh savings<br>Aggregate peak[4] kW savings<br>Aggregate super peak[5] kW savings<br>Annual kWh savings<br>Monthly therm savings<br>Annual therm savings<br>Net kWh-Weighted Average EUL<br>Total System Benefit |
| Weather normalization | Settlement and reporting will be based on actual ex-post measurement of savings during the 2025-2028 observation period.<br>Regression models developed using data from the baseline period will be used to predict participant loads during the performance period, normalizing for weather. |

[4] Peak hours is the period of high, but not highest, TSB value. For 2025, Peak hours at 4-6p & 8-11p. For 2026 and 2027, Peak hours are 5-6p & 9p-7a.
[5] Super Peak hours have the highest TSB values. Super Peak may or may not align with the traditional Net Peak period of 7-9pm. For 2025, Super Peak hours at 6-8p. For 2026 and 2027, Super Peak hours are 6-9p.

| | |
|---|---|
| Total System Benefit Calculation | Net Present Value of the avoided costs[6] will be calculated for each project using the CET calculator with the applicable EUL and CZ.<br>Program TSB will be the sum of each project's TSB. |

# 2. Savings Forecast and Installation Incentive

## a. Suitability of NMEC Methods

Decision 23-06-055, OP 20 requires that Program Administrators use NMEC or other meter-based savings evaluation methods for new, downstream, resource acquisition, and commercial sector programs that are eligible to use NMEC rules. Since GRID-MAP meets these criteria, the Program's total use of NMEC fully satisfies this CPUC requirement.

All else equal, the NMEC approach often delivers more cost-effective projects because all measured savings can be claimed, and the below-code savings are often more cost-effective than those that are above-code or industry standard practice. The population-based approach allows cost-effective treatment of customers at scale. In addition, the Program will incorporate a tiered incentive structure based on cost-effectiveness which pays a higher incentive rate for projects that meet cost-effectiveness thresholds.

The ability to accurately measure energy and/or demand savings using population NMEC methods depends on three key components:

1) **The effect or signal size** – The effect size is most easily understood as the percent change in energy use following the intervention. It is easier to detect large changes than to identify small ones.
2) **Inherent data volatility or background noise** – The more volatile the load, the more difficult it is to detect small changes. Non-routine events effectively add noise to the data.
3) **The ability to filter out noise or control for volatility** – Statistical models, baseline techniques, and comparison groups – no matter how simple or complex – are tools to reduce noise (or unexplained variation) and allow the effect or impact to be more easily detected.

For NMEC programs that focus on residential and/or small commercial (or commercial-like structures), the population of projects is (relatively) large. It is easier to precisely estimate average impacts for a large population than for a small population because individual customer behavior patterns "smooth out" and offset individual customer volatility across large populations. The Program will communicate the risks associated with population NMEC procedures when the proposed number of projects is small relative to the expected savings.[7] To reduce volatility introduced by non-participants, we will develop a series of comparison groups consisting of a large sample of non-participant customers with similar characteristics to the targeted customers (rather than a 1:1 match). Each evaluated GRID-MAP project will align with all customers in their comparison group on the key drivers of energy consumption: industry group (via NAICS code), climate zone, and size.

[6] Based on applicable Avoided Cost Calculator (ACC) and discount rate as provide in the current version of the CET Calculator.
[7] In all cases, the projects are required to meet the eligibility and model fit criteria (e.g., within 25% FSU at 90% confidence). This section refers to the risk borne by the aggregator of proceeding with a project that barely meets the thresholds, as opposed to adjusting the proposed measures or recruiting additional participants before proceeding with the project.

**Purpose and suitability of offering site-based NMEC**

Prior MAP implementation experience has shown that some projects are not well suited for the population-based NMEC approach. Most often, this occurs because the site load is not consistent over time. Despite this issue, GRID-MAP would prefer to allow such projects to participate and thus is allowing a site-based NMEC approach for such sites. If a site does not pass the population-based screening process described below, it will be evaluated to determine if a site-based approach is warranted and if so, the Aggregator and Customer will be given the choice of enrolling the project using the site-based approach.

GRID-MAP targets qualified customers who receive SCE electricity and pay the Public Purpose Program (PPP) surcharge. The following are more specific requirements for customers to participate in GRID-MAP:

**Universal Program Requirements**

- The customer must pay the PPP surcharge on the electric meter in which the energy-efficient equipment is being proposed.
- If the project has *ex ante* gas savings related to a fuel substitution project, the customer must receive their gas service from SoCalGas.
- The customer must have their own service account (i.e., no master-metered properties unless the entire property is being treated) unless they are submetered and these meters meet the current CPUC minimum requirements for submetering accuracy.
- The customer authorizes the Program and entities further authorized by SCE to access and store, for purposes related to fulfilling program requirements, pre- and post-installation metered energy use data recorded through the SCE electric meter.
- A minimum of 12 months of pre-treatment (prior to the project) hourly AMI meter data for electric is available with no more than 10% of hourly interval observations missing values.
- If the proposed project has *ex ante* gas savings, the customer must authorize pre- and post-installation metered energy use data through their SoCalGas gas meter with a minimum of 12 months pre-treatment gas data.
- If the site participated in any other SCE-administered ratepayer-funded energy efficiency program(s) in the 12 months prior to applying, additional AMI meter data going back 12 months prior to the installation of prior program measures is required (24 months total). Sites participating in a statewide energy efficiency program administered by another IOU, or sites participating in Community Choice Aggregator (CCA) or Regional Energy Network (REN) programs are ineligible unless the Aggregator can provide sufficient information on the customer's program participation (e.g. install date, measure type) to verify that the customer is not double-dipping and the Program can obtain sufficient AMI meter data to capture 12 months of meter data prior to the first installation.
- The energy efficiency project will target 10% savings as compared to total load; cautioning installers with projects below 10% savings and typically rejecting projects with less than 5% savings[8] of the customer's metered annual energy usage (electricity) at the project site.[9]

[8] See Effects Of Sample Size On Accuracy And Precision, page 66, https://pda.energydataweb.com/api/view/2587/PGE_NMEC_Accuracy_Assessment_Report_02-15-2022.pdf

[9] Projects with less than 10% must provide a rationale and explanation of how savings will be distinguished from normal variations in consumption.

- Fuel substitution (switching from regulated natural gas to regulated electric) projects will target 10% gas savings of the customer's metered annual energy usage (therms) at the project site and 5% MMBtu savings of the customer's total combined annual energy usage (kWh and therms). Similar to efficiency projects, the Program will caution installers with projects below the savings threshold and reject projects with less than 5% gas savings and/or 2.5% MMBtu savings.
- The customer must agree to provide all required documentation and access to the facility for project-related audits, inspections, or data gathering by SCE or the CPUC.

**Characteristics that Trigger Additional Screening for Population-Based NMEC Treatment**
The following criteria must be met by a project to receive population-based NMEC treatment. If one or more of these criteria are not met in the baseline model, additional screening is performed to determine if population-based treatment is warranted. If not, a site-based NMEC approach may be offered to projects that offer substantial cost-effective savings.

- Predictable load, with a CVRMSE < 0.5 (Coefficient of the Variation of the Root Mean Square Error) and fractional savings uncertainty (FSU) < 0.25 using the ex-ante savings estimate, a confidence level of 90 percent, and bias correction.[10]
- The customer site has a peak electricity demand below 1 MW.

**Requirements for Population-Based NMEC Treatment**
The following criteria must be met by a project to receive population-based NMEC treatment. If one or more of these criteria are not met, a site-based NMEC approach may be offered to projects that offer substantial cost-effective savings.

- Sites with solar, storage, and/or EV charging are not eligible for incentives if any of these systems were installed or any changes to the capacity of these systems were made within the prior 12-month period (or who intend to make changes before the end of the 12-month M&V period). An exception will be made if hourly interval monitoring data is available, which enables the program to remove solar, storage, and EV charging from the net consumption recorded at the utility meter.
- Customer does not plan to do any major renovations (e.g. replace cooling equipment, add or remove floor space or occupy an empty area) before the end of the 12-month M&V period.
- Customer is not enrolled in a wholesale demand response (DR) program under Rule 32 (GRID can account for utility-based DR).

Projects will be monitored throughout the 12-month period to ensure projects continue to meet eligibility requirements. If a project is initially qualified for participation but is later found to not meet eligibility criteria, then attempts will be made to change the savings measurement approach to another platform (e.g., site-based NMEC).

**Qualifying Energy Efficiency Measures**
GRID-MAP accepts various energy saving projects for residential homes and commercial facilities. All measures must meet the following criteria:

1. Application types must consist of equipment retrofits, weatherization, add-on equipment, behavioral, retrocommissioning (RCx), or operational measures. We expect the most common measures will be HVAC (efficiency upgrades and fuel substitution), lighting, service hot water

[10]The CPUC NMEC rulebook 2.0 requires 25% FSU at 90% confidence as calculated using ASRAE Guideline 14 methods, or similar methods that achieve the same level of certainty. FSU will be calculated in accordance with CalTRACK rules 4.3.2.3 and 4.3.2.4 (which specifies the precise formula that will be used), which is based on ASHRAE Guideline 14. If aggregation is required, this will follow CalTRACK rule 4.3.2.5 https://docs.caltrack.org/en/latest/methods.html

(SHW – efficiency upgrades and fuel substitution), energy management systems (EMS), and controls.
2. Equipment must be permanently installed.
3. Installations cannot double count (savings and incentives) with other incentive programs.
4. Existing equipment must be decommissioned and removed (except in some cases where add-on equipment is installed).

