SAN MATEO COUNTY ENERGY WATCH

OFFICE OF SUSTAINABILITY
COUNTY OF SAN MATEO

# RICAPS

## Regionally Integrated Climate Action Planning Support

## Multi-city Working Group

## July 25, 2023

RICAPS technical assistance is available through the San Mateo County Energy Watch program, which is funded by California utility customers, administered by Pacific Gas and Electric Company (PG&E) under the auspices of the California Public Utilities Commission and with matching funds provided by C/CAG and additional funding provided by Peninsula Clean Energy.

# Agenda:Leading by Example: Municipal Electrification

**1:30-1:35: Welcome** – Avana Andrade, Office of Sustainability (OOS)

**1:35-1:50: Announcements**

- Feedback from RICAPS from BAAQMD's EPA Grant Survey - Abby Young, BAAQMD
- Newly approved public programs that BayREN will be rolling out in 2024 (Karen Kristiansson, ABAG, MTC)
- Invite a friend! Merging Facilities Working Group and RICAPS in August (Avana Andrade, OOS)
- Regional Resilience Planning and Implementation Grant Program (Ori Paz, Menlo Park)

**1:45-2:05: Jurisdiction Peer-to-Peer Share Out** – all-jurisdictions

- Implementing Climate Actions Through Planning Applications (Daisy Quan, OOS)
- Highlight- All-electric Aquatic Center at Orange Park, South San Francisco (Philip Vitale, Capital Projects)

**2:05-2:35: How Can Cities Use the Capital Improvement Plan (CIP) to Electrify?**

- **Part 1:** Planning for Municipal Electrification with the CIP Overview; Ryan Gardner, Rincon Consultants:
- **Part 2:** Tracking Down Opportunities to Electrify Across San Mateo County CIPS (Tim Mensalvas and Farhad Farahmand, TRC)
- **Part 3:** Example of Leadership in Utilizing CIP for Electrification Planning: East Palo Alto Government Facilities, Sunali Yatagama, Energy Program Manager, County of San Mateo

**2:35-2:55: How do Cities get money, resources for electrification? PCE; Willdan, Energy Watch, BayREN:** *Landscape of existing funding & support opportunities for municipal all-electric retrofits*

- *Willdan GK-12 Program - Lou Jacobson*
- *BayREN Municipal ZNE Program - Karen Kristiansson*
- *PCE Electrification Assistance Program:*
- *EV Ready Supports for Muni Buildings (PCE)*

**2:55-3:00: Survey and Closing**

# Announcements

# Feedback from RICAPS BAAQMD EPA Grant Survey

*Abby Young, BAAQMD*

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

# EPA's Climate Pollution Reduction Grant Program's Planning Grant

## San Francisco-Oakland-Berkeley MSA

Abby Young
ayoung@baaqmd.gov

# USEPA Climate Pollution Reduction Grant Program

## Funding for Climate Planning

- Metropolitan Statistical Areas get $1 million for regional planning effort
- Alameda, Contra Costa, Marin, San Francisco and San Mateo counties

## Funding for Project Implementation

- Nationally-competitive pot of **$4.6 billion**
- For projects to implement measures in the plan
- Projects must benefit low-income, disadvantaged (“frontline”) communities

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# The Planning Process

## Phase 1: Priority Climate Action Plan (due Mar 1, 2024)

- Targeted, narrative Plan focusing on 1-2 priority sectors;
- **Short list of high-priority, near-term GHG reduction measures;**
- **High level benefits analysis for frontline communities**;
- Quantified GHG reductions, funding availability analysis

## Phase 2: Comprehensive Climate Action Plan (due Sept 2025)

- GHG inventory, projections and targets covering all sectors;
- Detailed benefits analysis for frontline communities;
- Quantified GHG and co-pollutant reductions for entire geographic scope;
- Funding availability analysis;
- Workforce analysis

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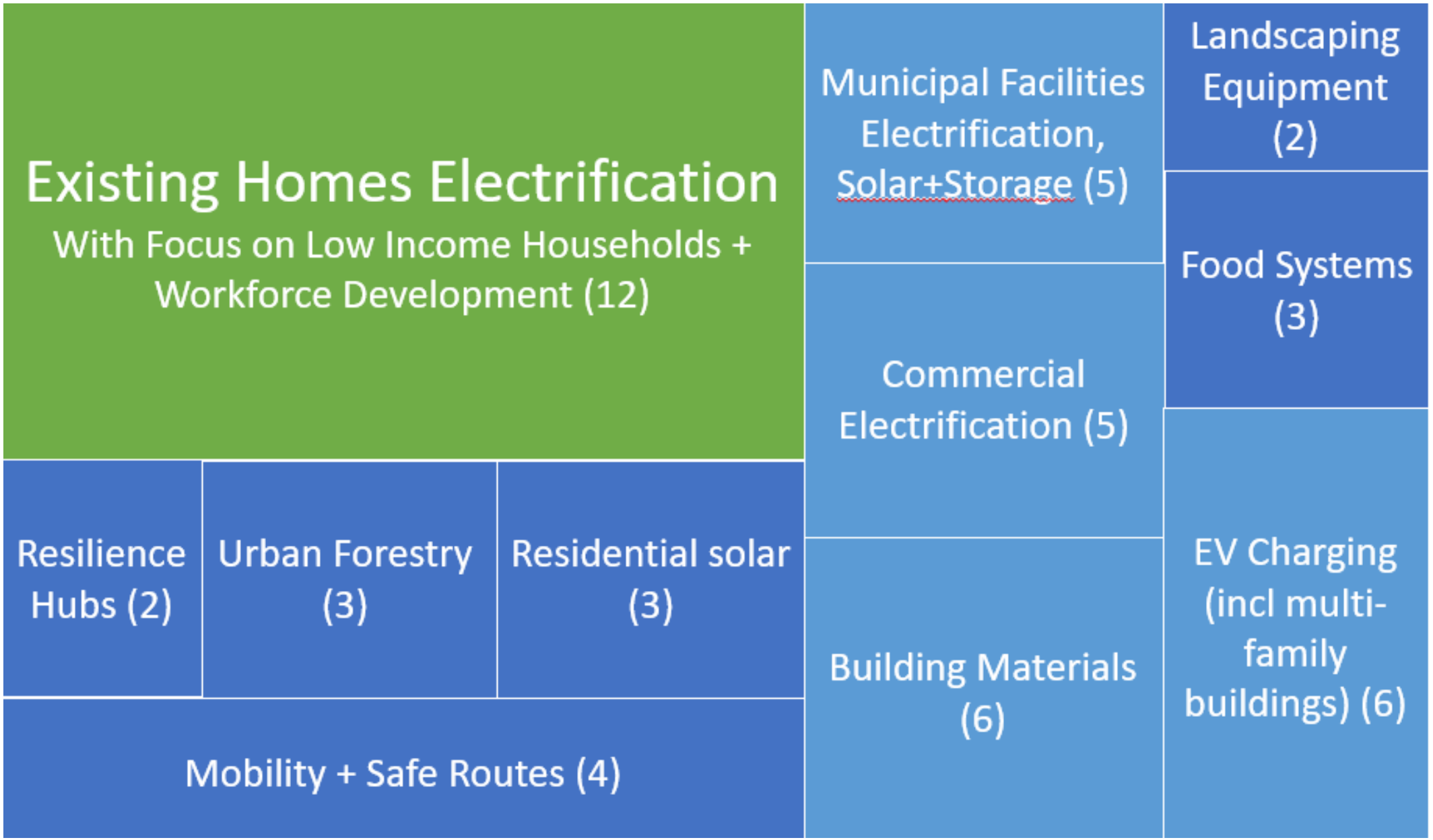
# Results of Local Government Survey



