San Diego Gas & Electric Grid-Responsive Incentive Design Private Institutions and Healthcare Program (GRID-PIH)

Implementation Plan

DRAFT-Version 1.0

April 2025

Portfolio Administrator:	San Diego Gas & Electric Company
Program Implementer:	Mendota Group
Program ID:	SDGE4171

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Program Overview

The Grid-Responsive Incentive Design Public Institutions and Healthcare Program (GRID-PIH) is available to specific San Diego Gas & Electric (SDG&E) commercial customer subsegments. The Program uses a market access approach that works with Aggregators to offer various services that best fit with what customers require to advance energy efficiency projects. GRID-PIH aligns incentives with SDG&E's grid needs using an incentive rate structure based on the Total System Benefit (TSB) realized by a customer project. Aggregators receive incentives for system benefits they deliver to SDG&E's grid, as assessed by the population-based Normalized Metered Energy Consumption (NMEC) measurement approach and supplemented by site-based NMEC when appropriate.

Program Budget and Savings

Table 1: Program Budget and Savings		
1	Program Name	Grid-Responsive Incentive Design Private Institutions and Healthcare Program (GRID-PIH)
2	Program ID number	SDGE4171
3	Program Implementer	Mendota Group, LLC
4	Portfolio Administrator	San Diego Gas & Electric
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	EE Budget	$4,378,930
	EE/Demand Response (DR) Integration Budget	$80,000
	Total Program Budget	$4,458,930
8	Program Budget by Year	2025 - $1,323,507 2026 - $1,527,740 2027 - $1,567,683* 2028 - $40,000* * Includes EE/DR annual budget.

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

Table 1: Program Budget and Savings		
9	Program Duration (Start Date - End Date)	February 14, 2025 – December 31, 2028 Implementation activities are expected to end by December 31, 2027. Program shutdown activities shall continue through, and be completed by, May 31, 2029, to allow for M&V activities and NMEC performance monitoring to conclude
10	Total System Benefit (TSB) (Total Program TSB and TSB by Program Year)	2025 - $1,758,982 2026 - $2,503,261 2027 - $2,503,167 Total - $6,765,411
11	CO_2 (Lifecycle, First Year, Net, Gross)	Lifecycle (Net)- 24,326 Tons (CO_2) Lifecycle (Gross) - 24,326 Tons (CO_2) First Year (Net) - 3,860 Tons (CO_2) First Year (Gross)- 3,860 Tons (CO_2)
12	KW (First Year, Net, Gross)	Net - 1,034 Gross - 1,034
13	kWh (Lifecycle, First Year, Net, Gross)	Lifecycle (Net) - 63,799,605 Lifecycle (Gross) - 63,799,605 First Year (Net) - 6,514,604 First Year (Gross) - 6,514,604
14	Therms (Lifecycle, First Year, Net, Gross)	Lifecycle (Net) 1,298,587 Lifecycle (Gross) - 1,298,587 First Year (Net) - 325,155 First Year (Gross) -325,155
15	Program Cost Effectiveness: Total Resource Cost (TRC): (Total TRC and TRC by Year)	2025 - 1.05 2026 - 1.11 2027 - 1.11 Total - 1.10
16	Program Cost Effectiveness: Program Administrator Cost (PAC): (Total PAC and PAC by Year)	2025 - 1.36 2026 - 1.69 2027 - 1.69 Total - 1.59
17	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
18	Program Type (i.e., Non-resource, Resource)	Resource

Table 1: Program Budget and Savings		
19	Delivery Type(s) (i.e., Upstream-Manufactured, Midstream-Distributor, Midstream-Retail, Downstream, Downstream - Direct Install,[2] Codes & Standards)[3]	Downstream
20	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 (MAP), Incentive, and Finance
21	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 NMEC - Site

Implementation Plan Narrative

1. Program Description

The Grid-Responsive Incentive Design Private Institutions and Healthcare Program (GRID-PIH) is a resource acquisition energy efficiency program that provides commercial customers in the Private Institutions and Healthcare subsectors technical assistance and opportunities to increase the efficiency of the buildings in which they work. To achieve the TSB, energy savings, and demand reduction targets, the GRID-PIH Program provides open access to qualified Aggregators to facilitate wider contractor and customer participation. It incorporates an incentive structure aligned with the value to SDG&E's grid and based on NMEC energy savings methodologies, thus expanding the EE measures available for installation. 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 contractual targets and associated numeric values used to quantify and track Program progress and success are shown below:

	2025	2026	2027	Total
TSB	$1,758,982.10	$2,503,261.41	$2,503,167.07	$6,765,410.58
Total Resource Cost (TRC)	1.05	1.11	1.11	1.10

The following Indicators are used to track Program progress and success:

[2] https://cedars.sound-data.com/deer-resources/deemed-measure-packages/guidance/
[3] Database for Energy Efficiency Resources (DEER) 2026 Delivery Types

Program Indicators of Success		
ID	**Category**	**Description**
1	**Total System Benefit (TSB):** Expressed in dollar terms of the energy, capacity & GHG benefits for program year.	Year-to-date, % achieved of TSB dollar value required under the Agreement split on an even pro rata basis. SDG&E will assess this KPI using the true TSB value from the CET that encompasses all measures installed-year-to-date.
2	**Compliance/ Program Performance** Reporting Accuracy	Average % variance between the forecasted figures and actual Program activity figures for the month (TSB and Expenditures). The quarterly score is the average of the individual monthly scores for the reporting period
3	**Marketing:** Campaign Efficiency	# of responses (phone, email and unique website visits) by potential Aggregators generated from a campaign divided by # of pieces sent or Aggregators reached (average of all campaigns in the reporting period)
4	**Customer Satisfaction:** Survey Scoring	Average score of customer satisfaction surveys administered year-to-date by Implementer (Assuming a 5-point scale where 5 is highly satisfied) If no surveys are completed, Implementer must provide SDG&E documentation demonstrating that surveys were administered to receive credit for this KPI. Survey to be performed semi- annually with the results of the most recent survey from the current program year used for each quarter.
5	**Customer Satisfaction:** Complaints Received	# of customers and Aggregators making a complaint received by SDG&E Year-to-Date related to Program divided by # of customers and Aggregators enrolled in Program Year-to-Date
6	**Compliance:** HTR/DAC /Underserved Penetration	Year-to-date, % of TSB savings from DAC or HTR or Underserved customers
7	**Compliance/ Program Performance:** Inspections	% of SDG&E inspections that pass year-to-date (If no inspections have been completed year-to-date, the assumed score will be a 4.) SDG&E will inspect a percentage of projects to ensure accuracy and validate savings.

~~The Primary Performance Metrics, as specified in Table 1 above, are:~~

3. Program Delivery and Customer Services

The Program is open to participation by San Diego Gas & Electric Company commercial customers in the Public Institutions and Healthcare subsegments. The Program will enrolls Aggregators who meet Program requirements and enter into a program participation agreement with the Implementer. This open market allows a wide range of solutions to identify energy efficiency projects that deliver measurable Total System Benefit.

Population-level NMEC rules will be used to verify savings, and a pay-for-performance payment structure based on those verified savings will be used to incentivize participation.

In addition, the Program will offer an installation payment based on the estimated incentive determined at project installation. If a site's usage pattern makes it ineligible for population-based NMEC measurement, the Aggregator may be offered a site-based NMEC alternative if the project meets all of the site-based NMEC eligibility criteria.

GRID-PIH 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 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, and 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 or capturing the full incentive benefits for project performance that exceeds estimates.

The Program design, based on the concept of aligning incentives with TSB, creates symmetry between contractor/customer incentives and the TSB each project produces. Incentives are directly tied to TSB and projects that produce more TSB receive higher incentives. This incentive design approach is consistent with the CPUC's Decision 23-06-055, Section 8.1 because it provides for uniform payment terms for Aggregators, incentive rates are based upon the TSB savings value, and the savings are measured using population-level NMEC methods.

The Program is open to participation by SDG&E's commercial private institutions and healthcare subsector customers. GRID-PIH will enroll any Aggregator who meets Program requirements and enters into a program participation agreement. Aggregators receive information through and upload information to the Program's online application. The custom-built application (GRID) 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 projects in Disadvantaged Communities (DACs).

The Program will primarily use Aggregators to perform outreach to customers and contractors. Customer outreach is not limited by one company's staffing levels or customer relationships. The Aggregator-based outreach strategy will recruit more Aggregators (including specific customers who may wish to self-aggregate). This recruitment approach expands the EE contractor base and increases competition by providing customers with additional choices in service providers, types of equipment, and project services. Aggregators will tailor offerings based on their expertise and customer needs. Although multiple Aggregators may contact the same customer, this can benefit customers through diversified offerings and lower implementation costs. The potential for multiple Aggregators to contact the same customer does not typically create customer confusion but Program staff will actively monitor this potential concern and address any issues that may arise.

In addition to the Aggregator network, Mendota Group will provide both active and passive program marketing:

- GRID-PIH will create and provide program documents (Program Manual, Implementation Plan, M&V Plan), marketing materials, and individual websites for the general public and contractors.
- Mendota Group will actively recruit Aggregators and customers through emails and phone calls to members of organizations that interact with sector customers.
- Program staff will actively engage with customers and support Aggregators to explain how the Program works and the benefits of participation.
- Staff will identify conferences and other meetings to actively recruit contractors, especially those who work with private institution and healthcare facilities. Examples include the BOMA San Diego Commercial Properties Expo and the American Association of Engineers West Energy Conference and Expo, among other events.

The Program plans to partner to promote with organizations such as the San Diego Chapter of the California Society for Healthcare Engineering, Inc. (CSHE), the San Diego Consortium of Independent and Private Schools (which works with private K-12 schools in San Diego), and the Association of Independent California Colleges and Universities (which has several schools in the San Diego area) to promote the Program. The Program will focus attention on Hard-to-Reach (HTR) customer participation by offering higher incentive rates for HTR-qualifying projects. It will also deliver a minimum of 5% of all projects to HTR customers annually. The Program will also emphasize installing projects for customers within identified Disadvantaged Communities by offering higher incentive rates. The Program will deliver a minimum of 10% of all projects within DAC areas annually.

Finally, the Program commits to working with "Underserved" customers who are identified within D.23-06-055 as Equity segment customers who are part of an "underserved business group" defined by Government Code Section 12100.63(h)(2). Mendota Group will work with SDG&E's with Small Business Saver Equity segment program to facilitate opportunities for that Program's target customers to participate in the GRID-PIH Program.

Although Aggregators are expected to offer technical and financial assistance (e.g. audits, project definition, installer selection, financing), GRID-PIH helps address customer capital concerns and enable Program participation by offering financing mechanisms, including SDG&E's On-Bill Financing and California Alternative Energy and Advanced Transportation Financing Authority's (CAEATFA) GoGreen Financing options.

The Program will create coordination plans to maximize mutually beneficial opportunities with SDG&E's Small Business Saver Equity Segment Program and the Non-Residential Behavioral Market Support Program implementers and overlapping Program Administrators San Diego Regional Energy Network and Southern California Gas Company. These coordination plans will detail ways that Programs can work with customers and trade allies to ensure they receive maximum benefit while minimizing overlap.

The Program ensures that customers do not receive incentives for the same measure through any other energy efficiency program, including programs offered by other utilities, the California Public Utilities Commission, or any other entity. The Program will only offer incentives for cost-effective measures that do not compete with other statewide programs.

To the extent that measures overlap with statewide measures, Mendota Group will work with SDG&E to establish a system that ensures savings from these measures are only counted once and that customers do not receive incentives from both GRID-PIH and the Statewide Program for the same savings claim. Program staff will continuously monitor measures offered and proposed to be offered by Statewide programs to be aware of potential overlap and will adjust offerings as necessary throughout the implementation period. In the event a measure overlaps, the Statewide Program's measure takes precedence.