## b. Estimated Savings

The project savings forecast calculations are essential to assess the project's viability. The calculations serve as an important guide to the metered data analysis and to ensure that the project's energy use is within acceptable tolerance levels towards the projected energy savings. At the project application stage, the data provided by the Aggregator (and entered into the GRID Platform[11]) must provide a clear, detailed, all-inclusive, and defensible explanation of the energy savings and demand reduction calculation methodology that incorporates a weighted EUL methodology and applicable Net-to-Gross ratios. The package must also explain all assumptions and include fully reviewable calculations.

Load shapes are used for analysis of a measure's energy savings over one year. A load shape is a set of fractions summing to unity, with one fraction per hour (or other time period). Estimated energy savings calculations for the Program will use a set of load shapes available with the GRID Platform. The GRID Platform will filter the total set of load shapes based upon the installed measure(s) to allow only appropriate load shapes. The total set of load shapes available will be a combination of DEER load shapes and custom load shapes. Multiplying a savings value by the load shape value for any particular hour yields the energy savings and avoided costs for that particular hour. Hourly load shapes from eTRM are built into the GRID platform and are filtered by the selected measure type.

## c. Effective Useful Life

The weighted average EULs should comprise the best available estimate of the relative contribution (on the basis of first year net kWh savings for electric measures and first year net therm savings for gas measures) of different measures to total savings, based on available data. The GRID Platform calculates an estimated weighted EUL at the installation stage and this value is applied to measured savings during the 12-month monitoring period.

Measure weighted average EUL example:

- Measure 1: 400,000 kWh (first year) savings, 20-year EUL
- Measure 2: 100,000 kWh (first year) savings, 6-year EUL

The EUL of the bundle would be (400,000 * 20 + 100,000 * 6) ÷ (400,000 + 100,000) = 17.2 years.

A similar approach is used to determine the weighted average EUL for each cohort of projects. Each project in the cohort will contribute a relative project EUL based on the total savings of the project.

Project weighted average EUL example:

[11] GRID Platform refers to Implementer's custom-built online software platform developed specifically to manage, track and report NMEC projects.

- Project 1: 400,000 kWh (first year) savings, 20-year EUL
- Project 2: 100,000 kWh (first year) savings, 6-year EUL

The EUL of the cohort would be (400,000 * 20 + 100,000 * 6) ÷ (400,000 + 100,000) = 17.2 years.

### d. Incentive Calculation

An incentive rate will be assigned to each hour of a calendar year, and each incentive rate will be based upon the TSB delivered by the savings during various incentive periods. The incentive payment amount is based on the corresponding incentive rate applied by the savings in each incentive period, for year one of savings. This amount is multiplied by the weighted average EUL, applicable Net-to-Gross ratio, and any other relevant factors (installation rate, gross realization rate, market effects factors, etc.). The final incentive amount is based on the verified savings and may vary from the estimated amount used for the installation incentive payment.

For ease of implementation and transparency, Aggregator incentive payments are tied to the project's kWh electric and/or therm savings as validated through metered data. The Program plans to have 36 electric incentive rates (3 per month, specific to time of the day) and 12 gas incentive rates (1 per month) which align with the TSB value of energy at specific periods of the day. The total amount of this performance-based incentive will ultimately depend on the kWh and therms achieved, by incentive period, as measured according to the approved M&V Plan.

- Approved GRID NMEC projects will qualify for a financial incentive. The kWh and therm incentive rates by period, listed on the Program website, will be used to identify incentive amount for the project.
- The installation incentive payment amount will be calculated using the best available information to estimate the potential energy savings of the project when the Installation Report is approved. The Installation Payment will normally be 40 percent of the Initial Expected Total Project Incentive Payment, but not more than 50% of the Project Cost.[12]
- The subsequent incentive payment amounts will be based on actual performance during the 12 months of post-installation metered energy savings analysis for the project. An Aggregator's Performance Incentive Payments will be made only after the value of achieved savings exceeds the cumulative value of all previously paid Installation Payments to that Aggregator. The total incentive payment amount may be subject to a limit of total project cost or a reservation limit.

## 3. Ex-Post NMEC Methods

The performance component of GRID-MAP incentive payments and the performance claims for the Program will be based on NMEC methods, consistent with the applicable version of the *Rulebook for Programs and Projects Based on Normalized Metered Energy Consumption* (NMEC Rulebook), and any other relevant CPUC direction. Both population-based and site-based NMEC processes used in the Program will fully comply with the applicable NMEC Rulebook version(s). Compliance with a given Rulebook version will be based upon the applicable Rulebook at the time of Project Approval.

[12] An adjustment to the 40% value may be made if an Aggregator's actual savings performance is consistently lower than initially estimated.

NMEC methods rely on comparing energy consumption at the revenue meter during the pre- and post-intervention periods. Regression models with weather and time variables help to explain variability in energy consumption and isolate the effect of the intervention. The difference in the pre-post change in hourly energy consumption amongst the participants and a comparison group of non-participants is the output of interest.

## e. Settlement Calendar Quarter Definitions[13]

For settlement purposes, a portfolio of projects will be defined as all projects that are still in their first year of savings (installed in the prior 365 days). The portfolio will be rolled up for each individual Aggregator and settlements will be made on a calendar quarter basis. The Aggregator's projects within this portfolio need not come from the same sector, climate zone, or industry type (subject to the Program's rules) because each participant's model will be estimated independently.

> The Program will communicate the risks associated with population NMEC procedures when savings (i.e., effect size) or population size is small. We will use actual AMI data from sites selected into the comparison group to estimate the relative precision, or the expected margin of error, divided by the effect size (e.g., 3%, 5%, or 10%). This metric is referred to as Fractional Savings Uncertainty (FSU) in the NMEC Rulebook. The values will be based on bootstrapped standard errors using hourly interval electric data from similar customers in the targeted sectors. For example, a cohort expected to save 5,000 MWh with a margin of error of ±3,000 MWh would have a margin of error of ±60% and a 95% confidence interval that the measured savings would fall between 2,000 MWh and 8,000 MWh. From an Aggregator's perspective, the performance payment amount can potentially vary from 40% to 160% of the actual value of the savings delivered due to measurement error. If this variability in performance payment is too high for them to tolerate, we will provide estimates for how much this error would be impacted by increasing the portfolio size (recruiting more participants) or increasing the effect size (adjusting the project scope).

## f. Data Preparation

SCE will establish a monthly data transfer procedure with the Implementer's M&V team, which includes project/measure package data from implementation and hourly electric AMI data for modeling. SoCalGas will also establish a monthly data transfer procedure with the M&V team to provide monthly gas data, for relevant sites associated with fuel substitution projects or the comparison group. Prior to modeling, the M&V team will prepare the participant load data for analysis according to the data structure required to implement the selected modeling approach.

- **Weather Station**: The Program will merge actual (i.e., historical) hourly weather data from CALMAC.[14] Weather station mapping and data sufficiency will follow Section 2.4.1 of the CalTRACK Technical Appendix.

[13] Calendar quarters are defined as follows: Q1 includes Jan, Feb, Mar; Q2 includes Apr, May, June; Q3 includes Jul, Aug, Sep; Q4 includes Oct, Nov, Dec.
[14] http://calmac.org/weather.asp

- **Define the "blackout" period, Baseline, and Reporting periods**: The blackout period lasts from the beginning of a project's first measure installation through the end of the last measure installation and full commissioning. Long blackouts do introduce additional risk to savings calculations, where exogenous changes in the buildings (positive or negative) can be misattributed to their interventions, but the blackout period must account for the entire installation and commissioning period, which for major projects can be for an extended period. For this reason, aggregators will be educated on the risks associated with extended installation periods. The maximum blackout period of twelve months will be allowed. If only one installation date is listed for start and ending of installation, we will create a buffer period of one week in either direction. The 365 days prior to the beginning of the blackout are the baseline period. The 365 days following the blackout are the reporting period. Projects will be monitored throughout the 12-month period to ensure projects continue to meet eligibility requirements. If a project is initially qualified for participation but is later found to not meet eligibility criteria, then attempts may be made to change the savings measurement approach to another platform (e.g. site-based NMEC)
- **Identify the appropriate comparison group**: Matching on key characteristics of the participant: industry group, climate zone, and size.

There are several important mechanical considerations regarding the comparison groups in this plan.

