Program Advisory Council Meeting
Q4 2024

January 29, 2025

Together, Building
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Agenda

Introduction | Safety	4 minutes
Meeting Timeline | Market Update | Fun Fact!	1 minute
EV Fleet Program Updates	5 minutes
EV Fast Charge Program Updates	5 minutes
EV Charge Schools Program Updates	5 minutes
EV Charge Parks Program Updates	2 minutes
EV Parks & Disadvantaged Communities (DACs)	13 minutes
EV Fleet Advisory Program Updates	5 minutes
Cadmus / Energetics Update	20 minutes
VGI Pilots	15 minutes
Q & A	5 minutes
Conclusion	2 minutes

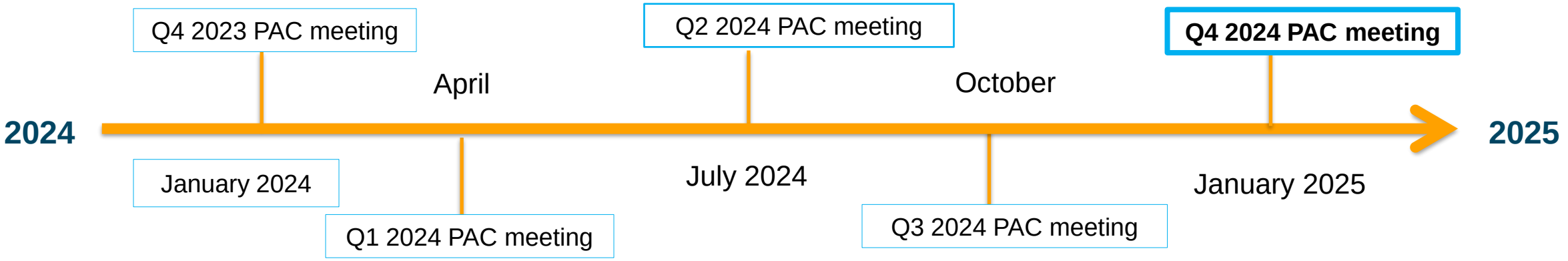
Safety


Winter Weather
Checklist
Maintain heating equipment with annual cleanings
Insulate your home by installing Storm Windows or adding Plastic covering
Dress in several layers of lightweight clothing
Wear waterproof boots to keep warm and dry and maintain your footing
Bring pets indoors during winter
Avoid black ice on the roads by looking for a slight sheen on the surface of the road
Radio
Listen to the news or the national weather service for critical info

Clean Energy Transportation Program Advisory Council Meetings

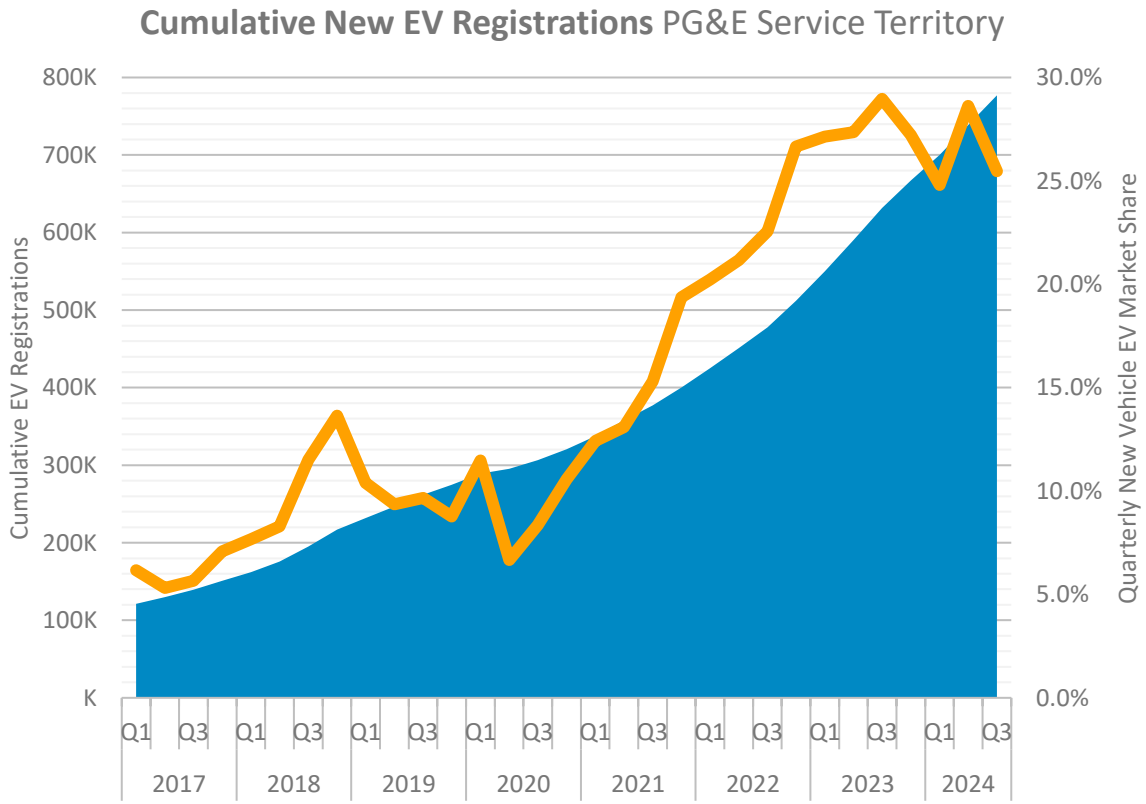
Overview

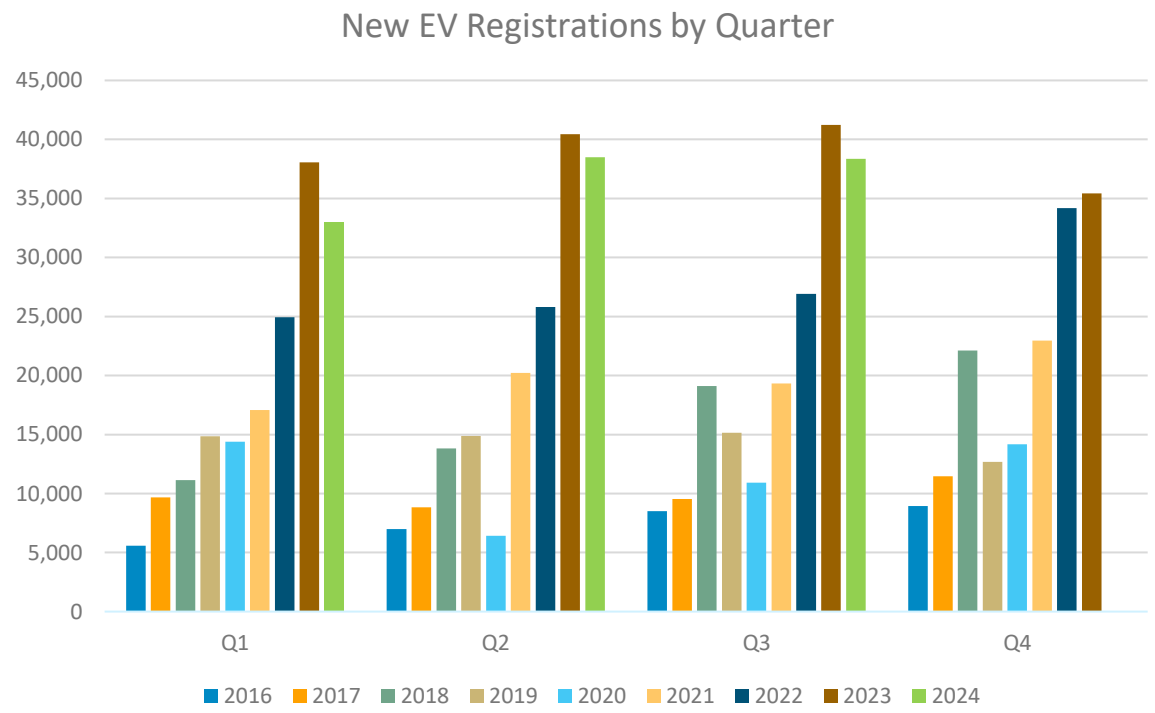
- PG&E has expanded our efforts on transportation electrification (TE) with several filings, pilots and programs in progress
- CPUC has directed PG&E to consult a Program Advisory Council (PAC) in the development of key TE pilots and programs to gain feedback from industry stakeholders
- This platform will serve to gather insight and feedback on PG&E's proposals and ongoing programs



EV Market Update

786,736 EVs registered in PG&E service territory through October 2024





Source: EPRI, Based on external registration data through Oct. 2024

Some good EV news in Q4 2024

COX Automotive Report:

EV Market will grow bigger in 2025, 1 in 4 cars sold to be electric.

*"Sales of electric cars in the US topped **one million units for the first time** per Kelly Blue Book. Looking at the second-hand EV market, the **percentage of people who are thinking about buying a used electric vehicle** has risen sharply – up from **62% in 2021 to 77% currently.**"*

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GM Q4 preview: Strong earnings momentum expected despite EV, China challenges

GM (GM) investors are looking for the Big Three automaker to continue its strong ...