# Measure Evaluation Criteria (Summer 2023)

**From EPA (June 2023):**

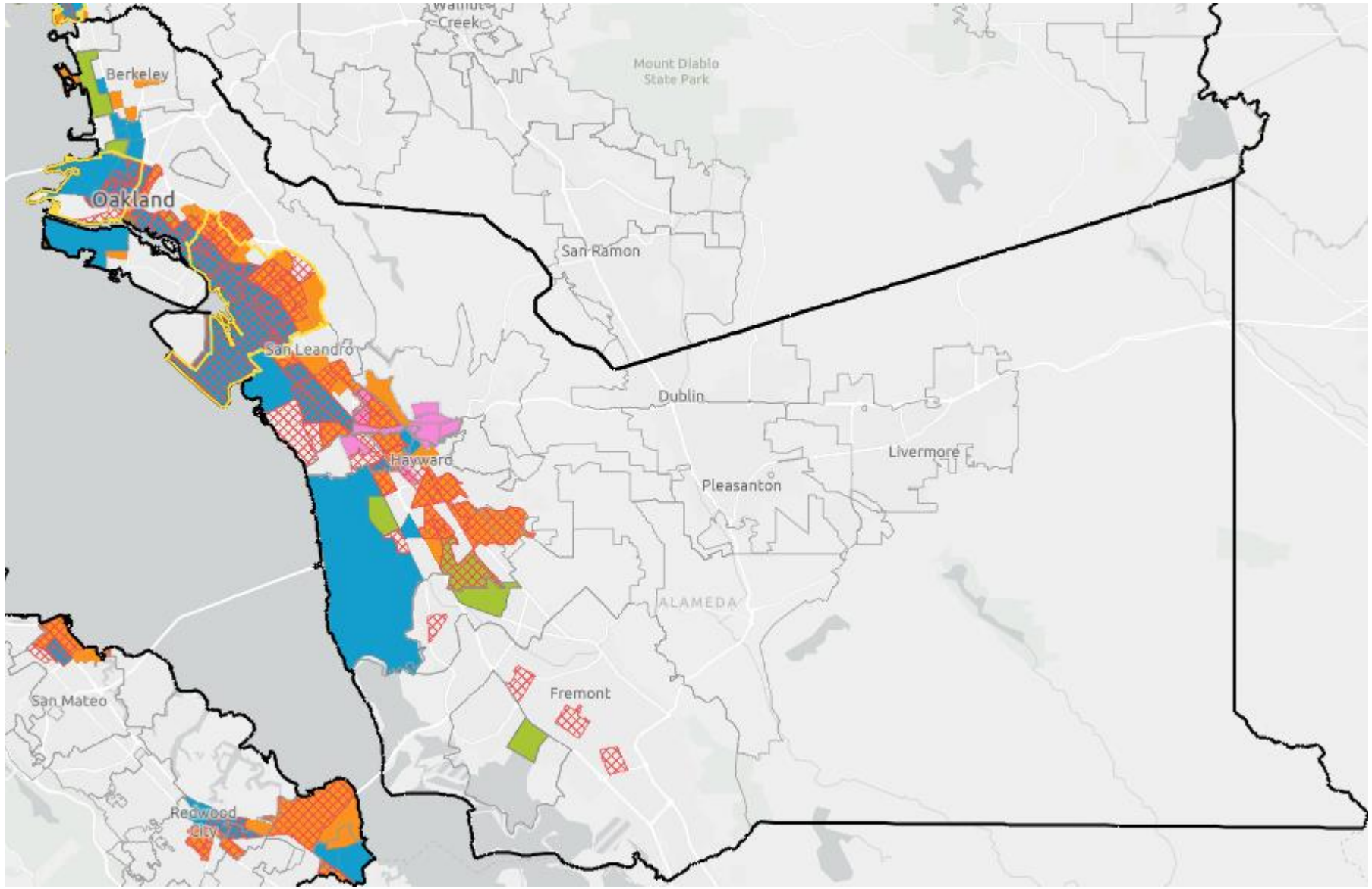
- Significant GHG emissions reductions
- Benefit frontline communities

**Other criteria:**

- Regionally applicable
- Funding gaps
- Local government interest and champions

Bay Area Air Quality Management District

# CPRG Frontline Communities Map




Climate and Economic Justice Screening Tool (CEJST) Identified as Disadvantaged

Census Tract

BAAQMD Overburdened Communities (Top 30% CalEnviroScreen 4.0 Scores)

Census Tract

AB 617 Community Emissions Reduction Plan (CERP)

Community Boundary

SB 535 Disadvantaged Communities (DACs)

Census Tract

MTC Equity Priority Communities

Census Tract

Local Designations

DRAFT Alameda County EJ Priority Community 5-5-2023 (SB 1000)

Census Tract

DRAFT Oakland EJ Communities (SB 1000)

Census Tract

# Building Upon Previous Community Engagement

## Synthesis and summary of ongoing and completed community engagement efforts

- Build upon efforts from recent CAPs, GP updates, housing/EJ elements, etc. to
  - Determine frontline community priorities and concerns
  - Develop informed criteria for prioritizing projects for funding
  - Inform the scope of the frontline communities benefits analysis
- Collaborate with external organizations to provide feedback and help develop criteria based on findings

## Share input from your efforts to ensure your communities' perspectives inform plan development

- In response to the survey (or email us or set up a conversation)

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# We Want to Hear From You

## Summer 2023 Surveys:

## Suggestions on Measures to Include in PCAP

- Near-term GHG reduction ideas - regional in nature and/or can be scaled regionally
- Success stories that can be replicated and/or expanded
- Evaluation of ideas against key criteria (described in form) to identify draft PCAP measures

## Results of Recent Community Engagement

- Input from your community engagement efforts to ensure your communities' perspectives inform plan development

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BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT

# Thank you!

*ayoung@baaqmd.gov*

# BayREN's New Public Programs

## Targeted Decarbonization Services

- Decarbonization Showcase
- Decarbonization Education and Financing

## Integrated Energy Services

- Energy Concierge
- Energy Roadmapping

# What to Expect

**This fall**, we will:

- Hire staff and start to find consultants
- Start coordinating with Energy Watch, RICAPS, and others

**In the spring**:

- Services will roll out!
- Look for opportunities to apply for the Decarbonization Showcase and participate in other activities