- The definition and composition of the comparison groups will be defined in advance, but the groups themselves must be maintained as new meter data becomes available.
    - To measure (and adjust for) exogenous changes, the comparison group must be observed during the full baseline and reporting period, which are defined separately for each individual participant (based on the measure installation date). The specific comparison sites with sufficient data for inclusion in the analysis may change over time, as these non-participant businesses close, participate in SCE GRID-MAP, or enroll in other programs. We must monitor each comparison site over time to ensure that they continue to meet these criteria for inclusion in the comparison group.
- The M&V team will document the comparison group segment definitions, and which accounts make up each comparison group within three months of the contract execution. Hourly electric AMI data and monthly gas data (where applicable) for members of the comparison group will be transferred along with participant load data on a regular cadence.
- The SCE and SoCalGas accounts that make up the comparison group will need to be monitored for GRID-MAP participation, account closure, or other significant changes, such as solar adoption or battery installation.
    - We plan to select alternate members for each comparison group to use as replacements if there is significant attrition and the segment has a large enough population to supplement (i.e., there are more sites to obtain). Based on our experience with similar programs, we do not expect to require use of these alternates.

## g. Analytical Methods

### Population-Based NMEC

We will model participant baselines in the reporting period using site-level hourly AMI metering data for electricity and likely monthly metering data for gas (or other finer increments if available). To these data, we will merge hourly weather data.

For each participant site, we will identify the appropriate comparison group that will provide our best estimate for the exogenous changes in energy consumption. Each comparison group will consist of a large sample (n~100) of non-participant customers from the same industry group, climate, and size. These comparison groups will be defined early in the program implementation, monitored until one year after the last installation is complete, and replenished if there is significant attrition (e.g., comparison group sites electing to participate in the program, business closures). Additional detail on the comparison groups are provided in the next section.

The specific steps to produce estimates of program energy savings will follow the following steps:

1. For each participant and comparison sites in the calendar quarter population, we will ensure that a full year of baseline and reporting period consumption interval data (hourly for electricity and likely monthly for gas) are available, along with hourly weather data. Each site should also have one year of pre-baseline data, referred to in this section as the testing period, to ensure model reliability. The testing, baseline, and reporting periods together comprise the analysis period.
2. Remove any data in the "blackout period," which consists of the time between the start and end of measure installation(s), which includes commissioning and testing. The baseline period is defined as the 365 days prior to the installation start and the reporting period is defined as the 365 days after the installation end.
3. Utilize the OpenEEMeter hourly model to construct the regression variables including time-of-week indicators and temperature characteristics segmented by month (i.e., separate models for each month).[15]
4. For each participant and comparison site, estimate the regression model during the baseline period using the OpenEEMeter hourly model. This model is a modified version of a monthly time-of-week & temperature (TOWT) model. OpenEE's hourly model includes variables for each hour of the week and temperature bins.[16]
5. For each site, predict usage during the reporting period using the OpenEEMeter hourly model developed in the previous step. This is the counterfactual: a representation of the energy that each site would have consumed if the program had not existed, reflecting the actual weather conditions experienced in the reporting period.
6. The difference between the participant counterfactual and the observed usage is the estimated total change. The difference between the comparison's counterfactual and observed usage is the estimated exogenous change during the study period.
7. The hourly measured savings (the impact of the Program) is the difference between the total change in participants and the exogenous change in the comparison group. In other words, the incremental change observed in participants, above and beyond the exogenous changes exhibited by the comparison group (which could be positive or negative).
8. Upload hourly measured savings by project to the GRID Platform.
9. The GRID Platform will aggregate the results to the annual total kWh and therm savings, as well as the total kWh savings in the peak and super peak periods and monthly therm savings. The GRID platform will calculate the incentive for each project.
10. The GRID Platform will aggregate these metrics by Aggregator and Program.

[15] https://www.recurve.com/how-it-works/caltrack-hourly-methods
[16] Ibid.

The modeling approach used to estimate participant impact is the OpenEEMeter hourly model. OpenEEMeter is an open-source, python-based procedure for measuring the impacts of demand-side programs by using historical data to fit models and then create predictions (counterfactuals) to compare to post-intervention, observed energy usage.[17] Models developed using OpenEEMeter are designed to meet or exceed the predictive requirements of CalTRACK.[18] The OpenEEMeter procedure includes a number of data quality control steps to ensure model accuracy and applicability. This includes testing input datasets to check that a sufficient amount of the pre-period is represented in the available data (90% of hours in each calendar month being modeled, which also ensures a minimum of 90% of hours in the year), as well as checking for extreme or duplicative values.[19] Missing values (i.e., null values) are allowed and will not be imputed or interpreted as zeros. In addition to the checks included within the OpenEEMeter procedure, we will also check the input data for indications of errant readings and other unusual energy usage behavior indicative of unreliable energy usage data.

Developing a OpenEEMeter hourly model includes the following steps for each site included in the analysis (both participant and comparison group sites):[20]

- **Segment energy usage by month:** each month of pre-period data is modeled separately
- **Determine occupancy for each hour of the week:** an HDD-CDD model is used to determine periods of high occupancy
- **Bin temperatures:** observed temperatures are binned based on pre-selected end points.
- **Calculate coefficients of model using a linear regression model:** each model has coefficients for each hour of the week, up to seven temperature bins, and occupancy status.

Combined, these steps produce a model for building energy use prior to program intervention based on the interaction between the building's temperature, occupancy status and the time of week. This model is then used to predict energy usage in the reporting period. The predicted hourly consumption in the reporting period is called the counterfactual consumption. These values represent what the consumption would have been had the premise not participated in GRID. Savings in the reporting period are simple summations of the hourly impacts by period of interest.[21]

Because all participants must have at least one year of pre-installation data and settlement occurs at the end of the first-year post-installation, all participants will have the same number of peak, net peak, and off-peak observations in the reporting period. Total kWh and therm savings in each period can simply be summed across participants and meter intervals in that calendar quarter.

If the estimated savings for a given quarter differ from the ex ante savings by more than 40% (i.e., <60% or >140%), they will be flagged for the Aggregator for review. If the overall annual savings differ from ex ante by more than 40% the participant model will be flagged as unreliable. As an example, while there is some uncertainty in the accuracy of ex ante savings, it is unlikely that a measure could truly achieve 200% of this expected value. It is far more likely that the participant made other changes to the building or operations during the reporting period, which are being misattributed to the installation. The purpose of flagging these sites for Aggregator review on a quarterly basis is to intervene early, when the participant is still able to accurately report other changes they have made recently that could be impacting energy

[17] https://lfenergy.org/projects/opendsm/
[18] https://github.com/opendsm/eemeter
[19] https://www.recurve.com/how-it-works/caltrack-scorecard
[20] https://www.recurve.com/how-it-works/caltrack-hourly-methods
[21] https://www.recurve.com/how-it-works/performance-period-outputs

usage. If the Aggregator is unable to identify the source of the deviation from ex ante (e.g., reduced operating hours or additional measures installed), the participant will be flagged as unreliable.

Participants who passed all of the prescreening, remained eligible for the program, had measures installed, met the model fit criteria, and still ended up with an unreliable savings estimate will be assigned an imputed savings value. This imputed value is based on the ex ante savings and realization rate (i.e., achieved savings / *ex ante* estimated savings) of similar projects. The imputed realization rate will be the average of all projects completed by this Aggregator, projects in this sector, projects with the same measure end uses, and climate zone as shown in Table 2. As we do not expect to have many projects to draw from, we plan to take the average of these four separate realization rates, rather than a subset of projects who match on all four criteria. If there are no existing projects completed within any of these segments, the portfolio-level realization rate for SCE GRID-MAP will be applied. If an Aggregator has unreliable savings estimates for multiple participants, they will be flagged and subject to additional pre-screening on future projects.

**Table 2: Example of an Imputed Realization Rate**

| Segment | Realization Rate | # of Projects completed to date |
|---|---|---|
| Aggregator: B | 0.75 | 4 |
| Sector: Hotel | 1.06 | 15 |
| Measure End Use: Heating | 0.65 | 20 |
| Climate Zone: 13 | 0.89 | 7 |
| **Imputed Realization Rate** | **0.84** | |

Across all stages of the analysis, we will follow fundamental tenets of data management and analysis. We will not make direct changes to the data files we receive. Rather, we will import the data into an analytic database (e.g. SQL) and perform all data transformation, quality control tests, and analysis in the analytic database using open-source software (e.g., R), while tracking all code in a Github repository. All modeling will be conducted using OpenEEMeter with key model specification saved for reproducibility. With this approach, all our analysis will be easily **auditable and replicable**. These are the two most important criteria necessary to ensure quality control in the analysis.

## h. Comparison Group Segmentation

### Population-Based NMEC

For population-based NMEC, we will assess naturally occurring changes in energy use with a comparison group comprised of similar customers from the same industry group, climate, and size. These customers experience similar economic conditions and other unobserved conditions that may influence energy use over the measurement period. For example, if the electric rates are changed on July 1st, increasing the cost of using energy on-peak relative to mid-peak, customers may see a spike in their bill in August and adjust their equipment controls to reduce cooling during on-peak hours. As this behavior was not driven by time-of year or outdoor air temperature, this observed change in participants could be misattributed to the

effect of program participation. Fortunately, non-participating customers will have experienced a similar spike in their electric bills. If we measure the impact of this rate change on energy consumption in the non-participants, we can clearly see that a similar shift in participant energy consumption should not be attributed to the program intervention.

