Statewide State of California Energy Strategy and Support (SOC ESS) Program

Implementation Plan

Prepared for:
Pacific Gas and Electric

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CONTENTS

FIGURES

TABLES

DEFINITIONS

AESC	Alternative Energy Systems Consulting, Inc.
AOE	Add-on Equipment
AR	Accelerated Replacement
BOC	Building Operator Certification
BRO	Behavioral, Retro-commissioning, and Operational
CALCTP	California Advanced Lighting Controls Training Program
CCC	California Community Colleges
CDCR	California Department of Corrections & Rehabilitation
CET	Cost Effectiveness Tool
CPUC	California Utilities Commission
CRM	Customer Relationship Manager
CSU	California State University
DAC	Disadvantaged Community
DEER	Database of Energy Efficiency Resources
DEI	Diversity, Equity, and Inclusion
DINI	Direct Implementation Non-Incentive
DR	Demand Response
EAP	Energy Action Plan
EC	Energy Concierge
ED	Energy Division
EE	Energy Efficiency
EEM	Energy Efficiency Measure
EM&V	Evaluation, Measurement & Verification
ERI	Energy Resources Integration
ESCO	Energy Service Company
ESS	Energy Strategy & Support Program
EUL	Effective Useful Life
EVO	Efficiency Valuation Organization
FMC	Full Measure Cost
FTE	Full Time Equivalent
GHG	Greenhouse Gas
HBCU	Historically Black Colleges and Universities
HOPP	High Opportunity Program or Project
HTR	Hard-to-Reach
HVAC	Heating, Ventilation, and Air Conditioning

IDSM	Integrated Demand Side Management
IMC	Incremental Measure Cost
IOU	Investor-Owned Utility
IPMVP	International Performance Measurement &Verification Protocol
LBNL	Lawrence Berkeley National Laboratory
MBCx	Monitoring-Based Commissioning
M&V	Measurement and Verification
NMEC	Normalized Meter Energy Consumption
NR	Normal Replacement
NRE	Non-Routine Events
NTG	Net-to-Gross
OBF	On-Bill Financing
O&M	Operational and Maintenance
P1	Pathway 1
P2	Pathway 2
PAC	Program Administer Cost
PG&E	Pacific Gas and Electric
POU	Publicly Owned Utility
PPA	Program Participation Agreement
PQTP	Pre-Qualified Trade Professional
QA/QC	Quality Assurance/Quality Control
RCx	Retrocommissioning
ROI	Return on Investment
RFQ	Request for Qualifications
SCE	Southern California Edison
SDG&E	San Diego Gas and Electric
SEI	Strategic Energy Innovations
SOC	State of California
SoCalGas	Southern California Gas Company
TA	Trade Ally
TRC	Total Resource Cost
UC	University of California
WE&T	Workforce Education and Training
WMBE	Women And Minority-Owned Business
WWTP	Wastewater Treatment Plant

PROGRAM OVERVIEW

PROGRAM BUDGET AND SAVINGS

1. Program Name

Statewide State of California Energy Strategy and Support (SOC ESS). Program designed and implemented by Alternative Energy Systems Consulting, Inc. (AESC).

2. Program ID Number

PGE_SW_IP_Gov
PGE_SW_IP_Gov_PA

3. Program Budget Table

Table 1 - Program Budget

EE Program Contract Budget	[A] YEAR 1 PROGRAM BUDGET (2021)	[B] YEAR 2 PROGRAM BUDGET (2022)	[C] YEAR 3 PROGRAM BUDGET (2023)	[D] YEAR 4 PROGRAM BUDGET (2024)	[E] YEAR 5 PROGRAM BUDGET (2025)	[F] YEAR 6 PROGRAM BUDGET (2026)	[G] YEAR 7 PROGRAM BUDGET (2027)	[H] YEAR 8 PROGRAM BUDGET (2028)	[I] TOTAL PROGRAM BUDGET	[J] BUDGET COST CATEGORIES
3P Program Administrative Costs	Input calendar year 1 program budget.	Input calendar year 2 program budget.	Input calendar year 3 program budget.	Input calendar year 4 program budget.	Input calendar year 5 program budget.	Input calendar year 6 program budget.	Input calendar year 7 program budget.	Input calendar year 8 program budget.	Calculated budget totals.	Calculated cost category %.
Marketing & Outreach Costs	$56,000.00	$96,000.00	$96,000.00	$96,000.00	$96,000.00	$96,000.00	$80,000.00	$20,000.00	$636,000.00	2%
Direct Implementation: Incentives & Rebate Costs	$8,000.00	$2,500.00	$5,000.00	$2,500.00	$2,500.00	$-	$-	$-	$20,500.00	0%
Direct Implementation: Non-Incentive (DINI) Costs	$-	$198,648.23	$1,777,060.64	$2,863,500.71	$3,666,290.98	$4,228,397.34	$385,560.00	$-	$13,119,457.90	51%
TOTALS	**$56,000.00**	**$1,193,203.20**	**$2,313,608.28**	**$2,686,069.28**	**$3,168,939.68**	**$2,008,626.06**	**$363,432.50**	**$20,000.00**	**$11,809,878.99**	**46%**
IDSM Program Contract Budget	**[K] YEAR 1 PROGRAM BUDGET (2021)**	**[L] YEAR 2 PROGRAM BUDGET (2022)**	**[M] YEAR 3 PROGRAM BUDGET (2023)**	**[N] YEAR 4 PROGRAM BUDGET (2024)**	**[O] YEAR 5 PROGRAM BUDGET (2025)**	**[P] YEAR 6 PROGRAM BUDGET (2026)**	**[Q] YEAR 7 PROGRAM BUDGET (2027)**	**[R] YEAR 8 PROGRAM BUDGET (2028)**	**[S] TOTAL PROGRAM BUDGET**	**[T] BUDGET COST CATEGORIES**
*	Input calendar year 1 program budget.	Input calendar year 2 program budget.	Input calendar year 3 program budget.	Input calendar year 4 program budget.	Input calendar year 5 program budget.	Input calendar year 6 program budget.	Input calendar year 7 program budget.	Input calendar year 8 program budget.	Calculated budget totals.	Calculated cost category %.
3P Program Administrative Costs	$-	$-	$-	$-	$-	$-	$-	$-	$-	0%
Marketing & Outreach Costs	$-	$-	$-	$-	$-	$-	$-	$-	$-	0%
Direct Implementation: Incentives & Rebate Costs	$-	$-	$-	$-	$-	$-	$-	$-	$-	0%
Direct Implementation: Non-Incentive (DINI) Costs	$-	$125,000.00	$150,000.00	$150,000.00	$75,000.00	$-	$-	$-	$500,000.00	100%
TOTALS	**$-**	**$125,000.00**	**$150,000.00**	**$150,000.00**	**$75,000.00**	**$-**	**$-**	**$-**	**$500,000**	*
TOTAL EE + IDSM BUDGETS	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**Calculated budget totals.**	*
TOTAL NTE CONTRACT BUDGET	$120,000.00	$1,615,351.00	$4,341,669.00	$5,798,070.00	$7,008,731.00	$6,333,023.00	$828,993.00	$40,000.00	$26,085,837.00	*

4. Program Gross Impacts Table

Table 2 - Program Gross Impacts

Calendar Year Savings Target (from CET output file) [E] ANNUALIZED FIRST-YEAR ENERGY SAVINGS - GROSS										
	2021	2022	2023	2024	2025	2026	2027	2028	Total	Lifecycle
kWh	-	1,188,482	10,438,432	17,026,432	19,796,486	23,549,590	-	-	71,999,423	723,790,739
kW	-	453	4,150	6,785	7,894	9,399	-	-	28,681	-
therms	-	11,368	298,406	307,406	397,406	370,406	-	-	1,384,994	18,972,651

Calendar Year Savings Target (from CET output file) [F] ANNUALIZED FIRST-YEAR ENERGY SAVINGS - NET										
	2021	2022	2023	2024	2025	2026	2027	2028	Total	Lifecycle
kWh	-	823,814	6,975,592	11,274,892	13,526,716	16,572,962	-	-	49,173,976	501,572,309
kW	-	316	2,776	4,495	5,396	6,617	-	-	19,600	-
therms	-	5,921	180,313	160,513	210,913	204,163	-	-	761,824	10,567,580

Calendar Year Savings Target [G] CALCULATED NET-TO-GROSS (NTG)										
	2021	2022	2023	2024	2025	2026	2027	2028	Total	Lifecycle
kWh	-	0.69	0.67	0.66	0.68	0.70	-	-	0.68	0.69
kW	-	0.70	0.67	0.66	0.68	0.70	-	-	0.68	-
therms	-	0.52	0.60	0.52	0.53	0.55	-	-	0.55	0.56

[H] ELECTRIC BENEFITS	[I] GAS BENEFITS	[J] TRC COSTS	[K] NET BENEFITS
From CET output	From CET output	From CET output	[K] = ([H] + [I]) - [J]
38,808,695.12	8,473,017.18	45,290,096.66	1,991,615.65

5. Program Cost Effectiveness

The Program Cost Effectiveness is provided in **Table 3** – **Program Total Resource Cost (TRC)**. Per the Cost-Effectiveness Tool (CET) output, the TRC is 1.04. The Program TRC Ratio No Admin, per the CET output, is 1.33.

Table 3 - Program Total Resource Cost

[A] TRC Test Results	[B] PAC Test Results	[C] RIM Test Results	[D] TRC Ratio No Admin
From CET Output	From CET Output	From CET Output	From CET Output
1.04	2.46	0.59	1.33

6. Program Cost Effectiveness

The Program Administrator Cost (PAC) is provided in **Table 4** - **Program PAC**. Per the CET output, the PAC is 2.46.

Table 4 - Program Administrator Cost

[A] TRC Test Results	[B] PAC Test Results	[C] RIM Test Results	[D] TRC Ratio No Admin
From CET Output	From CET Output	From CET Output	From CET Output
1.04	2.46	0.59	1.33

7. Type of Program Implementer

Third Party

8. Market Sector(s)

Public

9. Type of Program

Resource Acquisition

10. Market Channels and Intervention Strategies

Downstream: Portfolio-level Energy Action Plans, Site-Specific Audits, Energy Concierge, Technical Assistance, Policy Assistance, Pre-Qualified Trade Professional List, Staff

Augmentation, Incentives, Disadvantaged Community (DAC) Incentive Enhancement, Financing Support, Select Submetering, Select Facility Manger Coaching, Select Monitoring, Integrated Demand Side Management
(IDSM) integration, and Publicly Owned Utilities (POU) coordination.

IMPLEMENTATION PLAN NARRATIVE

1. Program Description

Describe the program, its rationale and objectives.

The State of California (SOC) Energy Strategy and Support Program (ESS) is a statewide energy efficiency program starting in 2021 administered by Pacific Gas and Electric (PG&E) and supported by the state's other investor-owned utilities (IOUs) under the auspices of the California Public Utilities Commission (CPUC).

The program builds on the State's successful existing approaches while adding new channels to address key barriers California state agencies experience while working to reduce energy use and greenhouse gas emissions. SOC ESS is designed to overcome barriers related to staffing and capacity, capital and financing, structural, operational, and safety to ensure successful realization of energy savings in state buildings. Flexibility is built in, allowing SOC ESS to work with each Agency in a way that best suits their needs.

The program provides direct Agency support to develop projects, staff augmentation to increase project completion rates, pre-qualifies trade professionals energy service companies (ESCOs) and trade allies (TAs)) for the Pre-Qualified Trade Professional (PQTP) list, and provides umbrella program and engineering support for projects developed by State Agency-selected ESCOs and TAs. With two pathways (Pathway 1 and Pathway 2) for agencies to choose from, the Program can adjust service levels to maintain Agency satisfaction and program cost-effectiveness.

Primary Goals and Objectives

The primary goal of SOC ESS is to provide California state agencies with the support and resources required to meet their energy savings and greenhouse gas reduction goals through a cost-effective program that delivers the following benefits over the five-year contracted energy savings period:

- Deliver 49,173,976 kWh and 761,824 therms of net annualized energy savings and 19,600 kW net demand reduction.
- Increase Agency project completion rate through workforce development and staff augmentations.
- Support Integrated Demand Side Management (IDSM) integration by delivering integrated analysis and planning, resulting in added customer value and Investor-Owned Utility (IOU) demand response benefits, and Agency support with renewable generation, energy storage, and energy resiliency planning.

2. Expand projects and savings by type, location, agencies, end-use and measure types, and savings pathways, with special focus on DACs

Program Delivery and Customer Services

Describe how the energy efficiency program will deliver offerings (including program strategies/tactics, market channel, and targeted market/customer group); how it will reach customers, including those in hard-to-reach and/or disadvantaged communities (if applicable), and any services that the program will provide. Describe all services and tools that are provided.

Program Delivery Strategies and Tactics

SOC ESS will be delivered by a team of expert program managers and energy engineers familiar with California state agencies at AESC, ASK Energy, and Energy Resource Integration (ERI) and by workforce development professionals at Strategic Energy Innovations (SEI). The team will work with state Agencies to understand how the program can best serve them and will direct each participating Agency to one of two pathways, thus providing flexibility to support each Agency as most appropriate for the individual Agency needs.

The program will achieve goals and objectives by partnering with agencies to identify energy savings potential and strategize approaches, working with Agency-hired ESCOs and TAs as they finalize scope, implement projects, and confirm projects have been installed to perform as promised, providing financial incentives and/or financing support to ensure agencies have access to the capital necessary to complete the work. Details on the key strategies are below.

Two Pathways With IDSM Support For Agency Engagement

Pathway 1 provides high-touch, customized strategic portfolio-wide and engineering support plus staff augmentation to agencies that are committed to a minimum level of energy savings achievement and program engagement. Highlights for Pathway 1 services include:

- **Strategic Planning Support with Assigned Energy Concierge (EC).** The EC combines Energy Efficiency (EE) and IDSM expertise and Agency knowledge to provide a holistic approach to portfolio and individual building project planning, integrating energy efficiency (EE), demand response (DR), renewable generation, storage and energy resiliency potential.
- **Energy Action Plans (EAP).** The key tool during strategic planning, this is an overview of buildings across an Agency's portfolio and outlines building/project prioritization along with some site specific scopes, and is used throughout the engagement to track progress and document new goals. The EAP includes remote and/or on-site assessments, portfolio-level analyses and benchmarking, and provides site-specific recommendations that advance Agency priorities that are compliant with CPUC policies and goals.
- **Publicly Owned Utility (POU) Coordination.** As possible and with IOU/POU cost sharing, the Program will coordinate with POUs that co-serve buildings to ensure the State receives available benefits from both utilities.
- **Focus on Under-represented Technologies.** During project planning special focus will be given to technologies that have historically been overlooked or underserved.

