Southern California Gas Company

August 3, 2021

Implementation Plan

Large Commercial Program (LCP)

Agreement Number: 5660060772

Program Years: 2021-2024

Large Commercial Program

Years: 2021-2024 Implementation Plan

Program Overview

KW Engineering is a stakeholder. Should KW Engineering review this document?

A. Program Budget and Savings

1. Program Name: SoCalGas Large Commercial Program

2. Program ID Number: SCG3892

Please refer to the California Energy Data and Reporting System (CEDARS) for the following program details:

3. Program Budget Table

4. Program Gross Impacts

5. Program Cost-Effectiveness (TRC)

6. Program Cost-Effectiveness (PAC)

7. Type of Program Implementer

8. Market Sector

9. Program Type

10. Market Delivery Channel and Intervention Strategies

B. Implementation Plan Narrative

1. Program Description

Program Description

The program serves commercial customers with annual gas consumption of more than 50,000 therms in the Southern California Gas Company (SoCalGas) service territory. Eligible customers must also pay the Public Purpose Program surcharge. Market segments that will be serviced include, but are not limited to, hospitals, long-term care, lodging, retail, office, restaurants, and laundry. The program complies with California Public Utilities Commission (CPUC) requirements and offers a tailored approach that includes segment-specific marketing, targeted outreach, site-specific energy audit reports, technical assistance, financing, and measurement and verification (M&V). Energy efficiency (EE) upgrades are delivered with a full-service, pay-for-performance approach.

Program Rationale

Due to the nature of the included segments, stakeholders are diverse and may include the building owner/landlord (such as a real estate investment trust, property management company, facilities management, and in many cases the tenant, who may themselves consist of multiple stakeholders. In addition, large commercial buildings vary widely in both building use type and energy needs. The new Large Commercial Program (LCP) is designed to overcome the challenges of different building types, multiple decision makers, and split incentives. The program's tailored marketing enhances program participation at a lower cost. The full-service approach enables projects that work with landlords and tenants to overcome the split incentive in an increasingly leased environment. Additionally, the program will offer a single point of contact (SPOC) to streamline the process for the customer. With a significant share of program services provided through open Trade Pro and community-based organization (CBO) networks, local contractors, and subcontractors who specialize in the commercial segment, the LCP will ensure that work is performed by qualified, reliable contractors.

Program Objectives

The program's primary objective is to meet the SoCalGas Business Plan goals and achieve deeper savings through comprehensive energy management solutions. Business Plan Goals include:

1. Increase EE adoption through efficient outreach and effective program offerings
2. Increase EE in commercial leased properties by reducing the split-incentive market barrier
3. Prepare customers for ZNE through EE and DR installations
4. Support proper installation, maintenance, and use of HVAC systems by licensed and certified installers

Additionally, the objectives of the Business Plan include:

1. Cost-effective savings (1.25+ TRC, 2.2MM net therms saved and 9.8 net GWh saved)
2. CPUC compliance (17,700 MT of GHG avoided; on-time, compliant reporting)
3. A Pay-for-performance approach

2. Program Delivery and Customer Services

The LCP will deliver savings using a multifaceted approach to customer enrollment using deemed, custom and NMEC approaches.

Deemed measures: For deemed measures, CPUC-approved workpapers are used to determine savings. Some workpapers require pre-installation inspections; for these inspections, Willdan technical auditors will identify existing systems as required by the workpaper. Post-inspections will be performed to verify that deemed measures are properly installed. Deemed measures may be installed by Willdan installation staff or by third party contractors.
Custom Measures: For custom measures, savings are estimated by Willdan's engineering team using modeling tools including eQuest. Savings estimates are submitted to SoCalGas and then verified after the project is installed using an approved Measurement and Verification (M&V) methodology.
Meter-based Measures: Meter-based projects will follow the existing Rulebook for Programs and Projected Based on Normalized Meter Energy Consumption (NMEC). Savings are determined on a site-by-site basis and claimed at the level of the individual site or project. The method used to estimate savings is developed based on building/site-specific characteristics and reflect the unique drivers of savings at the site or project. The method may include adjustments for site-specific non-routine events (NREs) that occurred at the site during the baseline, reporting, or installation period.

The exhibit below shows the primary strategies and tactics that will be used to drive goal attainment for the LCP.

Exhibit 1. Program Delivery Strategies and Tactics

Strategy	Tactic
Leverage Existing Relationships	▪ Leverage existing utility contracts in SoCalGas territory ▪ Call upon contractor relationships from past program experience ▪ Track customer's considered renovations, maintenance schedules, sustainability goals, and energy use questions ▪ Collaborate with trusted HTR/DAC experts and community action partnerships to expand reach and participation
Build LCP Awareness	▪ Attend local, regional, and state industry tradeshows for relevant market segments ▪ Deliver social media and email marketing campaigns; content will focus on customer value (e.g., increased asset value, return on investment, productivity, comfort, etc.) ▪ Host events to show how LCP aligns with commercial renovation schedules and challenges (e.g., code compliance, energy savings goals, equipment issues)
Gain Customer Trust	▪ Assign sales team members with commercial background to be a trusted source for HVAC contractors working with eligible customers ▪ Provide case studies comparing buildings of similar size, scope, and location to show value of EE services ▪ Demonstrate energy management technology (EMT) and benchmarking software to prove reliability of results
Tailor Sales	▪ Offer flexible services to meet individual customer needs (e.g., technical assistance, flexible incentive, financing assistance)
Streamline Participation	▪ Make participation easy through an online platform that tracks project eligibility, potential return on investment, energy savings, incentives, and participation costs ▪ Simplify energy audit and analysis results to match customer needs ▪ Assign an SPOC to facilitate participation ▪ Provide no-cost technical assistance and no-cost, simple measures, reducing obstacles to EE projects

Reaching Customers: The marketing approach uses flexible and diverse strategies that appeal to the wide-ranging set of stakeholders. To elicit customer interest and solicit participation, a wide net is cast using a diverse pool of partners, including community-based organizations that have strong existing relationships with key decision makers. To support sales efforts, the LCP leverages marketing materials and collateral in various forms, including, but not limited to:

- LCP marketing and informational flyers
- Case studies – examples of past projects performed at sites with similar customer types provide credibility. They also serve to educate customers on how to reduce natural gas consumption with the program's deemed, calculated, NMEC services and will demonstrate a Pathway to ZNE roadmap.
- Direct mailers/postcards
- Email campaigns
- Virtual EE workshops/webinars
- Social media campaigns

Services Provided:

The program offers customers a concierge approach that includes the following services:

- Intelligent outreach

- SPOC
- Bundled EE packages with energy modeling and EMTs
- Technical services, including energy audits, design, specification, and construction management support
- Financing assistance, such as working with existing financing entities, offering on-bill financing where applicable, and connecting projects to third-party financing.
- Direct install
- Do-it-yourself (DIY) for simple measures

3. Program Design and Best Practices

Strategies/Tactics to Reduce Barriers

These strategies and tactics are based on best practices that have been identified through the Implementer's delivery of dozens energy efficiency programs. As new strategies were developed alongside utilities and piloted in programs, the Implementer adopted effective strategies – those that increased enrollment, energy savings, or cost-effectiveness – as best practices for other programs nationally and meets with program managers regularly to refine these best practices based on savings delivery and performance.

Exhibit 2. Market Barriers and Program Strategies and Tactics to Overcome Them

Market Barrier	Strategies	Tactics	Best Practice
Varied Market: Single offer does not meet specific segment needs	**SPOC** provides comprehensive offer with a variety of measures, savings, services, and options.	An **Online Platform** centralizes data to support deemed, custom, and NMEC projects. The platform uses a single online application and facilitates high-opportunity, targeted outreach.	A SPOC that can tailor offerings to specific customers, improve customer experience, and yield higher rates of customer enrollment.
Split Incentive: Unaligned interests (landlord vs. tenant) and timeline (lease renewal vs. project)	**Revise Existing Lease Language** before project implementation. **Transform EE Projects** to meet decision-makers' needs.	**Technical Assistance** to make lease language benefit both owner and tenant (e.g., green leases). Renegotiate existing long-term leases. **Education** – Translate the value proposition to decision-makers as increased control, revenue, reliability, etc. Educate stakeholders about the financial benefit, the quality of products installed and added benefits like extended equipment life and reduced maintenance.	Bringing landlords and tenants together to change leasing language has been demonstrated as an effective tool to overcome the split incentive in leased property.

Market Barrier	Strategies	Tactics	Best Practice
Improper HVAC Installation or Maintenance: Lack of EE focus in HVAC contractors; customers uncertain of projected savings	**Ensure Proper HVAC Installation** by enhancing contractors' technical knowledge and using qualified, experienced, and vetted contractors.	**Train Trade Pros/ Contractors** – During program launch, the Implementer will lead training and shadowing for Trade Pros and contractors. Additional Trade Pro trainings to cover new measures/technology implementation, best practices, and safety will be held quarterly.	Training Trade Pro and Contractor ensures a higher rate of customer satisfaction and proper HVAC installation.
Performance Uncertainty About EE Upgrades Many users are unaware of how much energy efficiency they can expect from an upgrade	Produce **Savings Estimates**– that are accurate and reliable to accompany equipment installations. **Quality Equipment** is installed correctly.	**Quality Installs** – Provide quality assurance and quality control (QA/QC) pre-installation and post-installation to confirm that installed equipment meets program requirements and customer needs. This approach builds a foundation of good references. The online platform will host a product listing to define measure eligibility, new equipment requirements, and support subcontractors in equipment selection.	We have demonstrated through other EE programs that quality equipment that is installed correctly, and accurate savings estimates are key to driving future program participation.
Access to investment capital and sufficient return on investment First costs for energy efficiency upgrades can be prohibitive	**Improved Project Terms** expand procurement vehicles and intervention strategies.	**Financing** – Offer financing options to overcome specific barriers associated with financing. **Flexible Incentives** – Offer flexible incentives to lower project cost and improve project return on investment.	Many programs and financing vehicles have shown there is a market for financing EE and that this increases participation and project scope.

Interaction with Statewide Programs

The Statewide Non-Residential New Construction Programs (also known as California Energy Design Assistance (CEDA)) administered by PG&E serves commercial, public, high-rise multifamily, industrial, and agricultural new construction and major alterations facilities across all four IOU service territories (PG&E, SCE, SoCalGas, and SDG&E). In the CEDA program, major alterations are defined as meeting one of the following criteria:

- Changes in space function (building or space occupancy type change) OR
- Substantial changes (⩾30%) in design occupancy (square feet per person) OR
- Increase (≥10%) in conditioned floor area OR
- Any expansion or addition of substantial process or conditioning load to an existing facility

The Statewide program expects at least 75% of program savings in the commercial sector will come from new buildings with the remainder from major alterations. Given the definitions above, Willdan anticipates that LCP

program goals will be met through facility retrofit projects rather than through major alterations. Moreover, the Statewide program will primarily rely on engagements with architects and engineers to identify future projects while LCP is more focused on understanding the more immediate concerns of end users. For these reasons, we do not anticipate overlap between LCP and the California Energy Design Assistance Programs.

Financing

For many customers, upfront costs are a primary barrier to moving forward with implementing energy efficiency measures. This program intends to encourage the use of financing for those customers who express concerns about first costs. However, customers do not need to use financing in order to participate. Willdan will not be providing any of this financing directly, rather the program will make sure that customers are aware of all options. Willdan will collect and report financing cost information in accordance with forthcoming guidance from Energy Division.