To clarify, each project will be compared with a population of building types that behave (from an energy consumption standpoint) in a similar manner. The population will have the same factors that impact savings. Comparison will be between similar buildings in similar CZs between treated customers and non-participants. Factors include NAICS code, weather, economic conditions, and total size. These are the biggest drivers of changes in consumption over time (which is the function of a comparison group).

To develop the comparison groups, we will segment all eligible non-participating customers that meet program requirements (e.g., 12+ consecutive months of data, predictable load). They will be grouped by industry group (e.g., 2-digit NAICS or as appropriate for the Program's subsegment eligibility), climate zone, and size (via quantiles of annual consumption and solar status). We will aim to have at least n=100 customers in each comparison group, balancing the desires for specificity with the need for a large sample size to smooth out variability. These groups will be designed based on our review of the SCE population data within our targeted sectors, including basic customer characteristics (e.g., NAICS code) and at least one year their historical electric energy consumption. The comparison groups will be monitored on a monthly or quarterly basis to remove any sites that have been treated or closed. If the attrition in the comparison group is significant, we plan to refresh the groups with new non-participant sites.

Each individual participant will be matched with the comparison group that shares all of these segmentation criteria. The M&V team will develop a regression model for each customer in the comparison group, using the same methodology (described in the previous section). The predicted hourly consumption in the reporting period is the counterfactual consumption. For non-participants, these values represent what the consumption would have been had the premise not experienced any changes other than weather. The difference between the predicted and actual consumption in the reporting period provides our estimate for the hourly impacts of all exogenous changes experienced by the non-participant. Averaging the percentage change of each non-participant in the comparison group will provide our best estimate for the exogenous changes experienced by similar participants. This adjustment can be easily explained to the aggregators, providing comfort that the resulting increase or decrease in their performance payment is reasonable.[22]

At least once per year, the Implementer's M&V team plans to reassess the fit between all participants and their comparison sites, in aggregate using CV(RMSE). If we see a significant difference between the two groups (i.e., an opportunity for significant improvement), we plan to adjust the segmentation criteria for the comparison groups. This assessment will be done in aggregate to avoid introducing bias with project-specific adjustments to the comparison groups. If the comparison groups are adjusted, this change will apply to all future participants.

[22] We considered the option of developing customized matched comparison groups or synthetic controls. These approaches offer a small incremental improvement in the strength of the match, at the cost of distrust from aggregators, who have no way to verify that the matches and/or weights were not distorted to unfairly reduce their payment. We believe that this simple methodology is sufficiently accurate and will lead to more trust (and thus, participation) from aggregators.

## i. Dual Participation in other EE and DR Programs

GRID-MAP is designed to deliver incremental savings to SCE's existing energy efficiency and demand response programs. The program design centers on compensating projects based on the value the projects deliver to the utility system. This requires processes to prevent overpayment or underpayment due to dual participation. Along with other project completion details, SCE will pass information on current energy efficiency and demand response program enrollments and any energy efficiency measures completed twelve months prior to GRID-MAP participation to the Implementer's M&V team.

The GRID team may also make adjustments to measured savings based on assumed participation in mid-stream or upstream EE programs if measures and suppliers match the parameters of those programs.

## j. Recent Energy Efficiency Participation

Although it would be cleaner from an M&V standpoint to disallow participation in multiple EE and demand reduction programs, we believe this would block off a portion of the market and make it difficult to achieve targeted participation levels. The potential problem associated with allowing customers with recently completed EE projects to participate in a GRID-MAP project is that the regression model of consumption may overstate the counterfactual if it is estimated on data prior to the non-GRID-MAP measure installation. By design, the accounts selected to make up the comparison group will not have prior EE participation. If there are instances where we need to adjust to account participation in another EE or demand reduction project, we will adjust the baseline for site-based NMEC using a procedure similar to that for handling a non-routine event.

1) Determine whether each day in the performance period requires adjustment.
2) Determine the 8760 load shape of the non-GRID measures based on DEER or eTRM profiles and spread the claimed kWh savings over the year.
3) Multiply the 8760 load shape from step #2 by the adjustment flag (0,1) to arrive at the hourly adjustment.
4) Subtract the calculated adjustment from Step #3 from the predicted baseline determined via NMEC.
5) Compute hourly impacts as the difference between the adjusted baseline and metered consumption during the performance period.

A similar process will be conducted for gas using a 365 savings shape, spreading the claimed therms savings over the year and performing any required adjustments.

## k. Enrollment in SCE Demand Response Programs

SCE offers a full suite of demand response programs for the commercial sector. Although it would be simpler from an M&V standpoint to disallow dual participation in GRID-MAP and DR programs, we believe this could potentially exclude customers within the residential, commercial retail, office, and wholesale customers markets and make it more difficult to achieve targeted participation levels. Our proposed approach to prevent double counting of DR impacts in the GRID performance estimates is as follows:

- Exclude DR event hours from the baseline model and performance period.
    - If DR events begin or end mid-hour, exclude the entire hour.

- Also exclude the hour prior to and following DR events to account for pre-cooling, or post-event snapback which leads to DR participants having a higher load than they would otherwise.

This ensures that DR events in the baseline period do not bias participant baseline up or down unfairly. It also means that sites dual-enrolled in GRID-MAP and DR cannot earn GRID-MAP performance credit for participating in DR events. This will be communicated clearly to Aggregators as it affects settlement calculations.

## l. Normalization

The analytical methods described above include a series of explanatory variables to capture time and weather effects in the mathematical model of energy consumption. This relationship will be modeled in the baseline period and predicted for the reporting period using the actual reporting period weather conditions.[23] In other words, we do not plan to estimate separate regression models for the reporting period and perform parallel predictions under normalized weather conditions (e.g., CZ2018, TMY). This decision is based on the following factors:

1) An important objective of the Program is to align incentives to the value that these energy savings provide to the utility system. Generally, this means that savings delivered during utility peak hours will be valued higher than savings delivered off peak. Measuring performance and settling with Aggregators based on delivered impact during these periods removes a layer of complexity and provides clearer signals to the market.
2) It allows for faster reporting. If a separate mathematical model of energy consumption is required for the performance period, it is imperative to wait for adequate coverage of independent variables before estimating impacts. Under the approach outlined in this plan, we can measure savings as soon as the performance period begins and show cumulative sums of impacts at regular intervals.

## m. Customer Settlement

The final settlement with Aggregator for a calendar quarter of projects will be based on the Total System Benefit generated during the calendar quarter. More specifically, incentives will be calculated using published rates that are proportional to the delivered TSB. The incentive rates are based on the hourly levelized values of electricity and monthly levelized values of gas from the Avoided Cost Calculator. For electric energy efficiency and the electric portion of fuel substitution projects, the specific rates applied to each hour's energy savings are determined by grouping hourly values into categories (e.g. Peak, Net Peak, Off-Peak) and then smoothing value to create a more consistent rate structure. For the gas portion of fuel substitution projects, the Program will provide monthly incentive rates.

Although not specifically a goal of GRID-MAP, the Program's incentive structure for electric projects compensates Aggregators in large part based on savings generated during the peak and super peak

[23] There have been more extreme weather events in recent years than long-term average weather conditions, such as TMYx (2009-2023) or CZ2018 (2006-2017), would suggest. For this reason, we have chosen to normalize to the actual weather in the reporting period. If researchers develop a new normalized weather year that incorporates both historical and forecasted weather patterns, releases this data publicly for all major weather stations in the service territory, and their methodology is accepted by industry leaders, we would likely propose an amendment to the M&V plan.

periods, as these are the hours with the highest TSB. As a result, for electric projects, the load shape of the NMEC-based savings estimate is a key driver of the final compensation amount. Figure 1 illustrates how the DEER load shape for a commercial chiller distributes the annual TSB value over each hour in each month of the year. The value is concentrated at midday in the summer months with meaningful contribution during mid-day of all months.

