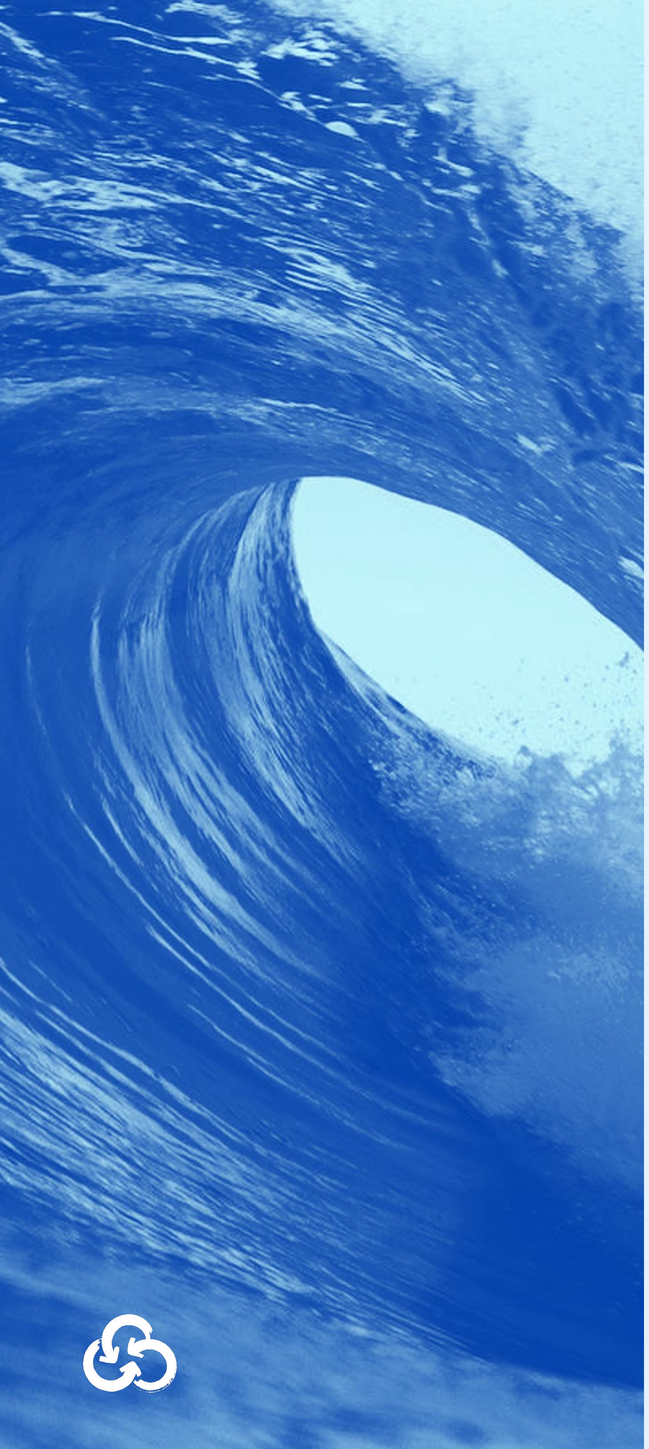
OFFICE OF SUSTAINABILITY
COUNTY OF SAN MATEO

RICAPS Monthly Meeting

October 24, 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 additional funding provided by Peninsula Clean Energy.



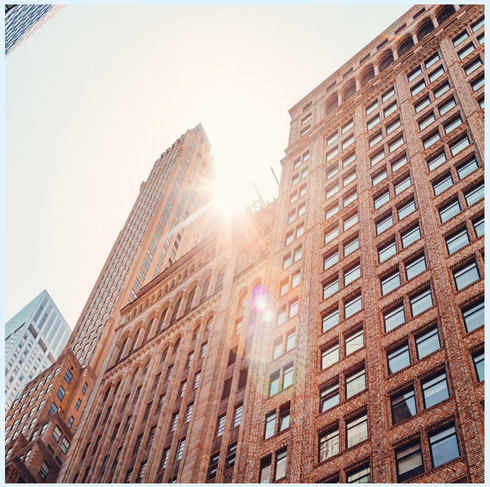
Agenda

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

- 1:30-1:35: Welcome, Forest Abbott-Lum, Rincon Consultants
- 1:35-1:40: Announcements
- 1:40-1:50: Jurisdiction Peer-to-peer share-out

1:50-2:25: Regulatory Update; CIP Electrification Key Takeaways; Breakout Rooms

- 1:50-2:00 Regulatory Announcements: Local Government and Sustainable Energy Coalition, Marc Costa, Steven Moss
- 2:00-2:10- Electrifying the CIP Process- Flowchart and Key Takeaways, Ryan Gardner, Rincon Consultants
- 2:10-2:25- City breakout rooms - CIP brainstorm & policy feedback



2:25-3:00: Implementation Challenges and Solutions for Electrification; Shift into Fleet Electrification

- 2:25-2:45 : Identifying Implementation Challenges and Solutions for Electrification Projects, Zoe van Duivenbode
- 2:55-3:00: Shift into Fleet Electrification, Ryan Gardner, Rincon Consultants