4. Program Design and Best Practices

The Program incorporates several strategies and tactics to address market and operational barriers for the targeted customer groups. In addition, the Program approach includes lessons learned and best practices from previous programs, and utilizes software tools that significantly enhance the Program's effectiveness. The table below lists the strategies employed by the Program and explains how these strategies mitigate perceived market and operational barriers to its success.

General Barriers and Mitigation Strategies	
Market and Operational Barriers	**Strategies to Overcome Barriers**
Limited Incentives and Project Approval Risks: Traditional incentives are insufficient to reduce project costs to the levels required for customer approval.	NMEC enables claiming all metered savings and expedites the review process.
Poor Workforce Participation: Large implementers dominate EE programs, and the general contractor workforce does not participate.	The combination of the MAP design, the GRID Application, and the Aggregator support provides higher incentives and reduced effort to participate.
Large Scale Needed: Most 3P EE programs focus only on large projects, yet many of SDG&E's HTR customers are SMBs. This might be relevant to small facilities such as dentist offices.	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 the time-based value of energy.	TSB-Based Incentives: Aligns customer incentives with grid needs, to include location and timing (peak, super peak, off peak)
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 documents, 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 cash flow issues. Payment on full measured savings results in higher incentives. The Program's design also leverages other sources, including financing.
Cost-effectiveness Requirements: Identified projects are not cost-effective based on the estimated project-level TRC ratio.	The Program provides a tiered incentive structure based on cost-effectiveness, which pays higher incentives for projects that meet and exceed cost-effectiveness thresholds

General Barriers and Mitigation Strategies	
Market and Operational Barriers	**Strategies to Overcome Barriers**
DAC, HTR and Underserved: Serving these customers is more challenging and many programs do not adequately serve them.	The Program provides a DAC/HTR/Underserved bonus to encourage the installation of projects that qualify as DAC, HTR, or Underserved.[4]

In addition to the above general EE program barriers, the following two tables provide the Program's approach to overcoming barriers specific to the Private Institutions and Healthcare markets.

Private Institutions	
Market Barriers	**Strategies to Overcome Barriers**
Tight Capital Budgets - Schools are budget constrained, particularly for capital projects. Projects must have quick paybacks, improve facility conditions, and benefit students.	Robust program incentives and flexible equipment opportunities can reduce the payback of EE projects (especially relevant for capital projects) and thus help meet short-term objectives.
Short Term Focus - Schools frequently prioritize short-term needs (immediate academic needs) over LT investments.	
Decision-Making Complexities - Private schools need to involve multiple stakeholders, including boards of directors, into decision-making, particularly on large projects.	The Program leverages Aggregators and community partners (AICCU, CAISCA, and SDEC) to help schools navigate project complexities and articulate the Program benefits, thereby reducing resistance. The Program's opportunities improve the learning environment.

Healthcare Facilities	
Market Barriers	**Strategies to Overcome Barriers**
Deal with competing priorities - Healthcare facilities face competing priorities (primary mission is treating and protecting patients) that all seek funding from operating and capital budgets.	GRID-PIH provides opportunities to combine multiple improvements in a single project, extending benefits to the entire facility.
High Hurdle Rates - Facility operators have high minimum rates of return on energy investments because the capital can be used for other investments.	The Program's flexibility in types of equipment that can be installed and high incentive rates allow projects to proceed due to attractive returns on investment.

[4] Each group has a specific definition according to the California Public Utilities Commission. "Underserved" customers are identified in CPUC Decision 23-06-055 as Equity segment customers who are part of an "underserved business group" defined by Government Code Section 12100.63(h)(2).

Healthcare Facilities	
Market Barriers	**Strategies to Overcome Barriers**
Operational Challenges - Healthcare facilities must operate continuously and, thus, face limitations on which projects are feasible to implement.	Aggregators experienced in working with healthcare facilities can design and propose projects that meet customer expectations and operational challenges. The Program's opportunities improve patient care.

The Program incorporates several lessons learned from previous market access program implementations. Among these learnings were that:

- Aggregators benefit from an installation payment to provide initial project financing and help project developers close projects;
- Aggregators need opportunities to test different configurations of projects (and associated measures) to understand options that will deliver the greatest system benefit and, thus, higher incentives - these options are provided to Aggregators through the GRID Application (the Program's primary software tool that enhances program effectiveness);
- project developers need active assistance in navigating the Program's parameters and ensuring that project's meet the Program's requirements;
- leveraging contractors as Aggregators enhances the marketing effectiveness by including multiple entities in the outreach effort and saving direct Program marketing expenses which can be used for other Program services.
- the primarily contractor-based outreach strategy recruits more contractors (including specific customers who may wish to self-aggregate), leads to broader outreach and engages more customers in the target segments - the approach substantially expands the EE contractor base and increases competition by providing customers with additional choices in service providers, types of equipment, and project services;
- leveraging contractor knowledge and customer connections enables the Program to retain funds that would otherwise be spent on marketing and outreach to fund more customer incentives and, thus, projects, and

providing transparency in terms of the way savings are determined and metered savings are normalized is also key to increasing Aggregator confidence in the Program. The Program employs best practices for project reviews, namely using a combination of automated and manual reviews for modeling and comparison group matching to ensure that each project has a reliable model (per the NMEC Rulebook) and a well-matched comparison group before proceeding with NMEC. Thisapproach aligns with SDG&E and CPUC expectations, emphasizing full cooperation, documentation transparency, and support during review phases.

The Program eligibility criteria require a minimum of 5% savings for population-based NMEC (and a target of 10%) for each project. The project must also meet the NMEC baseline model fit criteria, estimated using the Coefficient of the Variation of the Root Mean Square Error (CV(RMSE)) and the fractional savings uncertainty (FSU), which for Population NMEC, reflects the variation of annual savings aggregated across sites. Projects with smaller ex-ante savings must also have less variability in energy consumption to pass this test, indicating that this

magnitude of energy savings will be detectible with a meter-based approach.

The Program also maintains a series of comparison groups, one for each combination of climate zone, solar status, sector, quantiles of energy consumption, and industry group (2-digit NAICS for commercial). For example, a "Hospital" site in the coastal climate zone group may include the inland Hospital profile and related industries within the same climate zone group.

During the project intake process, staff compares the pool of participants proposed in a project to the relevant comparison group. Mendota Group measures the similarity of the two groups in the baseline using the Euclidean distance. If the two groups significantly differ in their energy use, the next step would be to develop a synthetic comparison, weighting non-participants to create a composite group with similar baseline energy consumption to the participants. If the synthetic comparison also fails to match the participants (which is unlikely, unless the participants are all outliers and systematically different from the comparison sites), then the project would be put on hold until additional non-participant customers with more comparable energy consumption could be obtained from the utility.

5. Innovation

The Program incorporates several innovations to increase uptake of cost-effective energy efficiency measure installation and program participation. These include:

- The "open to all" market access program approach attracts a wide variety of contractors/Aggregators and is not limited to one implementer or its subcontractors.
- Leveraging the contractor network for marketing and outreach, to customers, greatly expands the Program's reach while reducing program administration costs.
- Mendota Group's GRID Application, a custom-built online software platform, supports and promotes streamlined project estimations, application submissions, review processes, and tracking and reporting.
- The NMEC approach enables installation of measures and interventions that are not constrained by a limited measure catalog and allows installers to try new measures and/or combine measures to increase savings.
- The streamlined pathway (removing the need for custom calculations and the reviews that are required of them) Aggregators to participate in energy efficiency portfolios and deliver projects, especially enabling smaller Aggregators to participate more easily.
- Minimizes ratepayer risk because Aggregators are only paid based on measured savings.
- Incentives are based on TSB, which clearly communicates to contractors which types of projects and project configurations contribute the most benefit to SDG&E's electric and gas systems.

6. Pilots

Not applicable. The Program does not have any pilot elements.

7. Workforce Education and Training[5] *(Applicable to WE&T programs only.)*

Not applicable. The Program is not a Workforce, Education and Training Program.

8. Workforce Standards[6]

The Program supports improved access to job and career opportunities in the energy efficiency

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

industries through a defined Workforce Strategy. The Workforce Strategy includes:

- promoting workforce developing through a streamlined participation process. Implementer will encourage Aggregators to employ workers trained through utility EE programs such as Energize Careers;
- requiring, for incentives that exceed $2,000 (lighting controls) and $3,000 (HVAC), that installation technicians meet minimum requirements per CPUC D. 18-10-008, and working with SDG&E's third-party Learning Energy and Resource Nexus (LEARN) workforce and education program. Additional requirements related to installation of HVAC and Advanced Lighting Control measures follow.

a. HVAC Measures: Participating Aggregators must adhere to all requirements for workforce standards established by the Commission. Specifically, for all HVAC projects seeking an incentive of $3,000 or more, Mendota Group will ensure that each worker or technician involved in the project meets at least one of the following criteria:

i. Completed an accredited HVAC apprenticeship.

ii. Is enrolled in an accredited HVAC apprenticeship.

iii. Completed at least five years of work experience at the journey level according to the Department of Industrial Relations definition, Title 8, Section 205, of the California Code of Regulations, passed a practical and written HVAC system installation competency test, and received credentialed training specific to the installation of the technology being installed.

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

Program participants will affirm these qualifications and licensures as part of the program participation agreement.

b. Advanced Lighting Control Measures: Participating Aggregators must adhere to all requirements for workforce standards established by the CPUC. Specifically, for all projects that receive an incentive of $2,000 or more for Advanced Lighting Control measures Mendota Group will ensure that all workers or technicians involved in the project are certified by the California Advanced Lighting Controls Training Program (CALCTP). Program participants will affirm qualifications to perform the proposed work as part of the program participation agreement process.

9. Disadvantaged Worker Plan[7]

The Program defines "Disadvantaged Worker" (DAW) as a worker who meets at least one of the following criteria: lives in a household where total income is below 50 percent of Area Median Income; is a recipient of public assistance; lacks a high school diploma or GED; has previous history of incarceration lasting one year or more following a conviction under the criminal justice system; is a custodial single parent; is chronically unemployed; has been aged out or emancipated from the foster care system; has limited English proficiency; or lives in a high unemployment ZIP code that is in the top 25 percent of only the unemployment indicator of the CalEnviroScreen Tool.

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

The Program will encourage Aggregators to implement projects that can demonstrate they are using Disadvantaged Workers to install projects and work with SDG&E's third-party Learning Energy and Resource Nexus (LEARN) workforce and education program. GRID-PIH will work with the LEARN program implementer to provide resources for contractors and help Disadvantaged Workers become certified to participate in energy efficiency projects. The Program will track qualifying projects through the GRID Application with flags related to projects that utilize DAWs. It should be noted that, for purposes of reporting on Disadvantaged Workers, Mendota Group's collection of personal information from individual workers beyond zip code will be: 1) strictly voluntary for the worker, 2) recorded in an anonymous manner, and 3) not be used as a reason to include or exclude particular workers from assignment to any projects funded by the Program.

Collected information will provided to SDG&E as part of quarterly reports.

10. Market Access Programs

GRID-PIH is designed using the Market Access approach. The Program is open to trade professionals who agree to comply with program rules. This approach allows existing third-party EE contractors, existing MAP Aggregators, and new trade professionals who can offer various services related to energy efficiency to participate in the Program.

In an effort to limit customer confusion and avoid direct competition and duplication of program offerings, SDG&E has segmented its portfolio to provide a single point of entry for EE program participants,. To ensure there is no double dipping or double counting, with each application to the Program, Mendota Group staff will assess whether the proposed measures are part of a Statewide program and whether the project is participating in another PA local/regional program prior to installation. The following Statewide programs have the potential to overlap: Statewide HVAC, Plug Load and Appliance, Midstream Water Heating, and Food Service programs. GRID-PIH 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).