**Figure 1: DEER Commercial Chiller Value Distribution**

| Month: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12:00-1:00 a.m. | 0.02% | 0.03% | 0.03% | 0.03% | 0.03% | 0.04% | 0.07% | 0.07% | 0.06% | 0.04% | 0.03% | 0.02% | |
| 1:00-2:00 a.m. | 0.02% | 0.02% | 0.03% | 0.02% | 0.03% | 0.04% | 0.07% | 0.07% | 0.06% | 0.04% | 0.03% | 0.02% | |
| 2:00-3:00 a.m. | 0.02% | 0.02% | 0.02% | 0.02% | 0.03% | 0.04% | 0.06% | 0.06% | 0.06% | 0.04% | 0.03% | 0.01% | |
| 3:00-4:00 a.m. | 0.01% | 0.02% | 0.02% | 0.02% | 0.03% | 0.04% | 0.06% | 0.06% | 0.05% | 0.03% | 0.02% | 0.01% | |
| 4:00-5:00 a.m. | 0.01% | 0.01% | 0.02% | 0.02% | 0.03% | 0.03% | 0.06% | 0.06% | 0.05% | 0.03% | 0.02% | 0.01% | |
| 5:00-6:00 a.m. | 0.01% | 0.01% | 0.02% | 0.03% | 0.04% | 0.06% | 0.08% | 0.09% | 0.08% | 0.05% | 0.02% | 0.01% | |
| 6:00-7:00 a.m. | 0.02% | 0.02% | 0.02% | 0.06% | 0.13% | 0.17% | 0.24% | 0.26% | 0.23% | 0.12% | 0.03% | 0.01% | |
| 7:00-8:00 a.m. | 0.05% | 0.03% | 0.08% | 0.17% | 0.29% | 0.36% | 0.52% | 0.55% | 0.46% | 0.27% | 0.07% | 0.04% | |
| 8:00-9:00 a.m. | 0.12% | 0.09% | 0.20% | 0.30% | 0.42% | 0.52% | 0.75% | 0.77% | 0.65% | 0.45% | 0.19% | 0.12% | |
| 9:00-10:00 a.m. | 0.22% | 0.20% | 0.33% | 0.41% | 0.50% | 0.64% | 0.91% | 0.92% | 0.81% | 0.62% | 0.35% | 0.23% | |
| 10:00-11:00 a.m. | 0.32% | 0.31% | 0.42% | 0.49% | 0.57% | 0.76% | 1.03% | 1.04% | 0.95% | 0.77% | 0.47% | 0.35% | |
| 11:00-12:00 a.m. | 0.40% | 0.41% | 0.48% | 0.54% | 0.62% | 0.84% | 1.09% | 1.10% | 1.04% | 0.88% | 0.58% | 0.44% | |
| 12:00-1:00 p.m. | 0.47% | 0.48% | 0.53% | 0.57% | 0.64% | 0.87% | 1.11% | 1.14% | 1.10% | 0.95% | 0.66% | 0.52% | |
| 1:00-2:00 p.m. | 0.52% | 0.52% | 0.55% | 0.59% | 0.67% | 0.92% | 1.16% | 1.18% | 1.16% | 1.00% | 0.72% | 0.57% | |
| 2:00-3:00 p.m. | 0.54% | 0.53% | 0.56% | 0.62% | 0.70% | 0.96% | 1.23% | 1.23% | 1.21% | 1.01% | 0.73% | 0.58% | |
| 3:00-4:00 p.m. | 0.52% | 0.50% | 0.56% | 0.61% | 0.70% | 0.98% | 1.26% | 1.24% | 1.22% | 0.99% | 0.70% | 0.55% | |
| 4:00-5:00 p.m. | 0.48% | 0.45% | 0.52% | 0.58% | 0.67% | 0.95% | 1.23% | 1.19% | 1.14% | 0.90% | 0.62% | 0.49% | |
| 5:00-6:00 p.m. | 0.39% | 0.36% | 0.43% | 0.46% | 0.56% | 0.78% | 1.04% | 0.98% | 0.89% | 0.68% | 0.50% | 0.38% | |
| 6:00-7:00 p.m. | 0.27% | 0.23% | 0.28% | 0.28% | 0.36% | 0.52% | 0.72% | 0.65% | 0.54% | 0.40% | 0.35% | 0.24% | |
| 7:00-8:00 p.m. | 0.15% | 0.12% | 0.14% | 0.14% | 0.20% | 0.31% | 0.44% | 0.37% | 0.29% | 0.23% | 0.20% | 0.13% | |
| 8:00-9:00 p.m. | 0.09% | 0.07% | 0.08% | 0.08% | 0.12% | 0.17% | 0.25% | 0.22% | 0.19% | 0.16% | 0.11% | 0.07% | |
| 9:00-10:00 p.m. | 0.07% | 0.06% | 0.06% | 0.06% | 0.08% | 0.10% | 0.14% | 0.14% | 0.14% | 0.11% | 0.08% | 0.06% | |
| 10:00-11:00 p.m. | 0.05% | 0.04% | 0.05% | 0.04% | 0.05% | 0.07% | 0.10% | 0.10% | 0.10% | 0.07% | 0.06% | 0.04% | |
| 11:00-12:00 p.m. | 0.03% | 0.03% | 0.04% | 0.03% | 0.04% | 0.05% | 0.08% | 0.08% | 0.07% | 0.05% | 0.04% | 0.03% | |
| | **4.78%** | **4.58%** | **5.47%** | **6.18%** | **7.50%** | **10.20%** | **13.71%** | **13.56%** | **12.55%** | **9.89%** | **6.62%** | **4.95%** | **100.00%** |

Figure 2 is similar to Figure 1 but illustrates the value distribution for Commercial Indoor Lighting. Lighting does not have the same summer concentration as HVAC but does reflect the hours of operation of most businesses.

**Figure 2: DEER Commercial Indoor Lighting Value Distribution**

| Month: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12:00-1:00 a.m. | 0.18% | 0.17% | 0.19% | 0.17% | 0.17% | 0.17% | 0.17% | 0.17% | 0.17% | 0.17% | 0.18% | 0.18% | |
| 1:00-2:00 a.m. | 0.16% | 0.15% | 0.17% | 0.16% | 0.17% | 0.16% | 0.16% | 0.17% | 0.16% | 0.17% | 0.16% | 0.16% | |
| 2:00-3:00 a.m. | 0.16% | 0.15% | 0.17% | 0.16% | 0.17% | 0.16% | 0.16% | 0.17% | 0.16% | 0.17% | 0.16% | 0.16% | |
| 3:00-4:00 a.m. | 0.16% | 0.15% | 0.17% | 0.16% | 0.16% | 0.16% | 0.16% | 0.17% | 0.16% | 0.17% | 0.16% | 0.16% | |
| 4:00-5:00 a.m. | 0.16% | 0.15% | 0.16% | 0.16% | 0.17% | 0.16% | 0.17% | 0.17% | 0.17% | 0.17% | 0.16% | 0.16% | |
| 5:00-6:00 a.m. | 0.16% | 0.15% | 0.16% | 0.18% | 0.21% | 0.19% | 0.19% | 0.21% | 0.21% | 0.21% | 0.16% | 0.16% | |
| 6:00-7:00 a.m. | 0.19% | 0.18% | 0.21% | 0.24% | 0.27% | 0.26% | 0.25% | 0.27% | 0.28% | 0.27% | 0.19% | 0.18% | |
| 7:00-8:00 a.m. | 0.24% | 0.23% | 0.26% | 0.35% | 0.40% | 0.38% | 0.38% | 0.41% | 0.41% | 0.39% | 0.25% | 0.23% | |
| 8:00-9:00 a.m. | 0.36% | 0.34% | 0.40% | 0.44% | 0.48% | 0.47% | 0.46% | 0.50% | 0.50% | 0.49% | 0.37% | 0.34% | |
| 9:00-10:00 a.m. | 0.43% | 0.42% | 0.48% | 0.49% | 0.54% | 0.52% | 0.50% | 0.55% | 0.56% | 0.55% | 0.45% | 0.42% | |
| 10:00-11:00 a.m. | 0.48% | 0.46% | 0.53% | 0.52% | 0.57% | 0.54% | 0.52% | 0.57% | 0.59% | 0.59% | 0.50% | 0.46% | |
| 11:00-12:00 a.m. | 0.50% | 0.49% | 0.56% | 0.53% | 0.58% | 0.55% | 0.53% | 0.58% | 0.59% | 0.60% | 0.53% | 0.48% | |
| 12:00-1:00 p.m. | 0.51% | 0.49% | 0.57% | 0.52% | 0.56% | 0.53% | 0.51% | 0.55% | 0.57% | 0.58% | 0.54% | 0.49% | |
| 1:00-2:00 p.m. | 0.49% | 0.47% | 0.55% | 0.52% | 0.57% | 0.54% | 0.52% | 0.56% | 0.58% | 0.59% | 0.52% | 0.47% | |
| 2:00-3:00 p.m. | 0.50% | 0.48% | 0.56% | 0.53% | 0.57% | 0.55% | 0.52% | 0.57% | 0.58% | 0.59% | 0.53% | 0.48% | |
| 3:00-4:00 p.m. | 0.50% | 0.49% | 0.56% | 0.51% | 0.54% | 0.53% | 0.51% | 0.55% | 0.55% | 0.57% | 0.53% | 0.48% | |
| 4:00-5:00 p.m. | 0.48% | 0.46% | 0.53% | 0.49% | 0.51% | 0.50% | 0.49% | 0.53% | 0.53% | 0.54% | 0.51% | 0.47% | |
| 5:00-6:00 p.m. | 0.46% | 0.44% | 0.51% | 0.45% | 0.46% | 0.45% | 0.45% | 0.48% | 0.48% | 0.49% | 0.48% | 0.45% | |
| 6:00-7:00 p.m. | 0.41% | 0.40% | 0.46% | 0.37% | 0.38% | 0.37% | 0.37% | 0.39% | 0.39% | 0.41% | 0.43% | 0.41% | |
| 7:00-8:00 p.m. | 0.34% | 0.32% | 0.37% | 0.33% | 0.34% | 0.33% | 0.33% | 0.35% | 0.35% | 0.36% | 0.35% | 0.33% | |
| 8:00-9:00 p.m. | 0.31% | 0.29% | 0.33% | 0.27% | 0.27% | 0.26% | 0.27% | 0.29% | 0.28% | 0.29% | 0.32% | 0.30% | |
| 9:00-10:00 p.m. | 0.25% | 0.24% | 0.27% | 0.24% | 0.24% | 0.24% | 0.24% | 0.25% | 0.25% | 0.25% | 0.26% | 0.25% | |
| 10:00-11:00 p.m. | 0.22% | 0.21% | 0.24% | 0.20% | 0.20% | 0.19% | 0.20% | 0.20% | 0.20% | 0.21% | 0.23% | 0.22% | |
| 11:00-12:00 p.m. | 0.19% | 0.18% | 0.20% | 0.18% | 0.19% | 0.18% | 0.19% | 0.19% | 0.19% | 0.19% | 0.19% | 0.19% | |
| | **7.82%** | **7.51%** | **8.59%** | **8.18%** | **8.70%** | **8.39%** | **8.26%** | **8.84%** | **8.91%** | **9.01%** | **8.16%** | **7.62%** | **100.00%** |