BAYREN

# Regional Resilience Planning and Implementation Grant Program (CA Office of Planning and Research)

*Ori Paz, Menlo Park*

# Jurisdiction Peer-to-Peer Shareout

*Peer-to-peer Shareout, SMC Office of Sustainability*

# Implementing Climate Actions through Planning Applications

- We are creating a required climate action form for a wide range of planning applications
- The form includes voluntary climate actions that the applicant can add onto their project
- Climate actions are based on our Community Climate Action Plan strategies
- Opportunity to connect resources to the right people at an ideal time
- Data from the forms will help improve and expand what OOS can do at this critical intervention point for climate action

# Implementing Climate Actions through Planning Applications

## Project Development Actions

| Category | Strategy | Action | Resource |
|---|---|---|---|
| Increase energy efficiency and transition to clean energy | Energy Efficiency | For Remodels and Additions: Conduct an energy audit to identify energy efficiency opportunities of remaining building areas | Residents: BayREN Home Energy Score |
| | | | HomeIntel's Smart Audit |
| | Energy Efficiency | For Small Businesses: Conduct County benchmarking and/or energy audit to identify energy efficiency opportunities of remaining building areas | Small Businesses: San Mateo County Energy Watch Benchmarking energy analysis |
| | Energy Efficiency | Improve building energy efficiency (e.g. insulation, windows, door seals, airflow, façade materials) of building areas to remain | BayREN energy upgrades rebates & financing |
| | Electrification in existing buildings | For Remodels and Additions: prewire for electrification and/or upgrade electric panels | Dept. of Planning and Building |
| | Electrification in existing buildings | For Remodels and Additions: Electrify appliances (e.g. water heaters, furnaces, space heaters, stoves, and dryers) and eliminate natural gas appliances in remaining building areas. Indicate how many decomissioned and new appliances by type | Peninsula Clean Energy residential programs and rebates |
| | Renewable Energy Storage | Install energy storage technology (e.g. solar or home battery storage system). Show system on project plans submitted for the Planning Application. | Power On Peninsula Program |
| | Cool Roofs | Exceed cool roof efficiency standards determined by the California Energy Commission for Climate Zone 11 (zoning restrictions may apply in rural, scenic, or design review areas). | Cool Roof: Codes and Standards |
| | | | Dept. of Planning and Building |
| Encourage urban density, electric vehicles, biking, and walking | Bicycle Parking | Exceed existing bike parking requirements | Dept. of Planning and Building |
| | EV Charging Stations | Install EV charging station(s); For Multi-Family Residential/Institutional/Commercial Projects, stations should allow for shared or public charging | Peninsula Clean Energy EV Ready Program |
| | Complete Streets | Incorporate bicycle and pedestrian-friendly design (e.g. green spaces, traffic calming, complete streets, or pavement-to-parks) and/or integrate into existing networks. Show on project plans submitted for the Planning Permit Application. | Dept. of Planning and Building |
| | Mixed-Use Development | For Multi-Family Residential/Commercial/Institutional Projects: Incorporates mixed-used development | Dept. of Planning and Building |
| | Affordable Housing Near Transportation | For Multi-Family Residential Projects: Incorporates affordable housing near transportation | Dept. of Planning and Building |
| Reduce Project development waste | Construction | If a Waste Management Plan is required, exceed landfill diversion requirements; If a Waste Management Plan is not required, contact the Office of Sustainability for information on where to reuse and recycle the materials | Construction & Demolition Resources |
| | Demolition | For Demolitions, implement Deconstruction as an environmental alternative | Construction & Demolition Resources |
| Reduce waste in landscaping | Carbon Sequestration | For landscape projects subject to the Water Efficient Landscape Ordinance (WELO), exceed WELO standards; For landscaping projects under 500 square feet, reduce waste in landscaping (e.g. incorporate compost, install climate adapted plants, apply mulch, eliminate turf) | Water Efficient Landscape Ordinance (WELO) |

## Project Operations Actions

| | Strategy | Action | Resource |
|---|---|---|---|
| | Reusable packaging | For Food Operations: Exceed requirements of the Food Service Ware Ordinance (e.g. use reusable instead of disposable foodware and encourage consumers to bring their own reusables). Show on project plans or a Business Operations Plan submitted for the Building Permit Application. | Foodware Aware Program |
| | San Mateo County Green Business Program | For Small and Medium Businesses, participate in the Green Business Program to establish a GHG reduction goal. Applicant shall demonstrate program participation prior to final approval of the building permit. | Green Business Program |
| | Edible Food Recovery Program | For Food Operations, enter the Edible Food Recovery Program to reduce food waste. Applicant shall demonstrate program participation prior to final approval of the building permit. | Edible Food Recovery Program |

# Implementing Climate Actions through Planning Applications

COUNTY OF SAN MATEO PLANNING AND BUILDING

OFFICE OF SUSTAINABILITY COUNTY OF SAN MATEO

## Climate Beneficial Actions by Project Developers Questionnaire

Outlined below are Climate Beneficial Actions that homeowners, businesses, and developers can pursue during and after a development project. Climate actions often result in project cost savings long-term and higher resiliency to climate events. Climate actions also support our community's overall ability to adapt to climate change. The actions are aligned with the Community Climate Action Plan (CCAP), San Mateo County's mandate to address the harms of climate change, reduce greenhouse gas emissions, and become carbon neutral by 2040.

The County requires applicants to complete this checklist to identify additional climate actions for projects subject to the California Environmental Quality Act to offset project-related Greenhouse Gas (GHG) Emissions that contribute to climate change. Except where specified, Planning staff will confirm that the checklist is completed with actions identified by the applicant at the time of building permit application and will confirm action implementation prior to the final approval of the project's building permit.

Resources are available to support climate action and highlighted below. The County's Office of Sustainability offers programs and referrals for incentives to support climate action. Information about sustainability resources can be found on the Office's website and staff can be reached by emailing or calling 1 (888) 442-2666.

The Department of Planning and Building can be reached by emailing or calling the Planning Counter (650) 363-1825.

