LOCAL GC Okapi Architecture

PROGRAM IMPLEMENTATION PLAN PY2022-2025

Climate Action Plan for Zero Net Energy Program (CAP4ZNE)

September 19, 2022

Program Administrator
San Diego Gas & Electric

Program Implementer
Okapi Architecture

Table of Contents

I. Program Overview

1. Program Name: Climate Action Plan for Zero Net Energy (CAP4ZNE)
2. Program ID Number: 4010
3. Program Implementor: Third-Party
4. Market Sector: Public Local Government
5. Program Type: Resource
6. Market Channels: Downstream
7. Intervention Strategies include a combination of retro-commissioning, direct install, site-specific NMEC, benchmarking, financing, energy audits, technical assistance, direct installations, and financial incentives for deemed and customized energy efficiency solutions.

Program Budget & Savings

8. Program Budget Table:

Cost Category Description	Start-Up Costs	2022 Program Year Budget	2023 Program Year Budget	2024 Program Year Budget	2025 Program Year Budget	Total Program Budget
Administration & Overhead	$20,000	$158,295	$293,360	$234,120	$233,924	$939,699
Marketing, Outreach	$10,000	$94,979	$175,972	$140,412	$140,330	$561,693
Direct Implementation – Non–Incentive	$20,000	$621,346	$892,140	$347,416	$345,698	$2,226,600
Direct Implementation - Incentive	N/A	$346,759	$1,641,025	$1,692,738	$1,756,410	$5,436,932
Total Implementation Budget NTE	$50,000	$1,221,379	$3,002,497	$2,414,686	$2,476,362	$9,164,924

9. Program Gross Impacts Table:

CAP4ZNE Goals	2022 PY Totals	2023 PY Totals	2024 PY Totals	2025 PY Totals	Total
Annual Gross kWh Savings	1,035,086	5,952,834	6,792,790	6,783,591	20,564,300
Annual Gross Therms Savings	14,346	172,369	44,978	59,666	291,359
Annual Gross kW Savings	137	479	672	718	2,007
Total System Benefits	$1,014,568	$6,197,243	$3,562,894	$4,011,430	$14,786,135

10. Program Cost Effectiveness (TRC):

CAP4ZNE Goals	2022 PY Total	2023 PY Total	2024 PY Total	2025 PY Total
Total Resource Cost (TRC)	0.71	1.79	1.32	1.45

11. Program Cost Effectiveness (PAC):

CAP4ZNE Goals	2022 PY Total	2023 PY Total	2024 PY Total	2025 PY Total
Program Administrator Cost (PAC)	0.84	2.12	1.53	1.68

II. Program Implementation

1. Program Description

The CAP4ZNE Program (Program) provides a concierge approach tailored to the unique needs of each customer for EE and GHG reductions. This one-stop shop approach includes a comprehensive assessment of the customer's facilities for the Local Government segment within the COMPANY's service territory. The Program offers individual Partner Climate Action Paths tailored for participating Local Governments aimed at the customer's top energy-consuming facilities.

The program has the following objectives:

1) Empower leaders by equipping them with knowledge and tools to make informed decisions.

- Local Government Partner (LGP) leaders will initially be contacted and interviewed to determine if energy efficiency (EE) projects are considered important for meeting long term energy and climate goals, how they are evaluated and prioritized, and what obstacles they face in pursuing deep energy savings.
- Based on the initial interview, we will develop a unique plan to evaluate, educate, and conduct an education session for the leaders and key staff to show the value of energy efficiency and its relationship to reducing operation and maintenance costs preparation for ZNE, and CAPs.
- The Partners Action Plan and the associated web-based dashboard will aid the key leaders in visualizing how important energy efficiency is to meeting future ZNE and climate goals.

The specific strategies and tactics the Okapi team employ to motivate the stakeholders and directly address the CAP4ZNE program objectives include:

- At the launch of the program there will be significant information dissemination via e-Blasts and social media directing Local Government Partners to the program website and the Okapi team.
- Local Government Partner Leaders will initially be contacted and interviewed to

determine if energy efficiency projects are considered important for meeting long term energy and climate goals, how they are evaluated, and how EE projects are funded.

- Based on the initial interview, we will develop a unique plan to evaluate, educate, and implement a training program for the Leader and key staff including Facility Manages, Sustainability Managers, City Council Members, etc. to show the value of energy efficiency and how it related to operation and maintenance budgets, preparation for ZNE, and CAPs.
- The Partners Action Plan and the associated web-based Dashboard will aid the key Leaders in visualizing how easy and important energy efficiency is to meeting future ZNE and Climate goals.

2) Eliminates barriers to public sector participation by developing tailored solutions and financing options.

- Services provided to the LGP will be determined on a case-by-case basis based on the initial and ongoing discussions with partner leaders and staff. Some larger partners may require less technical guidance as they have staff to evaluate EE projects, while some smaller partners have no dedicated EE Staff and will require additional technical support. All partners will be treated with a "concierge approach" as their specific needs for implementing energy efficiency will differ.
- Project evaluation for LGP differs greatly from Commercial project evaluations. Using the information obtained in the initial interview and discussions with the partner leaders, we will develop a set of project evaluation parameters uniquely related to the partner requirements.

The specific strategies and tactics the Okapi team employ to motivate the stakeholders and directly address the CAP4ZNE program objectives include:

- LGP goals and EE project assessments will be used to influence the private sector. Lead by example!!
- Help LGP evaluate the addition of Reach Codes to affect private sector EE savings and goals.

We believe these actions will promote increased value of assets to lower operating costs and provide the greatest asset of all, a comprehensive partner action plan to be utilized as the local government partner's roadmap toward ZNE.

3) Influence private sector participation through reach codes and engagement.

- LGP goals and EE project assessments will be used to influence the Private sector. Lead by example!!

- Help the LGP evaluate the addition of Reach Codes to affect private sector EE savings and goals.

The specific strategies and tactics the Okapi team employ to motivate the stakeholders and directly address the CAP4ZNE program objectives include:

- Services provided to the Local Government Partners will be determined on a concierge approach, case-by-case basis based on the initial and ongoing discussions with Partner Leaders and Staff. Some larger Partners may require less technical guidance as they have staff to evaluate EE projects, while some smaller Partners have no dedicated EE Staff and will require additional technical support. All Partners will receive "one-stop shop" information about SDG&E and statewide EE programs.
- Project evaluation for LGP differs greatly from commercial project evaluations. Using the information obtained in the initial interview and discussions with the partner leaders, we will develop a set of project evaluation parameters uniquely related to the partner requirements.
- Project capital funding and procurement for our LGP typically do not coincide with utility EE program timelines. Our goal would be to develop funding requirements well in advance to the actual project implementation to encourage long term EE. Alternative short-term funding could come from maintenance budgets for early replacement, OBF, and Revolving Funds using EE incentives to pay for future EE projects. Utilization of the Municipal Tax-Exempt Lease Purchase is a popular vehicle for municipal financing options. The Okapi Team will provide support to assist in the financing analysis and process.

2. Program Delivery and Customer Services:

The Climate Action Path for Zero Net Energy program will address the entire segment of Local Government customers within SDG&E's territory, which includes the following:

- 25 cities (including Civic Centers, Maintenance Yards, Police, Fire, Libraries, Water Treatment and Delivery, Waste Treatment, etc.) including South Orange County (portions of the county which include 21 zip codes)
- County of San Diego (including county hospitals and correctional facilities)
- Specialty Districts (e.g., cemeteries, fire, health, community services, parks & recreation, and conservation)
  - Solid Waste Facilities (Must not overlap with the Statewide Water and Wastewater Program)
  - Water/Wastewater Treatment Facilities (Must not overlap with the Statewide Water and Wastewater Program)

Our marketing and outreach activities will stress the value of a holistic approach to encourage LGPs to view and operate their facilities differently to reduce energy usage and lessen the

environmental impact. With the onset of the program, the Okapi team will contact LGP leaders to share the program objectives, listen to their comments and incorporate all feedback into an implementation strategy that will prioritize the greatest need and potential to best serve the local government facilities and the communities at large.

Once a list of priority projects is established, the Okapi program manager will coordinate with the key contacts for each party involved and schedule project kick-off meetings to ensure that there is clarity, as well as identify any areas of concern that may cause issue for the success of such projects.

Depending on the existing conditions, the Okapi Team will assess each facility using various tools, such as audits, retrocommissioning, building benchmarking, etc. to deliver facility assessments. In addition to these assessments, financial feasibility is also an important factor. Therefore, the Okapi team will also leverage their financial partner National Energy Improvement Fund (NEIF) to provide critical information, should financing be a concern.

The Climate Action Path for ZNE (CAP4ZNE) will also develop and provide Partner Action Plans for each participating LGP's top 5 to 10 energy-consuming facilities, which may include:

- Building Benchmarking.
- Behavioral opportunities, including Technical Assistance and Education.
- SDG&E Rates and Usage (Electric and Natural Gas)
- Water Rates and Usage (Water Energy Nexus).
- Codes and Standards including Private Sector Reach Codes.
- Whole Building Audits.
- Retrocommissioning (RCx) leveraging existing SDG&E programs.

