Southern California Edison

Implementation Plan

Willdan Industrial Energy Efficiency Program (IEEP)

First Filing Date: 07/23/2021

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1. Program Budget and Savings Information

1. Program and/or Sub-Program Name

Willdan Industrial Energy Efficiency Program

2. Program and/or Sub-Program ID Number

SCE-3P-2021RCI-006

3. Program and/or Sub-Program Budget Table

Costs	2021	2022	2023	2024	2025	Total
Administration	$0	$1,146,143	$3,119,409	$3,060,350	$3,060,350	$10,386,252
Marketing/Outreach	$0	$830,220	$2,245,668	$2,201,375	$2,201,375	$7,478,637
Incentive/Rebate	$0	$5,909,674	$15,281,354	$15,281,354	$15,281,354	$51,753,737
Direct Implementation	$0	$6,053,677	$16,609,026	$18,004,282	$18,004,282	$58,671,265
Total	**$0**	**$13,939,713**	**$37,255,457**	**$38,547,361**	**$38,547,361**	**$128,289,892**

*This total assumes that the program is active from 2021 to 2025. To extend into 2026, a revised CPUC request will be required. If approved, the 2026 budget will be as follows:

Costs	2026
Administration	$2,120,568
Marketing/Outreach	$1,525,369
Incentive/Rebate	$10,588,705
Direct Implementation	$12,475,467
Total	**$26,710,109**

4. Program and/or Sub-Program Gross Impacts Table[1]

	2021	2022	2023	2024	2025	Total
Gross Demand	0	5,594	14,166	14,166	14,166	**48,091**

[1] Initial Delivery Date extended into 2022 as a result of delayed CPUC approval of the program.

Reduction (kW)						
Net Demand Reduction (kW)	0	3,426	8,694	8,694	8,694	**29,508**
Gross Energy Savings (kWh)	0	53,092,484	136,642,287	136,642,287	136,642,287	**463,019,344**
Net Energy Savings (kWh)	0	36,201,719	93,646,764	93,646,764	93,646,764	**317,142,011**

**This total assumes that the program is active from 2021 to 2025. To extend into 2026, a revised CPUC request will be required. If approved, the 2026 program impact will be as follows:

	2026
Gross Demand Reduction (kW)	9,815
Net Demand Reduction (kW)	6,024
Gross Energy Savings (kWh)	94,681,717
Net Energy Savings (kWh)	64,889,403

5. Program and/or Sub-Program Cost-Effectiveness (TRC)[2]

TRC values are annual averages. 2026 values are provided here but are dependent on future CPUC funding approval.

	2021	**2022**	**2023**	**2024**	**2025**
Expected TRC	N/A	1.27	1.33	1.35	1.35

6. Program and/or Sub-Program Cost-Effectiveness (PAC)

PAC values are annual averages. 2026 values are provided here but are dependent on future CPUC funding approval.

	2021	**2022**	**2023**	**2024**	**2025**

[2] An expected TRC value is not applicable in 2021 since no savings will be delivered in that year.

Expected PAC	N/A	1.51	1.53	1.54	1.53

7. **Type of Program and/or Sub-Program Implementer**

Program Implementer	
PA-delivered	☐
Third Party-Delivered	☒
Partnership	☐

8. **Market Sector**

SCE Business Plan Sector	Yes
Residential	☐
Commercial	☐
Industrial	☒
Agricultural	☐
Public	☐
Cross-Cutting	☐

9. **Program and/or Sub-Program Type**

Program Type	
Resource	☒
Non-Resource	☐

10. **Market Channels and Intervention Strategies:**

Market Channels	
Upstream	☐
Midstream	☐
Downstream	☒
Intervention Strategies	

Market Channels	
Direct Install	☒
Incentive	☒
Finance	☒
Audit	☒
Technical Assistance	☒
Other	☐

Campaign Goals and Timeline:[3]

Phase	Key Deliverable(s) / Milestone(s)	Dates/Duration	% of Energy Savings
Launch Readiness	•Implementation Plan •M&V Plan •Marketing Plan •QA/QC Plan •Program Management Plan •Program Marketing Materials	07/20/2021-10/31/2021	0%
Program Ramp Up	•Date Program is Available to Customers •Marketing Plan Implemented •Pipeline Development •Energy Savings •Workpaper Development / Updates	11/01/2021-12/31/2021	0%

Program Steady State	•Energy Savings •Workpaper Development / Updates	01/01/2022-12/31/2024	70%
Program Ramp Down / Transition	•Program Ramp-Down Plan •Energy Savings	01/01/2025-10/31/2025	30%
Measurement & Payment	•Date Program is No Longer Available to Customers •Completion of energy savings reporting/payments, if required	11/01/2025-12/31/2025	0%

Implementation Plan Narrative

1. Program Description

Program Description

The Industrial Energy Efficiency Program (IEEP) provides comprehensive energy efficiency for all industrial customers (NAICS Codes: 21xxxx, 22xxxx, 23xxxx, 31xxxx, 32xxxx, 33xxxx, 42xxxx, 48xxxx, 49xxxx, 81xxxx [except Public Administration]) with a monthly maximum demand greater than 20 kW across Southern California Edison's (SCE) service territory. The program complies with SCE and California Public Utilities Commission (CPUC) requirements and offers an integrated approach that includes segment-specific marketing, technical assistance, technologies, whole-plant opportunities, financing assistance, turnkey project implementation, and measurement and verification (M&V). This approach minimizes the barriers for customer participation.

This program also uses normalized metered energy consumption in the Industrial sector. The Rulebook for Programs and Projects Based on Normalized Metered Energy Consumption (v2.0) is explicit that NMEC "is not permissible for industrial operations" (p. 8) but that "Site-level NMEC projects in industrial buildings are permissible, to the extent they are similar to one that would be carried out in a commercial building." The Rulebook also references CPUC Decision 16-08-019 which notes that "to the extent there are building-related projects in the industrial sector similar to those in the commercial sector, those types of projects in the industrial sector may also receive an existing conditions baseline, consistent with our approach for the commercial sector" (p.39). For this reason, this Implementation Plan makes extensive reference to the NMEC methodology as the program intends to utilize NMEC as permitted under statewide guidelines. Integrated Demand Side Management (IDSM) and electrification upgrades are also offered to customers, excluding any storage technology .Energy efficiency (EE)/IDSM upgrades are delivered with a full-service, pay-for-performance approach.

Program Rationale

Willdan's IEEP will offer a full-service facility approach to qualifying industrial customers. With multiple industrial segments, stakeholders are diverse and may include the plant managers, maintenance supervisors, plant operations managers, plant engineers, corporate sustainability managers, corporate financial managers, company executives and building owners (if the building is not owned by the industrial company). In addition, industrial plants vary widely in size, in types of process systems based on products they produce, and in energy usage. The IEEP is designed to overcome the challenge of EE participation common to plant leadership stakeholders, i.e., gaining proactive engagement for energy and GHG emission reduction while not disrupting the daily challenge to meet and/or exceed production goals. This program will offer a single point of contact (SPOC) and provide a significant share of program services through direct-to -customer contact by the Willdan business development team, open Trade Pro and community-based organization (CBO) networks, local contractors, and subcontractors who specialize in specific industrial market segments.

Program Objectives

The program's primary objective is to meet or exceed SCE's business goals and objectives achieve deeper savings through comprehensive energy efficiency solutions. An additional objective is to increase EE adoption rates by targeting large customers while in parallel targeting small and medium industrial customers. Small and medium industrial customers include many hard-to-reach (HTR) customers and/or those located in disadvantaged communities (DACs).

2. Program Delivery and Customer Services

Program Offerings Delivery

The IEEP will deliver savings using a variety of actions, many of which are listed below:

- Build awareness through customer education and community/industry events
- Instill confidence through risk mitigation and leveraging a customer's preferred/pre-approved Trade Pro(s)
- Leverage turnkey project capabilities and strategic partnerships
- Uncover and meet customer needs via customized program offerings such as flexible incentives, technical support, financing assistance, and direct install (DI) services
- Demonstrate EE value through tailored energy analysis reports and energy modeling, where appropriate, that communicate benefits using relevant metrics
- Provide a SPOC to facilitate a seamless customer journey to reduced net energy requirements, and
- Help customers build the business case to justify investment in EE technologies to reduce energy use

Exhibit 1, below, shows the primary strategies and tactics that will be used to drive industrial goal attainment.

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those types of projects in the industrial sector may also receive an existing conditions baseline, consistent with our approach for the commercial sector" (p.39). For this reason, this Implementation Plan makes extensive reference to the NMEC methodology as the program intends to utilize NMEC as permitted under statewide guidelines.

Exhibit 1. Customer Service Approaches

Approach	Strategy/Tactic
Prioritize existing relationships	• Leverage Willdan turnkey EE project solution capabilities and relationships with Channel Partners, municipalities, trade associations, and previous customers across industrial segments • Leverage relationships from previous utility programs including the Non-Metallic Minerals Program (NMMP) • Develop strategic partnerships with community choice aggregators (CCAs), CBOs, and industry associations
Outreach to HTR/DAC customers	• Partner with trusted HTR/DAC experts and community action partnerships (CAPs) such as San Juaquin Valley Clean Energy Organization (SJVCEO), RHA, Staples, and Matrix to identify decision makers, build customer trust, and reduce costs
Build awareness	• Attend industry segment events and participate in regional segment groups • Perform customer education, relating EE value to customer objectives and long-term planning goals (e.g., greenhouse gas (GHG) reduction goals), (zero net energy (ZNE)
Instill confidence	• Provide risk mitigation, tailoring solutions to minimize risk and increase customer buy-in • Leverage open Trade Pro network, using customer's preferred/pre-approved trade pros
Face-to-face	• Offer full-service approach by customizing program offerings (e.g., flexible incentives, technical support, financing assistance, and DI services) to target customer needs • Determine the most applicable savings platform based on the measures identified, cost-effectiveness of the project, and the customer's needs (e.g., budget available, willingness to use financing, long-term facility plans, etc.) • Demonstrate EE and IDSM value through tailored reports and energy modeling that communicate benefits using relevant metrics analysis • Offer zero-upfront-cost financing assistance, including analysis of multiple financing options

Continuous engagement	• SPOC works with clients throughout with re-engagement/follow-up strategies
	• Leverage Willdan's Energy Management System (EMS) for continuous customer engagement
	  ○ System specific monitoring
	  ○ Analysis of inefficient operations
	  ○ Identification of potential new energy efficiency capital projects
	  ○ Assistance in long-term continuous improvement
	  ○ Ensuring persistence of savings from implemented energy efficiency solutions

Reaching Customers

The Willdan online platform's intelligent outreach function combined with direct customer outreach is key to the IEEP's customer acquisition and marketing plan. This approach uses machine learning and advanced data analytics to identify the best customer to target, the best EE measures to sell, and the appropriate messages needed to close sales. The platform marketing tools include:

- Grid analysis, and load-shape targeting
- Facility benchmarking
- Participation analysis and sales team matching
- Tailored materials for targeted industry segments, and
- Measure packages with energy modeling, if applicable

In addition, the marketing collateral listed below will be leveraged to effectively reach all customers:

- General program flyers
- Customized flyers
- Personalized business cases
- Direct mailers/postcards
- Phone campaigns
- Email campaigns
- Radio campaigns, and
- Social media campaigns.