**If applicable, complete this questionnaire by answering which climate actions will be incorporated into the project.**

### Increase Energy Efficiency and Transition to Clean Energy

**1.) For Remodels and Additions: Conduct an energy audit to identify energy efficiency opportunities for remaining building areas.**

**Resources:**

- **Residents: BayREN Home Energy Score**
- **HomeIntel's Smart Audit**

**Will you incorporate this action?**

- ○ Incorporated into project
- ○ Not incorporated
- ○ N/A

**If incorporated into project, please provide a description of how the action will be taken. If details are included in the planning application, please also reference the plan page number.**

**2.) For Small Businesses: Conduct County benchmarking and/or energy audit to identify energy efficiency opportunities of remaining building areas.**

**Resources:**

- **Small Businesses: San Mateo County Energy Watch Benchmarking Energy Analysis**

**Will you incorporate this action?**

- ○ Incorporated into project
- ○ Not incorporated

# South San Francisco: All-Electric Aquatic Center at Orange Park

*Philip Vitale, Capital Projects*

# Part 1: Planning for Municipal Electrification with Capital Improvement Plans (CIP): Overview

*Ryan Gardner, Rincon Consultants*

| Funding Source | FY 2021–22 Adopted | FY 2022–23 Projected | FY 2023–26 Projected | Five Year Total |
|---|---|---|---|---|
| Bond | 364,100,594 | - | - | 364,100,594 |
| Departmental | 29,457,985 | 977,626 | 18,133,186 | 48,568,797 |
| Rental Facilities Service Charge Fee | 2,904,208 | 258,166 | - | 3,162,374 |
| General Fund | 137,811,407 | 155,582,543 | 135,293,636 | 428,687,586 |
| Grants/Donations | 2,849,095 | 4,245,000 | 100,000 | 7,194,095 |
| Measure K | 26,575,356 | 6,650,000 | 6,200,000 | 39,425,356 |
| Total | $563,698,645 | $167,713,335 | $159,726,822 | $891,138,802 |

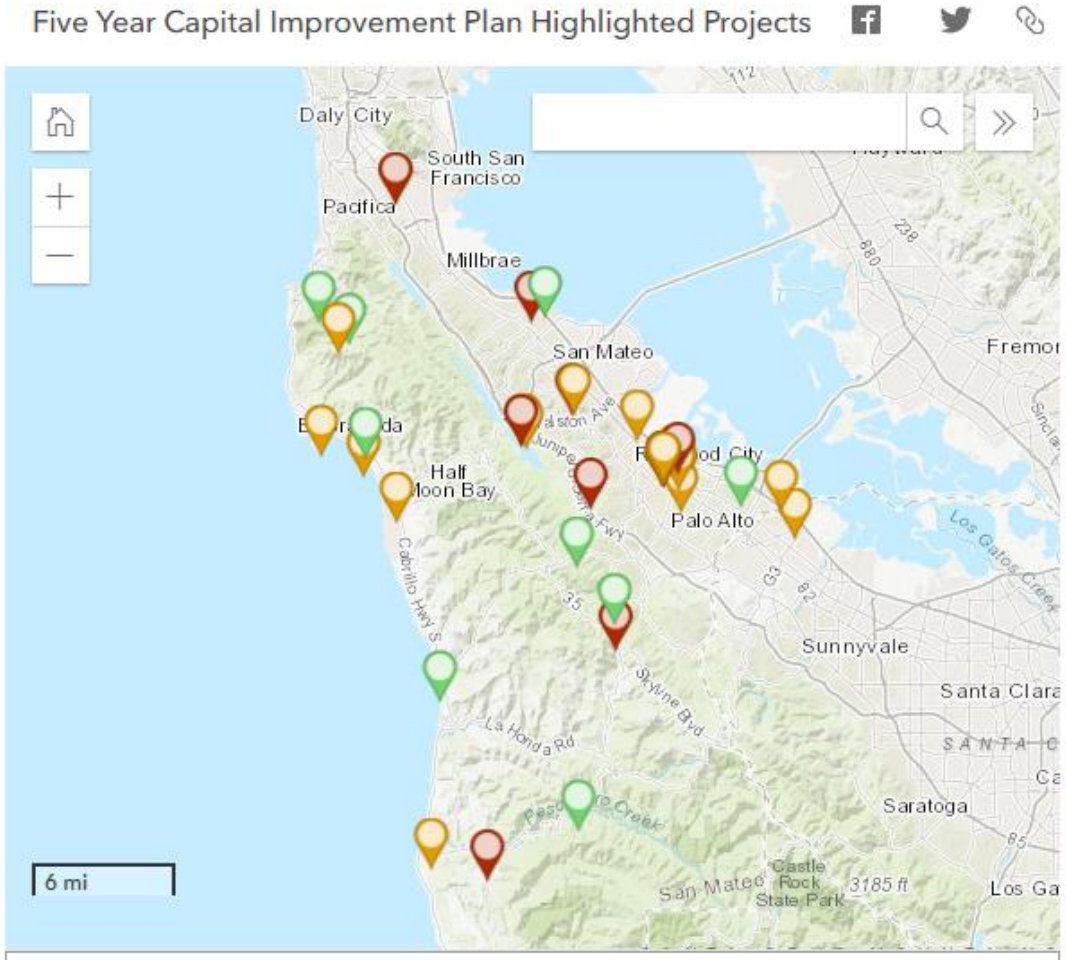
**Guiding question: How can local governments use the CIP as a tool to catch new gas infrastructure before its built and electrify publicly owned facilities?**

Opportunity for municipalities/ local gov to walk the walk and achieve climate goals with existing allocated investment.

***Example: County of San Mateo Capital Improvement Plan Budget- local government investment in facility upgrades could be a significant investment lever in building electrification***

# CIP Overview

- Capital projects = large scale, long-term investments that build, replace, or improve publicly-owned assets (ex. buildings, roads, sewer)
  - Must exceed cost threshold to be included in CIP (ex. Oakland, must be over 100k, HMB, must be over 30k (variable))
- Investment period requires appropriations over multiple fiscal years (5-year)
- Leverages multiple departments (ex. public works, parks) & funding sources
- Used in conjunction with County Budget




*Highlight- County of San Mateo 5-year CIP (2021-2026) projects*

# How can the CIP be used as a tool to electrify?

**Replacement/ upgrade/ construction of gas infrastructure:**

Any potential end-use of gas for space heating/cooling, water heating, cooking, etc.

- *New buildings*
- *HVAC*
- *Water Heating*
- *Kitchens*

AAMLO Preservation Of African American Collection & Energy Update

*Project Score: 103*

Systems including roof, HVAC, exterior terracotta, wood doors and windows, and interior finishes, provide recommendations for repair and replacement, and develop PS&E for Bid, Award and Construction.

*Highlight- City of Oakland Proposed 2-year budget project with HVAC component*

# Upcoming Projects


**Step 1:** Identify case study CIP projects to workshop

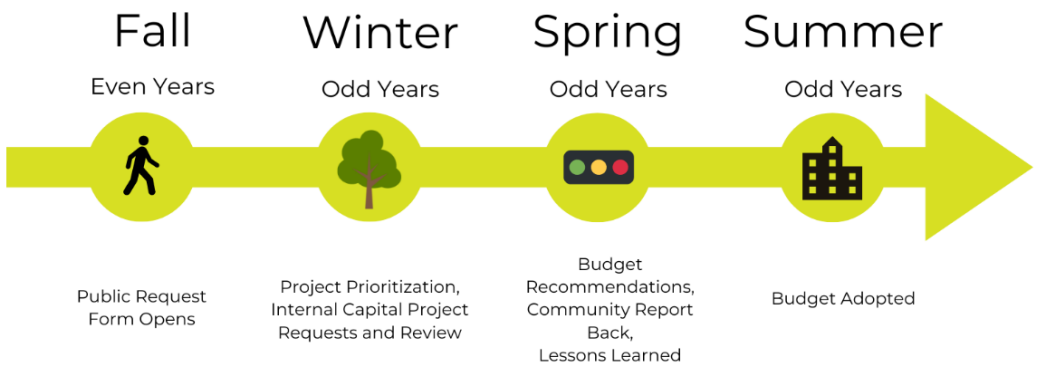
**Step 2:** Work with service providers (PG&E, PCE, BAYREN) to identify technical and economic support

**Step 3:** Develop framework/flow chart for addressing CIP projects that include gas

*PCE/TRC will be conducting a review of each cities CIP program to identify potential gas related projects*

# Questions to Explore

- When is the best time to engage/ intervene with CIP projects?
- How can sustainability staff work across departments to collaborate (ex. Public Works)
- Role of cross-county collaboration with shared infrastructure (ex. East Palo Alto example, shared facilities for smaller cities)




Above is the timeline for each 2-year cycle of the CIP, outlining how capital project requests made by community members become part of the CIP.