The program's design and approach consists of the following strategies that will help engage and maximize savings from Disadvantaged Communities:

a) Leverage established relationships with cities, counties, SDG&E account representatives, the San Diego Green Building Council (SDGBC), and other relevant community organizations to better engage these communities.
b) Hold special sessions targeted to educate, inform, and incentivize cities with facilities in Disadvantaged Communities.
c) Utilize the program's flexible incentive structure to provide appropriate (typically higher) incentives for projects in Disadvantaged Communities.

3. Program Design and Best Practices:

CAP4ZNE delivers a "Concierges Approach" to Local Government Partners through:

- Targeted Outreach to Decision-makers
    a. Use Implementer's existing and extensive networks with local governments and market the program through regular contacts, e-Blasts, and social media. For disadvantaged communities, the Implementer will work with SDG&E Account Executives and local partner SDGBC to reach out and provide specialized services to them. The Implementer will understand each customer's needs, barriers, and facility's goals. This effort will connect seamlessly with Implementer's technical group and pave the road for the next steps.
    b. Utilize the CAP4ZNE website/portal, social media, and Energy Management Cloud Service. The website will be easy to use and provide relevant information and Climate Action Plan examples. The website will include Codes and Standards, technical measure information, and financial resources for project information. The website will allow customers to register on the cloud and be able to track their project's progress.

- Concierge Approach with Technical Assistance
    a. Depending on existing conditions, each facility will be assessed utilizing a variety of tools, such as audits, retro commissioning, benchmarking, etc. to deliver a facility assessment. LGP action plans will be developed for each participating LGP's top energy-consuming facilities and will include building benchmarking, behavioral opportunities including technical assistance and education, SDG&E rates and usage (electric and natural gas), water rates and usage (Water Energy Nexus), reach codes, whole building audits and retro-commissioning (RCx)

- Hybrid Installation Incentives - Combination of bundled energy efficiency measures, incentive methods (using calculated, deemed and/or direct installation), and site-level NMEC.

4. Innovation:

Innovations developed for the Climate Action Path for ZNE program include:

a) Develop a comprehensive Partner Action Plan based on the unique requirements of the partner.

b) Benchmarking using the EPA Energy Star evaluation criteria to determine building performance vs. similar facilities and climates.

c) Behavioral energy savings opportunities including both technical assistance and education.

d) Develop an SDG&E Rates and Usage (Electric and Natural Gas) analysis tool to provide the Partner to help visualize actual energy usage and utility costs.

e) Water Rates and Usage analysis tool to provide the Partner to help visualize actual energy usage and utility costs. Use the information to develop the energy savings associated with reduced water consumption. (Water Energy Nexus).

f) Help the LGP evaluate the addition of Reach Codes to affect private sector EE savings and goals.

g) Whole building audits, as opposed to individual EE measure audits to increase opportunities for increase EE savings opportunities that include interactive affects.

h) Renewable energy evaluations to achieve facility ZNE after all cost-effective EE measures have been completed.

i) Assistance with developing GHG inventories and reduction opportunities through calculation methods for suggested EE measures.

j) Pay-for-Performance incentives using Normalized Meter Energy Consumption (NMEC) for energy savings and incentive calculations will be used for this program to keep the customer engaged in the program. This also protects the "rate payers" as the incentive payments are directly connected to the actual energy savings. This will also allow SDG&E to claim the "stranded" energy savings associated with existing facilities per AB 802.

k) A concierge approach to overcome partner attitude and aptitude barriers.

l) Webinars and local seminars events to educate the LGP base.

m) Web dashboards to highlight the partner's goals and progress to increase partner awareness of the energy efficiency path to ZNE.

5. Metrics:

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

Program metrics used to track program progress and effectiveness shall include:

- Program Performance
  - Net Energy Savings (kWh)
  - Net Energy Savings (kW)
  - Net Energy Savings (Therms)
  - Project Inspections
  - Total Resource Cost (TRC)
  - Total System Benefit (TSB)
  - Financial Savings – Goal & Expenditure Alignment
- Program Compliance and Regulatory Accuracy
- Customer Satisfaction
- DAC/HTR Penetration

6. For Programs claiming to-code savings:

For each project Okapi will identify and report to-code and above code measures and savings

(using Ex Ante values and post M&V results) to inform where to-code potential resides.

7. Pilots:

No pilot projects have been identified for CAP4ZNE.

8. Workforce Education and Training:

The Program will align with SDGBC and provide regular and on-demand classes on various topics such as climate change, energy efficiency design, water savings, maintenance, and operation. The program will also to LGPs serving disadvantaged communities that provide a curriculum that complements the workforce training and benefit largely disadvantaged workers. Providing critical training and education to LG decision-makers will help them understand the importance of energy efficiency and join the program will full confidence.

9. Workforce Standards:

Workforce standards incorporated into the program include the following:

a. HVAC Measures

i. Installation, modification, or maintenance of non-residential HVAC measures with an incentive of $3,000 or more are required to be installed by workers or technicians that meet one of the following criteria:

1. Enrolled in and/or completed an accredited HVAC apprenticeship
2. Completed more than five years of work experience at the journey level per California Department of Industrial Relations definition, passed competency tests, and received specific credentialed training
3. Has a C-20 HVAC contractor license issued by the California Contractor's State Licensing Board?

b. Advanced Lighting Control Measures

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

10. Disadvantaged Worker Plan:

All of the direct install work conducted on behalf of CAP4ZNE will be in alignment with CPUC guidelines as defined for Workforce Standards. We are committed to contributing to the welfare of the disadvantage communities and workers and as such, we will recruit and train individuals that reside in areas identified as disproportionately burdened by CalEnviroScreen supported by OEHHA California Office of Environmental Health Hazard Associations.

We will track such employment by:

- Number of new employees hired by Okapi;
- Number of job promotions initiated by Okapi;

- Number of hours worked by employees and subcontractors, and
- Number of hours worked by employees and subcontractors residing in targeted zip codes

In conjunction with our direct installation sub-contractor, Okapi will also provide a mentor/protégé program which has proven successful in the past for recruiting remarkable employees.

III. Supporting Documents – Additional Information

The following documents are attached to the Implementation Plan:

1. Program Manuals and Program Rules
2. Program Theory and Program Logic Model
3. Process Flow Chart
4. Incentive Tables, Workpapers, Software Tools
5. Quantitative Program Targets
6. Diagram of Program
7. Evaluation, Measurement & Verification (EM&V)
8. Normalized Metered Energy Consumption (NMEC)

Additional Information

1. Program Manual and Program Rules (see below)

a. Introduction

CAP4ZNE identifies and facilitates the implementation of energy-efficiency upgrades for SDG&E's local government customers. Customers that install energy efficient systems and equipment will receive incentives based on the annual kWh or therm savings achieved, as well as on peak demand reductions (kW) and deemed incentive measures.

The purpose of the CAP4ZNE program is designed to work with decision makers directly, whether it be with local government officials, general managers, or facility personnel to 1) identify if any climate action goals have been established, 2) gain a mutual understanding of how the CAP4ZNE program will help to reach set goals, 3) educate local government leaders on the benefit of establishing a climate action plan if none is in place with the development of a Partner Action Plan 4) identify greatest

potential for energy efficiency and potential barriers that will need to addressed for implementation.

Administration of the Program. The Program is managed and facilitated by Okapi Architecture, Inc. (Okapi), and is funded by California utility ratepayers, under the auspices of the California Public Utilities Commission.

The term of CAP4ZNE commences November 2022 and ends December 2025.

b. Key Participants

The Climate Action Path for Zero Net Energy program will address the entire segment of Local Government customers within SDG&E's territory, which includes the following:

i. 25 cities (including Civic Centers, Maintenance Yards, Police, Fire, Libraries, Water Treatment and Delivery, Waste Treatment, etc.) including areas within South Orange County (portions of the county which include 21 zip codes)
ii. County of San Diego (including county hospitals and correctional facilities)
iii. Specialty Districts (e.g., cemeteries, fire, health, community services, parks & recreation, and conservation)
iv. Solid Waste Facilities (CAP4ZNE will coordinate with SW Water program when in place.)
v. Water/Wastewater Treatment Facilities (CAP4ZNE will coordinate with SW Water program when in place.)

c. Customer Eligibility

Target Sectors.

Customers must have an active, SDG&E electric and/or natural gas account that pays the Public Purpose Program (PPP) surcharge in order to qualify. Okapi will specifically target, but not limit to, public sector customers with the following NAICS codes:

Table-1: Summary of Eligible Segments for the Program

NAICS Code	Description of Customer Segment
921190	General Public Administration
922140	Correctional Institutions
561210	Wastewater Treatment
561920	Convention/Trade Show

1.1 Incentive Payments

All incentives are paid directly by Okapi to the customer unless otherwise indicated. Incentive payments are based on approved energy savings developed and verified by Okapi engineers. The incentive payment amount is based on the energy savings associated with the specific measures. If the variances between the installed project are deemed by Okapi to result in the project producing different energy-savings than described in the analysis, incentives may be adjusted accordingly with the expressed approval of Okapi.

Incentive Payment Process Overview
The incentive payment process includes several stages.