- **Staff Augmentation.** Program-funded Climate Corps Fellow[1] placement(s) to support EE project efforts, resulting in increased project completion rates at no cost to agencies and a new talent pool for the EE and public workforce.

Pathway 2 provides agencies support on individual projects as identified and pursued. Highlights for Pathway 2 services include:

- **Available IDSM Studies:** Based on Agency interest and available funding, the Program will identify potential to integrate DR, generation, storage, and energy resiliency into EE projects.
- **Pre-Qualified Trade Professional (PQTP) List:** While agencies are responsible for selecting their own vendors using their approved procurement processes, the Program will provide a list of trade professionals that have been screened and trained to ensure they meet workforce standards and Program quality standards. The Program can also help provide oversight for trade professional-developed projects and has resources available to help PQTP's successfully complete projects.

For both pathways, the program has the discretion to provide enhanced rebates and incentives for qualifying projects in DAC regions.

Additionally, the Program continues to provide all agencies with the services they relied on through the prior Statewide Institutional Partnership Programs:

- **Financial Support:** Through rebates, incentives, and support accessing IOU offered On-Bill Financing to help address organizational and financial barriers to EE.
- **Policy Support:** Such as aligning projects to CPUC requirements, managing documentation influence and other policy-driven needs to secure funds, and tracking policy to ensure the Program is up to date and agencies can leverage available funds.
- **Technical Support:** To help agencies identify best-in-class solutions that meet their needs, including but not limited to identifying new technological solutions, identifying technology bundles for procurement, determining project/product eligibility, and supporting IOU/regulatory compliance.
- **Project Support:** For agencies and their selected TAs and ESCOs, regardless of PQTP status. Collaborate closely to fully develop the final scope of work, resolve hurdles, and provide technical input throughout the project process to ensure programmatic and technical issues are overcome, and work delivered saves the energy promised while maximizing available IOU rebates, incentives and/or financing. Example support includes project scoping, equipment identification, technical reviews, and measurement and verification.

Program Application Support: **To ensure application packages are complete, compliant, and quickly approved for payment, support agencies, TAs, and ESCOs with rebate, incentive and on bill financing (OBF) application development/submittals.**

[1] According to the Climate Corps website, Climate Corps is an award-winning fellowship program that provides professional development opportunities for emerging leaders through implementation of sustainability and resiliency projects with local governments, nonprofits, and for-profit businesses. Additional information is available at www.climatecorps.org.

Market Channels

SOC ESS leverages AESC's existing relationships with California state agencies and involvement with the Sustainable Building Working Group to directly engage with agencies. In addition, the Program will leverage the power of trade professionals, empowering them with program tools and knowledges as they seek work with agencies. While each TA and ESCO will need to be hired by the agencies directly, the program will ensure they meet state and CPUC workforce requirements to smooth the vendor selection process.

Other key channels for outreach include, but are not limited to:

- IOU Customer Account Representatives
- Conferences and meetings such as the California Green Summit Conference, National Association of State Facilities Administrators (NASFA), Sustainable Building Working Group
- Program Website and collateral

The Program will also engage and coordinate with POUs that co-serve the state-owned buildings.

Targeted Sectors/Segments/Geographies/Hard-To-Reach/Disadvantaged Communities

SOC ESS is open to all state-owned buildings, regardless of building or use type, in PG&E, Southern California Edison (SCE), Southern California Gas Company (SoCalGas), and San Diego Gas and Electric (SDG&E) service territories except those owned by the University of California (UC), the California State University (CSU), and the California Community College (CCC) systems. The program will coordinate with POUs to advance SOC projects in their respective territories.

Through strategic Agency building portfolio prioritization, TA and ESCO recruitment strategies, and enhanced incentives, the program will encourage project implementation in disadvantaged communities. State-owned buildings are not classified as hard-to-reach (HTR), and thus HTR is not a focus for this program. The program excludes net power producers to ensure that all program energy savings are claimable under current CPUC policies. The Program will also target agencies who have not previously been served by the prior program and smaller assets, to create incremental savings.

3. Program Design and Best Practices

Describe the program strategies/tactics that will be used to reduce the identified market barriers for the targeted customer group and/or market actor(s). Describe why the program approach constitutes "best practices" and/or "lessons learned." Include descriptions of key software tools that are significant to program strategy and implementation, including audit tools. Provide references where available.

Program Design and Strategies to Address Market Barriers

SOC ESS is designed to accommodate existing state processes while providing new solutions to overcome barriers that have historically limited energy savings realization in these buildings. Such challenges include staffing and capacity constraints that limit how many projects are

pursued at one time, funding constraints and existing state procurement processes that drive project size and completion time, inefficient building stock that suffer from years of deferred maintenance, complex IOU custom review processes, and the unique needs of some agencies, such as California Department of Corrections and Rehabilitation (CDCR), that restrict efficient technology options.

To accommodate existing state processes, and the various needs of each Agency, the program provides flexibility in Agency engagement. Pathway One (P1) invests in high-touch, customized strategic and engineering support for committed state agencies. These agencies will receive ongoing support including strategic portfolio planning via both remote and on-site EE and IDSM studies resulting in a portfolio-wide EAP. This plan will identify and prioritize the opportunities across all buildings and provide suggested approaches that achieves the Agency's goals given their available resources. Customized solutions will be created based on the Agency's unique needs and existing successful processes, including a focus on facilities in DACs and underserved technologies at that Agency. P1 agencies will receive staff augmentation through Climate Corps Fellow placement to address staffing and capacity constraints. Each Fellow's role is flexible, and will be outlined by the hiring Agency, with the exception that their activities, directly or indirectly, can be tracked to and result in more energy efficiency projects pursued.

Pathway 2 (P2) provides general program support for all other agencies to help ensure their projects maximize savings and meet the CPUC policy compliance to receive incentives and/or OBF. The Program will support individual projects to ensure successful realization of energy savings. Example activities include supporting the Agency and their TAs/ESCOs to scope the best qualifying project, determining project/product eligibility, and recommending IDSM integration opportunities. The program may also provide remote IDSM portfolio analysis and site-specific IDSM assessment and planning support for agencies working through P2.

For both pathways the Program will help overcome complex custom review processes and CPUC policy needs by providing ongoing support to ensure projects are successfully completed. Activities can include ESCO and/or TA support along with technical and CPUC policy guidance.

To help address buildings located in DACs and support both P1 and P2 Agencies, the Program will develop a pool of pre-qualified trade professionals who can independently identify projects. By including a wide array of trade professionals in the pool of Pre-Qualified Trade Professionals, the Program will have access to a labor pool that meets state workforce requirements, has offices throughout the IOU service territories, including DACs, and can mobilize sales teams to identify projects, either on behalf of the program or through an existing Agency contract.

To alleviate the issues of older building stock, the Program will pay special attention to technologies and solutions that have not often been pursued. Such opportunities include, but are not limited to, wastewater treatment optimization, building management systems that enable DR participation, retrocommissioning (RCx), and targeted operations and maintenance (O&M) training to diagnose and mitigate building performance issues stemming from control and operational issues.

The master-metered, highly secure campuses at the CDCR make Normalized Metered Energy Consumption (NMEC) a challenge. The Program will collaborate with this Agency to install program-funded battery-powered sub-meters to provide insight into individual building energy

use and enable NMEC savings claims to address CDCR's unique needs, including their health and safety requirements along with their master-metered, security-restricted campuses.

Best Practices

The SOC ESS Program design is informed by the implementation team's history working with the California state agencies as they pursue energy efficiency and leverage all four IOUs EE programs for financial and technical support.

Program design best practices include:

- **Early and Ongoing Stakeholder Collaboration:** SOC ESS partners with state agencies to inform the portfolio-level strategy and site-specific approaches and engages PG&E's program engineering team early in project development with review to ensure regulatory compliance and manage customer expectations.
- **Flexible Support:** SOC ESS accommodates the various agencies by customizing services to meet each Agency's needs and identified gaps, ensuring that every Agency can participate.
- **Leverage Existing Processes:** The Program adapts to existing state processes that drive project progress, most notably procurement rules and requirements and existing project management processes. By working within the state guidelines, the Program provides a state-compliant route to participation.
- **Clear Influence:** The high-touch program design includes well documented points of influence throughout the entire process including strategic energy planning support through energy action plans, remote assessments, on-site audits, pre- and post-project inspections, embedded staff at Pathway 1 agencies through staff augmentation, and energy efficiency measure (EEM) and IDSM project integration and prioritization, facility staff training, rebates and incentives, IOU OBF support, and TA and ESCO support, advisement, and oversight.

Program Management best practices include use of standardized tools and templates, integrated program platforms to support project documentation and management, internal quality assurance/quality control (QA/QC) on all client deliverables and regular management review of performance to ensure compliance and support continuous improvement.

Program implementation best practices include:

- **Increase Project Completion Rate through Workforce Development:** Due to financial and human resource constraints at California state agencies, often energy project development and implementation is limited by team bandwidth. By hosting Climate Corps Fellows at Pathway One agencies, the program helps increase bandwidth and the number of projects pursued at a given time.
- **Streamline Program Process:** Use AESC's end-to-end software platform, Praxis[2], to support energy planning, savings estimating, project tracking and meter-based savings verification; supported by the team's technical and programmatic expertise. Through Agency-by-Agency engagement, Praxis will help prioritize sites with portfolio benchmarking and ranking. The Praxis platform will also be used for individual projects

[2] https://www.aesc-inc.com/praxis/

as prioritized by agencies, trade professionals, and/or through benchmarking. As projects move from possibilities to pipeline, the appropriate information will flow from Praxis to AESC's Customer Relationship Management (CRM) system, Salesforce. Salesforce projects will be transferred to PG&E's Energy Insight on a regular basis via API.

- **Energy Concierge Serves as Agency-Specific Expert:** P1 agencies will have an assigned Energy Concierge who becomes familiar with that Agency's building portfolio, procurement rules, operational practices, and other details. The Energy Concierge bridges the gap between the program, available technology, and the Agency, providing the Agency with a technical and programmatic advocate to scope a comprehensive EE (and if appropriate, IDSM) project that meets CPUC and Agency requirements.
- **Support Integrated Demand Side Management Integration:** Deliver integrated analysis and planning, resulting in added customer value and IOU demand response benefits, and Agency support with renewable generation, energy storage, and energy resiliency planning.
- **Publicly-owned Utility (POU) Coordination:** Engage and coordinate with POUs for more holistic State support.
- **Support Trade Professionals:** Qualify and train ESCOs and TAs to be program ambassadors, so they can identify and complete projects that maximize incentives and/or financing and realize reliable energy savings. Provide technical support throughout projects and provide Equipment Purchase Support for qualified projects and trade allies, so smaller TAs can pursue smaller projects without being inhibited by long OBF payback times.
- **Tracking Customer Satisfaction and Climate Corps Fellow Performance:** Annual surveys will identify Agency satisfaction with the program as a whole, with individual fellows, and with the fellowship portion of the program. Given the close collaboration between the Program and each Agency, feedback avenues will not be limited to the formal surveys and will be solicited real-time on an ongoing basis. All feedback will trigger a continuous improvement process within the Program to ensure the program design, implementation team, and specific individuals are continuing positive practices and correcting less desirable ones.

4. Innovation

Describe how the program is innovative and will increase the uptake of cost-effective energy efficiency and minimizes lost opportunities for promoting other demand side energy reduction efforts by advancing a technology, marketing strategy, or delivery approach in a manner different from previous efforts.

The SOC ESS Program introduces significant innovations that are designed to lead to more comprehensive savings, increase implementation rates, engagement across more agencies, project uptake in more geographic regions, including DAC, and improve cost-effectiveness and persistence.

Delivery Approaches

- **Flexible Delivery Approach**: Balances Program costs and saving impacts, maintaining lighter-touch quality assurance and technical support for TA-developed project channel

while investing deeper technical support in underserved and committed agencies, high opportunity asset portfolios and underperforming large buildings.

- **Financing and Incentive Strategy**: Encouraging OBF versus project incentives frees up Program funds to 1) invest in enhanced direct implementation non-incentive (DINI) support services to generate incremental projects and 2) reserves incentives for projects and savings that may not otherwise happen.
- **Staff Augmentation**: Program-funded Climate Corps Fellows offer P1 agencies a no-cost staffing solution to advance energy project planning and implementation, leading to an increase in new projects per Agency over five years.
- **Pre-qualified Trade Professional Network:** Increase market capacity to deliver Program identified SOC projects, ensures TAs and ESCOs can meet state, utility, and Agency requirements through qualification and training, resulting in efficient Program operations and savings delivery.

Market Strategies

- **Equipment Purchase Support:** Available to pre-qualified TAs at 0% for up to six months, on qualified projects, eliminates increased TA project costs related to bridge financing (often 6-9%) and eliminates customer delays related to self-funding construction costs.
- **Energy Concierge Strategy:** Energy Concierge strategy adds holistic IDSM view of entire portfolio to advocate for solutions that advance the goals of all entities. Energy Concierge integrates innovative energy savings solutions, such as RCx, NMEC, and wastewater treatment plant (WWTP) improvements, to help scope projects that will produce the best combination of EE, DR and other IDSM solutions that maximize IOU and Agency benefits.

  Data Access Strategy: Data access strategy of installing battery-powered submeters at select buildings provides a pathway for NMEC, energy use visibility, and coaching on best practices for affecting energy use. CDCR's master-metered campuses are currently unable to participate in NMEC. Battery-powered submeters provide an opportunity test the value of NMEC-based savings by overcoming infrastructure limitations to capture higher, currently untapped savings.

Technology

- **High-opportunity Focus Strategy:** High-opportunity focus strategy targets non-lighting projects that have not historically been pursued. For CDCR, historical energy savings have been lighting-centric, with other technologies included when possible. Lighting projects are reaching saturation. By targeting under-represented technologies, such as WWTP process optimization and RCx, deeper savings across more technology types will be achieved.
- **Building Controls Technology:** Targeted implementation of technologies like grid-interactive building gateways and RCx strategies (below)
- **RCx and O&M Training**: RCx, which will be available for any low-performing SOC building over 50,000 ft^2 and can be combined with retrofits for a comprehensive NMEC approach. Strategies to support data visibility and staff operational and maintenance training will support savings persistence.
- **Praxis Software**: AESC's suite of cloud-based energy software provides integrated and centralized project scoping, calculations, applications, and measurement and verification (M&V) solutions and supports numerous cost and process efficiencies.

Each of these delivery approaches, market strategies, and technologies will contribute to SOC ESS achieving 49,173,976 kWh and 761,824 therms of net annualized energy savings and 19,600 kW net demand reduction.

5. Metrics

Provide metrics that will be used to track program progress. For programs design and implemented by third parties, include the required performance metric for innovation. Metrics can include non-energy metrics if applicable.