Regional programs of interest include SDG&E's Small Business Saver and Non-Residential Behavioral programs and SDREN's Market Access Program . In cases where other programs or opportunities may overlap or conflict, the Program will coordinate with SDG&E staff.

11. Additional information

No additional information.

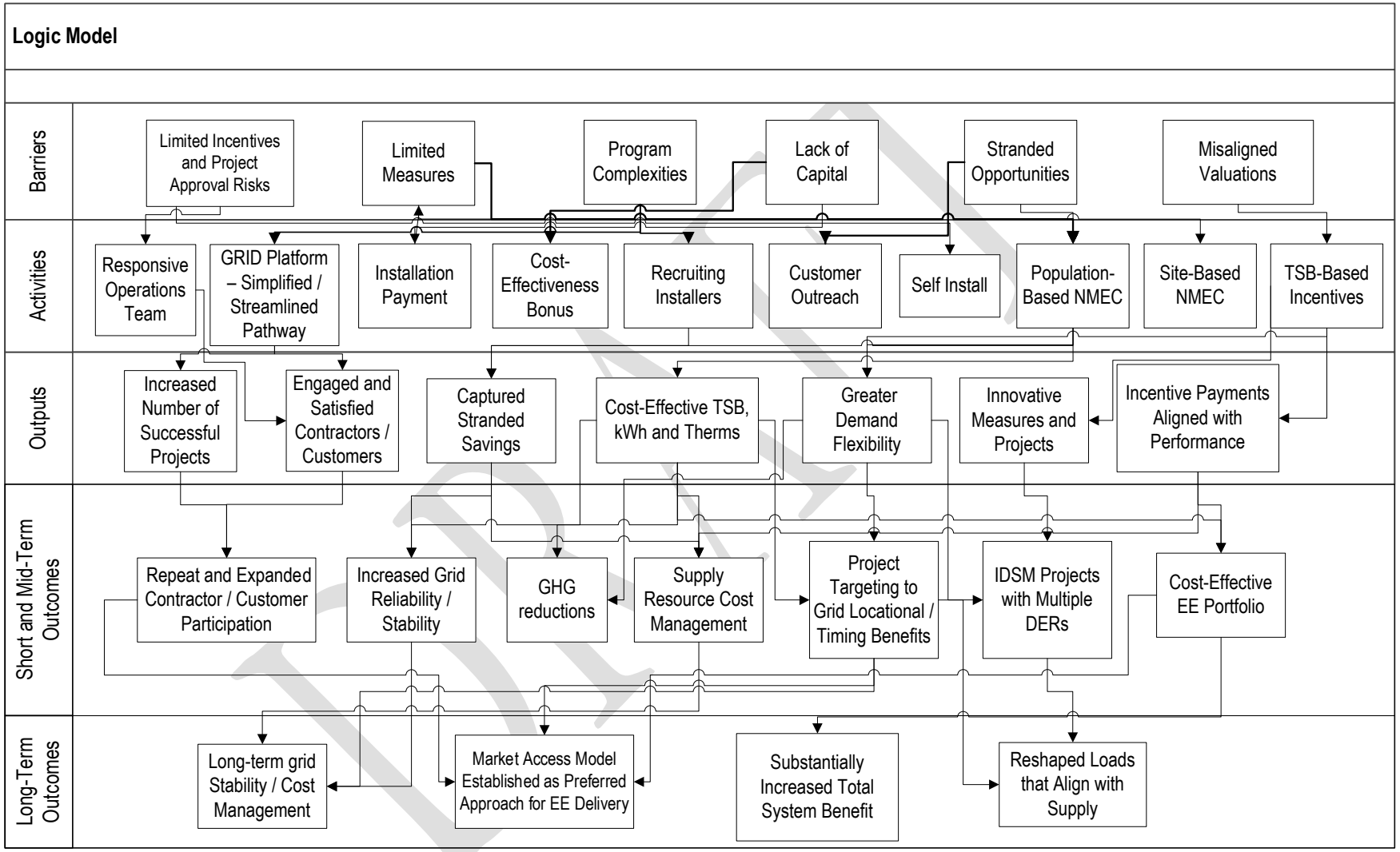
Supporting Documents

Attach the following documents (in PDF format):

1. Program Manuals and Program Rules

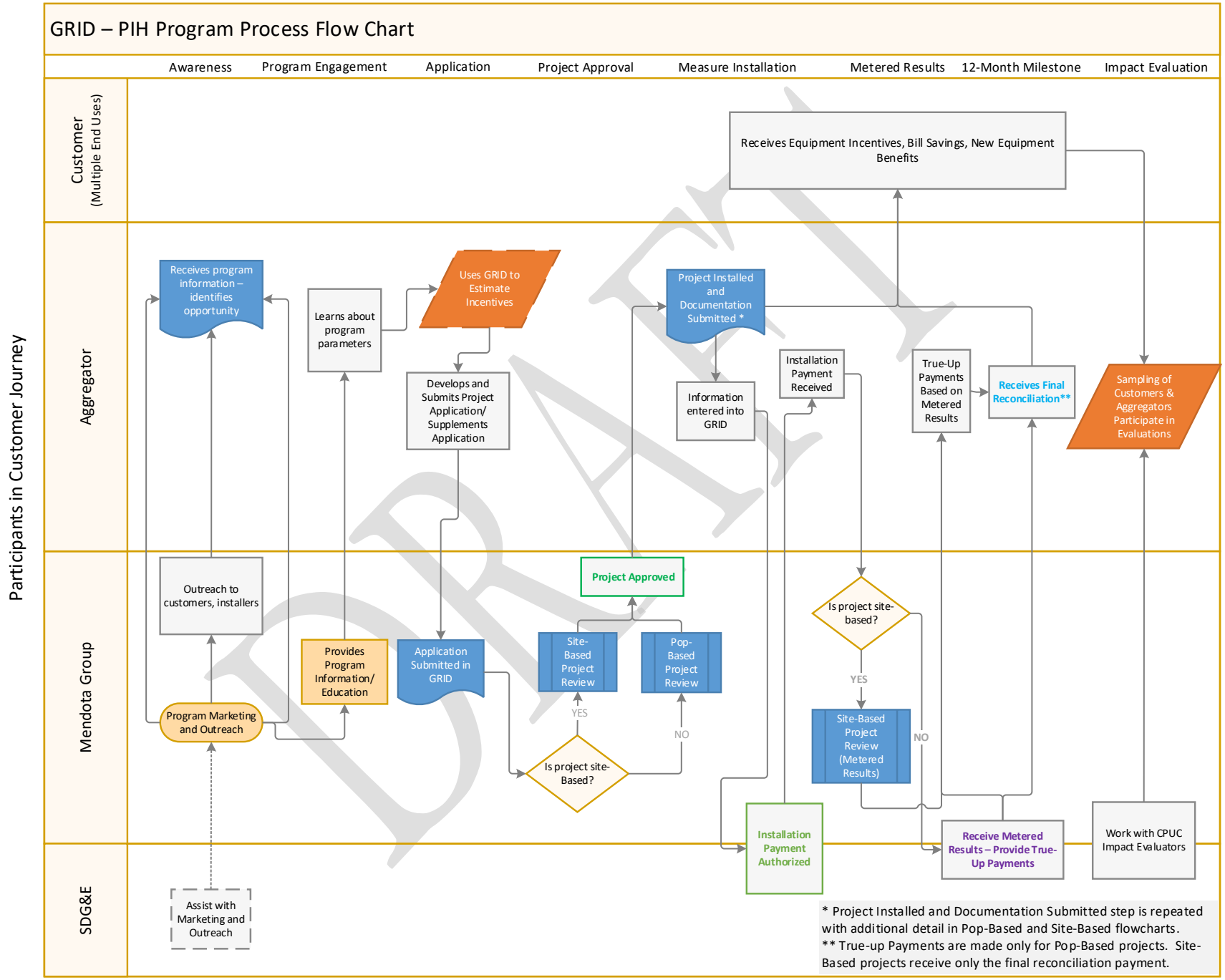
The Program Manual is attached as part of this Implementation Plan filing.

2. Program Theory and Program Logic Model:[8]



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

3. Process Flow Chart:

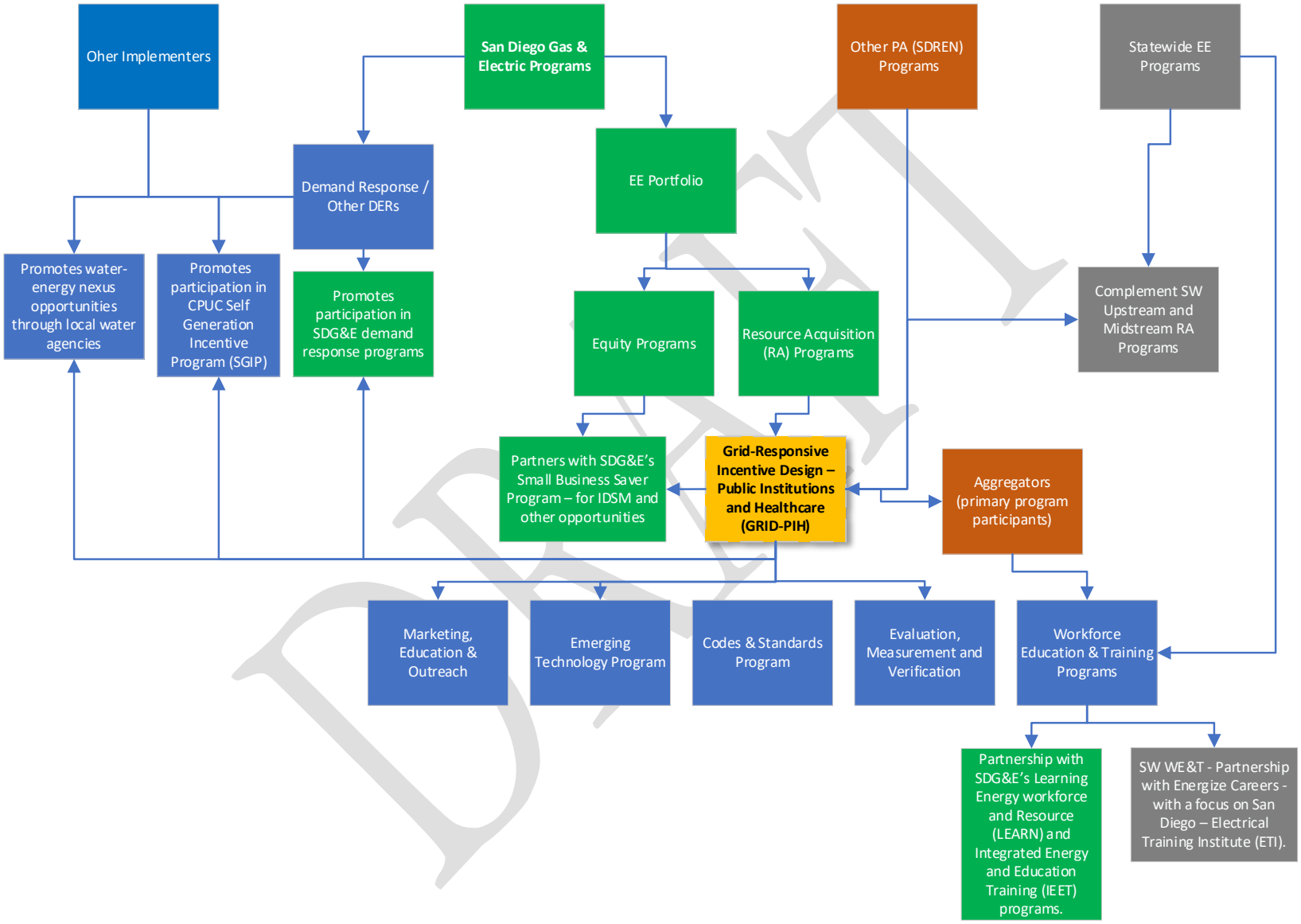


4. Measures and Incentives:

The GRID-PIH Program utilizes a population-based Normalized Metered Energy Consumption (NMEC) measurement approach and is supplemented by site-based NMEC, as appropriate. The table below lists the measures expected to provide the majority of Program savings and the anticipated percent of TSB achieved for each.