Example: Oakland Capital Improvement Program 2-year program cycle timeline

Note Oakland-specific project prioritization for equity, which assigns project points based on an equity score.

# CIP & Electrification Pt 2! Survey Request

**Familiarity with CIP process survey:**
https://forms.gle/wcDYhdT736qcSHUw8

Please take a couple of minutes to complete this 5-question survey

**Why?**

We'll be workshopping several San Mateo City's CIPS as part of the August workshop to identify areas for potential electrification

Ask: research internal CIP process and timeline, to apply workshop lessons to your own CIP

Note upcoming TRC/PCE technical assistance on this topic.

# Part 2: Tracking Down Opportunities to Electrify across San Mateo County CIPS

*Farhad Farahmand and Tim Mensalvas, TRC*

# Phase 1: Identifying Leads and Analysis

Peninsula Clean Energy and their consultants will perform the following:

1. Assemble all San Mateo County CIPs
2. Flag electrification opportunities
3. Characterize high-level complexity (simple → complex)

Examples:

- **Simple:** Packaged rooftop unit replacement
  - Same or similar footprint/technology
  - Heating-only applications are limited
  - Operational cost savings
- **Evaluate:** Water heater replacement
  - Location, electrical capacity, usage profile may pose challenges in some circumstances
  - Electric point-of-use may be a good application
- **Complex:** Boiler replacement
  - Near-certain physical constraints
  - High incremental costs

# Phase 2: Sharing Analysis with Cities

In late Aug / early Sept, we'll share the analysis with City staff to:

1. **Solicit Feedback**
   - Did we capture everything?
   - Is further research needed (i.e., interviews with Public Works)?
   - What questions remain about the projects?

1. **Initiate City-level Next Steps**
   - Should the project be Electrified now or Electrified later?

1. **Support engagement** for deeper Technical Assistance programs

( I.e. site visits / audits to develop incremental costs, payback, financing methods, and process flow)

   - BayREN Zero Net Energy and Carbon Program (and more)
   - PG&E Government and K-12 Energy Efficiency Program
   - California Energy Design Assistance (major renovations or new construction)

# Part 3: Example of leadership in using the CIP for electrification planning: East Palo Alto Government Facilities

*Sunali Yatagama, Energy Program Manger, County of San Mateo*

# How do Cities get money, resources for electrification? PCE; Willdan, Energy Watch, BayREN

*Landscape of existing funding & support for municipal electrification*

# PG&E Government & K-12 (GK12) Program

## Local Government Services

July 25th, 2023

WILLDAN

# GK-12 Presenter



**Lou Jacobson**
*Director*

707.273.2036
ljacobson@willdan.com

## Experience

- Member, City of Eureka Energy Committee
- Member, South Bay Union School District, Bond Citizen Oversight Committee
- Director of Fiscal Services, Eureka City Schools
- Director of Demand Side Management, Redwood Coast Energy Authority
- Board Member, Local Government Sustainable Energy Coalition (2018-2021)
- Member, California Energy Efficiency Coordinating Committee (2018-2021)
- Member, Rural and Hard to Reach Working Group, (2014-21), Co-Chair (2018-2019)

# GK-12 Program Overview




- Pacific Gas and Electric Company (PG&E) Service Territory (CA)
- Active PG&E electric and/or natural gas account
- **Local government**, Local Educational Facilities, and Federal government
- Three (3) Year Contract: 2021-2023
- Four (4) Year Contract Extension Currently in negotiation (2024-2027)

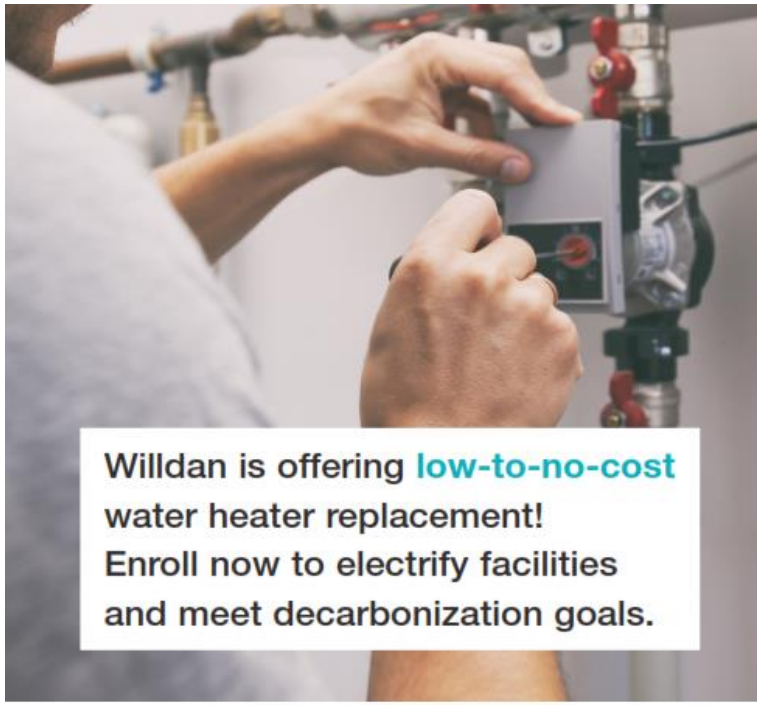
**200+ Comprehensive Measures**
Including high performance EE solutions, demand response, and more

**0% Interest Financing** through PG&E
We'll work with you to navigate On Bill Financing (OBF) and other options

**>$4.5 Million Incentives**
Offset cost of EE equipment and services

**Flexible Installation**
Use your preferred vendor, a Willdan-qualified installer, or self-install

# GK-12 Heat Pump Water Heater Electrification




## Program Eligibility

- PG&E gas and electric accounts are active.
- Natural gas is used for hot water heating.
- Existing unit is 30-80 gallons.*
- Agree to participate in a demand-response program.

*Custom replacement for larger units may be available

## Targeted Facilities

Limited Time Offer

For eligible government customers in PG&E's service territory.