1: Announcements

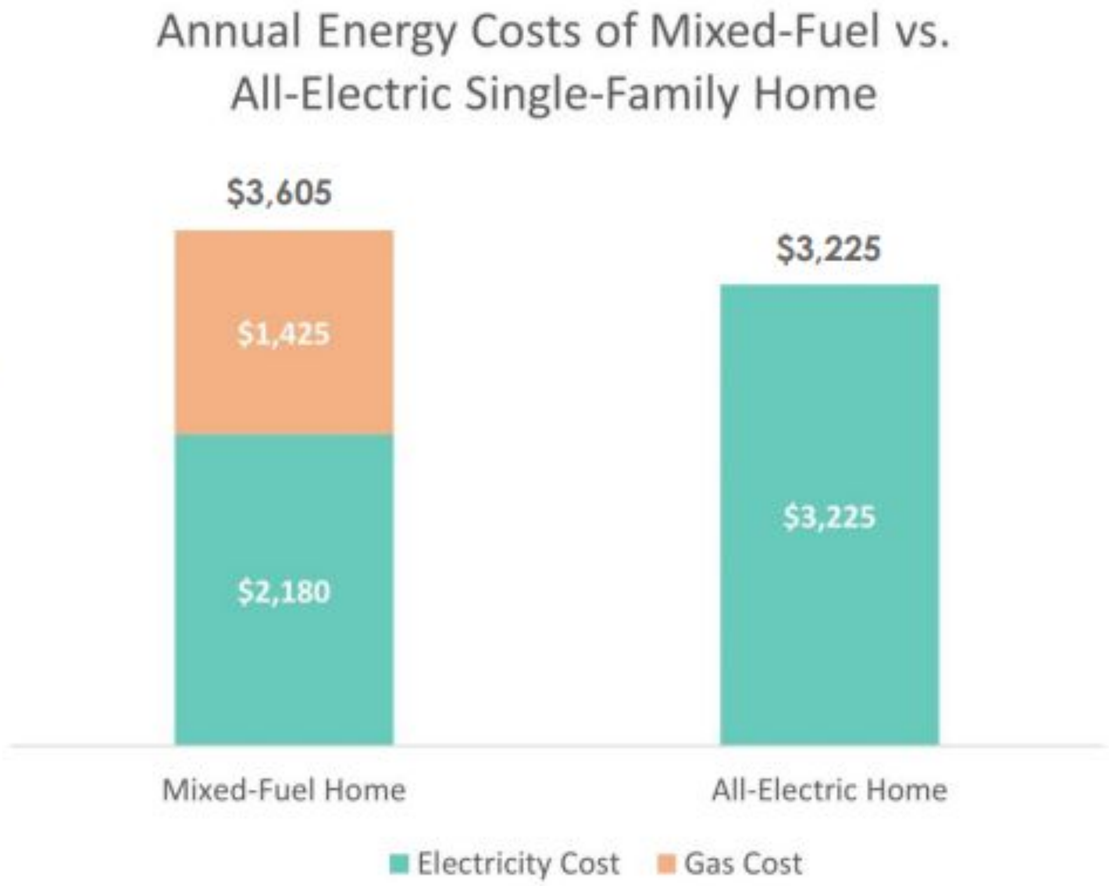
On-Bill Cost Data – San Mateo County Results

Ryan Gardner, Rincon Consultants

Executive Summary

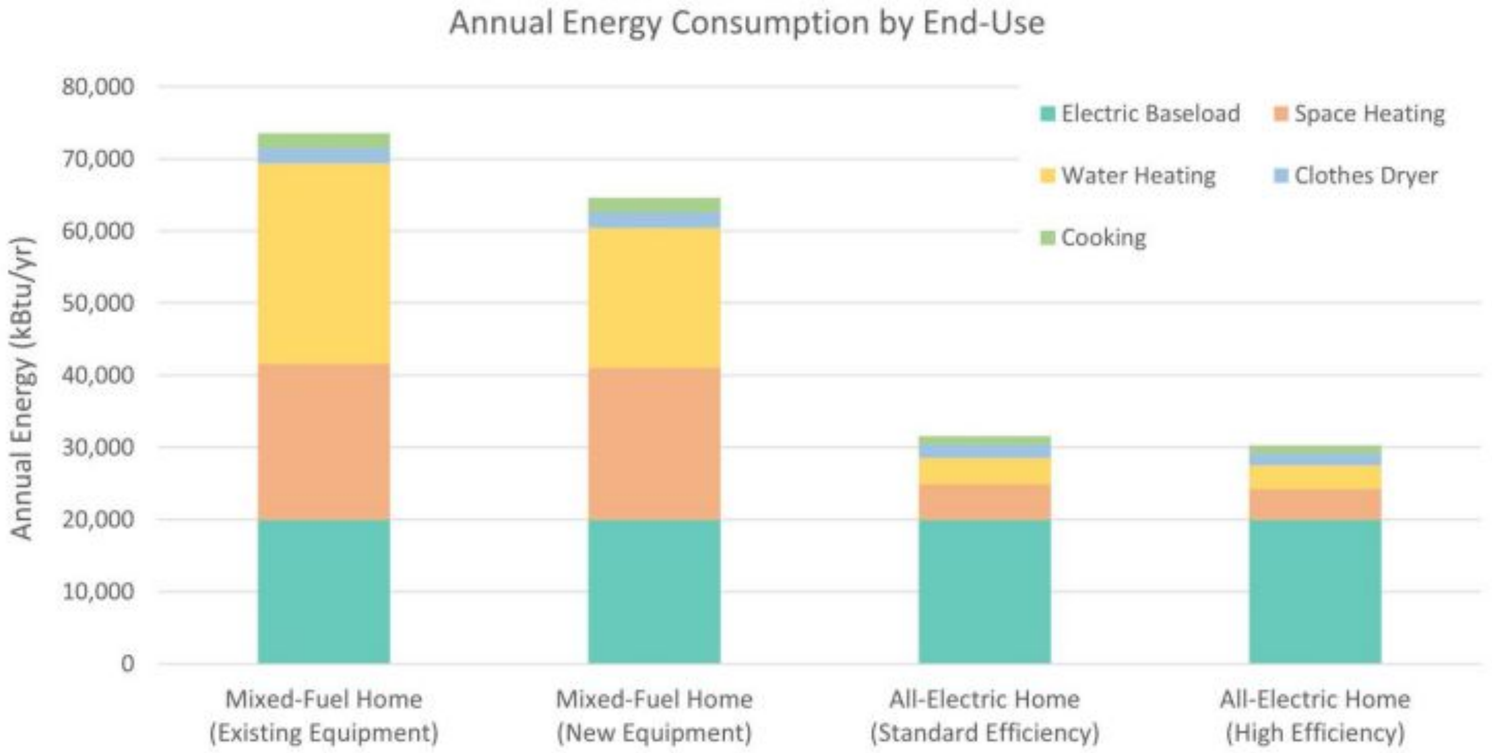
This study evaluates the on-bill cost impacts of electrification in single-family homes, and found savings of roughly $380 per year ($32/mo) when switching from existing gas appliances to standard efficiency electric appliances, provided customers also switch to an electrification-friendly utility rate. Savings increase to $495 annually ($41/mo) when switching to high-efficiency electric appliances.