- Verification of installation and project cost by the Okapi
- Verification of accurate and complete documentation by Okapi
- SDG&E project approval
- Incentive check produced by Okapi accounting
- Incentive delivered to the customer

Incentive Design

Ex-ante customer incentives are calculated from estimated savings by:

Electrical Consumption Incentive ($) = First Year kWh Savings x RR x NTG x Discounted Effective Useful Life x Base $/kWh Incentive Rate

Plus

Gas Consumption Incentive ($) = First Year therm Savings x RR x NTG x Discounted Effective Useful Life x Base $/therm Incentive Rate

Plus

Electrical Peak Demand Incentive ($) = Peak Demand (kW) Savings x RR x NTG x Base $/kW Incentive Rate

Where: RR = Measure Realization Rate; NTG = Measure net-to-gross ratio; and base incentive rates are listed in Table 2:

Table 2. Tiered Base Incentive Rates

Base Incentive Rate Tiers	$ / kWh	On-Peak $ / kW	$ / Therm
	$0.12	$150.00	$1.00/Therm

First Come, First Served. Program funds are available on a first-come, first serve basis. Financial incentives are reserved for a particular project upon the customer's dated signatory acceptance of the Project Application.

Incentive Caps. Program incentives are not to exceed 100% of the purchase price of the item. The purchase price includes material cost, installation labor, sales taxes, and shipping.

Aggregation of Measures. Okapi may aggregate measures at a facility to achieve the most attractive financial incentive rate and structure for customers.

Okapi will work with the Customers individually to develop an attractive comprehensive energy efficiency plan.

Payment Disbursements. For each project, 100% of the eligible incentive based on verified project savings, is paid after the project has been completely installed, commissioned, verified and approved by SDG&E.

Taxable Incentive Payments. The Okapi Accounting Department processes the incentive check and reports any payment over $600 to the IRS on Form 1099-MISC. The customer is solely responsible for all taxes due where applicable.

1.2 Basic Program Process

Okapi will conduct energy audits at participating facilities to evaluate the energy savings potential of a measure. Audits may be designated an Energy Efficiency Audit that deals with the entire facility or a Technical Analysis Study that deals only with a specific project. Okapi must have access to the facility and the equipment involved in the project to accurately complete the analysis. There is no cost to the customer at any time for any services provided by Okapi or its sub-contractors.

The basic sequence of program steps is the following:

- **Customer Meeting (V1) –** Okapi schedules an initial Facility visit at which a PowerPoint presentation to the client will be made regarding the program. Customer is presented with Access Agreement and the 3rd Party authorization form for data release.
- **Site Walk Through (V2)** – A walk through audit to determine the feasibility and requirements for a detailed audit.
- **Detailed Audit (V3)** – A detailed audit with Okapi and/or its sub-contractors
- **Customer Application (V4)** –Okapi reports the findings of the audit and the estimated associated incentive for completion of the project. Customer Signs Program Application.
- **Monitor Project Status (V5)** – Interim contacts and visits by Okapi and its sub-contractors as the project proceeds and reaches completion.
- **Post-Installation Verification (V6)** – Interim visits by Okapi and its sub-contractors after completion of installation and start up to verify projects are installed and commissioned as outlined in the Study
- **Post Installation report (V7)** – Completion of Project Report and Calculations for the project, Contractor Certification of HVAC Permits & license Form (as applicable) and Incentive Recipient Certification Form. These documents certifies that the project has been installed and is operating in accordance with the proposal.
- **Check Presentation (V8)** – The incentive check is issued by Okapi and is presented

to the Customer.

1.3 Qualifying Energy Efficiency Measures

The program accepts a wide variety of energy efficiency projects. There are a few criteria that must be met for every project. These requirements are subject to change based on CPUC and/or SDG&E directives in accordance with the implementation of AB802, SB350, or other legislation or modification to the Program Guidelines.

1) **Government Standards** – Incentives are paid only on the energy savings above and beyond minimum federal and state mandated energy-efficiency performance. Current industry standards may be used to establish the baseline consumption if there are no government standards.
2) **Building Vintage** – Buildings must be 10 years or greater
3) **Equipment Life** – All installed equipment must have a useful life of at least five (5) years.
4) **Energy Usage** – A minimum energy consumption must be at least 15 kWh/sq. ft/year
5) **Other California Efficiency Programs** – Projects cannot receive incentives from more than one publicly funded energy efficiency program. No "double-dipping" is permitted. None of the measures included in the Program may be applied for or receive incentive funds from any other California energy efficiency incentive or rebate program. Such other California end-user energy efficiency programs include, but are not limited to, any program offered by or through Pacific Gas and Electric Company, Southern California Gas Company, Southern California Edison, the California Energy Commission, and the California Public Utilities Commission (CPUC). These include all Public Purpose Program (PPP) funding local Programs, statewide programs, third party programs, and government partnerships.

The following list (not comprehensive) illustrates examples of qualifying measures.

- Motor upgrades
- Variable speed drives on pumps, fans and motors
- HVAC Occupancy Sensors
- HVAC Energy Management System
- HVAC Controls
- HVAC Water Chiller Replacement
- HVAC Ventilation Controls
- HVAC Heat Pump Replacement
- Water Heater / Boiler Replacement
- Process improvements (including projects that increase load but reduce per-unit energy usage)
- Water Pump Sequencing
- Water Pump Replacement or Modifications
- Air compressor system retrofits
- Industrial Heater Replacement
- Process cooling systems upgrades
- Process controls improvements
- Refrigeration system upgrades

- Thermal oxidizer upgrades
- Piping system changes to reduce pressure drop
- Boiler or furnace replacements
- Boiler/furnace heat recovery or economizer installations
- Lighting Fixture Replacement
- Lighting Lamp Replacement
- UPS Systems
- Retro-Commissioning (RCx and MBRCx)
- Waste-Water Recycling
- Ozone Laundry System
- Low Flow Water Devices
- Water Fauset Aerator
- Water Laminar Flow Restrictor

If a potential measure is not on the above list, please contact Okapi regarding eligibility.

1.4 Energy Savings Verification Requirements

Okapi will conduct energy audits at participating facilities to evaluate the energy savings potential of a measure. Okapi must have access to the facility and the equipment involved in the project to accurately assess the project. Some monitoring of equipment consumption and operation may be necessary as part of the evaluation. In addition, SDG&E and/or the CPUC may wish to have staff or contractors inspect the equipment installed as part of a project, and if so, must be granted access to the facility.

1.5 Baseline Efficiency Standards

The program provides incentives to customers that install equipment that exceeds standard efficiency of “baseline” equipment. “Standard efficiency” refers to equipment that meets either state/federal efficiency requirements or current industry practice. Thus, baseline energy use is established using accepted standards for currently available equipment.

Projects that involve the replacement of motors, air compressors, gas furnaces, gas boilers, cooling equipment, and linear fluorescent lighting will use a minimum standard as a baseline. The minimum efficiency standards are based on multiple industry and governmental standards. These include California’s Title-24 minimum equipment efficiency, National Electric Manufacturers Association (NEMA) standards, EPACT regulations, DOE’s Motor Challenge (Motor Master), and DOE’s Air Compressor Challenge (AirMaster+). The most current standards will

take precedence.

The baseline efficiency for equipment not covered by the standards listed above shall be the efficiency standard of the existing equipment at the time it was manufactured.

Please note that baseline efficiency standards may be subject to change with the implementation of AB802 and SB350 in September 2016. Okapi will align all baseline efficiency standards to reflect current CPUC and SDG&E guidelines.

1.6 Overview of Forms

Program-specific forms will be used to streamline the program. A description of each form is provided below. Okapi representatives are available to assist in preparing and submitting the required forms.

Access Agreement –The customer signs after the first introductory presentation visit (V1) to allow Okapi and its agents access to the facility with or without the ability to place test equipment. The Access Agreement grants Okapi facility access to conduct the energy audit and survey.

Project Application – This form requires the signature of both the customer and Okapi; and defines a specific project that the customer commits to undertake. The application summarizes the estimated energy savings, installed measure costs, and the specific incentive amount that Okapi agrees to reserve for a specified period. In addition, by signing this form, the customer (1) verifies that they have not received incentives (not including tax credits that may be available) or services for the same measure from another utility, state, or local program for the past five years; and (2) agrees not to apply for or receive incentives for the same measure from another utility, state, or local program (without written approval).

Incentive Recipient Certification Form – Okapi will complete the Incentive Recipient Certification Form and present it to the customer for signature. This form triggers the process for an incentive payment. The customer signs this form, which certifies that the measures have been completed and that the attached invoices and substantiating project documents are correct. Okapi will verify the project is operating and delivering savings before signing the Incentive Recipient Certification Form. The completed form is submitted to SDG&E with the Project Installation Incentive Payment (PIIP) package.

HVAC Contractor Certification Form – The contractor completes this form to certify that they are licensed and that all required permits have been obtained.

1.7 Program Contacts

Customers interested in participating in the Program should contact their Okapi representatives at:

Okapi Architecture, Inc.
2252 S. Figueroa St.
Los

Angel
es
CA
9000
7
Email
:
info@okapiarchitecture.com

1.8 Other Important Terms and Conditions

Program Evaluation. By participating in the program, customers agree to the following terms and conditions:

All parties consent to participate in any evaluation of the program. SDG&E and/or the CPUC (or their representatives) may contact customers to answer questions regarding their experience with the program or request a facility visit. All customers agree to comply with such program evaluation activities.

