



OFFICE OF
SUSTAINABILITY
COUNTY OF SAN MATEO

RICAPS Monthly Meeting

September, 2023



Agenda

1:30-1:50: Welcome, Announcements, Share-Out



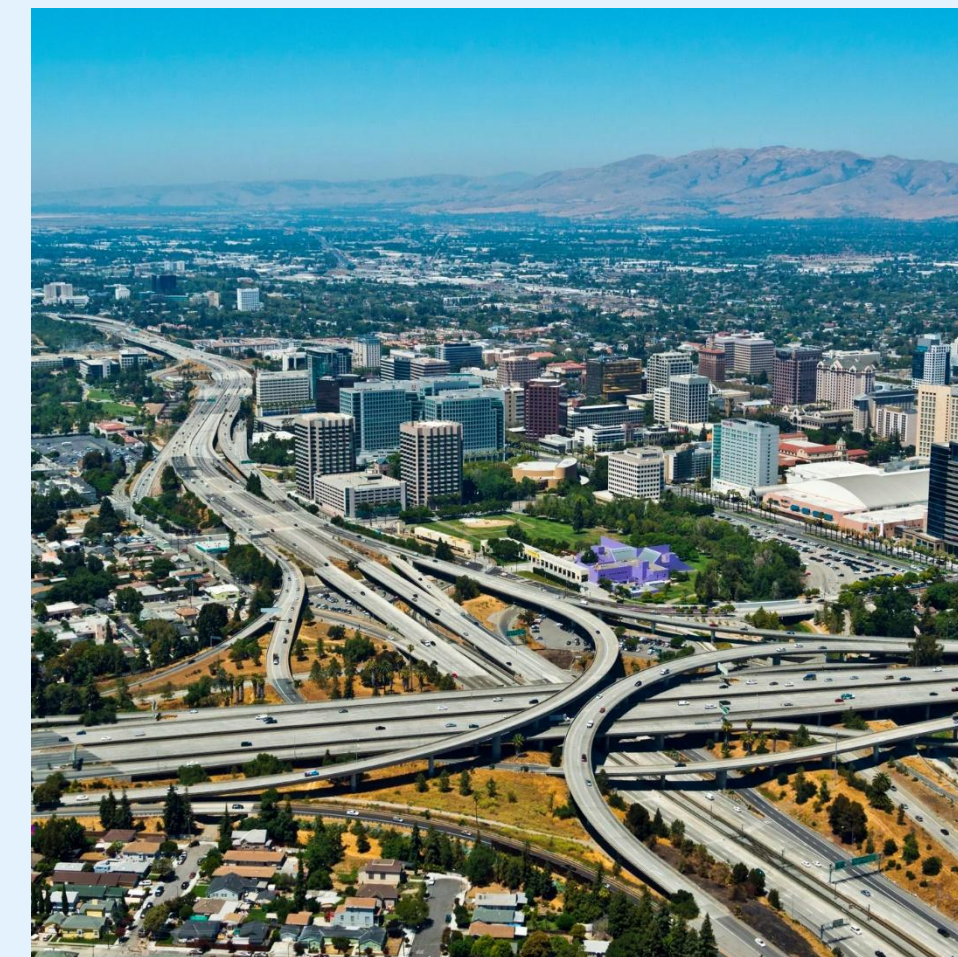
- 1:30-1:35: Welcome, Avana Andrade, Office of Sustainability (OOS)
- 1:35-1:40: Announcements
- 1:40-1:50: Jurisdiction Peer-to-peer shareout



1:50-2:40: Electrifying the CIP: Next Steps



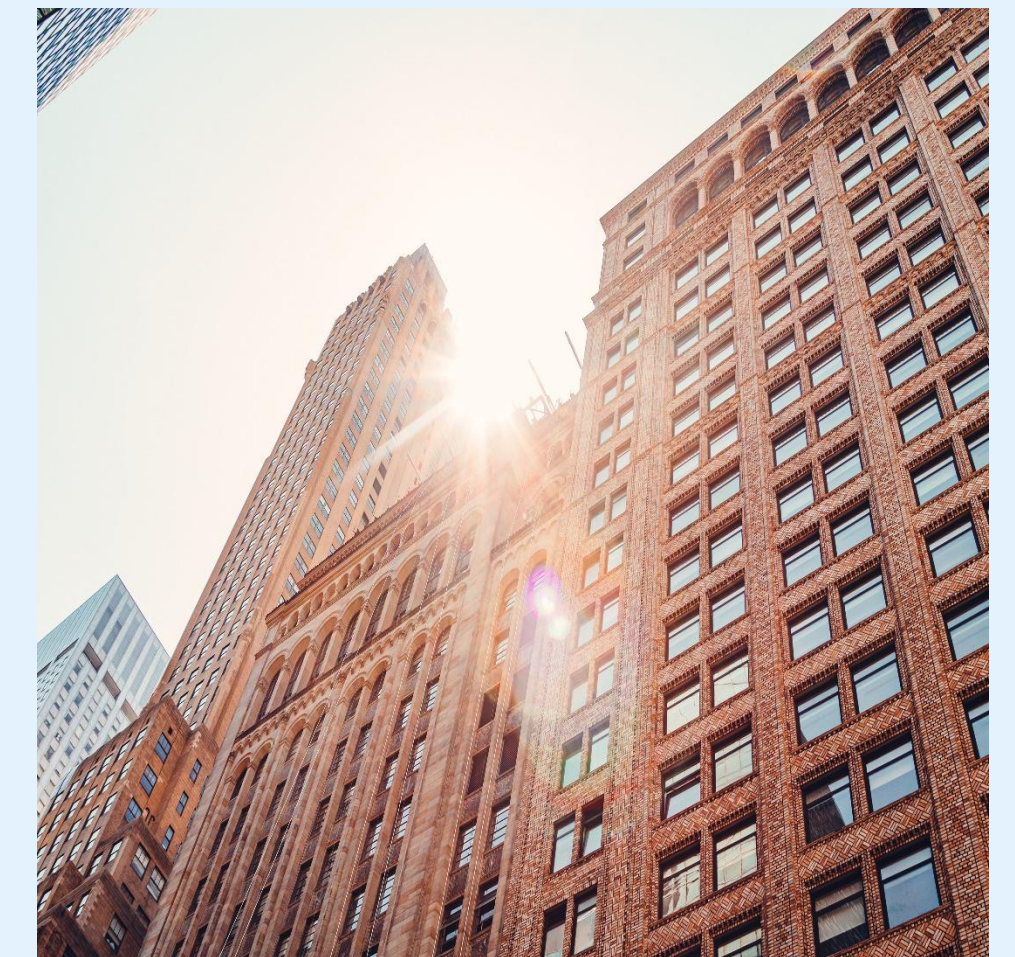
- 1:50-2:05: County-wide CIP Scan Results, Sean Armstrong, Redwood Energy
- 2:05-2:20: Methane Gas Catalogue Tool Next Steps + Implications for CIP Process, Lance Kincaid, Willdan
- 2:20-2:35: GK12 Funding, How Can Sustainability Staff Access Funding + custom Projects Overview, Lou Jacobson, Willdan
- 2:35-2:40: CIP Electrification Project Group Update, Ryan Gardner, Rincon Consultants