Table 5 shows an example of how the EUL impacts the TSB generated by a project. The table shows the annual kWh savings for a hypothetical commercial lighting measure project that saves 1 MWh annually using the load shape visualized in Figure 2. The TSB generated equals the net present value of EUL years of avoided costs for a given Climate Zone, divided by EUL, using a 7.52% nominal discount rate.[24] Although a commercial lighting project would generally have an EUL of 12, the table is meant to illustrate the impact of EUL on the TSB of projects. As illustrated, longer duration projects produce long term savings and thus have a higher total system benefit.

**Table 5: Example of EUL Impact on TSB**
(1MWh, Non-Res Lighting Load Curve, NTG = 0.95)

| Period | Annual Net kWh Saved | EUL = 2 | EUL = 5 | EUL = 10 | EUL = 15 | EUL = 20 |
|---|---|---|---|---|---|---|
| **Total** | **950** | **$71** | **$178** | **$356** | **$535** | **$713** |

(Note, all rates used or shown in this M&V Plan are samples and will be finalized prior to program launch.)

The NMEC population for each calendar quarter for each Aggregator includes all projects with less than 365 days of savings remaining. Note that this means that a calendar quarter will include projects with varying installation dates: 1) projects installed in that calendar quarter for which only a partial quarter of savings will be counted, starting from the installation date; 2) projects installed in one of the previous three quarters, for which the full quarter of savings will be counted; and 3) projects installed four quarters prior, for which only the remaining partial quarter of savings through the one year expiration date will be counted. The performance payment paid in each calendar quarter will be spread across four quarterly milestone payments. For installations made during a calendar quarter, the period prior to installation will be removed from the payment calculation. For installations made more than 365 days in the past, days after the 365$^{th}$ day will be removed from the payment calculation. To compute the incentive earned for each quarterly payment, we will total the savings for each period within the quarter, apply the corresponding period incentive rates, and multiply by the weighted average EUL determined during the upfront review, the applicable Net-to-Gross ratio, and any other relevant factors (installation rate, gross realization rate, market effects factors, etc.).
2
Once the quarterly performance estimates are finalized for a given calendar quarter, we will issue the settlement payments. Payment calculations will occur at the end of each of the four 3-month performance periods. Settlement will lag the close of the performance period by approximately 60 days to allow for validation and transfer of meter data to the modeling team and analysis. Table 6 shows the program lifecycle for a hypothetical calendar quarter of projects completed during the first quarter of 2025. The payment made in Q4 is expected to be the largest for this calendar quarter because it compensates the Aggregator for performance during Q3 (July, August, and September) when avoided costs are highest and most of the peak and super peak hours occur.

[24] Example CET Discount Rate.

**Table 6 Sample Payment Cadence for a Project**

| Quarter[25] | Activity | Installation Payment | Performance Payment |
|---|---|---|---|
| 2025-Q2 | Project Installation and First (partial) quarter of performance measurement | Based on agreements with Aggregator and savings forecast for projects completed in 2025-Q2. Payment occurs in the month following installation so may fall in Q2 or Q3 | Likely none because earned performance payment is likely lower than Installation Payment. |
| 2025-Q3 | Second quarter of performance measurement | | Payment based on measured impacts in Q2 of 2025 net of Installation Payment (partial). |
| 2025-Q4 | Third quarter of performance measurement | None | Payment based on measured impacts in Q3 of 2025 net of Installation Payment (full). |
| 2026-Q1 | Fourth quarter of performance measurement | None | Payment based on measured impacts in Q4 of 2025 net of Installation Payment (full). |
| 2026-Q2 | Project Expiration Fifth (partial) quarter of performance measurement | None | Payment based on measured impacts in Q1 of 2026 net of Installation Payment (full). |

Performance Payments are equal to the total incentive amount earned net of any Installation incentive issued based on the savings forecast that have not already been recovered.

### n. To-Code Savings

Most energy efficiency programs count savings as anything above code level baseline measures or efficiency levels. GRID-MAP, in contrast, does not limit qualifiable savings by measure type or relative to code minimums. The NMEC savings calculations will produce total savings, including to-code savings. As described above, dual participation projects will be adjusted to avoid double counting for savings above code minimums. This adjustment will, essentially, subtract the savings attributed to the energy efficiency program. Any remainder will include any savings attributable to GRID, including to-code savings.

## 4. Data Collection and Validation

Data collection for purposes of M&V and settlement falls into three primary categories:

1. **Project Completion Information (continuous).** As Aggregators complete projects, we will collect information about the participating customer, the efficient equipment installed, the expected energy savings, the date the work was completed, etc.
    a. Along with the project information, customer characteristics, and other metadata associated with the initial project completion package, SCE will extract and transfer the

[25] Because the Program will commence in June, quarters are defined as follows: Q1: Jan, Feb, Mar; Q2: Apr, May, Jun; Q3: Jul, Aug, Sep; Q4: Oct, Nov, Dec.

last 24 months of hourly AMI data for the new set of participating sites, and SoCalGas will transfer 24 months of monthly gas data for these same sites (where applicable).

2. **Ongoing transfers of hourly electric load data (monthly) from SCE**. Includes all accounts that were assigned to the comparison groups and all participants that have not reached the end of their 12-month performance period. SCE will establish a regular data transfer process to Implementer's M&V team once interval data have been processed and finalized. SCE will transfer data, which has received standard SCE meter data validation, to Implementer's M&V team approximately 45 days after the end of each month. For example, August interval data will be transferred for analysis by October 15th. Implementer's M&V team will perform additional data validation as described below.
3. **Ongoing transfers of monthly gas usage data (monthly) from SoCalGas**. Includes all accounts that were assigned to the comparison groups and all participants with ex ante gas savings that have not reached the end of their 12-month performance period. SoCalGas will establish a regular data transfer process to the M&V team once interval data have been processed and finalized.[26] We anticipate the data, including data validation, being transferred to Evergreen Economics approximately 45 days after the end of each month. For example, August interval data will be transferred for analysis by October 15th.
4. **Validation meters and meter data**. Meters associated with each project are identified by the Aggregator and the data from those meters is used to measure project savings. The program will implement a QC process that provides information to the Aggregator and keeps them engaged by using quarterly savings estimates to identify unexpected results and thus allows the Aggregator to follow-up on problematic sites.

   During each quarter (post-installation), forecasted savings will be estimated, and four items will be checked:

   1. The ex-ante savings as a proportion of baseline consumption: are the savings feasible on the provided meters?
   2. A time-series of daily energy consumption and cumsum plot: do you see a shift in consumption around the installation date?
   3. The estimated savings kWh and % for the quarter : do they fall within 40 percent of the ex ante savings (i.e., <60% or >140% of ex ante)?[27]

If the site fails any of these tests, they are flagged for the Aggregator for review. A key benefit of this approach is that it minimizes the administrative burden for the Aggregator. We are asking them to track down the information when it is needed.

The Program will preserve all customer, project, and load data for sharing with the CPUC upon request for evaluation or other purposes.

[26] SCE will need to establish an inter-utility agreement with SoCalGas to provide the M&V team with gas data for these customers.

[27] See the customer settlement section for more detail on how we plan to handle projects with annual estimated savings outside these boundaries.

# 5. Site-Based NMEC Methodology

As described above, projects/sites whose usage are not well modeled by the population-based NMEC approach may be offered a site-based NMEC treatment. Because the complexity involved in the site-based NMEC approach, only projects with likely substantial savings (to be determined by Implementer on a case-by-case basis) may be given this option.