- Community and Convention Centers
- Library/Museums/ Performing Arts Centers
- Community Fitness and Recreation Centers
- Airports and Transit Centers
- Corporate and Public Work Yards
- Police Departments
- Federal Buildings and Military Bases

## How it works

**Consult:** Meet with the Willdan team to determine if the program is a good fit for you.

**Enroll:** Willdan confirms your eligibility and provides enrollment documents.

**Send:** Share photos and system information.

**Assess:** Willdan assesses your project(s) and conducts on-site assessments as necessary.

**Propose:** Willdan presents the project scope and costs.

**Install:** Willdan provides turnkey installation services.

# 200+ Measures Available

## Lighting

- Interior/Exterior LED
- Lighting Controls

## Refrigeration

- Anti-Sweat Heat Controls
- Evaporator Fan ECM Motors

## Water Heating

- Hot water boilers
- Condensing hot water heaters

## Food Service

- Ovens – Combination, Conveyor, Convection
- Steamers
- Fryers
- Refrigerator & Freezers
- Electric Griddles
- Commercial Ice Machines
- Automatic Conveyor Broilers

## Other

- Faucet Aerators
- Pool covers, heaters
- Ozone laundry

## HVAC

### Unit Replacement (Upstream incentives not permitted)

- Efficient Chillers

### Space Heating Boilers

- Replacement
- Insulation
- Heat recovery

### Controls/Commissioning

- Chilled/Hot Water Reset
- Airflow/Hydronic Rebalance
- DCV/CO2 Sensor
- Zone Occupancy Controls

### Economizers

- Repair or Replace

### VFDs/VSDs on Motors

- Chilled/Hot Water Pumps
- Fan Motors
- Cooling Towers

# GK12 Project Funding Pathways

## Three program options to fund energy-saving projects

1

MOST POPULAR

### OBF Non-Incentive

- 0% interest financing for up to $4M
- Approved faster with less paperwork!
- More measures are available
- No out-of-pocket costs
- Repaid through PG&E utility bill
- Bill-neutral
- ≤ 10- year repayment plan

**QUICKEST PATHWAY**

2

### Incentive- Only

- Calculated by Willdan on a project-by-project basis
- Paid to customer or contractor (if preferred)
- Customer pays net cost when applicable.
- **Project must undergo PG&E incentive review process**

3

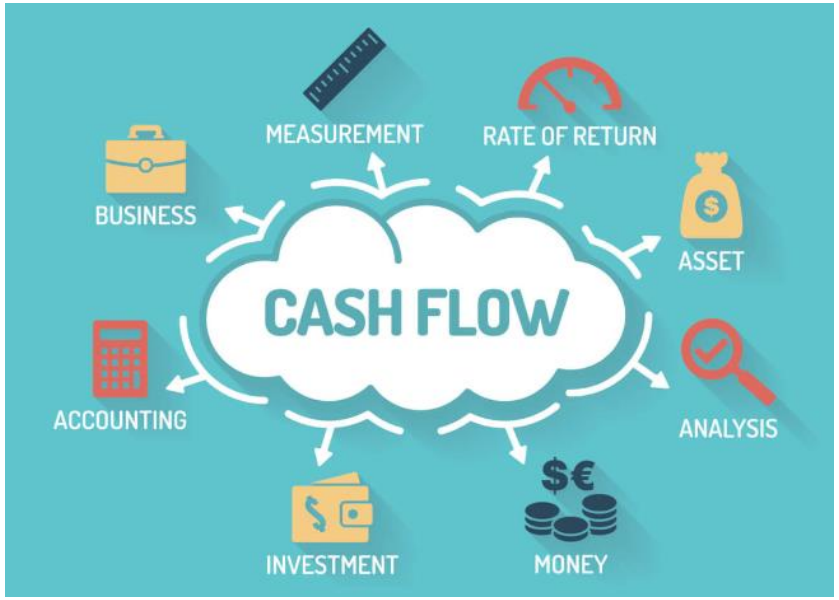
### Incentive + OBF

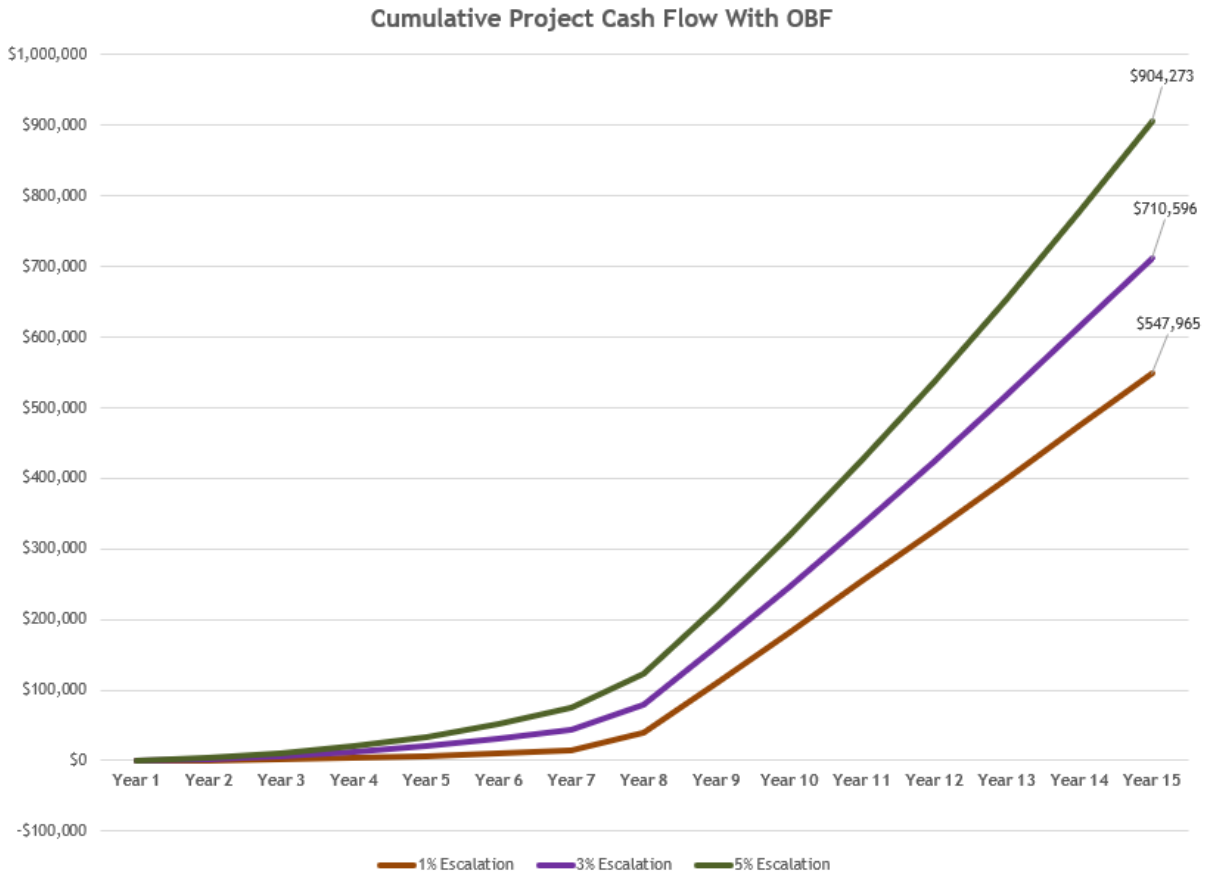
- 0% interest financing for up to $250k
- **Less measures are eligible**
- Repaid through PG&E utility bill
- No out-of-pocket costs
- Bill neutral
- **Project must undergo PG&E incentive review process**