Table 5 - **Program Metrics** provides the metrics used to track Program progress.

Table 5 - Program Metrics

[A] KPI ID	[C] KPI DEFINITION	[D] KPI MEASUREMENT	Frequency
Engineering Documentation Quality	The change in energy savings calculations required after review by PG&E engineering staff	ABS ([Estimated adjusted savings] – [Approved adjusted Savings after internal PG&E review]) / Estimated adjusted savings ABS |[Est Sav] – [Approved Sav]| --- [Est Sav] Est Sav = Pre-Committed Net Savings (Above Code vs Above Existing, based on Measure Application Type); where Pre-Install Tech Review Date is in the quarter Approved Sav = Committed Net Savings (Above Code vs Above Existing, based on Measure Application Type); where Pre-Install Tech Review Date (Post-Install Tech Review Date for Custom Lite ONLY) is in the quarter.	Quarterly
Geographic IOU Diversity	Percentage of savings from each IOU service territory reviewed quarterly for cumulative impact	Per IOU, sum of Approved Electric and Gas Benefits to date shown as a percent of total program Approved Electric and Gas Benefits / each IOUs cost share percent. Approved ElecBen and Gas Ben per CET output.	Quarterly
GHG Emissions Reductions	Total program-to-date reductions in emissions from state Agency facilities attributable to the energy efficiency projects delivered	Based on quarterly CET runs, Gross Electric and Gas CO_2 output in CET [Estimated adjusted reductions] – [Approved reductions after savings have been claimed and entered as actual in the CET]) / Forecasted reductions per CET [Est Red.] – [Approved Red.]| --- [Est Red.] Est Red. = Pre-Committed GHG Reductions per CET output at quarterly re-forecast current three-month period and all three-month periods prior. Approved Red.= Committed Lifecycle GHG Reductions for three-month period interim period and all three-month periods prior.	Quarterly

[A] KPI ID	[C] KPI DEFINITION	[D] KPI MEASUREMENT	Frequency
Climate Corps Fellow Effectiveness	Annual performance review of each Fellow including projects worked on and impact efforts have had on the state Agency's energy savings initiatives. 360 degree feedback from the Program and the state Agency.	Total points earned aggregated across all surveys / Total possible points.	Quarterly
Program Data Quality	Provided program data must be complete, accurate, and timely.	KPI Measurement method: Total corrections/adjustments requested by PG&E --- Total number of submissions into EI or program Units: Individual record level for submission into EI (e.g., custom project records) and program reports and administrative and operational deliverables.	Quarterly
Savings Forecast Accuracy	A comparison of paid adjusted net energy savings achieved (kWh, therm where applicable) within the quarter, to the energy savings that was in the contract implementation timeline or quarterly re-forecast. To maintain one comparable metric, a weighted value will be use to convert therms to kWh (1 therm = 5 kWh)	ABS (Actual net adjusted paid savings achieved quarterly by subprogram - Forecast energy quarterly adjusted savings) / Forecast energy quarterly net adjusted savings ABS |[Act kWh Savings + (Actual Therms Savings *5)] – [Fcst kWh Savings + (Forecasted Therms Savings * 5)] --- [Fcst kWh Savings + (Forecasted Therms Savings * 5)] Act Net Adj Savings = Total Savings; where Payment Date occurs within quarter Fcst Savings = Submitted by Implementer	Quarterly
Agencies Served	Comparison of state agencies the Program has engaged with to ensure reasonable and fair efforts are made to serve as many state agencies as possible.	Cumulative count of all agencies engaged for the current and past quarters / Total Program master list of agencies Engaged includes communication regarding program participation, and projects under consideration, in-progress, or paid.	Quarterly
Disadvantaged Communities	Comparison of savings the Program has achieved in DAC regions in relation to overall savings, reviewed quarterly for cumulative impact.	Sum of DAC region Approved Electric and Gas Benefits to date --- Total program Approved Electric and Gas Benefits to date	Quarterly

6. For Programs Claiming To-Code Savings

Describe how the Program complies with Applicable Law:

Since SOC ESS will claim to-code savings the section below complies with Decision 17-11-006[3] which requires that program delivery teams help lend insight into to-code savings. The Program's CRM will track and report the specific to-code measures and energy savings implemented through the program by customer type and geography for reporting to the IOUs.

To-Code Savings Potential

a. Identify where to-code savings potential resides.

Given state Agency's propensity to maintain equipment until failure, and their lack of funds to swap out equipment prior to end of life, there is to-code savings potential throughout SOC ESS.

Equipment Types, Building Types, Geographical Locations, and Customer Segments

b. Specify which equipment types, building types, geographical locations, and/or customer segments promise cost-effective to-code savings.

- **Equipment Types:** To-code savings potential resides in the replacement of packaged Heating, Ventilation, and Air Conditioning (HVAC) units, interior and exterior lighting and lighting controls, variable frequency drives in certain HVAC applications, tank water heaters, replacement of hydronic or domestic hot-water boilers, replacing or adding insulation on hot water piping and tanks, and water side economizers, amongst other opportunities.
- **Building Type:** Most state-owned buildings are over 20 years old and while some of their equipment may have been upgraded with the support of IOU energy efficiency programs, the majority of these buildings are still using outdated equipment that comply with previous versions of Title 24 and thus offer significant to-code savings potential.
- **Geographical Location:** To-code savings potential existing throughout the State will be pursued wherever found, maintaining alignment with the Programs goals of statewide support and DAC focus.
- **Customer Segment:** All eligible California state-owned buildings in the IOU service territories will be targeted for to-code savings.

Barriers

c. Describe the barriers that prevent code-compliant equipment replacements.

State agencies are faced with multiple barriers that prevent code-compliant replacements, such as budget constraints, lack of available staff to identify projects(?), and for some agencies, technical expertise.

[3] Ordering Paragraph (OP) 2.

Non-occurring Natural Turnover

d. Explain why natural turnover is not occurring within certain markets or for certain technologies.

State agencies typically follow a "perpetual maintenance" practice, which allows them to operate their buildings while incurring minimal equipment-related costs. In short, agencies will repair or bypass existing failed equipment rather than replace it with new equipment, since they don't have the capital budget available (and the operational budget, which pays utility bills, is a separate fund and often not considered in the cost equation).

Program Intervention

e. Detail the program interventions that would effectively accelerate equipment turnover.

Through P1 Agency Energy Action Plan (EAP) engagement, SOC ESS will identify short- and long-term energy savings potential, and advise the Agency on the best approaches to realize those savings. In the course of these initial strategy sessions, the Program will identify both buildings and equipment that are out of date, and provide, prioritize, and classify solutions (e.g., accelerated replacement, NMEC, etc.) to both meet and exceed code for these opportunities. Additionally, as P2 agencies engage with trade professionals, their opportunity to reach and exceed code will be identified, documented, and then confirmed by the Program. This technical support will be paired with rebates, incentives, and financing support to help agencies with budget constraints, along with staff augmentation for P1 agencies to help with the staffing constraints. SOC ESS will provide the necessary technical assistance, best fit option for financial support, suggestions of alternative designs or products not already under consideration to demonstrate how the customer requirement can be met or exceeded by selecting an alternative for accelerated replacement (AR) measures.

7. Pilots

Describe if any pilot projects are part of this program and explain the innovative characteristics to these pilots. The inclusion of this description should not replace the Ideation Process requirements currently agreed by CPUC staff and the IOUs. This process is still undergoing refinements and will be further discussed as part of Phase III of this proceeding (R.13-11-005).

No pilots are part of the SOC ESS Program.

8. Workforce Education and Training

Describe how the program will support workforce, education, and training to:

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

A key element of SOC ESS is the partnership with SEI, who will identify, hire, and oversee Climate Corps Fellows to enter the EE / public workforce. These Fellows will be places at P1 agencies to fulfill the staff augmentation role. As part of the recruitment effort, the Program will target potential job candidates located in DACs.

The Climate Corps Fellowship model provides a job creation opportunity for the community and is a reliable workforce solution for teams that may experience a higher percentage of attrition due to early retirement or shifts in staffing to other more critical departmental needs (such as environmental health and safety), and notably for state agencies, hiring freezes. Overall, Climate Corps Fellows are a distinct way to increase staff capacity in a significantly more time- and cost-effective manner compared to the new FTE route, at the same time paving the way for future hiring of Fellows by state agencies once the economy recovers and successfully transitioning institutional knowledge to the next generation of sustainability professionals. SEI has established innovative approaches for training Fellows, including regular energy-focused trainings and cohort workshops that would enable Fellows to stay updated on best practices, share expertise, and bring the latest energy efficiency strategies, resources, and technologies back to their supervisors and project teams.

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

While SOC ESS has a workforce training component, it is not a workforce, education, and training program, and thus item does not apply.

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

SOC ESS will use Climate Corps Fellows to fill the Staff Augmentation roles. In finding candidates for the openings, the Program will target disadvantaged workforce applicants before broadening the search.

- **Facilitate job connections, by working with implementers and contractor partners, and utilizing energy training centers.**

As Climate Corps Fellows leave their postings the Program will encourage the host Agency to consider them for full time employment. If that is not possible, the Program team may consider Fellows for their open positions and/or will make introductions to trade professionals working in the Program who may need additional staff and for whom the skillset may be a fit.

During engagement with both state agencies and trade professionals, the Program will identify training needs and will educate stakeholders on the availability of the training available through the IOU's Workforce Education and Training (WE&T) programs.

9. Workforce Standards

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

SOC ESS will pre-qualify trade professionals to be listed on the Program website and receive other unique benefits. An important aspect of pre-qualification will be documenting which certifications each trade professional holds and their ability to bring in sub-contractors to fill their organization's workforce standard gaps.

The applicable workplace standards include, but are not limited to:

a. HVAC Measures

i. **Installation, modification, or maintenance of non-residential HVAC measures with an incentive of $3,000 or more are required to be installed by workers or technicians that meet one of the following criteria:**
   1. **Enrolled in and/or completed an accredited HVAC apprenticeship**
   2. **Completed more than five years of work experience at the journey level per California Department of Industrial Relations definition, passed competency tests, and received specific credentialed training**
   3. **Has a C-20 HVAC contractor license issued by the California Contractor's State Licensing Board.**

The HVAC Workforce Standard will apply to the Program as HVAC equipment is one of the standard measures that will be provided incentives, and customer incentives can easily exceed the minimum threshold of $3,000 for large projects. Additionally, a significant amount of HVAC savings will likely involve controls work.

The Program will include workforce requirements in Request for Qualifications (RFQs) when creating and/or expanding the pool of participating trade professional. The PQTP will be required to ensure and provide proof that all work done by PQTP or sub-contractors (such as those who install equipment, or "Installer Contractors") meet all workforce and training requirements as dictated in D. 18-10-008, per below.

All PQTP and their Installer Contractors must have met at least one of the following criteria:

- Completed an accredited HVAC apprenticeship.
- Be enrolled in an accredited HVAC apprenticeship.
- Completed at least five years of work experience at the journey level as defined by the California Department of Industrial Relations, passed a practical and written HVAC system installation competency test, and received credentialed training specific to the installation of the technology being installed.
- Has a C-20 HVAC contractor license from the California Contractor's State Licensing Board.
- All of the above requirements apply to all of the individuals that perform the installation work, not to the contracting firm itself.

The Program will educate stakeholders on the availability of the Building Operator Certification (BOC) training available through the IOU's WE&T programs.

b. Advanced Lighting Control Measures

i. Installation of non-residential lighting control measures with an incentive of $2,000 are required to be installed by installation technicians who have completed the California Advanced Lighting Controls Training Program (CALCTP).

The Lighting Controls Workforce Standard applies to the Program as lighting controls are included as part of the measure mix for available lighting measures and will be integral to many DR strategies.

The Program will include the workforce standards as a minimum requirement in the trade professional RFQ. All trade professionals will be validated to ensure they are certified with the California Advanced Lighting Controls Training Program (CALCTP) certification, ensuring that controls measures are installed properly programmed, tested, installed, commissioned, and maintained, , and ultimately deliver the persistent savings required by the Program.

Prior to EE projects being approved, specified HVAC and lighting projects will need to obtain customer and/or trade professional acknowledgement that qualified or skilled workers will be on the project.

As required by CA Labor Code § 1720.6[4], the Program design and incentive structures assume that prevailing wage rules apply to work conducted at all State of California owned Agency facilities and are factored into project cost assumptions and incentive designs.

The above information is not applicable to CDCR. CDCR will contract directly with their approved pool of ESCOs to perform all work at their facilities. While CDCR requires all ESCOs to hold a General Contractor's license, ESCOs vary in their use of HVAC and lighting controls specialists who meet CPUC workforce standards. Any ESCO that is an HVAC union company will meet the HVAC workforce standards. Some ESCOs contract out HVAC and /or lighting work. If notified in advance, they can change their solicitation practices to meet CPUC standards, although this could impact project costs.

The Program will discuss the CPUC workforce guidelines with CDCR to determine how they compare with current state contracting requirements, and if integration of these are appropriate for CDCR ESCO contracts. The Program will support integration by providing the CPUC decision for CDCR's legal team, if requested.

[4] Labor Code § 1720.6 (ca.gov)

10. Disadvantaged Worker Plan

Describe how the program will provide Disadvantaged Workers with improved access to career opportunities in the energy efficiency industry for programs that directly involve the installation, modification, repair, or maintenance of Energy Efficiency equipment. Also describe the method that will be used for tracking this population in order to satisfy metric reporting requirements.

SOC ESS will promote improved access to energy efficiency careers for disadvantaged workers through several avenues.

Program Team

SOC ESS Team includes two CPUC Supplier Clearinghouse women and minority-owned business (WMBE) subcontractors, ASK Energy and SEI. AESC will ensure timely monthly reporting of Disadvantaged Business Enterprise (DBE) Subcontracting spend in PG&E's electronic reporting system.

Climate Corps Fellows

While there are legal issues around what can/cannot be asked during the hiring process, there are some levers the Program can use to help increase the likelihood of Disadvantaged Workers being hired for Climate Corps Fellow roles. The Program can target zip codes that rank high on CalEnviroScreen[5] with other job posting sites. While such postings will not be the exclusive source of the applicant pool, they will help raise visibility to the openings to those who qualify as a disadvantaged worker. Additionally, the Program will encourage agencies to consider their diversity, equity, and inclusion (DEI) goals when selecting the best candidate for the role.

Trade Professionals

SOC ESS will make concerted efforts to recruit trade professionals from DAC regions. These trade professionals will be well positioned to not only perform work in DAC regions, but to hire local DAC-based staff, increasing both DAC infrastructure investments and the disadvantaged workforce.

Direct Hires

The Program will report on the status of any direct new hires that join AESC, ASK Energy, ERI, or SEI, participating state Agency, and/or engaged trade professional who voluntarily provide the information necessary to determine if they meet the criteria of Disadvantaged Worker.