Potential financing options are provided in the table below:

#	Financing Vehicle and Example Provider(s)	Features	Benefits
1	EE as a Service **SparkFund, Metrus ESA, Redaptive**	Zero upfront cost, P4P, non-debt, off-balance sheet financing Customer makes payments on operational projects from realized savings or predetermined service fee	Aligns service provider and customer interests Provider monitors performance
2	Lease **Bank of America, Capital One, DLL, DA Davidson, etc.**	Customers use equipment and make payments to third party Commonly used and cost-effective	Familiar to finance staff; used for other types of equipment; Rates lower than commercial leases, reflecting tax-exemption
3	Loan **Banks, California I-Bank, California Energy Commission (CEC)**	EE equipment loans allow customers to own assets while spreading payments over EUL	Low-interest-rate offerings from I-Bank and CEC Municipal finance divisions of banks offer tax-exempt rates
4	Internal Revolving Fund **Customer**	Seeded by initial capital contribution from customer Effectively captures and uses energy savings from clean energy improvements to fund additional facilities investments	Customer easily accesses capital Project savings fund future projects Customer sets qualification criteria

#	Financing Vehicle and Example Provider(s)	Features	Benefits
5	Rate Payer Funded **SoCalGas On-Bill Financing (OBF)**	Customers gain access to rate-payer backed financing	Customers repay financing costs on their SoCalGas bill
6	State/Rate Payer Funded **GoGreen**	The CA State Treasurer's Office makes reduced interest rate financing available to qualifying commercial customers	Pre-vetted financing companies provide streamlined access to financing through web portals

Innovation

The LCP delivers cost-effective savings through comprehensive, multi-technology solutions. An integrated team will combine innovative features, enabling all eligible customers to be served.

Program innovations include the following.

Integrated SPOC delivery: An integrated team of in-house experts and partners (with skillsets spanning every step of project and program delivery) provide comprehensive services under a unified offering, as a one-stop shop.

How it increases enrollment/cost-effective savings – Enables significant cost reductions because:

- SPOC sells comprehensive projects, eliminating duplicate customer acquisition costs
- Single application for all program services
- AI/data analytic-driven customer targeting increases savings and reduces development costs per project
- Team-embedded QA/QC reduces third-party review time
- Centralized technology selection, contractor training, and accelerate higher-efficiency products to market

Online platform: A single repository tracks and manages all program activities, data, advanced analysis, communication, and key performance indicators (KPIs). Willdan, Trade Pros / contractors, and Customers will each have a unique login with an experience and data permissions that are tailored to and appropriate for their account type and credentials. Users can access the online platform 24/7. This platform has been developed by Willdan after more than a decade of managing programs across the US and incorporates all of the functions required to successfully serve utility customers.

How it increases enrollment/cost-effective savings – Reduce commercial portfolio administration cost from 10% of total program dollars (2016-18 program) to 8% using online platform:

- Reduce project delivery time
- Improve Trade Pro and customer participation, satisfaction
- Integrate program data for technologies and Trade Pros
- Streamline communication, approvals, internal QA/QC reviews, and transparency to SoCalGas and CPUC

Intelligent outreach: Willdan has a suite of advanced software and modeling technologies to improve customer targeting metrics. These include high opportunity targeting by load shape (provided adequate data is made available), high propensity customer acquisition modeling, benchmarking software and rapid efficiency measure

modeling software that allows a facility to "try on" different potential upgrades and combinations of upgrades.
How it increases enrollment/cost-effective savings – Targeting high savings can deliver 10-40% greater program benefits:

- Increases program savings per project
- Decreases subcontractor costs
- Increases customer bill savings
- Increases benefits per participant based on analysis of customer load-shapes
- Creates low-cost tailored sales, lowering HTR/DAC barriers for participation

DIY: Some measures may be delivered directly to customers such that the customer can install the measure themselves. Willdan will provide customers with technical assistance and project oversight as required.
How it increases enrollment/cost-effective savings – This approach avoids project-fallout due to difficult schedules or a customer's lack of capital.

- Reduces customer acquisition and installation costs – given the customer can install the measure themselves or with in-house staff, electricians or plumbers or other contractors do not have to be hired separately
- Customers invest limited capital in deeper measures – by savings on low-cost installations
- Increases achieved savings – increases adoption and participation by facilitating an easier path to installation
- Ensures recycling occurs through instructions, program-led collection, and site inspections – the program provides information about how to recycle and can also collect material for recycling and disposal

Journey to ZNE: Willdan intends to build on customer energy efficiency engagements to start customers on their journey towards ZNE. The program will be an entry point for customers to learn more about other technologies and understand other strategies they might deploy in the future.

Specifically, for customers who express an interest in being ZNE-ready, we identify how the customer can achieve ZNE-readiness and will provide them with a high level roadmap. This service is included as part of standard technical assistance and provides customers with insight about technology options and alternatives for further consideration. The roadmaps provided will be counted as a Key Performance Indicator. The Roadmap will include:

1. Potential technologies to be deployed
2. Potential operational strategy changes for net energy reduction
3. A timeline over which technologies and strategies should be deployed
4. Rough order of magnitude cost and savings estimates

Customers can also elect to use flexible incentive dollars to pay for optional ZNE technical services which include implementation support to install ZNE ready measures beyond energy efficiency. In those scenarios, Willdan will provide design, construction management and/or turn-key installation services to customers for the implementation of zero net energy technologies.

In both scenarios, Willdan's goal is to reduce the consumption of energy at the customer's site, rather than aim for a specific energy usage intensity. Customers vary considerably on their path to ZNE and customers will have varying levels of support for adoption of advanced technologies. The intent of the ZNE technical assistance in this program is to make customer decision making easier through the provision of expert advice using a single point of contact. This facilitates customer awareness and education and increases the likelihood of customers engaging in more comprehensive retrofits.
How it increases enrollment/cost-effective savings – Customer ZNE plans identify future projects for deeper EE opportunities through a single program, making enrollment and customer decision making easier. Opportunities include:

- EMTs and DR
- Solar hot water heating

- Self-generation and resilience (fuel cells/cogeneration)
- Alternative fuel vehicle infrastructure
- Renewable natural gas

The LCP follows an iterative process to generate new innovations. As innovative practices are developed, the Implementer will review them on a regular basis to assess their impact and determine feasibility for wider adoption.

4. Metrics

The Implementer's online platform tracks program processes and provides clear, detailed insight into program status by capturing the KPIs in the table below. It also offers secure access for the Implementer, Trade Pros, customers, and SoCalGas to credentials-appropriate information.

Key Performance Indicator	SoCalGas Metric	Description
Performance: Goal Accomplishment (net therm savings)	Energy Savings	Percentage of net annual and lifecycle energy savings achieved vs forecasted
Cost Effectiveness Alignment: TRC Calculation	Cost per Unit Saved	TRC – Actual vs. forecasted Difference: Actual Minus Forecasted, TRC is calculated without SoCalGas' portfolio administrator costs
Performance: Cost per Unit Saved	Cost Per Unit Saved	Levelized PAC Cost – Actual vs. Forecasted Difference: Actual Minus Forecasted
Performance: Disadvantaged Communities	Penetration of EE Programs	Percentage of customers in disadvantaged communities in different counties
Customer Satisfaction	N/A	Scale from 0-4 rating enrolled participant satisfaction with program
Service Delivery	N/A	Program Advisor-determined rating of 0-4 based on: - Timely response for out of scope requests - Proactive in continuous program delivery - On-time invoice and monthly report - Quality of deliverables - Willingness to partner - Communication
ZNE Projects		Number of ZNE Technical Assistance Projects
Leased Projects		Number of Leased Projects
Supply Chain Responsibility: DBE Spend	N/A	To date DBE spending as a percentage of total spend / DBE % commitment compared to agreed goal

5. For Programs Claiming To-Code Savings

CPUC Decision 17-11-006 requires that program execution lend insight into to-code savings potential. An online platform will track and report the specific to-code measures and savings implemented through the program by customer type and geography for reporting to SCG.

a. To-Code Savings Potential

To-code savings potential resides in most facets of the LCP. Some examples include replacement of tank water heaters, replacement of hydronic or domestic hot-water boilers, and replacing or adding insulation on hot water piping and tanks.

b. Equipment Type, Building Types, Geographical Locations, and Customer Segments

Equipment Types: To-code savings potential resides in the replacement of large boilers and insulation for hot water pipes and tanks. Boilers are often older than other mechanical equipment in commercial facilities, with retubing and other maintenance activities extending the operational life of this equipment.

Building Type: Larger commercial buildings over 20 years old present significant to-code opportunities due to outdated equipment with the greatest savings potential from coming up to current code.

Geographical Location: To-code savings potential spans of the entire SoCalGas service territory. However, the Implementer may focus on major metropolitan areas to achieve economies of scale. Geographic targeting is also focused on properties in DACs. To-code measures have high uptake in DACs due to limited capital and low market penetration.

Customer Segment: The Implementer will target retail, restaurants, hospitality, and office buildings to achieve cost-effective, to-code savings. Eligible customers include facilities with NAICS codes of 42****, 44****, 45****, 48****, 49****, 51****, 52****, 53****, 54****, 55****, 56****, 61****, 62****, 71****, 72****, and 81****.

c. Barriers to Code Compliant Equipment Replacements

Barriers that prevent code-compliant replacements include lack of time, capital, information, and technical expertise, as well as complexity and cost of meeting regulatory requirements (e.g., permitting).

d. Why Natural Turnover is Not Occurring

Natural turnover is often delayed due to “repair indefinitely” practices. This occurs when customers repair or bypass existing failed equipment rather than replace it with to-code (or higher efficiency) equipment. It is only when equipment fails beyond repair that to-code normal replacement is triggered. Equipment replacements are delayed because customers choose lowest first-cost repairs over higher cost replacements, without consideration of operating and lifecycle costs. Repairs extend the life of the below-code equipment, keeping old inefficient units in use. Repair indefinitely measures are most common in the nexus of the two markets this program services:

HTR/DAC: These customers lack the time, awareness of higher efficiency options and associated savings, technical expertise and/or the capital to invest in EE improvements. Technologies in this market that are not being replaced by natural turnover for these reasons are boilers and associated pipe insulation, near end-of-life clothes dryers, non-Title 24 compliant thermostats, and non-functioning boiler controls.

Large Capital Projects: Large capital replacements can be intrusive, costly, and often require design, permitting, and long project timelines. Technologies that are not experiencing natural turnover at these facilities are boiler replacements and other HVAC modifications, and controls upgrades. This program offers technical expertise to address these barriers.

e. Program Interventions to Accelerate Equipment Turnover

The primary intervention strategy to accelerate equipment turnover begins with identifying cost-effective NMEC and Accelerated Replacement measures and project management assistance to capture to-code savings. Identifying measures begins with working with customers to understand individual barriers and educating them on available measures. Willdan’s engineering team then evaluates opportunities on a project-by-project basis to confirm cost effectiveness and for non-deemed projects, the appropriateness of custom versus NMEC strategy. By employing both technical and financial intervention approaches, the LCP helps to identify and claim to-code savings and benefits. Customers are educated on to-code and higher efficiency options, with the associated benefits and incentives for each.

6. Pilots

The program has no current plans to conduct any pilot projects.

7. Workforce Education and Training

Expand/initiate partnerships with entities that do job training and placement: The implementer and its partners will seek to collaborate with entities that provide training on working with gas consuming equipment. The LCP will also network with the statewide workforce education and training (WE&T) program and SoCalGas Energy Resource Center in Downey to identify training opportunities that support program staff and participants.

Willdan has created a Clean Energy Academy course to provide virtual and in-person training. The Willdan Clean Energy Academy's energy auditing training course is a free 30 to 60-hour advanced level course designed to meet the needs of the clean energy job market. The Academy prepares students with real world, technical knowledge that matches the skills gaps that employers are looking for. The dedicated instructor team is composed of veteran engineers and educators passionate about clean energy, education, and accessibility. The course seeks to improve auditor skills both in helping customers with what have become standard technology upgrades and preparing themselves for various nationally recognized certifications, including Building Performance Institute (BPI), the Association of Energy Engineers (AEE), and Occupational Safety and Health Administration (OSHA).