2:40-3:00: PCE Revolving Loan Fund to Support Electrification Projects



- 2:40-2:55: Announcing \$10 million revolving loan fund to support electrification Projects, Blake Herrschaft, PCE
- 2:55-3:00: Closing + Survey



1: Announcements

NEW

RICAPS Advisory Group



Jobs Posting:

**BayREN Single
Family Project
Manager**



**December 19th
Coastside *in-person*
meeting?**

Who could make it?



Federal Funding **Opportunity:**

**EV Charger Reliability &
Accessibility**

Accelerator:

**For local govs to “*repair
and replace existing, but
non-operational, EV
charging infrastructure*”**



2: Jurisdiction Peer-to-Peer Share-Out

3: Electrifying the CIP: Next Steps

RICAPS CIP Pilot Group Update + Key Takeaways

***Ryan Gardner, Rincon
Consultants***



CIP Electrification Pilot Group Next Steps



Half Moon Bay



Project: Commercial Kitchen Electrification

Timeline: Near completion

Project Stage: Funding for induction range, then project is finished



Burlingame



Project: Fire Station HVAC + Boilers

Timeline: Unknown

Project Stage: Information gathering + internal coordination to clarify project timelines



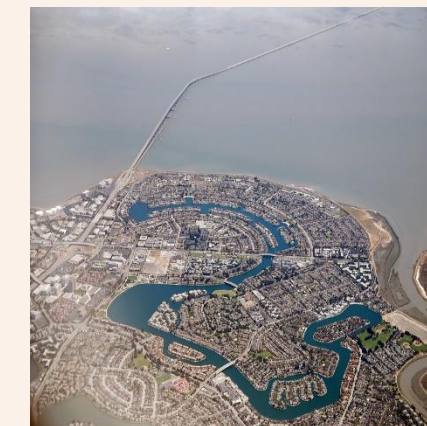
Redwood City



Project: Municipal Services Center + Roof Replacement

Timeline: Unknown (2027-2028?)

Project Stage: On pause- staffing turnover



Foster City



Project: Roof Replacement (City Hall + Fire Station)

Timeline: 2027-2028

Project Stage: Information gathering/ CAP update exploration for policy levers to encourage electrification

Project team updates (Rincon):

- GK12 funder meeting to clarify role of funding (+ Presentation at RICAPS);
- Collecting more resources on funding + technical support available for different building electrification end-uses to put into a guidance doc
- Model policy for electric preferred under internal review (drafted);





Key Takeaways



- Tools (e.g. methane gas catalog) can guide CIP project prioritization
- Timeline: CIP gets updated around the mid-year budget updates, with funding availability for budgeting in Jan-Feb
- Having a detailed understanding on project timeline is critical (requires coordination with public works)
- Making sure that each bid/RFP goes out with a requirement to collect costs for all-electric is critical (electric preferred policy can support)



CIP Pilot Group Next Steps



- Recurring monthly progress share-outs at RICAPs + continuation of tailored programming
- Upcoming Project work (potentials):
 - **Resource library for sustainability staff including:**
 - Upcoming Redwood Energy 21-Jurisdiction CIP scan + next steps (to be presented on shortly)
 - Model municipal electric first policy + staff report
 - Synthesized list of resources for funding and technical assistance for municipal building electrification, with explainers on how to access
 - Process diagram/ explainer of how to use the CIP to electrify
 - Excel sheet of existing examples of municipal electrification projects within San Mateo County with contact info + project specs and funding details

Feedback?

- Does this list of deliverables address some of the hurdles you've faced for municipal electrification?
- *Is there anything missing that you'd like to add?*



GK-12 Program: Daly City



GK-12 Program: Daly City

Program Information



- PG&E's Government K-12 (GK12) Energy Efficiency Program
- Supports and incentivizes local government and educational agencies to improve the energy efficiency of their buildings
- Free to participate

Eligible Measures



- Methane gas powered water heaters can be replaced with heat pump water heaters for little to no cost for the participating agency
- Other energy efficiency measures, including LED lighting and controls

Daly City



- 21 proposed water heater replacements
- 20 projects moving forward
- Total Proposed Project Cost: \$217,197
- Cost to Daly City: \$0
- Energy Savings:
 - 1.15 million kWh
 - 35,000 therms



County-wide CIP Assessment Results

AllElectricDesign.Org

***Provided by Peninsula Clean Energy and
Silicon Valley Clean Energy***



Technical Team: *Redwood Energy and TRC*



Overview of Research Plan and Resources Analyzed

Project	Electrification Alternative
Natural Gas Furnace Replacement	Ducted or Ductless Heat Pump, or VRF
Natural Gas Boiler Replacement	Hydronic Heat Pump System
Fleet Vehicle Replacements	Replace with Electric Vehicle or Truck
Construction, Heavy Vehicle Equipment Replacement	Electric Bobcat, Excavator, Fire Trucks, F550 Equivalent Truck
New Gas Stove in Kitchen	Electric Induction Range or Cooktop
Parking Lot Upgrades for City Buildings	City-owned +operated EV Charging
Parking Lot Upgrades for Public Lots	Third-party leased and operated EV Charging
Pump Station Generator Replacement	Solar PV + Battery Storage for Continuous Off-grid
Emergency Generator Replacement	Solar + Vehicle -to-Building EV Charger

