Discussion of Evaluation Year 2024

Report on SRPs and AB Pilots

September 17, 2025

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CLEAResult® energetics Energy Sustainability Consulting

ZM ASSOCIATES Environmental Consultants

NREL NATIONAL RENEWABLE ENERGY LABORATORY

ITS UCDAVIS INSTITUTE OF TRANSPORTATION STUDIES

Agenda

- Introduction
- Medium-Duty and Heavy-Duty Fleets
  (SCE Charge Ready Transport, PG&E EV Fleet, and SDG&E Power Your Drive For Fleets)
- Public Charging
  (Schools, Parks and Beaches, and PG&E EV Fast Charge)
- Q&A

Introduction

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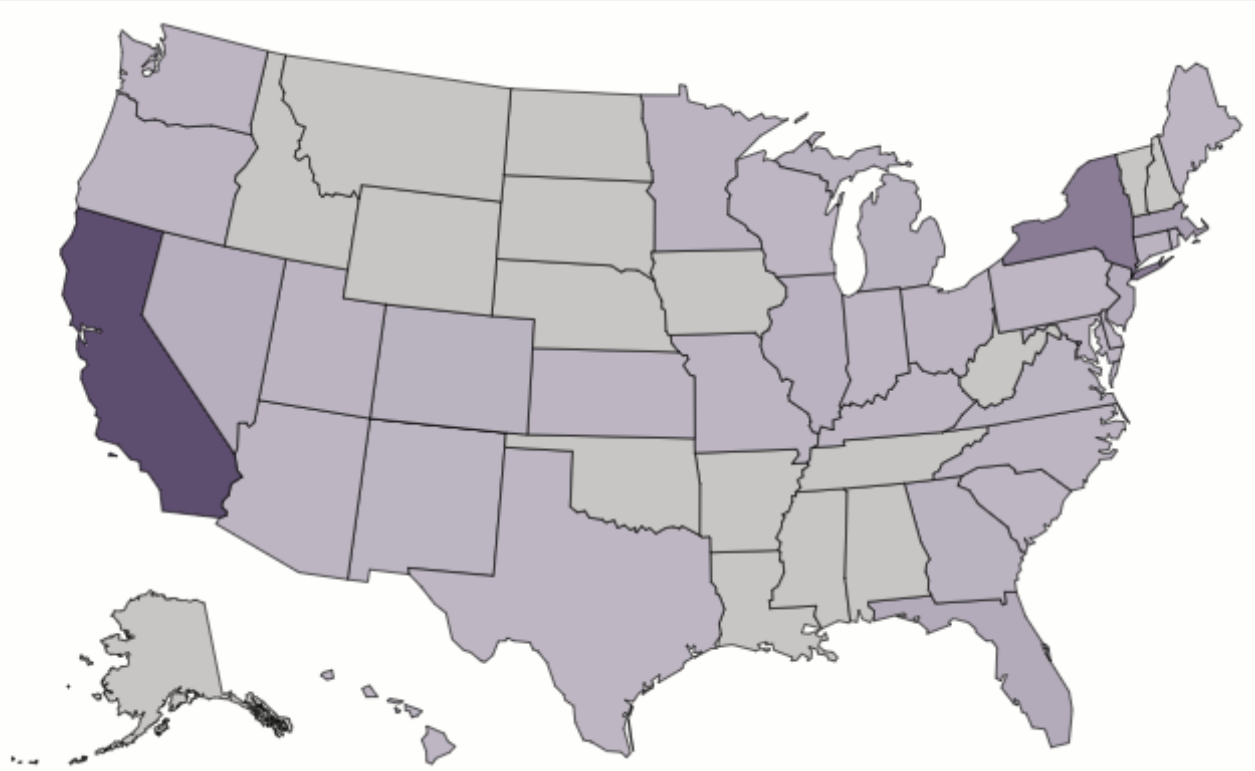
Introduction | Programs and Budgets

Total Utility Investment: **$765M over four to six years**

	Program	Budget ($Millions)
Liberty	*EV Bus Infrastructure Program*	*$0.2*
	Schools Pilot	$3.9
	Parks Pilot	$0.8
Pacific Gas & Electric (PG&E)	EV Fleet Program	$236.3
	EV Fast Charge Program	$22.4
	Schools Pilot	$5.8
	Parks Pilot	$5.5
Southern California Edison (SCE)	Charge Ready Transport Program	$342.6
	Schools Pilot	$9.9
	Parks Pilot	$9.9
San Diego Gas & Electric (SDG&E)	Power Your Drive for Fleets Program	$107.4
	Vehicle-to-Grid Pilot	*$1.7*
	Schools Pilot	$9.9
	Parks Pilot	$8.8
	Total	**$765**

Approved EV Make-Ready Filings
($ Invested)



Source: Atlas Public Policy, EV Hub
www.atlasevhub.com/materials/electric-utility-filings/

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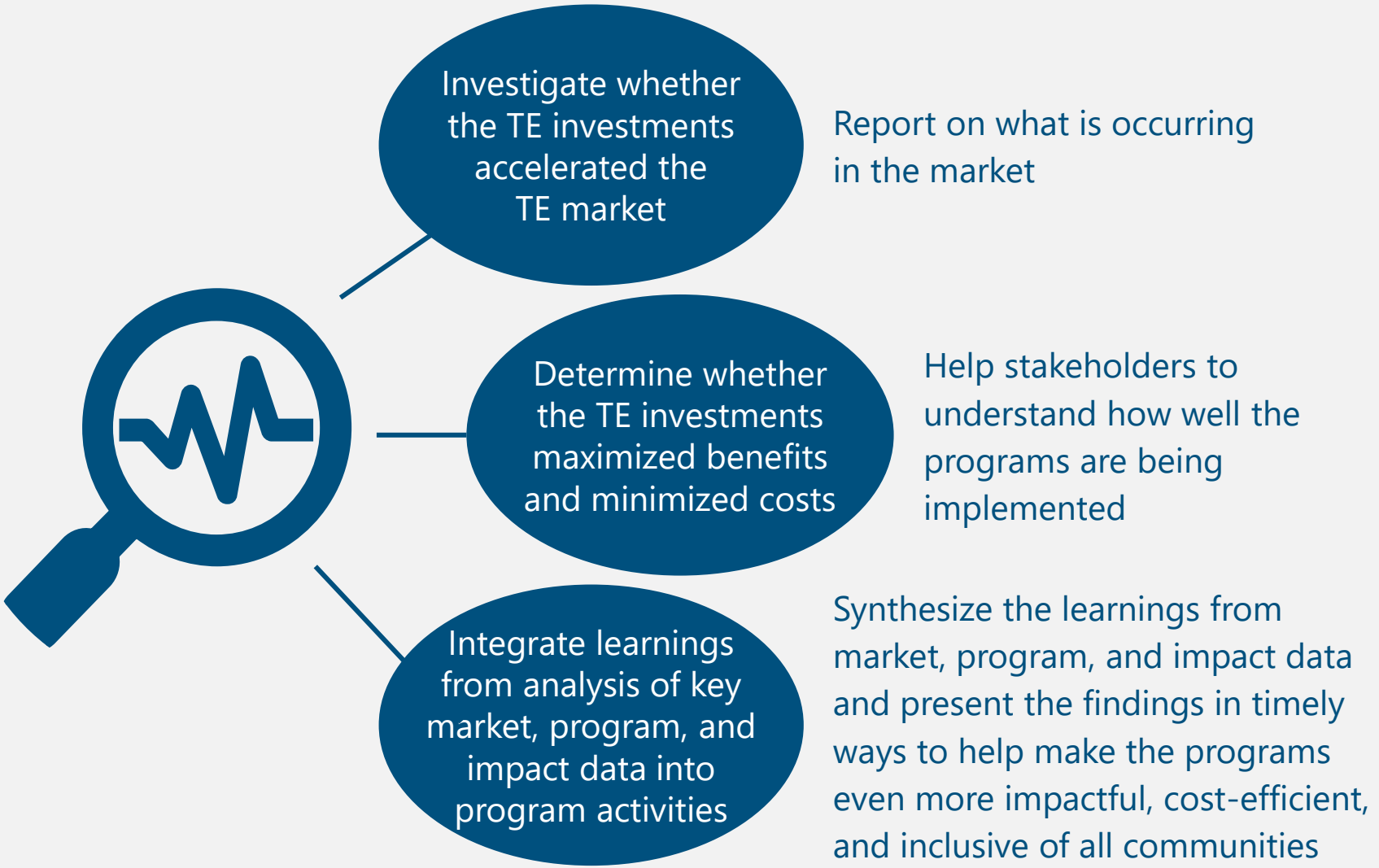
Introduction | Evaluation Objectives

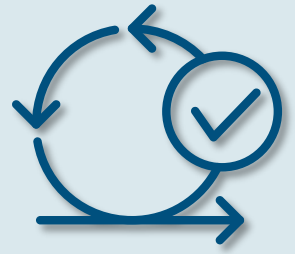
Evaluation Research Objectives



Report on what is occurring in the market

Help stakeholders to understand how well the programs are being implemented

Synthesize the learnings from market, program, and impact data and present the findings in timely ways to help make the programs even more impactful, cost-efficient, and inclusive of all communities



Our approach is based on these core objectives to deliver timely feedback, a durable yet flexible evaluation framework and deep market insights to guide future investments.