The East Coast Clean Energy Academy has been proven to be successful in creating homegrown talent, opportunities for Willdan to hire a qualified and trained workforce, and facilitating job connections to local employers. To create "first source" hiring opportunities for this program, Willdan is launching a Los Angeles region based West Coast Clean Energy Academy. The Academy will train potential employees to be energy service representatives, technicians in the field, installers in the field, and to work in quality assurance and quality verification of projects. This West Coast Clean Energy Academy is strategically being developed in partnership with the Watts Labor Community Action Committee, which is located in a disadvantaged community and focuses outreach to disadvantaged workers. The West Coast Clean Energy Academy will be offered both in person and virtually.

Require placement experience for any new partners in the workforce, education, and training and new solicitations:

New partners will be appropriately placed based on experience and certifications. For partners seeking additional resources to improve their experience, the LCP will assist in referrals to training programs and facilities (e.g., WE&T program, SoCalGas ERC Downey, ASHRAE).

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

The program prioritizes hiring locally when new positions need to be filled. This includes posting available roles to local job boards and recruiting within local workforce development programs, training centers, and CBOs. This also includes engagement, training, and working with local contractors with whom the customer already has a relationship. In doing so, the program can spread the strategy of comprehensiveness beyond partner contractors that are already familiar with the program approach.

Facilitate job connections by working with participating project teams (contractors, suppliers, facility managers) and utilizing energy training centers:

An online platform will allow for coordination and facilitation of participant networking. SoCalGas-hosted trainings will be leveraged when applicable. The program will encourage proactive engagement of contractors by promoting training offered by the LCP, and other organizations, to build awareness of relevant skills and job opportunities.

8. Workforce Standards:

HVAC Workforce Standards

The standards pursuant to D.18-10-008 are applicable. The program includes the installation, modification, and maintenance of incentivized (potentially greater than $3,000) HVAC measures in commercial buildings by program, subcontractor, and Trade Pro staff, triggering the applicable workforce standards. When required, the program verifies that the installation team has completed and/or is enrolled in a California- or federal-accredited HVAC apprenticeship, completed at least five years of work at the journey level, passed an HVAC system installation competency test, received training specific to the equipment being installed, and obtained a C-20 HVAC contractor license from California's Licensing Board.

To enhance quality and deliver deep, persistent energy savings, the program:

- Establishes workforce standards that meet or exceed those set forth in the contract with respect to apprenticeship, journey-level experience, and licensing.
- Requires and provides training that improves overall quality of installers, including subcontractors and Trade Pros.
- Requires and provides training targeted at specific measures.
- Tracks technicians for measures installed and maps measures to applicable trainings, providing valuable workforce education and training (WE&T) metrics.
- Performs comprehensive quality assurance / quality control (QA/QC), ties outcomes to specific technicians, and requires targeted remedial training based on those outcomes.

Compliance is demonstrated and enforced throughout the program lifecycle by:

- Establishing workforce standards requirements in customer applications/project agreements that are tied to incentive eligibility.
- Collecting proper worker documentation ("qualified documents"); for lighting controls projects, installer certification is obtained directly from CALCTP.
- Retaining qualified documents for reporting and periodic inspection by SoCalGas.

9. Disadvantaged Worker Plan

The LCP will provide Disadvantaged Workers with improved access to career opportunities in the energy efficiency industry by supporting outreach initiatives (training, mentorship, and/or apprenticeships) in collaboration with a combination of our subcontractor partners. The implementer will track and report Disadvantaged Worker participation in outreach programs, as well as program hiring, including the following metrics:

Exhibit 3: Disadvantaged Worker Outreach and Hiring

Outreach	Hiring
▪ # of training, mentorship, and/or apprenticeship opportunities offered ▪ # of participants ▪ # of staff and/or partner hours devoted to outreach initiatives	▪ # recruiting channels promoting access to Disadvantaged Workers ▪ % of job opportunities made available to Disadvantaged Workers ▪ % of candidates screened ▪ % of candidates interviewed ▪ % of candidates offered a position ▪ % of candidates hired

10. Additional Information

N/A

Supporting Documents

1. Program Manuals and Program Rules:

The Program Manual will be uploaded in California Energy Data and Reporting System (CEDARS) and is included as an appendix. The manual follows the CPUC Implementation Plan Template Guidance version 2.1 May 2020.

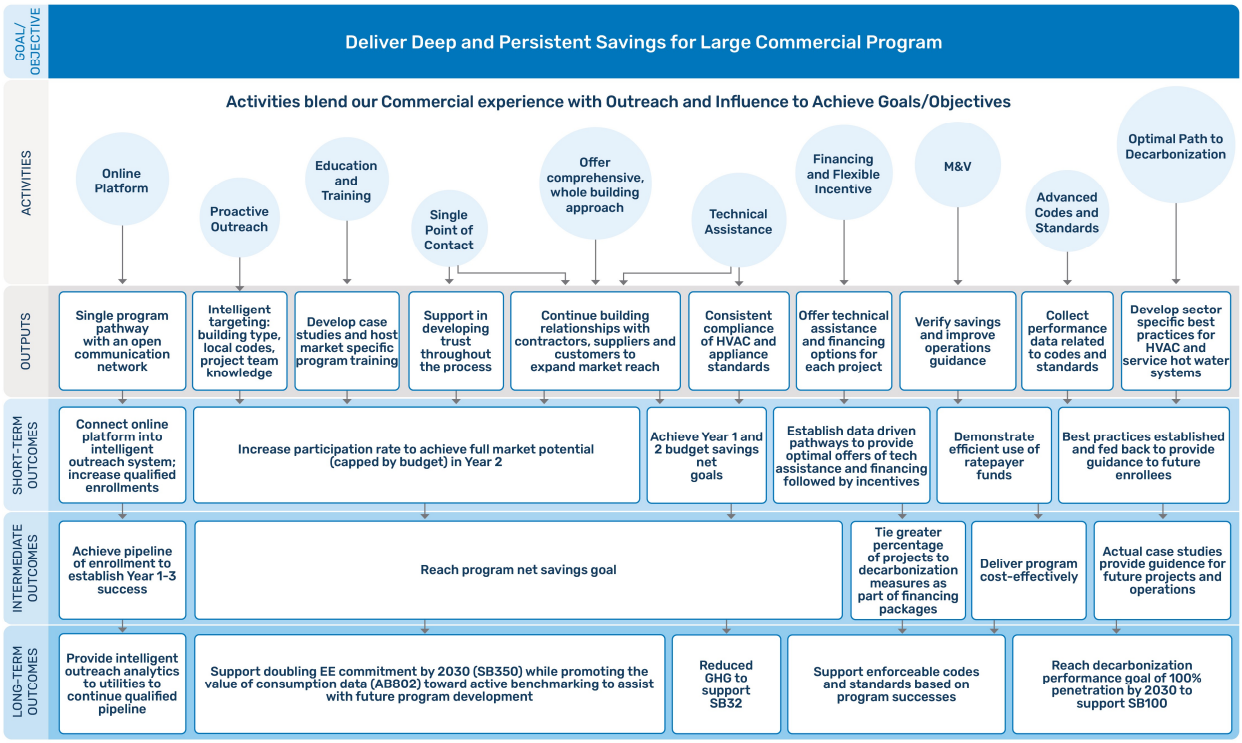
2. Program Theory and Program Logic Model

Program Theory

The program theory is to increase EE measure adoption rates in large commercial customers by offering financing, technical assistance, and incentives. The activities listed in the Program Logic Model below lead to outputs and short-term, intermediate, and long-term outcomes also listed in the Program Logic Model.

Program Logic Model

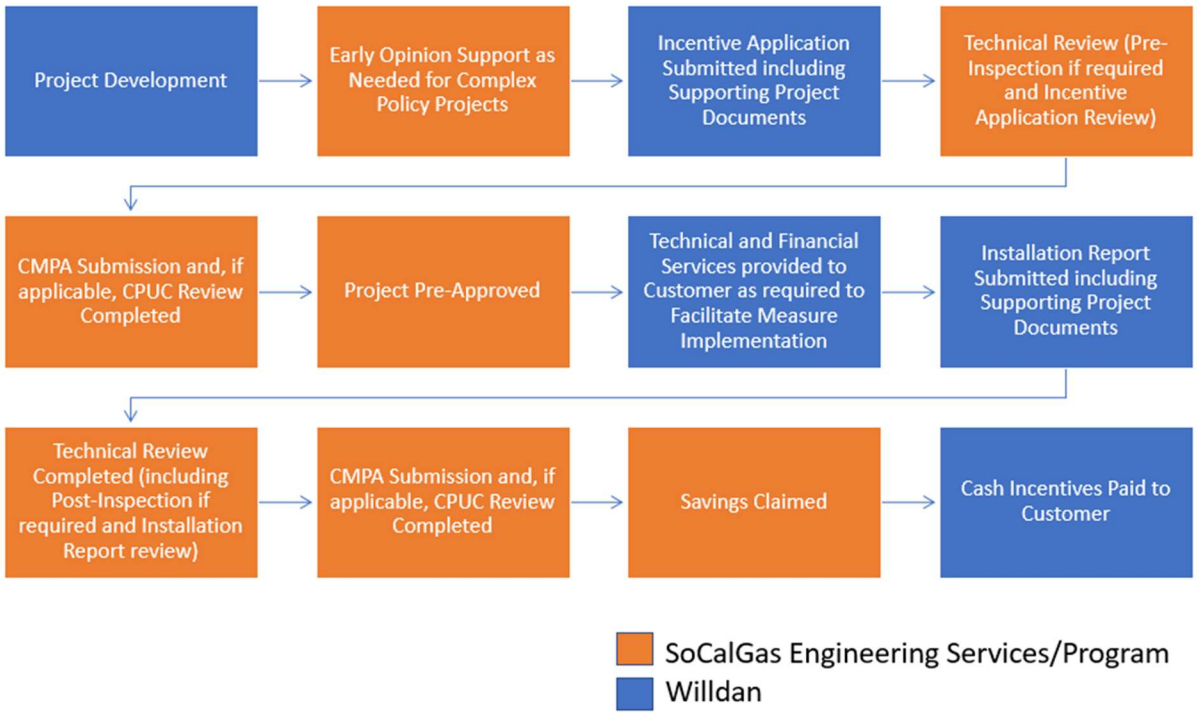
Exhibit 4: Program Logic Model



3. Process Flow Chart:

The LCP's end-to-end process uses the online platform to provide SoCalGas and all stakeholders with transparency into all program activities, a streamlined process, and continuous process improvement. This process is regularly updated using an iterative QA/QC process and feedback from the alliance steering committee. The process is flexible, tracked in the online platform, and can be adapted quickly.

Exhibit 5: Process Flow Chart



Custom Project Approach

The custom project approach consists of defined phases and activities as illustrated in the Table below.

Phase	Activity	Description
Project Development	Pre-Screening	When a customer lead is determined, implementer will conduct site walkthrough or investigation to identify initial targeted measures. If customer is determined to be viable, a Pre-App Review request is submitted to SoCalGas Custom Engineering Services (SoCalGas ES) to collaborate on initial engagement with the customer to determine program eligibility.
	Enrollment	Customer agrees to proceed with project development and signs a Program Application.
	Facility Audit	Assessment of potential project including, but not limited to, baseline development, M&V planning, determining the feasible energy efficient solutions, estimating the potential energy savings and incentive, and presenting the audit results to the customer.
Incentive Application	Development of Incentive Application	Developing the Project Feasibility Study (PFS) in accordance with the minimum requirements specified in the Statewide Custom Projects Guidance Document and all required documents to submit a Pre-Agreement (PA) Review Request to SoCalGas ES.
	Review of Incentive Application	SoCalGas ES technical review and approval of the Incentive Application Package (including PFS), submission to the CMPA list, and CPUC Custom Project Review (CPR), if applicable. If necessary, SoCalGas ES may conduct an additional project site visit and adjust savings claim, M&V plan, etc. to adhere to CPUC guidelines.
	Incentive Reservation	Customer signs Conditional Incentive Reservation (CIR) to reserve program funds for the project.
Implementation	Installation Monitoring	Continued monitoring of the installation process to ensure the recommended scope and timeline is adhered to.
	Project Installation	Customer performs installation of the energy efficiency measures.
Installation Report	Post M&V	Conducting post-installation M&V as agreed upon in the Incentive Application stage. Revising energy savings estimates as necessary to account for post-installation M&V

Phase	Activity	Description
		and any changes in the facility. Develop Post-Installation Report (PIR) in accordance with the minimum requirements specified in the Statewide Custom Projects Guidance Document and submit to SoCalGas ES for technical review.
	Review of Installation Report	SoCalGas technical review and approval of the PIR. SoCalGas ES will conduct a site visit if necessary. Approved PIR submission to the CMPA list and CPUC Custom Project Review (CPR), if applicable.
Project Completion	Incentive Check Delivery	Delivery of the incentive check to the customer.
	Project Reporting	Reporting of energy claims and maintaining project documentation for future ex-post EM&V studies.