SB 350 Standard Review Projects

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EV Fleet Updates

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EV Fleet Program Update

Status as of 12/31/2024

	Sites	MDHD EVs Committed
Applications	646	-
Viable Contracts[1]	312	6,382
Construction Complete	115	2,307
Activated	98	1,807

[1]*Viable contracts are all contracts signed to date excluding cancelled and withdrawn*

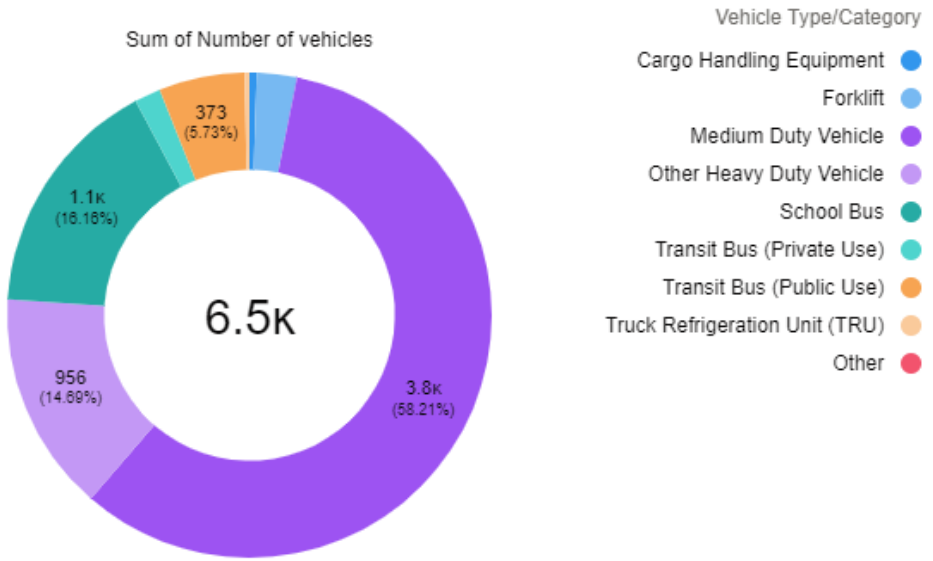
Program Budget Overview

Spend-to-Date	Remaining Funds
$70.2M	$166.1M

Lessons Learned/Best Practices

- Tested brand ambassador campaign as new marketing channel to engage small businesses. Ambassadors reached 289 businesses and completed 52 lead surveys.
- Program is on track to exceed vehicle goal, therefore cost per vehicle is no longer being evaluated in project screening, enabling the program to better support smaller fleets.

Viable Contracts: Vehicle Type



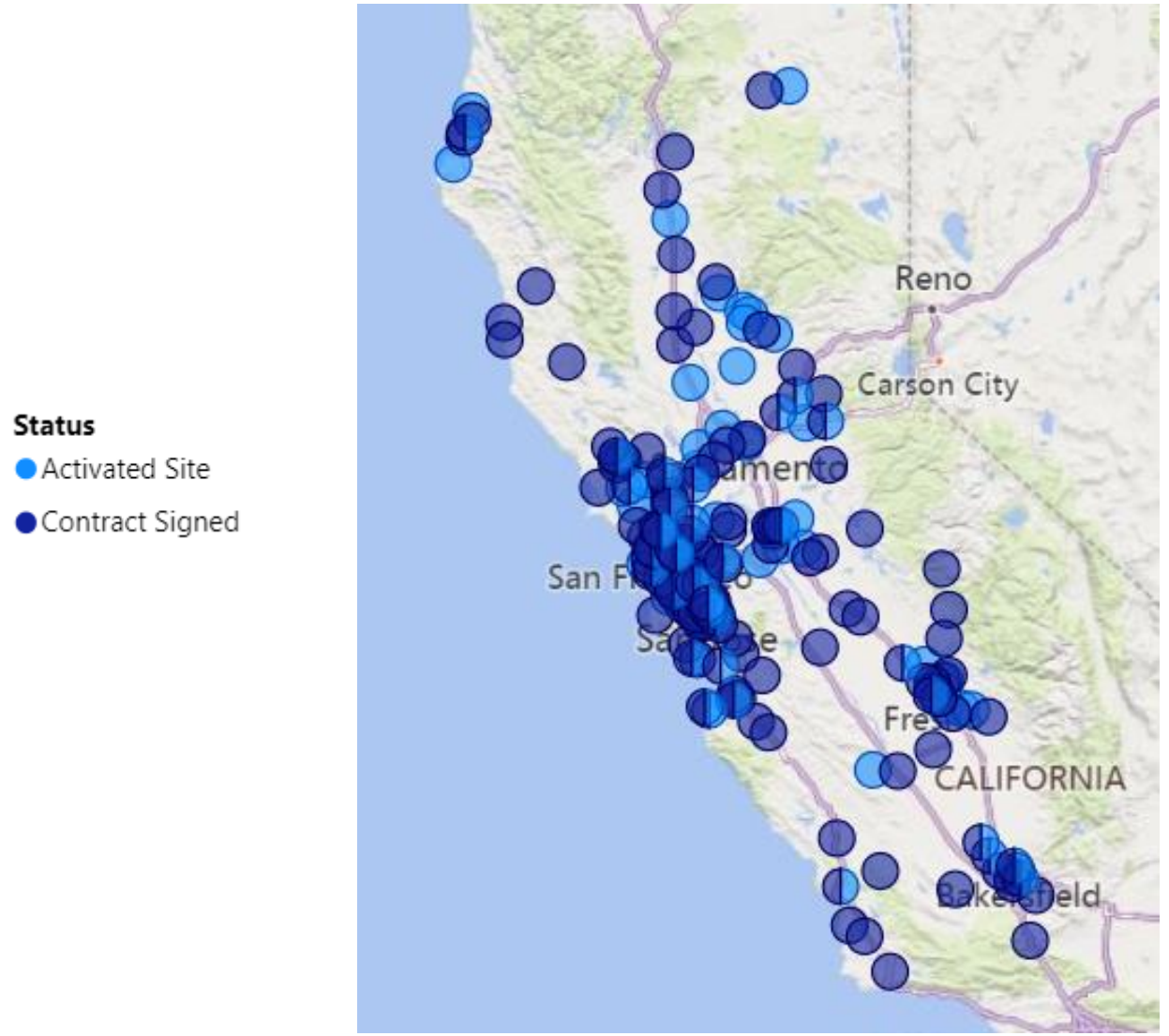
Program Highlights

- Program has reached 98% of its vehicle target (6,500 vehicles), on track to meet updated site goal of 375 sites
- 141 of the 312 signed contracts **(45%) are in DACs**
- Signed 78 contracts in 2024, supporting 1,441 vehicles
- Program is seeing a **diverse mix of vehicle types**; medium duty vehicles are dominant due to various applications, availability, operational compatibility; school buses, heavy duty vehicles, and transit buses are also successfully enrolling in the program

Public

Fleet Construction and Activation

Activated sites and sites in construction by zip code



EV Fast Charge

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EV Fast Charge Program Update

Status as of 12/31/2024

	Sites	Ports
Applications	272	1,225
Contracted Sites	39	204
Constructed	32	168
Activated	28	144

Contracted site counts exclude cancelled projects

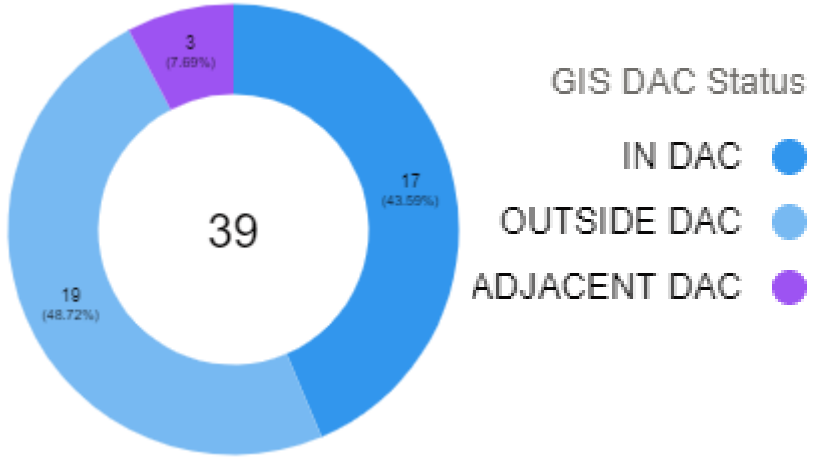
Program Budget Overview

Spend-to-Date	Remaining Funds
$19.0M	$3.4M

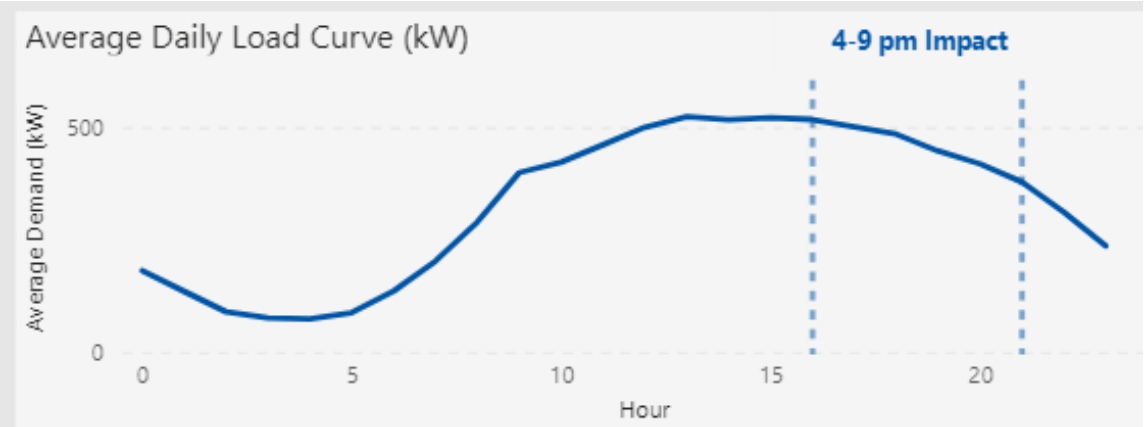
Lessons Learned:

- Portfolio average daily load curve has remained generally consistent throughout program years and even smaller timeframes.