To reach those in CPUC-defined HTR and/or DACs, partnerships will be leveraged with trusted community based organizations such as the San Joaquin Valley Clean Energy Organization (SJVCEO), as well as private entity HTR / DAC experts including , Richard Heath & Associates, Staples, and Matrix to identify decision makers, build customer trust, and reduce costs.

Lastly, a SPOC will assist customers throughout the process, leverage other opportunities, address outstanding issues, collaborate with multiple decision makers and ownership types, and educate stakeholders on the best, most cost-effective EE measures and savings expectations.

Services Provided

The program offers customers a concierge approach that includes some or all of the following services:

- SPOC
- Bundled EE, demand response (DR), and energy management technologies (EMTs) into IDSM solutions (excluding storage)
- Technical and financial assistance services offered before cash incentives (i.e, providing a path to no incentives)
- Direct Install for small and medium industrial customers
- Do-it-yourself (DIY) for simple measures (especially for smaller facilities), and
- Turnkey EE solution implementation

3. Program Design and Best Practices

Strategies/Tactics to Reduce Barriers

The IEEP will leverage the following specific strategies and tactics to reduce market barriers.

Exhibit 2. Barriers and Strategies/Tactics

Barrier	Strategy	Tactics	Best Practices
Lack of Information/ Lack of Time	Leverage Willdan Industrial team's knowledge & expertise	**Education:** Educate stakeholders about standard practice, higher efficiency options, and installation costs.	Engage professional technical staff possessing deep understanding and experience developing and implementing comprehensive EE projects to educate and advise customers. This increases measure adoption.
		Develop Business Case and provide technical assistance: Accurately assess the costs and financial benefits to support the selection of higher efficiency alternatives. Provide estimates of avoided energy cost and installation costs. Evaluate life cycle costs and added benefits, e.g., extended equipment life and reduced maintenance.	
Perception of Risk	Emphasize turnkey project implementation expertise delivered by a capable and experienced team	**Education:** Demonstrate to stakeholders how similar facilities have implemented EE and realized actual savings.	Leverage knowledge gained from decades of implementers' EE program experience to build customer confidence that implementation risk will be minimized.
		Turnkey Expertise: Leverage team track record and capabilities to instill confidence in successful outcomes for EE projects.	
		Partnering: Leverage our relationships with technology providers, subcontractors and an open Trade Pro network to build successful customer relationships.	Choose providers with extensive relationships with partners who can contribute to project success.

Lack of Technical Expertise	Leverage Willdan Industrial team's expertise and resources	**Technical guidance:** Use technical expertise to assist customers in evaluating alternative technology choices including options related to implementation, operation and maintenance of new technologies. Instill customer confidence is the solution selection process.	Supplement customer's resources with outside technical expertise to select the more energy efficient options and/or technology.
Capital Prioritization	Expand procurement vehicles and provide cash incentives and financial assistance	**Financing:** Offer financing assistance options to overcome specific barriers associated with financing and provide alternatives for project financing.	Provide alternatives to capital financing to minimize capital project competition and enable EE measure adoption.
		Flexible Incentives: Offer flexible incentives to improve project return on investment.	Provide flexible incentives to encourage measure adoption while minimizing program costs.

Best Practices

The strategies and tactics listed above were developed based on lessons learned and best practices identified from delivery of past EE programs. For example, IEEP adds elements like SPOC for program services and concierge services to improve upon historic EE portfolio program offerings (e.g., audits without implementation support, low TRC performance).

Key Software Tools

The online platform supporting the program will serve as a repository and single point of access for data integration and continuous stakeholder engagement. The platform will be the center for all program processes and data. It provides real-time tracking and reporting, forecasting, goal and/or budget management, savings calculations, Trade Pro management, user access control, customer experience management (including the collection of customer surveys to improve performance), and more.

IEEP leverages proprietary software for intelligent outreach and modeling. This starts by identifying customers with high savings potential, applying factors for likelihood to participate, and specifying optimal measure mixes through simplified facility modeling. These resources can be used to target customers with the highest opportunities and propensity to participate in the benefits of the program.

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

Additionally, the Program offers customers the Willdan Energy Management System (EMS) solution to provide real-time data for systems energy performance management and trending. This combined hardware/software/cloud solution enables energy project identification, data collection to establish energy use baselines, and trending data to identify abnormal systems performance. This integrated solution ensures persistence of savings from implemented EE measures.

4. Innovation

The IEEP delivers increased savings through comprehensive multi-technology solutions. An integrated team located within SCE's service territory will leverage existing relationships to increase the number of completed projects.

Seven innovations (listed below) are combined in a single industrial program, enabling all customers (including HTR/DAC) to be served cost-effectively. Integrating distributed energy resources (DERs) and IDSM resources, and providing the option to deliver EE as a grid resource.

Major innovations include the following:

1. **Integrated SPOC delivery**: an integrated team provides comprehensive services via a one-stop shop.
2. **EE, DR and EMTs** (excluding storage): EMTs like Willdan's Industrial Energy Management System (EMS) will be integrated into EE sales, marketing, and installation, where possible. Industrial EMS technology can identify EE opportunities and ensure persistence of savings for implemented solutions.
3. **Online platform**: a single repository tracks and manages all program activities, data, advanced analysis, communication, and key performance indicators (KPIs).
4. **Simple, customer-friendly offer that provides a path to no incentives**: overcomes industrial customer barriers by first offering technical assistance to support project development and/or implementation and financing assistance (when appropriate) to reduce upfront costs, and then flexible (tiered) incentives as needed.
5. **Intelligent outreach**: advanced software and modeling technologies to improve program results.
6. **Small Business DI & DIY**: increases enrollment for small industrial customers and improves cost-effectiveness and customer satisfaction.
7. **Journey to ZNE**: capture the full range of DER opportunities (excluding storage); establish and track customer goals; and, provide customer assistance over time to reach ZNE.

The IEEP promotes continuous learning that will generate new innovations. As additional innovative practices are developed, they will be reviewed and considered for adoption in this program.

5. Metrics

The online platform will track program processes and provide clear, detailed insight into program status by capturing the following KPIs: Program Performance: Ex Ante TRC Ratio

- Program Performance: Energy Savings (kWh)
- Program Performance: Demand Savings (kW)
- Program Performance: Pipeline Target Energy Savings (kWh)
- Program Performance: Pipeline Target Demand Savings (kW)
- Customer Satisfaction: Customer Satisfaction Rating
- Program Data/ Engineering Quality
- Supply Chain Responsibility: Safety Rating
- Supply Chain Responsibility: Diverse Business Enterprises (DBE) Spend
- Compliance: Hard to Reach (HTR) and Disadvantaged Communities (DAC) Penetration

6. For Programs Claiming To-Code Savings

Compliance with Applicable Law

The Willdan IEEP will comply with all applicable laws. CPUC Decision 17-11-006 requires that program execution lend insight into to-code [and standard practice] savings potential. Due to the unique nature of many industrial processes, most process equipment is not subject to Title 24 energy code requirements. The online platform will track and report the specific to-code and standard practice measures and savings implemented through the program. The program offers a normalized metered energy consumption (NMEC) methodology, where applicable, to capture full to-code [standard practice] savings for comprehensive measure packages. The CPUC NMEC Rulebook has specific limitations to industrial NMEC applications. NMEC is not permissible for industrial operations and maintenance (O&M) or behaviour, retrocommissioning, and operations (BROs) type projects, except as a component of Commission defined Strategic Energy Management Programs. However, site level NMEC projects in industrial buildings are permissible to the extent they are similar to one that would be carried out in a commercial building. A Custom calculated approach for accelerated replacement (AR) and BRO measures also captures to-code (industry standard practice) savings. For Industry Standard Practice, Willdan will refer to the Energy Efficiency Industry Standard Practice Guidance (v 3.1).

Equipment Types Promising To-Code [Standard Practice] Savings

Equipment Types: The industrial sector with its high operating hours intensity, and large variety of process and process support motor systems, offers a significant opportunity for energy reduction measures. These include process production equipment and systems, and other systems commonly found in manufacturing plants, such as dust/trim collection systems, process cooling systems, compressed air, refrigeration, vacuum, hydraulics, and various fan and pumping process systems. This variety of major systems enable cost-effective to-code or industry standard practice savings by capturing stranded potential through a combination of delivery methods that include Deemed, Custom, and NMEC; and a variety of Measurement Application Types (MAT's) such as, Normal Replacement, Accelerated Replacement, retrocommissioning (RCx), and Retrofit Add-on measure types.

Lighting and plug load opportunities are generally minor in industrial applications and they have continued to see a decreased value in savings, coinciding with decreases in available incentives. The program supports to-code (standard practice) savings by offering NMEC and completing the preponderance of evidence for influence on lighting measures when AR is applicable. It guides customers to the most efficient option to deliver to-code [standard practice] and beyond savings. Additionally, add-

ons such as the addition of occupancy and/or plug load sensors or daylighting controls can deliver significant savings at minimal costs.

Building Types:

Older building types present significant to-code opportunities due to the likelihood they contain outdated and energy inefficient equipment; however, many industrial facilities rely on legacy equipment for production. Therefore, building type is not a determinate factor for targeting to-code savings potential for industrial customers. **Geographical Location**:

To-code savings potential spans all SCE territory geographies. Geographical targeting includes industrial facilities in the Inland Empire (San Bernardino and Riverside Counties), as well as, manufacturing centers in various parts of Los Angeles county, including Santa Fe Springs, City of Commerce and City of Industry. Many of these areas include DACs for whom to-code measures have high uptake due to limited capital and low penetration.

Customer Segments:

To-code savings potential spans most customer segments, however, the potential is greatest in HTR/DAC communities.

To-Code [Standard Practice] Compliant Barriers to Equipment Replacements

The following six barriers prevent to-code or standard practice replacements:

1. **Lack of capital:** Industrial customers often prioritize revenue-generating investments over energy-saving or building improvement projects. This results in lowest first-cost decision-making, extending existing equipment life through short-term repairs (i.e., "repair indefinitely") and "like-for-like" replacements with in-stock materials. Owners may also have restrictions on financing. They often are unable to see the whole picture for energy upgrades, have limited experience with financing in the energy space, and face competing budget priorities (e.g., production investments, safety, etc.).
2. **Lack of information:** Industrial Customers may not have sufficient knowledge of code requirements or industry standard practices, awareness of higher-efficiency options and estimates of avoided cost (savings) or installation costs. Owners may lack confidence in vendor and/or contractor savings claims. Code-compliant or standard practice equipment replacements frequently result in capital-intensive measures with payback periods longer than a customer's acceptable budgetary timeframe. For deep, comprehensive upgrades, the costs can far outweigh the potential savings. These customers prioritize immediate returns and rarely plan for future, long-term investments that would meet new code or standard practice requirements without necessarily improving a bottom line.
3. **Lack of technical expertise:** With uncertainty of EE performance, industrial customers limit adoption of EE measures. Code-compliant or industry standard practice equipment replacements require technical expertise to educate the customers specifically on how much they save using and extrapolating only utility data, consumption hours, and understanding payback. Plant leaders may also have concerns about downtime during installation or how new solutions or equipment might impact their operations. This uncertainty and lack of knowledge can stall or prevent a viable EE project.
4. **Perception of risk:** Industrial Customers, particularly those with 24/7 operations, may have concerns about downtime during installation, or perceive risks to production quality or

reliability with the installation of new equipment. This uncertainty can stall or prevent viable replacement and upgrades.