York
YD 30-50 Ton Split Condensing Unit
(Outdoor Unit)



Lennox
Elite ELP Series
7.5 & 10 Ton HP
(Outdoor Unit)



Carrier
WeatherMaker 50TCQ
(17,24)

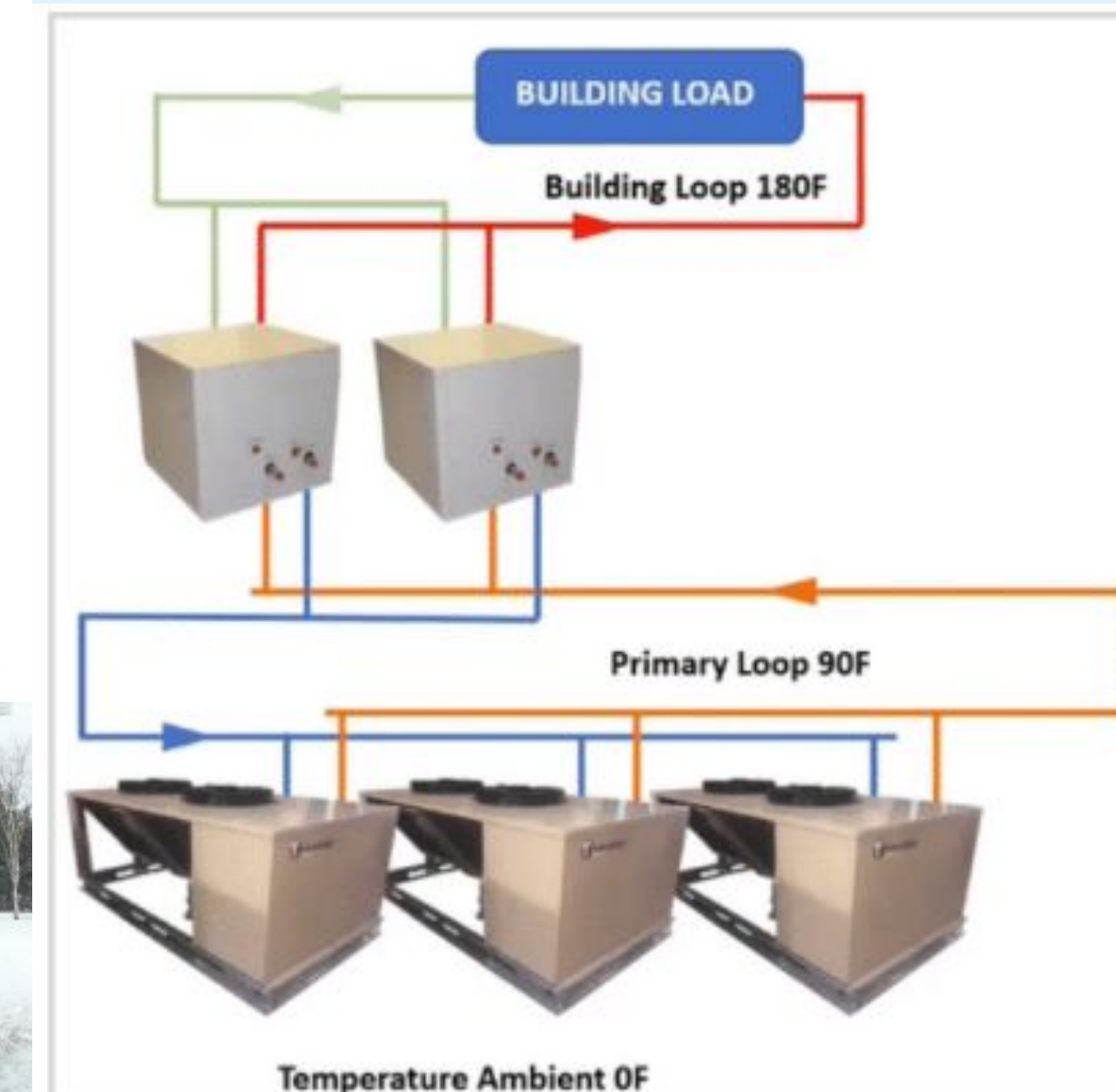


Figure 9: Transom cascading system to product 180F degrees at 0F outdoor air.



HVAC Example: Daly City Hall



- Rooftop HVAC Units - A Split A/C System
- Unclear if a boiler run heating system or a furnace system
- A boiler-only replacement is more difficult, but if there's A/C already - Heat Pump products slot right in
- Heat Pump HVAC is more cost effective than gas, and pay themselves off with energy savings when replaced early



Generators Example: Millbrae - Larkspur Pump Station

- Larkspur Pump Station is scheduled to have its generator replaced with funding of \$250,000 in FY 2024 and FY 2026.
- Also replacing the generator at City Hall Pump Station to meet current air district requirements





- **Vehicle to Building Chargers (V2B) - Use Fleet Vehicles as Deployable Energy Storage**

- Applicable to City Buildings, Police Stations, where fleet parks
- Less expensive than separate storage battery (just use fleet EV batteries occasionally)

- **Replace Pump Generators with a Solar PV installation and Battery**

- More expensive than V2B,
- Solar and batteries can not only save on gasoline cost but energy cost



	Wallbox ³⁸ Quasar2	dcbel ³⁹ r16	Nuvve ⁴⁰ PowerPort	BorgWarner ⁴¹
				
Vehicle-to-Home	X	X	X	X
Vehicle-to-Grid	X		X	X
Other Features	<ul style="list-style-type: none">• It charges and discharges through a CCS vehicle connector• Max power of 11.5 kW	<ul style="list-style-type: none">• Also operates as a solar inverter and home energy management system• CHAdeMO and CCS	<ul style="list-style-type: none">• 6-80 Amps of Single Phase AC charging• J1772/IEC 62196	<ul style="list-style-type: none">• Max power of 60 or 125 kW• Made for med/ heavy duty EVs with large batteries such as school buses