DAC Targets: Signed Contracts



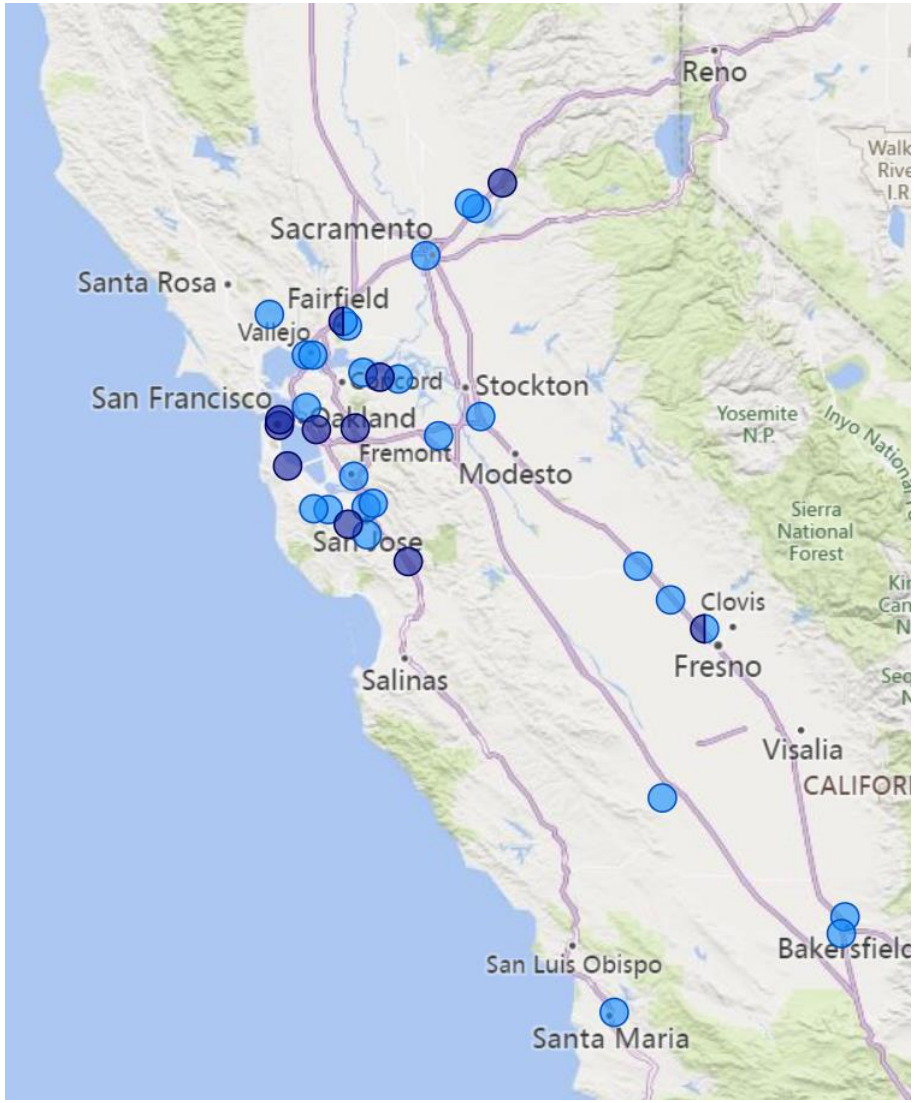
Portfolio-wide Utilization Trends



Source: SRP Evaluation Dashboard

Fast Charge Sites Contracted and Activated

Activated sites and sites contracted by zip code



AB1082 & AB1083 Standard Review Projects

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EV Charge Schools & Parks Update

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EV Charge Schools Program Update

Status as of 12/31/2024

	Sites	Ports
Applications	78	468
Contracted Sites	15	90
Constructed	12	72
Activated	12	72

Program Updates

- No longer recruiting new sites
- Final site anticipated complete in Q4 2025
- EV Curriculum available online to every K-12 school in PG&E territory

https://www.energizeschools.org/evcurriculumportal.html

Program Budget Overview

Spend-to-Date	Remaining Funds
$4.7M	$1.1M

Average Daily Load Curve

Source: SRP Evaluation 2024 Evaluation Report

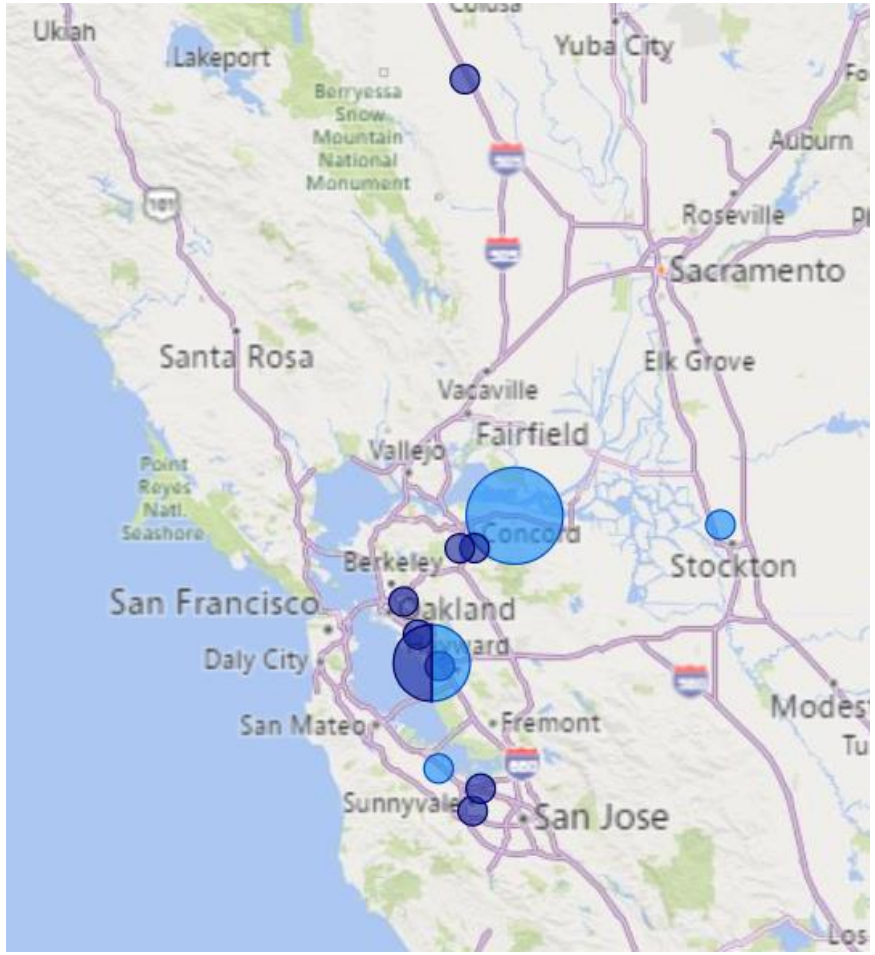
Lessons Learned/Best Practices

- Portfolio-wide maximum demand (unsurprisingly) dropped to a negligible amount in July. Suggests that nearly all usage is from staff, with minimal community use.

EV Charge Schools Contract + Site Update

Sites with signed contracts*

DAC Status
- IN DAC
- OUTSIDE DAC



** 3 DAC sites within same zip code*

	In DAC	Outside DAC	Total
Contracts	6	9	**15**
Ports	36	54	**90**
DAC Percentage	40%	60%	**100%**

EV Charge Parks Program Update

Status as of 12/31/2024

		Sites	Ports
Applications		131	0
Contracted Sites		1	8
Constructed		0	0
Activated		0	0