5. **Lack of time:** Industrial Customers often do not have the time and/or resources available to properly research options for equipment replacements, upgrades, or modifications. They may also lack the time needed to manage installation and training on operations and maintenance (O&M) requirements.
6. **Permits and regulations:** Implementation for more complex measures may require permits and approval of engineering design drawings, adding complexity, time, and cost.

Why Natural Turnover is Not Occurring

Less natural turnover of industrial equipment occurs as a result of "repair indefinitely" practices when customers repair existing equipment rather than replace it with new (or higher efficiency) equipment. It is only when equipment fails beyond repair that normal replacement is triggered. Equipment replacements are delayed because customers choose lowest first-cost repairs over higher cost replacements, without consideration of operating and lifecycle costs. Repairs extend the life of the below-code equipment, keeping old, inefficient units in use. Repair indefinitely measures are common across all of the market but most prevalent in two parts of the market:

1. Small Industrial Facilities and HTR/DAC: These customers lack the time, awareness of higher-efficiency options and cost savings, technical expertise, and/or the capital to invest in new technologies. For these reasons, small industrial and HTR/DAC facilities do not experience natural turnover in near-end-of-life packaged air-conditioning units and heat-pumps, refrigeration systems, non-Title-24-compliant thermostats, air-cooled chillers, failed HVAC controls, VFDs, and economizers. The IEEP program will offer technical expertise to address these barriers.

2. Large Industrial Facilities: Large capital replacements are intrusive, costly, and often require special design, permits, and long project timelines. For these reasons, large industrial facilities do not experience natural turnover in boiler replacements, chiller replacements, compressor (air) replacements, process cooling, and other types of production support equipment (e.g., dust collection, hydraulics systems, vacuum systems, and controls upgrades). The program offers technical expertise to address these barriers.

Program Interventions to Accelerate Equipment Turnover

Industrial customers face increasing operational costs as their operating systems continue to age. Production line improvements and/or investments are the priorities and often compete with EE upgrades for limited capital. As a result, industrial customers often lack the available capital needed for EE retrofits. Additionally, publicly held and/or multiple location industrial customers will have to engage in a required capital requisition process that can take several months to complete, and often the funds for a project may be deferred to a following, or later years.

Another customer need exists as a result of top-down pressure from corporate leadership or supply chain customers to reduce GHG emissions, including documenting progress towards ambitious climate goals. These pressures are often felt throughout the enterprise, and the sustainability goals are frequently prominently displayed on corporate websites for shareholders and the general public to view. Societal and local market pressures contribute to this effort as well. Local plant leadership compelled to respond to these goals often know little about what to do or how to do it, and often as not do not have the time to invest in something they know very little about. They will see the IEEP program as a viable and professional solution to this complex issue.

The IEEP program will offer Deemed or Custom measures to optimize the operating efficiency of complex systems and to accelerate equipment turnover. Clear and understandable metrics of operation, cost of operation, and estimated savings in operating costs will be provided, along with detailed scopes of work that will facilitate technical acceptance of the EE projects by operations stakeholders, while financial stakeholders will be presented a comprehensive proforma that captures all relevant financial metrics, and GHG reductions. The barriers that prevent to-code and above-code equipment replacements are listed below with the applicable program intervention used to overcome each.

1. Lack of Capital: Flexible Incentive Model: The IEEP will present customers with whole-plant business case options of measure packages tailored to their financial criteria and payback expectations. Customers will be offered one (or more) of the multiple flexible financing assistance options to overcome customer barriers to financing. Additionally, the program offers incentives for to-code standard practice and/or above code savings and motivates customers to select the highest-efficiency options by offering higher incentives for these options.

2. Lack of Information: Business Case: The program educates customers on code requirements and/or standard practice and presents measure packages that give them options to improve energy efficiency, with accurate cost and cost avoidance estimates. Case studies from previous projects are shared with customers to give them confidence in the recommendations. A one-page business case is prepared and presented to financial decision makers. The business case will encourage the decision makers to see the whole picture.

3 & 4. Lack of Time and Technical Expertise: Turnkey Options and Technical Assistance: The program offers customers turnkey options, or the customer can have a preferred Trade Pro or subcontractor selected by the IEEP program staff perform installation for their measures. The program also provides technical assistance including energy consultations, development of specifications and scopes of work, bid document preparation, and construction management. Training on O&M requirements is also provided. Ongoing monitoring services options (EMT's), like Willdan's Industrial Energy Management System (EMS) are also available to address customer concerns about persistency.

5. Permits and Regulations: Technical Assistance: The program provides plan reviews, performs inspections for eligible facilities and supports customers, Trade Pros, and contractors with permitting processes to ensure they can obtain approval.

7. Pilots

No pilots are part of the program as of the creation of this Implementation Plan.

8. Workforce Education & Training (WE&T) [4]

Willdan understands that Energy, Construction, and Utilities is one of the priority job sectors in demand in Southern California in need of skills gap training. The commitment to workforce education and training includes expanding and initiating partnerships with community-based entities that do job placement. Creating successful pathways from the community to job training and subsequent placement is key to supporting economic development in disadvantaged and hard-to-reach communities.

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

For example, The Willdan Clean Energy Academy's energy auditing training course is designed to meet the needs of the clean energy job market. The Academy prepares students with real world, technical knowledge that matches the skills gaps that employers are looking for. The dedicated instructor team is composed of veteran engineers and educators passionate about clean energy, education, and accessibility. The course seeks to improve auditor skills both in helping customers with what have become standard technology upgrades (e.g. - lighting) and preparing themselves for various nationally recognized certifications.

The Clean Energy Academy will be utilized to create homegrown talent, providing opportunities for Willdan to hire a qualified and trained workforce, and facilitating job connections to local employers. To create "first source" hiring opportunities for this SCE program, the Academy will train potential employees to be energy service representatives, technicians in the field, installers in the field, and to work in quality assurance and quality verification of projects. In addition to internal opportunities, energy training centers will also be utilized to support the training of the Willdan team and contractor partners.

9. **Workforce Standards**[5]

HVAC Measures

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

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

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

Compliance is demonstrated and enforced throughout the program lifecycle by:

- Establishing workforce standards requirements in customer applications and/or project agreements that are tied to incentive eligibility.
- Collecting and verifying proper worker documentation ("qualified documents"), and
- Retaining "qualified documents" for reporting and periodic inspection by SCE.

Advanced Lighting Control Measures

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

The program includes the installation, modification, and maintenance of incentivized lighting controls (potentially greater than $2,000) measures in industrial buildings by program staff, subcontractor staff, and Trade Pros, triggering the applicable workforce standards.

The program:

- Establishes workforce standards for lighting controls installations requiring California Advanced Lighting Controls Training Program certification, where applicable.
- Requires and provides training that improves the overall quality of implementation workers across program staff, subcontractors, and Trade Pros.
- Requires and provides training targeted at specific measures proposed and implemented.
- Tracks installation technicians for measures installed and maps measures to applicable trainings, providing valuable WE&T metrics, and
- Performs comprehensive QA/QC, ties outcomes to specific technicians, and requires targeted remedial training based on those outcomes.

Compliance is demonstrated and enforced throughout the program lifecycle by:

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

10. **Disadvantaged Worker Plan:**[6]

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

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

Additionally, the turnover and attrition are tracked by designated classification of Disadvantaged Worker, subject to appropriate privacy considerations. Subcontractor performance scorecards and KPIs are tracked on an individual firm basis, with Disadvantaged Worker participation as a key element.

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

11. Additional Information

Quality Assurance Procedures

The program has an assigned QA/QC officer who leads program QA/QC procedure development and oversight. This includes screening to ensure services and/or incentives motivate customers to choose higher-efficiency options. Responsibilities include:

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

The program evaluation partner assesses program-level performance, including QA/QC metrics, and performs full program cycle review of selected large projects. In addition to the QA/QC partner, an internal review process will be conducted for all projects. Stages of each project will be reviewed through one or a combination of the following measures:

- **Peer Reviews:** High level reviews by Project Engineers
- **Secondary Review:** Detailed review of the project submittal documents including but not limited to, project influence, Measure Application Type/baseline, calculation, and M&V plan.
- **High Rigor Review:** Includes QA/QC partner for projects on a case-by-base basis as determined by the Senior Engineering Manager and/or the Program Manager

The four-step Custom project QA/QC review steps are: (1) Early Screening, (2) Pre-Installation Review, (3) Post-Installation Report Review, and (4) Feedback/Refinement. The program's QA/QC tools screen projects, verify accuracy and completeness of documentation, and record errors. Senior engineer review and sign-off is required before advancing to next steps.

STEP 1. EARLY SCREENING: Checklist justifies measure eligibility, application type, applicable baselines, and summary of program influence. The tool is an enhancement of SCE's Early Screening Document, which is already used in third-party SCE programs to document customer barriers, as well as how financing assistance, technical services, or cash incentives influence customers to select high-efficiency options. The project- and measure-level TRCs are screened, and projects may be rejected or modified based on TRCs to meet cost-effectiveness targets. For any new proposed custom measure code, a custom solution code request form will be submitted via customreviews@sce.com**. ISP guidance and the Statewide Custom Projects Guidance documents will be followed when screening projects.**

STEP 2. PRE-INSTALLATION: Before uploading the pre-installation documents, an internal QA/QC review is performed using the Pre-Installation Review Checklist, an enhancement of the CPUC's review checklist. This step satisfies statewide guidelines by mandating checks of:

- Approved calculation methods and tools supported with baseline data;
- Documentation of calculation steps, inputs and assumptions, traceable from inputs to results;
- Correct values for Database for Energy Efficiency Resources (DEER) (if applicable), end-of-useful life (EUL), DEER peak demand hours, etc.;
- A suitable M&V Plan;

- Supported full, incremental, or accelerated cost estimates;
- Evaluation of on-site generation grid impacts; and
- Other elements including program influence.

For NMEC, the screening checks for quality and completeness of utility data and the appropriate independent variable data, as well as for potential non-routine events (NREs). Deemed reviews include verification of measure attributes, and review of product specifications for eligibility and performance. The nature and quantity of any errors are documented in the checklist and tracked. Any calculation tools not listed in SCE's tool archive are proposed to SCE for approval before submittal of pre-installation documents.

STEP 3. POST-INSTALLATION: This Primary Post-Installation Report (IR) review QA/QC step employs an IR Review checklist. This mandates checks of the following to verify:

- The justification of changes in scope, measure application type, applicable baselines, etc.;
- Adherence to an approved M&V Plan, with justification for any changes;
- Accurate calculations that follow the same approved methodology as an *Ex Ante* calculation;
- Calculations supported with post-installation data and normalized;
- For NMEC projects, that identified NREs are justified and NRE adjustment calculations comply with statewide custom guidance;
- Invoices supporting implementation costs;
- Documentation of customer commitment to O&M plan for BRO measures, and
- Other IR elements.