Use Category	Percentage of TSB
Lighting	63%
HVAC	35%
Refrigeration and Service and Domestic Hot Water	2%

5. Diagram of Program:



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

   Not Applicable. The GRID-PIH Program is solely utilizing NMEC methods. See Item 7.

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

   M&V Plan attached.

8. **Multi-DER IDSM Pilots only:[9].**

   Not Applicable.

9. **SEM Programs only:**

   Not Applicable.

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

Mendota Group
The Power of Bright Ideas

San Diego Gas & Electric Grid-Responsive Incentive Design Private Institutions and Healthcare Program (GRID-PIH)

Program Manual

DRAFT-Version 1.0

April 2025

Table of Contents

1.0 Introduction

The Grid-Responsive Incentive Design Private Institutions and Healthcare Program (GRID-PIH) is designed to cost-effectively maximize Total System Benefit (TSB) using a market access approach. The program uses population-based NMEC (pop-NMEC) to determine savings, with site-based NMEC utilized 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 to identify projects that save energy and reduce peak demand. GRID-PIH streamlines the participation process, provides customized financial incentives that are 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 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:

- Offering open access to qualified Aggregators to facilitate wider contractor and customer participation
- Providing incentives aligned with the value to the grid
- Providing technical and financial assistance to customers to achieve energy savings
- Utilizing NMEC methodologies to pay Aggregators based on delivered savings, thus expanding the measures available for implementation
- Streamlining the participation process through a primarily pop-NMEC savings methodology, a robust Aggregator-facing tool (the GRID application), and responsive customer service
- Allowing flexibility by including a site-based NMEC option if a pop-NMEC is not 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 for inclusion 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.

Additionally, projects that receive incentives through other Program Administrators' Regional or statewide energy efficiency programs can participate in GRID-PIH. Such projects require documentation (e.g., install date, measure type) to ensure that savings are not double-counted. GRID-PIH will remove savings claimed by other programs from calculations of its savings claims and only pay for measured savings that exceed those claimed by the other program.

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

2.2 Customer eligibility

GRID-PIH targets buildings in the Commercial sector within the Private Institutions and Healthcare subsectors. The following customer requirements apply:

- Must be an active SDG&E customer and pay the Public Purpose Program (PPP) surcharge on the electric and/or gas meter in which the energy efficient equipment is being proposed
- Must have a service account (i.e., no master metered properties unless the entire building is being treated)
- Must be within the following NAICS codes – 61XXX, 621XXX, 622XXX, 623XXX, or 813XXX.
- Must agree to provide all required documentation and access to the facility for project-related audits, inspection or data gathering by SDG&E and the CPUC
- Site may be either bundled or unbundled (Direct Access customers are eligible if they meet all other eligibility requirements)

Non-residential customer types that are ineligible include:

- Public, Industrial, and Agricultural customers
- Commercial retail, office, and wholesale customers
- Commercial lodging customers (hotels/motels)
- Commercial groceries, restaurants, and food storage customers

2.3 Project Eligibility

Project and site eligibility requirements include:

- Passing an initial screening to ensure reasonable baseline model fit and to verify data sufficiency in accordance with CalTRACK compliance requirements
    - Predictable load, with a CV(RMSE) < 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
    - The customer site has a peak electricity demand below 1 MW
- Must have at least 12 consecutive months of AMI meter data (prior to the project start date)
- Must have additional AMI meter data going back a full 12 months prior to the first installation if the site participated in any other CPUC ratepayer-funded EE program in the 12 months prior to the project start date

- A target 10% savings as compared to total load (with cautions to Aggregators who have projects below 10% and typically rejecting projects with projected savings lower than 5%).
- Sites participating in other active CCA or REN Resource Acquisition Programs are ineligible unless project and meter data can be provided, which is sufficient to determine project savings
- Generally, sites that installed solar, storage, and EV charging (or made any changes to system capacity) within the prior 12-month period, or who intend to make any changes during the 12-month M&V period, are not eligible for incentives (an exception will be made if hourly interval monitoring data is available which enables the NMEC contractor to remove solar, storage, and EV charging from the net consumption recorded at the meter)
- Must not be enrolled in a wholesale Demand Response (DR) program under Rule 32 (GRID-PIH 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 later found to not meet eligibility criteria, then attempts will be made to change the savings measurement approach to another platform (e.g., site-level NMEC), or 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 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 workforce standards, laws, and permitting requirements.

3.2 Roles and Responsibilities

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

- Performing direct customer outreach and sales
- Developing and maintaining a Customer Participation Agreement (e.g., Incentive, Direct Install, Letter of Authorization, etc.) with the customer
- Following all SDG&E customer privacy requirements
- Ensuring that customers agree to provide all required documentation and access to the facility for project-related audits, inspection or data gathering by SDG&E or by the CPUC
- Receiving incentive payments and determining customer incentives, if any
- Monitoring project performance
- Complying with M&V Plan requirements

- Resolving customer complaints
- Managing installation, warranties, and product guarantees, if any.

4.0 Additional Services

The program will offer the following additional tools and services:

- The GRID Platform creates a streamlined and efficient program process for Aggregators. Specific features of this online tool include the ability to test various project scenarios to see how different measure mixes will impact estimated incentives, a standardized way to submit projects for approval, built-in verification steps to ensure submittals are complete, a document upload feature, and ongoing tracking of savings performance and incentives at both the project and Aggregator portfolio level.
- Referrals to financing assistance (to include utility or non-utility project financing and state and federal tax incentives)
- Demand Response integration, including sign-up bonuses for customers that enroll in a qualified Demand Response program after the GRID-PIH monitoring period has been completed, and promotion of integrated demand side management (IDSM) opportunities (such as SDG&E's Capacity Bidding and Emergency Load Reduction programs, Self-Generation Incentive Program [SGIP] battery storage, Transportation Electrification (TE) opportunities [including vehicle-to-grid], and Water-Energy opportunities through local water agencies).
- DAC/HTR/Underserved bonuses to promote opportunities in DACs and encourage participation from HTR and Underserved customers
- Coordination with other regional programs (SDG&E's Small Business Saver program and Non-Residential Behavioral program as well as San Diego Regional Energy Network's (SDREN) SMB Energy Coach, Market Assess, and Efficient Refrigeration programs)
- Customized outreach and technical assistance by Aggregators to identify measures which help customers achieve summer peak and net peak reductions
- Partnership with SDG&E's third-party Learning Energy workforce and Resource (LEARN) and Integrated Energy and Education Training (IEET) programs to promote workforce development

5.0 Audits

Audits are not an element of the program except in cases where an Aggregator may use them to identify potential measures. No audit report is required as part of the program.

6.0 Program Quality Assurance Provisions

The program includes a Quality Assurance Plan (QAP) that describes the methods and processes by which the Mendota Group ensures that the GRID-PIH program produces high-quality outputs, minimizes errors, maintains efficiencies, incorporates continuous improvement, and satisfies

participants. Each member of the program's staff is considered part of the Quality Assurance Team (QA Team).

The Implementer's adherence to proven quality standards and established quality assurance (QA) methods drive successful programs and projects. The QAP ensures that GRID-PIH:

- uses well-defined, thoroughly reviewed, and repeatable processes;
- produces reliable, predictable, and persistent savings, and
- leverages proven measurement and verification (M&V) techniques.

The QA Plan describes the roles, responsibilities, and the policies and procedures that ensure consistency and quality throughout projects. These objectives enable the program team to achieve high-quality, measurable results. The goals and objectives for the QA plan are to:

- *Produce Predictable Results*: The QA plan helps ensure that the program produces deliverables and services in an efficient, effective, reliable, and predictable manner and that the program produces consistent results that meet or exceed contractual requirements.
- *Minimize Errors*: The QA plan prevents the introduction of errors into deliverables and services. Any identified errors undergo analysis and subsequent action to both correct the error and establish protocols to prevent a repeat. This aspect of the QA plan includes the structured approach to pursuing continuous improvement in all aspects of the program.
- *Document Project Information*: The QA plan establishes a structured approach for defining, recording, and storing documentation related to requirements, approvals, reviews, tests, decisions, actions, events, and identified problems.
- *Ensure High Participant Satisfaction*: The QA plan ensures that participants receive the best possible deliverables and services. The program conducts participant satisfaction surveys to regularly assess the market's perception of the program, provide early identification of trending issues or problems, and receive feedback that can inform continuous improvement efforts. Surveys are web-based or conducted by email or telephone. Survey results are reported quarterly as a program Key Performance Indicator.
- *Continuously Improve the Program*: Information and data collected throughout the program's implementation serve as feedback loops for ongoing efforts to improve program processes.

Consistency and transparency are critical for programs and projects to achieve their objectives. A key element of the program that facilitates quality assurance is the customized GRID software platform that participants use to estimate project incentives, submit projects, upload project documentation, track project results, and close out projects. The GRID application is also a critically important tool the QA Team uses for quality control and quality assurance. Each proposed project follows a prescribed process, with automated and manual checks at each project stage. GRID stores project detail and supporting documentation from each stage, providing process transparency for participants and administrators (Mendota Group team and SDG&E staff), and facilitating project or

program audits as necessary. GRID calculations are validated by program staff using independent calculations and are available for SDG&E review.

Specifically, QA procedures for site-based projects will differ from pop-NMEC 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.

Further 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:

- Aggregators self-screen customers for initial eligibility by entering information into the GRID platform's Customer Verification Tool (CVT), which assesses eligibility by cross-checking entered customer information against eligible customer lists provided by SDG&E. For each application, Mendota Group staff confirm initial eligibility and then proceed to the secondary eligibility check, which is a more in-depth check of customer and project eligibility. Following the secondary eligibility check, project data is uploaded to SDG&E's system of record for review.
- Mendota Group then conducts a secondary eligibility check to confirm the following -
    - The customer pays the Public Purpose Program (PPP) surcharge on the electric and/or gas meter in which the energy-efficient equipment is being proposed, either verified by SDG&E or by using the customer's utility bill.
    - The customer has their own service account on a commercial rate (i.e., no master-metered properties unless the entire property is being treated).
    - A minimum of 12 months of pre-treatment (prior to the project) AMI meter data for electric and/or monthly meter data for gas is available.
    - If the site has participated in any other SDG&E-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 other project's installation will need to be provided, if available. Sites participating in a statewide energy efficiency program administered by another IOU, or sites participating in a Community Choice Aggregator (CCA) or Regional Energy Network (REN) program, 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 other project's installation.
    - The proposed measures are not enrolled in a statewide program, including the TECH program and CalMTA pilots. If so, Mendota Group staff either reject the measure or reduces the savings and incentives by the statewide program's claimed savings and incentives so there is no double-counting or double-dipping.
    - The project is flagged within the GRID platform for program follow-up with the aggregator if potential exists for the customer to benefit from IDSM opportunities, including limited EE-DR integration opportunities. An eligibility check for bonus incentives due to cost-effectiveness and/or the customer's HTR/DAC/Underserved status has been performed.
- Based on the submitted data and historic variability of the sites load, Mendota Group determines 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 the GRID Platform, Mendota Group creates a Program Verification Checklist for SDG&E approval of each project. Aggregator information provided includes the aggregator's customer agreement, a signed customer statement (acknowledging influence, granting permission for future EM&V inspections, and authorizing data sharing), calculations supporting the claimed savings values, project bids or

quotations to support the project cost estimate, measure description(s), and confirmation that appropriate permits were pulled. Mendota Group staff then reviews all submitted information and completes the Project Approval QA Checklist, which includes the following checks:

- All required documents are submitted and customer statement is signed.
- Estimated installation date meets program requirements.
- Measure description/detail is complete (sufficient to verify EUL).
- Entered savings in the GRID platform match descriptions and provided backup documentation.
- Backup documentation includes assumptions used to estimate project savings.
- Project savings are appropriate given the measure description.
- Selected load curve and selected measure type are appropriate.