Program Budget Overview

Spend-to-Date	Remaining Funds
$615K	$4.9M

Lessons Learned / Best Practices

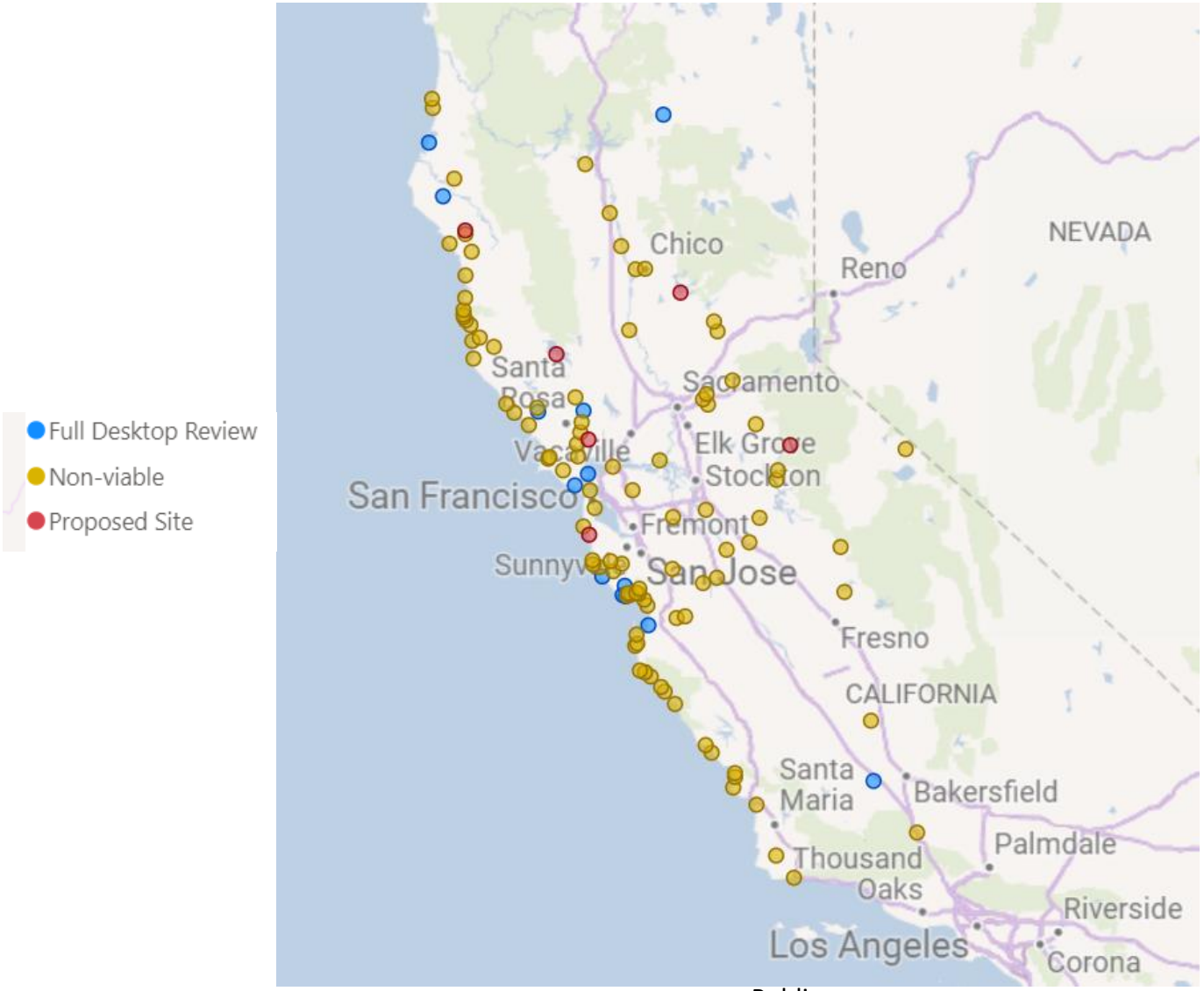
- Similar to other infrastructure programs, EV Charge Parks rejected many sites due to high costs.
- Proposed portfolio achieves 400% more DCFC chargers than originally anticipated. (12 actual vs 3 initially)

Program Update

- PG&E in process of selecting hardware and software for Parks portfolio.
- All 130 parks in PG&E's service territory have been assessed and narrowed down to a proposed portfolio of 6 sites.
- Filed Tier 1 AL related to Tribal Participation (Jan 24, 2025)
- PG&E will file a Tier 2 Advice Letter in early February to request reallocation of funds and relief from 25% DAC target.
- Finalizing the site-specific addenda is on hold until a disposition is received from DAC advice letter.

EV Charge Parks Sites Evaluated

State Parks in PG&E Service Territory



EV Parks and Disadvantaged Communities (DACs)

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Approach to Site Selection

Financially viable

- Site cost-effectiveness
- Ability to meet ADA compliance

Estimated utilization rates

- Seeking locations with high utilization potential or ability to fill a corridor gap
- Available for public and fleet use

Disadvantaged Communities (DAC)

- 25% targeted in DAC

Partnership & Engagement

- Awareness raising through ribbon cutting, signage, etc.

Attributes of Cost-Effective Sites

1. Availability of distribution circuit at property
2. Minimal improvements to be ADA compliant
3. No New Transformer Required
4. Minimal trenching required to the most usable parking stall area
5. Existing space for new electrical equipment (in the most usable stall area)

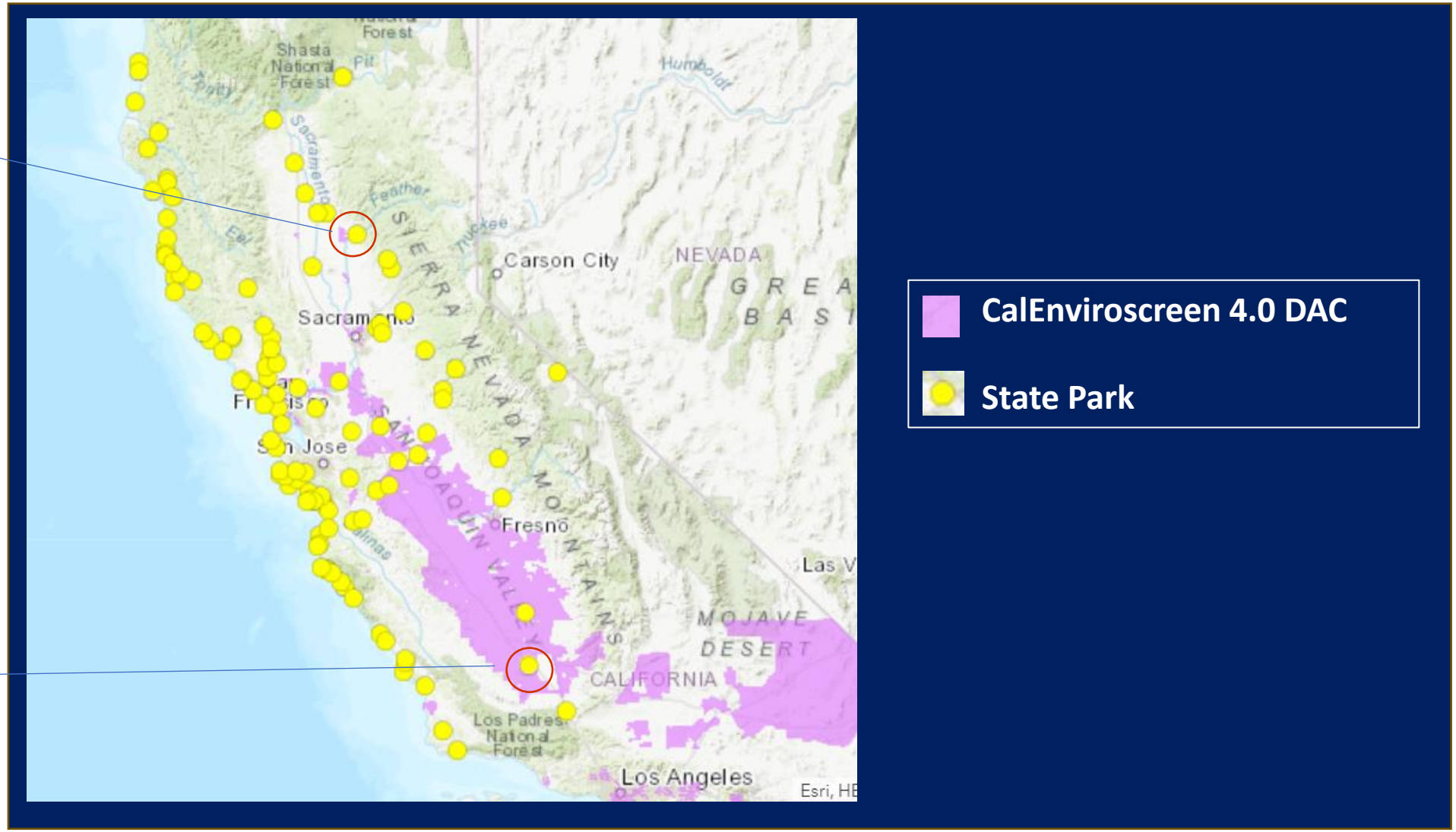
Limited number of Parks in or near DACs

Only 8 State Parks in the service territory have at least one parking area within a DAC, or 6% overall.

Lake Oroville SRA (multiple parking areas)

Two DAC sites were considered in full desktop review

Tule Elk SRA



Site Selection Process

DACs were prioritized throughout every phase of site selection, even though the proposed site portfolio does not include any.