In line with the Statewide Custom Project Guidance Document (v1.4), if changes were made to the project, the anticipated energy savings and demand reduction should be recalculated as necessary" (p. 27). Specific to NMEC, this review includes verification of NMEC statistical fitness with post-installation data. For a Deemed approach, reviews ensure invoices and specifications support claimed quantities, Deemed values, and eligibility requirements. For Custom and NMEC approaches, post-installation inspections are performed by project engineers on 100% of projects. For Deemed, Primary Post-installation inspections are performed, consistent with the applicable workpaper.

STEP 4. FEEDBACK/REFINEMENT: This QA/QC step involves ongoing refinement of QA/QC review procedures, tools, and training. QA/QC metrics are tracked. QA/QC metrics include the type and quantity of errors documented in review checklists and comparison (variance) of estimated, approved *ex-ante*, claimed, and approved *ex-post* savings. Partner and program staff senior engineers proactively update QA/QC training and QA/QC tools (checklists) in response to:

- QA/QC metrics
- Market and legislative changes (e.g., standard practice or code changes)
- CPUC decisions and *ex-ante* review dispositions
- Statewide Custom Calculation Guidelines Document updates
- SCE Engineering Policy, Program and Infrastructure Changes (E-PPICs) memos
- Customer satisfaction surveys, and

- Subcontractor and Trade Pro feedback

Disadvantaged Communities Marketing and Spend

The program identifies customers in disadvantaged communities and leverages CBOs, trade pros, etc. to target these customers. However, there is not a specific budget dedicated to marketing to disadvantaged community customers.

Hard-to-Reach Customers Marketing and Spend

The program identifies hard-to-reach customers and leverages CBOs, trade pros, etc. to target these customers. We will identify hard-to-reach customers using our different datasets to understand the geography, language, and if the property is leased or rented.

Installation Remedy

The program addresses all customer service issues through:

a. **Concierge Approach** – providing industrial facilities with a SPOC simplified energy assessment by identifying the most cost-effective investment and options for low-cost financing, rebates and incentives. In addition, the SPOC educates the customer throughout the process and provides a call center phone number to call if an issue arises. The customer hears back within 24 hours of initial contact and the issue is prioritized and resolved. The online platform provides SPOCs with real-time updates to help improve performance.

b. **Rigorous Vetting/Training** - evaluation criteria include safety, performance, customer satisfaction, workforce qualifications, certifications and experience to build a strong team of partners and subcontractors. The program continuous trains trade pros on program design, measure requirements, standardized installation process, the online platform, and lead sharing to provide a comprehensive offering. This minimizes any issues with installation and improves customer satisfaction.

c. **Trade Pro Performance Management** - the program uses scorecards to manage the installation and equipment quality, customer feedback, and performance in random spot checks and scheduled post-inspections. More than three spot-check or post-inspection failures result in suspension from the program. Scores are constantly updated and available to the trade pros through the online platform, along with improvement recommendations.

d. **Apply Workforce Standards and Quality Metrics** - program staff hold appropriate licenses, registrations, certifications and workforce standard credentials. The online platform reports on compliance to ensure all trade pros and partners meet the requirements and to prompt the removal of unqualified contractors.

e. **Centralized Material Purchasing** - the program installs quality products (Tier 1 and 2) for long-term performance. Installed products are manufactured by a financially stable company with extended warranties. All trade pros are trained on product specifications to meet measurement requirements and minimize failures post-installation.

f. **Post-Installation Walk-Through** - field managers walk through the site upon project completion to ensure customer satisfaction. Any questions or issues are addressed during that time.

g. **Customer Survey** - upon project completion, the online platform triggers customer surveys to management and tenants with qualitative and quantitative questions to improve the customer experience. The responses are reviewed weekly to improve processes and reduce customer issues.

h. **Continuous Engagement** - the program performs outreach to customers on an annual basis post-installation to ensure satisfaction.

2. Supporting Documents

1. Program Manuals and Program Rules

A summary of the program process and rules are presented below. As required, the full program manual will be uploaded to the California Energy Data and Reporting System (CEDARS). The manuals will comply with the CPUC Implementation Plan Template Guidance version 2.1 May 2020.

Eligible Measures

The Industrial Energy Efficiency Program (IEEP) offers a full range of measures, including (but not limited to) LED lighting and lighting controls, HVAC modifications and controls for packaged equipment, HVAC retro-commissioning and operational measures, refrigeration, hot water heating and industrial process measures. The program will continue to work toward expanding the measure list and ensuring a comprehensive offering.

No measure, no Project nor any Customer service account that is part of a Project, may use, submit, claim, or receive any rebates, discounts, incentives, or services from any other program, energy efficiency or otherwise, for the Project or for any Measure installed at the Customer's Site for which the energy and demand savings have already been compensated, including the attribution of energy and demand savings or reductions for a single Measure/activity at multiple market intervention points (e.g., energy savings or reductions claimed upstream, midstream, and at the Customer) where a particular Measure was installed or an activity occurred. Measure eligibility includes a verification by way of customer attestation to the lack of previous program participation.

Willdan's IEEP utilizes Deemed, Custom, and NMEC savings platforms to influence, calculate, and incentivize customers for energy savings. Deemed measures must have an approved and non-expired workpaper or be listed in the Database for Energy Efficient Resources (DEER) as an active measure. Custom measures must be cost-effective and meet the criteria specified in the Statewide Custom Project Guidance Document. NMEC measures will follow guidance set forth in the CPUC NMEC rulebook.

This program also uses normalized metered energy consumption in the Industrial sector. The Rulebook for Programs and Projects Based on Normalized Metered Energy Consumption (v2.0) is explicit that NMEC "is not permissible for industrial operations" (p. 8) but that "Site-level NMEC projects in industrial buildings are permissible, to the extent they are similar to one that would be carried out in a commercial building". The Rulebook also references CPUC Decision 16-08-019 which notes that "to the extent there are building-related projects in the industrial sector similar to those in the commercial sector, those types of projects in the industrial sector may also receive an existing conditions baseline, consistent with our approach for the commercial sector" (p.39). For this reason, this Implementation Plan makes extensive reference to the NMEC methodology as the program intends to utilize NMEC as permitted under statewide guidelines.

Customer Eligibility Requirements

IEEP will serve all eligible, Industrial customer segments. Customers meet the eligibility requirements for IEEP if they:

- Have an active SCE electric account
- Have a total peak demand of 20 kW or greater

- All 15 Industrial segments listed in SCE's business plan are served in the following NAICS codes:

Sector	NAICS Code	Description of Segment
Industrial	21xxxx	Mining
Industrial	22xxxx	Utilities
Industrial	23xxxx	Construction
Industrial	31xxxx	Manufacturing
Industrial	32xxxx	Manufacturing
Industrial	33xxxx	Manufacturing
Industrial	42xxxx	Wholesale Trade
Industrial	48xxxx	Transportation and Warehousing
Industrial	49xxxx	Transportation and Warehousing
Industrial	81xxxx	Other Services, except Public Administration

Contractor Eligibility Requirements

- In order to participate in the Industrial Energy Efficiency program, installation contractors must meet the following CPUC requirements:
- Install all measures in accordance with all applicable federal, state, and local laws building codes, manufacturers' specifications, and permitting requirements.
- If a contractor performs the installation or improvement, the contractor must hold the appropriate license for the work.
    - For all program projects and for each measure installed, modified, or maintained in a non-residential setting where the project is seeking an EE incentive of $3,000 or more, the program shall ensure that each worker or technician installing, modifying or maintaining the applicable measure meets at least one of the following criteria:
        - Completed an accredited HVAC apprenticeship
        - Is enrolled in an accredited HVAC apprenticeship
        - Completed at least five years of work experience at the journey level according to the Dep. Of Industrial Relations definition, Title 8, Section 205 of the California Code of regulations, passed a practical and written HVAC system installation competency test, and received credentialed training specific to the installation of the technology being installed
        - Has a C-20 HVAC Contractor license issued by the California Contractor's State Licensing Board.
    - For all advanced lighting control projects and for each advanced lighting control measure installed in a non-residential setting where the project is seeking an EE incentive of $2,000 or more, the program shall ensure that all workers or technicians installing, modifying or maintaining the applicable measure are certified by the California

Advanced Lighting Controls Training Program (CALCTP). This requirement shall not apply where the incentive is paid to a manufacturer, distributor, or retailer installs or contracts for installation of the equipment.

- A rebate or incentive can only be provided if the customer or contractor certifies that the improvement or installation has complied with any applicable permitting requirements, including from California Building Standards Code (Title 24 of the California Code of Regulations).
- If a customer or contractor is the recipient of a rebate or incentive offered by an energy efficiency program specifically for the purchase or installation of air-conditioning or heat pump units, and their related fans, the rebate or incentive will be paid only if the customer or contractor provides proof of permit closure.
- Follow workforce standards pursuant to D.18-10-008.
- Contractors shall, except with prior written consent of SCE, at their own expense, provide and maintain in effect the insurance policies and minimum limits of coverage specified below, and such additional coverage as may be required by Applicable Laws, with insurance companies which are authorized to do business in the state in which the services are to be performed and which have an A.M. Best's Insurance Rating of not less than A-:

a. Worker's Compensation Insurance with the statutory limits required by the state having jurisdiction over Implementer's employees.

b. Employer's Liability Insurance with limits of not less than

    a. Bodily injury by accident - $1,000,000 each accident

    b. Bodily injury by disease - $1,000,000 policy limit

    c. Bodily injury by disease - $1,000,000 each employee

c. Commercial General Liability Insurance

    a. Per occurrence limit of not less than $1,000,000 and annual aggregate of not less than $2,000,000 exclusive of defense costs, for all coverages.

d. Commercial Automobile Liability Insurance

    a. Covering bodily injury and property damage with a combined single limit of not less than $1,000,000 per occurrence

e. Umbrella/Excess Liability Insurance written on an "occurrence," not a "claims-made" basis, providing coverage excess of the underlying Employer's Liability, Commercial General Liability, Pollution Liability Insurance and Commercial Automobile Liability insurance, on terms at least as broad as the underlying coverage, with limits of not less than $10,000,000 per occurrence and in the annual aggregate.

f. Cyber insurance covering:

    a. Liability arising from theft, dissemination and/or use of Confidential Information stored or transmitted in electronic form

    b. Liability arising from the introduction of a computer virus into, or otherwise causing damage to, a customer's or third person's computer, computer system, network or similar computer related property and the data, software and programs stored thereon. Such insurance will be maintained with limits of no less than $2,000,000 per claim and in the annual aggregate, and may be maintained on a stand-alone basis, or as part of any errors and omissions coverage.

- Contractors must maintain high customer satisfaction and perform quality work, as evaluated by Willdan quality control staff. Contractors will no longer be eligible for participation in Willdan's IEEP if there are complaints about Contractor performance and problems are not resolved to the satisfaction of the customer and program administration. Contractor will also be ineligible for participation if it is determined that fraudulent misrepresentation of removed or installed equipment has occurred, or that the program has been falsely described or represented in any way.