Understanding these energy cost impacts is critical for customers, utilities, installers, and policymakers as we work to decarbonize and make our homes safer environments for residents.



Key Takeaways – Electrification is much more efficient

Annual Energy Comparison



Electrification reduces site energy use by **nearly 60%**.

While upgrading to new gas appliances saves energy, the impact is minimal

Key Takeaways – Rate structure is very important, all-electric rates provide savings

	Total Annual Gas & Electric Costs				
Residential Rate	**Mixed-Fuel *New Equipment***	**Mixed-Fuel *Existing Equipment***	**All-Electric *Minimum Efficiency***	**All-Electric *Standard Efficiency***	**All-Electric *High Efficiency***
E1 (B)	$3,410	$3,655	$3,810	$3,705	$3,540
E1 (H) (Electric Heating)	-	-	$3,720	$3,615	$3,450
TOU-C (B)	**$3,360**	**$3,605**	$3,690	$3,585	$3,430
TOU-C (H) (Electric Heating)	-	-	$3,600	$3,495	$3,345
EV-2A	-	-	$3,325	$3,245	$3,125
E-ELEC	-	-	**$3,300**	**$3,225**	**$3,110**

Induction Loaner Cooktop Program

Interested in testing out a countertop induction cooktop at home? You can do so through PG&E's Induction Cooktop Loaner Program!

If you're a PG&E customer, you are invited to try a plug-in countertop induction unit for two weeks, at no cost.

Induction cooktops are more energy efficient than traditional gas or electric resistance cooktops. They also heat food faster, offer improved temperature control, and are easier to clean!

For more information about the program, send a message to ICLP@frontierenergy.com or call 925-326-7544.

2: Jurisdiction Peer-to-Peer Share-Out

The Possible Demise of Virtual Net Metering (VNEM)

Steven Moss, Partner, M.Cubed

LOCAL GOVERNMENT SUSTAINABLE ENERGY COALITION

Contact us: contact@lgsec.org

How VNEM Works Currently

Scenario: Solar photovoltaics (PV) at a multifamily building is installed on roof, interconnected ‘in front of the meter.’ The power ‘goes to the grid’ but virtual accounting credits the tenants.

Generation and loads aggregated on a single parcel: focuses on multi-family

- vs. NEMA which aggregates loads on different parcels: caters to agriculture and commercial

Generation output netted against aggregated loads akin to NEM 2.0

- Offsets allocated proportionately to bills—credits at retail rate
- Puts tenants on equitable footing with single family NEM customers

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Changes from NEM 2.0 to NEM/Net Billing Tariff (NBT) 3.0

NEM 2.0

- Credited generation at retail rate trued up based on 12 months of loads and generation.
- Averages 25 -35 cents per kWh

NEM 3.0/NBT

- Credits generation used directly by hourly load at retail rate
  - averages 25 cents per kWh
- Credits excess generation above hourly load at export rate determined by Avoided Cost Calculator (ACC) at every hour of the year
  - Averages 4 to 8 cents per kWh
  - Majority of solar generation credited at lower ACC rate
  - Incentivizes adding storage to use energy on site
  - Tool to visualize how it works: https://osesmo.shinyapps.io/NBT_ECR_Data_Viewer/

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Rationale for Changing NEM 2.0

Claim of "cost shift" of $3 billion annually

- Ignored minimum of $2 billion in benefits from avoided generation investment
- Asserted cost shift from higher income households without addressing many other "cost shifts" e.g., energy efficiency measures

Asserted payback extended only from 6 to 9 years

- Flaws in financial analysis – payback more likely 20 years for solar only
- Ignored significantly higher investment costs to add storage which creates financial barriers for lower income households

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Proposed Change to VNEM

Based on NBT 3.0 crediting exports at ACC rate

No credit given for on-site usage at retail rate

Benefitting customers continue to receive financial credit on bills in proportion to load

Allocation method unclear in Proposed Decision (as are several other key elements)

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Rationale for Changing VNEM

Proposed Decision was pulled from this month's agenda for the second time.

Governor's Office is weighing strong opposition.