Introduction | Evaluation Activities

Data Collection

	MDHD	Public Charging	*V2G*
Program Data and Materials	✓	✓	✓
AMI/EVSP Data	✓	✓	✓
Site Visits	✓	✓	✓
Interviews	✓	✓	✓
Surveys	✓		
Delphi Panel	✓		

Analysis

	MDHD	Public Charging	*V2G*
EV Adoption Regression		✓	
Grid Impacts	✓	✓	
Counterfactual Development	✓	✓	
Petroleum Displacement	✓	✓	
GHG and Criteria Pollutant	✓	✓	
Health Impacts	✓	✓	
Total Cost of Ownership	✓	✓	
Site Visit Findings	✓	✓	
Co-Benefits and Co-Costs	✓		
Interviews/Survey Findings	✓	✓	✓
Market Effects	✓		

Introduction | 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

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

Introduction | Program Activity

Summary of completed sites as of December 31, 2024

Program-Wide Totals

Utility Construction Complete	
EY2024: 102	PTD: 340

↓

Activated	
EY2024: 101	PTD: 313

↓

Operational	
EY2024: 102	PTD: 307

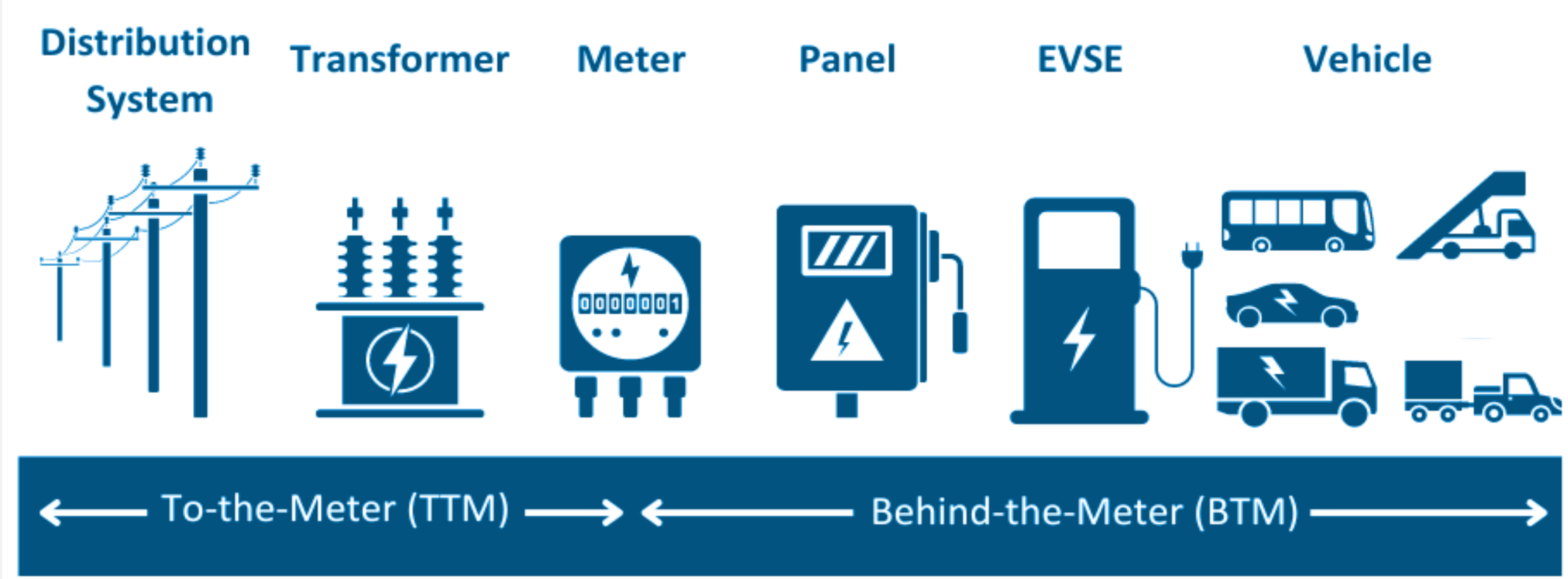
↓

Closeout	
EY2024: 125	PTD: 249

Activated Totals

		EY2024	PTD
SCE	Charge Ready Transport	31	86
	Schools	1	22
	Parks	0	0
PG&E	EV Fleet	46	108
	Schools	1	12
	Parks	0	0
	EV Fast Charge	11	29
SDG&E	Power Your Drive for Fleets	4	25
	Schools	4	19
	Parks	2	11
Liberty	Schools	1	1
	Parks	0	0

Introduction | Infrastructure



- 14 programs support both to-the-meter (TTM) and behind-the-meter (BTM) infrastructure upgrades
- Utilities pay 100% for TTM infrastructure costs and for some or all BTM costs
- Similar California programs are Rule 29, Rule 45, CALeVIP, EnergIIZE

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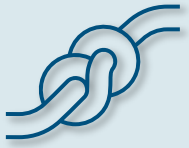
Introduction | Unique Contributions

Large volume of **real-world data** in a clean, consistent format (for example, ~25% of electric MDHD in dataset)

Diversity of vehicle categories, fleet participants, tariffs, etc.



Site cost, meter data, charger data, and **billing data**

Interactive dashboards on site performance (not public)

Medium-Duty and Heavy-Duty Fleets

SCE Charge Ready Transport, PG&E EV Fleet, and SDG&E Power Your Drive For Fleets

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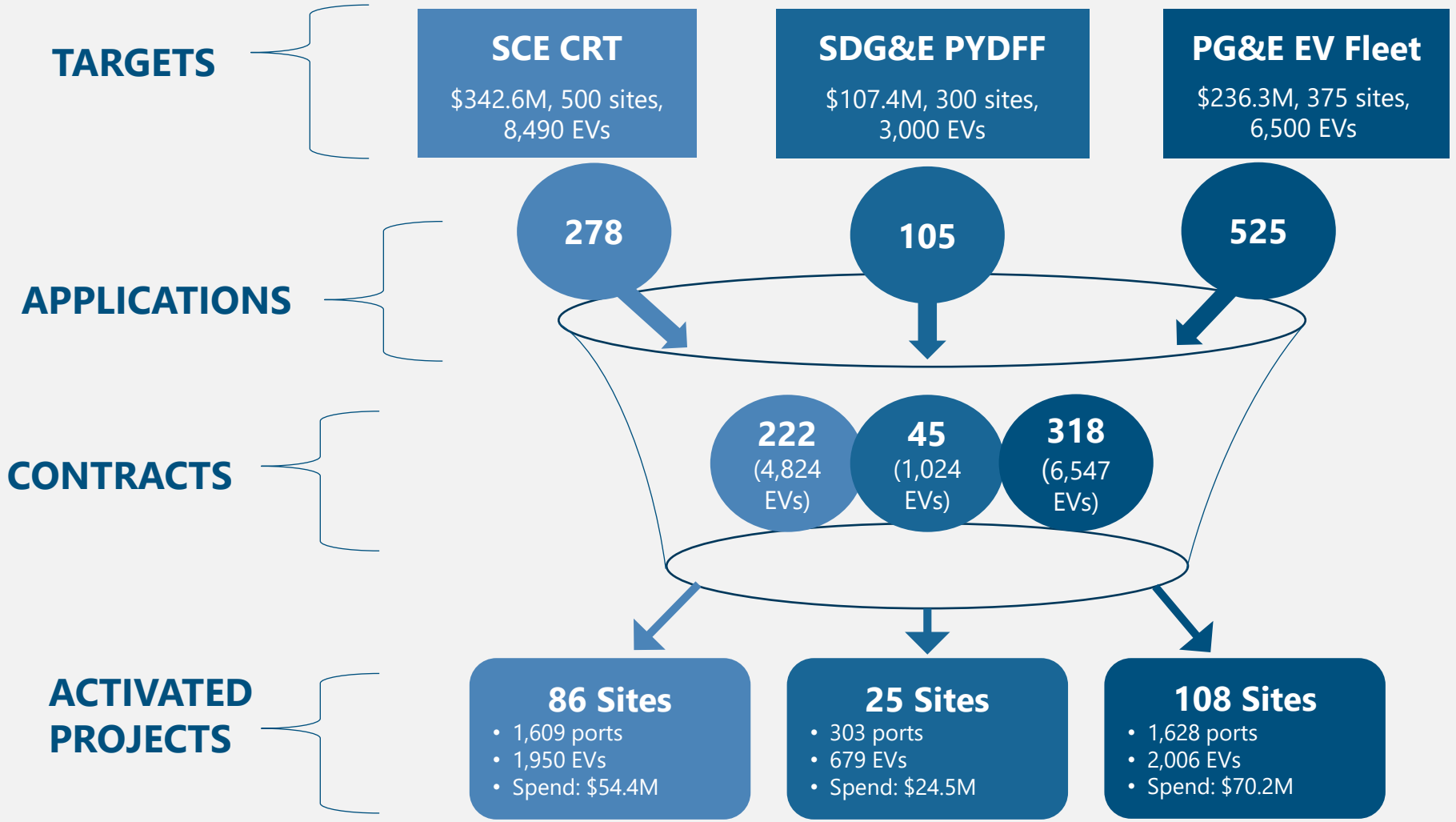
MDHD | Progress Toward Program Targets

Program Targets (Sites & EVs) / Received Applications / Signed Contracts / Completed Sites



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MDHD | 2024 Findings

Positive impacts in fourth year of evaluation; **1,925** MDHD EVs toward goal of **17,990**

Population of Activated Sites in EY2024 (#)

81

Ports Installed in Analyzed Sites (#)

1,590

EVs Supported (#)

1,925

Electric Energy Consumption (MWh)

36,348

The team derived the EVs supported value for MDHD programs from applicants' vehicle acquisition plans (VAP). This value represents the maximum number of vehicles expected to be supported by the charging infrastructure.

Petroleum Displacement (diesel gallons equivalent)

2,861,568

GHG Emissions Reduction (metric ton [MT] GHG)