Next Steps and Q&A

- Cities to review packages and resources
- Reach out to Redwood Energy for any questions concerning the electrification opportunities or resources provided. POC: Dylan Anderson - dylan@redwoodenergy.net
- Rincon Consultants will provide additional staff report templates and tools to support decision making activities with staff. Activities such as:
 - Conducting a site visit and audit
 - Developing a project design and workflow
 - Analyzing incremental costs and payback timelines
 - Assessing financing methods and incentive opportunities

Free programs for further technical assistance:

- [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)



San Mateo County Regionally Integrated Climate Action Planning Suite (RICAPS)

Methane Gas Catalog Results Presentation

Next Steps + Implications for CIP Process

September 26, 2023



- **GOAL:** To help organizations in the County of San Mateo (Cities and the County itself) find and manage all the natural gas consuming systems within their facilities, with ultimate goal of electrification
- **SCOPE:** Identify and catalog all gas-powered equipment at targeted buildings to enable building owners to prioritize what equipment can be converted from gas-powered to new electric equipment
 - Supported Tool Development with Rincon
 - Trained student evaluators. Conducted and reviewed site evaluations
 - Catalogued 220+ pieces of equipment at 33 buildings/sites

FACILITIES

Atherton

- J Pavilion
- Main House
- Carriage
- Corporation Yard

Brisbane

- City Hall
- Community Center
- Child Center
- Mission Blue Center
- Marina
- Fire Department