Rationale: VNEM projects are "using the utility grid"	• 77% of VNEM generators and customers served by the same transformer, and 98% by the same feeder.
Proposed Decision asserts that payback to investment should be the same as for NBT 3.0	• Ignores lack of retail rate credit for on-site use. If the PV was behind-the-meter benefiting customers would receive retail credit, a figment of a contorted regulatory rule, not based on reality or practical considerations.
Incentivizes storage	• Only incentive derives from small TOU differentials in ACC – payback period could be infinite
Effectively turns VNEM projects into Electric-**Renewable** Market Adjusting Tariff generators	• Existence of any load is essentially irrelevant except for changing the type of interconnection process • Incentives for property owners to invest disappear – can't recover their investment

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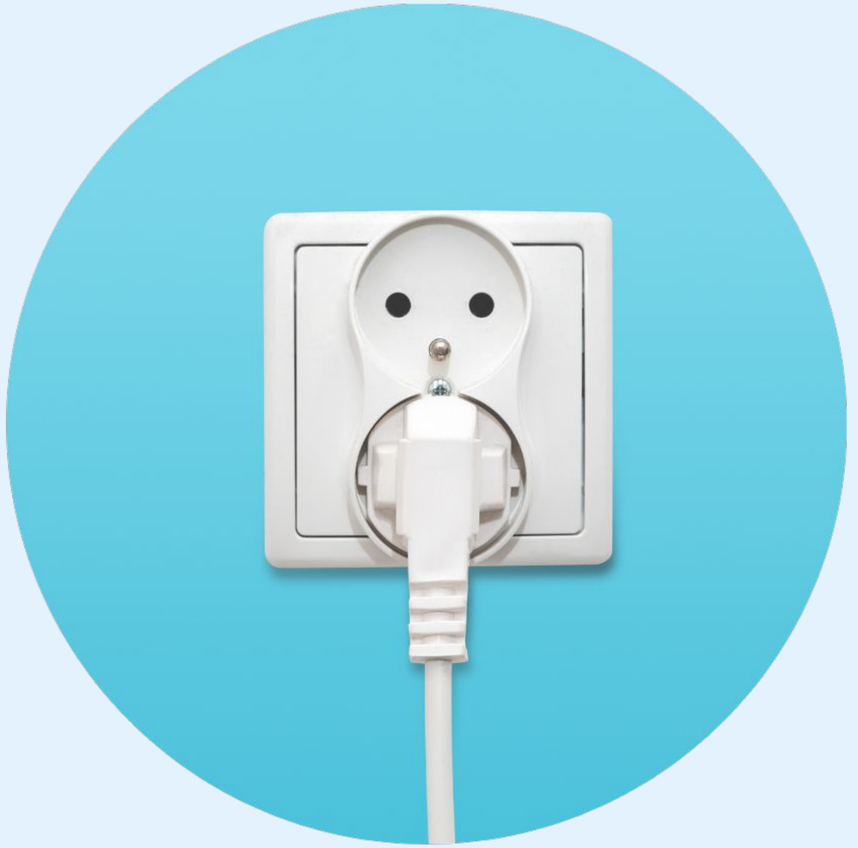
Electrifying the CIP Process

Ryan Gardner, Rincon Consultants

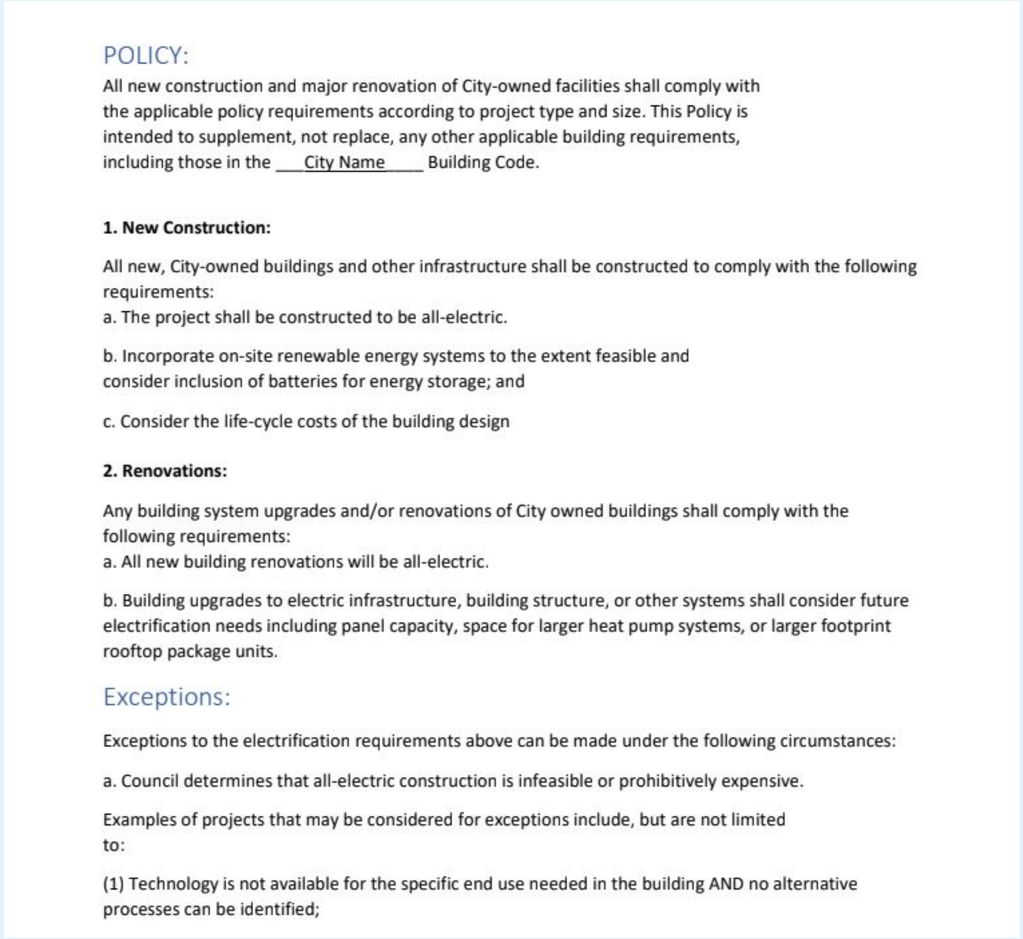
Refresher: RICAPS CIP Electrification Work so Far