NMEC Project Approach
The NMEC project approach will adhere to CPUC guidelines, specifically the NMEC Rulebook, using a forthcoming process flow.

4. Incentive Tables, Workpapers, Software Tools

Incentives are calculated using net lifecycle therm savings, using NTG ratios and EUL values and are based on project savings. Tiered incentive rates are applied based on percent savings above standard practice, flexible within the maximum ranges stipulated in the contract. DAC/HTR receive an incentive adder.

Specifically:

- Incentives based on net lifecycle savings by multiplying first-year savings by the net-to-gross (NTG) ratio and effective useful life, discounted by 7.38% (SoCalGas CET rate).
- To promote higher degrees of efficiency, discounted net lifecycle savings is applied to tiered base incentive rates ($0.75/therm to-code savings; $1.25/therm above-code).
- To promote products with the highest degrees of efficiency, the program will offer a premium base incentive rate tier of $1.75/therm for specific qualifying high-performance products.
- To consider barriers for different customer segments, the program will offer a cash incentive first to DAC customers before introducing technical assistance or financing. DAC customers will receive a 40% incentive adder in addition to the full incentive offered to other non-DAC customers.
- Financing (e.g., SoCalGas OBF) will be offered to customers.
- For custom projects, the program will pay customers 100% of incentives after measurement and verification of installation.
- For NMEC projects, the program will pay customers up to 50% of approved cash incentives for measures upon physical installation and verification. This initial incentive payment is based on the initially calculated therm savings estimate. After 12-month (24-month for BRO measures) measured performance period, the Program will true-up the customer cash incentive payment based on measured and verified energy savings conducting post-implementation and pay the remainder of the cash incentives to the customer.

- Basic technical services will be offered to all customers. These services may change in response to customer preference during the Program implementation period. The initial technical services may include:
    - Comprehensive Audit
    - Customer Education
    - Business Case Development
    - Green Lease Support
    - Direct Install Measures
    - Facility Benchmarking
    - Energy Modeling
    - Equipment Specification
    - Financing Support
    - On-going Modeling for NMEC Projects
    - ZNE Roadmaps
    - M&V for Custom and NMEC Projects
- Optional technical services will be provided to customers who elect to receive such services. These optional services will be provided to customers who elect to receive such services in lieu of cash incentives. These services may change in response to customer preference during the Program implementation period. The initial technical services may include:
    - Project design
    - Financing Enhancements
    - Bid package preparation and procurement
    - Construction management
    - Turnkey Project Installation for non-DI Measures
    - Project Commissioning
    - Energy/Sustainability Manager
    - ZNE Ready
    - IDSM Implementation Support

A complete measure list for the program, with associated workpaper links, is included as an appendix.

Key Software Tools

The online platform supporting the program will serve as a repository and single point of access for data integration and continuous stakeholder engagement. The platform is the center for all program processes and data.

The online platform reduces administrative costs and human error that are often associated with manual QA/QC efforts. It can be easily modified for any policy changes that may impact savings or documentation.

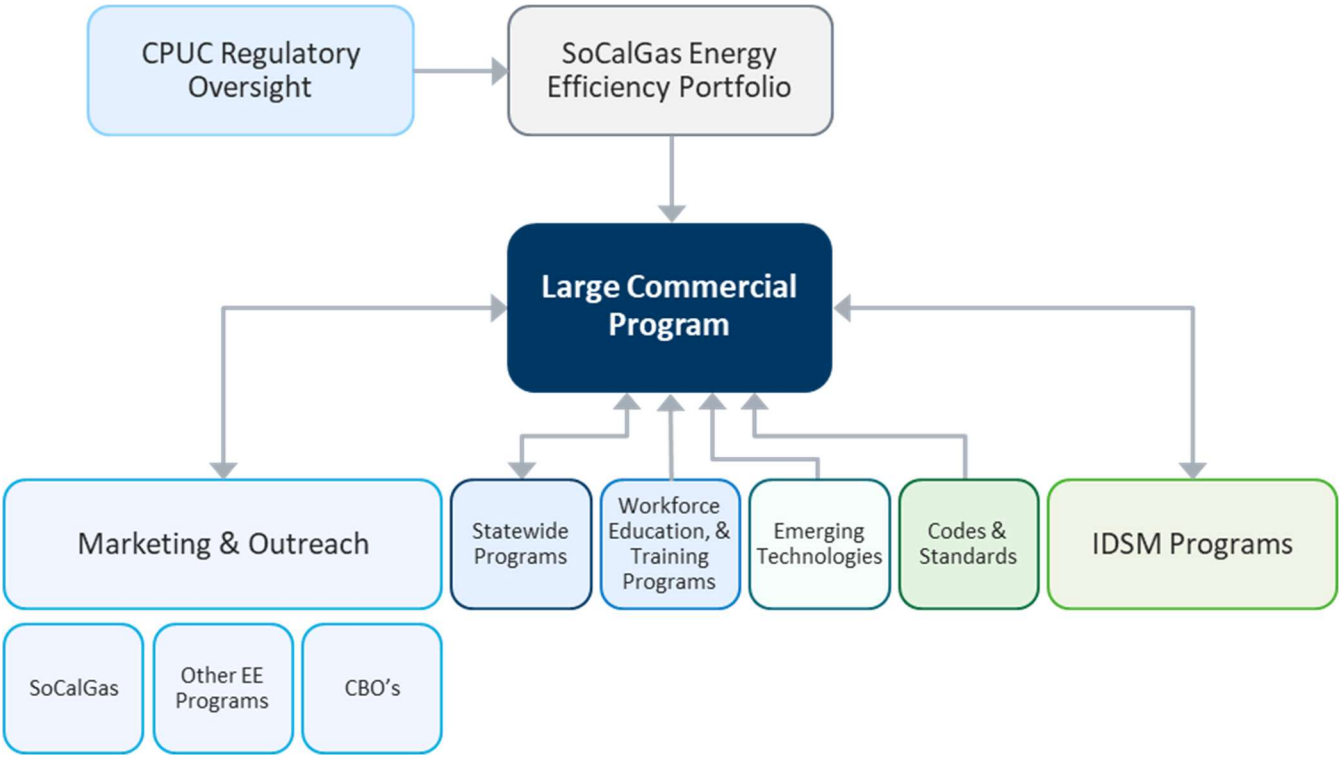
5. Quantitative Program Targets

Note that the totals in each row do not add to the total number of expected projects. For example, NMEC projects may be performed at DAC/HTR sites but not all NMEC projects will be for DAC/HTR customers.

Target	2021	2022	2023	2024	Total
# of Projects	6	23	30	6	**65**
# of DAC/HTR Customers Served	3	13	18	4	**38**
# of DIY Projects	1	2	2	0	**6**
# of Deemed Projects	3	11	13	0	**27**
# of Custom Projects	1	6	8	0	**15**
# of NMEC Projects	0	0	19	4	**23**
# of Leased Projects	2	8	8	2	**20**
# of ZNE Projects	0	1	2	1	**4**

6. Diagram of Program

Exhibit 6: Diagram of Program



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

The LCP will utilize the deemed, custom and NMEC energy savings platforms to deliver the energy savings goals. Each of these platforms has a different Measurement and Verification (M&V) protocol for claimed savings. However, the overall objective remains the same to confirm that: (1) the measures were actually installed, (2) the installation meets reasonable quality standards, and (3) the measures are operating correctly and have the potential to generate the predicted energy savings[1]. This section describes Willdan's M&V approach for deemed and custom. The Program Level NMEC M&V plan is in Section 8 to comply with the CPUC stand alone document requirement.

Deemed Verification Requirements

Deemed measures include those with approved workpapers located on http://www.deeresources.net/workpapers or https://www.caetrm.com/. The verification consists of facility eligibility, measure eligibility, savings validation, and sampling of site inspections.

Facility eligibility includes a double dip analysis and a confirmation that the facility is eligible for Investor Owned Utility (IOU) energy efficiency programs. Generally, this consists of whether the facility is served by the IOU and pays the Public Goods Charge (PGC) and can be verified by a utility bill or the site address and the rate schedule.

Measure eligibility is defined in the workpaper and performed by engineering staff. Common parameters that define measure eligibility include:

- Existing equipment type, size, or efficiency,
- Proposed equipment type, size, or efficiency,
- Building type, and
- Specific Qualified Product Lists (QPLs).

Deemed savings values are on a per unit basis. They tend to vary based on building type, climate zone, and equipment sizes of efficiencies. Some measures have a few savings permutations while others have hundreds. The correct application of the savings permutation for the measure is critical to an accurate accounting of energy savings claims. The invoice and other required submitted documents are reviewed to ensure that the proper savings permutations are assigned to each measure.

Deemed inspections provide another level of verification for the measures. Inspections verify installation quantities, specifications, and that the measures are performing as intended. The inspections may be virtual and sampling rates are included in the Quality Assurance Plan.

Custom M&V Approach

Willdan understands that custom project M&V is a balance between M&V cost and uncertainty. The higher the measure value, the more important M&V becomes to reduce the assumptions and uncertainty in the savings calculation. With this in mind, Willdan supports verification only activities for small projects similar to protocols under development in the CPUC Small Project Sub Group. As projects increase in size, the level of M&V rigor also should increase to include compliance with the International Performance Measurement and Verification Protocol (IPMVP).

IPMVP consists of four M&V options as described in the table below. Most projects will fall under the retrofit isolation M&V types.

[1] California Evaluation Framework p.161.
https://www.cpuc.ca.gov/uploadedFiles/CPUC_Public_Website/Content/Utilities_and_Industries/Energy/Energy_Programs/Demand_Side_Management/EE_and_Energy_Savings_Assist/CAEvaluationFramework.pdf

M&V Option	M&V Type	Description	General Uses
A	Retrofit Isolation	Individual equipment measurement of some key parameters with estimates based on manufacturers specifications, historical data, engineering judgment or other sources for non-measured parameters.	Smaller savings measures in which the equipment for the facility can be isolated within the M&V boundary.
B	Retrofit Isolation	Individual equipment measurement of all key parameters	Larger savings measures in which the equipment for the facility can be isolated within the M&V boundary.
C [1]	Whole Building	Utility or sub meter savings measurement with the use of regression analysis to account for independent variables.	Useful for projects with multiple measures that interact and/or impact multiple end-uses and savings are greater than the regression variation.
D	Whole Building	Calibrated computer simulations.	Useful for projects with multiple measures that interact and/or multiple end uses with systems that can be modeled accurately.

[1] Similar to NMEC but without NMEC policy requirements

Data Collection Strategy

Individual project data collection will consist of the following:

- Site specific equipment, energy and, driving variable data – All trend data will be collected as defined in the M&V plan. Data may be obtained from customer Building Automation Systems (BAS) or through temporary data loggers. Relevant data are measure specific, but some examples include system set points, boiler pressure and/or temperature, run time data, and occupancy patterns. Manufacturer specifications and/or pictures of nameplates can help justify assumptions in the energy calculations.
- Utility data – Utility metered data may be useful in some applications where there is a single system contributing to the majority of the consumption of the meter. Data can be obtained from the customer, through SoCalGas Energy Data Request Form, or other ways deemed appropriate by SoCalGas.
- Weather Data – Weather data is often a useful variable to normalize pre- and post- installation trend data. Real-time weather data can be downloaded from NOAA. Typical year weather files are obtained from the 2022 CA Climate Zone weather files.