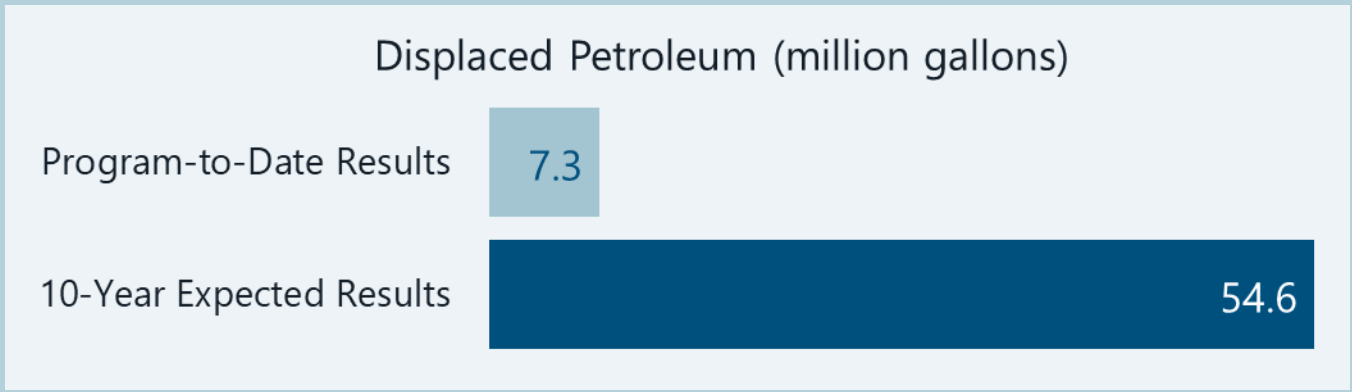
22,397

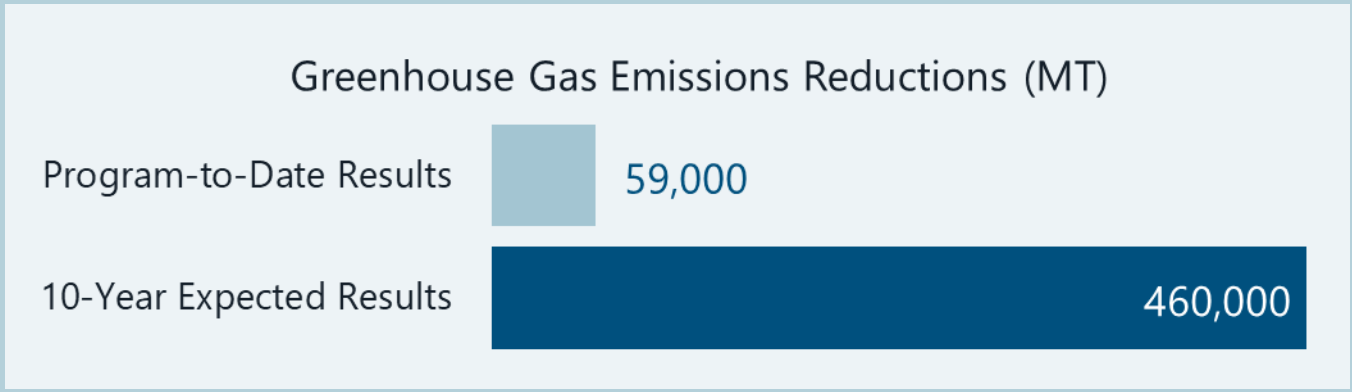
GHGs include carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O) multiplied by their respective Global Warming Potentials (GWP) as defined by the Intergovernmental Panel on Climate Change (IPCC) published fifth assessment (AR5; see the Methodology section for more details).

Local Emissions	Reduction (kg)
Oxides of Nitrogen (NO_x)	15,709
Particulate Matter (PM_{10})	159
Particulate Matter ($PM_{2.5}$)	148
Reactive Organic Gases (ROG)	1,055
Carbon Monoxide (CO)	112,575

MDHD | Lessons Learned

Utility Medium-Duty/Heavy-Duty program sites continue to displace petroleum, reduce greenhouse gas and local emissions, and achieve health impacts.





Utility MDHD programs have achieved a reduction of more than **400,000 kg** of **local carbon monoxide emissions** to date

Proportion of health benefits in DACs:

- SCE: **32%**
- PG&E: **18%**
- SDG&E: **14%**

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MDHD | Market Sector Mix

Market sector diversity continues

EY2024 Takeaways

Medium- and Heavy-Duty Vehicles have an increasing presence

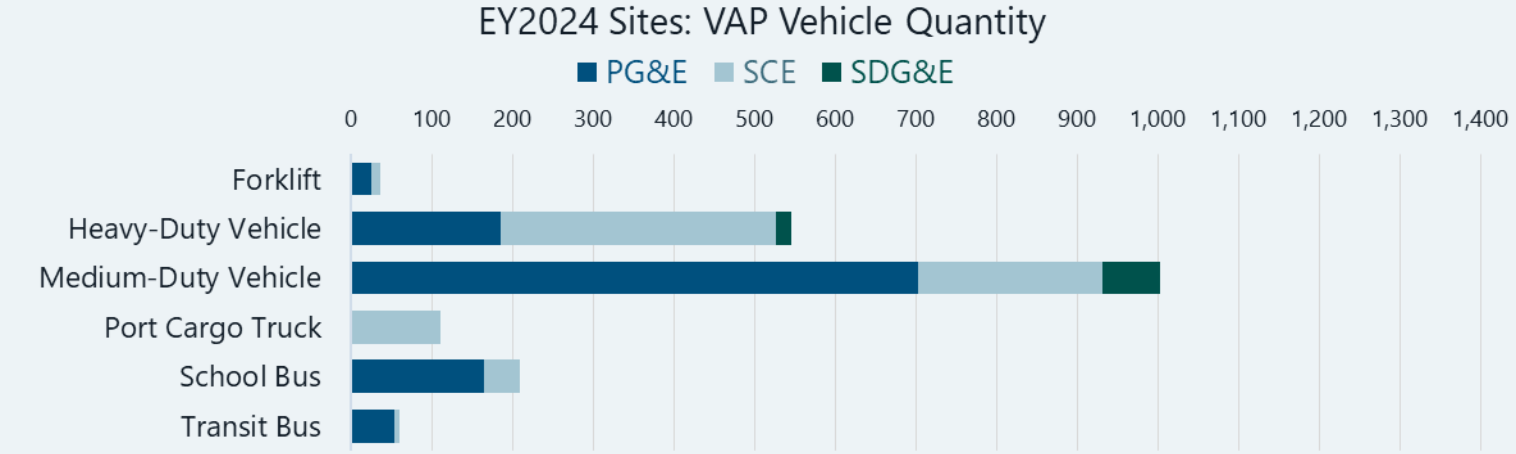
- National fleet operators and larger sites coming online.

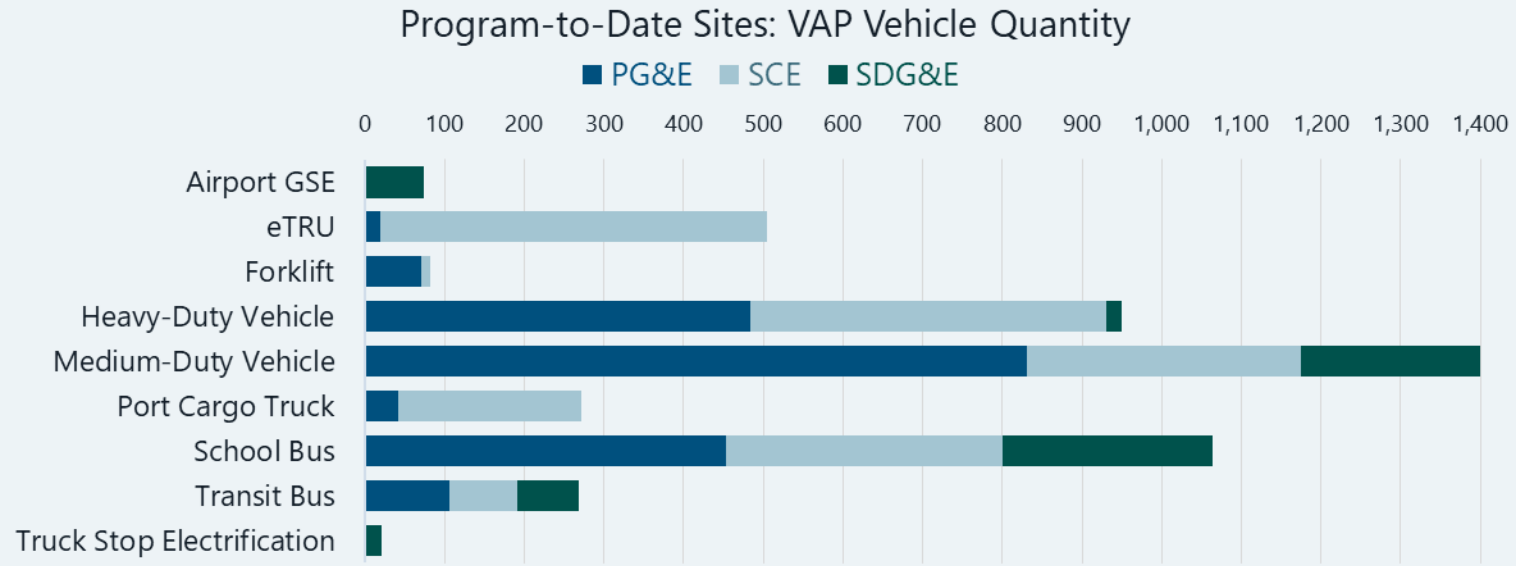
Medium-Duty Vehicles are now the most common across sectors.

- School buses have been the most common in all prior years.

The **School Bus sector** continues to grow.

- Second highest vehicle quantity in the program to date of all market sectors





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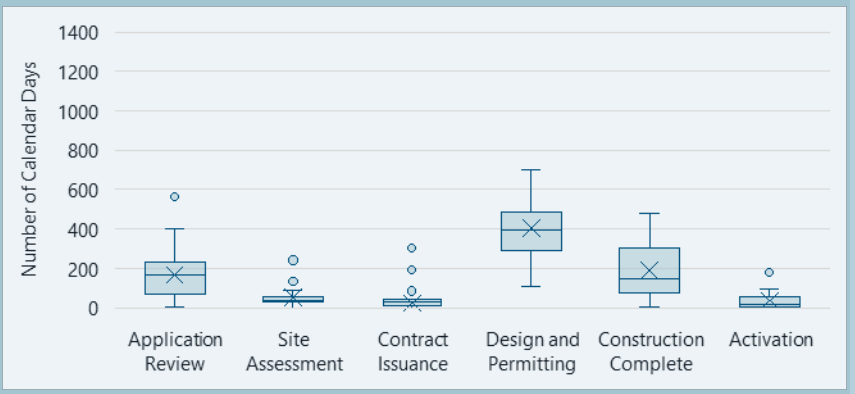
MDHD | Site Timelines

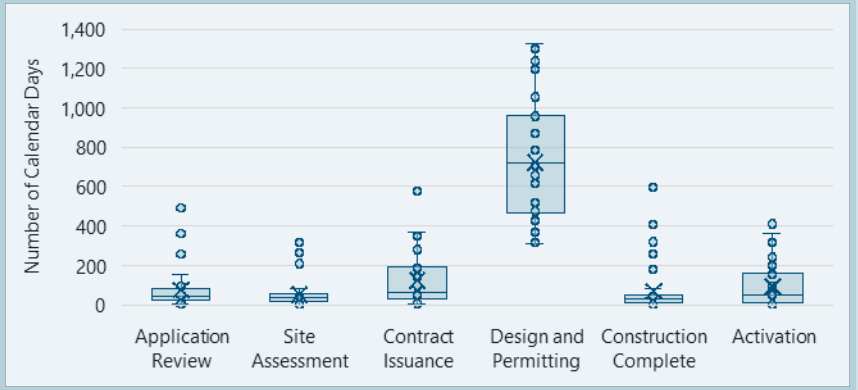
Calendar Days per Phase for EY2024 Activated Sites