11. Additional information

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

CPUC does not require additional information for this program beyond what is included in this document.

[5] CalEnviroScreen

SUPPORTING DOCUMENTS

1. Program Manuals and Program Rules

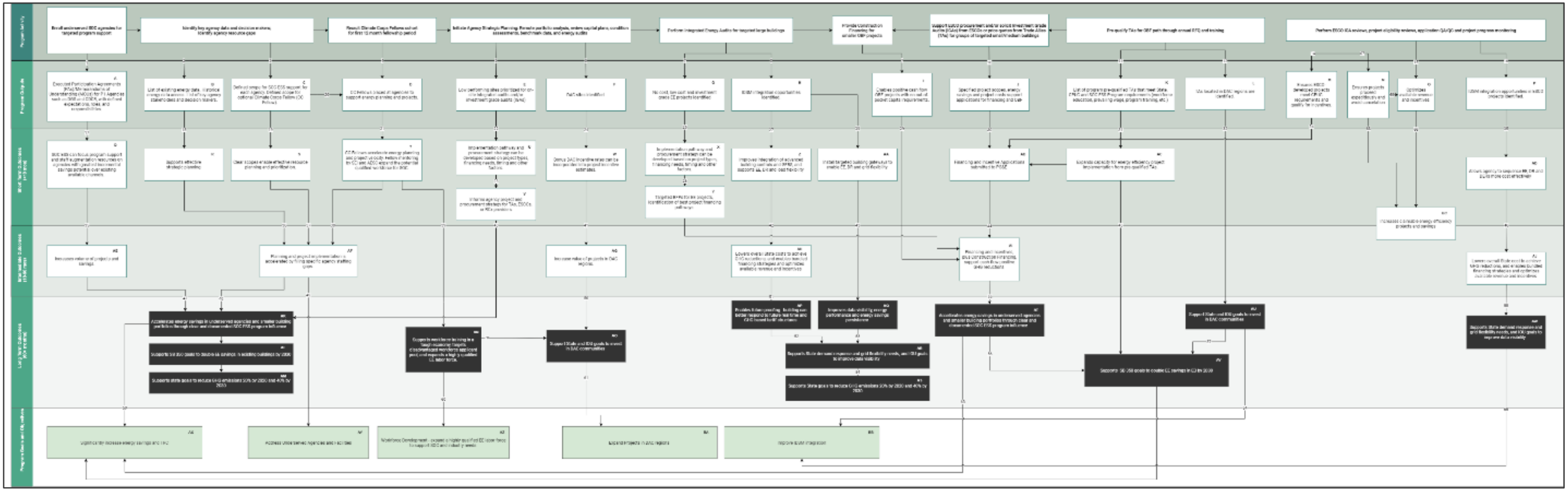
Under Separate Cover

2. Program Theory and Program Logic Model

Program Theory and Logic Models should visually explain underlying program theory supporting the sub-program intervention approach, referring as needed to the relevant literature (e.g., past evaluations, best practices documents, journal articles, books, etc.).

Figure 1 – Program Logic Model provides the SOC ESS logic model explains the underlying theory of the Program. It draws a correlation between program activity, Program outputs and Program outcomes.

Figure 1 - Program Logic Model

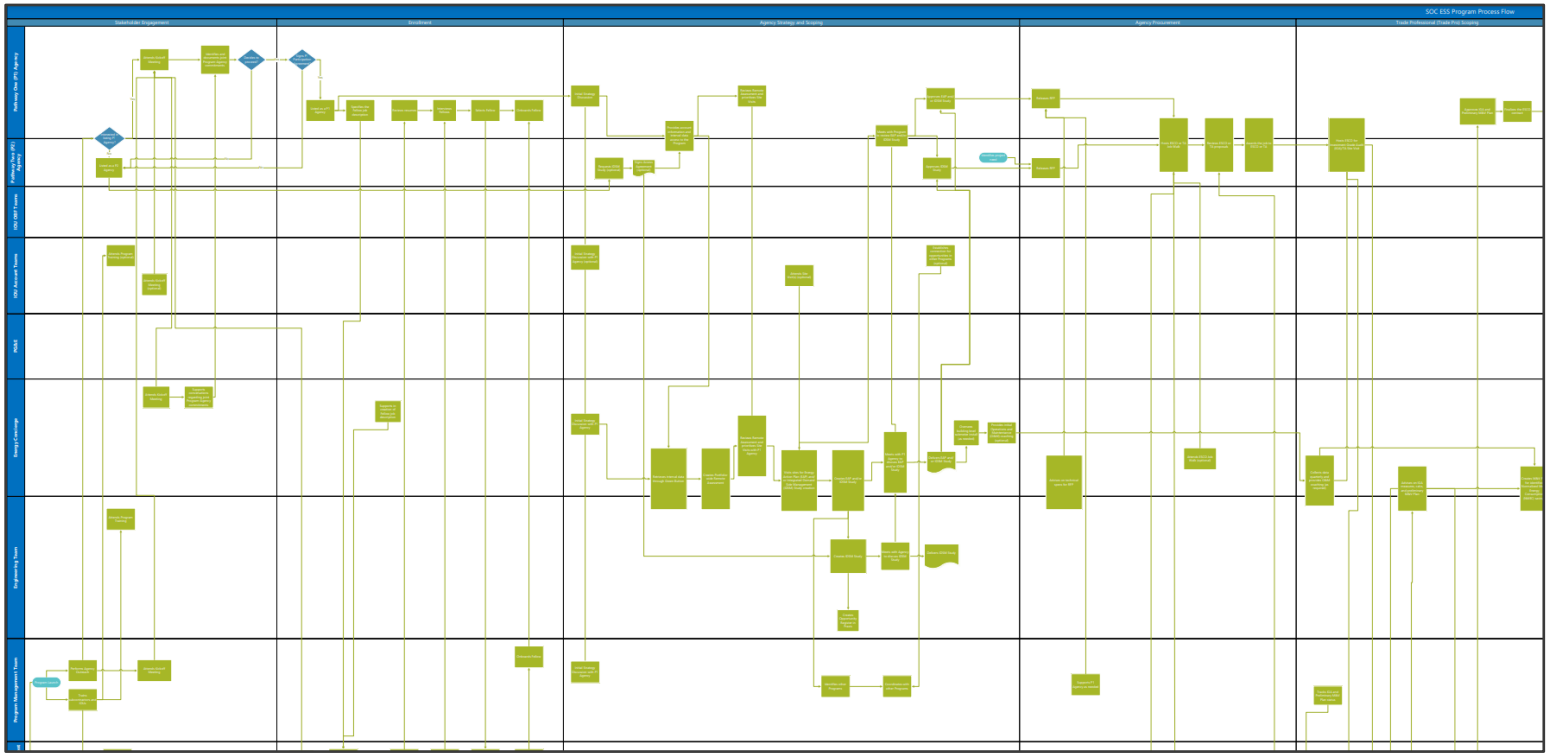


3. Process Flow Chart

Provide a program or, if applicable, a sub-program process flow chart that describes the administrative and procedural components of the sub-program. For example, the flow chart might describe a how a customer submits an application, how the implementer screens the application, the application approval/disapproval process, verification of purchase or installation, incentive processing and payment, and any quality control activities.

The full flow chart illustrating the coordination among project stakeholders, roles and responsibilities and steps in the Program process is included under separate cover. Due to size, a partial image is provided in **Figure 2 - SOC ESS Process Flow Chart Snippet.**

Figure 2 - SOC ESS Process Flow Chart Snippet



4. Incentive Tables, Workpapers, Software Tools

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

SOC offers downstream financial incentives and supports Agency access to IOU OBF programs.

- **Rebates and Incentives:** Customer funded projects, and those financed through non-IOU financing pathways such as GS $Mart[6], will be eligible to receive incentives at rates described below.
- **OBF With Incentives:** Based on the IOU's OBF eligibility requirements, projects will be eligible to receive OBF financing, plus incentives at standard Program rates, capped at what is required to buy down project costs to meet OBF return on investment (ROI) requirements and thresholds.
- **OBF Without Incentives:** For projects developed through the Program and/or trade professionals may be eligible to receive financing through some IOU OBF offerings without incentives. Qualifying projects under this pathway may also be approved for AESC's Equipment Purchase Support.

Incentives and Rebates

Incentives, rebates, and associated caps for all agencies except CDCR are provided in **Table 6 - Other Agency Caps, Incentives, & Financing**.

Table 6 - Other Agency Caps, Incentives, & Financing

Mechanism	Amount
To Standard Practice and Lighting	$0.12/kWh
HVAC, Refrigeration and Process	$0.24/kWh
Comprehensive (2+ types)	$0.24/kWh
DAC adder[7]	$0.02/kWh
All Gas Measures	$1.50/therm
DAC adder[7]	$0.10/therm
kW Incentive	N/A
Rebates	Full list provided in Appendix A: Deemed Rebates
Measure Caps	Per measure, based on IMC, FMC and simple pay-back requirements, up to the Project Cap 50% project cost for NMEC
Project Cap	Per project maximum of $500,000, or the sum of capped measure incentives, whichever is less

[6] GS $mart

[7] Adder applied at Program discretion.

Given CDCR's unique project needs, their incentives and incentive caps are slightly different from the other state agencies, as shown in **Table 7 - CDCR's Caps, Incentives, & Financing**.

Table 7 - CDCR's Caps, Incentives, & Financing

Mechanism	Amount
All Electric Measures	$0.24/kWh
All Gas Measures	$1.50/therm
kW Incentive	N/A
Measure Cap	Per measure, based on IMC, FMC, and simple payback requirements, whichever is less 50% project cost for NMEC
Project Cap	Per project maximum of $1M; $250K for lighting only, or the sum of capped measure incentives, whichever is less

Since some projects will not qualify for incentives, especially for large projects using OBF without incentives, the Program is providing influence and key benefits in the form of support services such as Energy Concierge, Fellowship staff augmentation, and submeters.

On-Bill Financing

Each IOU's OBF participation limits are outlined in **Table 8** - **Investor-Owned On-Bill Financing for California State Agencies**. The Program will verify eligibility rules and limits on a regular basis with each respective IOU, to ensure this information is up-to-date.

Table 8 - Investor-Owned On-Bill Financing for California State Agencies[8]

Utility	Loan Minimum	Loan Minimum Rules	Loan Maximum	Loan Maximum Rules	Payback Requirement	Eligible Measure Types	Change Orders	Payment	Signature Requirements
PG&E	$5,000	Per premise, sites can be bundled in order to meet minimum	$250,000 >$250,000 must go OBF with no incentive pathway	Per Premise	10 years or the EUL, whichever is shorter	Deemed, Custom, Midstream, Upstream*	For changes to project scope (excluding new measures), energy savings, or costs, customer will be provided with a Loan Modification Agreement including final loan terms.	OBF payment issued to one payee. Incentive can be split among multiple payees. Discuss each case with PG&E.	1. Loan Agreement accepts electric or wet signature 2. OBF application can be scanned/emailed.
SCE	$5,000	Per service account, sites can be bundled in order to meet minimum	$250,000 >$250,000 must go OBF with no incentive pathway	Per service account, by exception for separate premises sharing the same service account	10 years or the EUL, whichever is shorter	Deemed, Custom, Midstream	No changes allowed to OBF loan amount. Loan amount can only decrease (as energy savings/incentives increases). Loan amount cannot increase.	OBF payment issued to one payee. Incentive can be split among multiple payees.	1. Loan Agreement requires wet signature 2. OBF application requires wet signature 3. Training on OBF loan agreement required
SCG	$5,000	By meter	$1,000,000	By meter	15 years or the EUL, whichever is shorter	Deemed, Custom, Midstream, Upstream	For changes to project scope (excluding new measures), energy savings, or costs, customer will be provided with a Loan Modification Agreement including final loan terms.	OBF and Incentive payments can be split among multiple payees.	1. Loan Agreement requires wet signature 2. OBF application can be scanned/emailed.
SDG&E	$5,000	Sites can be bundled. Specifics vary based on project. Discuss each case with SDG&E.	$1,000,000 per meter, $2,000,000 per customer.	By meter and customer. A customer is defined as any entity with the same name and/or tax ID number.	15 years or the EUL, whichever is shorter	Deemed, Custom, Midstream, Upstream	For changes to project scope (excluding new measures), energy savings, or costs, customer will be provided with a Loan Modification Agreement including final loan terms.	OBF and Incentive payments can be split among multiple payees.	1. Loan Agreement & Loan Adjustment Letter (if applicable) requires wet signature 2. OBF application can be scanned/emailed.

*PG&E offers non-incentive OBF for energy savings projects that do not have an incentive attached. Discuss exact terms with your PG&E account manager.
** Dependent of Midstream funding availability.

[8] As of March 2020

Workpapers

Table 9 - **Program Offered Deemed Measures** outlines the SOC ESS offered deemed measures and their associated workpapers.

Table 9 - Program Offered Deemed Measures

Deemed Measure	Workpaper Reference
Automatic Conveyor Broiler, Commercial	SWFS017-02
Boiler, Commercial	SWWH005-03
Boiler, Process	SWWH008-01
Circulating Block Heater	SWPR004-01
Cogged V-Belt for HVAC Fan, Commercial	SWHC024-02
Combination Oven, Commercial	SWFS003-01
Convection Oven, Commercial	SWFS001-02
Conveyor Oven, Gas, Commercial	SWFS008-01
Conveyor Toaster, Commercial	SWFS023-01
Deck Oven, Electric, Commercial	SWFS009-01
Demand Control Ventilation for Single Zone HVAC	SWHC006-01
Door-Type Dishwasher, Commercial	SWFS002-01
Enhanced Ventilation for Packaged HVAC	SWHC023-02
Floating Head Pressure Controls, Multiplex	SWCR007-02
Floating Suction Controls, Multiplex	SWCR008-02
Fryer, Commercial	SWFS011-03
Gas Dryer Modulating Valve, Commercial and Multifamily	SWAP012-01
Griddle, Commercial	SWFS004-01
Heater for Pool or Spa, Commercial	SWRE003-01
Hot Water Pipe Insulation, Nonresidential	SWWH017-02
Hot Water Tank Insulation, Nonresidential	SWWH018-02
Ice Machine, Commercial	SWFS006-01
Insulated Hot Food Holding Cabinet	SWFS007-02
Laminar Flow Restrictor	SWWH004-02
LED, High or Low Bay	SWLG011-03
Low-Flow Pre-rinse Spray Valve	SWFS013-01
Ozone Laundry, Commercial	SWAP005-01
Pool Cover, Commercial	SWRE001-01
Rack Oven, Gas, Commercial	SWFS014-02
Reach-In Refrigerator or Freezer, Commercial	SWCR018-02
Recirculation Pump Timer, Commercial	SWWH021-01
Software-Controlled Switch Reluctance Motor	SWHC041-01
Space Heating Boiler, Commercial	SWHC004-02

Steam Trap, Commercial	SWPR003-01
Storage Water Heater, Commercial	SWWH007-04
Supply Fan Controls, Commercial	SWHC009-02
Tankless Water Heater, Commercial	SWWH006-05
Undercounter Dishwasher, Commercial	SWFS018-01
Variable Speed Drive for a Central Plant System	SWHC008-01
VFD on Well Pump, <=300 hp	SWWP002-01
VFD Retrofit for Air Compressor	SWCA001-02
VSD for HVAC Fan Controls, Commercial	SWHC018-02

Software Tools

AESC's end-to-end software platform, Praxis, is used to support energy planning through portfolio benchmarking and ranking, savings estimating, project tracking, performance tracking, and meter-based savings verification. Praxis will be used to integrate IDSM by estimating DR opportunities and size/scale distributed generation (DG) infrastructure, especially batteries that can be leveraged for DR and renewable generation+storage to achieve energy resiliency. The program may use the following tools and software to identify and quantify energy savings during project planning and to confirm and submit custom and NMEC-based savings to PG&E for payment:

- Praxis tool by AESC
- custom-designed energy engineering spreadsheets
- eQUEST
- EnergyPro
- EnergyPlus
- DOE AIRmaster+
- DOE MotorMaster+
- DOE2.2R
- Universal Translator 3 (UT3)
- IOU approved technology-specific calculators such as utility pump tests and OBF Lighting Workbook
- Other utility preferred tools

The Program will also use Salesforce and Smartsheets to round out the program administration functions. Other software tools to facilitate CRM may also be introduced.