DISCLAIMER / NO LIABILITY: Okapi is receiving funds from SDG&E for this program, but parties agree that SDG&E is not liable to either party for any loses or damages, including incidental or consequential damages, arising from this Agreement. Furthermore, SDG&E makes no representation or warranty, and assumes no liability with respect to quality, safety, performance, or other aspect of any design, system or appliance installed pursuant to this Agreement, and expressly disclaims any such representation, warranty or liability.

Notice of Public Record. Customers should be aware that, because the Program is funded by the PPP and/or demand-side management surcharge, forms (which may include project costs) submitted may not be kept confidential. SDG&E and Okapi are not liable to any customer or other party as a result of any public disclosure of any program forms.

Contract Termination. The Agreement for the payment of incentives between Okapi and the customer may be terminated under the following conditions:

1. The project fails to be installed and be operational prior to program end date, and an extension is not granted.
2. The customer formally requests withdrawal from the program.

Section 2. Program Process and Steps

The following section provides a description of the process for participating in the program. Each step is outlined to illustrate the expectations of the elements of the program.

2.1 Project Identification/Program Introduction (V1/V2)

The Initial Facility Visit (V1) consists of Okapi engineers meeting with the Customer's key decision makers at the facility to introduce the program. During this visit, Okapi presents basic information about the program to the customer. Additionally, an Initial Walkthrough Audit (V2) facility assessment will be performed by the Okapi Project Manager. This involves discussing the facility operation and equipment to get an understanding of the systems that should be evaluated for efficiency opportunities. Depending on the facility and customer availability, the initial walk-through audit may be performed on a different day.

2.2 Detailed Energy Efficiency Audit (Analysis) or TechnicalAnalysis Study (Analysis) (V3)

Prior to beginning this phase of the process, the customer must complete and sign the Access Agreement. This form allows Okapi and their subcontractors access to the facility and use of monitoring equipment.

An Analysis (V3) is performed at the facility, focusing on the systems identified at the initial visit and walkthrough audit. Depending on the systems involved and the nature of the tasks required to evaluate the energy efficiency potential, more than one visit may be necessary. For instance, if monitoring equipment is installed, one day is necessary to install the equipment and another day would be required to remove it. Some of the activities conducted during this facility visit include:

- Collecting nameplate data
- Installing short-term monitoring equipment on various loads
- Collecting production data

Based on the information gathered, Okapi will complete the facility and measure-specific analysis. This report includes all the recommended measures, associated energy savings, measure cost information, and program

incentives. The energy savings may be calculated by the Okapi engineer, a sub-contractor, previous audit, or industry expert. If the vendor, previous audit, or industry expert calculates the savings, a due-diligence review of the calculation methodology and assumptions will be checked by Okapi to ensure that the savings estimates are reasonable.

2.3 Project Scope (V4)

Okapi presents the completed Analysis and/or studies performed at the customer location and the project application to the customer at the Analysis Presentation (V4) stage of the process. Okapi will work with the customer to assist in prioritizing the measures and defining the project scope and timeline necessary to complete it. This stage involves identifying and completely understanding the Customer's needs. If necessary, Okapi can help develop an action plan for the Customer to implement the measures outlined.

2.4 Project Commitment (V4)

The Project Application will be signed by the Customer at the Project Commitment (V4)

stage of the process. This document summarizes the estimated energy savings, incentive amount, and installed measure costs, and it also requires Okapi to reserve incentive funds. The full submittal documenting the energy savings, analysis, and proposed Measurement & Verification (M&V) plan is the Project Commitment Incentive Payment (PCIP). At a minimum the PCIP will include:

- Description of the proposed project(s), including performance details of all equipment to be installed
- The basis for the energy-savings to be realized from the project,
- Calculations for the incentive dollars for the project,
- An estimate of the installed cost of the major project components,
- Supporting documentation on how the energy savings were derived are shown in the Analysis that accompanies Project Application.

The Customer's signature on the Project Application verifies that the customer has not received incentives (not including tax credits that may be available) or services for the same measure from another utility, state, or local program for the past five years, and that the customer agrees not to apply for or receive incentives for the same measure from another utility, state, or local program.

2.5 Project Implementation (V5)

This visit (V5) is the Construction Oversight stage of the process, and the implementation of the project(s) has started. Okapi will assist the customer, if necessary, to evaluate any bids that are obtained. This review will include objectively evaluating the different equipment and process designs.

Okapi will provide the customer with construction oversight during the installation of the project. With the customer's consent, the Okapi Project Manager will monitor the installation through occasional facility visits to ensure the installation and equipment meets the standards outlined in the Project Application and Analysis. Customer must agree to grant Okapi reasonable access for this task.

2.6 Project Completion (V6/V7)

This visit (V6/V7) is the Installation Verification stage of the process. Project installation is expected to be completed within the agreed-upon period by both parties and set into the Project Application. Customers unable to complete the project installation before the completion date shall advise Okapi by letter or email no later than 30 days prior to the scheduled completion date. Once the project is installed to the customer's and Okapi's satisfaction, Okapi will complete and sign and submit to customer Incentive Recipient Certification Form.

Discontinued Projects – projects with a signed Project Application can be discontinued and the claim to incentives forfeited because either of the following has occurred:

1) Customer has voluntarily notified Okapi they will not complete the project; or
2) Customer and Okapi agree the project cannot be completed before the program end date, and no extension has been granted.

In the event of a discontinued project, Okapi will notify the customer in writing that their project has been discontinued and the incentive funds associated with the project are no longer available to the customer for their project.

Once a customer indicates the project is complete, Okapi may contact the customer to conduct a post- Installation verification. Okapi will verify if the selected project by comparing the project description in the project file with a visual verification of the installed project at the customer facility. Okapi may also conduct measurements of equipment or systems to verify savings. Savings variances between the verification and the Project Application will be noted and a recommendation made by Okapi to approve or modify the project.

Verification Dispensation – Okapi's verification will result in one of the following recommendations:

- Approved – Customer will sign the Incentive Recipient Certification Form, and begin the process of issuing an incentive check to customer
- Modify – typically there are three reasons for a modification as a result of post-Installation

1) Installed equipment varies from the equipment described in the Project Application and Analysis.
2) Quantity of equipment installed varies from that described in Project Application and Analysis.
3) Operation of the facility has changed since the Project Application and Analysis was completed (e.g., facility changes from 3 shifts per day to 2 shifts per day.)

Okapi deems the variances between the installed project and the Project Application and Analysis to result in the project producing more energy-savings than described in the Project Application and Analysis, under certain instances the customer may be offered an additional incentive provided the program is not fully subscribed. The offer for additional incentives will be set forth in the Incentive Recipient Certification Form to the customer.

If the variances between the installed project and the Project Application and Analysis are deemed by Okapi to result in the project producing less energy-savings than described in the Project Application and Analysis, the Customer will be given one of two choices:

1) By Issue a change order to modify or install additional equipment to eliminate the variance between the installed project and Project Application and Analysis, or
2) Complete and sign the Incentive Recipient Certification Form with the revised project energy- savings and revised calculated incentive amount. The revised document is effective only when countersigned by Okapi's authorized representative.

Upon concurrence with the performance of the project between Okapi and the customer, Okapi prepares the Project Installation Incentive Payment (PIIP) submittal. The PIIP includes at a minimum documentation to support the verified energy savings. This includes any data captured during the M&V activities for the project.

2.7 Incentive Payment Disbursement

This visit is the Check Presentation visit (V8) and final stage of the process. The incentive check is presented to the customer by Okapi.

2.8 Quality Assurance and Quality Control Plan

Post-Installation Verification. All equipment proposed in the PCIP report will meet or exceed Program

baseline requirements as described in Section 1.8.

At the customer's discretion, Okapi will review all bids and proposals to ensure the equipment specifications and proposed installations are consistent with the measures outlined in the PCIP report.

To verify that the equipment is installed and operating as proposed in the PCIP, Okapi will conduct either physical or virtual site inspections and produce verification reports required per the following incentive value structure:

Customer Incentive	Thresholds Inspection Rates
Incentives under $2,000	15% of projects
Incentives $2,000 to $10,000	30% of projects
Incentives greater than $10,000	100% of projects

All projects: the owner will be required to certify that each of the proposed Energy Efficiency Measures (EEMs) was installed per the original Agreement.

Subcontractor Management. Although Okapi intends to perform the majority of the work with internal resources, industry experts may be utilized as subcontractors in the following three instances:

1) Okapi has identified a specific need for expertise from an external provider
2) Okapi has identified an intrinsic subcontractor to client relationship
3) Okapi does not have the resources to meet all the project demands for the program.

Okapi has standard contractor agreements in place for consulting services. Okapi will ensure that each subcontractor maintains the appropriate insurance requirements set forth by SDG&E. Okapi will also verify that all subcontractors maintain valid state license(s) to perform work in California and meet Workforce Standards for HVAC and Lighting Controls projects. Okapi will ensure that each subcontractor complies with background investigations in accordance with

Okapi'scontract with SDG&E.

All subcontractors will report and submit studies to the Okapi engineer or program manager.

Tracking of Program Metrics. Okapi's program tracking system meets all the reporting requirements of SDG&E and the CPUC. These reports can be tailored to each user's specifications and stored for real-time access via a personalized dashboard. Each project is individually tracked in the system. Okapi tracks milestones pertinent to the energy savings and turnaround time goals of the program as well as identification of information related to project performance. The system will be synchronized with Energy360 data monthly (and as needed) to ensure the system is up to date with project information.