- **Goal: all-electric municipal facilities across San Mateo County**
- 4-City Pilot Group Produces insights into challenges/ opportunities
- CIP electrification assessment scan & next steps conducted for each City (!) In your inbox
- 3 webinars on tech and financial support opportunities for municipal electrification
- *Work in Progress: Electrification First Municipal Policy + Staff Report*
- *Work in Progress: implementation roadmap for electrification of municipal facilities*



Draft Language: Municipal Electric First Policy

- **View draft language here:** *https://drive.google.com/file/d/1e-Z7sML1xZKwEwyvNfiFT-WtCDL7A4zY/view?usp=sharing*
- We will reflect on ways to bring this policy forward in the breakout rooms & collect feedback for potential hurdles.
- *Work in progress- accompanying staff report*



POLICY:

All new construction and major renovation of City-owned facilities shall comply with the applicable policy requirements according to project type and size. This Policy is intended to supplement, not replace, any other applicable building requirements, including those in the ___City Name____ Building Code.

1. New Construction:

All new, City-owned buildings and other infrastructure shall be constructed to comply with the following requirements:
a. The project shall be constructed to be all-electric.

b. Incorporate on-site renewable energy systems to the extent feasible and consider inclusion of batteries for energy storage; and

c. Consider the life-cycle costs of the building design

2. Renovations:

Any building system upgrades and/or renovations of City owned buildings shall comply with the following requirements:
a. All new building renovations will be all-electric.

b. Building upgrades to electric infrastructure, building structure, or other systems shall consider future electrification needs including panel capacity, space for larger heat pump systems, or larger footprint rooftop package units.

Exceptions:

Exceptions to the electrification requirements above can be made under the following circumstances:

a. Council determines that all-electric construction is infeasible or prohibitively expensive.

Examples of projects that may be considered for exceptions include, but are not limited to:

(1) Technology is not available for the specific end use needed in the building AND no alternative processes can be identified;

CIP Timeline: Creation Completed Build/Retrofits

How Sustainability Staff Can Intervene + Supporting RICAPS Programs

Collaborate with CIP creators: Inclusion of gas equipment approaching end of life

Available tools: Methane Gas Catalog Tool – CIP Review

Ensure municipal electric first policy in place to collect costs for gas vs. electric projects

Available tool: Draft Electric First Policy

Understand local procurement process, connect to financing opportunities to close gap

Available tool: implementation roadmap + ongoing RICAPS support

If needed- intervention in design and build process to collect costs for electric alternative

Example: East Palo Alto Case Study (Government Center)

Goal: all-electric, efficient projects completed!

Next Steps

- **Goal:** identify first mover Cities to bring forward the Municipal Electric First policy - especially cities with upcoming CAP updates
- *Ongoing RICAPS support can help Cities move forward to pass ordinances through City Council.*
- **This webinar:** 15-minute workshop to discuss City next steps for CIP electrification, and thoughts on next steps for policy passage/ feedback based on individualized CIP assessment

Thoughts & Feedback?

Point of contact: Rincon: Rgardner@rinconconsultants.com & falum@rinconconsultants.com

Electrifying the CIP City Breakout Rooms

How can sustainability staff engage with the CIP and coordinate across departments to implement all-electric municipal facilities?

Process

Goal: discuss next steps forward to electrify CIP projects identified for your City + reflect on the way forward/ applicability of the draft Municipal Electric First Policy

- Breakout rooms of 4-5 cities
- 15 minutes to discuss
- Write on google slides assigned by breakout room number

First: Take a minute to read through your City's CIP assessment and collect your thoughts

- If you've already looked at your summary, type in the slide a quick summary of where you are re: implementation

- *Can't find your summary? Check for your City folder here: https://drive.google.com/drive/folders/1kTGDGeIVIUA7-I78gJldYgPG7tp02yv2?usp=sharing*

Question 1

What can you do to electrify identified CIP projects?

What do you need more clarity about at this stage?

- *If this current CIP had no opportunities identified- how can you move forward with future CIP electrification?*

Breakout room 1:

QUESTION 1: What can you do to electrify identified CIP projects?

Is there anything that is unclear?

Group- type notes directly in this slide in the text box below

Notes go here

Breakout room 2:

QUESTION 1: What can you do to electrify identified CIP projects?

Is there anything that is unclear?

Group- type notes directly in this slide in the text box below

-Gas Water Heaters - can be trickier than appears (GK12)
-Space constraints can be tricky → but good responses
-Rooftop package unit→ indicates that there needs to be public works buy in and perceptions about electrification efficiency;
-Common trades approach → Need to do one type of fix one type

→ How to catalyze a cultural shift

Breakout room 3:

QUESTION 1: What can you do to electrify identified CIP projects?

Is there anything that is unclear?

Group- type notes directly in this slide in the text box below

Notes go here

Breakout room 4:

QUESTION 1: What can you do to electrify identified CIP projects?

Is there anything that is unclear?