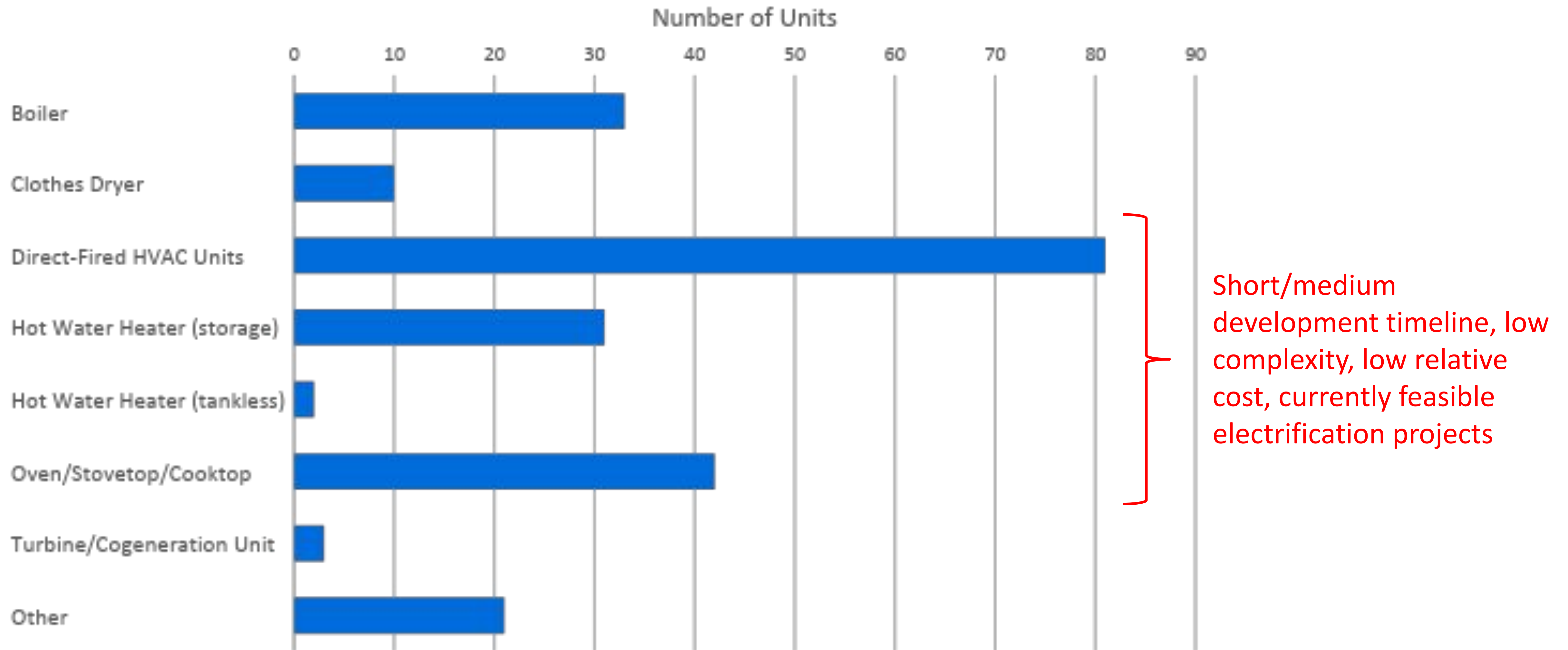
Half Moon Bay

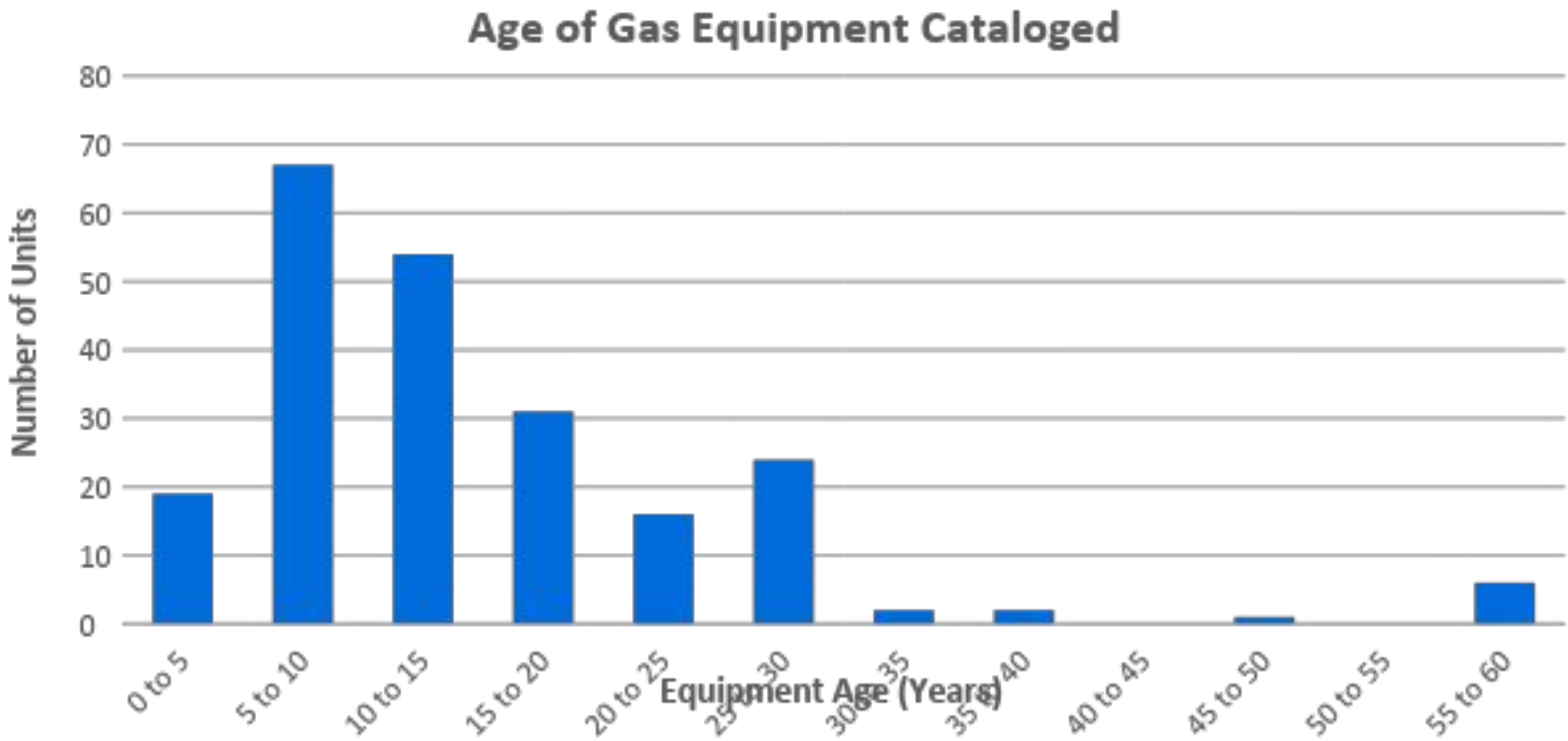
- Johnston House
- Senior Center
- City Hall
- Train Depot

County of San Mateo

- San Mateo Medical Center
- Fair Oaks Medical Center
- Youth Services Center
- Crime Lab
- Grant Yard
- HAS Records Center
- Maple St Jail
- Hall of Justice
- Central Library
- San Mateo Agricultural Center
- Coyote Point

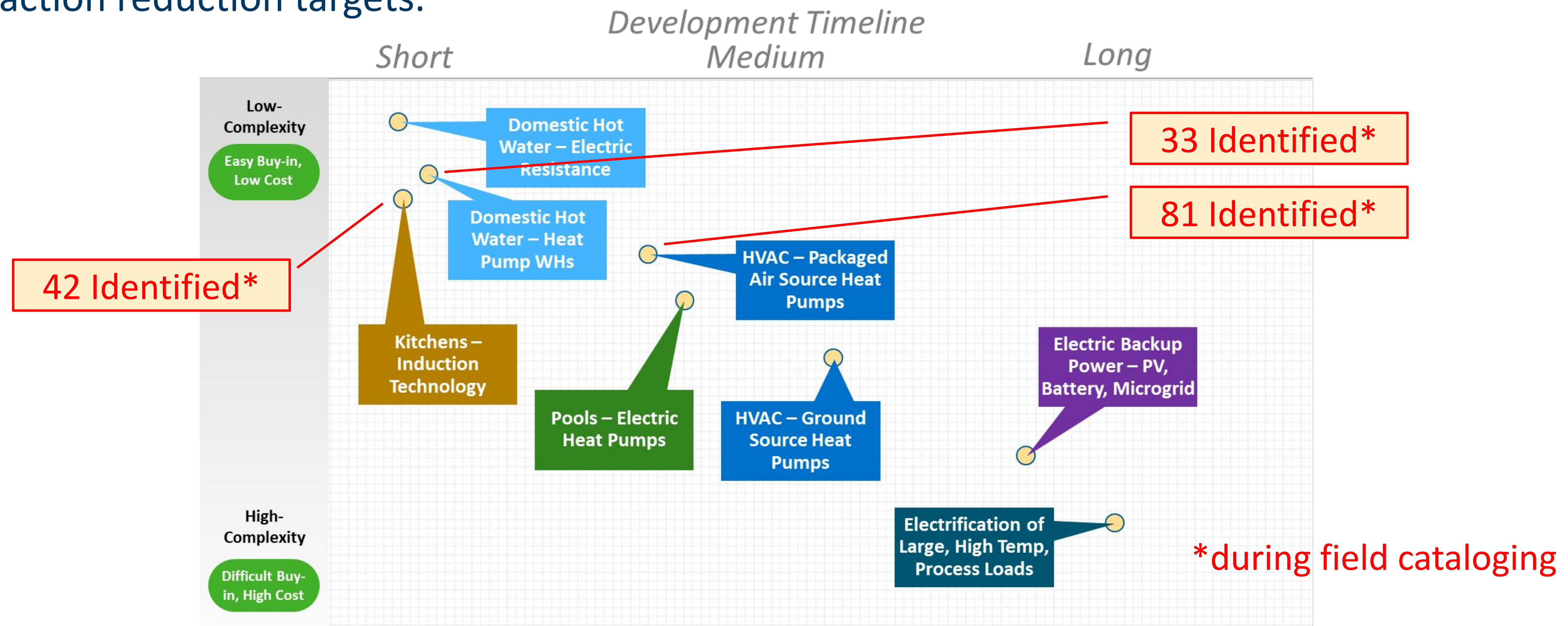
Types of Gas Equipment Cataloged





- Equipment currently beyond “expected useful life” (EUL) of 15 years and will require replacement in near- to medium-term, which should be factored into upcoming CIPs
- Be on the lookout for equipment in the 5-10 and 10-15 year which should be in upcoming CIPs based on EULs
- Equipment identified as currently beyond their EULs should be replaced as soon as possible

- **Significant decarbonization potential exists** – majority of equipment identified meet cost-effectiveness considerations (less complex/require shorter timelines for implementation)
- **Identify gas-equipment included in CIPs** – avoid like-for-like gas equipment replacement. Intercept projects and upgrade to electrification alternatives. Explore incentive and rebate opportunities.
- **Climate action impacts are significant** – across 233 pieces of gas equipment evaluated, estimated GHG load is between 7,000 to 13,000 metric tons of CO₂e per year. This is in the range of various municipalities' climate action reduction targets.