Additional Services

Additional services include:

- Technical Assistance: IEEP program staff work closely with customers to understand their needs, decision-making process, regulatory requirements and available funds. This individualized approach provides consistency throughout the journey, with the potential for technical assistance funds to be used to support equipment and contractor selection, construction management, and financing options.
- Providing Diverse Financing Options to Customers: The program assists customers with implementing energy efficiency projects by offering a variety of financing mechanisms, including loans, leases, energy efficiency as a service, and property-assessed financing options.
- Providing an Online Platform: The program's online platform provides customers and trade professionals with a single repository that tracks and manages all program activities, data, advanced analysis, communication, and key performance indicators, in an effort to reduce program complexities and improve customer satisfaction.
- Interface with Statewide Programs: The program continuously monitors measures offered and proposed to be offered by Statewide programs to be aware of potential overlap and offerings are adjusted, as necessary. Program staff is trained on Statewide programs and refer customers to programs that could benefit them.
- Electrification and DR Services: There are electrification and DR measures tailored to this customer class. The program offers customers a seamless route to implementing demand response by deploying automated demand response-enabled, NMEC-compatible energy management technologies and leveraging existing demand response programs.

Audits

The program performs in-person audits to determine the recommendations for each site.

Audits are comprehensive and include energy efficiency (EE), demand response (DR) and electrification measures. The program's team and its partners perform the audits. During mandatory trainings, all partners and subcontractors learn how to identify good candidates for the program offerings during an audit.

Pre- and post-installation inspections will be required for deemed measures when required by the workpaper and for custom and NMEC measures. The pre- and post-installation packages will contain the pre- and post-inspection information and follow all SCE and California Public Utilities Commission (CPUC) requirements.

Program Quality Assurance Provisions

Program success and customer satisfaction are rooted in adherence to our quality assurance procedures. The program's quality assurance and quality control (QA/QC) procedures verify accuracy and completeness of documentation and record errors and corrections through pre- and post-installation documentation review and field verification. The implementer's experienced partners will continue to improve program QA/QC processes and tools. Partnered firms will

oversee tool development for NMEC measurement and verification (M&V), the Custom Review Guidance Document, review checklists for early screening, and application and installation reports. These firms will assess program-level performance.

Additionally, QA/QC tools are built into an online platform and follow a four-step process: (1) Early Screening, (2) Application Review, (3) Post-Installation Review, and (4) Feedback and Refinement. Each step has a checklist that must be completed before advancing to the subsequent step.

Other Program Metrics

An online platform tracks the following data points and key performance indicators (KPIs):

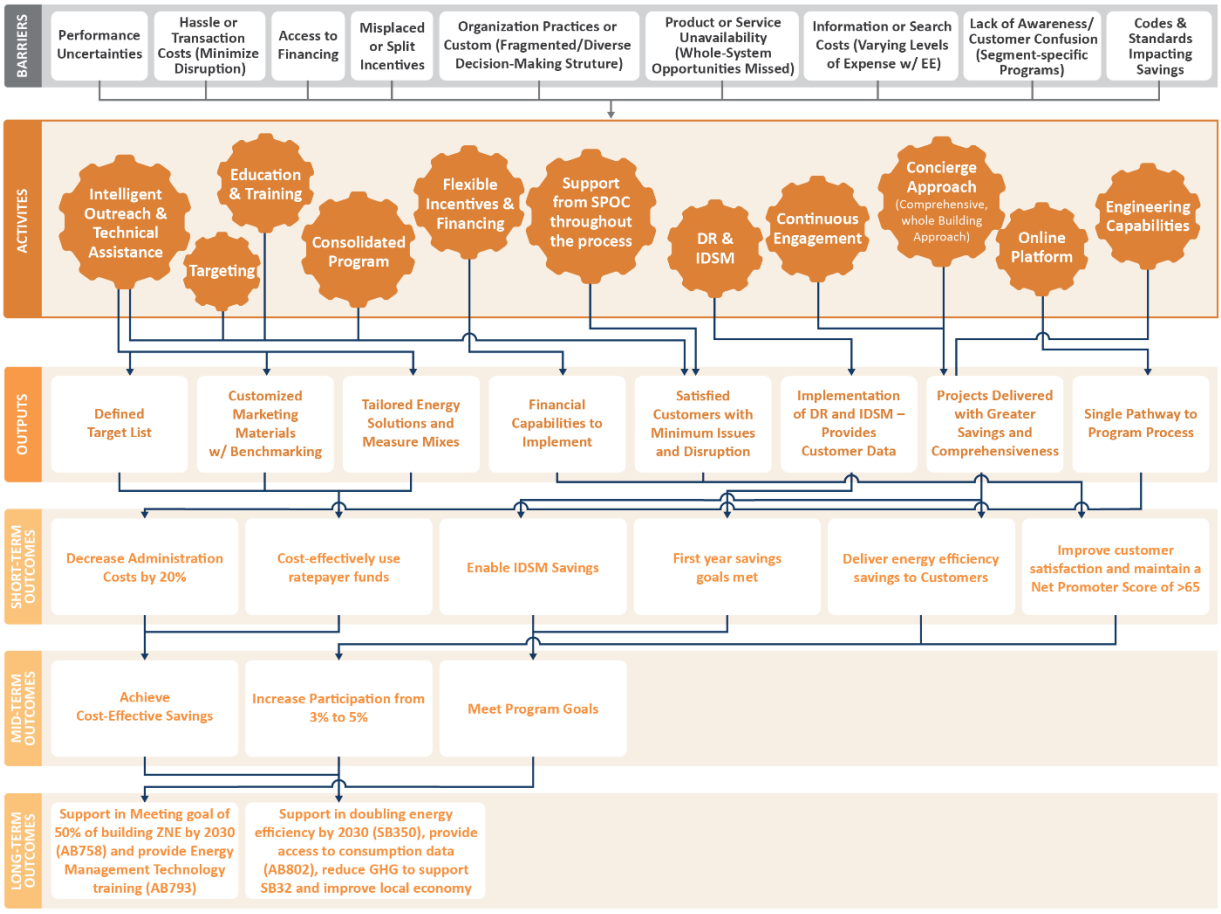
- Gross and Net Savings (kWh, kW)
- Gross and Net Savings (kWh, kW) in DACs
- Gross and Net Savings (kWh, kW) in HTR Markets
- Levelized Cost of Energy Efficiency per kWh and kW (using both TRC and PAC)
- Greenhouse Gasses (MT CO_2e) Net kWh Savings
- Average Savings per Participant Savings per Project (property)
- Energy Savings per (kWh, kW) per Project (property)
- Energy Savings (kWh, kW) per square foot
- Percent of participation relative to eligible population (by unit, and property)
- Percent of square feet of eligible population participating (by property)
- Percent of participation in disadvantaged communities
- Percent of participation by customers defined as "hard-to-reach"
- Percent of benchmarked multi-family properties relative to the eligible population
- Percent of benchmarking by properties defined as "hard-to-reach"

2. Program Theory and Program Logic Model

Program Theory

The program theory is to increase EE and IDSM adoption rates in small, medium, and large industrial customers. The activities listed in the Program Logic Model below lead to program outputs and short-term, mid-term, and long-term outcomes.

Exhibit 3. Program Logic Model

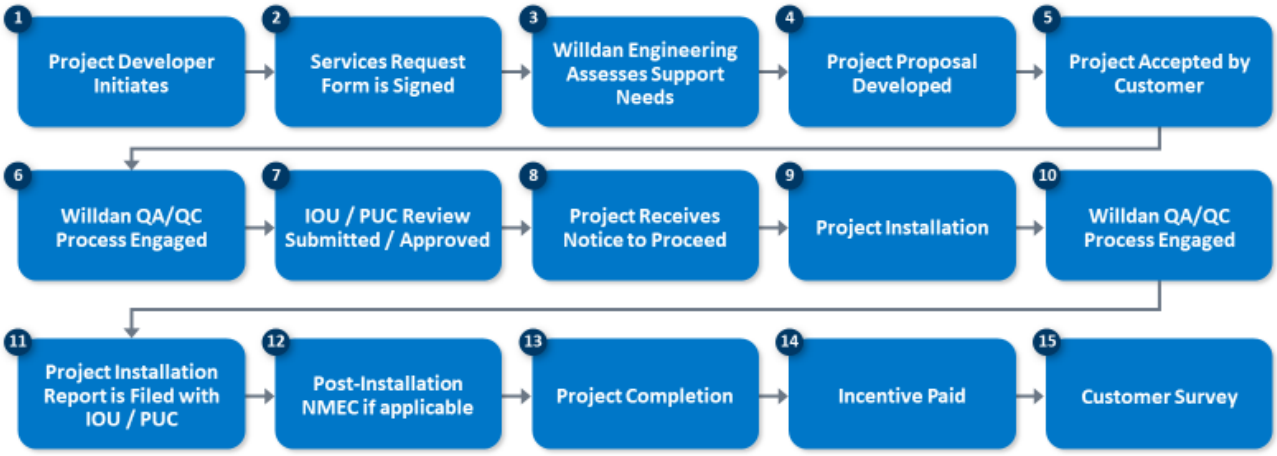


3. Process Flow Chart

The IEEP's end-to-end process uses the online platform to provide all stakeholders with transparency into all program activities, a streamlined process, and automated QA/QC. The program draws on a comprehensive implementation team to create natural competition. This process is regularly updated using an iterative QA/QC process. The end-to-end process is flexible, tracked and can be adapted quickly.

Exhibit 4. End-to-End Process

A typical project in the Willdan Industrial Energy Efficiency Program will include the following major steps:



- **Step 1:** Implementer follows strategies outlined in the program marketing campaign to use data-driven approaches to target customers with a high propensity for savings and participation in order to initiate a Project, subject to verification of customer's eligibility to participate in the program.
- **Step 2:** Customer authorizes Willdan to assess the energy efficiency opportunities on location. Willdan verifies customer's program eligibility using criteria listed above.
- **Step 3:** Willdan engineering will assess and document the available energy efficiency opportunities through a variety of means up to and including a comprehensive site audit where site data would be gathered, and customer barriers will be identified along with potential measures. For custom projects, this information is compiled and submitted to SCE in the form of an Early Screening Document (ESD). SCE has the option of reviewing ESDs and providing feedback to Willdan regarding the project.
- **Step 4:** Implementer will present a list of recommended measures, report of findings (savings, projected costs and, detailed measure descriptions), along with technical services, financing options, and/or incentives offered. Customer specific decision-making needs are addressed.
- **Step 5:** Customer approves the Project, and signs the Customer-Implementer Agreement and the Project submission process is engaged.
- **Step 6:** Willdan QA/QC process reviews pre-installation package for submission to SCE.
- **Step 7:** Pre-installation Package is submitted/reviewed and eventually approved (with potential for CPUC review).
- **Step 8:** Notice to Proceed is given to customer after SCE and (if applicable) CPUC reviews are complete.
- **Step 9:** Customer's typical and/or preferred procurement and/or installation process may commence.
- **Step 10:** Upon installation completion, Willdan's QA/QC process is again engaged to ensure the Project Installation meets application expectations.
- **Step 11:** Primary Post-installation inspection Report is filed with and approved by SCE and (if applicable) the CPUC.
- **Step 12:** NMEC projects require continuous monitoring to check for non-routine events and verify savings for progress payment(s). This is primarily accomplished using utility meter data but may also utilize a combination of existing building automation systems, installed energy management technologies, and project-specific monitoring equipment. Custom projects that require post-install M&V will leverage the same monitoring approaches.
- **Step 13:** Project is formally completed.