Program related data is important to drive Willdan's continuous improvement process. Embedded in the design of the program, program management will collect data to track progress towards goals, analyze success of marketing strategies and sales efforts, and performance of contractors and supplied technologies. The data collected and subsequent analyses will be regularly reported to the Program Administrator and used to guide program adjustments.

Savings Calculations

The gross energy savings are calculated based on the agreed upon site specific M&V plan. The general equation as outlined in IPMVP is:

$$Energy\ Savings = Baseline\ Energy\ Consumption - Retrofit\ Energy\ Consumption + Adjustments$$

The baseline and retrofit energy consumptions can be calculated in a myriad of different ways depending on the measure. Adjustment represents a normalization factor when the baseline and retrofit periods may be under differing conditions. This adjustment could be positive or negative.

Internal performance analysis during deployment
The program has an assigned QA/QC partner that leads program QA/QC procedure development and oversight. This includes screening to ensure services or incentives motivate customers to choose higher efficiency options. Responsibilities include:

- QA/QC tool development (consolidating guidance from multiple sources) including checklists for Early Screening, Pre-Installation, and Post-Installation Reports
- Training for program staff engineers and Trade Pros
- Deep-dive reviews of select larger, complex projects
- Ongoing updates of training and guidance documents

Performance metrics
An online platform tracks program processes and provides clear, detailed insight into program status by capturing the following KPIs:

- Performance: Goal Accomplishment (net therm savings)
- Cost Effectiveness Alignment: TRC
- Performance: Cost per Unit Saved
- Performance: Disadvantaged Communities
- Customer Satisfaction
- Service Delivery
- ZNE Projects
- Leased Projects
- Supply Chain Responsibility: DBE Spend

8. Normalized Metered Energy Consumption

Measurement & Verification (M&V) is the process of using measurements to reliably quantify savings from a resource savings project within a facility, a process, a building, or a building subsystem. In investor owned utility (IOU) energy efficiency programs, the resource saved is typically energy (natural gas therms or electric kWh), demand (electric kW), or water (gallons). For simplicity, this plan focuses on energy savings, but the approach can be applied to any resource.

M&V is used to verify that an energy efficiency project is achieving its intended savings. Energy savings represents the absence of energy use and cannot be directly measured. Therefore, the M&V approach describes how savings are determined from measurements of energy use before and after implementation of a project, with appropriate adjustments made for changes in conditions. Such adjustments may be routine and expected, while others are nonroutine and unexpected, due to factors unrelated to the project.

The LCP NMEC M&V Plan conforms to California Public Utilities Commission (CPUC, or Commission) guidance as codified in its Rulebook for Programs and Projects Based on Normalized Metered Energy Consumption (NMEC Rulebook 2.0), issued on January 7, 2020 (NMEC Rulebook 2.0[2]). The program will update the M&V plan to conform with future rulebook or policy updates.

[2] NMEC Rulebook https://www.cpuc.ca.gov/WorkArea/DownloadAsset.aspx?id=6442463694

1. Site-level NMEC Program M&V Plan

This is an initial plan and will evolve throughout the program. The most up to date plan will be maintained in the Program Manual.

Site-level NMEC Overview

This program approaches Site-level NMEC with the following principles:

- Savings are determined on a site-by-site basis and claimed at the level of the individual site or project.
- The method used to estimate savings is developed based on building/site-specific characteristics and reflect the unique drivers of savings at the site or project.
- The method may include adjustments for site-specific non-routine events (NREs) that occurred at the site during the baseline, reporting, or installation period.

The SoCalGas Large Commercial Program will conduct site-level M&V following the framework in the International Performance Measurement and Verification Protocol (IPMVP), using the Option C-Whole Facility method.

This document covers the Program-level M&V. For each site-level NMEC project, a supplemental site-level M&V plan will be provided. These site-level M&V plans will include the site-specific details indicated above.

a. Methodology, Analytical Methods, and Software

The initial step in the NMEC approach is to collect the site energy consumption data, spanning a 12-month baseline period before energy efficiency measures are implemented. This data will be inspected and cleaned prior to creation of any NMEC models. The purpose of this data review process is to look for time gaps in the data, clearly erroneous data (e.g., non-numerical data points or blank entries, negative numbers), or data that is in significant contradiction with engineering staff's understanding of the site function (e.g., high gas use during periods when gas-fired equipment is known to be locked out). If problems such as these are found, attempts will be made to clean the data. Data cleaning processes may include interpolation of data for small gaps or periods showing errors, removing the data period in question from the NMEC regression model analysis (e.g., creating a model with less than a full 12-months of data, with approval), or attempting to shift the baseline period start and stop dates to exclude the period of concern.

Once the data has been reviewed and cleaned as needed, the next step in the NMEC approach is to create a mathematical model of the project site (or submeter) energy consumption. This is a regression model, that relates energy consumption (the dependent variable), to one or more independent variables. The specifics of the regression model are determined by observing actual data. In the case of the baseline model, this data comes from the historical performance of the site.

In most cases, weather (outdoor dry-bulb temperature) is the primary independent variable for site-level NMEC models. Secondary variables (such as day-of-week, occupancy rate, or other variables describing operational variation) are added if they demonstrate significant explanatory power on energy use. After collecting 12-months of baseline data, one of three regression models are selected, based on data availability.

- **Model #1:** Daily Energy and Daily Weather Data (with Optional Daily Secondary Variable) – Single variable (or optional two variable) least squares linear regression will be performed using 365 data points. Separate models will be created for occupied vs unoccupied periods (e.g. weekdays vs weekends and holidays). Alternatively to separate single-variable models approach, an second indicator variable may be used to identify occupancy periods.

- **Model #2:** Hourly Energy and Hourly Weather Data – Time of Week and Temperature (TOWT) – Temperature regression with time-of-week as a proxy for building operating schedule. The TOWT approach features a time-of-week indicator variable, an outdoor air temperature dependence[3].
- **Model #3:** Monthly Energy, Weather, and Secondary Variable Data – For sites that demonstrate strong correlations with a secondary variable, but have only monthly secondary data available, daily usage and weather data are totaled into monthly data. Two variable least squares linear regressions are performed using monthly data (minimum 12 data points).

It is expected that the majority of Program NMEC projects will utilize the three modeling approaches shown above, there may be cases where other modeling algorithms will be preferable. In these cases, the Program will propose to use these alternate algorithms as appropriate for prior approval.

NMEC modelling calculations will follow recognized CalTRACK 2.0[4] and LBNL NMEC procedures[5]. These resources provide guidance regarding evaluation of acceptable modeling uncertainty. The Program's approach to NMEC modelling will have the following characteristics:

- Automated collection of utility AMI (or sub-meter) data, weather data import, and NMEC calculations compliant with NMEC guidance. Automation saves engineering effort.
- Scalable and not cost prohibitive for most customers and projects.
- Provide monitoring capability (necessary for NMEC) and trigger notifications of potential sub-performance or NREs (persistence of savings). Calculate statistical fitness metrics to validate appropriateness of a meter-based approach.

IPMVP Option and Measurement Boundary

IPMVP Option C, Whole Facility will be used for savings determination. Option C was selected because the LCP promotes upgrade projects that encompass multiple EEMs and may have interactive effects.

SoCalGas's revenue meters will be used to provide reference consumption data for natural gas savings calculations. These meters account for all energy use of the facilities. If a facility is served by more than one meter, then all EEMs must be properly attributed to the meter that tracks the associated load. If an NMEC analysis is being conducted at a single meter within a multiple-meter facility, the Program will track other meters at the site to ensure that the perceived savings are in reality not simply shifting load to other meters. Alternatively, meter-level consumption can be summed to the whole-building or site level so long as all meters are included that serve loads affected by the adopted EEMs. In rare cases, if a system submeter of appropriate accuracy is present, the submeter may be used for analysis with prior approval from SoCalGas.

Example NMEC Regression and Normalization

Gas is correlated with weather (and secondary variable if it demonstrates influence), using a least-squares linear regression model. Weather data takes the form of Heating Degree Days (HDD), and Cooling Degree Days (CDD). The monitoring tool automatically defines HDD and CDD balance point temperatures that will provide the best correlation to the energy profile.

The typical mathematical form of the regression for Model #1 (defined above) follows:

$$Therms\ (daily) = A_e \times HDD\ (daily) + B_e \times Secondary\ Variable\ (daily) + C_e$$

[3] The TOWT approach is described further in Section 4 here: http://eta-publications.lbl.gov/sites/default/files/LBNL-4944E.pdf

[4] CalTRACK 2.0 methods are documented at http://docs.caltrack.org/en/latest/methods.html

[5] LBNL NMEC guidance can be found at https://www.cpuc.ca.gov/WorkArea/DownloadAsset.aspx?id=6442463695

Where A_e, B_e and C_e are the constants resulting from the gas use regression. If no secondary variable, constant B_e is zero. Constants C_e is the base (non-temperature dependent) portion of consumption. The mathematical form for Model #3 is the same as that for #1 but uses monthly data. Model #2 (TOWT) uses hourly data.

The resulting regression formula is then applied to the most recent typical year's weather data (CALEE2018) for the appropriate climate zone to calculate baseline energy use over a normal weather year. This is the normalized baseline.

Where a secondary variable (non-weather related) is incorporated in the model, Program staff will collect and review available data pertaining to the secondary variable, and conduct a review with site staff to discuss how normal operations are reflected in the data. Through this data collection and review process, we will determine the best estimate of how the secondary variable would behave during the normal weather year, to create a normal profile of the secondary variable.

Net Savings Determination

The projects using the site-level NMEC approach will install a combination of measures and will therefore use a Net-to-Gross (NTG) ratio of 0.95, per Commission Resolution No. E-4952.

Adjustments for COVID19

To account for the impacts of COVID19 on energy consumption, the best approach is to include a variable in the models that categorizes the impacts of COVID19 within the standard NMEC process. Examples of these types of variables are vacancy rates in hospitality, beds occupied in healthcare, or occupancy (key card data or water use as a proxy for the number of people) in office buildings. If this is not possible, a non-routine adjustment to gross savings will be used to ensure savings claims are not over/underestimated. Methods to perform this adjustment will be submitted to SoCalGas for approval prior to implementation.

Where CalTRACK methods are being followed, the Program will consider the recommended methods included in that report *Comparison Groups for the COVID Era and Beyond*[6]. This report summarizes the findings of a Department of Energy-funded Comparison Groups Working Group led by Recurve Analytics, Inc. The working group facilitated open discussion via bi-weekly meetings and a public github[7] forum. This report primarily deals with population-level NMEC approaches and will thus not be a primary resource for the SCG Large Commercial Program's site-level NMEC approach. It is referenced here because the Program will be monitoring the results of other programs using these methods to ensure that our high level results are in alignment.

PG&E is currently researching alternative approaches to comparison group evaluation using index methods which also may be leveraged for the Program as they develop, with prior approval from SCG.

The Program will continue to monitor the output of the Efficiency Valuation Organization's (EVO's) Focus Group on COVID19, to ensure that best-practices with respect to pandemic related adjustments[8] are followed.

b. Data Collection Plan

The site-level NMEC approach allows for customization of M&V approaches based on site-specific characteristics and unique drivers of savings. The LCP will create project-level M&V plans that describe project-specific data collection for each site-level NMEC project. What follows is a discussion of general program level guidance for site-level NMEC data collection.