Group- type notes directly in this slide in the text box below

Notes go here

Breakout room 5:

QUESTION 1: What can you do to electrify identified CIP projects?

Is there anything that is unclear?

Group- type notes directly in this slide in the text box below

-This process has been very helpful, but need to touch base with Public Works team on next steps.
- Proactive approach, looking ahead, time to plan/prepare
-

Question 2

We’ve brought forward an Electric First Municipal Policy (as discussed at previous RICAPS meetings) as a tool to allow for future facility electrification

- Is it feasible for a City to bring this forward to a City manager or other key decision maker with RICAPS support?

- If not, what is the more immediate barrier?

Breakout room 1:

QUESTION 2: Discuss- next steps/ hurdles getting the Electric First Policy adopted?

- **Is it feasible for a City to bring this forward to a City manager with RICAPS support?**
- **Discuss: existing CAP update/ municipal facility carbon neutrality policy at your city (potential policy opportunity)**
- **Applicability for your City**

Group- type notes directly in this slide in the text box below

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Breakout room 2:

Question 2: Discuss- next steps/ hurdles getting the Electric First Policy adopted?

- **Is it feasible for a City to bring this forward to a City manager with RICAPS support?**
- **Discuss: existing CAP update/ municipal facility carbon neutrality policy at your city (potential policy opportunity)**
- **Applicability for your City**

Group- type notes directly in this slide in the text box below

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Breakout room 3:

Question 2: Discuss- next steps/ hurdles getting the Electric First Policy adopted?

- **Is it feasible for a City to bring this forward to a City manager with RICAPS support?**
- **Discuss: existing CAP update/ municipal facility carbon neutrality policy at your city (potential policy opportunity)**
- **Applicability for your City**

Group- type notes directly in this slide in the text box below

Notes go here

Breakout room 4:

Question 2 Notes: Discuss- next steps/ hurdles getting the Electric First Policy adopted?

- **Is it feasible for a City to bring this forward to a City manager with RICAPS support?**
- **Discuss: existing CAP update/ municipal facility carbon neutrality policy at your city (potential policy opportunity)**
- **Applicability for your City**

Group- type notes directly in this slide in the text box below

Notes go here

Breakout room 5:

Question 2 Notes: Discuss- next steps/ hurdles getting the Electric First Policy adopted?

- **Is it feasible for a City to bring this forward to a City manager with RICAPS support?**
- **Discuss: existing CAP update/ municipal facility carbon neutrality policy at your city (potential policy opportunity)**
- **Applicability for your City**

Group- type notes directly in this slide in the text box below

Staff Report and Presentation

Identifying Implementation Challenges and Solutions for Electrification Projects

Zoe Van Duivenbode
Sustainability Specialist
County of San Mateo Office of Sustainability