Energy360 routinely delivers real-time multiple data points or program reports in a few minutes. It can produce a vast array of reports for specific periods of time and year-to-date program reporting. These reports can be tailored to each user's specifications and stored for real-time access via a personalized dashboard. If the data exists in Energy360, a report can be generated for it. If the data needed to meet a reporting requirement change during the course of the program, Energy360 can be quickly modified to add those data points to allow immediate tracking and reporting going forward. We will solicit feedback from program stakeholders on reporting needs and develop project reports that detail and summarize all program metrics and facilitate identification of program strengths and areas for improvement.

Reports can be automated on a user-defined schedule to run daily, weekly, monthly, or on a specific day and then emailed to a list of user-defined recipients. Each Energy360 user can save any data query or report in a dashboard for regular use. Among the data that can be stored there are a limitless number of user-defined reports which can be accessed with a click of a mouse and populated by real-time data.
Energy360 generates customizable dashboard reports that recap monthly and year-to-date program performance metrics and compliance with established goals in a user-friendly, real-time reporting environment. Data collected is a critical component of the Partner Action Plan for transparency and evaluating progress made toward climate action goals.

Data used to calculate program metrics includes, but is not limited to:

- Net 1st Year kWh savings
- Net 1st Year kW savings
- Net 1st Year Therm savings
- Measures installed
- Budget spend
- Post-Inspection results
- Customer Satisfaction Survey Results
- Monthly Forecasted Savings and Budget
- Number of Projects in a Disadvantaged Community (DAC)

2.9 Security Procedures (Including data/informationprotection procedures)

All files and data transfers will be performed through SDG&E's “Electronic Data Transfer (EDT) portal or via SDG&E’s Energy Efficiency Collaboration Platform (EECP) ”. Okapi will adhere to all encryption requirements for the file transfer process. .

Okapi will maintain all confidential paper files in a secure, locked space.

Okapi anticipates that some potential facilities for the program will have specific security requirements. Such facilities may include computer technology manufacturing or clean rooms. Okapi will adhere to all customer security regulations when visiting facilities.

2. Program Theory and Logic Model

a. Program Theory

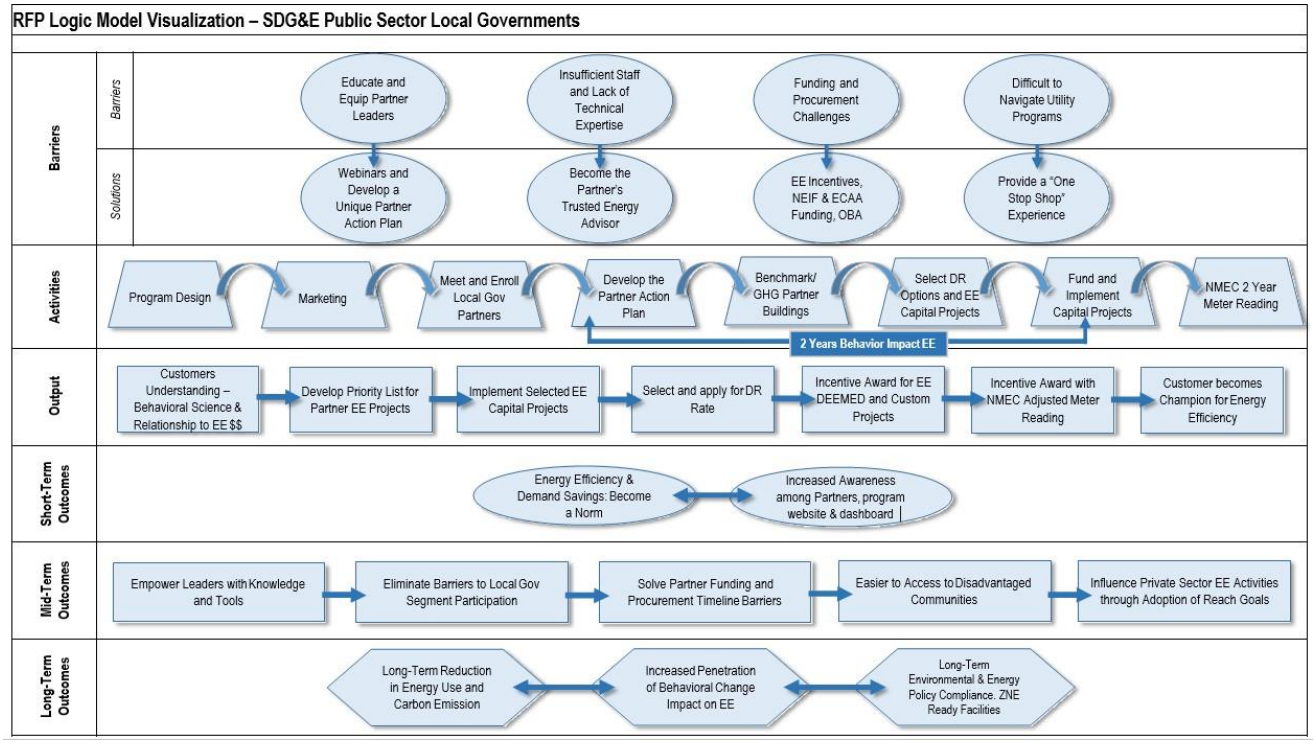
The program theory is to increase EE and IDSM adoption rates with Local Government customers.

Public Goal #1: Empower Leaders by equipping them with knowledge and tools to make informed decisions.	• Local Government Partner leaders will initially be contacted and interviewed to determine if energy efficiency projects are considered important for meeting long term energy and climate goals, how they are evaluated and prioritized, and what obstacles they face in pursuing deep energy savings. • Based on the initial interview, we will develop a unique plan to evaluate, educate, and conduct an education session for the leaders and key staff to show the value of energy efficiency and its relationship to reducing operation and maintenance costs preparation for ZNE, and CAPs. • The Partners Action Plan and the associated web-based Dashboard will aid the key Leaders in visualizing how important energy efficiency is to meeting future ZNE and Climate goals.
Public Goal #2: Eliminate barriers to public sector participation by developing tailored solutions and financing options.	• Services provided to the Local Government Partners will be determined on a case-by-case basis based on the initial and ongoing discussions with Partner Leaders and

	Staff. Some larger Partners may require less technical guidance as they have staff to evaluate EE projects, while some smaller Partners have no dedicated EE Staff and will require additional technical support. All Partners will be treated with a "concierge approach" as their specific needs for implementing energy efficiency will differ. • Project evaluation for Local Government Partners differs greatly from Commercial project evaluations. Using the information obtained in the initial interview and discussions with the Partner Leaders, we will develop a set of project evaluation parameters uniquely related to the Partner requirements. • Financing through National Energy Improvement Fund (NEIF): We have partnered with NEIF, a trusted, experienced partner in the energy financing industry to help fund public sector projects and overcome a key barrier for local governments to implement EE projects.
Public Goal #3: Influence Private sector participation through reach codes and engagement.	• Local Government Partner goals and EE project assessments will be used to influence the Private sector. Lead by Example!! • Help the Local Government Partner evaluate the addition of Reach Codes to effect Private Sector EE savings and Goals.

The activities listed in the Program Logic Model below lead to program outputs and short-term, mid-term, and long-term outcomes.

b. Logic Model



3. Process Flow Chart

Process Flow

V1 Customer meeting → V2 Site Walk Through → V3 Detailed Audit → V4 Customer Application → V5 Monitor Project Status → V6 Post Installation Verification → V7 Post Installation Report → V8 Incentive to Customer

- **Customer Meeting (V1) –** Okapi schedules an initial Facility visit at which a PowerPoint presentation to the client will be made regarding the program. Customer is presented with Access Agreement and the 3rd Party authorization form for data release.
- **Site Walk Through (V2)** – A walk through audit to determine the feasibility and requirements for a detailed audit.
- **Detailed Audit (V3)** – A detailed audit with Okapi and/or its sub-contractors
- **Customer Application (V4)** –Okapi reports the findings of the audit and the estimated associated incentive for completion of the project. Customer Signs

Program Application.

- **Monitor Project Status (V5)** – Interim contacts and visits by Okapi and its sub-contractors as the project proceeds and reaches completion.
- **Post-Installation Verification (V6)** – Interim visits by Okapi and its sub-contractors after completion of installation and start up to verify projects are installed and commissioned as outlined in the Study
- **Post Installation report (V7)** – Completion of Project Report and Calculations for the project, Contractor Certification of HVAC Permits & license Form (as applicable) and Incentive Recipient Certification Form. These documents certifies that the project has been installed and is operating in accordance with the proposal.
- **Check Presentation (V8)** – The incentive check is issued by Okapi and is presented to the Customer.