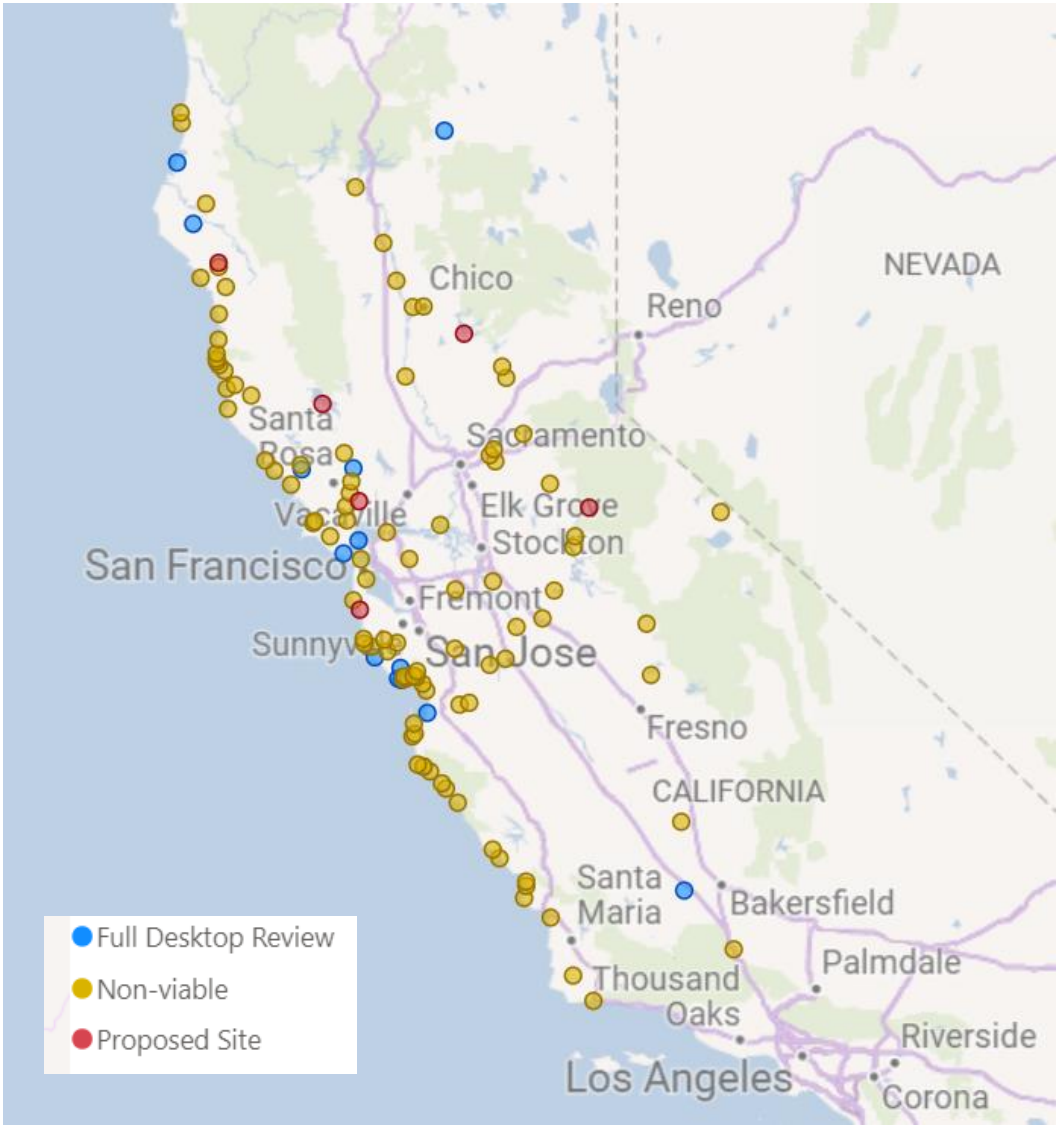
Proportion DACs	Selection Gates	Evaluation Criteria
8 of 130	GIS Data Analysis	PG&E Review of all Parks using GIS data.
8 of 30	Partial Desktop Review	Brief review of available power and ADA using satellite maps.
8 of 30	District Meetings	Gather input from Park staff on visitor habits and needs for various Parks.
2 of 20	Full Desktop Review	Develop high level cost estimate for site design and validate electric design.
1 of 14	Site Walk	Visit each site to develop a detailed cost estimate and confirm feasibility.
0 of 6		Determine which sites to move forward into addendums and backups.

Proposed Portfolio

Property Name	District	# L2 ports	# DCFC ports	Installed KW	Miles to Nearest DAC
LAKE OROVILLE SRA (Bidwell Marina)	Northern Buttes	10		100	6
HALF MOON BAY STATE BEACH	Santa Cruz	4	4	400	10
SONOMA SHP	Bay Area	10		100	10
CLEAR LAKE SP	Northern Buttes	10	4	460	40
CALAVERAS BIG TREES SP	Central Valley	8		80	44
BENBOW LAKE SRA	North Coast Redwoods		4	360	90
Total		**42**	**12**		

PG&E's proposed Parks portfolio:

- Exceeds requirement of 40 Level 2 and 3 DCFC
- Has 50% of sites within 10 miles of a DAC



DAC Advice Letter - Overview

Background: Tier 2 Advice Letter will be filed as required by OP 4 to reallocate funds.

Summary: PG&E is requesting to reallocate funds currently reserved to meet the 25% DAC target for Parks, to make a proposed portfolio resulting in:

- 50% of sites within 10 miles of a DAC
- Exceeded targets for L2 ports, and
- Exceeded targets for DCFC ports

Summary of Key Points:

1. There exists little overlap between DACs and State Parks.
2. PG&E applied a rigorous analysis which prioritized DAC locations at each step of site selection
3. PG&E and State Parks agree that the proposed portfolio balances a variety of priorities for EV charging infrastructure in Parks; Both parties are eager to move into the construction phase upon disposition of the AL.
4. Without the ability to reallocate, PG&E may not meet regulatory minimums for number of chargers and would have a less geographically diverse set of locations.

Additional Program Updates

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EV Fleet Advisory Services (FAS)

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EV Fleet Advisory Services (EV FAS)

EV Fleet Advisory Services Website

Program Summary: PG&E's EV Fleet Advisory Services offers one-on-one help to eligible medium and heavy-duty fleets to help with vehicle electrification planning, implementation, and operation

Eligibility: MDHD fleets in underserved communities that are schools, transit agencies, municipalities, or small businesses

Budget: $18.8M through 2026

Program Status:

- Beta launch on November 25, 2024 – offering limited set of services via invite-only
- 15 applications received as of 12/31/2024
- Full program launch in Q1 2025

Planned service offering:

- Fleet Electrification 101
- Fleet Planning Study
- Site review
- Capacity assessment
- Charging equipment selection and right-sizing
- Consulting on load management, VGI, rates
- Service application tracking
- Non-wires alternatives support for load-restricted customers
- Charging load and rate optimization for energized sites
- Guidance on grants and funding, LCFS credits

Cadmus Energetics Updates

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EV Fleet Program 3rd Party Evaluation Findings for EY23

Prepared for Pacific Gas and Electric Company
Program Advisory Council
January 29, 2025

ZM ASSOCIATES Environmental Consultants

DAVENERGY solutions DEDICATION ALIGNMENT VALUE

NREL NATIONAL RENEWABLE ENERGY LABORATORY

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Introduction

Programs and Budgets

Total Utility investment: **$270M over 4-6 years**

	Program	Budget ($Millions)
Pacific Gas & Electric (PG&E)	EV Fleet Program	$236.3
	EV Fast Charge Program	$22.4
	Schools Pilot (AB 1082)	$5.8
	Parks Pilot (AB 1083)	$5.5
	Total	**$270**

Team Partnership

Tasks across evaluation

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- Surveys
- Program Performance
- ME&O
- Interviews
- Total Cost of Ownership
- Health Impacts
- Delphi Panels
- NTG
- Truck Choice Model
- LDV Regression Model
- V2G

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NREL NATIONAL RENEWABLE ENERGY LABORATORY ZM ASSOCIATES Environmental Consultants DAVENERGY solutions

- Site Visits
- Grid Impacts:
  - AMI Synthesis & Annualization
  - EVSP Analysis
  - Billing Data
- Deep Dives
- GHG, Criteria Pollutant
- Petroleum
- LDV Counterfactual
- MDHD Counterfactual

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Program Metrics (as of December 31, 2023)

Program Targets (Sites & EVs)

TARGETS

PG&E EV Fleet
$236M, 700 sites, 6,500 EVs

APPLICATIONS

455

CONTRACTS

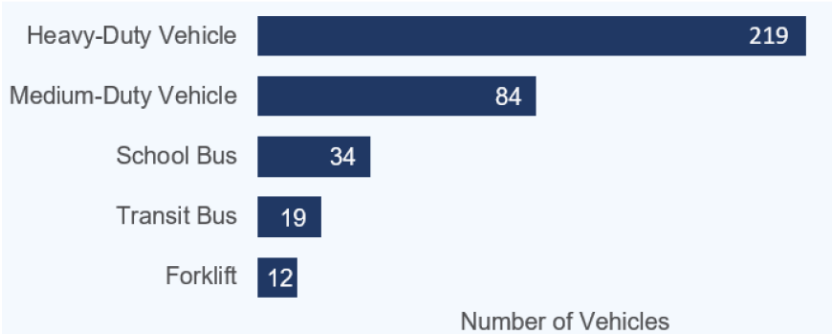
239
(4,942 EVs)

ACTIVATED PROJECTS

62 Sites
- 630 ports
- 874 EVs
- Spend: $49.5M of $236M

Market Sector Diversity

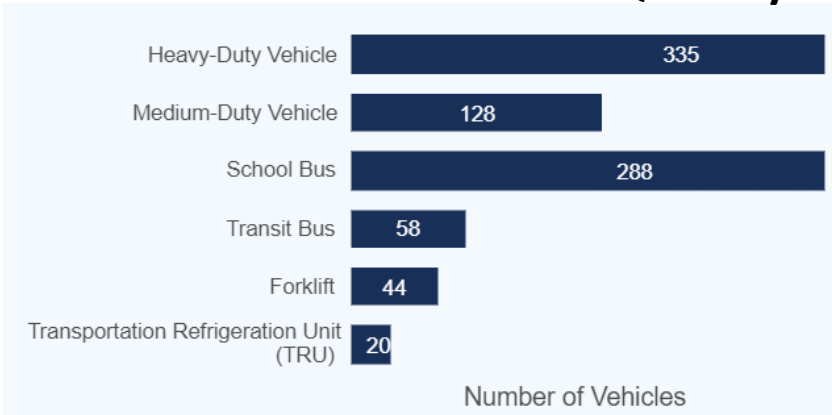
EY2023 Sites: VAP Vehicle Quantity



EY2023 Takeaways

- **Medium- and Heavy-Duty Vehicles** have increasing presence
  - Large fleet adoption
- The **School Bus sector** continues to grow
  - EPA and CEC grants