**SLOWEST PATHWAY**

# Staying Cash Flow Positive: On-Bill Financing Non-Incentive

| PG&E On-Bill Financing | | | |
|---|---|---|---|
| **OBF Example** | | OBF Loan Limit<br>Loan Terms | $4,000,000<br>Up to 10 Years |
| **Project Details** | | | |
| Gross Project Cost | $ 500,000.00 | Loan Amount | $500,000.00 |
| Incentive | $0 | Annual Interest Rate | 0.00% |
| OBF Buy Down | $0 | Loan Period in Years | 7.69 |
| Annual Bill Savings | $65,000.00 | Number of Payments | 92 |
| Start Date of Loan | 11/1/2022 | Fixed Monthly Payment | $5,416.67 |
| Net Implementation Cost | $ 500,000.00 | Out of Pocket Costs | $0.00 |
| Monthly Bill Savings | $5,416.67 | | |



# How the Program Works

1

**ENROLL**

Confirm basic details, and we determine your eligibility.

Engage with San Mateo EW

2

**AUDIT**

An audit and technical assistance, find the best solutions for your facility

Aligned services to available measures

3

**INSTALL**

Use your own contractor, our turnkey option, or Do-It-Yourself

Turn-Key, Internal Procurement, or Forced Account Labor

4

**START SAVING**

With upgrades finished, we make sure you see energy savings and receive your incentive

Measurable Impacts

# Q&A

**For more information, contact:**


**Lou Jacobson**
*Director*
707.273.2036
LJacobson@willdan.com

BAYREN

Local Governments Empowering Our Communities

# Zero Net Energy/Zero Net Carbon Technical Assistance Program

July 25, 2023

# Municipal Zero Net Energy / Zero Net Carbon Technical Assistance

Provides FREE engineering technical assistance for municipal projects targeting Zero Net Carbon or Zero Net Energy through

Energy Efficiency

Renewable Energy

Building Electrification

**Services include**:

- Portfolio Review
- Engineering
- Cost Estimating
- Policy Threshold Analysis

BAYREN

# Participation

Projects should:

- Have a goal of being Zero Net Energy or Zero Carbon
- Expect to implement at least some measures within three years

**Process Overview:**

- Initial conversation and scope of work
- Energy data provided & analyzed
- Site visit
- Report developed
- Report delivery and discussion
- Feedback

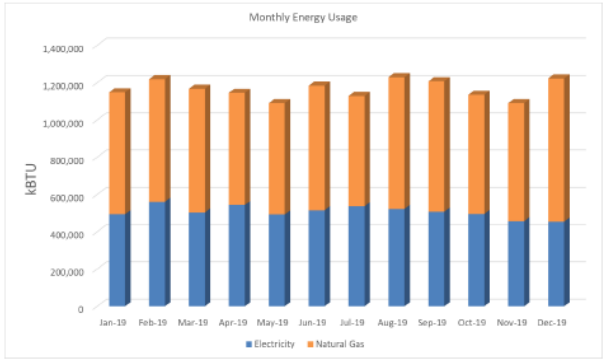
BAYREN

# The report includes:

## Energy Use Analysis

## Identification of Measures and Estimates of Cost and Impacts

### FACILITY ENERGY USE

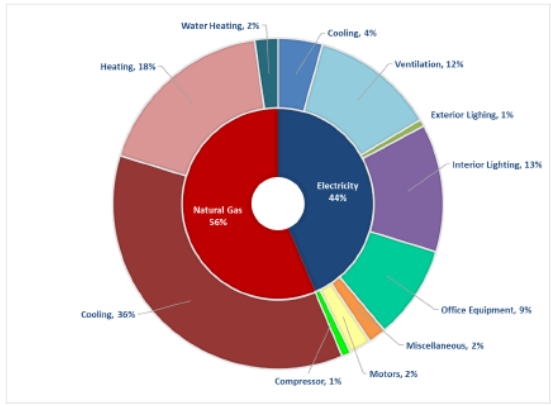



Since the building was sparsely occupied almost all of 2020, we analyzed monthly energy use data from 2019. Annual energy use for the building was 1,784,000 kWh of electricity and 78,790 therms of natural gas with a total cost of $432,000 for the year.

As seen in the chart, the electricity energy consumption remains quite stable throughout the year. Natural gas usage is unusually constant throughout the year, likely because of the use of an absorption chiller for cooling.

*Note: The chart above converts the electricity and gas usage into common units of kBTU.*

### CURRENT ENERGY USE BREAKDOWN




The chart to the left shows the estimated energy use breakdown for the building, based on analysis of energy bills and typical benchmark energy use from the CEUS dataset. The highest energy users at the facility are the absorption chiller (cooling), heating hot water boiler, ventilation, and interior lighting.

Apart from the absorption chiller in the penthouse, the building uses packaged heatpump units to cool certain spaces on the first floor. These packaged units use electricity; hence cooling is called out twice in the chart above.

The natural gas-fired boiler, domestic water heater, and the absorption chiller consume well over half of all

### ENERGY EFFICIENCY MEASURES

Install Interior LED Light Fixtures and Lighting Control System

Interior lighting is one of the biggest end-uses at the building. On two of the five floors (3rd and 4th floors) existing light fixtures have been retrofitted with LEDs and networked lighting controls have been added. The rest of the building still uses ceiling mount two-lamp, linear fluorescent light fixtures in most parts. Some of the common areas on these individual floors have 4-inch recessed light fixtures that use compact fluorescent lamps. The building automation system (BAS) sweeps lights off at the end of the day. Lighting in most of the open offices, conference rooms, and common areas can be controlled using wall switches. Some private offices use wall-switch



### ENERGY SAVINGS SUMMARY TABLE

The following table outlines approximate energy and energy cost savings, rough order of magnitude (ROM) installation costs, and simple payback of the proposed measures.