Questions?

PG&E Government & K-12 (GK12) & California Energy Design Assistance Programs (CEDA)

Funding – How Can Sustainability Staff Access Funding | Custom Projects Overview

September 26th, 2023



What is Government and K12?

The Government and K-12 (GK12) energy efficiency program provides public agencies **no cost energy efficiency services for retrofit and replacement projects in existing buildings.**

GK12 Promotes:

- ☐ Electrification
- ☐ Demand Response
- ☐ Decarbonization
- ☐ Financing

Through...

- ☐ Heat Pump Water Heaters
- ☐ On-Bill Financing
- ☐ Low-Volume Measures
- ☐ Custom Projects
- ☐ Financing



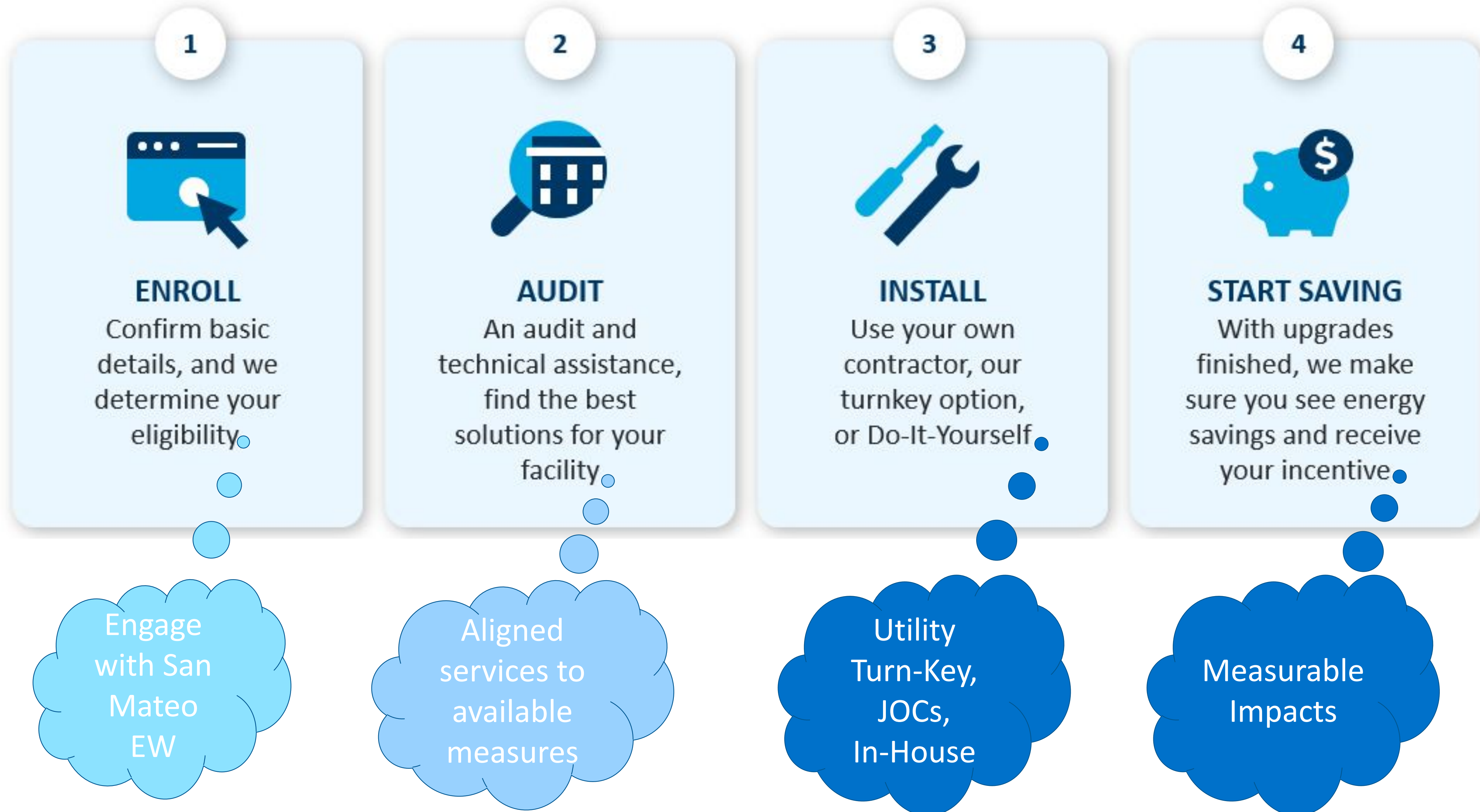
Heat Pump Water Heaters

The Government and K-12 (GK12) energy efficiency program provides public agencies **can replace existing natural gas water heaters with heat pump water heaters at no or low cost.**

- ❑ Community and Convention Centers
- ❑ Community Fitness and Recreation Centers
- ❑ Library/Museums/Performing Arts Center
- ❑ Police Departments
- ❑ Airports and Transit Centers
- ❑ Corp Yards