3. Quantitative Program Targets

Provide estimated quantitative information on number of projects, companies, non-incentive customer services and/or incentives that program aims to deliver and/or complete annually. Provide references where available.

Table 10 - Quantitative Program Targets

	Year 1	Year 2	Year 3	Year4	Year 5	Total
Net Annual kWh	823,814	6,975,592	11,274,892	13,526,716	16,572,962	49,173,976
Net Annual kW	316	2,776	4,495	5,396	6,617	19,600
Net Annual Therms	5,921	180,313	160,513	210,913	204,163	761,824
PG&E Elec & Gas Benefit	$263,459	$3,373,422	$5,255,325	$5,680,352	$6,987,903	$21,560,461
SCE Elec & Gas Benefit	$185,346	$2,373,232	$3,697,167	$3,996,178	$4,916,051	$15,167,973
SoCalGas Elec & Gas Benefit	$80,655	$1,032,740	$1,608,867	$1,738,985	$2,139,279	$6,600,527
SDG&E Elec & Gas Benefit	$48,301	$618,461	$963,476	$1,041,398	$1,281,116	$3,952,751
Total Elec & Gas Benefit	$577,761	$7,397,855	$11,524,835	$12,456,913	$15,324,349	$47,281,712
Agencies Served[9]	7	12	18	23	29	29
Fellows Placed	3	6	5	5	2	21

[9] Agency count may change once SOC ESS and PG&E confirm which agencies have no state-owned buildings, and how to handle such agencies.

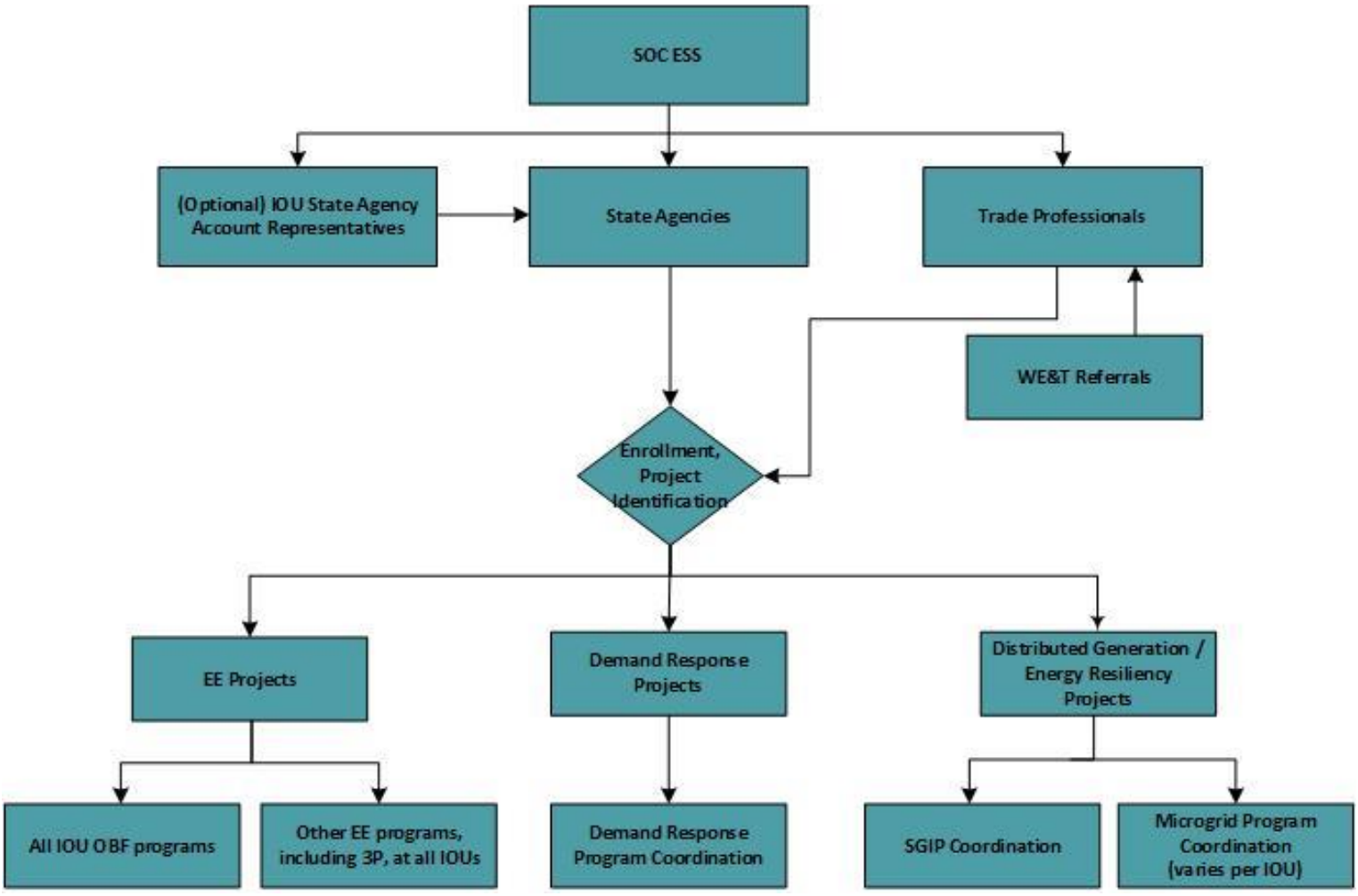
4. Diagram of Program

Provide a one-page diagram of the program including subprograms. This should visually illustrate the program/sub-program linkages to areas such as:

a. **Statewide and individual IOU marketing and outreach**
b. **Workforce Education & Training programs**
c. **Emerging Technologies and Codes and Standards**
d. **Integrated efforts across demand-side management programs**

Figure 3 - **Program Diagram** illustrates the Program linkages. SOC ESS engages directly with state agencies and leverages trade professionals and IOU sales teams, as available. Trade professionals are directed to workforce, education and training programs as appropriate. Projects are assessed for EE, DR, generation, storage, and energy resiliency, per Agency priorities, and directed to appropriate programs.

Figure 3 - Program Diagram



5. Evaluation, Measurement & Verification (EM&V)

Describe any process evaluation or other evaluation efforts that the program administrator (PA) or program implementor (PI) will undertake to identify the evaluation needs that the must be built into the program, clearly identifying who will be responsible for which evaluation activity. These might include:

a. Data collection strategies embedded in the design of the program or intervention to ensure ease of reporting and near-term feedback, and
b. Internal performance analysis during deployment
c. Performance metrics
d. All PAs should indicate what coordination support and funding, if any, they will provide to support program evaluation.

Data Collection Strategies

SOC ESS relies heavily on data collection via the following methods: 1) customer & energy data via either Energy Insight, directly from each Agency, and green button data access, 2) remote site assessments and on-site audits, and in some instances 3) data logging. Building energy data, existing site conditions, and proposed measures, along with performance monitoring data when used, is stored in PRAXIS, except for complex buildings and systems, which will be stored on our secure SharePoint. Customer data is stored in CRM.

Through the remote site assessments and on-site audits, the Program collects key facility data. This includes but is not limited to baseline information, influence information, equipment make/model, hours of operation, run-times, existing operation and maintenance practices, etc. Cost tracking, labor and direct expense management, invoicing and financial reporting is tracked in AESC's Deltek Ajera platform, an integrated accounting and project management software. Team members will record their expenses and labor and the team will monitor expenses against plans. Cost information automatically populates a monthly invoice by billing category. The invoice will be paired with a monthly narrative summarizing the work and results reflected in the invoice.

Internal Performance Analysis During Deployment

SOC ESS project will collect energy data from individual sites following International Performance Measurement and Verification Protocol (IPMVP) guidelines. Savings are determined by field measurement of energy use as a comparison of baseline versus post-intervention observation. The data gathered during the baseline period is used to establish the existing conditions baseline for Accelerated Replacement (AR) / Add-On Equipment (AOE) / Behavioral, Retro-commissioning, and Operational (BRO) measures, as well as to determine the equipment performance used in standard practice for Normal Replacement (NR) measures. For all measures, weather conditions as well as other relevant conditions observed during post-installation data is used to normalize the energy savings estimations.

Basis for Adjustments

- **Weather:** The pre-and post-implementation M&V tasks may occur during varying weather conditions. Ambient weather data and any other key parameters that affects the performance of equipment in question s are collected pre-and post-implementation.
- **Non-Routine Adjustments:** Non-routine events (NREs), both positive and negative, are identified using a statistical approach for determining outliers present in data sets

acquired both pre-and post-implementation. Clear identification of NREs and energy savings (or penalties) associated with the NREs are removed from the scope of the final measure determinations.

- **System Boundary:** For each measure, the appropriate system boundary is established prior to deployment of any power monitoring equipment.
- **Measure Monitoring Period:** The baseline and proposed monitoring periods shall each last at least two weeks to cover a range of operating conditions. For M&V that requires power measurements, DENT ElitePro XC logger or an equivalent equipment is used to log true power every 15 minutes or less. Spot measurements of voltage, current, and power factor may also be used.

Performance Metrics

Table 11 – **Performance Metrics** outlines quarterly and monthly metric data critical to evaluating program efforts and success provided. The data will be provided by the SOC ESS team.

Table 11 – Performance Metrics

Quarterly Metric	Frequency	Supporting Metric	Frequency
Agencies Engaged	Quarterly	Outreach conducted	Monthly
P1 Agencies Enrolled	Quarterly	P1 Participation Agreements (PPA) signed	Monthly
P2 Agency Projects	Quarterly	Active Projects by Agency	Monthly
Regions served (IOU, DAC)	Quarterly	Projects Status and Documentation by IOU Projects Status and Documentation by DAC Region Savings Claimed by IOU Savings Claimed by DAC Region	Monthly
Forecast and Actual Fellows Placed	Quarterly	Fellows Placed	Monthly
Forecast and Actual Program Spend by Quarter	Quarterly	Invoices	Monthly
Forecast and Actual Savings by Quarter	Quarterly	Program Forecast with IOU breakouts Savings Claimed	Monthly
Forecast and Actual Incentives by Quarter	Quarterly	Incentive Forecast with IOU breakouts Incentives Paid	Monthly
Forecast and Actual OBF by Quarter, by IOU	Quarterly	OBF Forecast with IOU breakouts OBF Paid	Monthly
Cross-Program Coordination Tracking	Quarterly	Active Project Program Referrals	Monthly
Confirmation of regular data transfer between AESC's Salesforce and PG&E's Energy Insight	Quarterly	Data transfer between AESC's Salesforce and PG&E's Energy Insight	Weekly

Program Evaluation Support

SOC ESS supports CPUC and PG&E program evaluation efforts as required by the contract and CPUC guidelines. The Program will make all program resources available to assist in coordination of evaluation efforts, data analysis and data queries. SOC ESS will coordinate with PG&E to finalize data reporting requirements.

6. Normalized Metered Energy Consumption (NMEC)

If NMEC is applicable please include a detailed Program-level M&V plan, as called for in the most recently updated NMEC Rulebook. The revised Rulebook includes requirements for Program-level M&V plans to be submitted as part of the Implementation Plan.

Program-Level Measurement and Verification Plan (Site-Level NMEC)

1. **PAs must submit a Program-level M&V Plan for each Site-level NMEC program… The Program-level M&V Plan must be included in Implementation Plan filings for the program and must include (*items a-m*):**

a. **Methodology, analytical methods and software employed for calculating Normalized Metered Energy Consumption, as well as both gross and new savings, resulting from the energy efficiency measures installed and not influenced by unrelated changes in energy consumption.**

Methods and Tools

IPMVP Option C- Whole Building will be used to quantify and verify energy savings for site-level NMEC projects. Option C-Whole Building is the accepted approach for NMEC energy savings verification when projects are comprehensive, estimated savings is significant compared to total energy usage, and interactive effects are expected between EEMs.

The Program will utilize its web-based software platform, Praxis, to drive the empirical modeling, performance tracking, and to determine payable and claimable savings. Praxis imports and stores site-level building data (utility metered energy, weather, etc.) to develop normalized regression models for energy consumption following CalTRACK Methods. 12-months of metered energy (prior to Program intervention) will be collected to calculate and establish the baseline energy model. Praxis automatically imports metered energy data through Green Button, or data can be uploaded manually. Weather is commonly the most influential energy driver for building energy consumption and dry-bulb temperature is used as the primary independent variable in the regression equation. Praxis automatically imports and stores the required site-specific weather data for model development. Additional independent variables, such occupancy or time-of-week, can be incorporated into the energy model if needed to improve the predictability of the model.

Praxis reports all pertinent statistical criteria and other key parameters to ensure the energy model exhibits acceptable levels of accuracy. Praxis enables ongoing measure monitoring during the reporting period through data visualization, tracking, and reporting. Praxis exhibits interactive graphing and charting to inform tool users of missing data, errors in datasets, and other data anomalies which can aid in model QC and NRE detection. Formatted output reports

can be generated throughout the reporting period and used to track project performance and facilitate discussions with project stakeholders.

Avoided energy use and normalized energy savings can be exported from Praxis at the close of a site-level NMEC project for the incentive calculation and Program savings claim.

b. Data collection plan.