- Mendota Group works with Aggregators to fully address any deficiencies in documentation until the project receives SDG&E approval.
- Project installation can only occur after SDG&E's approval of the Population-Based NMEC Program Verification Checklist.
- After project installation, the aggregator returns to the GRID platform, verifies the project scope (including inputting any changes to installed measures or project costs), enters the project completion date, and uploads all required backup documentation, which, at a minimum, includes invoices, specification sheets, and photos.
- Mendota Group staff also review submitted information and performs the following checks:
  - All required documents are submitted
  - Invoice documentation is complete and costs are reasonable
  - Details listed on invoices (e.g. project site address, measure quantities and
  - descriptions) match entries in the GRID platform
  - Calculation documentation is provided for projects with changes to installed measures (a review as described in Project Approval section above is performed).
- From the project data submitted in the GRID Platform, Mendota Group creates a Post-Installation Package that represents the actual project installed for SDG&E approval. Mendota Group works with Aggregator to fully address any deficiencies identified by SDG&E.
- If the project passes the review, Mendota Group approves the installation and the project becomes Active. At this time, the contractor (or customer, if participating directly) receives an Installation Payment based on a portion of the expected total incentive. No further incentive payments are made until the contractor's total incentive payments earned exceed the total of installation payments received. Project data from this stage is uploaded to SDG&E's system of record. EECP.
- Mendota Group reviews the project data entered into the GRID Platform

- Mendota Group reports actual measured savings for each project as part of each applicable Population NMEC Semi-Annual Report for SDG&E review and approval. Mendota Group works to revise any calculations to fully address any deficiencies identified by SDG&E.

Site-Based NMEC QA Procedures

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

- Aggregators self-screen customers for initial eligibility by entering information into the GRID platform's Customer Verification Tool (CVT), which assesses eligibility by cross-checking entered customer information against eligible customer lists provided by SDG&E. For each application, Mendota Group staff confirm initial eligibility and then proceed to the secondary eligibility check, which is a more in-depth check of customer and project eligibility. Following the secondary eligibility check, project data is uploaded to SDG&E's system of record for review.
- Mendota Group then conducts a secondary eligibility check to confirm the following -
    - The customer pays the Public Purpose Program (PPP) surcharge on the electric and/or gas meter in which the energy-efficient equipment is being proposed, either verified by SDG&E or by using the customer's utility bill.
    - The customer has their own service account on a commercial rate (i.e., no master-metered properties unless the entire property is being treated).
    - A minimum of 12 months of pre-treatment (prior to the project) AMI meter data for electric and/or monthly meter data for gas is available.
    - If the site has participated in any other SDG&E-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 other project's installation will need to be provided, if available. Sites participating in a statewide energy efficiency program administered by another IOU, or sites participating in a Community Choice Aggregator (CCA) or Regional Energy Network (REN) program, 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 other project's installation.
    - The proposed measures are not enrolled in a statewide program, including the TECH program and CalMTA pilots. If so, Mendota Group staff either reject the measure or reduces the savings and incentives by the statewide program's claimed savings and incentives so there is no double-counting or double-dipping.
    - The project is flagged within the GRID platform for program follow-up with the aggregator if potential exists for the customer to benefit from IDSM opportunities, including limited EE-DR integration opportunities. An eligibility check for bonus incentives due to cost-effectiveness and/or the customer's HTR/DAC/Underserved status has been performed.
- Mendota Group reviews the project data entered into the GRID Platform and works with the Aggregator to clarify data entries or remedy documentation deficiencies.
- Mendota Group works with Aggregator to create an Early Screening Document that describes the planned measures and a Project Feasibility Study, which includes detailed estimated savings using methods including building simulations and custom calculations, EUL projects, and project influence narratives. Additionally, a project specific M&V plan is developed.

- From the project data submitted in the GRID Platform, Mendota Group creates a Project Feasibility Study for SDG&E approval. Aggregator information provided includes the aggregator's customer agreement, a signed customer statement (acknowledging influence, granting permission for future EM&V inspections, and authorizing data sharing), calculations supporting the claimed savings values, project bids or quotations to support the project cost estimate, measure description(s), and confirmation that appropriate permits were pulled. Mendota Group staff then reviews all submitted information and completes the Project Approval QA Checklist, which includes the following checks:
    - All required documents are submitted and customer statement is signed.
    - Estimated installation date meets program requirements.
    - Measure description/detail is complete (sufficient to verify EUL).
    - Entered savings in the GRID platform match descriptions and provided backup documentation.
    - Backup documentation includes assumptions used to estimate project savings.
    - Project savings are appropriate given the measure description.
    - Selected load curve and selected measure type are appropriate.
- Mendota Group works with Aggregator to fully address any deficiencies in either package until the project receives SDG&E approval.
- Following SDG&E approval, the project is added to the next Custom Measure Project Archive (CMPA) submission for potential selection by CPUC staff.
    - Project installation can only occur after the project is released from the CPUC's CMPA process.
- After project installation, the aggregator returns to the GRID platform, verifies the project scope (including inputting any changes to installed measures or project costs), enters the project completion date, and uploads all required backup documentation, which, at a minimum, includes invoices, specification sheets, and photos.
- Mendota Group creates a Post-Installation Report that represents the actual project installed for SDG&E approval of each project. This package includes a comparison between the post-installation values and the values initially submitted in the Project Feasibility Study. Mendota Group works with Aggregator to fully address any deficiencies identified by SDG&E.
- Mendota Group staff also reviews submitted information and performs the following checks:
    - All required documents are submitted
    - Invoice documentation is complete and costs are reasonable
    - Details listed on invoices (e.g. project site address, measure quantities and
    - descriptions) match entries in the GRID platform
    - Calculation documentation is provided for projects with changes to installed measures (a review as described in Project Approval section above is performed).
- Mendota Group then recalculates estimated savings and incentives based on the actual equipment installed and makes any necessary adjustments to the M&V Plan.

- If the project passes the review, Mendota Group approves the installation and the project becomes Active. At this time, the contractor (or customer, if participating directly) receives an Installation Payment based on a portion of the expected total incentive. No further incentive payments are made until the contractor's total incentive payments earned exceed the total of installation payments received. Project data from this stage is uploaded to SDG&E's system of record. EECP.
- After the 12-month monitoring period, Mendota Group reports actual measured savings and TSB for each project to SDG&E for review and approval as a Second Post Installation Report. Mendota Group works to revise any calculations to fully address any deficiencies identified by SDG&E.

7.0 Other Program metrics

The program's metrics include:

- ~~Measured TSB (Dollars)~~
- ~~Estimated TSB (Dollars)~~
- Energy savings (kWh, therms) and demand reduction (kW)
- NMEC schedule adherence
- Total incentive budget reserved
- Payments to Aggregators
- ~~Cost-effectiveness results (TRC ratio)~~
- ~~Marketing campaign efficiency~~
- ~~Customer satisfaction & survey feedback~~
- ~~Hard-to-Reach (HTR) and Disadvantaged Communities TSB penetration~~
- ~~Inspection results~~

Specific marketing metrics include:

Marketing Metrics and Rationale

Metric	Rationale
Recruit Minimum of 5 Participant Aggregators	Attracting a robust Aggregator pool diversifies the mix of projects, reduces risks associated with tying the program's success to a limited number of Aggregators, and facilitates better outcomes for customers if Aggregators compete against one another for a customer's business. A Participant Aggregator is defined as signing the Aggregator Participation Agreement and completing at least one project. (Note, this program is targeted at two specific subsectors so the number of Participant Aggregators is smaller than what would be expected in a broader program.)
Hold a minimum of 2 engagement sessions	Engagement sessions are opportunities to attract more program participants and include Mendota Group participation in

<table>
<tr><th>Metric</th><th>Rationale</th></tr>
<tr><td>each year of the program.</td><td>conferences and other events where PIH customers, Aggregators and Trade Allies who serve PIH customers will be present. Examples of these events include the BOMA San Diego Commercial Properties Expo and the American Association of Engineers West Energy Conference and Expo, among other events. Sessions also include Mendota Group-sponsored program awareness raising or training sessions.</td></tr>
<tr><td>Create One Marketing Collateral Document that Aggregators can Provide to Customers/Trade Allies</td><td>The Program's primary Aggregator and customer interface will be the Implementer-hosted program website that explains the program and its rules and provides a gateway to the GRID platform where participants will submit and track projects. The website will include a downloadable piece of marketing collateral to help Aggregators and customers who prefer to have a separate document that explains the Program's benefits and details.</td></tr>
<tr><td>Create inbound customer leads with quarterly targets</td><td>Leads help build a pipeline of projects that create consistent Program participation and identify opportunities for Implementer to engage with Aggregators and customers. Leads[1] will be generated through direct-to-customer and Aggregator program marketing strategies, marketing partnerships, and engagement sessions.

The following are the Customer Lead Goals by quarter.
<table>
<tr><th>Year</th><th>Quarter</th><th>Leads</th></tr>
<tr><td rowspan="3">2025</td><td>2</td><td>8</td></tr>
<tr><td>3</td><td>8</td></tr>
<tr><td>4</td><td>6</td></tr>
<tr><td rowspan="4">2026</td><td>1</td><td>5</td></tr>
<tr><td>2</td><td>5</td></tr>
<tr><td>3</td><td>5</td></tr>
<tr><td>4</td><td>5</td></tr>
<tr><td rowspan="4">2027</td><td>1</td><td>4</td></tr>
<tr><td>2</td><td>4</td></tr>
<tr><td>3</td><td>4</td></tr>
<tr><td>4</td><td>4</td></tr>
</table></td></tr>
<tr><td>Program will engage with one or more SDG&E, SDREN, or</td><td>Opportunities exist to leverage SDG&E and San Diego Regional Energy Network (SDREN) programs and contacts, particularly through: SDREN's SMB Energy Coach Equity program and</td></tr>
</table>

[1] "Leads" are defined as: 1) Customer inbound inquiries by email, program interest form completion, or calls,2) leads generated and recorded from in-person industry events, or 3) documented referrals received from community partners or other complementary programs.

Metric	Rationale
other PA Energy Efficiency (EE) programs to co-market and recruit Aggregators.	SDG&E's Small Business Saver Equity program, and SDG&E's San Diego LEARN program (which can provide connections to newly trained workforce participants).
Per year, recruit one Aggregator categorized as "Near Participant".	Implementer will review on a semi-annual basis Aggregators categorized as Near Participant to engage them (demonstrated by submitting a project) in the Program. As demonstrated by submitting a participation agreement, these potential participants may be good candidates for participation.[2]

[2] As discussed in the CPUC's "California Statewide Market Access Programs Process Evaluation Report" (7/1/24), a "near participant" is defined as an aggregator who completes a participation agreement but does not submit any projects.

Appendix A - DEFINITIONS

Aggregator: The primary program participants in a Market Access Program. Aggregators are so called because they are encouraged to aggregate multiple energy saving projects as a means of diversifying risk since projects receive payments based on measured savings and Total System Benefit. 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. Customers can also opt to self-aggregate, bearing the risks of underperformance themselves.

GRID Application: Also called "GRID Platform" and "GRID Tool". Mendota Group's innovative, custom-built online software application that functions as a one-stop shop for program participants to design, submit, track, and report energy efficiency projects using measured savings (Pop-NMEC and Site-Based NMEC) approaches. The application also serves as a repository for project information accessible by funding entities (program administrators) and program staff.