Program-to-Date Sites: VAP Vehicle Quantity



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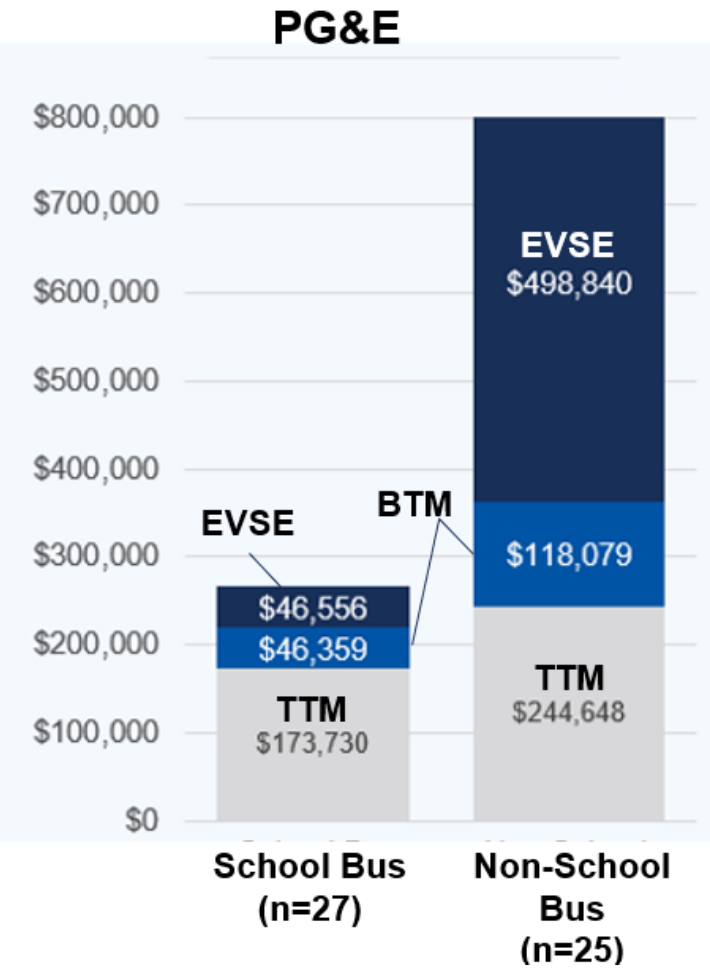
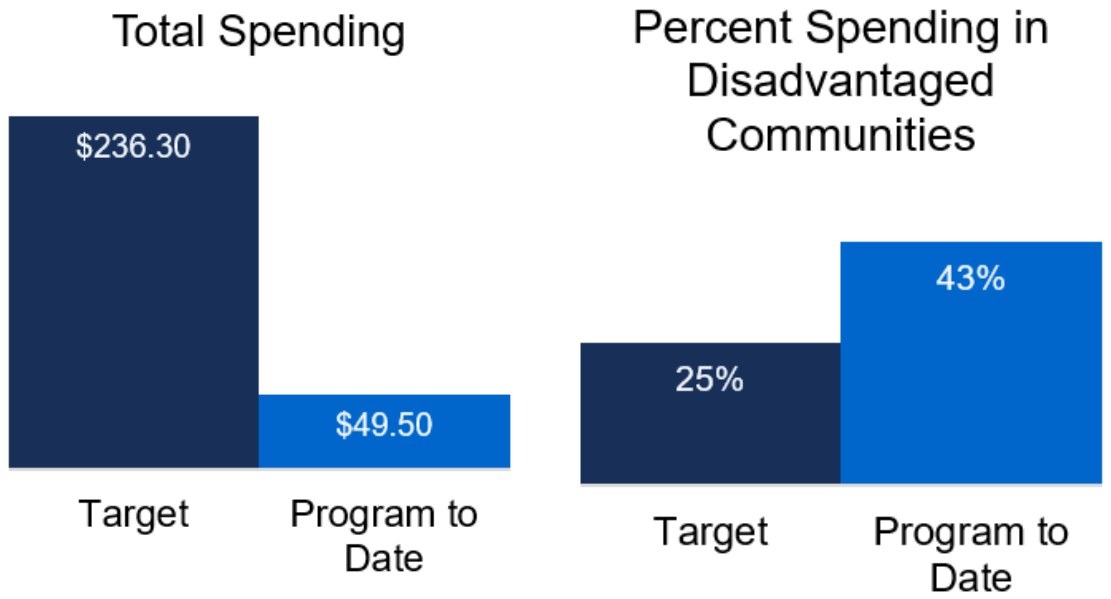
Cost Summary



- Average site-level costs including what the Utility pays and the site host pays to install the chargers
- EVSE is the largest estimated cost across sites
- Mix of charging power drives results, as illustrated in the left two bars (i.e., school buses rely on L2 much more)

Program spending is ramping up slowly; however, spending in disadvantaged communities exceeds targets in most programs.



Costs for installing infrastructure vary across market sectors and are corelated with the installed charging capacity (kW).

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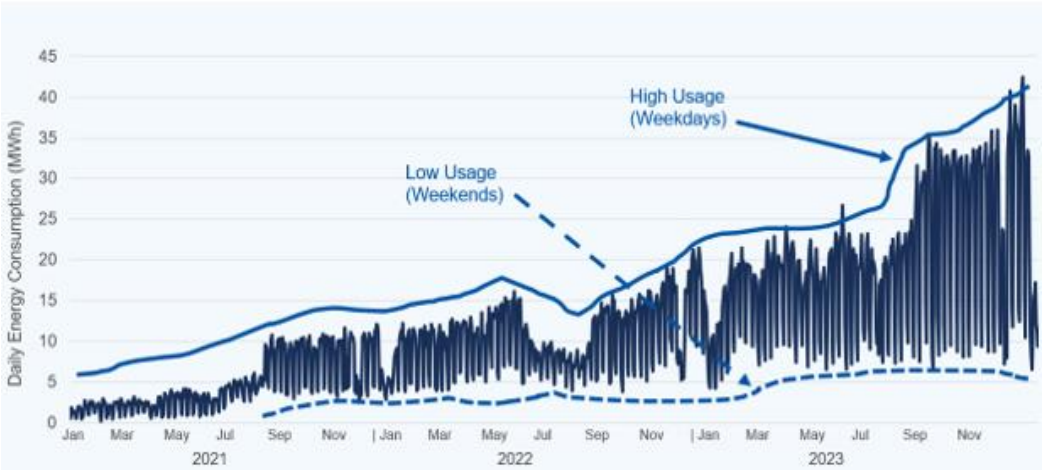
Grid Impacts

Energy Use Trends

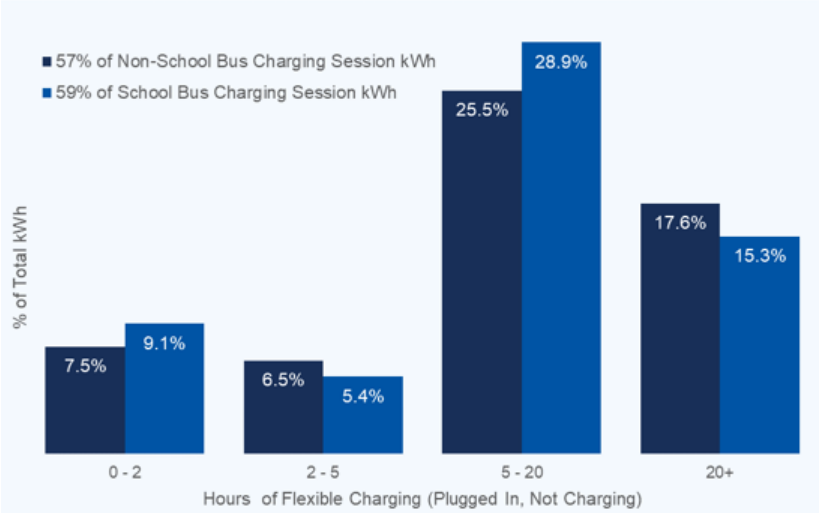
Figure 129. PG&E EV Fleet Program Daily Energy Consumption for PTD Sites



- **Daily energy consumption and demand** across all sites has continued to **increase**.
- There are wide variations in daily energy consumed, as well as in consumption between weekdays and weekends.

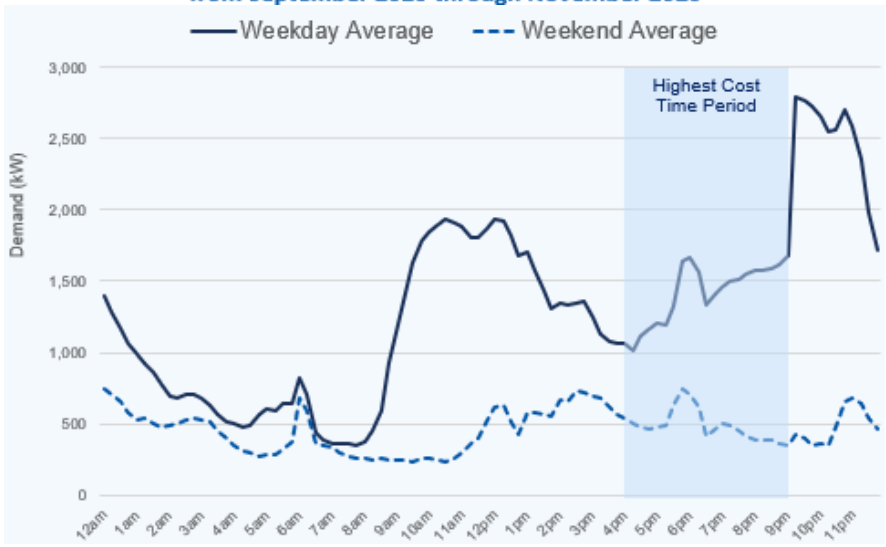
Load Management

Figure 135. PG&E EV Fleet Program Flexible Charging Availability for PTD Sites in Sessions Overlapping the Time Period Between 4 p.m. and 9 p.m.