4. Incentive Tables, Workpapers, Software Tools

Measure Description	Workpaper ID
Ozone Laundry System	SWAP005
Refrigeration - Anti-Sweat Heater Controls-LT	SWCR001
Efficient, Saturated Discharge Controls	SWCR007
Refrigeration - Insulate Bare Suction Pipes	SWCR010
Refrigeration - New Refrigeration Case w/Doors	SWCR021
Ventilation Control - Retrofit	SWFS012
Low Flow Pre-Rinse Spray Valve	SWFS013
Space Heating Boiler, Hot water boiler	SWHC004
Add DCV, ADEC and CO2 sensor	SWHC006
Unoccupied Fan Control	SWHC009
VSD on HVAC fan control (SWHC018A)	SWHC018
VSD on HVAC Fan Control (SWHC018A)	SWHC018
Add new VFD on existing units	SWHC023
Cogged V-belt for HVAC fans	SWHC024
Lighting-LED Fixture: HighBay luminaire	SWLG011
Steam trap replacement	SWPR003
Water Heating-Laminar Flow Restrictor- Health Care Facilities	SWWH004
Commercial Inst. Heaters	SWWH006
Water Heating - Storage Water Heater	SWWH007
Water Heating- Aerator Faucet for Commercial Buildings	SWWH019
Public Lavatory Faucet Flow Control Valves for Commercial Buildings	SWWH019
Water Fixture - Gas - Commercial - Showerhead	SWWH020
Commercial Showerhead Flow Control Valves	SWWH020

5. Quantitative Program Targets

Table 1. Annual Customers Served

Forecasted Number of Local Government Served by Program Year	
Program Year	Customers Served
2022	12
2023	35
2024	45
2025	20

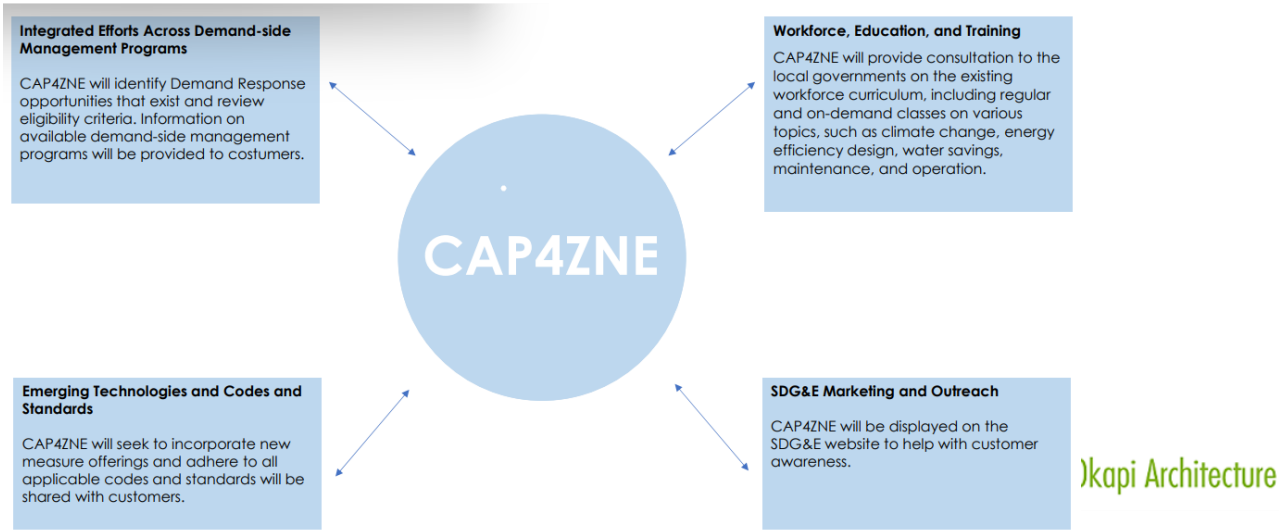
Table 2. Annual Customers Served

CAP4ZNE Goals	*2022 Program Year Totals*	*2023 Program Year Totals*	2024 Program Year Totals	2025 Program Year Totals	Total
Net Energy Savings (kWh)	876,814	3,777,786	4,619,007	4,613,487	13,887,094
Net Energy Savings (Therms)	8,360	103,288	28,041	36,854	176,543
Net Demand Reduction (kW)	113	293	425	453	1,284
Total System Benefits	$1,014,568	$6,197,243	$3,562,894	$4,011,430	$14,786,135

Note: CAP4ZNE has a goal of participation for approximately 10-15 DAC customers within the Local Government Segment. Targeted net program savings include:

- 4,166,128 kWh
- 385 kW
- 52,963 Therms

6. Diagram of Program



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

The program's developed Quality Assurance (QA) plan ensures a structured approach to support verification, validation, and traceability. Throughout the duration of the program, data integrity checks are completed by program staff to ensure accurate reporting. This data is also leveraged to conduct internal performance analysis during deployment and to generate and monitor progress towards program performance metrics. The program's developed Measurement and Verification (M&V) plan covers M&V requirements and details for all NMEC projects.

The plan follows the latest NMEC rulebook and will be updated as the rulebook is updated. In addition, SDG&E will conduct independent EM&V activities, which may include the following:

- Inspection and audit of incoming documentation for accuracy and completeness
- Review of savings claims submittals
- Inspections of customer installations to ensure proper equipment operation and configuration and to confirm that installations comply with technical and program requirements

8. Normalized Metered Energy Consumption (NMEC):

NMEC AND Custom Pre-Implementation M&V Plan

For NMEC and Custom Projects and Measures, this M&V plan will be executed using a site-level meter- based (NMEC) or energy submeter (Custom) approach, with the included measures listed in Table 1.
Baseline usage will be normalized to the relevant independent variable(s) identified. Estimated (Ex-ante) savings will be determined for each measure, for calculating weighted average effective useful life and incentive rates. This is applied to project-level savings to calculate customer incentives.

Project Identification

Provide customer name, building type, location, California climate zone, and brief description of the project.

Project Name:			
Customer Name:		**Site Address:**	
Building Type:		**CA Climate Zone:**	

Table 1. List of Measures and Attributes

Measure ID	Description	Measure Application Type*	EUL *	Independent Variables
EEM-1				

EEM-2				
EEM-3				
…				

*Justifications for measure types, effective useful life values and other attributes are documented in the Early Screening Checklist.

Description of Energy Efficiency Measures (EEMs)

Measures will be identified using standard measure codes and descriptions, and the scope and intent of the measure will be documented. The specific principles resulting in energy savings will be documented, and the key data points required to measure savings will be identified and listed.

Method of Determining Program Influence

Influence for NMEC projects will follow the same procedures as that for custom, following SDG&E's influence guidance. Our screening QA/QC procedure step requires determination and documentation of program influence. We will identify customer barriers and the incentives necessary 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:

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

NMEC Eligibility, Screening, Minimum Savings as Percent of Baseline, and To-Code Savings

NMEC is eligible for our program for all customer types without excessive variability in operations and occupancy (except industrial processes), that meet savings levels and statistical fitness thresholds. We envision using NMEC for project bundles with a number of interactive predominantly existing baseline
(AR, AOE and BRO) measures. Our Early Screening step includes screening for NMEC. This includes verification of an appropriate utility meter location (or sub-meter meeting accuracy requirements as found in LBNL NMEC Guidance), and permissible project types. At this step, the process will incorporate a target savings threshold of 15% of baseline annual energy usage. This considers that post M&V NMEC verified savings may be reduced from estimated. We will not use NMEC methodology on projects that save less than 10% of baseline usage. Goodness of fit between electrical energy use and the independent variables must meet the thresholds suggested in the LBNL NMEC Guidance and ASHRAE Guideline 14, specifically; CV(RSME) <25%, NMBE < 0.5% and R2 > 0.70.

For each project we will identify and report to-code and above code measures and savings (using Ex Ante values and post M&V results) to inform where to-code potential resides.

Utility Meters and Measurement Boundary

The site utility meter data will be collected as listed in Table 2.

Table 2. Utility Meters

Account No. / Meter No.	Utility	Area Served	Annual Usage (kWh or Therms)	Tariff
	Electricity			
	Natural Gas			
	…			
Average Rates Used to Estimate Utility Cost Savings*				
Electricity:			Natural Gas:	

Documentation of Baseline Conditions

The baseline facility and equipment operating schedules and key parameters will be collected as shown in the following tables. Relevant operating sequences, set-points, control strategies, and seasonal variations will be documented.

Table 3. Facility Operating Schedule

Day of Week	Normal Occupancy Hours	Comments
Monday to Friday		
Saturday		
Sunday		

Table 4. Baseline Equipment Operating Conditions

Equipment ID	Description	Operating Schedule	Other Relevant Operating Parameters

NMEC and Custom-Metered Methodology

NMEC Model and Tool Selection

In most cases, weather (outdoor dry-bulb temperature) is the primary independent variable. Secondary variables (such as day-of-week, occupancy rate, or other variables describing operational variation) are added if they demonstrate significant correlation with 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 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 and Custom calculations will be automated using InTech's Energy360 Energy Management Technology (EMT) tool, following the NMEC Rulebook, IPMVP processes, and associated Measure Workpaper procedures. Energy360:

- Automates collection of utility AMI and bill data, energy submeter data, weather data, and other independent variables as required.
- Incorporates NMEC calculations compliant with NMEC guidance, savings engineering effort.
- Is scalable and cost effective, even for small projects.
- Provides ongoing monitoring for NMEC calculations, which can also trigger notifications for performance issues or NREs to support savings persistence.
- Calculates statistical fitness metrics to validate appropriateness of a meter-based approach.