| Measure Number | Measure Description | Annual Energy & Cost Savings | | | | | | Financial Metrics | |
|---|---|---|---|---|---|---|---|---|---|
| | | Demand Savings (kW) | Electricity Savings (kWh/yr) | Gas Savings (therms/yr) | Total Energy Savings (kWh equivalent/yr) | Total Cost Savings | $CO_2$ Savings (lbs./yr) | ROM Measure Cost | Simple Payback |
| EEM-1 | Install Interior LED Fixtures and Lighting Control System | 54.0 | 190,000 | - | 190,000 | $ 35,000 | 78,000 | $ 570,000 | 16 |
| EEM-2 | Install Hi-Efficiency Conventional Chiller | (132.2) | (199,000) | 50,000 | 1,266,000 | $ 29,000 | 503,000 | $ 750,000 | 26 |
| EEM-3 | Replace Existing Gas Fired Heating Hot Water Boiler with Electric Heat Pump[1] | - | (169,000) | 25,000 | 564,000 | $ 2,000 | 223,000 | $ 590,000 | 295 |
| EEM-4 | Install New Air Handlers and Direct Digital Controls to the Zone | - | 117,000 | - | 117,000 | $ 22,000 | 48,000 | $ 790,000 | 36 |
| EEM-5 | Install Heat Pump Water Heater for Domestic Use | - | (24,000) | 3,000 | 64,000 | $ (500) | 25,000 | $ 20,000 | N/A |
| EEM-6 | Install Double-Pane Windows and Film | - | 113,000 | - | 113,000 | $ 21,000 | 47,000 | $ 700,000 | 33 |
| | | (78.2) | 28,000 | 78,000 | 2,314,000 | $ 108,500 | 924,000 | $ 3,400,000 | 31 |

[1]Incremental cost of replacing existing boilers with an electric heat pumps. If the County decides to do a like for like replacement, a set of new boilers and integration into the new BAS will cost $320,000.

Note that since construction costs fluctuate with the economy, costs of raw materials and other factors, we

# The report includes:

## Estimate of Solar PV Potential & Fit with Demand

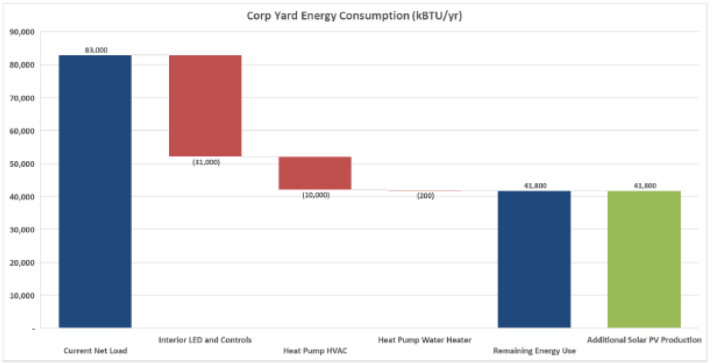
### ON-SITE RENEWABLE POTENTIAL

Solar Photovoltaic (PV) Potential

The building has large open spaces on the roof to install solar panels. As shown in the picture on the left, the County could install a PV system with 115 kW generating capacity, with a portion on the 5th floor roof and the remainder on the 1st floor roof. This roof capacity will only offset a portion of existing and future energy use; additional locations for renewables would need to be found for the building to be completely Zero Net Energy. Purchasing clean electricity may allow the building to be Zero Net Carbon, however.

| On-site Solar PV System Opportunities | | | |
|---|---|---|---|
| | Annual Production (kWh/yr) | System Size (kW) | Area Available (Sq. ft.) |
| Roof Capacity (Green Area) | 190,000 | 115 | 7,000 |
| Total | 190,000 | 115 kW | 7,000 |






Once the City resolves the issues with its existing solar PV system, the system may be able to offset the remaining energy use to achieve ZNE. If not, the building has enough space on the office building and warehouse rooftop to install additional solar panels to offset the remaining energy use.



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# For More Information

More information, resources, and sign-up on website

Or contact:

Karen Kristiansson
415-778-5260
kkristiansson@bayareametro.gov

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# AllElectricDesign.org

## Free Electrification Technical Assistance Program Overview

# What kind of electrification projects are eligible for free technical assistance?

SILICON VALLEY CLEAN ENERGY PENINSULA CLEAN ENERGY

Electrification Technical Assistance Program

## Eligible Project and System Types

- New construction or retrofits
- Market rate or affordable housing
- Residential or nonresidential occupancies
- Space heating, water heating, and other non-industrial appliances (e.g., cooking, clothes drying, and pool & spa heaters)
- Commercial kitchens
- Campus systems
- Electric vehicle charging infrastructure

## Eligible Participants

- Architects
- Builders
- Building owners
- Contractors
- Developers
- Design engineers
- Energy consultants
- Facility managers
- Residents

**Eligible Locations:** Technical assistance is aimed at serving San Mateo and Santa Clara counties, especially for construction in the PCE/SVCE service territories. Project teams don't necessarily operate to these specific boundaries, if there is a project that we feel we cannot serve immediately due to location, we can share their needs with our partners.

# Support Offerings

SILICON VALLEY CLEAN ENERGY | PENINSULA CLEAN ENERGY

Electrification Technical Assistance Program

## TYPES OF FREE SUPPORT AVAILABLE

- Recommended design approaches
- Design guide resources
- Energy model peer review
- Feasibility and performance analysis

**Assistance does not include stamping or signing drawings or pricing negotiations*

## ADDITIONAL SUPPORT FOR AFFORDABLE HOUSING

- Design charrette facilitation
- Owner Project Requirements (OPR) or Request for Proposal (RFP) language adjustments
- Cost-benefit analysis
- Measurement and verification plan scoping

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# Support Offerings - Examples

SILICON VALLEY CLEAN ENERGY PENINSULA CLEAN ENERGY

Electrification Technical Assistance Program

**Basic or In-depth Project Assistance**

Queries can be submitted via email or a phone call. For complex challenges, your request will be assigned to a team of subject matter experts for extended support.

**Developer Roundtables**

Online and in-person* discussions of general building electrification strategies, individual technology design, and successful implementation practices.

**Technical Trainings for Contractors**

Webinars, online videos, presentations, and in-person hands-on training* covering technology installation, maintenance, and sales. Opportunities to connect with equipment suppliers, professional organizations, and trade allies.

**Best Practice Guides**

Key considerations for specific technologies and building types, including case studies.

AllElectricDesign.org

# GET ELECTRIFICATION SUPPORT TODAY

Fill out our Interest Form online for technical assistance

www.AllElectricDesign.org

Hotline: 650-429-8910

# PCE EV Charging Support for Municipal Buildings

## EV Ready

- Public or employee charging
- Simple (Level 2) fleet charging

“I just need help planning for and paying for some EV chargers”

## Public EV Fleets

- Detailed/complex fleet charging and fleet transition planning

“I need help understanding exactly how to transition my entire fleet and what charging is necessary”

# PCE EV Charging Support for Municipal Buildings

## EV Ready

- Free tech. assistance (site designs) and funding
- Incentives for retrofits and new build projects
- Up to $5K per Level 2 charger
- $90K limit per site for employee/fleet charging, no limit for public access sites

https://www.peninsulacleanenergy.com/ev-ready/

## Public EV Fleets

- In-depth fleet replacement analysis and charging needs based on vehicle fleet
- Site designs for EV charging projects
- Limited incentive funding

https://www.peninsulacleanenergy.com/public-ev-fleets-program

# Survey and Closing