Over 40% of charging sessions have enough **flexibility to avoid charging during peak periods**

Figure 134. PG&E EV Fleet Program Weekday and Weekend Daily Average Loads for PTD Sites from September 2023 through November 2023



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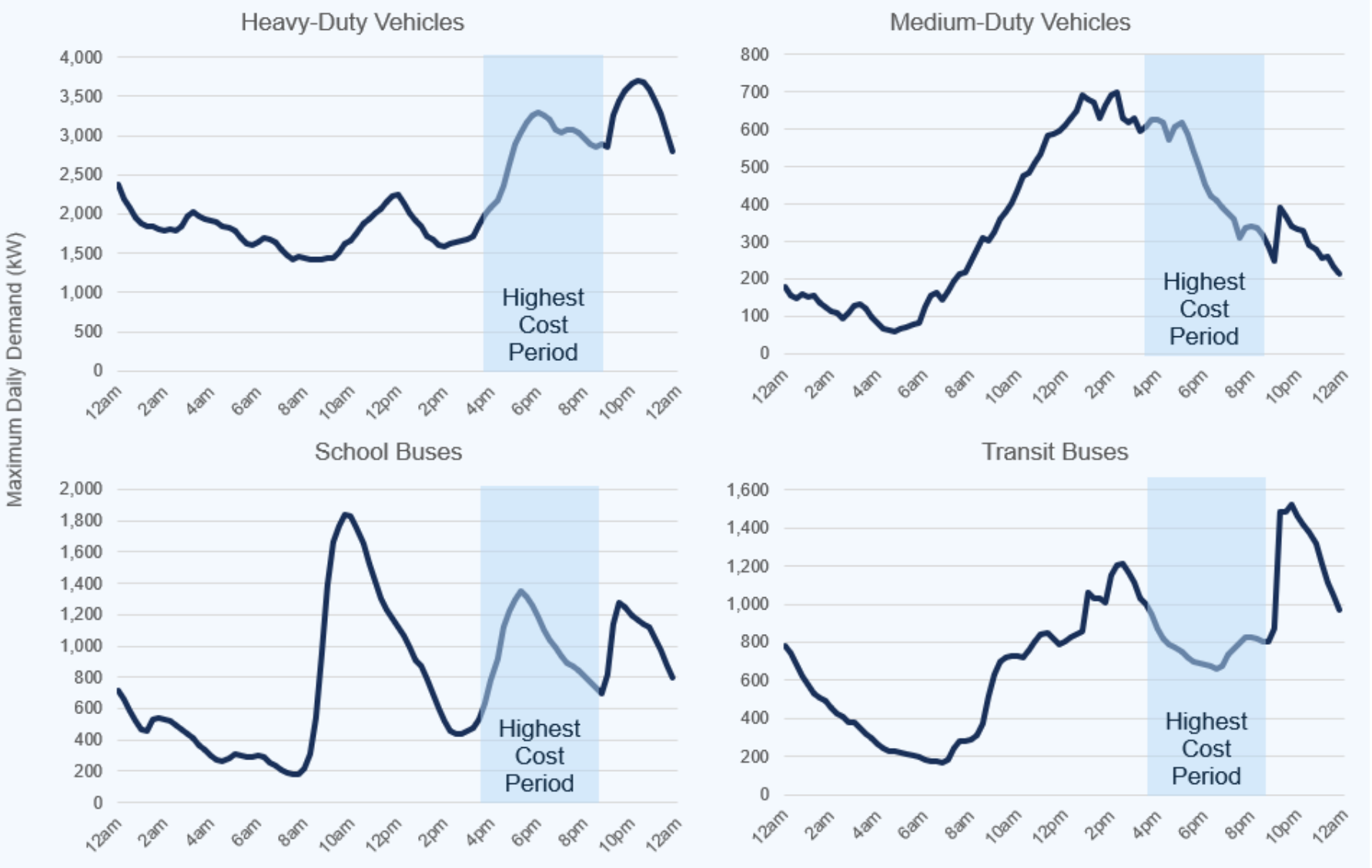
MDHD | Grid Impacts – Statewide Daily Load Curves

Average Daily Load Curve for Four Market Segments - October 2023 through December 2023

- All four market segments shows a spike in demand at 9 p.m.
  - Indicating sites are implementing load management to avoid the highest cost period.
- This is most pronounced in the Transit Bus segment
  - Showing a **drop in demand of nearly 50% between 2-6 p.m.,** followed by an **increase of almost 50% at 9 p.m**.
- Heavy-Duty vehicle market segment has the highest demand between 4-9 p.m.
- Medium-Duty vehicle market segment has the most consistent load profile
- School Bus segment exhibits charging peaks after morning routes and again in the late afternoon during the highest cost period
  - Significant opportunity to reduce costs through load management



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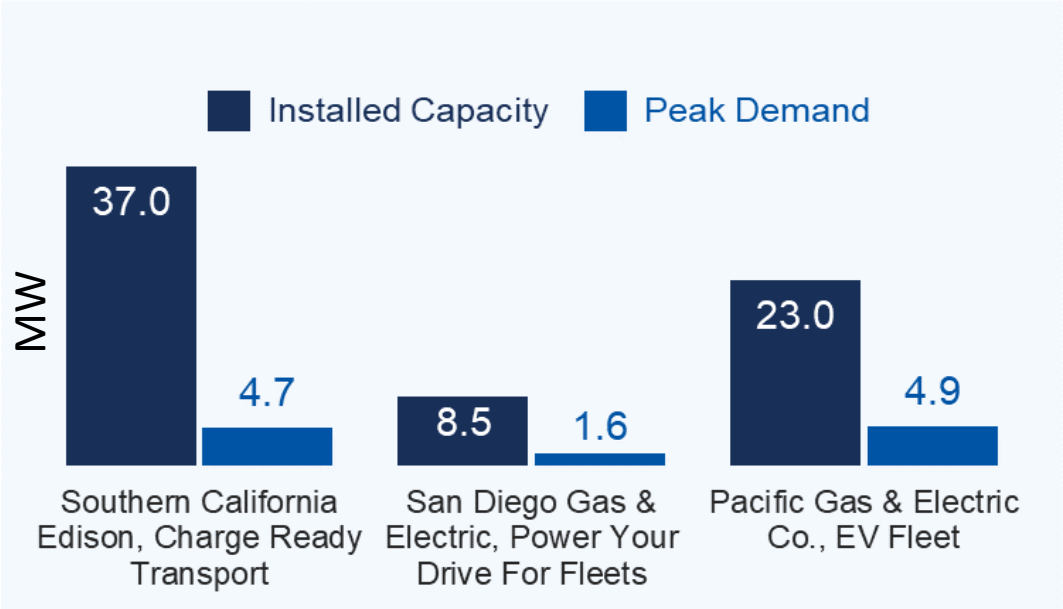
Medium-Duty / Heavy-Duty | Statewide Lessons Learned

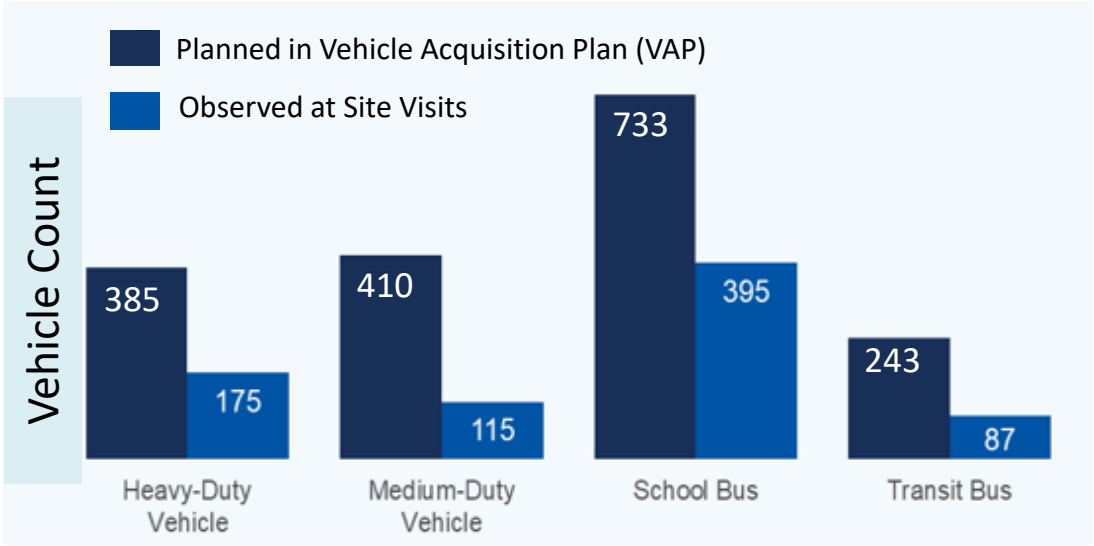
Installed Capacity vs. Peak Demand (MW)



Only **28 of the 138** activated sites exhibited the use of **load management**

Though overall demand for electric vehicle charging increased substantially in EY2023, customers are only using a small percentage of installed charging capacity, and the majority of fleet operators are not implementing load management.