zvanduivenbode@smcgov.org

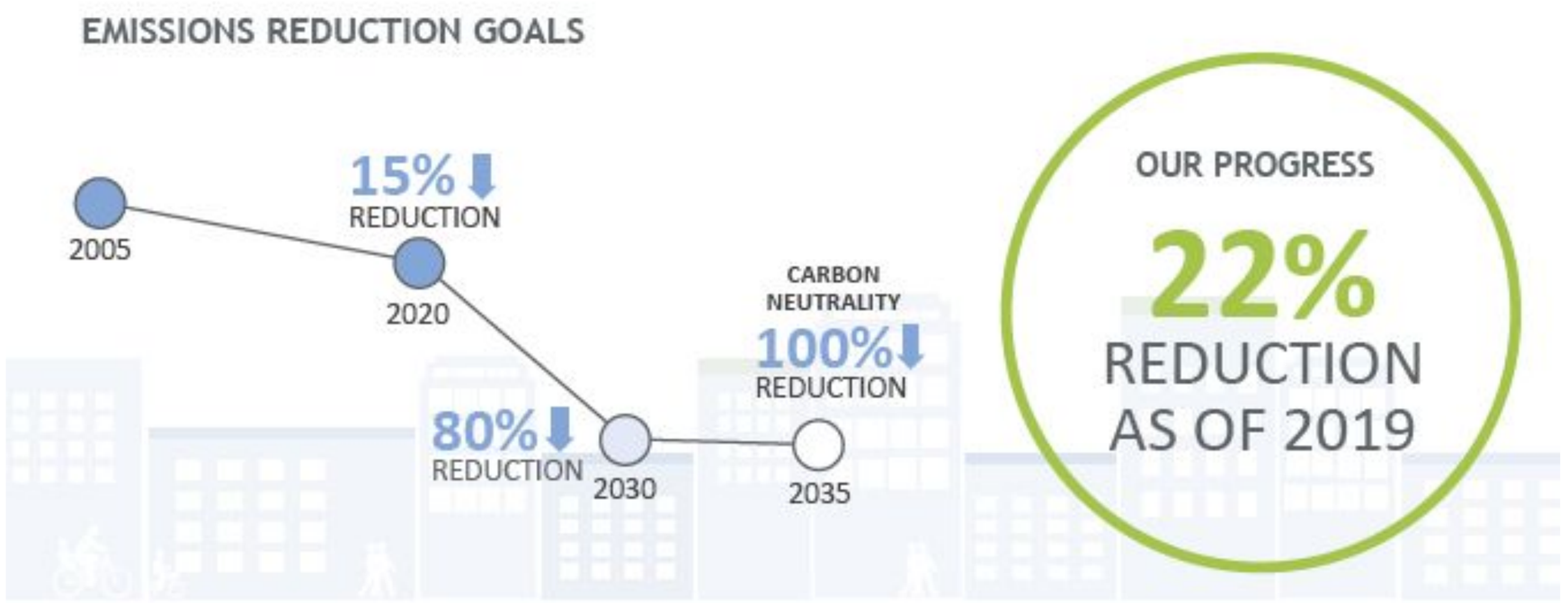
GOCAP Overview

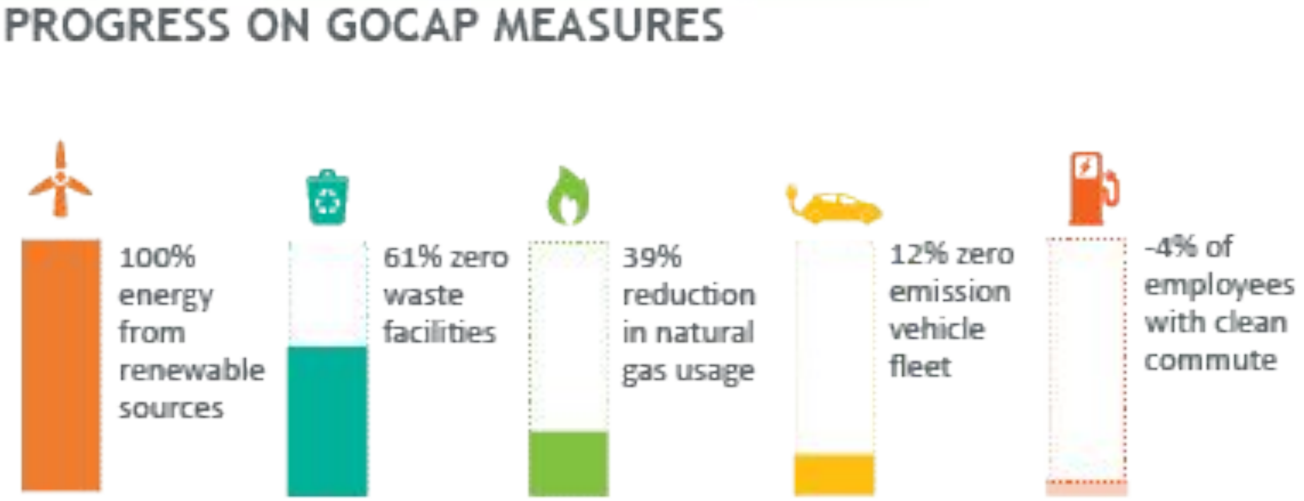
County Board of Supervisors adopted the Government Operations Climate Action plan in 2021, committing the County to achieve carbon neutrality by 2035

Key Strategies*	GHG Emissions (MTCO2e)	Percent of Total County Emissions
Electrification of County Buildings	15,921	38%
Reduce Employee Commute Emissions	14,942	36%
Electrification of County Fleet Vehicles	4,560	11%
Total Reduction from Key Strategies	35,423	85%

* Waste reduction and water efficiency measures included in GOCAP as emissions reductions strategies but not represented in the table above

Progress on Key Strategies





Implementation Analysis

- **Key Challenges**
  - Project Resource Management: need additional staffing resources to manage new projects
  - Department Role: implementation of GOCAP measures falls on a few departments
  - Fiscal Impact: achieving carbon neutrality will require significant investment; department budgets currently not aligned with carbon neutrality goals
  - Processes & Operations: existing processes and operations are not aligned with carbon neutrality goals
- **Themes**
  - Most impactful measures (in terms of emissions reductions) have the most implementation barriers
  - Public Works is responsible for implementing the most impactful measures

Example Implementation Challenges

GOCAP Measure	Challenges	Opportunity
Facilities Electrification	• Capital Improvement Project (CIP) process doesn't include GHG emissions reductions during project selection project	Align CIP decision-making process with electrification and emissions reduction goals
Fleet Electrification – Vehicle Procurement	• Department budget process for purchasing new vehicles does not account for the higher upfront costs of EVs	Amend vehicle replacement funding process so departments save more each year to purchase EVs
EV Charger Operations and Maintenance	• Need staff resources and budget for EV charger administration, operations, and maintenance	Establish an EV charger replacement fund to cover cost of charger maintenance and repairs; Identify staff resources to lead EV charger maintenance

Observations

- Intentional coordination across departments is key
  - Need to understanding department operations and decision making processes
  - Existing processes can make implementation harder as they were created prior to emissions reductions goals
- Departments must navigate many priorities in addition to their existing workload
- Create change management strategies in parallel to electrification projects

Discussion

- What internal challenges have you experienced during CAP implementation?
- How have you navigated internal challenges?

Shift into Fleet Electrification

Ryan Gardner, Rincon Consultants

Why Fleet Electrification?

- Legislative requirement upcoming for local gov: Advanced Clean Fleets, Zero-Emission Medium-and Heavy-Duty Vehicles by 2045;
- Transportation + gas powered vehicles typically largest source of emissions □ Significant climate impact
- EV passenger vehicles have lower lifecycle costs
- Like electric building retrofits: inclusion in CIP;
- **Good niche for sustainability staff impact**

Regulation Highlight: Advanced Clean Fleet Overview

- *Regulation effective:* ***January 1, 2024.***
- Fleets performing drayage operations, **those owned by State and local government agencies (including city, county, special district, and State agency fleets)**, those owned by federal government agencies, and high priority fleets.
- **Medium- and heavy-duty on-road vehicles** with a gross vehicle weight rating greater than 8,500 pounds, off-road yard tractors, and light-duty mail and package delivery vehicles.