This section provides further details of the site-based NMEC approach that will be relevant to any projects using this methodology. Processes and methods will be compliant with the current Rulebook.

## a. Strategies to Target High Savings

Pre-screening will assess the project's ability to exceed 10% savings. GRID-MAP's training and coaching strategies will help customers identify and implement comprehensive projects.

## b. Analytical Methods and Tools

GRID-MAP will manage development and documentation of regression model and savings quantification within Excel. Spreadsheets will use industry standards for multivariate linear regression analyses, such as Microsoft Excel's 'linest' function. Completed models will be loaded into Gazebo to streamline data management, performance monitoring, and progress visualization. In compliance with open-source expectations, Gazebo licenses will be provided to any reviewer needing access.

Baseline and performance period models will be developed to account for the energy usage of each facility. Model selection is not always simply based on the best statistics; a model is selected based on a combination of model statistics, ease of data acquisition, physical conditions at the site, and what makes intuitive sense to the facility operators.

Energy savings within the project boundary will be calculated using a model based on performance period data under normalized conditions. Performance period models will use the same modeling approach as was used for the baseline model development. Energy savings within the project boundary will be calculated by applying the following equation:

**Energy Savings = Normalized Baseline Period Energy Use – Normalized Performance Period Energy Use**

Where:

- Normalized Baseline Period Energy Use = energy consumption calculated using the Baseline Model and normalized data for each independent variable. Normalized weather data will use a Typical Meteorological Year (TMY) dataset, which aligns with the applicable CPUC-approved Avoided Cost Calculator (CALEE 2018 TMY dataset for the nearest weather station).
- Normalized Performance Period Energy Use = energy consumption calculated for the performance period using the performance period model, adjusted for non-routine events as necessary.

Models will be developed using an Excel-based workbook template, which streamlines the process of testing candidate variables for statistical significance and comparing and documenting performance of hypothesis models. Once a model is selected, it will be loaded into Gazebo software to facilitate customer communication, sharing, and ongoing tracking.

### c. References for Analytical Approach

GRID-MAP's analytical approach follows CPUC, Lawrence Berkely National Labs (LBNL), American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), and IPMVP guidance.

### d. Implementation Examples for Analytical Approach

GRID-MAP's analytical approach has been refined through usage in Cascade's existing programs including those of SCE, SDG&E, and SoCalGas, plus NMEC projects within PG&E ISOP.

### e. Key Data for Savings Calculations

Most models will use daily data for all dependent and independent variables. Data will vary for each project. Daily or weekly SCE usage data will typically serve as the dependent variable, though in some cases, submeter data may be used instead. Independent variables may include, but will not be limited to:

- Ambient temperature: Gazebo downloads site-specific dry-bulb and wet-bulb data through a third-party service that aggregates data from multiple NOAA sources.
- Facility schedules: GRID-MAP coaches will confirm customer operating schedules with respect to weekends, holidays, and/or seasonal operations.
- Occupancy or production: In some cases, occupancy or production data may be obtained from a customer system of record for use in an NMEC model. Examples could be number of workers on-site, daily product shipments, or tons of raw material/equivalent inputs.

### f. Data Collection Plan

All data will be uploaded from the GRID platform and managed in Gazebo. Project-specific Data Collection Plans will be provided in all NMEC Project Applications. Data collection methods and Quality Assurance/Quality Control (QA/QC) checks will be customized based on the predicted uncertainty. For example, projects with predictable buildings using reliable utility meter data may require savings progress to be checked every three to six months. Projects with customer-owned meters, potential non-routine events, and uncertain upfront savings estimates may need to check savings progress each month.

### g. EUL Determination

A weighted average EUL will be calculated by adding together the product of each measure's EUL multiplied by its expected savings and dividing by the total expected savings. The forecast weighted average for all recommended measures will be included in the Project Application based on forecast savings, and the updated weighted average EUL for the measures actually installed and verified will be included in the Final Savings Report.

## h. Program Influence Methodology

GRID-MAP will use a NTG ratio of 0.95 for all NMEC projects per CPUC Resolution E-4952. Facilities with significant changes in operations or normal maintenance of existing equipment during the baseline or reporting periods may not be eligible, or calculation methodologies may have to be developed to isolate and back out corresponding apparent savings. Project influence will be clearly documented per CPUC Resolution E-5115 for all projects, with applicable Preponderance of Evidence (POE) rigor according to incentive levels. The following factors may be relevant to the influence demonstration: project developer's engagement and communications with the customer, the customer's decision-making criteria, the project timeline, how the project was initiated, how the measure was identified, the alternative viable options that also meet the customer's needs, and the energy and non-energy benefits. Documentation, with time stamps if applicable, may include marketing materials, training workshop attendance, self-serve video attendance, audits or site visit results, savings or financial calculations shown to customers, email correspondence, meeting minutes, customer internal policies or investment criteria, and/or relevant internal customer communications.

## i. Statistical Precision (Risk and Savings Uncertainty)

Consistent with California regulatory precedent, all GRID-MAP NMEC claims will meet a Fractional Savings Uncertainty (FSU) standard of within 50% uncertainty at 90% confidence. This is consistent with all other NMEC programs GRID-MAP is implementing in California and a higher standard than ASHRAE guidance specifies (50% uncertainty at 68% confidence).

GRID-MAP's M&V protocols on projects with meter-based savings have been employed for over a decade in various programs throughout the country. GRID-MAP also allows for some savings risk when we develop annual program forecasts from NMEC projects. In addition, we constantly monitor savings progress on NMEC projects through Gazebo dashboards, giving us enough advance notice to intervene and analyze in case savings trends are not in line with expectations. Above all, in the event that projects do not yield expected savings, GRID-MAP will focus on meeting the planned program goal by identifying more projects both NMEC and non-NMEC (deemed, custom calculated BRO, and capital projects) depending on the level of shortfall and the time period in which the shortfall needs to be addressed.

## j. Identification of Non-Routine Events (NREs)

Possible NREs will be identified through continuous monitoring of performance data as well as regular project check-ins with the customer. All NREs will be documented in the project M&V Report. Standard thresholds will apply for identification of significant NREs and for possible updates to regression models, ensuring that directionality is not biased specifically toward positive or negative adjustments.

Baseline data shall also be analyzed to determine the presence of unusual energy use patterns that may be caused by NREs. All suspected NREs should be confirmed with the participant. Confirmed baseline period NREs must be documented in the pre-screening report, with a clear description of how their impacts will be addressed.

During the performance period, the most common method to identify NREs is through visual inspection of the metered energy use data. Time-series charts of energy use data may be used to identify shifts in energy use patterns that may be caused by NREs. If energy use data begins trending significantly outside

expected values as determined by the model, an NRE may be present. GRID-MAP staff's professional judgement will be used to identify NREs, but a situation in which an independent variable departs its baseline mean by ±3σ will serve as a flag of a potential NRE.

## k. Rationale for savings <10%

GRID-MAP is not targeting projects with savings less than 10%, but we do not believe a hard eligibility line is appropriate. Use of interval data and advanced modeling methods means that even if fewer measures are installed or if they are not functioning as intended, savings at or below 5% may still be determined with reasonable accuracy and confidence. In the event of projects with less than 10% savings, we will use the FSU methodology listed above to ensure savings claims are statistically meaningful. Site-specific methodologies will be described in project-level M&V plans submitted with Project Applications.

## l. Monitoring During Reporting Period

Data monitoring will include the collection of data for each dependent and independent variable used in the baseline model. SCE usage data will be imported from GRID into Gazebo. Other data will be obtained from customers and reviewed regularly by GRID-MAP staff to identify quality issues or potential non-routine events.

## m. M&V Roles

All M&V roles, including data management, model development, and performance analysis, will be completed by GRID-MAP staff. Cascade already has a deep bench of M&V expertise from their longtime leadership in program implementation.

## n. Incentive Methodology and Compensation

GRID-MAP NMEC financial incentives will be calculated per the incentive rates specified in the Implementation Plan. Incentives will be based on final energy savings as determined during the performance period and verified by the Savings Report. Accordingly, customer incentives will be paid in a single payment following M&V completion.

## o. Quality Assurance

The following QA and QC steps will be taken to ensure savings estimates are dependable and replicable:

1. Periodic review of data with sites to ensure energy usage is as expected
2. Measure verifications based on site visit documentation
3. Periodic tracking of energy savings progress (visually available with Gazebo)
4. Quality checks will be used to assess data integrity at multiple stages. These will include checks on data gaps, repeated data, and common logic. Information collection and documentation with reports will be checked to ensure that appropriate project data is being entered, used, and tracked. GRID-MAP will typically ensure QC is done by a team member that was not involved in the project to ensure fresh eyes are assessing the information and procedures utilized.