Data Collection Plan
Praxis allows all relevant project data (customer information, utility meter data, weather data, etc.) to be uploaded and stored within the platform, Customer data will be collected via Green Button for each IOU. While the Program does not anticipate requiring utility support with data collection, should there be unforeseen instances, the Program may request PG&E assistance. Site-level energy models, energy savings, NREs, and statistical and performance metrics will be calculated and stored for each project in Praxis.

c. Approach to ensure adequate monitoring and documentation of energy savings for each project over the reporting period.

Documenting Savings
All project data stored within Praxis can be exported for review and incentive application assembly. Each NMEC project application will be submitted with a project feasibility study report using the current approved CPUC template or an alternative template as agreed upon by PG&E and AESC. The feasibility study will outline the project and customer eligibility, program influence, existing equipment, proposed measures, energy savings estimates and methodology, measure costs, measure and project effective useful life (EUL), and project M&V plan. AESC's SharePoint will be used to store application and customer site data that is not related to the ongoing NMEC models.

d. A method for identifying and adjusting for non-routine events.

Non-Routine Events
Non-routine events are changes to the building or building operations that influence energy consumption that is not accounted for in the energy model. Typically, these are static factors, such as facility size, operating schedule, or facility use type, that are not expected to change throughout the baseline and reporting period. However, these factors must be monitored for change so their effects can be quantified and isolated from the energy projects' performance tracking and savings claim.

The following outline summarizes how NREs will be proactively monitored, quantified, validated, and reported:

- Determine whether an NRE is present through three methods of detection
    - Initial staff interviews while onsite performing site walkthrough during the pre-installation phase
    - Ongoing structured interviews with facility managers through the reporting period
    - Detection of NREs through Praxis performance tracking data and visualizations
- Quantify the significance of the NREs

  - Engineering calculations/models will be used to quantify the energy impact
  - Whenever possible, actual system measurements will be used
- Determine whether the NRE is temporary or permanent
  - The data for temporary events may be removed from the data set, as long as data quality standards are maintained
  - Permanent events shall be incorporated into the baseline or accounted for in the reporting period
- Make adjustments to the baseline and reporting periods as appropriate, including potentially a re-baseline of the model
- Document the adjustment:
  - Describe the analysis used to quantify the NRE
  - Detail how the impacts of the NRE were resolved
  - Discuss the potential bias in estimating the adjustment and methods to mitigate the bias

For COVID-related adjustments, the Program may take one of two approaches, as determined in each project's M&V plan.

1. Seek a longer measurement period (pre or post) so that the "COVID related months" can be deleted while maintaining 12 months of data.
2. For high frequency (15-min) data, sample where there is a clear repeatability during the months before and after COVID. Use interpolation or other regression techniques to evaluate what the consumption would have been during the "COVID months". This will be done only if the subset analysis meets the statistical criteria of the program.

If a code adjustment is needed, the Program may use a custom savings calculation approach to determine code adjustment savings, and will decrease the NMEC savings claim by the resulting code adjustment value.

If a different approach is warranted for either COVID or code adjustments, that approach will be documented in the project M&V plan.

e. Method of determining program influence, either through a detailed data collection and analysis plan provided in the M&V Plan or adoption of Commission approved default NTG values.

Program Influence

Project program influence will be determined and tracked according to the process outlined in the "Documenting Program Influence" section of this document.

Site-level NMEC projects will require specific data from the Agency, the utility, and third-party sources. These data, by source, along with contingencies, are described in **Table12 - Site-Level NMEC Project Data**.

Table 12 - Site-Level NMEC Project Data

Data Type	Data Source	Data Type	Contingency
Utility Meter Data	**Green Button**	• Automated Green Button authorization and data capture through Praxis • 15-minute interval, hourly or daily data	• Meter data can be supplied directly from the customer or PG&E • Sub meters can be used if compliant with calibration criteria (SCE, ETS)
Independent Variable Data	**Agency**	• Hours of operation • Occupancy data (employees and visitors) • Production (if applicable) • Data on other energy drivers	• Independent variables can be focused on temperature or variants thereof
Weather Data	**Third Party (NOAA, TMY, other)**	• Weather data will automatically be captured and stored through Praxis • Weather station will be selected based on closest calibrated GHCN station • Data will have adequate coverage for the baseline period • TMY will be the most recent industry accepted files	• Temporary data can be used from other sources (such as TMY or nearby station) when data gaps occur

f. Programs targeting savings that comprise less than 10% of annual consumption must provide a rationale and explanation of how savings will be distinguishable from normal variations in consumption.

Distinguishable Savings

The Program Team will not apply the NMEC approach unless the estimated savings is large in comparison to the random or unexplained variation in the energy use data. For projects claiming less than 10% meter savings, savings uncertainty screening, using ASHRAE Guidelines, will be used to determine if savings are detectible. Alternative approaches may be identified in individual project M&V plans. The Program will apply other screening criteria for sites, including:

- Measure opportunities are comprehensive and diverse across traditional custom, RCx, and measures identified in the Database of Energy Efficiency Resources (DEER). If appropriate the program might suggest energy efficiency measures that may not yet have a solution code; in such cases we will either use the "other" solution code within the technology in question or work with CIT to create a new solution code.
- Baseline data is readily available and meets basic data quality standards required for the NMEC approach.
- No significant changes to the facility are expected before and after program intervention, such as major renovations, addition or removal of new loads, etc.

- The facility baseline can be modeled to meet the statistical criteria for goodness-of- fit suggested in ASHRAE Guideline 14[10] and Lawrence Berkeley National Laboratory (LBNL) Site-Level NMEC Technical Guidance[11].

For CDCR, while there is great benefit to using the meter-based platform, the unique characteristics of CDCR facilities, including campus master meters and security protocols, present certain challenges. Therefore, AESC will focus implementation of the meter-based platform with 3-5 projects that meet the strict screening criteria. For example, the team may select projects in administration buildings located outside security perimeters. These less-restricted buildings will enable the team to use desired submeters and the project savings will be easily distinguishable from normal variations in energy use. In addition to the site screening criteria outlined above, CDCR sites will be screened for ease of access and the ability to accommodate sub-meters and collect accurate energy consumption data.

There are several aspects inherent to the NMEC approach that ensure normalized energy savings are detectable beyond data variation and model error. The following is a list of strategies to ensure accurate results and combat uncertainty, which are consistent in themes covered by NMEC Rulebook, and CPUC Technical Guidance Document:

- **Comprehensive Assessment of Baseline Model**: Various statistical criteria will be assessed prior to model acceptance, as outlined in the NMEC M&V Plan below.
- **Application of ASHRAE Savings Uncertainty Formulation**: Fractional savings uncertainty will be applied to each model after the reporting period, and compared to threshold values, prior to reporting energy savings.
- **Sufficient Baseline Data Coverage**: Data for baseline training will span no less than a 12-month period for all model variables.
- **Appropriate Adjustments Made for NREs**: Process is outlined herein and will be documented for each model.
- **Project Screening for Feasibility**: Rigorous screening will be applied to each site to determine feasibility of proposed methods.
- **Reduced Time Period of Implementation Phase**: As part of site screening, the Team will ensure that implementation will not exceed 18 months, or a baselined model will be re-established if new data showed the consumption pattern has changed.

g. A description of the incentive structure, including a) a description of which entity receives compensation at each stage of the project, and b) method(s) and tools utilized in the calculation of incentives and/or compensation.

Incentive Structure

Incentive rates align with "Incentive Tables, Workpapers, Software Tools" Section of this document for kWh and therms savings. NMEC projects will pay out 50% of the estimated incentive (Pre-payment) after the measures have been implemented. The Pre-payment is based on pre-installation engineering estimates or deemed measure savings that represent the installed project scope. Occasionally, and for certain technologies for which it is difficult to

[10] https://www.techstreet.com/ashrae/standards/guideline-14-2014-measurement-of-energy-demand-and-water-savings?product_id=1888937
[11] LBNL Site-Level NMEC Technical Guidance Document

create engineering calculations, the program will accept saving estimates based on rule of thumb or previous project experience, since a true up at the end of the M&V phase will provide evidence of the real savings. Incentive Pre-payment will be authorized and issued once the project has been reviewed and approved by the PG&E technical reviewer. The remaining incentive (Final Payment) will be authorized and paid by the Program after completion of the reporting period (at least 12 months of post-installation M&V data has accrued) and the project has passed final PG&E technical review. Note that more than 12 months of M&V data could be required, at Program team discretion, if unexpected changes occur with measures implemented, non-routine adjustments, or data quality.

Incentive payments wholly based on deemed measure saving or pre-installation engineering savings estimates will not be permissible. Incentives will be paid to the customer or their assigned incentive recipient (for example, the ESCO). Final incentive paid at the end of the reporting period will be calculated based on the actual savings (avoided energy use), subtracting out the pre-payment to determine final incentive amount owed, as outlined in the formulas below.

Pre-payment:

$$50\% * [(Estimated\ kWh\ *\ \$/kWh)\ +\ (Estimated\ therm\ *\ \$/therm)]$$

Final Payment:

$$[(Actual\ kWh\ *\ \$/kWh)\ +\ (Actual\ therm\ *\ \$/therm)]\ -\ Incentive\ Prepayment$$

h. Documentation of the expected costs, energy saving, peak impacts, and effective useful life (EUL) of planned measures and intervention strategies. Including supporting documentation, work papers and/or DEER values.

QA/QC

To supplement the imbedded M&V of the NMEC approach, QA/QC activities will be performed to confirm installation and/or implementation of equipment and services, to ensure the accuracy and completeness of energy savings calculations, and to document program influence of the measure implementation and optimization. To record and collect details on to-standard practice saving potential, equipment, building types and geographical locations will be specified as well as detailed Program interventions that accelerated equipment turnover. The team will monitor metered energy performance on an ongoing basis for all participating projects to detect outliers that may be symptomatic of performance issues or NREs. The team will flag projects for further investigation, including possible follow-up site visits, when outlier projects are detected. A post-installation M&V report is a key Program deliverable and will include the following components:

- Project description
- Detailed list of installed equipment
- Details of any changes between the final proposal and as-built conditions, including any changes to the estimated energy savings
- Documentation of all post-installation verification activities and performance measurements conducted
- Adjustment made to models and all findings related to routine and non-routine events
- Status of rebates or incentives

- Expected first year and lifecycle savings claims, final avoided energy use and final normalized energy savings, including explanation for the use of NRE in case where needed,
  Measure/Project EUL and Net-to-Gross (NTG)Circumstances leading to baseline adjustment as necessary, which may include items such as permanent modification of the building size, shape or use, permanent modification of operating hours or rate of utilization.
  i. **Describe how the project level EUL will be calculated for purposes of energy savings claims.**

Energy Savings Claim
Initial project savings estimates will be calculated for individual energy efficiency measures using industry standard engineering calculation tools and methods which are accepted by PG&E and CPUC, including but not limited to: spreadsheet calculations (Excel), calibrated energy simulations (eQUEST), and DEER workpaper savings estimates.

Praxis will calculate avoided energy savings at the end of the reporting period to determine incentive values. Avoided energy use is the difference between the actual energy consumption in the reporting period and the consumption that is forecasted for the same period using the baseline model and where the baseline energy model use is adjusted to reflect the reporting period conditions. Actual weather data will be used from the accepted third-party weather sources.

Praxis will calculate normalized energy savings at the end of the reporting period and will be used to report final savings. Normalized energy savings is calculated by adjusting the baseline and reporting period to a common set of normal operating conditions such as long-term average weather. Praxis has live access to NOAA weather files and will use the actual weather data that occurred during the collection period. There may be instances in which recent weather files are unavailable, such as during Federal shut-downs, in which case AESC will use the best available local airports weather files.

NMEC savings claims will use the CPUC assigned default net-to-gross ratio of 0.95 per CPUC Resolution E-4952.

Equipment Useful Life (EUL) is an estimate of median number of years that the measures installed under the Program are still in place and operable. CPUC's DEER lists EULs for common equipment and will be utilized to establish most measure EULs. Statewide workpapers will also be referenced and leveraged. The maximum EUL for new equipment replacing removed equipment is 20 years. BRO measures will utilize a three-year EUL. The program will employ one of two methods to determine project EUL where a combination of measures is installed.

1. Per CPUC guidance, savings weighted EUL may be calculated for projects that install a combination of measures. The approach takes into consideration the reported first year gross savings, primary fuel, measure NTG and established EUL to determine reported first year net savings and lifetime net savings for each measure, which is respectively summed for all measures. The savings weighted EUL for the project is the total lifetime net savings divided by the total first year net savings.
2. Alternatively, the weighted project EUL may be calculated as the sum of the product of the measure savings times the measure EUL divided by the total project savings.

$$Weighted\ Project\ EUL = \frac{\sum_{i=1}^{n}(Measure\ Savings_i \times EUL_i)}{\sum_{i=1}^{n}(Measure\ Savings_i)}$$

j. Describe the program target population, and participant eligibility criteria.

Target Population
The Program will target large comprehensive projects on a case-by-case basis for all NMEC qualifying sites where the project and proposed EEMs can meet all applicable requirements of the Program and NMEC M&V Data requirements, and when an NMEC approach provides the most efficient and cost effective method to measure and claim energy savings.

k. Demonstrate compliance with Decision 17-11-006

To Code Savings
See the "For Programs Claiming To-Code Savings" section of this document for explanation of how the Program will demonstrate compliance with Decision 17-11-006.

l. A copy of any Bid M&V Plan submitted by third-party implementers in their bid.

m. Any other item as required by the NMEC rulebook and other applicable rules.

7. Third-party implementers shall provide an M&V Plan as part of their bid package. The bid M&V Plan in bid packages must include, at a minimum:

a. A description of the program target population and participant eligibility criteria
b. Documentation of the expected costs, energy savings, peak impacts, and effective useful life (EUL) of planned measures and intervention strategies
c. Identification of the method(s) and calculation software that will be used to calculate savings, including required information as outlined elsewhere in this rulebook
d. Approach to ensure adequate data collection, monitoring and documentation of energy savings for each project over the reporting period.

Population-based NMEC Programs

1. PAs must submit a program-level M&V Plan for each Population-level NMEC program. For third-party programs, PAs may work with – or ask – implementers to develop parts or all of the PRgram-level M&V Plan. However, the Program-level M&V Plan is still a PA document that PAs will submit directly to the Commission.

Not applicable. SOC ESS will not be using Population-Based NMEC as a savings verification method.

Bid M&V Plans

2. **Implementers must develop and submit an M&V Plan as part of their bid. The Bid M&V Plan in bid packages must include at least the following:**

    a. **A description of the program target population and participant eligibility criteria**
    b. **Documentation of the expected costs, energy savings and effective useful life (EUL) of planned measures and intervention strategies**
    c. **Identification of the method(s) and calculation software that will be used to calculate savings, including required information as outlined elsewhere in this rulebook.**

The following M&V Plan is a copy from the Implementer's bid and is included for reference only.