- Timelines are generally longer than expected and vary widely by phase
- Original Utility estimates ranged from 11 to 19 months while overall program **medians** are between **24 and 33 months**
- Overall median calendar days have steadily increased in each of the last three years
- The **median start-to-finish** for all 81 EY2024 activated sites was **983 days**
- **Design and Permitting** is **longest phase** with a median of **491 days** in PTD sites, followed by Application Review with a median of 69 days

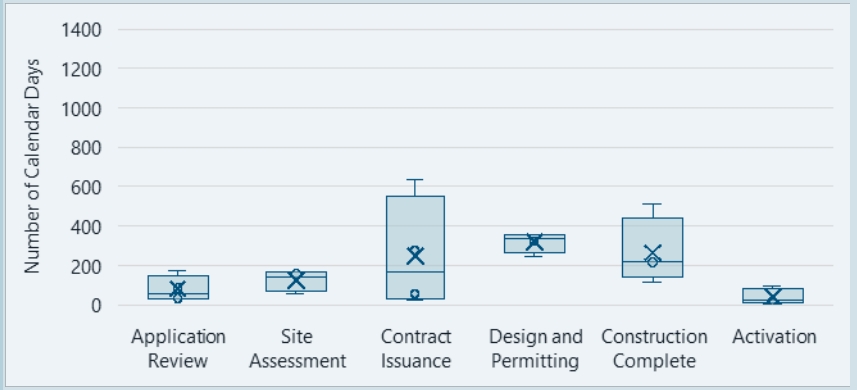
SCE Charge Ready Transport



PG&E EV Fleet



SDG&E Power Your Drive For Fleets



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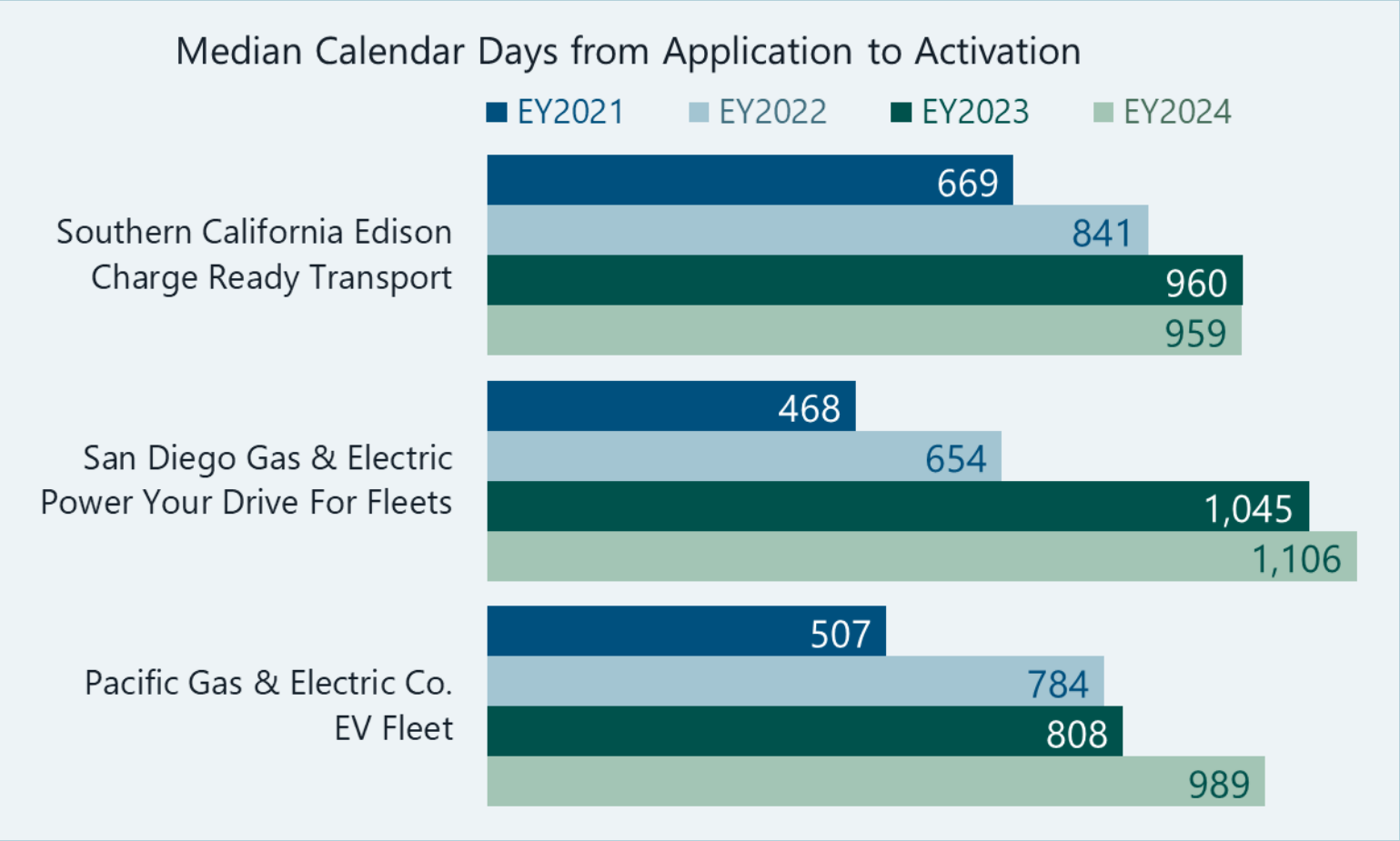
MDHD | Lessons Learned

Site activation timelines continue to increase as larger sites become operational.



Start-to-finish median calendar days for all MDHD programs:

- EY2021: **600 days**
- EY2022: **725 days**
- EY2023: **862 days**
- EY2024: **983 days**

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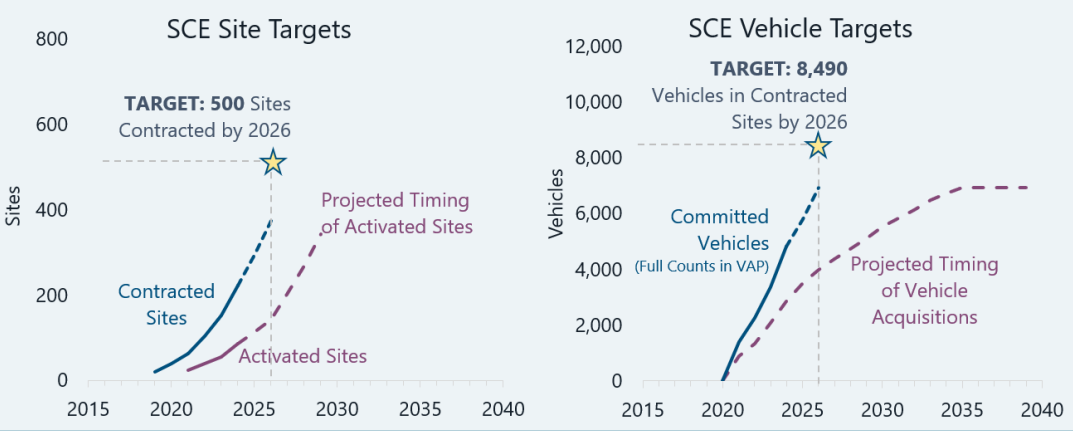
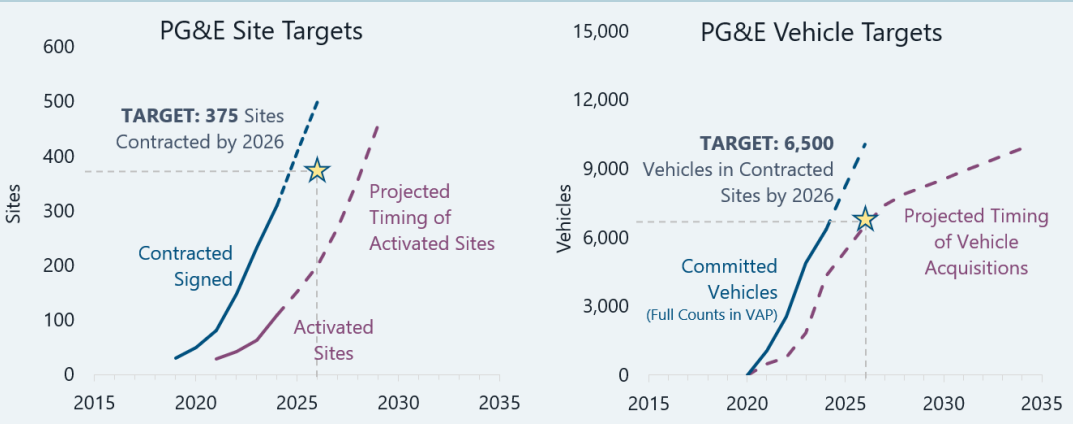
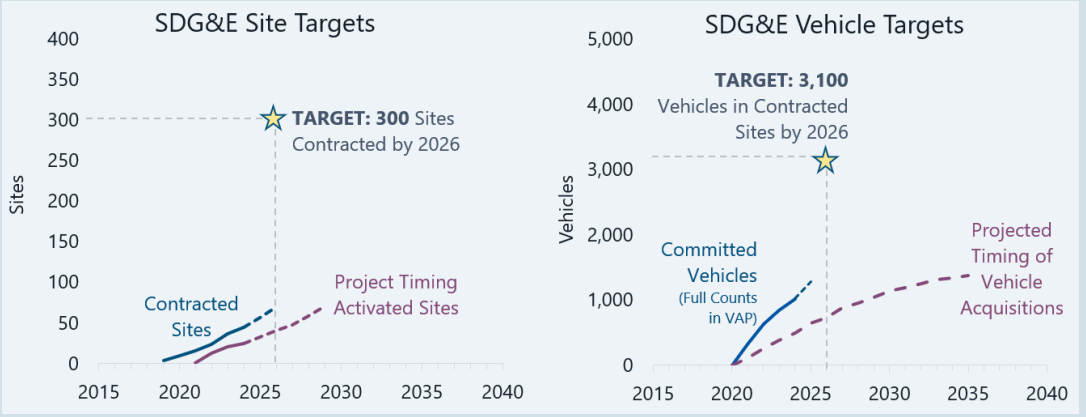
MDHD | Lessons Learned