Market Access Program (MAP): A Market Access Program is a program design that is open to any program participant (typically, an Aggregator) who agrees to provide services under the terms of the Program. Typically, a MAP is implemented using population-based NMEC to measure savings. Aggregators are compensated through a pay-for-performance structure which ties payments to energy savings the projects deliver (converted to Total System Benefit). In its Decision 21-12-011 (December 2, 2021), the California Public Utilities Commission (CPUC) directed the state's electric utilities (San Diego Gas & Electric, Southern California Edison, and Pacific Gas and Electric) and one Community Choice Aggregator (Marin Clean Energy) to implement two-year Market Access programs. In D. 23-06-055 (June 29, 2023, OP 26), the CPUC subsequently required that, by July 1, 2024, the investor-owned utility portfolio administrators (PAs) and Marin Clean Energy make available solicitations using market access approaches for residential and commercial downstream opportunities in their territories

Normalized Metered Energy Consumption (NMEC): A method of calculating energy savings established by California Assembly Bill (AB) 802. AB 802 modified California Public Utilities Code §381.2(b) to "authorize electrical corporations or gas corporations to provide financial incentives, rebates, technical assistance, and support to their customers to increase the energy efficiency of existing buildings based on all estimated energy savings and energy usage reductions, taking into consideration the overall reduction in normalized metered energy consumption as a measure of energy savings." According to the law, these programs incorporate:

- Energy usage reductions resulting from the adoption of a measure or installation of equipment required for modifications to existing buildings to bring them into conformity with, or exceed, the requirements of Title 24 of the California Code of Regulations, as well as
- Operational, behavioral, and retrocommissioning activities reasonably expected to produce multi-year savings. (California Public Utilities Code § 381.2(b))

Population-Based Normalized Energy Consumption (Pop-NMEC): According to the California Public Utility Commission's *Rulebook for Programs and Projects Based on Normalized Metered Energy Consumption (NMEC Rulebook),* programs are referred to as "Population-Level NMEC" where the following conditions apply:

- Programs must meet the Population-level NMEC regulatory and filing requirements described in this document(*NMEC Rulebook)*;
- Energy savings determinations are made using an NMEC approach based on pre and post-intervention energy usage data observed at the meter, rather than a modeled engineering forecast or deemed value; and
- Measurement methods and calculation software are set before the program starts (and not subsequently changed) and apply to all sites in a uniform fashion, as opposed to Site-level NMEC measurement methods which may differ on a site-by-site basis." (*NMEC Rulebook*, *Version 2.0*, pp. 5-6)

Site-Based Normalized Energy Consumption (Site-Based NMEC): According to the CPUC's *NMEC Rulebook,* "Projects and programs are referred to as "Site-Level NMEC" where the following conditions hold:

- Programs and projects meet the regulatory and filing requirements described in this document (*NMEC Rulebook*);
- NMEC methods used to determine savings are customized to the particular site and project to conform to site-specific conditions and adjust for the particular drivers of savings pertinent to the customer site and project;
- Energy Savings claims and project estimates of savings are submitted for a specific site or project; and
- NMEC-determined energy savings rely on a project-specific M&V plan, customized to the specific characteristics of the site and project." (NMEC Rulebook, Version 2.0, p. 5)

Total System Benefit (TSB): An expression, in dollar terms, of the lifecycle energy, capacity, and GHG benefits, expressed on an annual basis (CPUC Decision 21-05-031, May 20, 2021, p. 9). CPUC Staff provided further technical guidance to calculate TSB.[3] D.21-05-031 also stated that, beginning with program year 2024, the TSB metric would replace the energy and peak demand savings goals as the single goals metric, but required that program administrators continue to report energy and peak demand savings (D. 21-05-031, OP 1, p. 80).

[3] https://pda.energydataweb.com/api/view/2530/DRAFT%20TSB%20Tech%20Guidance%20081621.pdf

Mendota Group
The Power of Bright Ideas

San Diego Gas & Electric Grid-Responsive Incentive Design Private Institutions and Healthcare Program (GRID-PIH)

Measurement and Verification Plan

DRAFT-Version 1.0

April 2025

Table of Contents

1. Introduction

a. Program Description

The GRID Private Institutions and Healthcare (GRID-PIH) program 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 private institutions and healthcare target markets. The Program will leverage the Mendota Group's 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-PIH program offers qualified contractors the opportunity to provide SDG&E customers with various options not available through conventional energy efficiency programs to achieve energy savings and demand reductions. The Program utilizes population-level NMEC rules and methodologies to determine energy savings. A pay-for-performance (PFP) payment structure incentivizes the Implementer, Aggregator, and contractors to find energy-efficiency projects that deliver:

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

To achieve TSB goals, the GRID-PIH program 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 delivered 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. Since the Private Institutions and Healthcare Program meets this criterion, our use of NMEC satisfies this CPUC direction. Most GRID-PIH projects will be evaluated using population-based NMEC. If projects do not meet the population-based NMEC requirements, site-based NMEC will be considered.

This measurement and verification (M&V) plan provides technical details regarding the energy savings estimates that are the basis for incentives. The NMEC procedures used to settle with aggregators 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	Individual premise regression with synthetic control profiles[1] as an independent variable. The seasonal Time of Week Temperature (TOWT) model includes 168 hour-of-week dummy variables, a temperature spline, and one or more granular profiles acting as a synthetic control. The profiles will be based on a segmentation scheme. Preliminary segments are described under Ex-Post NMEC Methods.
Implementer	Mendota Group (w/ Evergreen Economics, Cascade Energy, and RHA as subcontractors)
Calculation Software	R and PostgreSQL
Data Collection Strategies	Upfront capture of typical efficiency attributes: • project location • project installation start and completion date • equipment type, quantity, capacity, and specifications Periodic capture of AMI data for participants and of AMI data and metadata for comparison group (for matching) Back-end consolidation of participant meter data, performance estimates, and incentive payments
Performance Metrics	Hourly kWh savings Aggregate peak kW savings Aggregate net peak kW savings Annual kWh savings Daily therm savings Annual therm savings Weighted Average EUL Total System Benefit
Weather Normalization	Settlement and reporting will be based on actual ex-post measurement of savings during the 2025-2028 observation period. Regression models developed using data from the baseline period will predict population loads during the performance period, normalizing for weather.
Total System Benefit Calculation	Net Present Value of 2025-2036 avoided costs[2] for climate zone 7[3] and a discount rate of 7.55%[4] divided by 12 is used for TSB, calculated separately for every hour of the year.

[1] Abadie, Alberto. 2021. "Using Synthetic Controls: Feasibility, Data Requirements, and Methodological Aspects." *Journal of Economic Literature*, 59 (2): 391-425.
[2] Based on applicable Avoided Cost Calculator (ACC).
[3] ACC pricing differences across the six SDG&E climate zones are negligible, and zone 7 contains the majority of the SDG&E population. As such, zone 7 was selected as representative of the entire SDG&E territory.
[4] SDG&E authorized Rate of Return.

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 eligible to use NMEC rules. Since the Private Institutions and Healthcare Program 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. Many implementation methods remove this equivalency by adding expensive interventions (e.g., complicated engineering for Site-Based NMEC or long-term training for SEM). The population-based approach allows for the cost-effective treatment of customers at scale. This is especially important for SDG&E because its customer base is heavily weighted toward small and medium-sized businesses. 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 savings and/or demand reduction at a large non-residential facility 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. This will work for smaller customers like medical offices and dentists. The GRID-PIH program may have projects at larger facilities (e.g., hospitals, K-12 schools) that are not usually directly comparable to a single comparison facility. In those cases, we will utilize a pool of facilities to compare each evaluated GRID-PIH project.

The GRID-PIH program targets qualified customers who receive SDG&E electricity and/or natural gas and pay into the Public Purpose Program (PPP) surcharge.

The following are the requirements for customers to participate in the GRID-PIH program:

Program Requirements

- The customer must pay the Public Purpose Program (PPP) surcharge on the electric and/or gas meter in which the energy-efficient equipment is being proposed.
- The customer must have their own service account (i.e., no master-metered properties unless the entire property is being treated)
- The customer authorizes pre- and post-installation metered energy use data through the SDG&E electric and/or gas meter.

- A minimum of 12 months of pre-treatment (prior to the project) AMI meter data for electric and/or monthly meter data for gas is available.
- If the site participated in any other SDG&E-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 first installation is required. Sites participating in a statewide energy efficiency program administered by another IOU, or sites participating in a 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[5] of the customer's metered annual energy usage (electricity and/or gas) at the project site.[6]
- The customer must agree to provide all required documentation and access to the facility for project-related audits, inspections, or data gathering by SDG&E or the CPUC.

Characteristics that Require 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, additional screening is performed to determine if population-based treatment is warranted. If not, a site-based NMEC approach may be offered to projects with 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.
- The customer site has a peak electricity demand below 1 MW.

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

- Solar, storage, and EV charging are not eligible for incentives at sites that installed any of these systems or made any changes to the capacity of these systems within the prior 12-month period (or who intend to make changes during 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 meter.
- 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 they continue to meet eligibility requirements. If a project is initially qualified for participation but later found not to meet eligibility criteria, attempts will be made to change the savings measurement approach to another platform (e.g., site-level NMEC).

[5] 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
[6] Projects with less than 10% must provide a rationale and explanation of how savings will be distinguished from normal variations in consumption.

Qualifying Energy Efficiency Measures
The GRID-PIH Program accepts various energy saving projects for private institutions and healthcare 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 (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 when 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) 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 the 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). Multiplying a savings value by the load shape value for any particular hour yields 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 of different measures to total savings, based on available data. The GRID Platform calculates an estimated weighted EUL at the application stage, and this value is applied to measured savings during the 12-month monitoring period.
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.

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 to 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 will be tied to the project's kWh electric energy savings, and/or therms savings as validated through metered data. The Program plans to have 36 incentive rates, 3 per month, that 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 the incentive period, as measured according to the approved M&V Plan.

- Approved GRID Population NMEC projects will qualify for a financial incentive. The kWh and therms incentive rates by period, listed on the Program website, will be used to identify the potential 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 be 40 percent of the Initial Expected Total Project Incentive Payment, but not more than 50% of the Project Cost.[7]
- 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-PIH incentive payments and the performance claims for the Program will be based on population-level 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 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.

NMEC methods compare 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 population of interest and a control group of non-participants is the output of interest.

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

a. Settlement Calendar Quarter Definitions[8]

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

The Program will communicate the risks associated with population NMEC procedures when savings or population size is small via a table like the conceptual example shown in Table 2. The table values represent the relative precision, or the expected margin of error, divided by the effect size. This metric is referred to as Fractional Savings Uncertainty (FSU) in the NMEC Rulebook. 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. Values can be color-coded to ensure correct interpretation:

- **Green** cells indicate limited settlement risk (error not more than half of the effect size),
- **Yellow** indicates moderate risk (error is no more than the effect size)
- **Red** indicates high measurement risk (the expected margin of error is greater than the effect size and may not be detected via population NMEC methods).

Table 2: Margin of Error Depends on the Number of Sites Aggregated and the Magnitude of Savings at the Whole Building Level[9]

Non-Residential

Portfolio Size	3% Effect	5% Effect	10% Effect	15% Effect
5	1041%	624%	312%	208%
10	804%	482%	241%	161%
25	295%	177%	88%	59%
50	281%	168%	84%	56%
100	271%	163%	81%	54%
250	198%	119%	59%	40%
500	158%	95%	47%	32%
1000	95%	57%	29%	19%
2000	70%	42%	21%	14%

This type of lookup table conveys the settlement risk associated with a calendar quarter of a given size and the expected percent savings. The values in Table 2 are based on bootstrapped standard errors using SDG&E AMI data from customers in the commercial sector. The margin of error for the target

[8] 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.
[9] Expected Margin of Error in Performance Estimate (95% Confidence).

subsectors will likely be smaller than those represented in the overall commercial analysis shown in Table 2.

b. Data Preparation

SDG&E will establish a monthly data transfer procedure with the M&V team, which includes project/measure package data from implementation and AMI data for modeling. Prior to modeling, Evergreen Economics will prepare the participant load data for analysis according to the data structure required to implement the selected modeling approach.