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[6] https://grid.recurve.com/uploads/8/6/5/0/8650231/recurve_comparison_group_methods_final_report_2.pdf

[7] https://github.com/recurve-methods/comparison_groups

[8] https://evo-world.org/en/news-media/m-v-focus/884-m-v-focus-march-2021-issue-8/1209-impacts-of-covid-19-on-measurement-and-verification-m-v-of-energy-savings-considerations-for-projects-programs

For the purposes of NMEC savings evaluation, models of energy use at site level meters will be created for the baseline period (pre-implementation) and reporting period (post implementation) using 12 months of input data as required by NMEC guidelines. Data requirements and sources for creation of site-level NMEC energy use models are listed in the exhibit below.

Exhibit 7 – Site-level NMEC Data Sources

Description of Data	Data Sources
Utility Data: Interval (hourly) Natural Gas Consumption Data for all meters on site	SoCalGas sends data export monthly Contingency: Account reps and CISR form External: Utility API import
Other Independent Variable (e.g., occupancy rates)	Data supplied by customer
Building occupancy schedule; Equipment specifications, schedules, and sequences	Audit observations and building staff interviews, BMS inspections,
Weather data (hourly or daily dry-bulb ambient temperatures)	Automatic download from NOAA or Dark Sky websites into NMEC Tools

Ex-ante savings estimates will be generated during the initial project investigation. Shorter term data will be gathered for these ex-ante savings estimates, if required. However, deemed or other workpaper values may be used where available and applicable. Where calculations are required, the Program will use industry standard tools (e.g., spreadsheet calculations, eQUEST models) and methods that are compatible with CPUC energy efficiency policy.

c. Monitoring and Documentation During the Reporting Period

Implementation team engineers (or Trade Pros) will remotely observe energy consumption data for each site-level NMEC project on a routine schedule over the reporting period. The reporting period observation frequency will be set for each project based on size and risk when completing the Pre-Implementation project-level M&V Plan. Observations will be frequent at first (typically monthly), but intervals will increase over time if performance is found to be stable. The purpose of these observations is to identify out-of-range performance or potential non-routine events (NREs) triggering investigation and corrective action. Methods used to detect NREs and apply corrective non-routine adjustments (NRAs) will be guided by the *IPMVP Application Guide on Non-Routine Events & Adjustments (October 2020, EVO 10400 – 1:2020)*.

Projects incorporating Energy Management Technologies (EMTs) will incorporate continuous monitoring and automated flagging of out-of-range performance and potential NREs for further investigation.

Project-level M&V reports will be submitted to SoCalGas with timing that corresponds to customer incentive payment structure described below. SoCalGas reviewers may be allowed remote access to all NMEC program participant EMT portals, to verify performance and accuracy of M&V reports. Supporting data will be available to SoCalGas reviewers through the program's online platform or can be sent directly by request. The M&V reports, with the data, will provide sufficient detail for SoCalGas reviewers to replicate the NMEC results.

In the event that a project is selected by CPUC Energy Division (ED) for further review, the Program Implementer will provide "marked" confidential copies of all relevant project files for SoCalGas review with all identifying customer information highlighted. Upon review, SoCalGas will redact all highlighted identifying information on the confidential copies and send them to ED for review.

d. Identifying and Adjusting for Non-Routine Events

NREs are unexpected changes in building operation or use that significantly impact energy use, skewing meter-based results. NREs may occur during baseline or post M&V periods, may be one-time occurrences which must be isolated from the regression model, or recurring events requiring adjustments incorporated into the model.

Site-level NREs will be identified by observing baseline and reporting period energy use and static factors (which can be monitored and reported on by building operators). Methods used to detect NREs within this data, and apply corrective non-routine adjustments (NRAs) will be guided by the *IPMVP Application Guide on Non-Routine Events & Adjustments (October 2020, EVO 10400 – 1:2020)*.

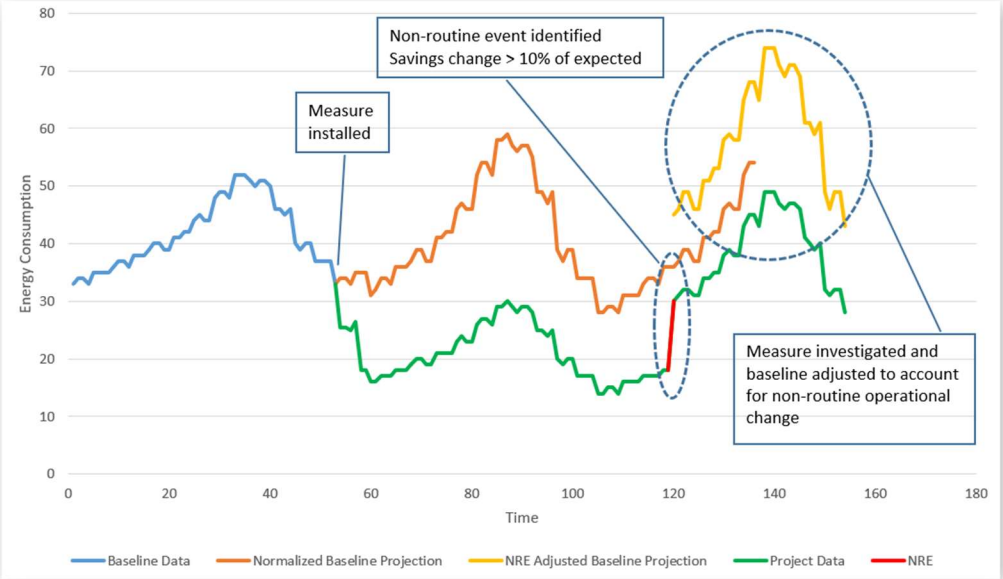
Significant NREs will be quantified regardless of whether they have a positive or negative impact on savings. Typical potential NREs for LCP customers are:

- Equipment outages or maintenance shutdowns
- Operating hours change
- Equipment replacements, additions, or removals unrelated to program measures
- Major building use or occupancy changes
- Construction or facility closures

Typical methods employed to prevent NREs from skewing NMEC results are:

1. Remove the data points from the regression data set during the NRE.
    a. Data points associated with NREs during the baseline period will be removed if they constitute a small portion of the overall data, and remaining data points contribute to models exhibiting acceptable goodness of fit. Where this is not the case, attempts will be made to include additional variables in the models to account for the NRE behavior. If acceptable goodness of fit cannot be achieved through the inclusion of additional variables, the associated projects will be moved to custom or deemed savings platforms or rejected from the program as appropriate.
    b. Data points associated with NREs during the performance period will only be investigated if they cause project savings to move above or below a preset threshold. Prior to data-point removal, these projects will undergo manual review and investigation by program engineering staff to determine the true nature of the NRE and will be submitted to SoCalGas for approval.
2. Quantify the impact of the NRE by performing measurements and calculations in compliance with custom calculation guidelines for each NRE. Calculated NRE adjustments will be normalized.
3. For deviation caused by incorrectly installed and/or improperly operated energy efficiency projects (the projects under evaluation for savings), the Program will attempt to rectify those problems so the measures operate as intended.

The exhibit below depicts how an NRE is identified and adjusted for. In this example, the customer site implemented increased operating hours during the reporting period.



e. Determining Program Influence

Influence for NMEC projects will follow the same procedures as that for custom, following the SoCalGas free-ridership screening processes. The program's Early Screening QA/QC procedure step requires determination and documentation of program influence. This screening identifies customers' plans for upgrades/replacements, barriers to implementing higher efficiency options, and the incentives or services needed to overcome these barriers. This step requires description of the options presented to customers, normal replacement practices for the customer, and how the monetary incentives, technical services or financing assistance influenced the customer to invest in higher efficiency. The following documents will be submitted to demonstrate influence:

- Timeline of customer/implementer meetings, deliverables, and decision-making milestones
- Documentation of customers replacement/upgrade practices, plans, and budgets.
- Reports and business cases of options presented to customer (requires measure level preliminary or Ex Ante savings estimates).
- Customer-implementer correspondence (e-mails, letters, meeting notes, letters, etc.)

All influence documentation associated with each project will be uploaded and stored in the program's online platform.

f. Targeted Savings

The LCP will not target Site-level NMEC projects that are expected to save less than 10% of the annual utility (or sub) metered consumption. However, if a project is determined to be a good candidate despite having projected savings below 10% of annual consumption, a rationale and explanation on how this savings will be distinguished from normal variations will be included in the Site-level M&V Plan. Site-level NMEC models' goodness-of-fit between energy use and the independent variables will meet thresholds suggested in the LBNL NMEC Guidance and ASHRAE Guideline 14 with the LBNL document being the prime authority.

g. Incentive Structure

Site-level NMEC savings will be claimed by SoCalGas after the projects are installed, prior to the end of performance period data collection. These savings will be calculated based on ex-ante savings estimates, adjusted as needed by changes in project details (e.g., scope, operating parameters).

Once the performance period is over and true NMEC savings are calculated, the program savings will be trued-up against the prior savings claimed at the end of project installation. This savings true-up will be based on differences between projected and realized project savings.

Program payments to customers will be split in portions between payments tied to installation, and a follow up payment provided after the performance period has been evaluated. See Subsection "Payments and Incentives" for more detail. In the event that savings degrade during the performance period to the point that the upfront payment was found to be in excess (i.e., greater than the NMC verified savings multiplied by the appropriate incentive rates), the Implementer will evaluate whether excess incentive paid is above a threshold value and decide whether to recover incentive funds from the customer.

Maximum customer incentives will be calculated based on net, lifecycle savings. Lifecycle savings will be based on project-level EULs (see M&V Plan Subsection "Project Level EULs").

Net, discounted lifecycle savings will be multiplied by site-level NMEC incentive rates to calculate the maximum incentive. These calculations will be based on ex-ante savings estimates, which will then be trued-up to NMEC measured savings once obtained.

Maximum incentive calculations may receive a DAC/HTR multiplier where justified.

Depending on customer barriers and needs, optional technical services will be provided to customers who elect to receive such services in lieu of cash incentives.

The program will pay (at its discretion) up to 50% of the estimated (ex-ante estimates) approved customer incentive following verified installation, for measures with submitted and approved installation completion documentation, including itemized invoices. The program may offer less than 50% based on our assessment of risk to savings. The remainder of the customer incentive will be paid, as follows:

- The full remainder of the verified incentive for all non-BRO measures, and 50% of the remaining incentive for BRO measures at approval of the **12-month post-installation M&V report.**
- The full remainder of the incentive for all BRO measures after approval of the report following the **CPUC-approved post-installation monitoring period for BRO measures.** No more than 75% of the incentive for BRO measures will be paid prior to verification of this CPUC-approved BRO monitoring period post-implementation M&V report.

For the purposes of the above payment approach, BRO measure impacts will be estimated based on ex-ante savings estimates and trued up to NMEC measured savings

h. Expected Costs, Energy Savings, Peak Impacts and EULs

Program estimates of costs, energy savings, peak impacts, and Effective Useful Life of measures are based on Database for Energy Efficient Resources (DEER) values and latest workpapers. Costs from previously implemented projects or other reputable sources (e.g., RS Means) may be used when DEER or approved workpaper values are unavailable.

As the program develops, the Implementer will adjust ex-ante estimates of costs, savings, peak impacts, and EULs for ongoing projects. These new ex-ante estimates will be developed using a combination of up-to-date DEER values (including those provided by the READI Tool), approved custom calculation methods, and other approaches. Examples of other approaches may be use of past program performance or use of out-of-state Technical Resource Manual (TRM) values. All ex-ante estimates will be presented to SoCalGas for potential review, and will be

ultimately trued-up using approved NMEC savings analysis and true project costs evidenced by receipts, invoices, etc.

i. Project Level EULs

- Project level EULs will be calculated as weighted averages of individual measure level EULs that make up a given project. Weighting of the measures in these calculations will be based on the individual measure's level savings as a percentage of the project. Savings for the purposes of this calculation are estimated first-year savings.
- Individual measure level EULs will be based on the 2014 DEER EUL table. If a DEER EUL does not exist for a measure, the implementation team will propose an estimated EUL for SoCalGas approval.
- To facilitate EUL estimation, the implementation team will collect site-level data for the implemented measures and document any equipment being replaced.

j. Program Target Population and Eligibility

The LCP serves commercial facilities (e.g. hospitals, lodging, offices, and restaurants) throughout SoCalGas service territory, with an emphasis on HTR, DAC. Each property uses over 50,000 therms annually and is therefore considered a "Large" customer.