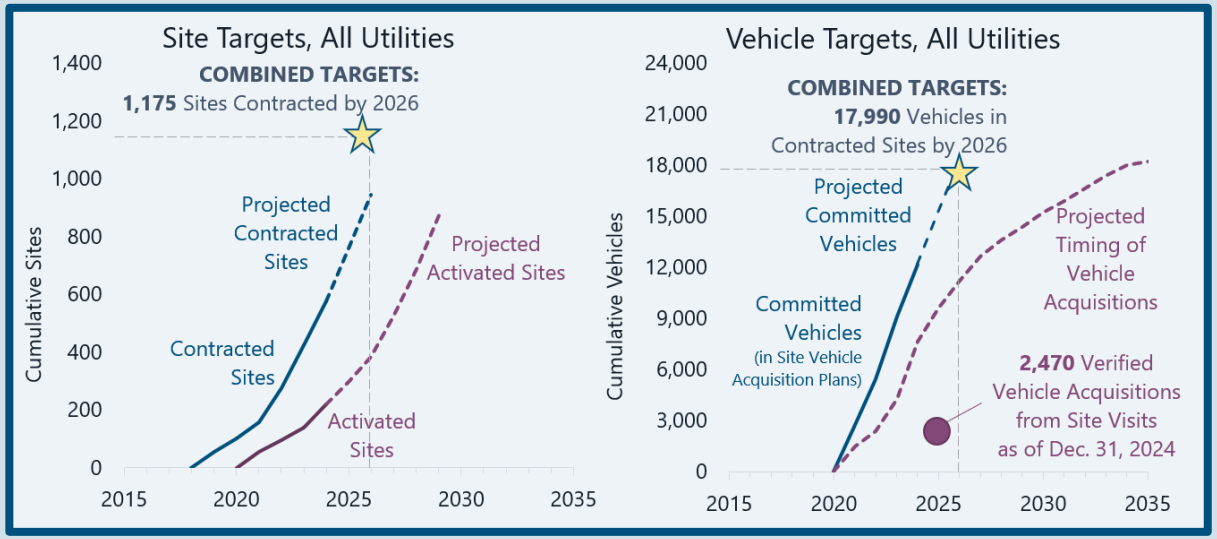
MDHD programs are having a meaningful impact on EV and charger deployments. However, program participation has been lower than expected in two of the three programs.







When all programs are aggregated, the Utilities will likely **meet the *combined vehicle* targets** (17,990 vehicles) but **fall short of the *combined site* targets** (1,175 sites)



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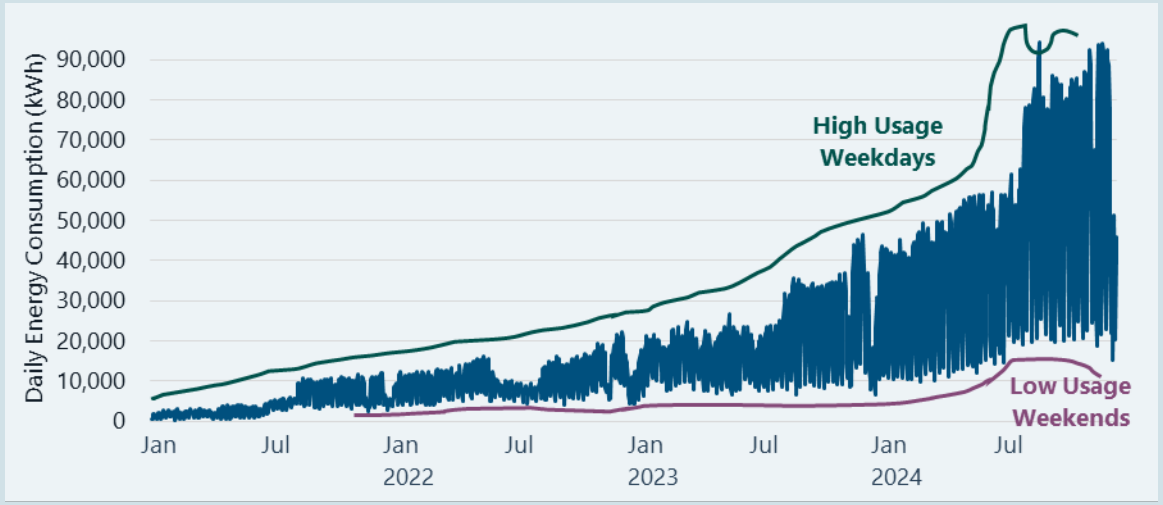
MDHD | Grid Impacts – Consumption

Program Daily Energy Consumption for PTD Sites

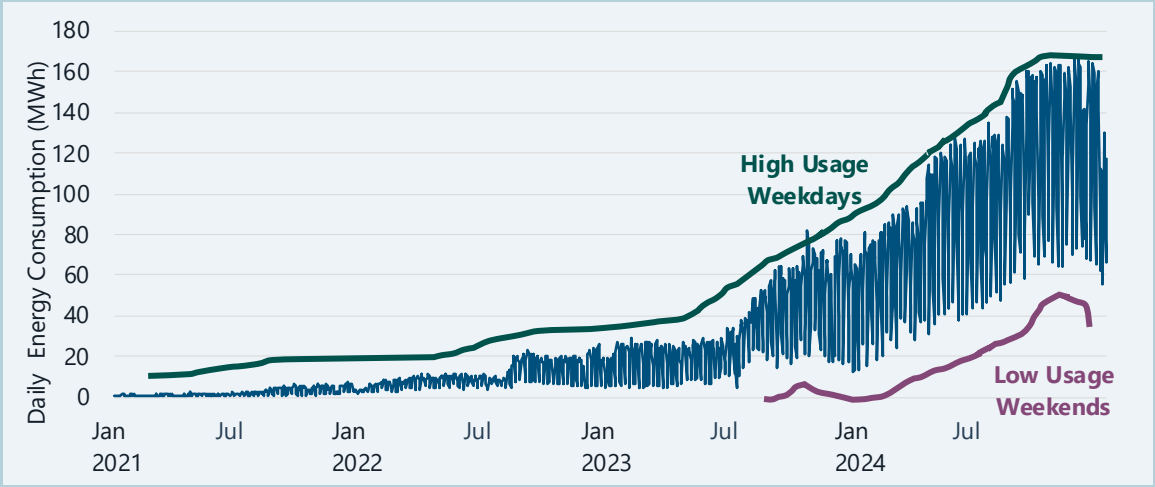
Daily energy consumption across all sites has continued to **increase**, especially as new larger sites have come online.

There are wide variations in daily energy consumed and also in consumption between weekdays and weekends.

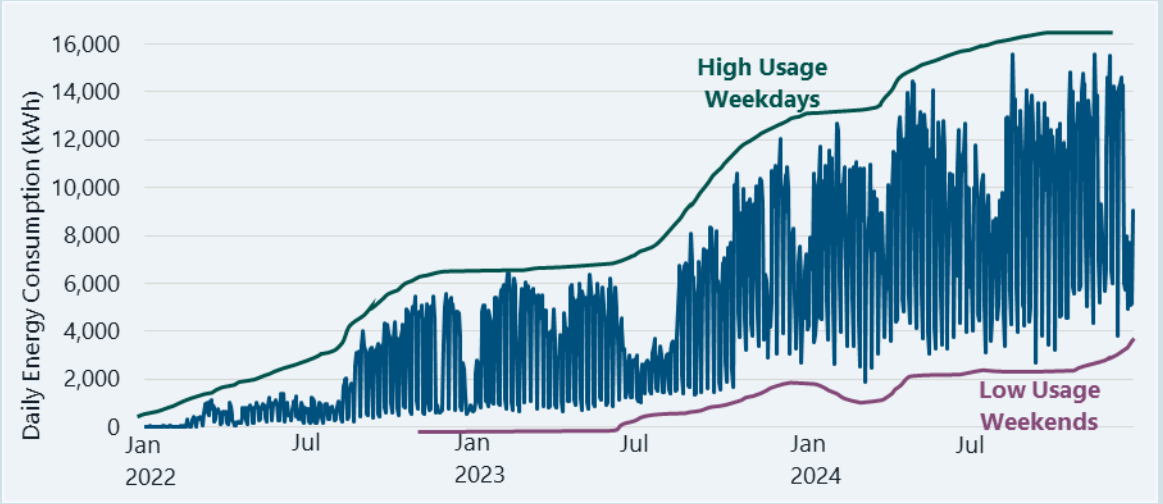
PG&E EV Fleet



SCE Charge Ready Transport



SDG&E Power Your Drive for Fleets



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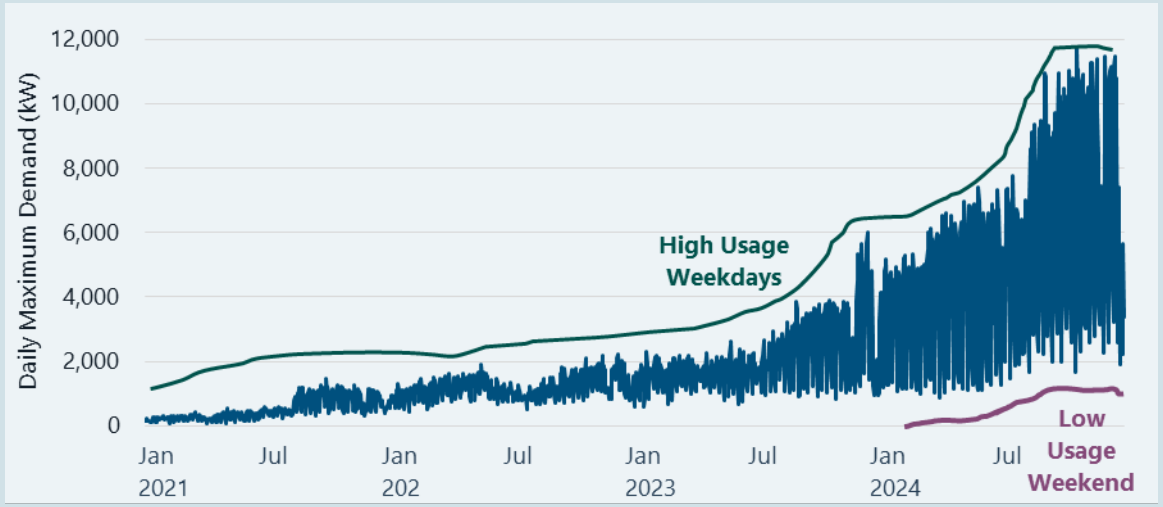
MDHD | Grid Impacts – Demand

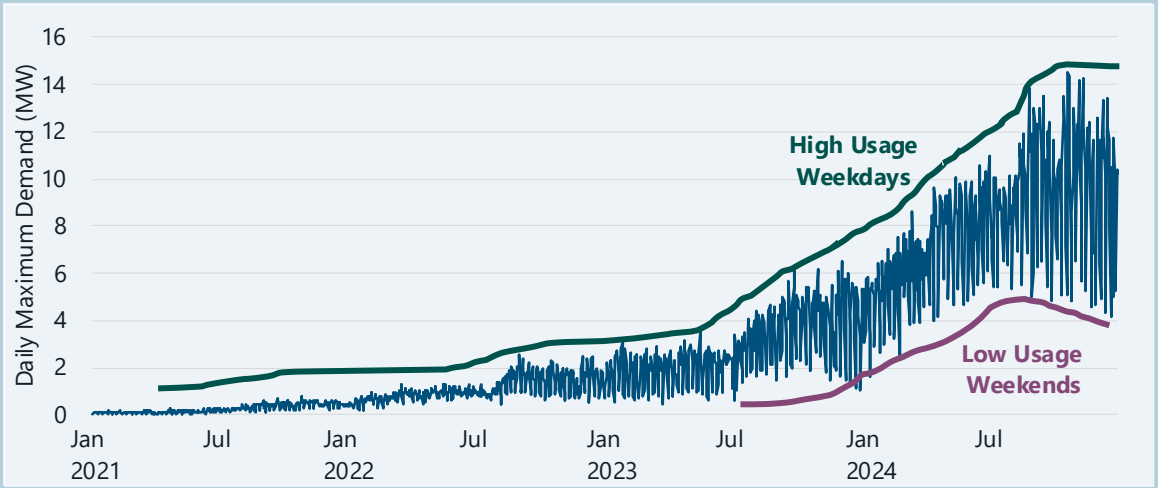
Program Daily Maximum Demand for PTD Sites

SCE and PG&E maximum demand **continues to grow** with time but has been **more consistent** in the second half of 2024.