Suitability
Where viable and cost effective, SOC ESS will leverage an NMEC approach, and the process of developing and maintaining empirical and normalized energy models to optimize savings on large, multi-measure projects that deliver more than 10% savings over the building baseline, and to capture the benefits of the higher NTG afforded to the platform. One key value of the meter-based platform is the ability to unlock historically stranded to-code savings.

Decision 17-01-013 states that programs that use NMEC for savings verification and incentive payment should, "incorporate a pay-for-performance element that …provides such motivation to the market actors that have access to performance information and the ability to improve or affect performance as it evolves." Through SOC ESS, real-time performance information will enable Agency facility managers to be notified of energy use anomalies or NREs and provided technical assistance if specific system improvements can be made. This engagement will enable PG&E and CPUC staff to review projects and provide early feedback in the process. For these reasons, the site-level NMEC approach is aligned with the SOC ESS program goals, and therefore suitable for State agencies.

Methods and Tools
IPMVP Option C- Whole Building will be used to verify normalized energy savings for projects under the meter-based platform. SOC ESS will utilize its web-based software platform, Praxis, to drive the empirical modeling and performance tracking processes. Praxis can develop quality whole building normalized baselines using standardized approaches and has been developed in compliance with CalTRACK methods. More fundamentally, Praxis follows ASHRAE Guideline 14, IPVMP and other industry best practice. Praxis tracks all pertinent statistical criteria and other key parameters to ensure the energy model exhibits high levels of accuracy and predictive power.

One of the primary value-adds of Praxis is the ability to conduct ongoing measure monitoring during the reporting period through data visualization, tracking, and reporting features. Praxis exhibits interactive graphing and charting, and specific alerts can be enabled to notify tool users of missing data, errors in datasets, or other data anomalies. Formatted output reports can be sent to the Agency throughout the reporting period. These features will also enable SOC ESS staff to discern if implemented measures are not performing as predicted and facilitate a discussion with the Agency where specific equipment recommendations can be made.

Praxis algorithms and software, in addition to AESC's detailed methodology document explaining the basis of all software functionality, will be made available to PG&E, CPUC staff and its consultants upon request. The team suggests that the tool is as transparent as possible and is consistent with the definition for transparency as described in the LBNL document, "State of Advanced Measurement and Verification Technology and Industry Application" (Granderson, 2017).

Key Data

The team will require specific data from the Agency, the utility, and third-party sources. These data, by source, along with potential challenges, are described in the **Table 13** - **Required Key Data**.

Table 13 - Required Key Data

Source	Data Type	Notes	Challenge	Solution
Agency	- Billing history - Hours of operation - Occupancy data (employees and visitors) - Production (if applicable) - Data on other energy drivers	STEM data, hourly or daily is expected (monthly can be used but impacts FSU requirements) Previous 12 months immediately prior to planned project installation Utility revenue meters to be primary source Sub meters can be used if compliant with calibration criteria (SCE, ETS)	Unable to get electronic billing history with daily values Source of occupancy data is unreliable	Request data from utility Focus on CDD, HDD, average temp, and variants thereof as independent variables,
Utility	Billing history (if not viable through Agency)	STEM, hourly, or daily data	Time delay	Work through utility account management
Third Party	NOAA GHCN Weather Data-Historical NOAA Weather Data	Weather station will be selected based on closest calibrated GHCN station Data will have adequate coverage for the baseline training period	.Data gaps Government shutdowns	Clean data per CalTRACK standard Use temporary data from other sources (such as TMY data) until GHCN databases are updated

The following outline summarizes how NREs will be proactively monitored, quantified, validated, and reported:

- Determine whether an NRE is present through three methods of detection
  - Initial staff interviews while onsite performing site walkthrough during the pre-installation phase
  - Ongoing structured interviews with facility managers through the reporting period
  - Detection of NREs through Praxis performance tracking
- Quantify the significance of the NREs
  - Engineering calculations will be used to quantify the energy impact
  - Whenever possible, actual system measurements will be used
- Determine whether the NRE is temporary or permanent:
  - The data for temporary events may be removed from the data set, as long as

data quality standards are maintained
    - Permanent events shall be incorporated into the baseline or accounted for in the reporting period
- Make the adjustment to the baseline and/reporting period as appropriate, including potentially a re-baseline of the model
- Document the adjustment:
    - Describe the analysis used to quantify the NRE
    - Detail how the impacts of the NRE were resolved
    - Discuss the potential bias in estimating the adjustment and methods to mitigate the bias

Distinguishable Savings

The SOC ESS team will not apply the NMEC approach unless the estimated savings exceeds 10% of the whole building or subsystem annual use and is large in comparison with the random or unexplained variation in the energy use data. The team will apply other screening criteria for sites, including:

- Measure opportunities are comprehensive and diverse across traditional custom, RCx, and measures identified in DEER.
- Baseline data is readily available and meets basic data quality standards required for the NMEC approach.
- No significant changes to the facility are expected before or after program intervention, such as major renovations, addition or removal of new loads, etc.

Detectability

As SOC ESS engineering resources quantify anticipated project savings, individual energy efficiency measures and the total estimated site savings will be estimated using typical engineering calculations and calibrated energy models, or via savings values established in DEER.

There are several aspects inherent to the NMEC approach that ensure normalized energy savings are detectable beyond data variation and model error. The following is a list of strategies to ensure accurate results and combat uncertainty, which are consistent in themes covered by HOPPs rulings, NMEC Rulebook, and CPUC Technical Guidance Document:

- **Comprehensive Assessment of Baseline Model**: Various statistical criteria will be assessed with high threshold prior to model acceptance, as outlined in the NMEC M&V Plan below.
- **Application of ASHRAE Savings Uncertainty Formulation**: Fractional Savings Uncertainly (FSU) will be applied to each model after the reporting period, and compared to threshold values, prior to reporting energy savings.
- **Frequent Interval Baseline Data**: Hourly data increases the accuracy of the model.
- **Sufficient Baseline Data Coverage**: Data for baseline training will span no less than a 12-month period for all model variables.
- **Appropriate Adjustments Made for NREs:** Process is outlined herein and will be documented for each model.

- **Project Screening for Feasibility**: As mentioned above, rigorous screening will be applied to each site to determine feasibility of proposed methods.
- **Reduced Time Period of Implementation Phase**: As part of site screening, the team will ensure that implementation will not exceed 18 months, or a re-baselined model will be established.

Supporting References

The SOC ESS team includes experts in M&V and NMEC approaches. We continually reference industry guidelines and approaches in our meter-based work and adjust as needed due to the evolving nature of NMEC requirements. The list of sources that have informed Praxis, M&V Plan, and general meter-based approach, include, but is not limited to, the following:

- CPUC, 2020. "Rulebook for Programs and Projects Based on Normalized Metered Energy Consumption", version 2.0[12].
- PG&E. "PG&E Manual for Commercial and Public Sector Whole Building Performance Based Retrofit Program Offering", June, 2021[13].
- ASHRAE Guideline 14 (2014). ASHRAE Guideline 14-2014 for Measurement of Energy and Demand Savings, American Society of Heating, Refrigeration and Air Conditioning Engineers, Atlanta, GA.[14]
- Efficiency Valuation Organization (EVO) 2016. IPMVP, Core Concepts.[15]
- LBNL. "Site-Level NMEC Technical Guidance: Program M&V Plans Utilizing Normalized Metered Energy Consumption Savings Estimation", Version 2.0. December 15, 2019[16].

QA/QC

To supplement the imbedded M&V of the NMEC approach, certain post-installation activities will be performed to confirm installation or implementation of equipment and services, to ensure the accuracy and completeness of energy savings calculations, and document program influence of the measure implementation and optimization. The team will monitor metered energy performance on an ongoing basis for all participating projects to detect outliers that may be symptomatic of performance issues or NREs. At a minimum, the highest and lowest one percent of projects will be flagged for further investigation, including possible follow-up site visits. A post-installation M&V report is a key deliverable of the SOC ESS Program and will include the following components:

- Project description
- Detailed list of installed equipment
- Details of any changes between the final proposal and as-built conditions, including any changes to the estimated energy savings
- Documentation of all post-installation verification activities and performance measurements conducted

[12] CPUC Rulebook
[13] PG&E Manual for Commercial and Public Sector Whole Building Performance Based Retrofit Program Offering
[14] https://www.techstreet.com/ashrae/standards/guideline-14-2014-measurement-of-energy-demand-and-water-savings?product_id=1888937
[15] https://evo-world.org/en/component/content/article/738-news/1024-a-fresh-look-for-the-2016-ipmvp-core-concepts?Itemid=2704
[16] LBNL Site-Level NMEC Technical Guidance

- Status of rebates or incentives
- Expected savings for the first year

Appendices

Deemed Rebates

Measure Description	Rebate	Unit Definition
Automatic Conveyor Broilers Belt Width <20 inches	$ 2,000.00	EACH
Automatic Conveyor Broilers Belt Width 20-26 inches	$ 2,500.00	EACH
Automatic Conveyor Broilers Belt Width > 26 inches	$ 3,000.00	EACH
Commercial Combination Oven < 15 pan capacity (Electric)	$ 1,000.00	EACH
Efficient, Commercial Combination Oven, 15-28 Pan Models, Gas	$ 1,000.00	EACH
Efficient, Commercial Combination Oven, <15 Pan Models, Electric	$ 1,000.00	EACH
Commercial Combination Oven > 29 pan capacity (Electric)	$ 3,500.00	EACH
Commercial Combination Oven/Steamer < 15 pan capacity (Gas)	$ 700.00	EACH
Commercial Combination Oven < 29 pan capacity (Gas)	$ 2,000.00	EACH
Commercial Full-Size Convection Oven (Electric)	$ 350.00	EACH
Efficient, Commercial Convection Oven, Full, Gas	$ 500.00	EACH
COMMERCIAL Conveyor Oven Gas	$ 500.00	EACH
Add DCV and CO2 Sensor, DX Furnace with ADEC	$ 40.00	CAP-TONS
Add DCV and CO2 Sensor, Heat Pump with ADEC	$ 40.00	CAP-TONS
PGE - Add CO2 sensor to AC only unit with ADEC	$ 40.00	CAP-TONS
Add DCV, ADEC and CO2 Sensor, DX Furnace	$ 50.00	CAP-TONS
Add DCV, ADEC and CO2 Sensor, Heat Pump	$ 50.00	CAP-TONS
Add DCV, ADEC and CO2 Sensor, DX only	$ 50.00	CAP-TONS
Tier 2- 15% below Energy Star Minimum Speciation for Energy Efficient High Temperature Door-Type Commercial Dishwashers with water usage <= 0.76 gal/rack and idle energy rate <= 0.7 kW	$ 600.00	EACH
PGE - Add VFD to an existing motor on an AC unit with gas heat and ADEC	$ 80.00	CAP-TONS
Heat Pump, Add VFD	$ 80.00	CAP-TONS
PGE - Add VFD to an existing motor on an AC only unit with ADEC	$ 80.00	CAP-TONS
Add ADEC and VFD to an existing motor on an AC unit with gas heat	$ 130.00	CAP-TONS
Add ADEC and VFD to an existing motor on a Heat pump	$ 130.00	CAP-TONS
AC unit only, Add VFD and ADEC	$ 130.00	CAP-TONS
Economizer Control Replacement on AC Unit with Gas Heat	$ 10.00	CAP-TONS
Economizer Control Replacement on Heat Pump	$ 10.00	CAP-TONS
Economizer Control Replacement on AC Only Units	$ 10.00	CAP-TONS
Economizer Control Replacement on Variable Volume AC Unit with Gas Heat	$ 10.00	CAP-TONS
Efficient, Commercial Fryer, Electric	$ 650.00	EACH
Efficient, Commercial Fryer, Gas, Tier 1	$ 749.00	EACH
Efficient, Commercial Fryer, Gas, Tier 2	$ 749.00	EACH
ENERGY STAR GRIDDLE - ELECTRIC Per Len. Ft	$ 150.00	LEN-FT
Efficient, Commercial Griddle, Gas	$ 100.00	LEN-FT
Commercial Pool and Spa Heater	$ 2.00	CAP-KBTUH

Measure Description	Rebate	Unit Definition
Commercial Ice Machines SCU <110 lbs/day	$ 50.00	EACH
Commercial Ice Machines SCU 110-200 lbs/day	$ 75.00	EACH
Commercial Ice Machines SCU >200 lbs/day	$ 100.00	EACH
Efficient, Commercial Ice Maker, IMH, <300 lb/day	$ 75.00	EACH
Commercial Ice Machines IMH 300 to 800 lbs/day	$ 125.00	EACH
Commercial Ice Machines IMH 801 to 1500 lbs/day	$ 200.00	EACH
Commercial Ice Machines IMH >1500 lbs/day	$ 300.00	EACH
Efficient, Commercial Ice Maker, RCU, <988 lb/day	$ 200.00	EACH
Efficient, Commercial Ice Maker, RCU, >=988 lb/day	$ 300.00	EACH
Insulated Holding Cabinet, Full-Size	$ 750.00	EACH
Insulated Holding Cabinet, Half-Size	$ 200.00	EACH
0.5 GPM Flow Rate Laminar Flow Restrictor being installed on a 2.7 GPM Flow Rate Faucet Base Case	$ 4.00	EACH
1.0 GPM Flow Rate Laminar Flow Restrictor being installed on a 2.7 GPM Flow Rate Faucet Base Case	$ 4.00	EACH
1.5 GPM Flow Rate Laminar Flow Restrictor being installed on a 2.7 GPM Flow Rate Faucet Base Case	$ 4.00	EACH
LED HighBay luminaire rated from 4500 to < 5400 lumens and >= 130 LPW and < 150 LPW	$ 13.00	FIXTURE
LED HighBay luminaire rated from 5400 to < 6500 lumens and >= 130 LPW and < 150 LPW	$ 13.00	FIXTURE
LED HighBay luminaire rated from 6500 to < 7800 lumens and >= 130 LPW and < 150 LPW	$ 13.00	FIXTURE
LED HighBay luminaire rated from 7800 to < 9400 lumens and >= 130 LPW and < 150 LPW	$ 13.00	FIXTURE
LED HighBay luminaire rated from 9400 to < 11800 lumens and >= 130 LPW and < 150 LPW	$ 13.00	FIXTURE
LED HighBay luminaire rated from 11800 to < 14800 lumens and >= 130 LPW and < 150 LPW	$ 13.00	FIXTURE
LED HighBay luminaire rated from 14800 to < 18500 lumens and >= 135 LPW and < 150 LPW	$ 13.00	FIXTURE
LED HighBay luminaire rated from 18500 to < 23100 lumens and >= 135 LPW and < 150 LPW	$ 25.00	FIXTURE
LED HighBay luminaire rated from 23100 to < 30000 lumens and >= 135 LPW and < 150 LPW	$ 25.00	FIXTURE
LED HighBay luminaire rated from 30000 to < 39000 lumens and >= 135 LPW and < 150 LPW	$ 25.00	FIXTURE
LED HighBay luminaire rated from 39000 to < 50700 lumens and >= 140 LPW and < 150 LPW	$ 25.00	FIXTURE
LED HighBay luminaire rated from 50700 to < 65900 lumens and >= 140 LPW and < 150 LPW	$ 25.00	FIXTURE
LED HighBay luminaire rated from 4500 to < 5400 lumens and >= 150 LPW	$ 19.00	FIXTURE
LED HighBay luminaire rated from 5400 to < 6500 lumens and >= 150 LPW	$ 19.00	FIXTURE
LED HighBay luminaire rated from 6500 to < 7800 lumens and >= 150 LPW	$ 19.00	FIXTURE
LED HighBay luminaire rated from 7800 to < 9400 lumens and >= 150 LPW	$ 19.00	FIXTURE
LED HighBay luminaire rated from 9400 to < 11800 lumens and >= 150 LPW	$ 19.00	FIXTURE
LED HighBay luminaire rated from 11800 to < 14800 lumens and >= 150 LPW	$ 19.00	FIXTURE