All customers without excessive variability in operations and occupancy that meet savings levels and statistical fitness thresholds are eligible for Site NMEC. NMEC will be used for project that bundle interactive, predominantly existing baseline (AR, AOE and BRO), measures. The program's Early Screening step includes screening for NMEC. This includes verification of an appropriate utility meter location (or sub-meter meeting accuracy requirements as found in LBNL NMEC Guidance), and permissible project types. Site-level NMEC will not typically be used for projects with ex-ante savings estimates below 10% of baseline energy consumption but there may be exceptions. If a project is determined to be a good candidate despite having projected savings below 10% of annual consumption, SoCalGas will be notified and a rationale and explanation on how this savings will be distinguished from normal variations will be included in the Site-level M&V Plan. Eligible site-level NMEC projects must be able to have their energy use simulated with models meeting statistical goodness-of-fit thresholds suggested in the LBNL NMEC Guidance and ASHRAE Guideline 14.

k. To-Code Savings Insight

Insight into questions surrounding to-code savings will be generated during the program's Early Screening QA/QC procedure. This step includes an identification of customers' business-as-usual plans for upgrades/replacements, the customers' barriers to implementing higher efficiency options, and the incentives or services needed to overcome these barriers. The following documents will contribute insight into why these customers currently operate below code requirements:

- Documentation of customers replacement/upgrade history, practices, plans, and budgets.
- Reports and business cases of options presented to customer (requires measure level preliminary or Ex Ante savings estimates).
- Customer-implementer correspondence (e-mails, letters, meeting notes, letters, etc.)

See the "To-Code Savings" section of the Implementation Plan for more information.

l. Bid M&V Plan

An M&V Plan was not included in the Implementer's original bid.

Appendices

A. Work Plan

B. Program Manual

C. Measure List and Workpapers

Appendix A. Work Plan

Work Plan – SoCalGas Large Commercial		
Program Launch Tasks	**Major Milestone**	**Timeline (Assumes 08/03/2021 launch date)**
Program Planning & Design	Ensure Q1 goals achieved with best practices, recruit, and train Trade Pros, incorporate feedback from Alliance Steering Committee and SoCalGas.	45 days after CPUC Advice Letter Approval *(07/19/2021)*
Develop IT security	Submit attestation form	15 days after Advice Letter approval *(06/19/2021)*
Complete Implementation Plan	Submit Implementation Plan, including NMEC M&V plan, Program Manual, logic model, QA/QC plan	60 days after CPUC Advice Letter Approval *(08/03/2021)*
Develop Marketing Documents	Submit Marketing Plan and marketing collateral, including Q&A document	60 days after CPUC Advice Letter Approval *(08/03/2021)*
Develop Willdan Program Documents	Submit customer enrollment forms, incentive agreement, CIR, and other program documents for review and approval by SoCalGas.	60 days after CPUC Advice Letter Approval *(08/03/2021)*
Customize Online Platform	Complete tailoring of online platform to work with EECP. Customize audit tools, load targeting data, and launch platform to track status (PM, automated QA/QC, reporting, EM&V).	60 days after CPUC Advice Letter Approval *(08/03/2021)*
Program Launch Meeting	Notice to Proceed	60 days after CPUC Advice Letter Approval *(08/03/2021)*

Work Plan – SoCalGas Large Commercial		
Ongoing Tasks	**Major Milestone**	**Timeline (Assumes 08/03/2021 launch date)**
Intelligent Outreach	Use LoadSEER to customize targeting and outreach. Leverage CBO, trade networks, and SoCalGas account reps relationships. Tailor marketing and education outreach.	Perform quarterly, starting immediately after program launch *(07/01/2021-12/31/2023)*
Comprehensive Audit	Streamline audit process to minimize customer hassle. Provide benchmarking and options for path to ZNE.	Throughout program cycle *(07/01/2021-12/31/2023)*
Present Business Case	Offer customer design advice, engineering services, RFP development, turnkey delivery options, and financing.	Throughout program cycle *(07/01/2021-12/31/2023)*
Install Project	Implement projects using DIY, DI, Trade Pros, turnkey installation. Use centralized material procurement.	Throughout program cycle *(07/01/2021-02/28/2024)*
Savings Verification	Validate savings. If deemed, perform post-inspection and verify quantities installed. If custom or NMEC, employ data loggers, OpenEEmeter, or other monitoring efforts. Third-Party engineers and SoCalGas Engineering Services will review to ensure savings align.	Throughout program cycle, including closeout year *(07/01/2021-02/28/2024)*
Inspection	Up to 100% of projects pre- and post-inspected. Iterative fine-tuning and engagement.	Throughout program cycle *(07/01/2021-02/28/2024)*
Shutdown Tasks	**Major Milestone**	**Timeline**
Create Shutdown Plan	Close out Program	Completed by program end date *(03/31/2024)*

Work Plan – SoCalGas Large Commercial		
Inform Stakeholders	Identify stakeholders and ensure they are aware of shutdown plan	Completed by program end date *(03/31/2024)*
Resolve Outstanding Items	Work with SoCalGas Program Management team to ensure remaining issues are closed out	Completed by program end date *(03/31/2024)*
Final Program Report	Complete close out report for program	Completed by program end date *(03/31/2024)*

Appendix B. Measure List and Workpapers

Measure	Type	Workpaper	Link
Add Door to Medium Temperature Open Vertical Display Case	Deemed, NMEC	SWCR015	https://www.caetrm.com/login/?next=/
Add VFD and ADEC to AC unit with Gas Heat	Deemed, NMEC	SWHC023	https://www.caetrm.com/login/?next=/
CO2 Sensor and ADEC Control for Gas Pack with no Control	Deemed, NMEC	SWHC006-01	https://www.caetrm.com/login/?next=/
CO2 Sensor for Gas Pack with ADEC Control	Deemed, NMEC	SWHC006-01	https://www.caetrm.com/login/?next=/
Commercial Air-Cooled Multiplex Floating Head Pressure Control	Deemed, NMEC	SWCR008-01	https://www.caetrm.com/login/?next=/
Commercial Cooking - Combination Oven, <15 Pans	Deemed, NMEC	SWFS003	https://www.caetrm.com/login/?next=/
Commercial Cooking - Combination Oven, >28 Pans	Deemed, NMEC	SWFS003	https://www.caetrm.com/login/?next=/
Commercial Cooking - Combination Oven, 15-28 Pans	Deemed, NMEC	SWFS003	https://www.caetrm.com/login/?next=/
Commercial Cooking - Conveyor Broiler, 2 Lane Width (<20 inch)	Deemed, NMEC	SWFS017	https://www.caetrm.com/login/?next=/
Commercial Cooking - Conveyor Broiler, 3 Lane Width (<20-26 inch)	Deemed, NMEC	SWFS017	https://www.caetrm.com/login/?next=/
Commercial Cooking - Conveyor Broiler, 4 Lane Width (>26 inch)	Deemed, NMEC	SWFS017	https://www.caetrm.com/login/?next=/
Commercial Dishwasher For Businesses (Dishwasher, Single Tank Door Type), <0.76 (SCE-SCG)	Deemed, NMEC	SWFS002	https://www.caetrm.com/login/?next=/
Commercial Dishwasher For Businesses (Dishwasher, Single Tank Door Type), <0.76 (SCG Only)	Deemed, NMEC	SWFS002	https://www.caetrm.com/login/?next=/
Commercial Evap-Cooled Multiplex Floating Head Pressure Control	Deemed, NMEC	SWCR008-01	https://www.caetrm.com/login/?next=/
Commercial Fryer, >=50 percent	Deemed, NMEC	SWFS011	https://www.caetrm.com/login/?next=/
Commercial Griddle - Heavy load cooking EF >38 percent	Deemed, NMEC	SWFS004	https://www.caetrm.com/login/?next=/
Commercial Hot Water Boiler - Large - Tier I, >200 Mbtuh	Deemed, NMEC	SWWH005	https://www.caetrm.com/login/?next=/
Commercial Hot Water Boiler - Large - Tier II, >200 Mbtuh	Deemed, NMEC	SWWH005	https://www.caetrm.com/login/?next=/
Commercial Hot Water Boiler - Small/Medium - Tier I, <=200 Mbtuh	Deemed, NMEC	SWWH005	https://www.caetrm.com/login/?next=/
Commercial Hot Water Boiler - Small/Medium - Tier II, <=200 Mbtuh	Deemed, NMEC	SWWH005	https://www.caetrm.com/login/?next=/
Commercial Multiplex Floating Suction Pressure Control	Deemed, NMEC	SWCR008-01	https://www.caetrm.com/login/?next=/

Measure	Type	Workpaper	Link
Commercial Stor. Heaters, <=75 kBtu/hr, 30G-MD-0.64 UEF	Deemed, NMEC	SWWH007	https://www.caetrm.com/login/?next=/
Commercial Stor. Heaters, <=75 kBtu/hr, 40G-HD-0.68 UEF	Deemed, NMEC	SWWH007	https://www.caetrm.com/login/?next=/
Commercial Stor. Heaters, <=75 kBtu/hr, 50G-MD-0.64 UEF	Deemed, NMEC	SWWH007	https://www.caetrm.com/login/?next=/
Commercial Stor. Heaters, >75 kBtu/hr, 0.83 TE	Deemed, NMEC	SWWH007	https://www.caetrm.com/login/?next=/
Commercial Underfired Broiler, QPL EF	Deemed, NMEC	SWFS019	https://www.caetrm.com/login/?next=/
Convection Oven, >=46 percent	Deemed, NMEC	SWFS001	https://www.caetrm.com/login/?next=/
Demand Control Ventilation Hood Control	Deemed, NMEC	SWFS012	https://www.caetrm.com/login/?next=/
Domestic Hot Water Loop Temperature Controller, Multifamily	Deemed, NMEC	SWWH016	https://www.caetrm.com/login/?next=/
Double-rack Oven, >=50 percent	Deemed, NMEC	SWFS014	https://www.caetrm.com/login/?next=/
Duct Seal High to Low Maintenance	Deemed, NMEC	SWSV001	https://www.caetrm.com/login/?next=/
Duct Seal Med to Low Maintenance	Deemed, NMEC	SWSV001	https://www.caetrm.com/login/?next=/
Economizer Control Adjustment AC Unit with Gas Heat	Deemed, NMEC	SWSV010	https://www.caetrm.com/login/?next=/
Economizer Control Replacement AC Unit with Gas Heat	Deemed, NMEC	SWSV010	https://www.caetrm.com/login/?next=/
Furnace, Commercial	Deemed, NMEC	SWHC011-01	https://www.caetrm.com/login/?next=/
Gas Modulating Valve - >=30 Lbs and <=200Lbs	Deemed, NMEC	SWAP012	https://www.caetrm.com/login/?next=/
Greenhouse Curtain	Deemed, NMEC	SWBE001	https://www.caetrm.com/login/?next=/
Heat Recovery Rooftop Unit (HR-RTU), >10 Ton	Deemed, NMEC	SWHC048	https://www.caetrm.com/login/?next=/
High-Efficiency Residential Clothes Washers For Businesses (CEE Tier 3)	Deemed, NMEC	SWAP004	https://www.caetrm.com/login/?next=/
Hot Water Pipe Insulation	Deemed, NMEC	SWWH017	https://www.caetrm.com/login/?next=/
HVAC Zone Occupancy Controls	Deemed, NMEC	SWHC012	https://www.caetrm.com/login/?next=/
Infrared Film (for Greenhouses) single sheet, min thickness of 6 mil	Deemed, NMEC	SWBE002	https://www.caetrm.com/login/?next=/
Laminar Flow Restrictor (LFR) - GPM <= 2.2	Deemed, NMEC	SWWH004	https://www.caetrm.com/login/?next=/
Large Conveyor Oven, >=42 percent	Deemed, NMEC	SWFS008	https://www.caetrm.com/login/?next=/
Low Flow Showerhead	Deemed, NMEC	SWWH002	https://www.caetrm.com/login/?next=/