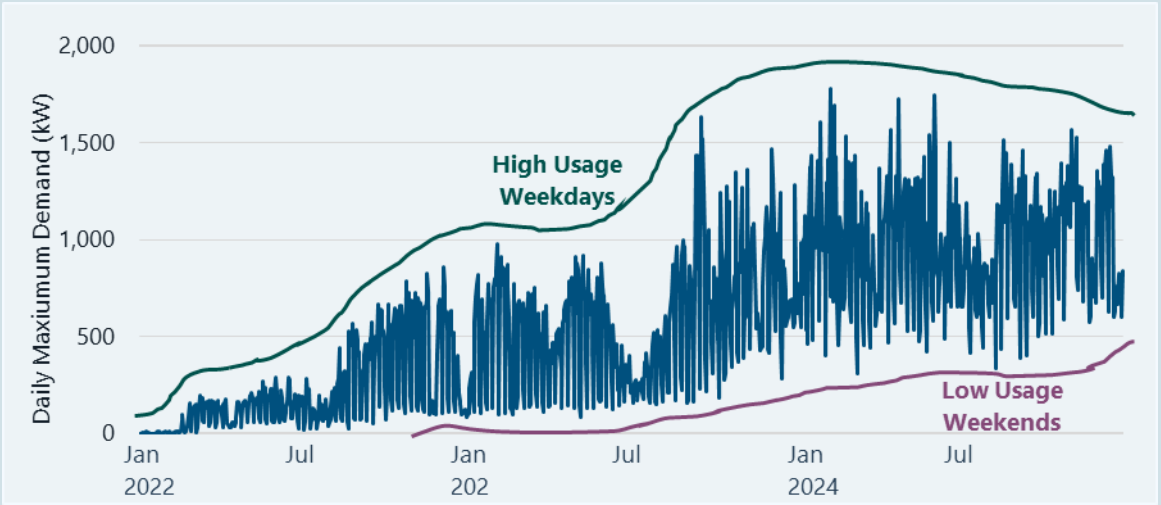
PG&E EV Fleet



SCE Charge Ready Transport



SDG&E Power Your Drive for Fleets



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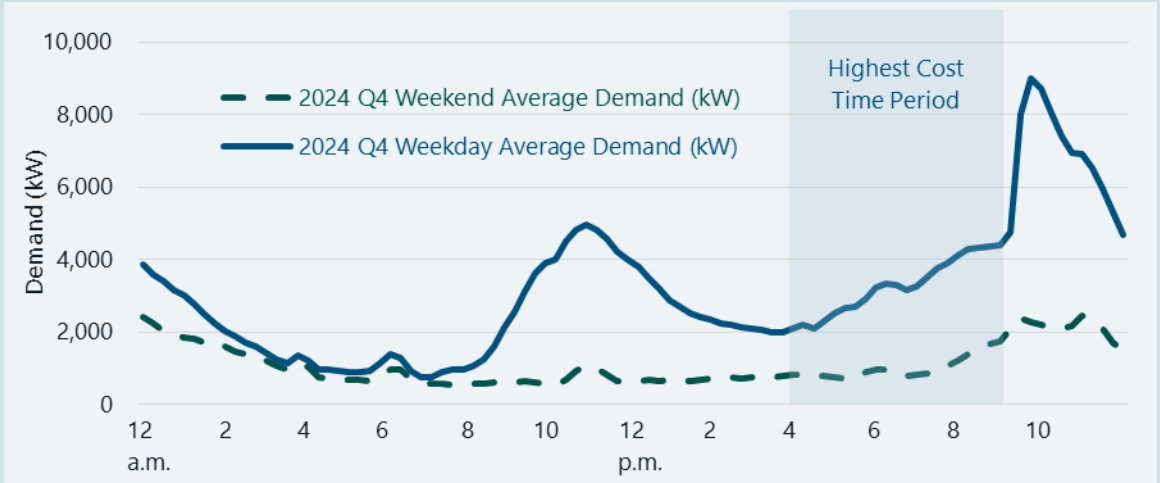
MDHD | Grid Impacts – Load Management

Average Weekday and Weekend Q4 2024 Load Curves

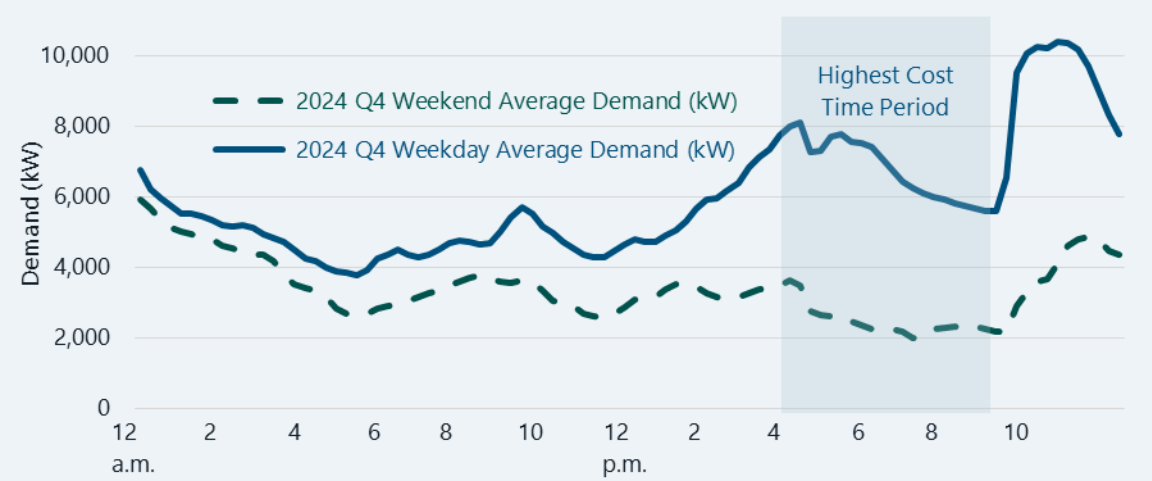
Significant unnecessary consumption from 4 p.m. to 9 p.m.

- **Only 21% of activated sites** (45 of 219) have exhibited the use of **load management** to date
  - **174 out of 219 sites are not using load management**
- A **steep increase in weekday demand at 9 p.m**. indicates that sites are employing load management to avoid high-cost energy
  - Minimizing demand appears less of focus than time-of-use.

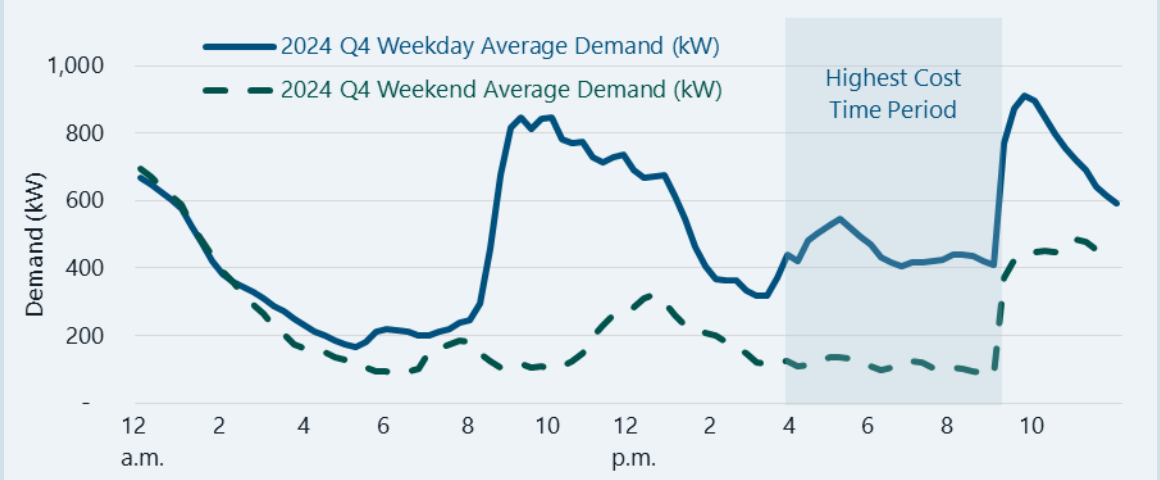
PG&E EV Fleet



SCE Charge Ready Transport



SDG&E Power Your Drive for Fleets



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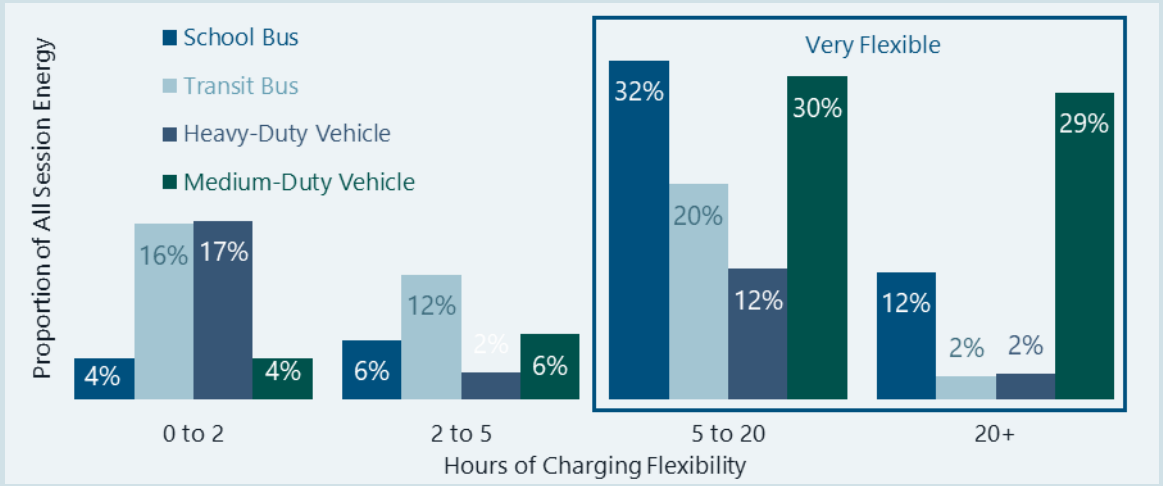
MDHD | Grid Impacts – Load Management

Charging Flexibility for PTD Sites of Sessions Overlapping the Time Period Between 4 p.m. and 9 p.m.