Planned vs. Observed Vehicles



Utilization is expected to increase as fleet operators receive additional planned vehicles

Vehicle deliveries are not running on schedule; therefore, most fleets have not yet acquired the vehicles per their agreement with all Utilities.

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MDHD | Statewide Recommendations

Continue to contact customers on an annual basis following site activation.

Utilities should continue to contact customers on an annual basis (at minimum) following site activation to ensure that sites are proactively identifying load management opportunities. The Evaluation Team recommends focusing on school bus sites—which typically do not manage load—and large sites such as those with greater than 1 MW installed capacity—which have the greatest opportunity to manage load. By identifying and documenting reasons why customers are not actively managing load, program staff and the Evaluation Team can build more-targeted recommendations for addressing load management barriers

Incorporate ongoing lessons learned into programs. Continue to communicate recommendations for updates to program design and metrics to regulators and other stakeholders.

Utilities are significantly lagging in their progress toward site goals and are spending their allocated budgets slower than expected. Ongoing lessons learned by Utility staff and from evaluation findings should be incorporated into programs to promote improvements. To ensure changes can be implemented in a timely manner, Utilities should continue to communicate recommendations for updates to program design and metrics to regulators and other stakeholders. For many changes, regulatory support will be needed to implement these recommendations. For example, the cost threshold metrics designed by the Utilities—which are based on CPUC decisions—can create barriers to greater and more-diverse site participation. Program changes are needed to meet the overarching goals to advance transportation electrification.

Take a proactive approach to track progress toward the Vehicle Acquisition Plans.

The vehicle counts observed during site visits tend to be significantly lower than customers' Vehicle Acquisition Plans (even when compared with the expected annual procurement). Taking a proactive approach to tracking progress toward the Vehicle Acquisition Plans (with an annual customer contact about vehicle procurement, for example) would allow the Utilities to ensure that customers are following their Plan, which could contribute to improved program performance with respect to energy consumption, petroleum displacement, emissions reductions, and health impacts.

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Q&A

Link to EY23 Evaluation
Link to EY23 Presentation

Project Manager: Michael.Colby@Cadmusgroup.com
Technical Director: Ziga.Ivanic@clearesult.com

VGI Pilots

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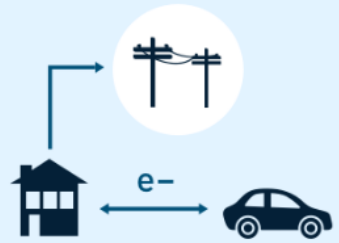
Vehicle to Everything (V2X) Pilot Programs

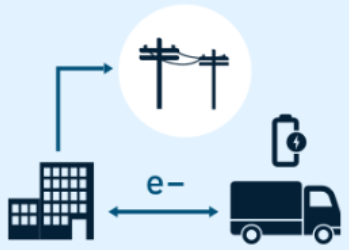
Pilot #1: Residential



Enrollment: We have 2 customers enrolled.

Eligible Equipment: Ford F-150 Lightning MY 2022/2023/2024 paired with the Ford 80 Amp Charge Station Pro and Sunrun Home Integration System

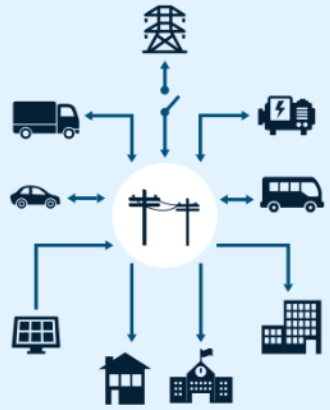
Pilot #2: Commercial



Enrollment: One customer with 74 chargers is enrolled and able to export.

Eligible Equipment: Tellus Power bidirectional chargers paired with BYD-RIDE School Buses

Pilot #3: microgrids



Phase 1 - Testing Cohort / Redwood Coast Airport Microgrid:

- Parking lot construction completed
- Chargers installed
- New completion date estimated Q2 2025

Phase 2 – Incentive Cohort

- Open enrollment began Q4 2024

Q & A

Together, Building
a Better California


PG&E

MDHD | Infrastructure Costs

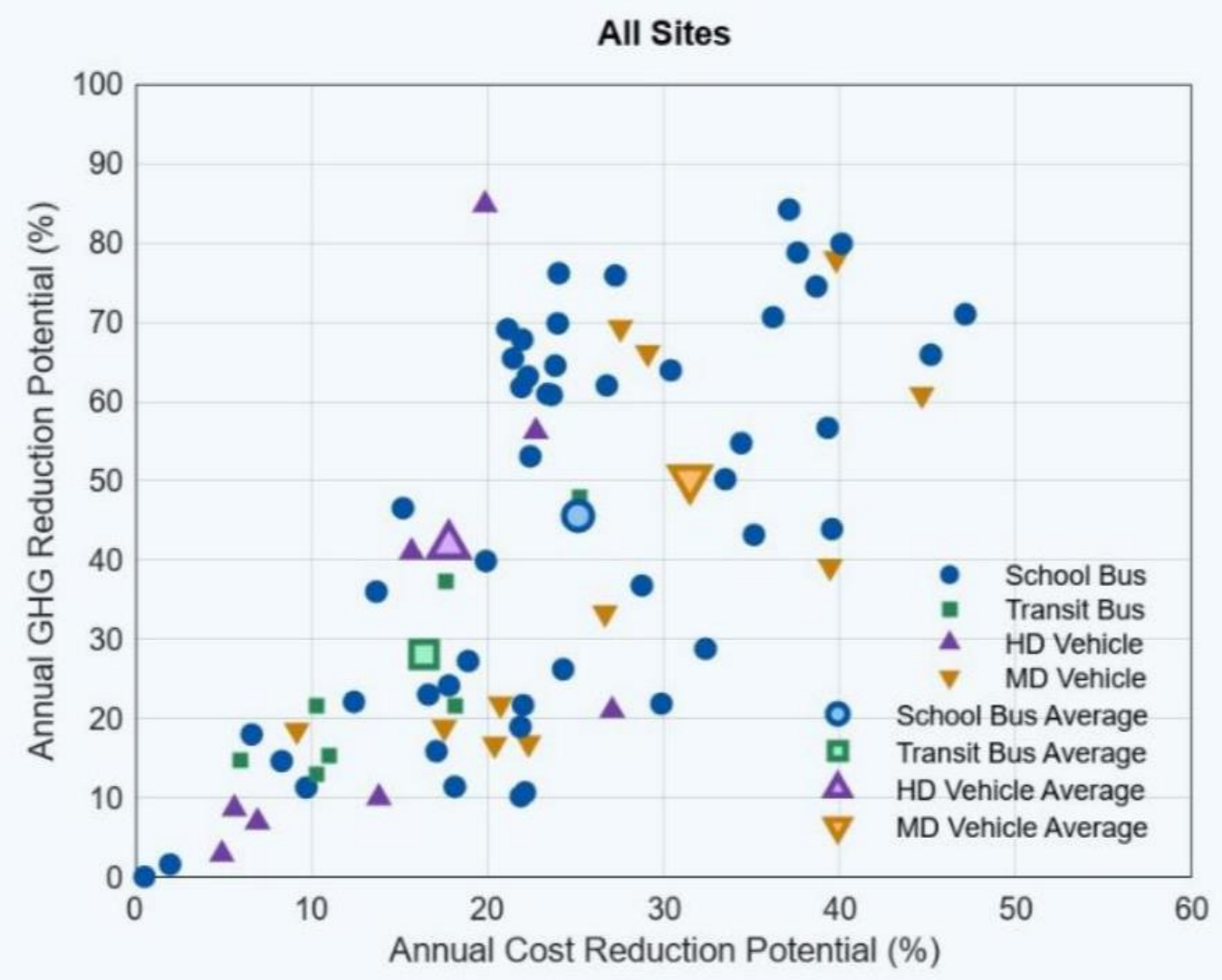
TTM and BTM Cost versus Installed Site Capacity (kW)

TTM = To the meter, BTM = Behind the meter

- Curves show relationship between infrastructure costs and installed capacity (kW)
- Smaller sites are more expensive per kW
- Around 500 kW curves for TTM and BTM flatten

MDHD | NREL Optimization

Potential Cost and Attributed GHG Emissions Reductions



Total Count of 2023 Operating Days
- SCE: 8,598
- PG&E: 8, 210
- SDG&E: 3,342

Cost Reduction Potential (%)
- SCE: 27.1%
- PG&E: 19.3%
- SDG&E: 23.1%

Total Number of Fleets
- SCE: 33
- PG&E: 30
- SDG&E: 13

GHG Reduction Potential (%)
- SCE: 39.7%
- PG&E: 50.3%
- SDG&E: 20.5%

Estimated cost and GHG emissions reductions for each site **resulting from a cost-minimizing load management strategy** *considering carbon intensity only as a tiebreaking factor when there is sufficient charging flexibility

Shifting charging load to reduce costs shows the potential to **reduce GHG emissions** by an even greater percentage than costs

Public