Measure Description	Rebate	Unit Definition
LED HighBay luminaire rated from 14800 to < 18500 lumens and >= 150 LPW	$ 19.00	FIXTURE
LED HighBay luminaire rated from 18500 to < 23100 lumens and >= 150 LPW	$ 40.00	FIXTURE
LED HighBay luminaire rated from 23100 to < 30000 lumens and >= 150 LPW	$ 40.00	FIXTURE
LED HighBay luminaire rated from 30000 to < 39000 lumens and >= 150 LPW	$ 40.00	FIXTURE
LED HighBay luminaire rated from 39000 to < 50700 lumens and >= 150 LPW	$ 40.00	FIXTURE
LED HighBay luminaire rated from 50700 to < 65900 lumens and >= 150 LPW	$ 40.00	FIXTURE
Ozone Laundry	$ 39.00	PROC-LBS
COMMERCIAL RACK OVEN	$ 2,000.00	EACH
< 15 cubic feet Glass-Door Reach-In Refrigerator	$ 30.00	EACH
15 - 29 cubic feet Glass-Door Reach-In Refrigerator	$ 60.00	EACH
30 - 49 cubic feet Glass-Door Reach-In Refrigerator	$ 80.00	EACH
>= 50 cubic feet Glass-Door Reach-In Refrigerator	$ 100.00	EACH
VSD on HVAC Fan Control	$ 80.00	RATED-HP
Pipe Insulation 1 inch Insulation <= 1 inch pipe <=15 psig steam_Outdoor	$ 3.00	LEN-FT
Pipe Insulation 1 inch Insulation <= 1 inch pipe >15 psig steam_Outdoor	$ 3.00	LEN-FT
Pipe Insulation 1 inch Insulation <= 1 inch pipe Hot Water_Outdoor	$ 3.00	LEN-FT
Pipe Insulation 1 inch Insulation > 4 inch pipe <=15 psig steam_Outdoor	$ 3.00	LEN-FT
Pipe Insulation 1 inch Insulation > 4 inch pipe >15 psig steam_Outdoor	$ 3.00	LEN-FT
Pipe Insulation 1 inch Insulation > 4 inch pipe Hot Water_Outdoor	$ 3.00	LEN-FT
Pipe Insulation 1 inch Insulation 1 inch < pipe <= 4 inch <=15 psig steam_Outdoor	$ 3.00	LEN-FT
Pipe Insulation 1 inch Insulation 1 inch < pipe <= 4 inch >15 psig steam_Outdoor	$ 3.00	LEN-FT
Pipe Insulation 1 inch Insulation 1 inch < pipe <= 4 inch Hot Water_Outdoor	$ 3.00	LEN-FT
Pipe Insulation 1 inch Insulation <= 1 inch pipe <=15 psig steam_Indoor	$ 3.00	LEN-FT
Pipe Insulation 1 inch Insulation <= 1 inch pipe >15 psig steam_Indoor	$ 3.00	LEN-FT
Pipe Insulation 1 inch Insulation <= 1 inch pipe Hot Water_Indoor	$ 3.00	LEN-FT
Pipe Insulation 1 inch Insulation > 4 inch pipe <=15 psig steam_Indoor	$ 3.00	LEN-FT
Pipe Insulation 1 inch Insulation > 4 inch pipe >15 psig steam_Indoor	$ 3.00	LEN-FT
Pipe Insulation 1 inch Insulation > 4 inch pipe Hot Water_Indoor	$ 3.00	LEN-FT
Pipe Insulation 1 inch Insulation 1 inch < pipe <= 4 inch <=15 psig steam_Indoor	$ 3.00	LEN-FT
Pipe Insulation 1 inch Insulation 1 inch < pipe <= 4 inch >15 psig steam_Indoor	$ 3.00	LEN-FT
Pipe Insulation 1 inch Insulation 1 inch < pipe <= 4 inch Hot Water_Indoor	$ 3.00	LEN-FT
Fitting Insulation <= 1 inch pipe <=15 psig steam_Indoor	$ 3.00	EACH
Fitting Insulation <= 1 inch pipe >15 psig steam_Indoor	$ 3.00	EACH
Fitting Insulation <= 1 inch pipe Hot Water_Indoor	$ 3.00	EACH
Fitting Insulation > 4 inch pipe <=15 psig steam_Indoor	$ 3.00	EACH
Fitting Insulation > 4 inch pipe >15 psig steam_Indoor	$ 3.00	EACH
Fitting Insulation > 4 inch pipe Hot Water_Indoor	$ 3.00	EACH

Measure Description	Rebate	Unit Definition
Fitting Insulation 1 inch < pipe <= 4 inch <=15 psig steam_Indoor	$ 3.00	EACH
Fitting Insulation 1 inch < pipe <= 4 inch >15 psig steam_Indoor	$ 3.00	EACH
Fitting Insulation 1 inch < pipe <= 4 inch Hot Water_Indoor	$ 3.00	EACH
Fitting Insulation <= 1 inch pipe <=15 psig steam_Outdoor	$ 3.00	EACH
Fitting Insulation <= 1 inch pipe >15 psig steam_Outdoor	$ 3.00	EACH
Fitting Insulation <= 1 inch pipe Hot Water_Outdoor	$ 3.00	EACH
Fitting Insulation > 4 inch pipe <=15 psig steam_Outdoor	$ 3.00	EACH
Fitting Insulation > 4 inch pipe >15 psig steam_Outdoor	$ 3.00	EACH
Fitting Insulation > 4 inch pipe Hot Water_Outdoor	$ 3.00	EACH
37-199 kW Backup Generator with Circulating Block Heater replacing Undersized Thermosiphon Heater	$ 75.00	EACH
200-799 kW Backup Generator with Circulating Block Heater replacing Undersized Thermosiphon Heater	$ 150.00	EACH
800-1099 kW Backup Generator with Circulating Block Heater replacing Undersized Thermosiphon Heater	$ 140.00	EACH
High Performance Conveyor Toaster, Commercial	$ 500.00	UNIT
Efficient, Commercial Deck Oven	$ 1,250.00	UNIT
Floating saturated condensing temperature controls (air-cooled)	$ 50.00	TON
Floating saturated condensing temperature controls VFD (air-cooled)	$ 50.00	TON
Floating saturated condensing temperature controls (evaporative-cooled)	$ 50.00	TON
Floating saturated condensing temperature controls VFD (evaporative-cooled)	$ 50.00	TON
Efficient, Saturated Suction Controls, Air-cooled	$ 50.00	TON
Efficient, Saturated Suction Controls, Evap-cooled	$ 50.00	TON
Software-controlled switch reluctance motor	$ 50.00	HP
Variable-speed drive on condenser water pump control	$ 225.00	HP
Variable-speed drive on chilled water pump control	$ 200.00	HP
VFD on Agricultural Well Pumps (≤300 hp) - Existing Equipment 1,2	$ 75.00	HP
VFD on Agricultural Booster Pumps (≤150 hp) - Existing Equipment 1,2	$ 65.00	HP
VFD on Agricultural Well Pumps (≤300 HP) - New Equipment 1,2	$ 75.00	HP
VFD on Agricultural Booster Pumps (≤150 hp) - New Equipment 1,2	$ 65.00	HP
Variable speed drive on air compressor control: 5 to 14 hp1,2	$ 75.00	HP
Variable speed drive on air compressor control: 15 to 24 hp1,2	$ 75.00	HP
Small/Medium – Tier I (non-condensing) <200 kBtuh, >=0.84 UEF	$ 0.50	KBTUH
Small/Medium – Tier II (condensing) <200 kBtuh, >=0.87 UEF	$ 2.50	KBTUH
Large - Tier I (non-condensing) >=200 kBtuh, ≥0.84 TE or ≥0.86 CE	$ 0.50	KBTUH
Large - Tier II (condensing) >=200 kBtuh, ≥0.90 TE or ≥0.92 CE	$ 3.00	KBTUH
Large - Tier III (condensing) >=200 kBtuh, ≥0.96 TE or ≥0.98 CE	$ 4.00	KBTUH
Gallons Per Minute (GPM) ≤1.07	$ 20.00	UNIT
R-value ≥0.5 ft.2-hr-°F/Btu	$ 1.00	SQ.FT.

Measure Description	Rebate	Unit Definition
Recirculating Pump Time Clock, Requires 7-day (or better) scheduling capabilities	$ 300.00	UNIT
Steam Trap, >=12 hours of average daily use	$ 100.00	UNIT
Small - 40 Gallon (Medium Draw), ≤75 kBtuh, ≥0.64 UEF	$ 3.00	KBTUH
Small - 50 Gallon (Medium Draw), ≤75 kBtuh, ≥0.64 UEF	$ 2.00	KBTUH
Small - 30 Gallon (High Draw), ≤75 kBtuh, ≥0.68 UEF	$ 3.00	KBTUH
Small - 40 Gallon (High Draw), ≤75 kBtuh, ≥0.68 UEF	$ 6.00	KBTUH
Small - 50 Gallon (High Draw), ≤75 kBtuh, ≥0.68 UEF	$ 5.00	KBTUH
Large - Tier 1, >75 kBtuh, ≥0.83 TE	$ 2.00	KBTUH
Large - Tier 2, >75 kBtuh, ≥0.90 TE	$ 8.00	KBTUH
Large - Tier 3, >75 kBtuh, ≥0.96 TE	$ 8.00	KBTUH
Unoccupied Fan Control, AC Only Unit	$ 3.00	CAP-TONS
Unoccupied Fan Control, AC Unit with Gas Heat	$ 3.00	CAP-TONS
Unoccupied Fan Control, Heat Pump	$ 3.00	CAP-TONS
Unoccupied Fan Control, Variable Volume AC Unit with Gas Heat	$ 3.00	CAP-TONS
Undercounter Dishwasher, Hi Temp, Tier 1	$ 100.00	EACH
Undercounter Dishwasher, Hi Temp, Tier 1 - New	$ 100.00	EACH
Undercounter Dishwasher, Hi Temp, Tier 2	$ 100.00	EACH
Undercounter Dishwasher, Hi Temp, Tier 2 - New	$ 100.00	EACH
Undercounter Dishwasher, Lo Temp, Tier 1	$ 100.00	EACH
Undercounter Dishwasher, Lo Temp, Tier 1 - New	$ 100.00	EACH
Undercounter Dishwasher, Lo Temp, Tier 2	$ 820.00	EACH
Undercounter Dishwasher, Lo Temp, Tier 2 - New	$ 820.00	EACH
Process Boiler-Hot Water – 85% CE, <200,000 kBtu/hr	$ 0.50	CAP-KBTUH
Process Boiler-Hot Water – 90% CE, <200,000 kBtu/hr	$ 0.50	CAP-KBTUH
Process Boiler-Steam-83% CE, <200,000 kBtu/hr	$ 4.00	CAP-KBTUH
Cogged V-Belt for HVAC Fans	$ 0.25	CAP-TONS
Cogged V-Belt for HVAC Fans - New	$ 0.25	CAP-TONS
Space Heating Boiler, Hot water boiler (300 - 2500 kBtuh, 94.0 Et, condensing, OA reset from 115 to 140 F)	$ 3.00	CAP-KBTUH
Space Heating Boiler, Hot water boiler (> 2500 kBtuh, 94.0 Et, condensing, OA reset from 115 to 140 F)	$ 2.00	CAP-KBTUH
Space Heating Boiler, Hot water boiler (300 - 2500 kBtuh, 85.0 Et, OA Reset from 140 to 165 F) - New	$ 8.00	CAP-KBTUH
Space Heating Boiler, Hot water boiler (300 - 2500 kBtuh, 94.0 Et, condensing, OA reset from 140 to 165 F) - New	$ 3.00	CAP-KBTUH
Space Heating Boiler, Hot water boiler (300 - 2500 kBtuh, 94.0 Et, condensing, OA reset from 115 to 140 F) - New	$ 3.00	CAP-KBTUH
Space Heating Boiler, Hot water boiler (> 2500 kBtuh, 83.0 Et, 85.0Ec, OA Reset from 140 to 165 F) - New	$ 4.00	CAP-KBTUH
Space Heating Boiler, Hot water boiler (> 2500 kBtuh, 94.0 Et, condensing, OA reset from 140 to 165 F) - New	$ 2.00	CAP-KBTUH
Space Heating Boiler, Hot water boiler (> 2500 kBtuh, 94.0 Et, condensing, OA reset from 115 to 140 F) - New	$ 2.00	CAP-KBTUH

Measure Description	Rebate	Unit Definition
Space Heating Boiler, Steam boiler (300 - 2500 kBtuh, 82.0 Et, OA Reset from 140 to 165 F) - New	$ 12.00	CAP-KBTUH
Space Heating Boiler, Steam boiler (> 2500 kBtuh, 80.0 Et, OA Reset from 140 to 165 F) - New	$ 1.00	CAP-KBTUH
Space Heating Boiler, Steam boiler (> 2500 kBtuh, 82.0 Et, OA Reset from 140 to 165 F) - New	$ 2.00	CAP-KBTUH
Large Instantaneous Heaters, >200 kBtu/hr, 80% TE	$ 0.50	CAP-KBTUH
Large Instantaneous Heaters, >200 kBtu/hr, 90% TE	$ 0.50	CAP-KBTUH
Gas Dryer Modulating Valve	$ 250.00	EACH