Measure	Type	Workpaper	Link
Low-Flow Pre-Rinse Spray Valve (PRSV) For Businesses, GPM <=1.07	Deemed, NMEC	SWFS013	https://www.caetrm.com/login/?next=/
Ozone Laundry System, Venturi Injection or Bubble Diffusion	Deemed, NMEC	SWAP005	https://www.caetrm.com/login/?next=/
Pipe/Fittings Insulation - Hot Water (HW), <1 inch	Deemed, NMEC	SWWH017	https://www.caetrm.com/login/?next=/
Pipe/Fittings Insulation - Hot Water (HW), >=1 inch and <4 inch	Deemed, NMEC	SWWH017	https://www.caetrm.com/login/?next=/
Pipe/Fittings Insulation - Hot Water (HW), >=4inch	Deemed, NMEC	SWWH017	https://www.caetrm.com/login/?next=/
Pipe/Fittings Insulation - Steam <15 psig, <1 inch	Deemed, NMEC	SWWH017	https://www.caetrm.com/login/?next=/
Pipe/Fittings Insulation - Steam <15 psig, >=1 inch and <4 inch	Deemed, NMEC	SWWH017	https://www.caetrm.com/login/?next=/
Pipe/Fittings Insulation - Steam <15 psig, >=4inch	Deemed, NMEC	SWWH017	https://www.caetrm.com/login/?next=/
Pool Cover - Indoor	Deemed, NMEC	SWRE001	https://www.caetrm.com/login/?next=/
Pool Cover - Outdoor	Deemed, NMEC	SWRE001	https://www.caetrm.com/login/?next=/
Pool Heater - TE >=84 percent	Deemed, NMEC	SWRE003	https://www.caetrm.com/login/?next=/
Process Boiler - Hot Water Tier I, <=20MMBtuh	Deemed, NMEC	SWWH008	https://www.caetrm.com/login/?next=/
Process Boiler - Hot Water Tier II, <=20MMBtuh	Deemed, NMEC	SWWH008	https://www.caetrm.com/login/?next=/
Process Boiler - Steam, <=20MMBtuh	Deemed, NMEC	SWWH008	https://www.caetrm.com/login/?next=/
Process Multiplex Floating Suction Pressure Control	Deemed, NMEC	SWCR008-01	https://www.caetrm.com/login/?next=/
Recirculating Pump Controll, 24hr/day required	Deemed, NMEC	SWWH015	https://www.caetrm.com/login/?next=/
Recirculating Pump Time Clock, 7-day scheduling capabilities (or better)	Deemed, NMEC	SWWH021	https://www.caetrm.com/login/?next=/
Residential Smart (Communicating) Thermostat replacing Non-Programmable&ProgrammableThermostat	Deemed, NMEC	SWHC039-03	https://www.caetrm.com/login/?next=/
Small Pkg AC, increase or decrease refrigerant charge to factory specified level	Deemed, NMEC	SWSV002-01	https://www.caetrm.com/login/?next=/
Space-Heating Boiler - Large Hot Water - Tier 1, >2500 Mbtuh	Deemed, NMEC	SWHC004	https://www.caetrm.com/login/?next=/
Space-Heating Boiler - Large Hot Water - Tier 2, >2500 Mbtuh	Deemed, NMEC	SWHC004	https://www.caetrm.com/login/?next=/
Space-Heating Boiler - Large Steam - Tier 1, >2500	Deemed, NMEC	SWHC004	https://www.caetrm.com/login/?next=/
Space-Heating Boiler - Large Steam - Tier 2, >2500	Deemed, NMEC	SWHC004	https://www.caetrm.com/login/?next=/

Measure	Type	Workpaper	Link
Space-Heating Boiler - Medium Hot Water - Tier 1, 300-2500 Mbtuh	Deemed, NMEC	SWHC004	https://www.caetrm.com/login/?next=/
Space-Heating Boiler - Medium Hot Water - Tier 2, 300-2500 Mbtuh	Deemed, NMEC	SWHC004	https://www.caetrm.com/login/?next=/
Space-Heating Boiler - Medium Steam, 300-2500	Deemed, NMEC	SWHC004	https://www.caetrm.com/login/?next=/
Steam Boiler Stack Economizer - Condensing (Dual-Stage), <=20MMBtuh	Deemed, NMEC	SWPR007	https://www.caetrm.com/login/?next=/
Steam Boiler Stack Economizer - Feedwater (Single-Stage), <=20MMBtuh	Deemed, NMEC	SWPR007	https://www.caetrm.com/login/?next=/
Steam Trap, >12 hours per day	Deemed, NMEC	SWPR003	https://www.caetrm.com/login/?next=/
Steamer-Gas	Deemed, NMEC	SWFS005	https://www.caetrm.com/login/?next=/
Tank Insulation	Deemed, NMEC	SWWH004	https://www.caetrm.com/login/?next=/
Tank Insulation - 1 inch, High-temperature application	Deemed, NMEC	SWWH018	https://www.caetrm.com/login/?next=/
Tank Insulation - 1 inch, Low-temperature application	Deemed, NMEC	SWWH018	https://www.caetrm.com/login/?next=/
Tank Insulation - 2 inch, High-temperature application	Deemed, NMEC	SWWH018	https://www.caetrm.com/login/?next=/
Tank Insulation - 2 inch, Low-temperature application	Deemed, NMEC	SWWH018	https://www.caetrm.com/login/?next=/
Undercounter Dishwasher, Commercial	Deemed, NMEC	SWFS018	https://www.caetrm.com/login/?next=/
Unoccupied Fan Control AC Unit with Gas Heat	Deemed, NMEC	SWHC009	https://www.caetrm.com/login/?next=/
VFD and NEMA Motor for Gas Pack with ADEC Control	Deemed, NMEC	SWHC023	https://www.caetrm.com/login/?next=/
VFD and NEMA Motor with ADEC Control for Gas Pack with no Control	Deemed, NMEC	SWHC023	https://www.caetrm.com/login/?next=/
VFD for Gas Pack with ADEC Control	Deemed, NMEC	SWHC023	https://www.caetrm.com/login/?next=/
Water Heating - Lg Storage Water Heater TE>=0.9	Deemed, NMEC	SWWH007	https://www.caetrm.com/login/?next=/
Water Heating- Aerator Faucet for Commercial Buildings- Com	Deemed, NMEC	SWWH019	https://www.caetrm.com/login/?next=/
Water Heating- Aerator Faucet for Commercial Buildings- MFm Cmn	Deemed, NMEC	SWWH001	https://www.caetrm.com/login/?next=/
BOILERS/HW/STEAM SYSTEMS RETROFIT/NEW-DIST. SYSTEM-HEAT RECOVERY	Custom, NMEC	PGE Pick List - PGECOALL100 R11	https://energyinsightpartners.pge.com/login
COMMISSIONING-RCX RESET CONTROL SETTING-HVAC-SETPOINT CHANGE	Custom, NMEC	PGE Pick List - PGECOALL100 R11	https://energyinsightpartners.pge.com/login

Measure	Type	Workpaper	Link
HVAC EXHAUST/VENTILATION - BLDG DISTRIB FANS VFD - To-Code/Std	Custom, NMEC	PGE Pick List - PGECOALL100 R11	https://energyinsightpartners.pge.com/login
HVAC RETROFIT/NEW-AHU/PACKAGE UNITS-VAV-CONVERT, INCL TERMINAL BOXES	Custom, NMEC	PGE Pick List - PGECOALL100 R11	https://energyinsightpartners.pge.com/login
HVAC RETROFIT/NEW-AHU/PACKAGE UNITS-VAV-CONVERT, NOT INCL TERMINAL BOXES	Custom, NMEC	PGE Pick List - PGECOALL100 R11	https://energyinsightpartners.pge.com/login
AC Diagnostic, Repair and Tune-up	Custom, NMEC	SDGE3279-421025	https://cedars.sound-data.com/
Boiler Controls	Custom, NMEC	SDGE3222-463203B	https://cedars.sound-data.com/
Conversion of Pneumatic Controls to DDC controls	Custom, NMEC	SCE-501105052	https://cedars.sound-data.com/
EMS and EMT - Modification Add-On including DCV	Custom, NMEC	SDGE3220-463154	https://cedars.sound-data.com/
Optimum start/stop EMS control - rcx	Custom, NMEC	Record Level Data - CEDARS -SCE-2018-Q3-0000858	https://cedars.sound-data.com/
Regenerative Thermal Oxidizer	Custom, NMEC	SCE-NMMP-10-000051	https://cedars.sound-data.com/
Economizer - air side - Add-on Equipment	Custom, NMEC	READI v2.5.1 - DEER-ImpID D03-056	http://www.deeresources.com/index.php/deer-versions/readi
Economizer - water side - Add-on Equipment	Custom, NMEC	READI v2.5.1 - DEER-ImpID D03-098	http://www.deeresources.com/index.php/deer-versions/readi
Water Heating -Instantaneous - Gas <=200MBtuh	Custom, NMEC	READI v2.5.1 - DEER-ImpID D14 v1.04 WtrHt-SmlInst-Gas	http://www.deeresources.com/index.php/deer-versions/readi
Water Heating -Instantaneous -Gas >200MBtuh	Custom, NMEC	READI v2.5.1 - DEER-ImpID D14 v1.04 WtrHt-SmlInst-Gas	http://www.deeresources.com/index.php/deer-versions/readi
Automatic sash closer controls - Add-on Equipment	Custom, NMEC	Sample Project: Illumina, SDGE CAP	N/A
Combined Heating and Cooling - Commercial Heat Pump	Custom, NMEC	Electrification - wHP v2-23-20	N/A
Commercial Domestic Water Heater to Heat Pump	Custom, NMEC	Electrification - wHP v2-23-20	N/A
EMS and EMT - New System	Custom, NMEC	06 GridPoint - CA IOU-Actual EMS Savings Calc_Lime Energy_kWh+Therms SCE/SCG	N/A
Frictionless compressor retrofit	Custom, NMEC	Custom Estimate	N/A
General HVAC Retro-commissioning (Electric)	Custom, NMEC	Generic Rcx Measure - Willdan Estimate	N/A

Measure	Type	Workpaper	Link
General HVAC Retro-commissioning (Gas)	Custom, NMEC	Generic Rcx Measure - Willdan Estimate	N/A
Lab Air Flow Optimization and Fume Hood Retrofits	Custom, NMEC	Sample Project: 25% of AQMD Savings; cost at 4 year simple PB	N/A
Liquid Pool Cover	Custom, NMEC	HeatSavr EM&V Study - Sempra, Rev2	N/A
Outdoor Pool Cover - Commercial	Custom, NMEC	Custom Estimate	N/A
Reduced air change rate	Custom, NMEC	Sample Project: Genentec	N/A
Refrigeration Controls Retrocommissioning (Head and Suction Pressure Reset)	Custom, NMEC	Custom Estimate	N/A
Retrocommissioning - Behavioral	Custom, NMEC	Generic Rcx Measure - Willdan Estimate	N/A
Retrocommissioning - HVAC	Custom, NMEC	Generic Rcx Measure - Willdan Estimate	N/A
Retrocommissioning - Monitoring Based Retrocomissioning	Custom, NMEC	RCx SP 2 Years - Willdan Estimate	N/A
Variable air volume for fumehoods	Custom, NMEC	Sample Project: AQMD modelled savings and 2X orig. budget costs	N/A