- **Weather Station**: merge hourly weather data from one of the CALMAC weather stations. [10] Weather station mapping and data sufficiency will follow Section 2.4.1 of the CalTRACK Technical Appendix.
- **Define the "blackout" period, Baseline, and Reporting periods**: Using the project completion data collected during implementation, create a buffer period in either direction not part of the baseline or performance period. The 365 days prior to the beginning of the buffer are the baseline period. The 365 days following the buffer are the reporting period.
- **Merge the granular control profiles**: based on the characteristics of the participant, merge one or more granular profiles by date and hour.

Several important mechanical considerations regarding the granular profiles are important in this plan.

- The definition and composition of the profiles will be defined in advance, but the profiles themselves must be maintained as new meter data becomes available.
    - Because the baseline period model is fitted with the granular profile as an explanatory variable, predicting counterfactual energy consumption in the performance period requires the profile data to be available for the performance period.
- Evergreen Economics will document the profile definitions and which accounts make up each profile within three months of the contract execution. Hourly AMI data for members of the synthetic control group will be transferred along with participant load data on a regular cadence.
- The SDG&E accounts that comprise the synthetic control group profiles will need to be monitored for GRID-PIH participation, account closure, or other significant changes, such as solar adoption or battery installation.
    - We plan to select alternate members for each profile to use as replacements when these of changes occur.

c. Analytical Methods

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, and for each participant site, we will develop a comparison group that will account for exogenous changes in energy consumption. The specific steps to produce estimates of program energy savings will be the following steps:

[10] **http://calmac.org/weather.asp**

1. For each participant 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 participant should also have one year of pre-baseline data, referred to in this section as the testing period, to ensure model validity. 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. 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. Construct the regression variables. These are defined in more detail below, but include seasonal indicators, hour-of-week indicators, temperature characteristics, and control customer consumption.
4. For each participant, estimate the regression model during the baseline period. This model is a seasonal time-of-week & temperature (TOWT) model. This model includes variables for each hour of the week, a temperature spline, and one or more granular profiles that act as a synthetic control group.
5. For each participant, predict usage during the reporting period. This is the counterfactual consumption: a representation of the energy the participant site would have consumed if it had not enrolled in the Program.
6. The difference between the counterfactual and the observed usage is the impact of the Program.
7. Upload hourly measured savings by project to the GRID Platform.
8. The GRID platform will aggregate the results to the annual total kWh and therms savings, as well as the total therms savings and kWh savings in the peak and net peak periods. The GRID platform will calculate the total TSB and incentive for each project.
9. The GRID platform will aggregate these metrics by Aggregator and Program.

The recommendations for population NMEC methods to be implemented for the GRID program are:

1. Use a common method for non-residential sectors – synthetic controls
2. Do additional testing of synthetic controls with a larger amount of non-residential data used to develop the granular profiles
3. Rely on a back-up method for non-residential sectors:
    a. Produce the results using synthetic controls.
    b. Assess the accuracy of synthetic controls at the site level.
    c. For large influential sites above 1 MW or if the site-level CV(RMSE) is above 0.5, run the backup option – a matched control group with difference-in-differences.
    d. If the site level CV(RMSE) for the back-up option is lower, use those results instead.

The regression specification used for participant impact estimation is based on the time of week temperature (TOWT) model developed by LBNL[11]. There are five components to the regression, which is run on the hourly participant consumption data.

1. The regression constant term, representing the average base consumption for the participant.
2. Hour-of-week fixed effects. There are 7 x 24 = 168 dummy variables that capture deviations from the base consumption in each hour of the week.

[11] Quantifying Changes in Building Electricity Use, with Application to Demand Response Johanna L. Mathieu, Phillip N. Price, Sila Kiliccote, Mary Ann Piette Lawrence Berkeley National Laboratory April 2011.

3. Temperature spline. There are between one and seven temperature bins, with cut points for each temperature bin set algorithmically to ensure sufficient coverage.
4. Granular profiles. These are average hourly consumption profiles for a sample of non-participants in similar segments to the participant. The role of the granular profile is to capture information about non-weather characteristics of each date-hour that may influence participant energy consumption. Excluding these granular profiles from the model results in a simple pre-post model.
5. The error term.

The exact specification is shown in Equation 1:

Equation 1: Seasonal Time of Week Temperature Model

$$kWh_{p,t} = \alpha_p + \sum_{i=1}^{168}(\beta_i * I_{i,t}) + \sum_{b=1}^{b=[2,7]}(\gamma_b * B_{b,t}) + \sum_{g=0}^{n}(\delta_g * GP_{g,t}) + \varepsilon_{p,t}$$

Table 3: Definition of Equation Terms

Symbol	Interpretation
$kWh_{p,t}$	The observed kWh consumption for participant p in date-hour t
α_p	The constant for participant p
β_i	The coefficient representing the base energy consumption for hour-of-week i, above or below the participant average
$I_{i,t}$	A dummy variable for each hour-of-week i. Equal to 1 when date-hour t is in that hour-of-week, and 0 otherwise
γ_b	The coefficient representing the marginal consumption associated with a one-degree change in outdoor temperature for temperature bin b
$B_{b,t}$	The value of temperature bin b. The construction of temperature bins is described in more detail below.
δ_g	The coefficient representing the marginal effect of one kWh change in the control group granular profile g.
$GP_{g,t}$	The average consumption of the granular control group profile g in date-hour t.
$\varepsilon_{p,t}$	The error term for participant p in date-hour t

The temperature spline is comprised of between one and seven temperature bins that relate outside air temperature to participant consumption. A spline model splits temperature from a single value into ordered bins that correspond to the degrees Fahrenheit (or Celsius) that fall in that bin. As examples, the temperatures in Table 4 can be represented as temperature bins in the following manner:

Table 4: Relationship Between Temperature and Spline Temperature Bins

Temperature	B_1	B_2	B_3	B_4	B_5	B_6	B_7
Condition (F)	**< 30**	**30-45**	**45-55**	**55-65**	**65-75**	**75-90**	**> 90**
25F	25						
47F	30	15	2				
65F	30	15	10	10			
83F	30	15	10	10	10	8	
101F	30	15	10	10	10	15	11

To robustly estimate the relationship between temperature and consumption, there must be sufficient data in each temperature bin. To ensure this is the case, the number of bins used in the regression are modified dynamically by algorithmically removing cut points between the bins. The procedure for this pruning is described in further detail in Section 3.9 of the CalTRACK methods[12]. In brief, the procedure involves:

1. Count the number of hours in each temperature bin $\boldsymbol{B_1}$ through $\boldsymbol{B_7}$
2. If any of bins $\boldsymbol{B_1}$ through $\boldsymbol{B_6}$ have fewer than 20 observations in that range, combine the observations in that bin with the next highest bin.
    a. For example, if bin $\boldsymbol{B_2}$ (30-45F) had 17 observations and bin $\boldsymbol{B_3}$ (45-55F) has 30 observations, combine $\boldsymbol{B_2}$ and $\boldsymbol{B_3}$ to create one bin from 30-55F with 47 observations.
3. If $\boldsymbol{B_7}$ has fewer than 20 observations, combine it with the next lowest bin until the 20-observation criteria is met.
4. Continue pruning the bins until each bin contains at least 20 observations.

The final elements in the Seasonal TOWT model are the granular profiles. These represent the average granular (8,760 hours) consumption of a group of non-participants. Participants are matched to the correct granular profile(s) based on having similar segmentation. The regression may add one or multiple granular profiles as explanatory (right-hand-side) variables. This approach is called a synthetic control and exploits the correlations between participant loads and nearby similar customers. These customers experience similar economic conditions and other unobserved conditions that may influence energy use. This correlation does not have to be positive to yield useful information, though in practice it is often easiest to understand the intuition for this approach with positive correlations. For example, if the July 4th holiday falls on a Thursday, some participants may have altered consumption on Friday July 5th or earlier in the week as households take vacation. Without the inclusion of the granular profiles, this information would not be observable in the model and the observed change in consumption would be misattributed to the effect of program participation.

The regression model is estimated for each season[13] in the training period, and then predicted for that season 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.

[12] **http://docs.caltrack.org/en/latest/methods.html.**
[13] Seasons are defined as: Summer – June through September. Winter – December through March. Shoulder – April, May, October, November.

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 hours in that calendar quarter.

We will follow the fundamental tenets of data management and analysis. We will not make 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, imputations, and analysis in the analytic database using open-source software (e.g., R), and all code is tracked in a Github repository. With this approach, all our analyses will be easily **auditable and replicable**. These are the two most important criteria necessary to ensure quality control in the analysis.

d. Comparison Group Segmentation

For population-based NMEC, we will assess naturally occurring savings and changes in energy use with a synthetic control comprised of similar customers from the same segment. First, we will limit the comparison pool to eligible non-participating customers that meet program requirements (e.g., 12+ consecutive months of data, predictable load). Next, we will segment all customers by climate zone, solar status, sector, and quartiles of annual consumption; commercial customers will also be segmented on industry group (e.g., 2-digit NAICS or as appropriate for the Program's subsegment eligibility). We will select comparison customers that match individual participants on all the segmentation criteria.

Should a synthetic control group not provide a good fit to a project's load, we will select a 1:1 matched comparison based on the Euclidean distance between each treatment and comparison customer.

The M&V team will use synthetic controls on the right-hand side to model impacts for GRID-PIH /participants. Any given participant site's regression model will not include all 38 profiles on the right-hand side. We anticipate using approximately ten profiles in the modeling procedure. For example, a "Lodging" site in the Coastal climate zone group would likely include the Inland Lodging profile and related industries from within the same climate zone group.

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 treatment and control. 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).

e. Dual Participation in other EE and DR Programs

GRID-PIH is designed to deliver incremental savings to SDG&E'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, SDG&E will pass the NMEC modeling team information on current energy efficiency and demand response program enrollments and any energy efficiency measures completed twelve months prior to GRID-PIH participation.

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

f. 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 with allowing customers with recently completed EE projects to participate in a GRID-PIH project is that the regression model of consumption may overstate the counterfactual if it is estimated on data prior to the non-GRID-PIH measure installation. By design, the accounts selected to make up the synthetic control group profiles 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-level 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 and therm 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.

g. Enrollment in SDG&E Demand Response Programs

SDG&E 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 the GRID-PIH and DR programs, we believe this could potentially exclude customers within the private institution and healthcare market 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 unfairly bias participant baseline up or down. It also means that sites dual-enrolled in GRID- PIH and DR cannot earn GRID-PIH performance credit for participating in DR events. This will be communicated clearly to aggregators as affects settlement calculations.

h. 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. We do not plan to estimate separate regression models for the reporting period and perform parallel predictions against normalized weather conditions. This decision is based on these factors:

1) An important objective of the Program is to align incentives to the value 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.
3) We are already "smoothing" the avoided costs used to compute the Total System Benefit. The CPUC's Avoided Cost Calculator places significant value on a small number of hours. Averaging the avoided costs by month, hour, and business day distributes the value more evenly and mitigates risk to Aggregators and SDG&E that actual weather conditions during the summer cooling season (for electric measures) will be misaligned with ACC assumptions.

i. Determination of Net Savings (Influence)

The index of non-participating accounts captures both exogenous effects, like the COVID-19 pandemic, and energy efficiency purchases and actions GRID- PIH participants would have taken absent program intervention. The NMEC Rulebook discusses this logic in its definition of a comparison group. A comparison group compares energy consumption changes from program participants against non-participants with otherwise similar usage characteristics. Comparison group analysis can help determine net savings by accounting for externally driven changes or trends (exogenous factors) and impacts from customers who install energy efficiency projects without incentives. Although the Program uses the CPUC's current default (Resolution E-4952) net-to-gross ratio of 0.95 for non-residential NMEC projects, we also require that customers complete a form documenting the Program's influence. For site-level NMEC projects, influence documentation will adhere to the requirements in E-5115.

j. Customer Settlement

The final settlement with aggregators for a calendar quarter of projects will be based on the Total System Benefit (TSB) generated during the calendar quarter. More specifically, incentives will be calculated using published rates 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 gas energy efficiency and the gas portion of fuel substitution projects, the Program will provide monthly incentive rates.