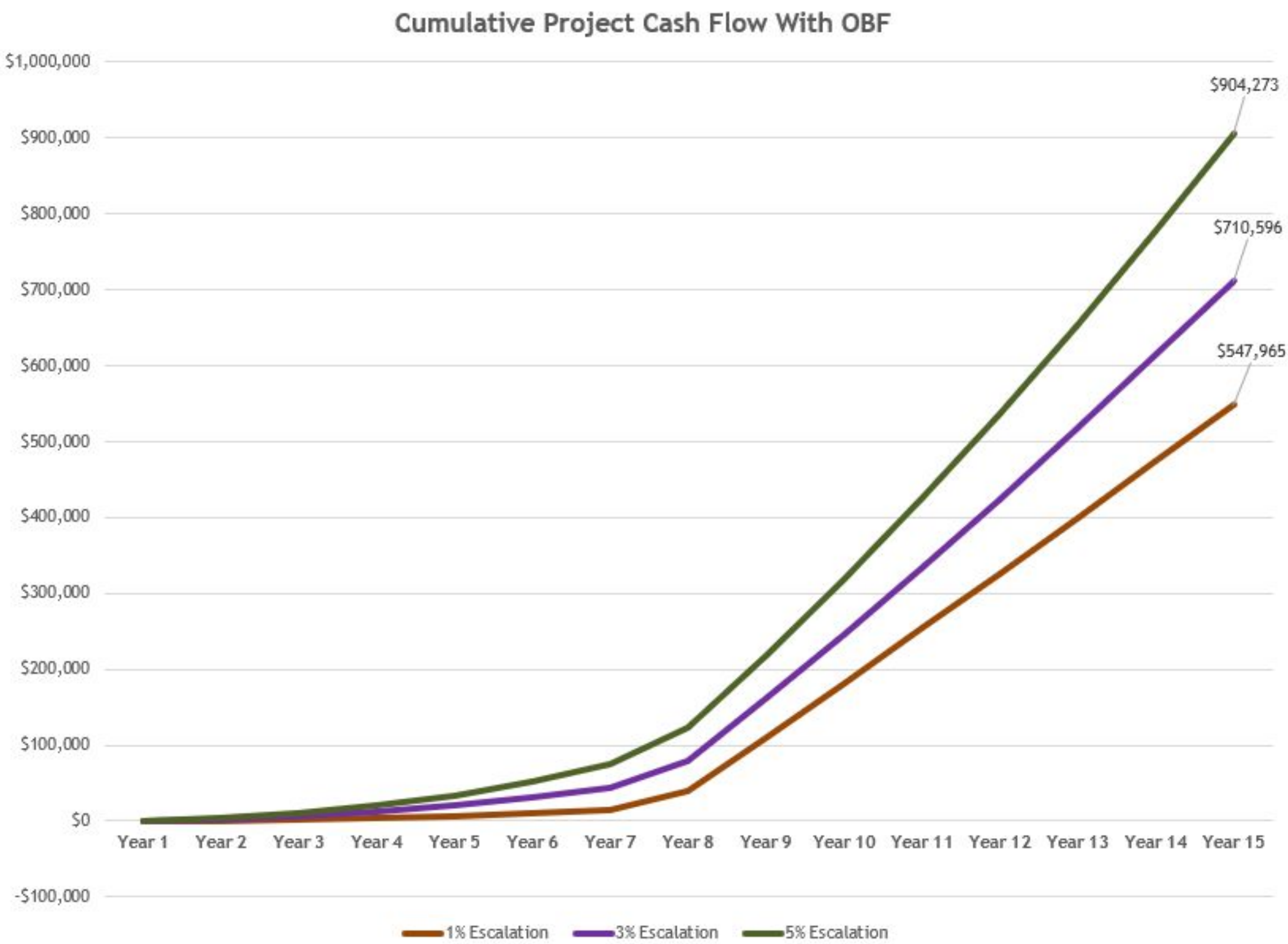
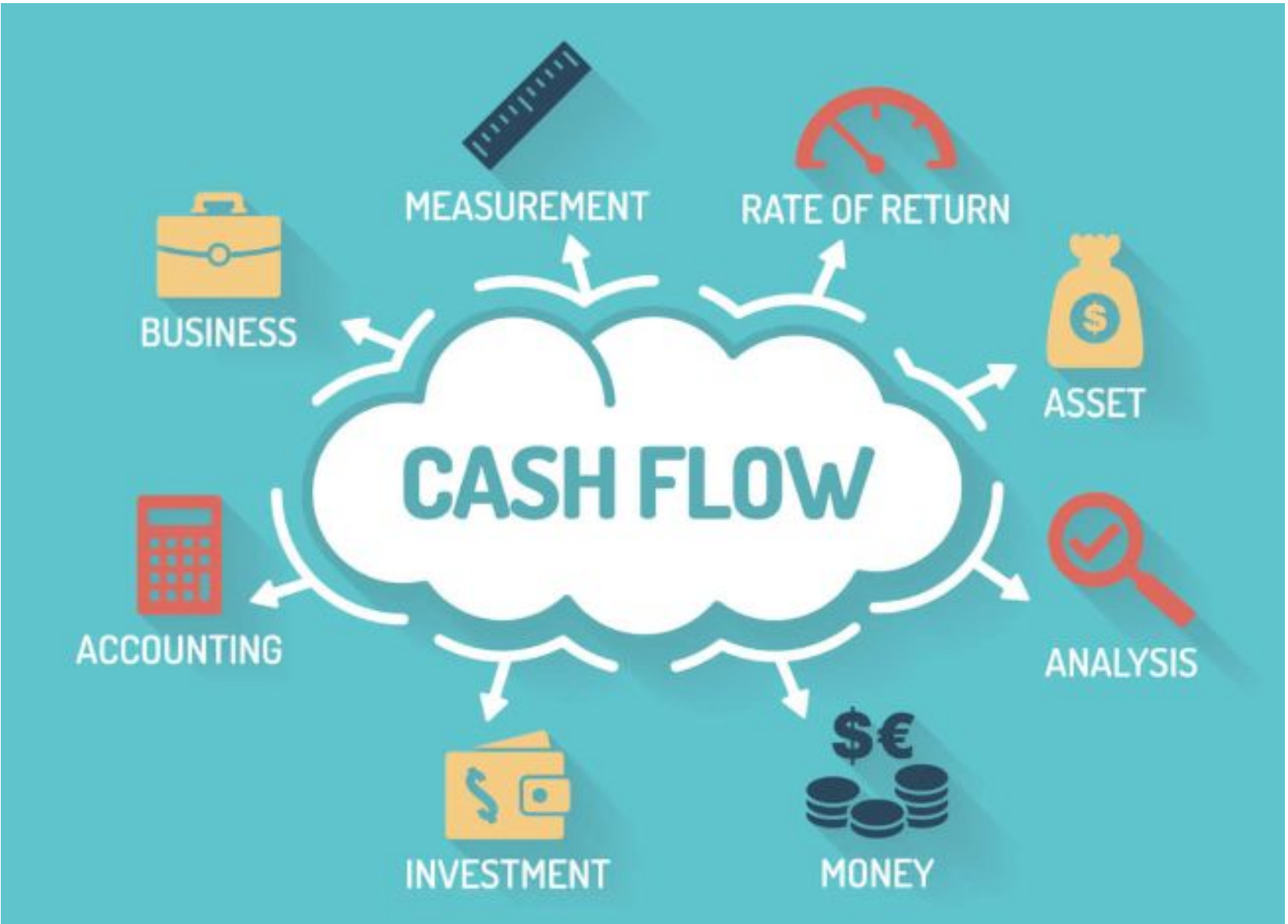