NMEC and Custom-Metered Regression and Normalization

Electricity and gas usage are correlated with weather (and secondary variable if it demonstrates influence), with a least-squares linear regression model. Weather data from NOAA is transformed into Heating Degree Days (HDD) and Cooling Degree Days (CDD). The heating and cooling reference point

temperatures for HDD and CDD can be automatically evaluated.

The typical mathematical form of the regression for Model #1 follows:

$$kWh(daily) = A + B \times CDD\ (daily) + C \times HDD\ (daily) + D \times Secondary\ Variable\ (daily)$$

Where A, B and C are the constants resulting from the regression analysis. If no secondary variable, constants D is zero. Constant A is the base (non-temperature dependent) portion of consumption. The mathematical form for Model #3 is the same at that for #1 but uses monthly data. Model #2 (TOWT) uses hourly data.

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

Data Collection Plan

Data sources, challenges to data collection, as well as our strategies to address these challenges is presented in Exhibit A.

Description of Data	Data Sources	Data Source Challenges	Addressing Challenges

Utility Data: Electricity (15-minute or hourly)	Automated Green Button or Energy Manager download; External: Utility API import Contingency: SDG&E sends data monthly for select accounts enrolled in program; Account reps and CISR form	Green Button authorization can be challenging for owners and tenants Requesting data from utility burdens staff, adds complexity Poor data quality	Contingency data sources are listed to the left Default automated sources reduces burden on SDG&E Rulebook 2.0 data cleaning and sufficiency standards will be applied to ensure proper data quality; Monthly NMEC model #3 is available
Other Independent Variable (e.g., occupancy rates)	Data supplied by customer	Incomplete, inaccurate, or imprecise customer data	Three NMEC model options address customer data availability, including Rulebook 2.0 hourly methods using an occupancy proxy without requiring additional data
Building occupancy schedule; Equipment specifications, schedules and sequences	Audit observations, BMS inspections, building drawings, specifications and building staff interviews	Observations performed only when onsite, but operation may change throughout the year Audit data may not be documented	Operating schedules and conditions documented at each site visit to verify consistency; Customers interviewed for seasonal, weekly changes Standard forms for documenting equipment data and operating parameters
Equipment Operating Parameters (chilled water and supply-air temperatures, etc.)	Audit observations, BMS inspections and trending, spot measurements and logging with Energy360	If many BRO measures, number of data points may be excessive Logger installation requires specialized safety training Intrusive to customers	M&V data sampling plan will be developed, with emphasis on most valuable data Safety plan ensures employees are trained and have PPE; only qualified staff will install loggers on electrical devices Audit planning collects data with fewer customer visits
Weather data (hourly or daily dry-bulb ambient temperatures)	Automatic download from NOAA or Dark Sky websites into NMEC Tools	Third-party weather data sources may change their terms of access	Our NMEC tool partners may utilize other third-party weather data sources, and will ensure quality of their data source (NOAA)

Exhibit A. NMEC Data Requirements and Plan

From the dependent and independent variables identified for each measure, develop the baseline data collection plan. NMEC requires a full 12-months of baseline utility and independent variable data; Custom baseline durations will depend on load profiles

Shorter term data will be gathered for Ex-ante savings estimates. Justify that the data collection period sufficiently represents a full year of facility operation. The data collection plan should

represent at least 80% of operating conditions over a full year and demonstrate the operating limits at each extreme. If significant variability and weak correlation between the variables is found, (for example, $R^2 < 70\%$), this may require revisions to the data collection plan.

The baseline data collection plan is listed in Table 5. At lease 12-months of utility and independent variable data is required. The data collection plan must also include the data requirements to verify Ex Ante estimates for measures lacking deemed values, following Statewide Custom Calculation Guidelines.

Table 5. Baseline Data Requirements

Data Point and Units	Measure Relevancy	Data Source – Measurement Device	Data Duration / Interval	Device Accuracy or Comments
Minimum 12-months NMEC Variable Data				
Short-Term Data for Ex-ante Savings Estimates				
…				

Baseline NMEC and Custom-Metered Regression Results

Justify the predictability of the building operations and appropriateness of a meter-based approach. Describe the independent variables (listed in Table 1) and the data sources used to perform the regression calculations. Describe any corrections made to baseline data or omissions, with justifications. Select the tool and regression model employed to perform the calculations following the Methodology below.

Select the Least Squares Regression Model Used:

- ☐ Model #1: Daily Energy, Weather, and Optional Secondary Independent Variable
- ☐ Model #2: Hourly Energy, Weather / Time-of-Week and Temperature (TOWT)
- ☐ Model #3: Monthly Energy, Weather, and Optional Secondary Independent Variable

The breakeven temperatures for calculation of heating degree days (HDD) and cooling degree days (CDD) are defined in the table below.

Table 6. Reference Temperature Definition

Utility	Heating	Cooling
Electricity	**°F**	**°F**

The resulting regression definition is presented in Table 7.

Table 7. Baseline NMEC Regression Definition

Utility	CDD Coefficient		HDD Coefficient		Secondary Variable Coefficient		Base Usage (kWh, kW, or Therms)

Verify that statistical goodness of fit meets the following criteria; CV(RMSE) < 25%; NMBE < 0.5%; R2 >
0.70. The correlation accuracy metrics are defined in Table 8.

Table 8. Baseline Correlation Accuracy Metrics

Utility	R^2	NMBE	CV(RSME)
Electricity			
Utility	**Baseline Usage**	**Estimated Savings**	**Savings Percentage of Baseline**
Electricity	kWh/yr.	kWh/yr.	%

Non-Routine Events (NREs)

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

Our tool's anomaly detection and monitoring capability will identify possible occurrences and nature of
the NREs. The Team's engineers will periodically review each project over the baseline M&V Period. EMTs will flag out-of-range performance triggering investigation and corrective actions. We will identify and quantify significant NREs regardless of whether they have a positive or negative impact on savings. To true-up incentives for individual customers with site-level NMEC or Custom-Metered approach, justifiable NREs that exhibit 10% or more savings variance will be evaluated (ASHRAE 14 Guideline).
Potential NREs for commercial customers are:

- Equipment outages or maintenance shutdowns
- Operating hours change
- Equipment replacements, additions, or removals unrelated to program measures
- Building use or tenancy changes
- Construction or facility closures
- COVID-19 impacts during baseline period (to be assessed consistent with any CPUC guidelines in affect)

Two methods are employed to prevent NREs from skewing results:

1. Remove the data points from the regression data set during the NRE period.

2. Quantify the impact of the NRE with measurements and calculations in compliance with custom calculation guidelines for each NRE. Normalize and apply NRE adjustments.

Results

The normalized baseline energy usage including NRE adjustments is presented in Table 9

Table 9. Baseline Regression Results

Month	Baseline kWh	Normalized Baseline kWh (a)	Baseline NRE Adjustment kWh (b)	Adjusted Normalized Baseline kWh (a+b)
January				
February				
March				
April				
May				
June				
July				
August				
September				
October				
November				
December				
Totals				
Average Demand During DEER Peak Demand Hours	**Baseline kW**	**Normalized Baseline kW (a)**	**Baseline NRE Adjustment kW (b)**	**Adjusted Normalized Baseline kW (a+b)**

Approach for Monitoring and Documentation over the Reporting Period

Our team's engineers will periodically review each project over the performance M&V Period. NMEC projects will be monitored for a minimum of 1 year; Custom projects will be monitored per their project/measure-specific M&V plan. Checks will be frequent at first (typically monthly), but intervals will increase over time if performance is found to be stable. EMTs will flag out-of-range

performance or potential NREs triggering investigation and corrective actions. Justifiable NREs that exhibit 10% or more savings variance will be evaluated (ASHRAE 14 Guideline).

M&V reports will be submitted to SDG&E at intervals matching the customer's incentive payment structure. SDG&E's reviewers will also be allowed remote access to all program participant EMT portals, to verify performance and accuracy of M&V reports. Supporting data will be available to SDG&E, CPUC and other reviewers through Energy360, or can be exported upon request.

The M&V reports, with the data, will provide sufficient detail for SDG&E and CPUC reviewers to replicate the results.

Discussion of Savings Variance

Estimated (Ex Ante) Savings Methodology

Deemed

Deemed values may be used for Ex-ante estimates when applicable. Deemed savings are presented in Table 10. Deemed values are selected for building type_____and climate zone _____.

Table 10. Deemed Measures

*Units are motor horsepower, cooling capacity (tons), linear feet, etc. or simply "per unit"

Measure	Units *	Quantity of Units	kWh Savings per Unit	kW Savings per Unit	Therm Savings per Unit	Total kWh Savings	Total kW Savings	Total Therm Savings	Workpaper ID Or DEER Other Source
EEM-1									
EEM-2									
…									

Operations and Maintenance Plan

For applicable measures including behavioral, retro-commissioning and operational types, describe the operations and maintenance plan and inspection procedures required by customers to ensure persistence of savings. Document customer commitment to the plan.

Table 11. Operations and Maintenance Notes

Measure	Operations and Maintenance Notes
EEM-1	
…	

Summary of Estimated Savings and Incentives

Estimated (Ex Ante) savings are presented in Table 12.