### p. Software Tools

Models will be developed using an Excel-based workbook template, which streamlines the process of testing candidate variables for statistical significance and comparing and documenting performance of hypothesis models. Once a model is selected, it will be loaded into Cascade Energy's Gazebo software platform, which streamlines the process of data management and performance tracking, while providing other customer-facing services. All hypothesis model variants, input and output data, resulting model coefficients, and model metrics will be documented and available for review, and reviewers will be provided access to Gazebo if desired.

### q. To-Code Savings

All NMEC measures, including to-code projects, will use an existing conditions baseline. Savings estimates will not separately quantify or differentiate incentives for to-code and above-code portions of savings. GRID-MAP will focus on helping customers improve energy performance from a unique starting point. While most GRID-MAP measures will fall outside of clear code applicability, in some cases "To Standard Practice" measures may be identified and included in projects. Sometimes straightforward upgrades go uncaptured indefinitely at some ag sites due to barriers, such as a customer's lack of energy efficiency knowledge and the cost of implementing energy-saving projects. If to-code or to-ISP measures are identified and implemented, the project application will assess the operability (or probability of repair) of existing equipment and document program influence.

The Program generally and the GRID Platform specifically, will collect project information and measure-level data, which will enable further analysis related to:

- Where to-code savings potential resides and where cost-effective to-code projects can be found:
    - Equipment types
    - Building types
    - Geographical locations
    - Customer segments

In addition, it is anticipated that program data and outcomes will be used to determine: What kinds of barriers are preventing code-compliant equipment replacements? Why is natural turnover not occurring within certain markets or for certain technologies? What program interventions would effectively accelerate equipment turnover?

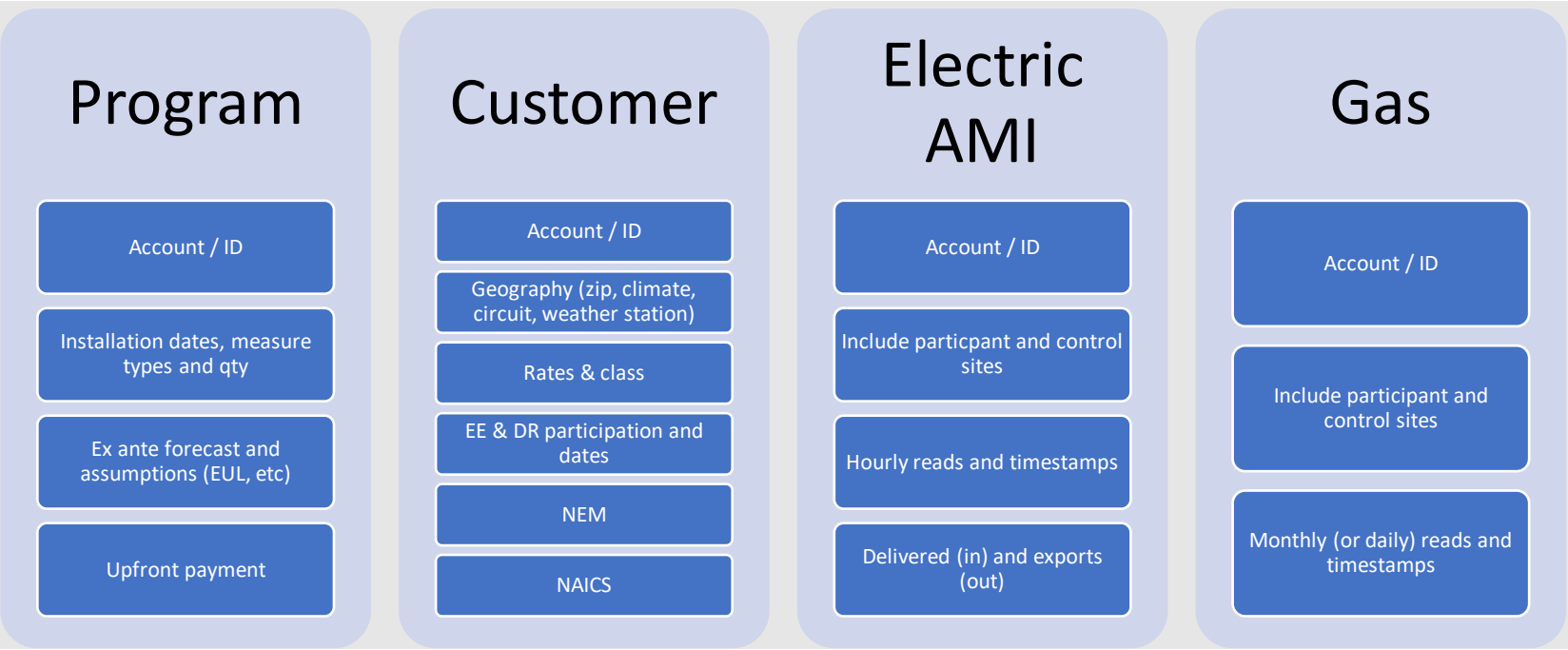
## 6. Reporting

The GRID Platform will maintain project, measure, savings, TSB, and incentive data. Data can be filtered and aggregated by project, Aggregator, or at the program level. Data can be viewed by SCE at any time. If requested, the GRID Platform can provide a data extract or upload data via a provided API into SCE's reporting system.

Project level data will be exported from GRID to SCE's reporting systems for both approval and reporting processes.

# 7. M&V Data Requirements

## a. Overview



## b. Detailed request

| Request | Detail | Purpose/notes |
|---|---|---|
| **1. Customer characteristic file for participants and sites selected to be part of the comparison groups** | For each account that completes a GRID project between January 1, 2025, and December 31, 2027:<br><br>a. Customer name -<br>b. SCE Customer ID -<br>c. SCE Account number<br>d. SCE Account status<br>e. SCE Premise ID<br>f. SCE Service point ID<br>g. Rates and effective dates of rates for 2025 – 2028<br>h. Annual max demand (non-residential)<br>i. Net metering status, date that NEM status became effective, installed capacity, and type of interconnected device (solar, batteries, etc.)<br>j. NAICS industry codes, if applicable<br>k. Service Address (Street number, street name, city, state, Zip Code)<br>l. Climate Zone<br>m. Weather Station<br>n. DR enrollment information (Program and enrollment date)<br>o. Any additional EE measures installed on site (savings estimate and installation date)<br>p. Any other relevant customer demographics | Customer characteristics will be used to:<br><br>▪ identify participants,<br>▪ design and maintain comparison groups<br>▪ produce results by segment |
| **2. Project Information** | a. Customer name<br>b. SCE Account number<br>c. SCE Premise ID<br>d. SCE Service point ID<br>e. SoCalGas IDs (e.g., account number, premise id, service point id), if the project has *ex ante* gas savings<br>f. Project number<br>g. Installation site address<br>h. Contact information (name, title, phone, email, mail, primary language) | |

| Request | Detail | Purpose/notes |
|---|---|---|
| | i. Number of employees (i.e. less than 26 employees)<br>j. Building type<br>k. Building vintage<br>l. Climate zone<br>m. Existing HVAC system type<br>n. Measure ID<br>o. Type of measure (lighting, HVAC, etc.)<br>p. Measure name<br>q. Key dates (project start, project completion, approval date)<br>r. Implementation contractor<br>s. EUL (by measure)<br>t. Measure quantity<br>u. Measure baseline description (Poor, Good, Excellent)<br>v. Deemed or estimated first year savings (by measure- annual kWhannual therms)<br>w. Payment information (payee name, tax status, W-9, etc.)<br>x. Calculations<br>y. Influence documentation (statement for Pop-NMEC and documentation per E-5115 for Site-NMEC)<br>z. Final invoice(s) (Manufacturer and model, equipment cost, labor cost)<br>aa. Photos of installed equipment<br>bb. Other items to comply with CPUC and PA directives<br><br>Note: Where appropriate, some data collection inputs will be populated with CEDARS default parameters for reporting purposes | |
| **3. Hourly interval electric data for participant and site selected to be part of the comparison groups** | a. Account numbers (account number, premise id, service point id, etc.)<br>b. Date<br>c. Hour/Interval<br>d. kW delivered<br>e. kW exported (if applicable)<br>f. QC code, if applicable | Interval data will be used to estimate energy and demand impacts |
| **4. Monthly interval gas data (or smaller intervals, if available) for participants with *ex ante* gas savings** | a. Account numbers (account number, premise id, service point id, etc.)<br>b. Date<br>c. therms delivered<br>d. QC code, if applicable | Interval data will be used to estimate energy and demand impacts |

| Request | Detail | Purpose/notes |
|---|---|---|
| **and site selected to be part of the comparison groups** | | |
| **5. Weather data for relevant stations from Jan 1, 2023, to Dec 31, 2028** | a. Station ID<br>b. Station Name<br>c. Date<br>d. Hour<br>e. Temperature (dry bulb)<br>f. Humidity | Weather data will be used to model energy use |
| **6. DR Event data Jan 1, 2023, to Dec 31, 2028, for all DR programs** | a. Program name<br>b. Event date<br>c. Event start<br>d. Event end<br>e. Dispatch group called | ▪ Please include all commercial programs/rates so we can account for dual enrollments |