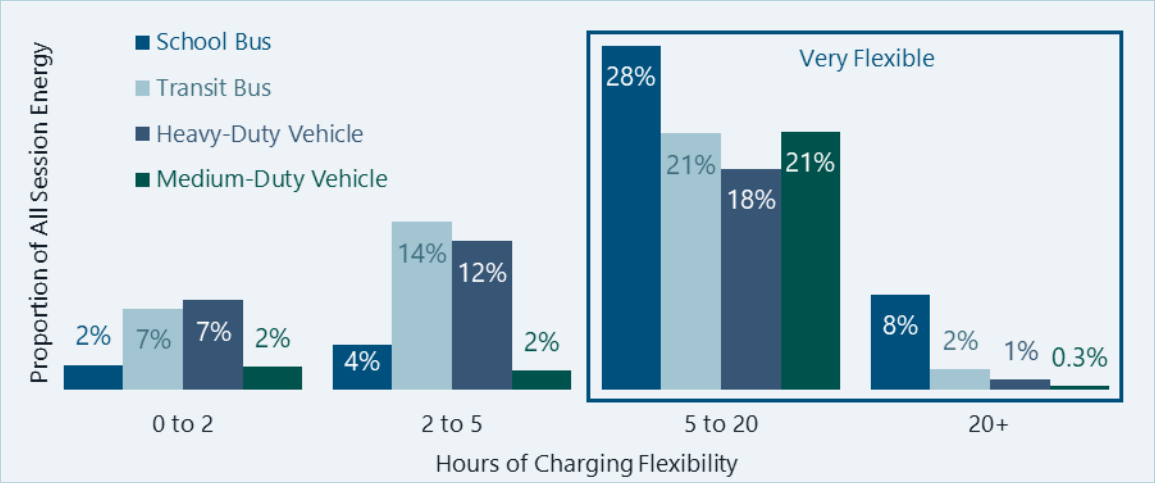
Many charging sessions have enough **flexibility to avoid charging during peak periods:**

- SCE Charge Ready Transport School Bus: **36%**
- PG&E EV Fleet Medium-Duty Vehicle: **59%**
- SDG&E Power Your Drive For Fleets School Bus: **40%**

PG&E EV Fleet



SCE Charge Ready Transport



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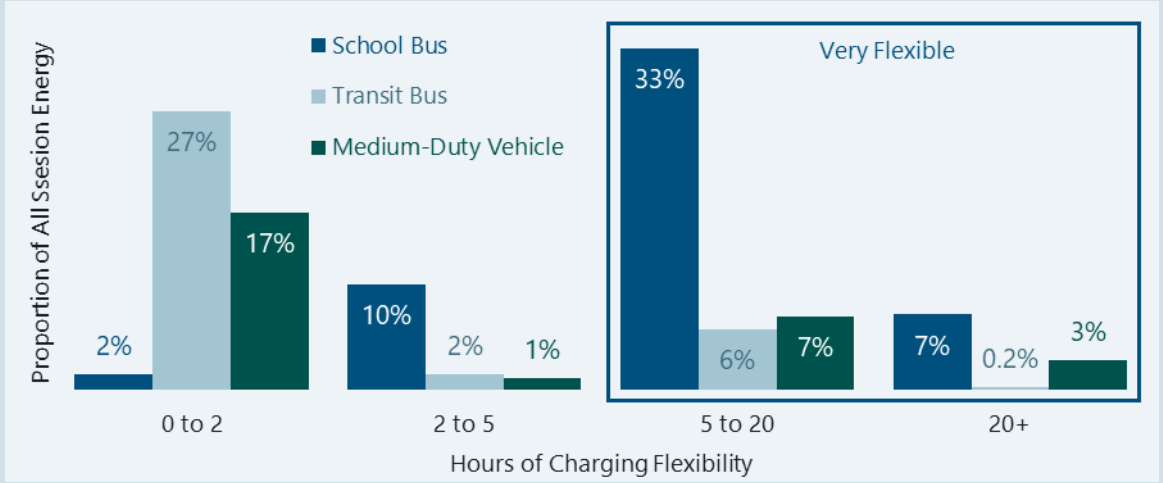

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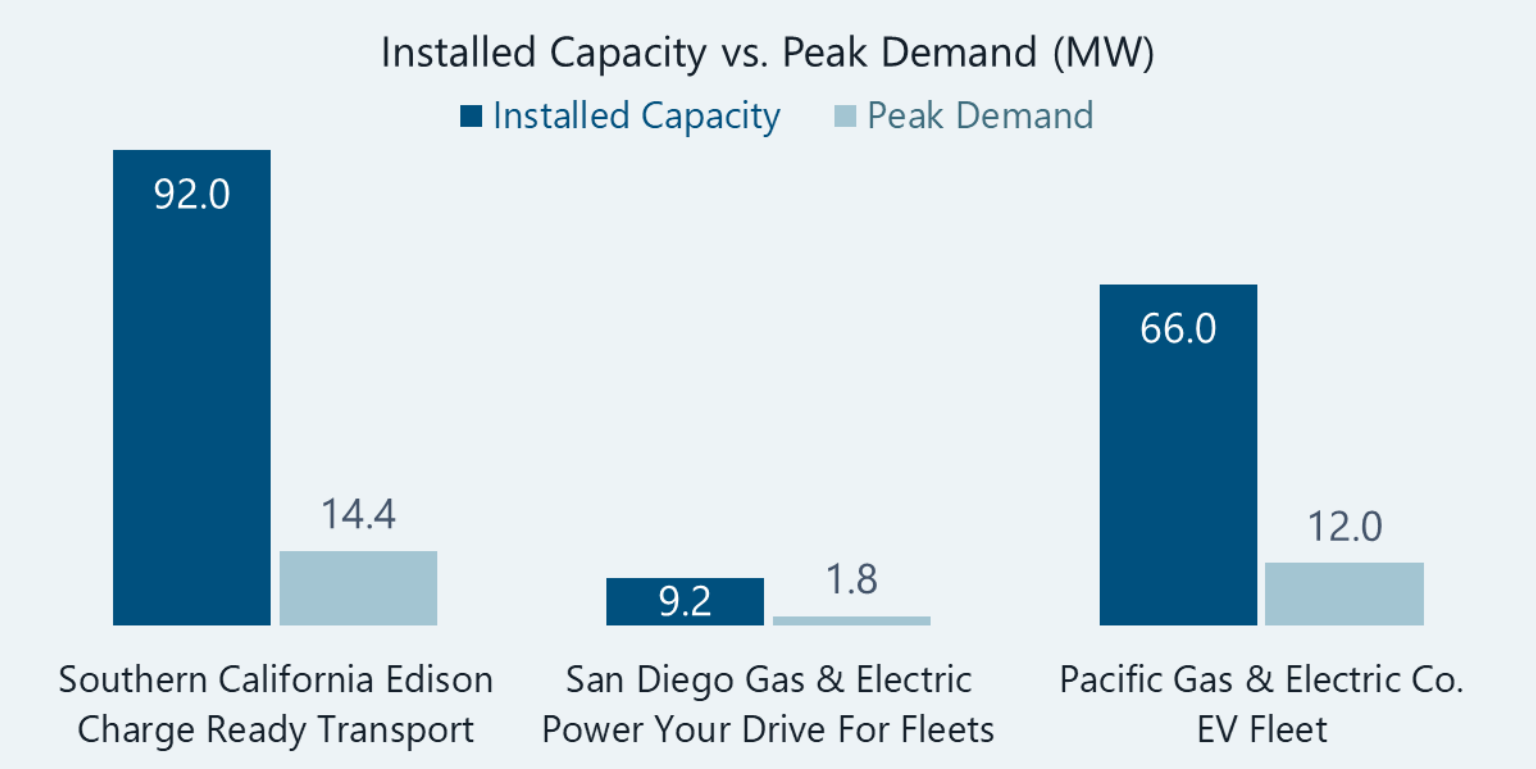
MDHD | Lessons Learned

Though installed capacity and overall consumption for MDHD sites increased significantly, peak demand represents a small portion of installed charging capacity, and most fleet operators have not implemented load management.