Meeting ACF Requirements; 2 Pathways for State + Local Agencies

1: Model Year Schedule

- 50% of vehicle purchases are zero emission in 2024
- 100% of vehicle purchases are Zero Emissions
- For small government fleets (≤10 vehicles) and those in designated counties: must start their ZEV purchases beginning in 2027

2: ZEV Milestones

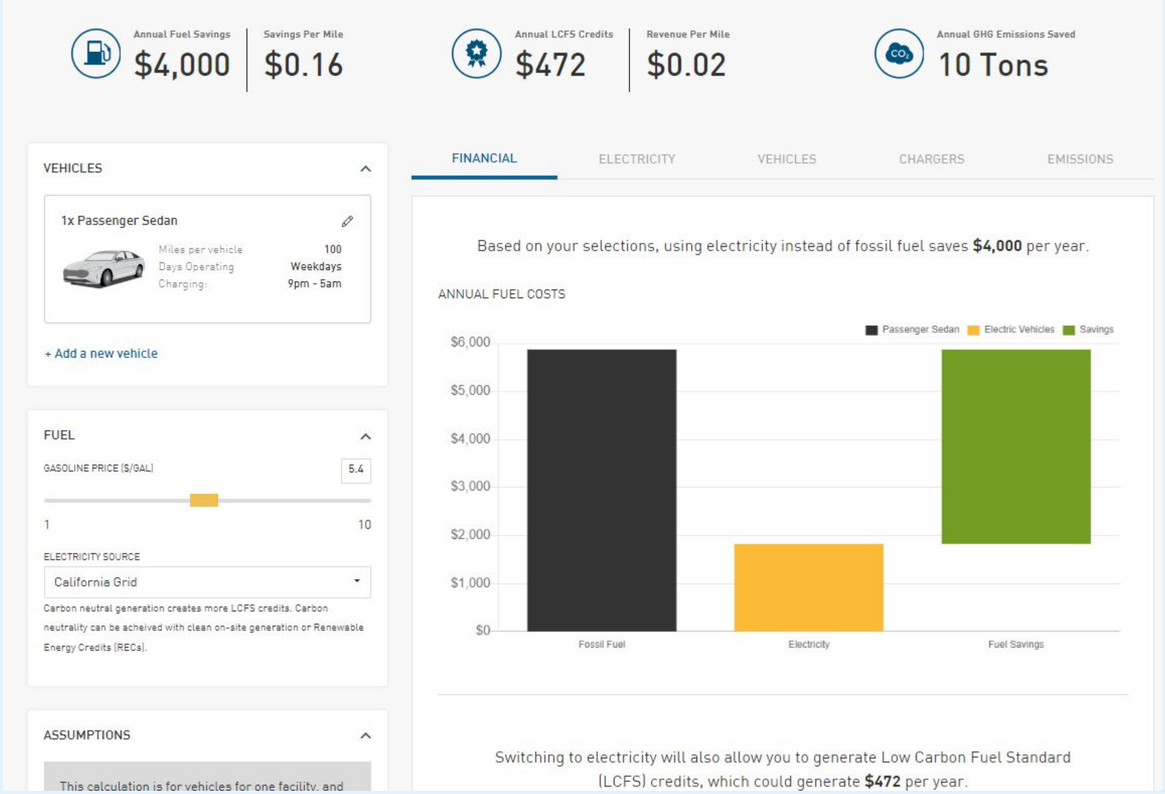
- % thresholds (10, 25, 50, 75, 100) for vehicles that must be zero-emission by years 2025-2042
- Organized by milestone groups 1-3, by different types of vehicle types

Passenger Vehicle Opportunities

- Not legislated until 2035 (Executive Order N-79-20)
- Opportunity for lifecycle cost savings
- Significant GHG emissions reductions
- Need for new approaches to install and maintain chargers
- LCFS credits

Screenshot: PG&E EV calculator shows significant annual fuel savings for a sedan under current gas rates:

Link: https://fleets.pge.com/fuel-savings



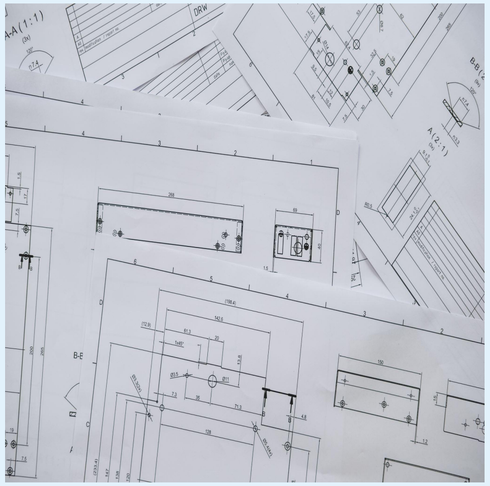
EV Hurdles RICAPS will Cover

- Availability
- EV Infrastructure hurdles (installation and maintenance)
- Perceptions of performance/range
- Hesitation to adopt new technology
- Upfront cost premiums

RICAPS & Clean Fleets: What We'll Cover

1: Planning Tools

- Summary of points for sustainability staff collab & implementation
- Overview of available planning tools (e.g. ZEV Readiness Plan)
- Working groups to assess state of implementation/ timelines



2: Funding and Financing

- Overview of technical and financing supports to support municipalities & special agencies in fleet electrification
- Identification of gaps for implementation

3: Operations and Maintenance

- Adapt RICAPS programming and project supports to support modules 1 and 2
- Options for infrastructure installation, operation and maintenance
- Vehicle types

- *Did we miss anything?*

- *Feedback on future RICAPS ZEV programming*

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THANK YOU