- **Step 14:** Incentive (if applicable) may be paid to customer.
- **Step 15:** Customer survey is issued in order to maintain operational excellence and continuous improvement.

4. Incentive Tables, Workpapers, Software Tools[7]

Program incentives are flexible: The program offers financing or technical services, and then monetary incentives as needed to motivate customers and avoid free ridership. By first offering financing and services, or below the maximum monetary incentive, more Program funds are available for higher efficiency options and HTR customers.

Additionally, the program includes, but is not limited to, the following measures:

Measure Code	Measure ID	Measure Description	Source Description	Link
RF-31355	SWCR007D	Commercial Air-Cooled Multiplex Floating Head Pressure Control	SWCR007-02	https://www.caetrm.com/login/?next=/
RF-41488	SWCR007B	Commercial Evap-Cooled Multiplex Floating Head Pressure Control	SWCR007-02	https://www.caetrm.com/login/?next=/
FS-20166	SWFS006G	Ice Machines >1500 - CEE Tier III	SWFS006-01	https://www.caetrm.com/login/?next=/
FS-20165	SWFS006F	Ice Machines 1001-1500 - CEE Tier III	SWFS006-01	https://www.caetrm.com/login/?next=/
FS-20164	SWFS006E	Ice Machines 301-400 - CEE Tier III	SWFS006-01	https://www.caetrm.com/login/?next=/
AC-19790	AC-19790	HVAC Zone Occupancy Controls - Add-On	DEER-ImpID D03-073	http://www.deeresources.net/
AC-19794	AC-19794	Occupancy/Smart Thermostat	Record Level Data - CEDARS	https://cedars.sound-data.com/
PM-21954	PM-21954	BOILERS/HW/STEAM SYSTEMS RETROFIT/NEW-DIST. SYSTEM-HEAT RECOVERY	PGECOALL100 R12 - PGE210123	https://cedars.sound-data.com/
AC-19789	AC-19789	HVAC RETROFIT/NEW-AHU/PACKAGE UNITS-AIR SIDE ECONOMIZER-OTHER	PGECOALL100 R12 - PGE210123	https://cedars.sound-data.com/

[7] Per D.19-08-009, for fuel substitution measures where the incentive exceeds the Incremental Measure Cost (IMC), the CPUC requires submission of a workpaper addendum using a separate template. Third-party implementers can request the template from their Contract Manager. SCE Program Managers should refer to the E-PPICs Smart Sheet.

AC-19789	AC-19789	HVAC RETROFIT/NEW-AHU/PACKAGE UNITS-AIR SIDE ECONOMIZER-UPGRADE	PGECOALL100 R12 - PGE210123	https://cedars.sound-data.com/
AC-19789	AC-19789	HVAC RETROFIT/NEW-AC/SPLIT SYSTEMS/HEAT PUMPS-OTHER	PGECOALL100 R12 - PGE210123	https://cedars.sound-data.com/
AC-19789	AC-19789	HVAC RETROFIT/NEW-AC/SPLIT SYSTEMS/HEAT PUMPS-DX/AIR COOLED	PGECOALL100 R12 - PGE210123	https://cedars.sound-data.com/
AC-19789	AC-19789	HVAC RETROFIT/NEW-AC/SPLIT SYSTEMS/HEAT PUMPS-WATER/EVAP COOLED	PGECOALL100 R12 - PGE210123	https://cedars.sound-data.com/
AC-19789	AC-19789	HVAC RETROFIT/NEW-AC/SPLIT SYSTEMS/HEAT PUMPS-GROUND SOURCE	PGECOALL100 R12 - PGE210123	https://cedars.sound-data.com/
AC-28476	AC-28476	HVAC EXHAUST/VENTILATION - BLDG DISTRIB FANS VFD - To-Code/Std	PGECOALL100 R12 - PGE210123	https://cedars.sound-data.com/
PM-23862	PM-23862	PROCESS - WASTE WATER - PUMP VFD - To-Code/Std	PGECOALL100 R12 - PGE210123	https://cedars.sound-data.com/
PM-23862	PM-23862	PROCESS RETROFIT/NEW-PUMPS-VFD	PGECOALL100 R12 - PGE210123	https://cedars.sound-data.com/
AC-37854	SWHC027E	<=24 kBtu/hr High Efficiency Package Terminal Heat Pump (Non Res) DX Equipment	SWHC027-01	https://www.caetrm.com/login/?next=/
AC-21823	SWHC027A	<=24 kBtu/hr High Efficiency Package Terminal Air Conditioner (Non Res) DX Equipment	SWHC027-01	https://www.caetrm.com/login/?next=/
PM-21834	PM-21834	Nonresidential Pool Pump - VFD - Add-on Equipment	SCE-2019-Q3-0078446	https://cedars.sound-data.com/
RF-51222	SWCR008A	Commercial Multiplex Floating Suction Pressure Control	SWCR008-02	https://www.caetrm.com/login/?next=/

AC-15987	AC-15987	Chilled water reset - retrocommissioning	SCE-2018-Q2-0068580	https://cedars.sound-data.com/
PM-23862	PM-23862	Optimize chilled water pump VFD - retrocommissioning	SCE-2018-Q2-0069112	https://cedars.sound-data.com/
AC-74984	AC-74984	Condenser water pump motor - VFD - Add-on Equipment	SCE-2018-Q4-0077617	https://cedars.sound-data.com/
AC-64388	AC-64388	Optimum start/stop EMS control - rcx	SCE-2018-Q3-0000858	https://cedars.sound-data.com/
AC-19790	AC-19790	HVAC Zone Occupancy Controls - Add-On - NMEC	READI v2.5.1 - DEER-ImpID D03-073	http://www.deeresources.com/index.php/deer-versions/readi
AC-19794	AC-19794	Occupancy/Smart Thermostat - NMEC	Record Level Data - CEDARS	https://cedars.sound-data.com/
AC-10166	AC-10166	Retrocommissioning - HVAC - NMEC	Generic RCx Measure - Willdan Estimate	https://energyinsightpartners.pge.com/login
AC-10166	AC-10166	Retrocommissioning - HVAC	Generic RCx Measure - Willdan Estimate	https://energyinsightpartners.pge.com/login
AC-19794	AC-19794	Occupancy/Smart Thermostat	Record Level Data - CEDARS	https://cedars.sound-data.com/
AC-15987	AC-15987	Chilled water reset - retrocommissioning	Record Level Data - CEDARS -SCE-2018	https://cedars.sound-data.com/
PM-23862	PM-23862	Optimize chilled water pump VFD - retrocommissioning	Record Level Data - CEDARS -SCE-2018	https://cedars.sound-data.com/
AC-74984	AC-74984	Condenser water pump motor - VFD - Add-on Equipment	Record Level Data - CEDARS -SCE-2018	https://cedars.sound-data.com/
AC-64388	AC-64388	Optimum start/stop EMS control - rcx	Record Level Data - CEDARS -SCE-2018	https://cedars.sound-data.com/
PR-42009	PR-42009	Process Chilled Water Plant Optimization Project	Record Level Data - CEDARS -PGE_ID210123	https://cedars.sound-data.com/
AC-28476	AC-28476	Add VFDs and Controls to Exhaust Fans	Record Level Data - CEDARS -PGE_ID210123	https://cedars.sound-data.com/
PM-23862	PM-23862	VFDs on Process CHW Pumps	Record Level Data - CEDARS -PGE_ID210123	https://cedars.sound-data.com/
PR-20099	PR-20099	Process Fans VFDs	Ap No SCE-NMMP-11-000147	https://cedars.sound-data.com/
AC-74984	AC-74984	Condenser Water Pumps VFD	Ap No SCE-500793876	https://cedars.sound-data.com/
PR-51921	PR-51921	Industrial Blower Replacing Air Compressor	Ap No PG&E-FPRW14	https://cedars.sound-data.com/
PR-19786	PR-19786	Compressed Air System Leak Repair	Ap No SCE-500634844	https://cedars.sound-data.com/

PR-32856	PR-32856	Air Compressor System Control - Add-on Equipment	Record Level Data - CEDARS -SCE-2019	https://cedars.sound-data.com/
PR-81093	PR-81093	Air compressor consolidation	Record Level Data - CEDARS -SCE-2019	https://cedars.sound-data.com/
AC-78722	AC-78722	Ventilation fan - VFD - Add-on Equipment	Record Level Data - CEDARS -SCE-2019	https://cedars.sound-data.com/
RF-20965	SWCR008B	Process Multiplex Floating Suction Pressure Control	SWCR008-02	https://www.caetrm.com/login/?next=/
RF-43876	RF-43876	Defrost controls - Add-on Equipment	Record Level Data - CEDARS -SCE-2019	https://cedars.sound-data.com/
PM-29644	PM-29644	Optimize Fluid Flow	Record Level Data - CEDARS -SCE-2019	https://cedars.sound-data.com/

Key Software Tools

The online platform supporting the program will serve as a repository and single point of access for data integration and continuous stakeholder engagement. The platform is the center for all program processes and data. The online platform includes benchmarking and energy modeling applications to help visually convey the value of implementing EE and the benefit comparison of different measure bundles.

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

The program uses the NMEC analysis tools listed in the table below, selected because they:

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

Tool	Developer	Publicly Available for SCE Review	NMEC Calculation Compliance	Version or Date
OpenEEmeter (Recurve Platform)	Recurve	Yes	CalTRACK 2.0 – Certification steps automatically enforced	2.5.4
Energy360	Intech	Yes	SCE NMEC Procedures Manual (LBNL Time-of-Week-and-Temperature [TOWT] Model)	None: Latest version always on-line

GridPoint Energy Manager	GridPoint	Yes	IPMVP Option C	None

OpenEEmeter core code is publicly available for download and review. SCE can access Energy360 and GridPoint with full input and output visibility.