How the Heat Pump Program Works



On-Bill Financing Non-Incentive for Lighting: Staying Cash Flow Positive

PG&E On-Bill Financing			
OBF Example		OBF Loan Limit Loan Terms	\$4,000,000 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		



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

Custom Project Overview

The Government and K-12 (GK12) energy efficiency program provides **can provide custom calculated incentives** for projects that do not have state approved savings values.



Deemed (Prescriptive)

- ❑ Limited to available measures.
- ❑ Can, in some situations, be accessed mid-project or after installation.
- ❑ Best if accessed before installation.



Custom Calculated

- ❑ Allow for a wide range of projects that do not have a deemed measure.
- ❑ Need to be large in scale and impact.
- ❑ **Require early engagement with the program.**

Attributes of a viable custom project:

- ❑ Large CIP project with energy impact.
- ❑ You need technical/financial help.
- ❑ You have time to work through the CPUC custom review process.

WHAT IS CEDA?



The California Energy Design Assistance (CEDA) **program promotes the electrification and decarbonization of new building construction or major renovation.**

CEDA works in collaboration with project teams to reduce energy demand, consumption, and carbon emissions.



PROCESS



1



Enrollment

You provide schematic information about your building through our Energy Design Assistance application or directly to one of our outreach specialist

2



Discovery

Willdan performs a real-time evaluation of decarbonization measures and bundle potential whole-building strategies for further analysis

3



Results

You determine the measures that best align with your project goals, from which estimated savings, and incentives are calculated

4



Verification

We confirm your project was constructed to plan and issue a final report confirming savings, incentives as applicable

5

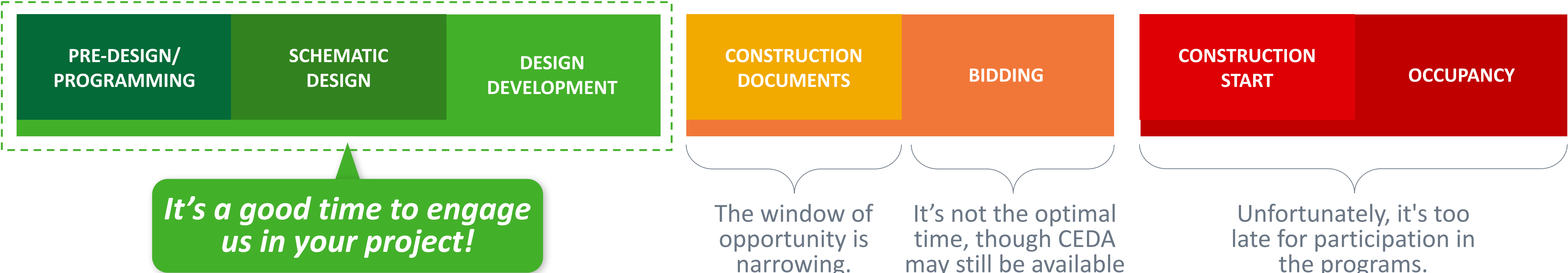


Savings

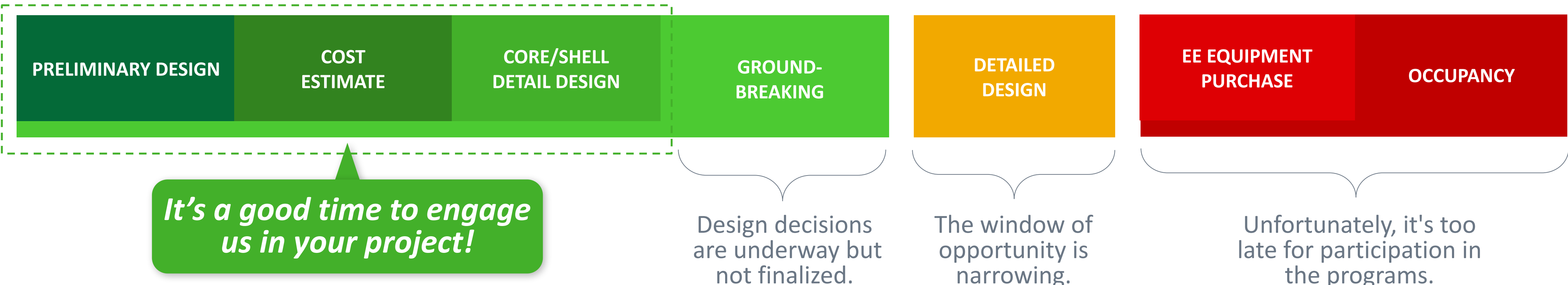
Enjoy continual energy savings, helping to actualize decarbonization goals and being a grid partner

GK-12 Custom and CEDA Engagement Timelines

TRADITIONAL DESIGN/BID/BUILD PROCESS



FAST-TRACK OR DESIGN/BUILD PROCESS



Take advantage of GK12 or CEDA

**For more
information,
contact:**



Lou Jacobson

Director

📞 707.273.2036

✉️ LJacobson@willdan.com

4: PCE Revolving Loan Fund to Support Electrification



OFFICE OF
SUSTAINABILITY
COUNTY OF SAN MATEO

**THANK
YOU**