Although not specifically a goal of GRID-PIH, the Program's incentive structure for electric projects compensates Aggregators in large part based on savings generated during the peak and net peak 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 the annual kWh savings by period for a hypothetical commercial lighting measure that saves 1 MWh annually using the load shape visualized in Figure 1. The TSB generated equals the net present value of 12 years of avoided costs, divided by 12, using a 7.55% nominal discount

rate.[14] In this example, less than 25% of the annual savings for the indoor commercial lighting measure occur during high-value peak and net peak periods. Because Net Peak and Peak rates are higher than Off-Peak rates, the TSB generated per unit of energy saved is about 75% for these periods.

Table 5: Estimated Incentive Payments ($2022) by EUL (CZ07) – Non-Res Lighting

Period	Annual kWh Saved	EUL = 2	EUL = 5	EUL = 10	EUL = 15	EUL = 20
Peak	72	19	49	97	146	195
Net Peak	156	34	85	171	256	342
Off-Peak	722	18	44	88	132	176
Total	**950**	**$71**	**$178**	**$356**	**$535**	**$713**

(Note, all rates 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 365th 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 calculation will occur at the end of each four 3-month performance period. 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 net peak hours occur.

[14] SDG&E authorized Rate of Return.

Table 6 Sample Payment Cadence for a Project

Quarter[15]	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).

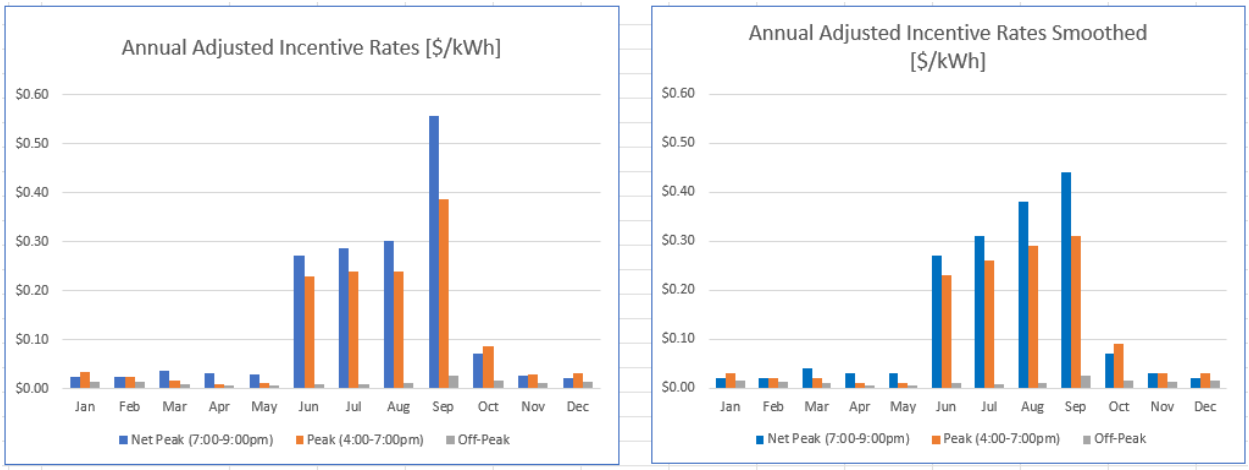
Performance Payments are equal to the total incentive amount earned net of any Installation incentive issued based on the savings forecast that have not already been recovered.

Although the M&V contractor will estimate 8760 load impacts and the CPUC's avoided costs are on an 8760 basis, a "collapsed" set of impacts and avoided costs will be used to compute TSB and settle with aggregators. The rationale for using collapsed avoided costs and impacts is to smooth out the avoided costs to mitigate risk to SDG&E and aggregators and to simplify the rate structure for aggregators marketing to customers.

For electric, the Program will include 36 separate incentive rates with three rates corresponding to periods of the day, based on TSB value, for each of the 12 months of the year. Summer rates will be "smoothed" out for a more even distribution of these rates by moving some of the incentive dollars from one or more months to other months as shown in Figure 3(rates are illustrative and subject to change). The specific rates are subject to change, but the concept will hold. For gas, the Program will have monthly incentive rates.

[15] 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

Figure 3: Illustrative Incentive Rates before and after Adjustment for Summer – CZ07



k. To-Code Savings

Most energy efficiency programs count savings as anything above code level baseline measures or efficiency levels. The GRID- PIH Program, 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 two 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, SDG&E will extract and transfer the last 12 months of hourly AMI data for the new set of participating sites.
2. **Ongoing transfers of hourly load data (monthly)**. Includes all accounts that make up the granular profiles and all participants that have not reached the end of their 12-month performance period. SDG&E will establish a regular data transfer process to the M&V team once electricity and gas interval data have been processed and finalized. 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.
3. **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. the estimated savings kWh and % = do they align with our expectations?
3. a time-series of daily energy consumption = do you see a shift in consumption around the installation date?
4. a cumsum plot = do you see a shift in the baseline model's ability to accurately predict consumption (i.e., something has shifted) around the installation date?

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.

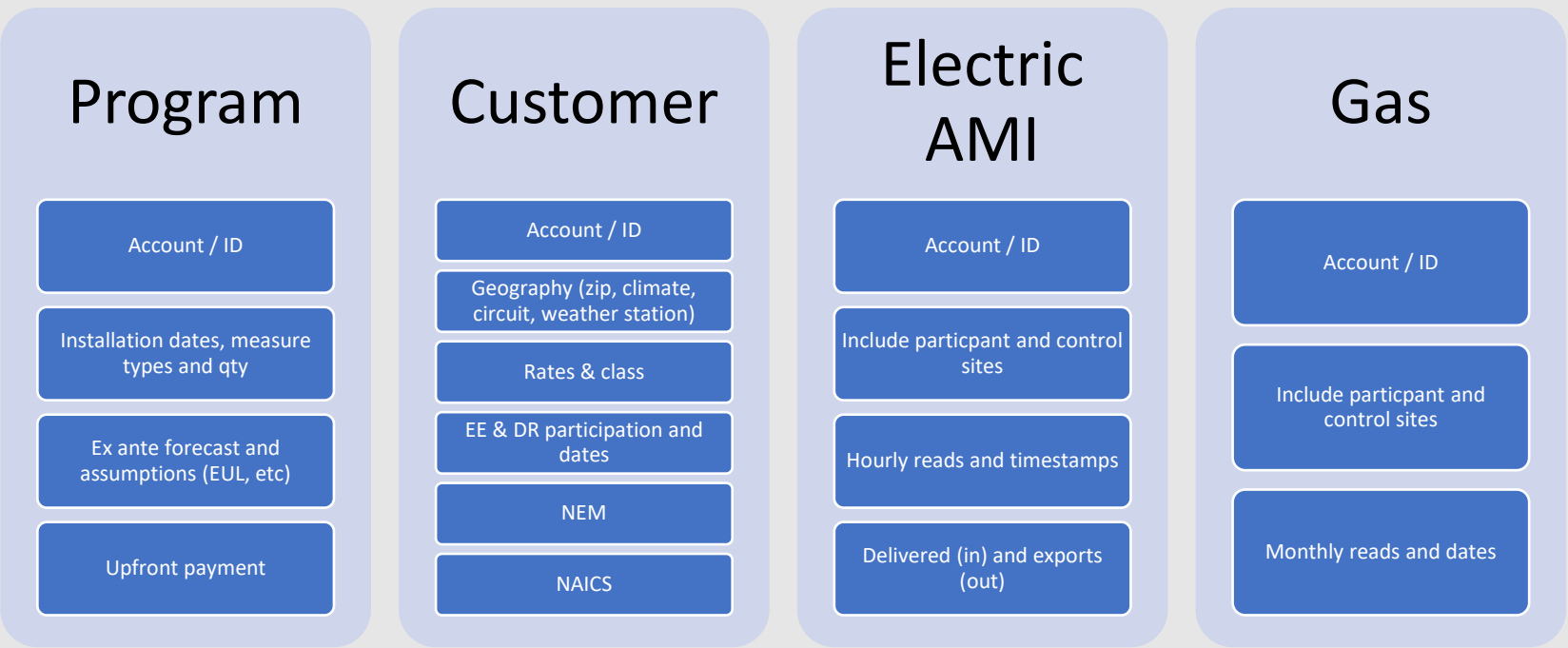
The Program will preserve all customer, project, and load data for sharing with the CPUC upon request for evaluation or other purposes.

5. 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 SDG&E at any time and extracted for use by SDG&E in its reporting. If requested, the GRID Platform can provide a data extract or upload data via a provided API into SDG&E's EECP system.

6. 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 granular control profiles	For each account that completes a GRID project between January 1, 2025 and December 31, 2027: a. Customer name (non-residential) b. Customer ID (non-residential) c. Account number d. Premise ID	Customer characteristics will be used to: ▪ identify participants, ▪ map to control profile

Request	Detail	Purpose/notes
	e. Service point ID f. Rates and effective dates of rates for 2024 – 2027 g. Annual max demand (non-residential) h. Net metering status, date that NEM status became effective, installed capacity, and type of interconnected device (solar, batteries, etc.) i. NAICS industry codes, if applicable j. Zip Code k. Climate Zone l. Weather Station m. DR enrollment information (Program and enrollment date) n. Any additional EE measures installed on site (savings estimate and installation date) o. Any other relevant customer demographics	▪ produce results by segment
2. Project Information	a. Customer name b. Account number c. Premise ID d. Service point ID e. Project number f. Installation site address g. Contact information (name, title, phone, email, mail, primary language) h. Number of employees (i.e. less than 26 employees) i. Building type j. Building vintage k. Climate zone l. Existing HVAC system type m. Measure ID n. Type of measure (lighting, HVAC, etc.) o. Measure name p. Key dates (project start, project completion, approval date) q. Implementation contractor r. EUL (by measure) s. Measure quantity t. Measure baseline description	

Request	Detail	Purpose/notes
	u. Deemed or estimated first year savings (by measure- annual kWh, peak kW, net peak kW, annual therms) v. Payment information (payee name, tax status, W-9, etc.) w. Calculations x. Influence documentation (statement for Pop-NMEC and documentation per E-5115 for Site-NMEC) y. Final invoice(s) (Manufacturer and model, equipment cost, labor cost) z. Photos of installed equipment 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 granular control profiles	a. Account numbers (account number, premise id, service point id, etc.) b. Date c. Hour/Interval d. kW delivered e. kW exported (if applicable) 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 participant and site selected to be part of the granular control profiles	a. Account numbers (account number, premise id, service point id, etc.) b. Date c. therms delivered d. QC code, if applicable	Interval data will be used to estimate energy and demand impacts
5. Weather data for relevant stations from June 1, 2024 to May 31, 2029	a. Station ID b. Station Name c. Date d. Hour e. Temperature (dry bulb) f. Humidity	http://calmac.org/weather.asp Weather data will be used to model energy use
6. DR Event data June 1, 2024 to May 31, 2029 for all DR programs	a. Program name b. Event date c. Event start d. Event end e. Dispatch group called	▪ Please include all commercial programs/rates so we can account for dual enrollments