5. Quantitative Program Targets

Exhibit 6. Quantitative IEEP Targets

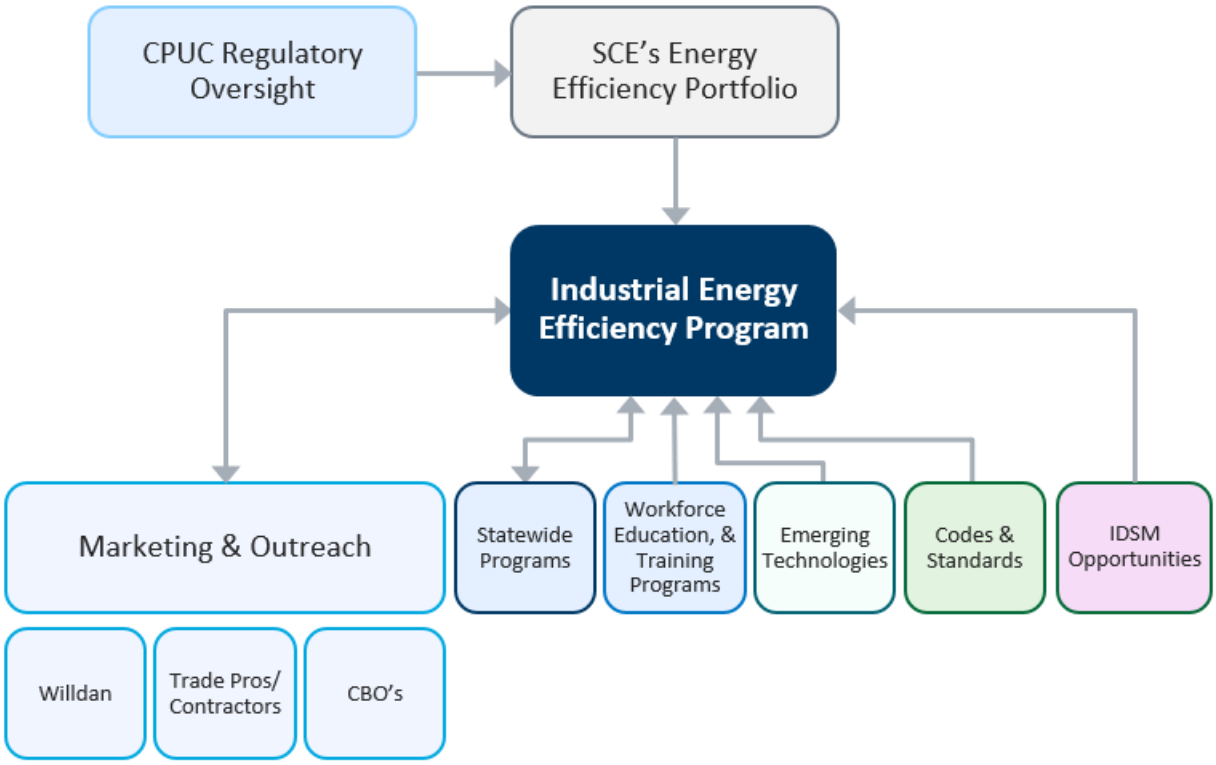
Year	2021	2022	2023	2024	2025	Total
Total Customers Served	0	1,100	1,050	1,050	1,050	4,250
Hard-to-Reach (HTR) Customers Served	0	230	220	225	225	900
Disadvantaged Community (DAC) Projects*	0	340	320	320	320	1,300
Incentives Delivered**	0	$5,909,674	$15,281,354	$15,281,354	$15,281,354	$51,753,737

**HTR and DAC customer counts should not be added together.*

***Incentives delivered include materials, installation labor, turnkey services, project management, etc.*

6. Diagram of Program

Exhibit 7. Program Diagram



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

The purpose of EM&V at the program level is to provide ongoing performance feedback during implementation, produce impact evaluations once the program term is over, and to inform planning for future program cycles. To provide robust program EM&V, the implementation team ensures program data integrity through rigorous Quality Assurance/Quality Control (QA/QC) procedures and extensive records retention. These data collection and review strategies are embedded in the design of the program from end-to-end. This promotes accurate reporting and allows near-term optimization of Program performance.

The implementation team is committed to providing quality program delivery and meeting customer needs, compliant with CPUC requirements and statewide guidance. Willdan's Industrial Energy Efficiency Program integrates project and program management tools, providing a platform for sharing information with all stakeholders. The QA/QC procedures were developed and will be overseen by a team of industry experts, with emphasis on continuous improvement in response to QA/QC metrics, cost-effectiveness tracking, and any changes in legislation, regulation, and technologies.

Quality Assurance Plan (QAP) Features

The QAP has the following features:

- **Oversight by Industry Expert Partners:** Third-party program partners, including EM&V experts, oversee QA/QC training, review tool development and execution of QA/QC procedures, and provide full process review and analysis of program level metrics for Key Performance Indicators (KPIs). Our quality assurance effort integrates with M&V and drives continuous process evaluation and improvement.
- **QA/QC Process Review Tools:** Third-party program partners will oversee development and continuous improvement of QA/QC review documents consolidating guidance from various sources, and QA/QC checklists, refined from the existing CPUC checklist.
- **Early Screening:** Willdan justifies measure eligibility, influence, measure application type, and other measure attributes, then screens for project cost-effectiveness before submittal of application. Willdan may opt to send completed Early Screening documents to SCE for approval prior to completing the Pre-Installation package.
- **Enforcement, Documentation and Transparency:** Program staff enforce QA/QC procedures, requiring signoff of review checklists by senior level engineers before project advancement. The IEEP program implementer provides visibility to submittals and QA/QC documentation and tracks QA/QC metrics.
- **M&V Plans:** Custom and NMEC projects require development and execution of M&V plans, compliant with the most current versions of the Statewide Custom Project Guidance Document, CPUC NMEC Rulebook, LBNL site Level Technical Guidance and International Performance Measurement and Verification Protocol (IPMVP).
- **Customer Satisfaction:** The QAP reduces review times and errors, preventing erosion of savings and incentives with the aim of satisfying SCE customers.
- **Continuous Improvement:** Feedback of our QA/QC metrics will be used to revise our review tools and guidance documents as well as targeting training of Willdan engineers and Trade Pros

Data Collection and Management to Support EM&V

Comprehensive and thoughtful data collection practices are vital for streamlining EM&V efforts. The implementation team will obtain and securely manage all data including internal and external program activities. Examples of these activities include customer interaction, targeting, outreach, project scope definition, project installation, QA/QC, invoicing, and performance tracking. EM&V industry expert partners provide feedback on our data collection process to ensure support for process and impact evaluations.

8. Normalized Metered Energy Consumption (NMEC):

Program Measurement & Verification Overview

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

M&V is used to verify that an energy efficiency project is achieving its intended savings. Energy savings represents the absence of energy use and cannot be directly measured. Therefore, the M&V approach describes how savings are determined from measurements of energy use before and after implementation

of a project, with appropriate adjustments made for changes in conditions. Such adjustments may be routine and expected, while others are nonroutine and unexpected, due to factors unrelated to the project.

The IEEP M&V Plan conforms to CPUC guidance as codified in its Rulebook for Programs and Projects Based on Normalized Metered Energy Consumption (NMEC Rulebook 2.0), issued on January 7, 2020. To meet CPUC guidance, the IEEP is a "Site-level NMEC Program."

Projects will be sorted for NMEC platforms based on the following criteria:

- Project site (or qualifying submeter) energy use models that meet goodness-of-fit criteria will be treated as NMEC.
- Projects with estimated depth of savings greater than 10% annualized usage will be treated as NMEC.
- When NMEC is not applicable, the measure will be treated as Deemed or Custom.

Site-level NMEC Program M&V Plan

Site-level NMEC Overview

The NMEC Rulebook 2.0 provides the following definition for site-level NMEC approaches:

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

The IEEP will conduct site-level NMEC M&V following the framework in the International Performance Measurement and Verification Protocol (IPMVP), using the Option C-Whole Facility method. CPUC has clarifications in the NMEC Rulebook and all projects will be subject to CPUC review & dispositions.

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

Methodology, Analytical Methods, and Software

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

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

- **Model #1:** Daily Energy and Daily Weather Data (with Optional Daily Secondary Variable) – Single variable (or optional two variable) least squares linear regression will be performed using 365 data points.
- **Model #2:** Hourly Energy and Hourly Weather Data – Time of Week and Temperature (TOWT) – Temperature regression with time-of-week as a proxy for occupancy. Separate

models fit within temperature buckets in each month. This allows analysis of sites with custom operation schedules.

- **Model #3:** Monthly Energy, Weather, and Secondary Variable Data – For sites that demonstrate strong correlations with a secondary variable, but have only monthly secondary data available, daily usage and weather data are totaled into monthly data. Two variable least squares linear regressions are performed using monthly data (minimum 12 data points).

NMEC modelling calculations will follow recognized CalTRACK 2.0 and LBNL NMEC procedures. These modelling calculations will have the following characteristics:

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

IPMVP Option and Measurement Boundary

IPMVP Option C, Whole Facility will be used for savings determination. Option C was selected because IEEP promotes upgrade projects that encompass multiple Energy Efficiency Measures (EEMs) and may have interactive effects.

Appropriate revenue meters will be used to provide reference consumption data for both natural gas and electricity savings calculations. These meters account for all energy use of the facilities. If a facility is served by more than one meter, then all EEMs must be properly attributed to the meter that tracks the associated load. Alternatively, meter-level consumption can be summed to the whole-building or site level so long as all meters are included that serve loads affected by the adopted EEMs. In rare cases, if a system submeter of appropriate accuracy is present, the submeter may be used for analysis.

Example: NMEC Regression and Normalization

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

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

$$\boldsymbol{kWh(daily) = A_e \times CDD\ (daily) + B_e \times Secondary\ Variable\ (daily) + C_e}$$

$$\boldsymbol{Therms\ (daily) = A_g \times HDD\ (daily) + B_g \times Secondary\ Variable\ (daily) + C_g}$$

Where A_e, B_e and C_e and, A_g, B_g and C_g are the constants resulting from the electric and natural gas regressions, respectively. If there is no secondary variable, constants B_e and B_g are zero. If there is electric heat (e.g., heat pumps), an HDD term is automatically added to the electric regression formula. Constants C_e and C_g are the base (non-temperature dependent) portion of consumption. The mathematical form for Model #3 is the same as that for #1 but uses monthly data. Model #2 (TOWT) uses hourly data.

Under this site-based NMEC approach, new regression models will be created for each project, using metered data from that particular site. Models will not be carried over from site to site, avoiding the concern of varying projects with complex sizes.

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

Adjustments for COVID-19

To account for the impacts of COVID-19 on energy consumption, a routine adjustment to gross savings will be used to ensure savings claims are not over and/or underestimated. Methods to perform this adjustment will be submitted to SCE before implementation. Any adjustment to project on account of Covid-19 shall be subject to and in compliance with CPUC approval.

The most straightforward method of adjustment for site-level NMEC will be to adjust the COVID-19-impacted baseline period data associated with a project to reflect expected future site behavior more accurately. This adjustment could take the form of moving the baseline data collection window to look at a period unaffected by COVID-19 (e.g., 12 months prior to February 2020). More elaborate adjustments to the baseline models could also be made based on the site behavior as observed during the implementation period or reporting period.

Data Collection Plan

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

For the purposes of NMEC savings evaluation, models of energy use at site level meters will be created for the baseline period (pre-implementation) and reporting period (post implementation) using 12 months of input data as required by NMEC guidelines. Data requirements and sources for creation of site-level NMEC energy use models are listed in **Exhibit 8** following.

Exhibit 8. Site-level NMEC Data Sources

Description of Data	Data Sources
SCE Utility Data: Electricity (15-minute or hourly); Natural Gas (daily)	• SCE: automated "Share My Data" and Building Benchmarking Portal • External: utility application programming interface (API) import (i.e., UtilityAPI) • Contingency: SCE Business Customer Account representative assists with obtaining customer data; customer completes Customer Information Standardized Request (CISR) form
Other Independent Variable (e.g., occupancy rates)	• Data supplied by customer
Building Occupancy Schedule; Equipment Specifications, Schedules, and Sequences	• Observations from energy consultation • Building management system inspections • Building drawings, specifications, and staff interviews
Equipment Operating Parameters (e.g., chilled water and supply-air temperatures)	• Observations from energy consultation • Building management system inspections and trending • Logging with solid state BTU meters with temperature sensors and flow meter

Weather Data (hourly or daily dry-bulb ambient temperatures)	• Automatic download from National Oceanic and Atmospheric Administration (NOAA) or Dark Sky websites into NMEC tools

Ex-ante savings estimates will be generated during the initial project investigation. Shorter term data will be gathered for these *ex-ante* savings estimates. These calculations will use industry standard tools (e.g., spreadsheet calculations, eQUEST models) and methods that are compatible with CPUC energy efficiency policy. **Exhibit 9**, following, shows examples of data collection that will be required for typical ex-ante savings estimates. This example data would be needed in addition to what is shown for the NMEC models in **Exhibit 8** above.