Table 12. Summary of Estimated (Ex-ante) Savings and Incentives

Measure ID	Measure Name	Measure Type	kWh Savings	Peak kW Savings	Therm Savings	Percent Above	Effective Useful Life	Realization Rate x Net To	Net Life-Cycle Savings	Eligible Cost ($)	Estimated Incentive[2] ($)
Weighted Average Electricity Incentive Rate ($/First Year kWh Saved)[3]											
Weighted Average Electrical Demand Incentive Rate ($/First Year kW Saved)[4]											

[1]Indicate if above-code savings qualify for Premium Incentive Rate.

[2]Net Project incentive is capped at 50% of total eligible project cost.

[3]Weighted average kWh incentive rates account for individual measure realization rates, net-to-gross (NTG) values, discounted effective useful life and incentive tiers, calculated to apply to project-level verified NMEC savings. The weighted average kWh incentive rate is calculated by: (Sum of Measure Ex Ante kWh/yr. Savings x Measure kWh Incentive) / Total Ex Ante kWh/yr.
Savings

[4]Weighted average kW incentive rates account for different individual measure realization rates, net-to-gross values, and incentive tiers, calculated to apply to project-level verified NMEC savings. The weighted average kW incentive rate is calculated by: Sum of Measure Ex Ante kW Savings x Measure kW Incentive) / Total Ex Ante kW Savings

1. NMEC and Custom Post-Implementation M&V Plan

This section describes the plan for post-implementation M&V activities; and will be updated when post- implementation M&V is performed, noting any changes from the plan, with justifications.

Description of Implemented Measures

EEM-1: Measure Name

Post Implementation: For each measure, note any deviations from the approved measure scope or quantities. Note any approved measures that were not implemented.

EEM-2: Measure Name

…

Post Data Requirements:

Post-implementation data requirements are listed in Table 14.

Post Implementation: Describe any changes from deviations from the Approved M&V Plan, with justification. 12-months is required NMEC measures, except for behavioral, retro-commissioning and operational (BRO) measures which require 24-months of post M&V. Post inspections are also required to verify measures were installed and operate as intended.

Table 14. Post Data Collected

Data Point and Units	Measure Relevancy	Data Source – Measurement Device	Data Duration / Interval	Device Accuracy or Comments

Post Operating Conditions

Post Implementation: Other than changes directly a result of the measures, describe and document changes to facility operating schedules, equipment changes etc. impacting heating/cooling loads or energy use of the systems impacted by the measures. Describe how counterfactual baseline was adjusted for changes to operating conditions.

Post Data Analysis

Post Implementation: Describe the period of data, and any changes to data sources with justifications. Describe any corrections or omissions of data, with justification. Re perform statistical regression to verify integrity of the statistical fit.

Correlation analysis must be repeated after the 12 to 24-month M&V period, using the same regression, model and variables identified at Pre-Installation. The resulting regression results are used to normalize post usage with most up to date weather files (CALEE 2018). Statistical goodness of fit metrics must also be verified at this stage.

The resulting regression coefficients and goodness of fit metrics are listed in the following tables.

Table 15. Post Regression Definition

Utility	CDD Coefficient		HDD Coefficient		Secondary Variable Coefficient		Base Usage (kWh, kW, or Therms)
Electricity kWh/[*interval*] =		X CDD +		X HDD +		X 2nd Variable +	
Electricity kW/[*interval*] =		X CDD +		X HDD +		X 2nd Variable +	

Table 16. Post Regression Accuracy Metrics

Utility	R^2	NMBE	CV(RSME)
Electricity			

Post Non-Routine Events

Describe any NREs with significant impacts on energy usage, if they are recurring or one-time. Describe how the regression calculations were corrected or isolated from the event. Potential corrections include removal of data during short-term NREs, or calculated adjustments. Describe any calculated NRE adjustments, including data and assumptions used. Calculated NRE

adjustments must follow Statewide Custom Calculation Guidelines.

Results

Using the baseline (pre-installation) regression equation, normalize the baseline energy use with the normal weather data and post-implementation period secondary independent variable data.

Add any recurring NREs identified at the baseline; the result is the counterfactual baseline. *Compare with the normalized post energy use.*

Table 17. Normalized Counterfactual Baseline

Month	Normalized Counterfactual Baseline kWh (a)	Recurring Baseline NRE Adjustment kWh (b)	Net Normalized Counterfactual kWh (a+b)
January			
February			
March			
April			
May			
June			
July			
August			
September			
October			
November			
December			
Totals			
Average Demand During DEER* Peak Demand Hours	**Normalized Counterfactual Baseline Peak kW**	**Recurring Baseline NRE Adjustment Peak kW**	**Net Normalized Counterfactual Baseline Peak kW**

*Database of Energy Efficiency Resources

Document the post-implementation energy and any monthly non-routine adjustments.

Table 18. Post Energy Use*

Month	Post kWh	Normalized Post kWh (a)	Post NRE Adjustment kWh (b)	Net Post kWh (a+b)
January				
February				
March				
April				
May				
June				
July				
August				
September				
October				
November				
December				
Totals				
Average Demand During DEER Peak Demand Hours	**Post Peak kW**	**Normalized Post Peak kW**	**Post NRE Adjustment Peak kW**	**Net Post Peak kW**

*Expand tables to 24-months for BRO measures.

Subtract post energy use from normalized baseline usage to verify the claimed savings.

Table 19. Post NMEC Savings

	Annual kWh	Peak kW
Counterfactual Baseline		
Post-Implementation		
M&V Period Savings		

1. Deemed Measure M&V Plan

Deemed measures will be evaluated and verified based on their associated Workpapers.

If deemed measures are part of an NMEC or Custom-Metered project, the savings will be reported as follows:

- If the project is predominantly composed of deemed measures, the project energy savings will be reported based on the deemed savings plus any non-deemed measure savings as calculated based on their measure-level sub metered energy data.

- If the project is predominantly compromised of non-deemed measures, the energy savings will be based on the metered data inclusive of any included deemed measure savings, and the deemed savings will be used to attribute the measure savings.

An example of the new data requirements for upstream and midstream programs is provided below:

- SiteID – A unique identifier for the installed location of the incentivized equipment
- EquipmentID - A unique identifier for each unit of incentivized equipment on the site
- Measure Size category – General size or capacity range specific to each measure type, for example HVAC equipment would be AHRI product type and size range
- Equipment manufacturer – Manufacturer of the incentivized equipment, e.g., Carrier, Trane, Nest, Philips, GE, etc.
- Equipment model number – Manufacturer number that can be used to lookup size, features, performance, etc. for the incentivized equipment
- Rated capacity – Actual size, capacity, load rating, etc. for the incentivized equipment
- Rated efficiency unit (EfficUnit) – The engineering unit basis for the efficiency or performance rating, e.g., Unit Energy Factor (UEF), thermal efficiency (TE), SEER (seasonal energy efficiency ratio)
- Rated efficiency (ref. EfficUnit) – Efficiency or performance rating value for the Rated efficiency unit basis
- Quantity per sales transaction, project, or site – Total units of incentivized equipment located at the site or project

2. Grid-Impacts for On-site Generation

Post Implementation: Describe any changes to on-site generation. Model total project level verified hourly energy savings against most recent 12-months utility interval data (prior to implementation), and adjust savings (if necessary), such that 100% of the claimed energy savings will result in IOU grid reduction.

3. Summary of Verified Savings and Calculation of Weighted Average Values

The approved (Ex-ante) savings for installed measures is presented in the following table (used to recalculate weighted average incentive rates). The resulting weighted average incentive rates incorporate the base incentive rate tier, realization rate, net-to-gross value, and discounted effective useful life values for each measure. The result is applied to the verified savings to calculate the claimed incentive.

The energy impacts for deemed measures included in NMEC or Custom projects will be reported using their associated Workpaper methodologies, and these impacts will be disaggregated from the NMEC or Custom impact

Table 20. Summary of Estimated (Ex-ante) and Verified Savings and Incentives for Installed Measures

Measure ID	Measure Name	Measure Type	kWh Savings	Peak kW Savings	Therm Savings	Effective Useful	Net Life-Cycle	Verified Eligible Cost ($)	Estimated Incentive[2] ($)

	Adjusted Weighted Average	Verified Savings	Calculated Customer

	Incentive Rate[5]		Incentive[2] ($)
Weighted Average Electricity Incentive Rate ($/First Year kWh Saved)[3]		*kWh/yr.*	
Weighted Average Electrical Demand Incentive Rate ($/Annual Peak kW Saved)[4]		*kW/yr.*	

[1]Indicate if above-code savings qualify for Premium Incentive Rate.

[2]Customer Incentive is calculated by multiplying the Adjusted Weighted Average Incentive Rates (for kWh and kW), by the Verified NMEC kWh and kW savings over the M&V period. Project incentive is capped at 50% of total eligible project cost.

[3]Weighted average kWh incentive rates account for individual installed measure realization rates, net-to-gross values, discounted effective useful life and incentive tiers, calculated to apply to project level verified NMEC savings.

4 Weighted average kW incentive rates account for different individual installed measure realization rates, net-to-gross values, and incentive tiers, calculated to apply to project level verified NMEC savings.

5. The weighted average kWh incentive rate is calculated by: Sum of Measure Ex Ante kWh Savings x Measure kWh Incentive) / Total Ex Ante kWh Savings

5. The weighted average kW incentive rate is calculated by: Sum of Measure Ex Ante kW Savings x Measure kW Incentive) / Total Ex Ante kW Savings