Exhibit 9. Example Data Requirements for *Ex-Ante* Savings Estimates

Data Point and Units	Typical Measure Relevancy	Data Source – Measurement Device	Data Duration/Interval
CHW Pump #1 & #2 Operating Speed (Hz)	HVAC	Building Management System (BMS) Trending	May 1 to June 15 / 15-minutes
Secondary CHW Loop Cooling Load (tons)	HVAC	BMS Trending	May 1 to June 15 / 15-minutes
AHU-1 Supply Fan Operating Speed (Hz)	HVAC	BMS Trending	May 1 to June 15 / 15-minutes
AHU-1 Supply, Return Mixed Air Temperatures (°F)	HVAC	BMS Trending	May 1 to June 15 / 15-minutes

Monitoring and Documentation During the Reporting Period

Implementation team engineers (or contractors) will remotely observe energy consumption data for each site-level NMEC project on a routine schedule over the reporting period. The reporting period observation frequency will be set for each project based on size and risk when completing the Pre-Implementation project-level M&V Plan. Observations will be frequent at first (typically monthly), but intervals will increase over time if performance is found to be stable. The purpose of these observations is to identify out-of-range performance or potential non-routine events (NREs) triggering investigation and corrective action. Performance indicating 10% or more savings variance will be considered a justifiable significant NRE triggering further evaluation (ASHRAE 14 Guideline).

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

Project-level M&V reports will be submitted to SCE as required during the standard NMEC-Custom project workflow. SCE reviewers will also be allowed remote access to all NMEC program participant EMT portals, to verify performance and accuracy of M&V reports. Supporting data will be available to SCE reviewers through the program's online platform or can be sent directly by request. The M&V reports, with the data, will provide sufficient detail for SCE reviewers to replicate the NMEC results.

Identifying and Adjusting for Non-Routine Events

NREs are unexpected changes in building operation that significantly impact energy use, skewing meter-based results. NREs may occur during baseline, implementation or post M&V periods, and may be one-

time occurrences which must be isolated from the regression model, or recurring events requiring adjustments incorporated into the model.

Site-level NREs will be identified by observing baseline and reporting period energy use and identifying where savings deviate from ex-ante estimates by greater than 10% (ASHRAE 14 Guideline). These deviations will be further evaluated, and corrective action will be taken in the form of adjustments to the savings models and/or modifications to the installed measures.

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

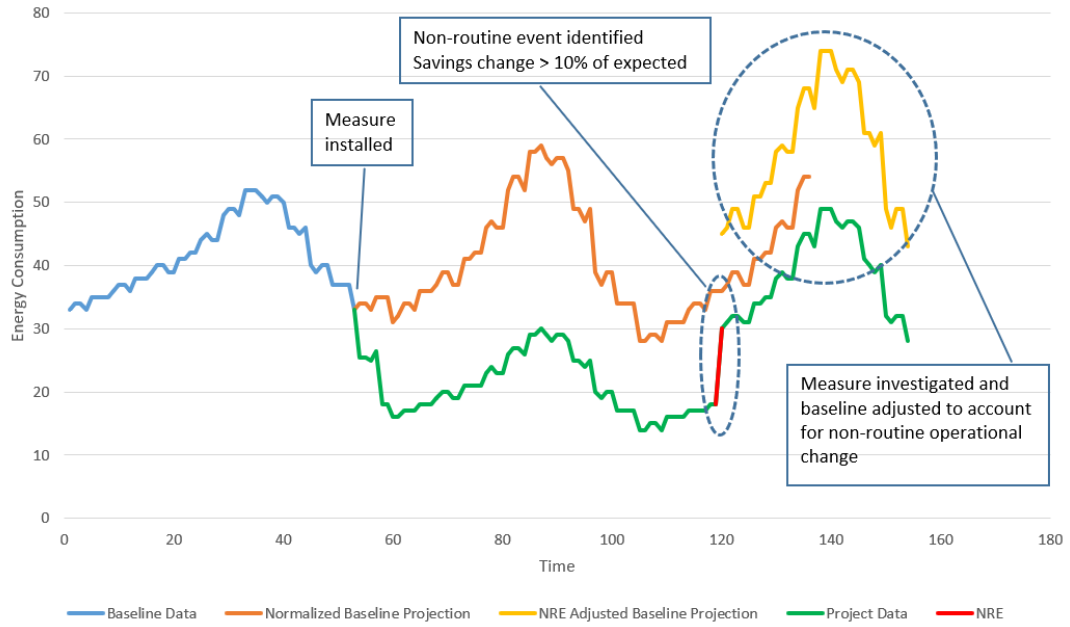
- Equipment outages or maintenance shutdowns
- Equipment replacements, additions, or removals unrelated to program measures
- Building use or tenancy changes, and
- Construction or facility closures

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

1. Remove the data points from the regression data set during the NRE.
    a. Data points associated with NREs during the baseline period will be removed if they constitute a small portion of the overall data, and remaining data points contribute to models exhibiting acceptable goodness of fit. Where this is not the case, the associated projects will be moved to custom or deemed savings platforms or rejected from the program as appropriate.
    b. Data points associated with NREs during the performance period will only be investigated if they cause project savings to move above or below a preset threshold. Before data-point removal, these projects will undergo manual review and investigation by program engineering staff to determine the true nature of the NRE and will be submitted to SCE for approval.
2. Quantify the impact of the NRE by performing measurements and calculations in compliance with custom calculation guidelines for each NRE. Calculated NRE adjustments will be normalized.
3. For deviation caused by project related systems, reconfigure to operate as intended.

Exhibit 10, following, depicts how an NRE is identified and adjusted for. In this example, the customer site implemented increased operating hours during the reporting period.

Exhibit 10. Identifying and adjusting for a typical NRE



Determining Program Influence

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

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

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

Depth of Savings Thresholds and Model Accuracy

IEEP will not use Site-level NMEC methodology on projects that save less than 10% of the site's annual energy consumption as measured at the meter or submeter level. Site-level NMEC models' goodness-of-fit between energy use and the independent variables will meet thresholds suggested in the LBNL NMEC Guidance and ASHRAE Guideline 14.

Incentive Structure

Site-level NMEC savings will be claimed by SCE in accordance with the provisions under the Agreement and the CPUC guidelines. These savings will be calculated based on ex-ante savings estimates, and adjusted as needed by changes in project details (e.g., scope, operating parameters, etc.) found during

post-implementation inspections and review. Software and calculation methods are discussed in the M&V Plan Subsections "Methodology, Analytical Methods, and Software" and *Expected Costs, Energy Savings, Peak Impacts and EULs* "

Once the performance period data collection period is over and true NMEC savings are calculated, the program savings will be trued-up against the prior savings claimed at the end of project installation. This savings true-up will be implemented in the form of reductions in current project savings at the time the true-up process is implemented.

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

Customer Incentives

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

EULs for electric energy and gas energy (kWh and therms) will be discounted for the purposes of incentive calculations.

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

Maximum incentive calculations may receive a DAC, HTR, or Grid Constrained Load Shape Benefit multiplier where justified.

Depending on customer barriers and needs, the calculated maximum incentive may be provided as equivalent technical or financing services, or as direct cash incentives.

Expected Costs, Energy Savings, Peak Impacts and EULs

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

Project Level EULs

Project level EULs will be calculated as weighted averages of individual measure level EULs that make up a given project. Weighting of the measures in these calculations will be based on the individual measure level savings converted to BTUs. Savings for the purposes of this calculation are estimated first-year savings. The EUL calculation will follow the guidance in the NMEC Rulebook and the approved CPUC EUL calculation tool will be utilized. Note that these may be updated and the current CPUC guidance will be followed.

Individual measure level EULs will be based on the most updated DEER values and CPUC guidance. If a DEER EUL does not exist for a measure, the implementation team will propose an estimated EUL for SCE approval. Individual measure level EULs will be based on the latest CPCU guidance.

To facilitate EUL estimating, the implementation team will collect site-level data for the implemented measures and document any equipment being replaced.

Program Target Population and Eligibility

The IEEP serves industrial customers of all types (including HTR, DAC), sizes (small, medium, large), and geographic regions (all of SCE's distribution planning regions [DPRs]).

All customers without excessive variability in operations and occupancy (except industrial processes) that meet savings levels and statistical fitness thresholds are eligible for NMEC. NMEC will be used for project bundles with interactive, predominantly existing baseline (AR, AOE and BRO), measures. The program's Early Screening step includes screening for NMEC. This includes verification of an appropriate utility meter location (or sub-meter location meeting accuracy requirements as found in LBNL NMEC Guidance), and permissible project types. Site-level NMEC will not be used for projects with ex-ante savings estimates below 10% of baseline energy consumption. Eligible site-level NMEC projects must be able to have their energy use simulated with models meeting statistical goodness-of-fit thresholds suggested in the LBNL NMEC Guidance and ASHRAE Guideline 14.

To-Code Savings Insight

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

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

See the "For Programs Claiming To-Code Savings" section of the Implementation Plan above for more information.

Bid M&V Plan

An M&V Plan was included in the Implementer's original bid.

Measure List

The IEEP measure list for industrial customers will incorporate and use all eligible measures available to EE programs, as determined by applicable CPUC EE decisions, rules, regulations, directives, guidelines, and policies. Accordingly, the measure list may be amended or modified from time to time. If a Custom project opportunity is available for which no eligible measure exists, a Custom Solution Code request will be submitted to SCE to obtain approval for the measure's use.

APPENDIX. List of Acronyms and Abbreviations

Term	Definition
C&S	Codes & Standards
CALCTP	California Advanced Lighting Controls Training Program
CEDARS	California Energy Data and Reporting System
CPUC	California Public Utilities Commission
DAC	Disadvantaged Communities
DEER	Database for Energy Efficient Resources
DSM	Demand-Side Management
EE	Energy Efficiency
EE PRG	Energy Efficiency Procurement Review Group
EM&V	Evaluation, Measurement & Verification
ET	Emerging Technologies
EUL	Effective Useful Life
FSU	Fractional Savings Uncertainty
HTR	Hard-to-Reach
HVAC	Heating, Ventilation, & Air Conditioning
IOU	Investor-Owned Utility
IP	Implementation Plan
kW, kWh	kilowatts, kilowatt-hours
M&V	Measurement & Verification (or, sometimes, Validation)
NMEC	Normalized Metered Energy Consumption
PA	Program Administrator
PAC	Program Administrator Cost
RFA	Request for Abstract
RFP	Request for Proposal
TRC	Total Resource Cost
WE&T	Workforce Education & Training