- Only **45 of the 219** activated sites (21%) exhibited the use of **load management**
- **Most charging** consumption shows enough flexibility to shift to lower cost time periods

- **Over 56 MWh** of energy consumption in 2024
- This accounted for **64% of PTD consumption** (nearly 88 MWh)
- Maximum demand was approximately 17% of total charging capacity
  - Sites have significant opportunity to grow utilization; most do not appear to mitigate max demand (kW)

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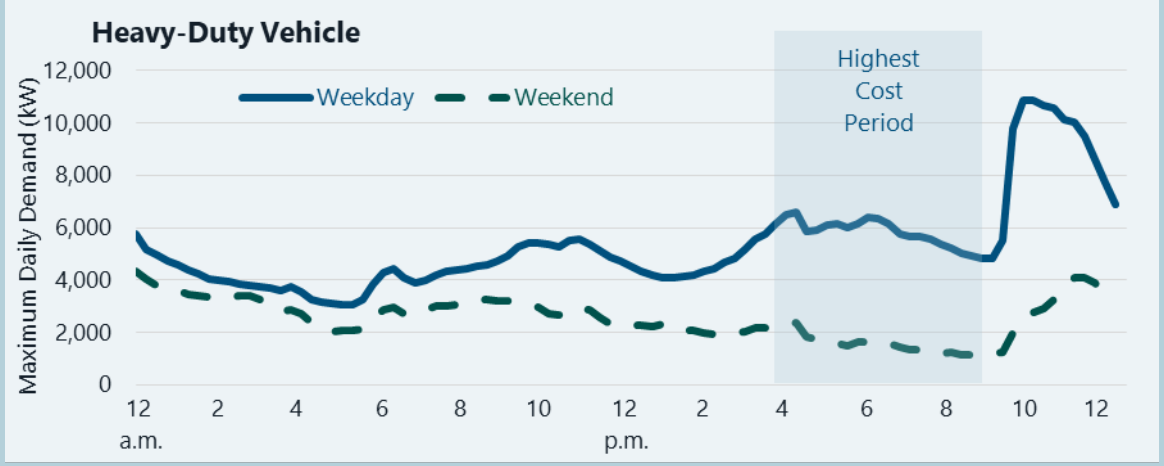
MDHD | Statewide Daily Load Curves

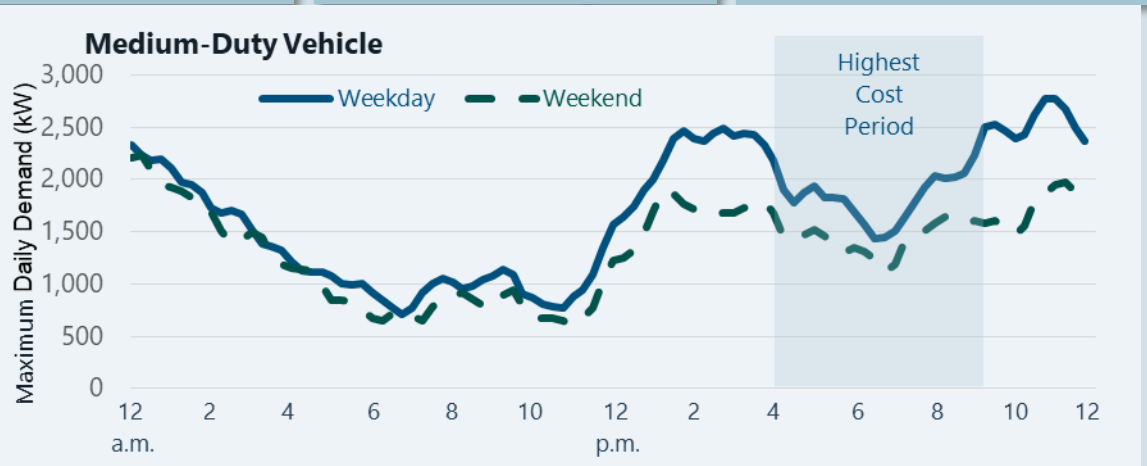
Weekday and Weekend Day Average Load Curves Q4 2024 by Market Sector

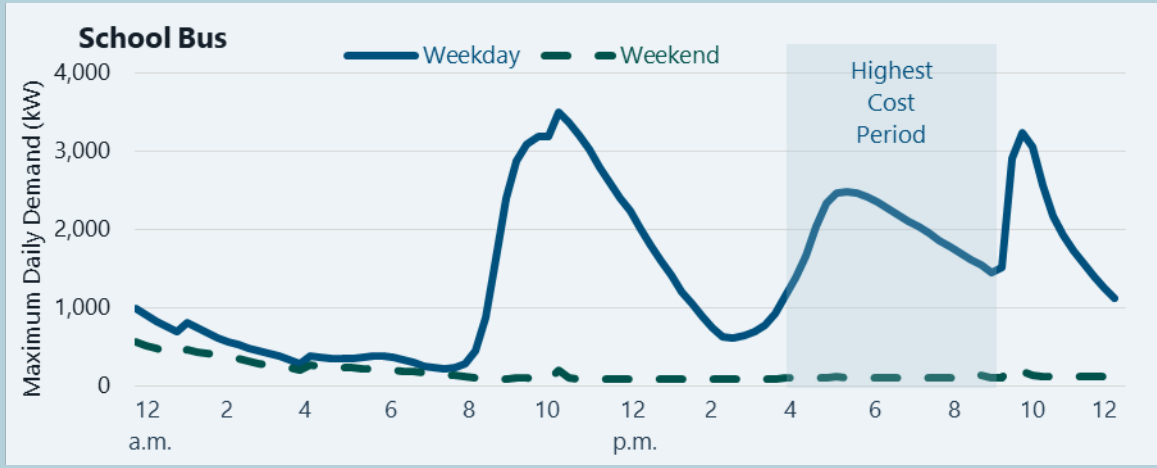
School bus charging has most midday consumption; more could move to weekends.

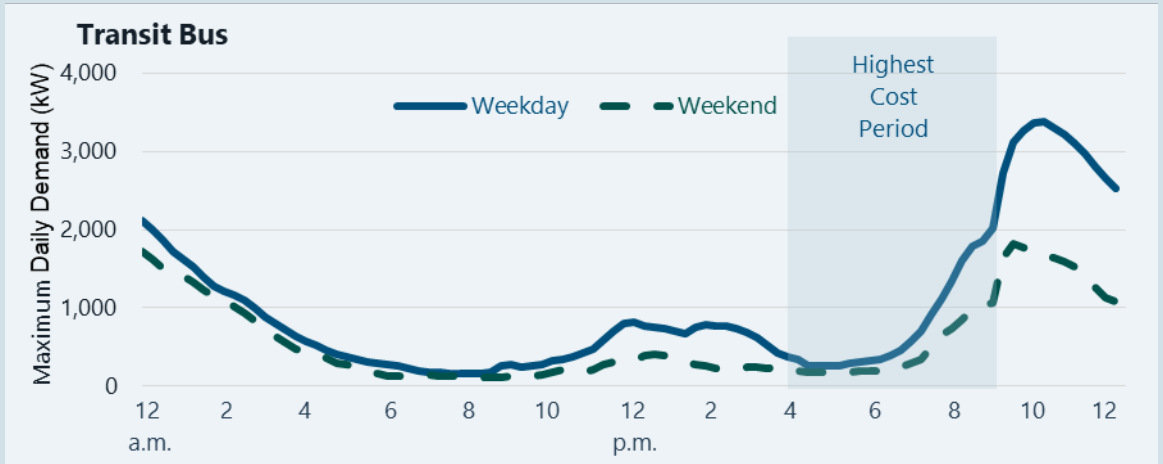
Other sectors show significant energy usage on Saturdays and **less** on Sundays but **~50% less than weekdays**

Most non-school bus fleets are constrained to **weekends for midday charging**









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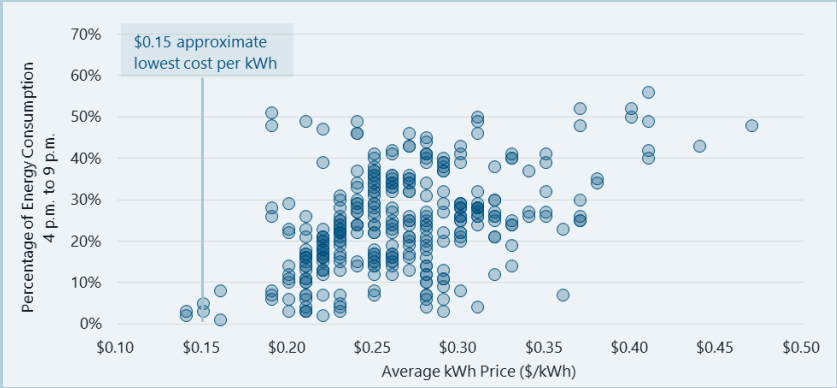
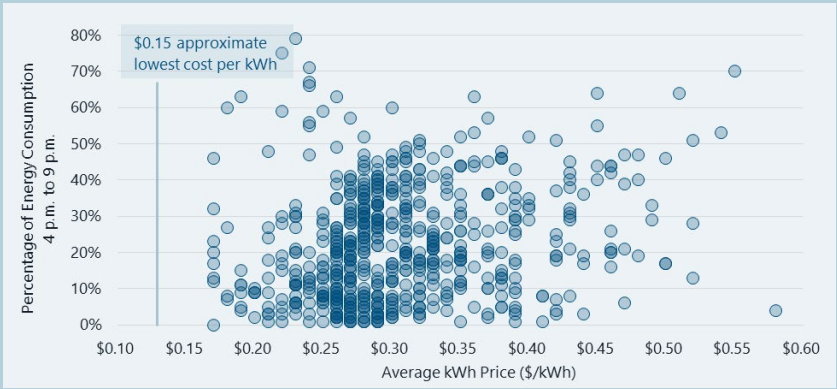
MDHD | Grid Impacts – Billing

These figures show SCE Charge Ready Transport percentage of monthly energy consumed from 4 p.m. to 9 p.m. versus the average energy price for consumption billing months for PTD sites.

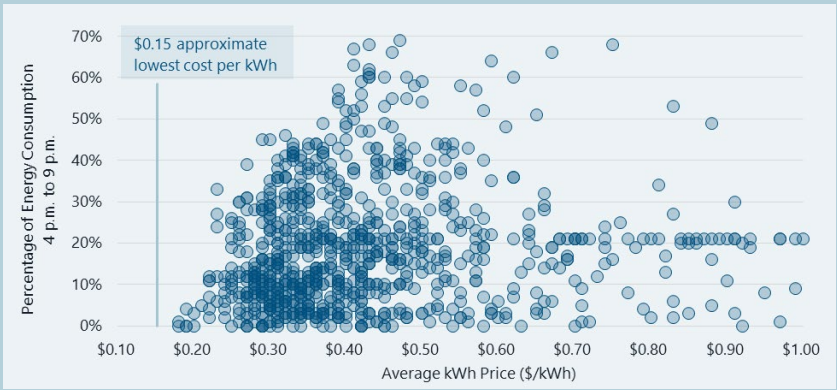
High consumption billing months (>20 MWh) show generally lower costs than medium and low billing months. More round-the-clock charging spreads non-volumetric costs and reduces % 4 p.m. to 9 p.m.



Medium consumption billing months (5 MWh to 20 MWh) show average of $0.20 to $0.30 per kilowatt-hour. **Cost savings of 30%** for many months averaging $0.40 or more per kilowatt-hour are achievable.



Low consumption billing months (<5 MWh) show a correlation between the amount of consumption between 4 p.m. and 9 p.m. Due to less energy volume, costs are more heavily impacted by other bill components. This highlights the value of **load management**.



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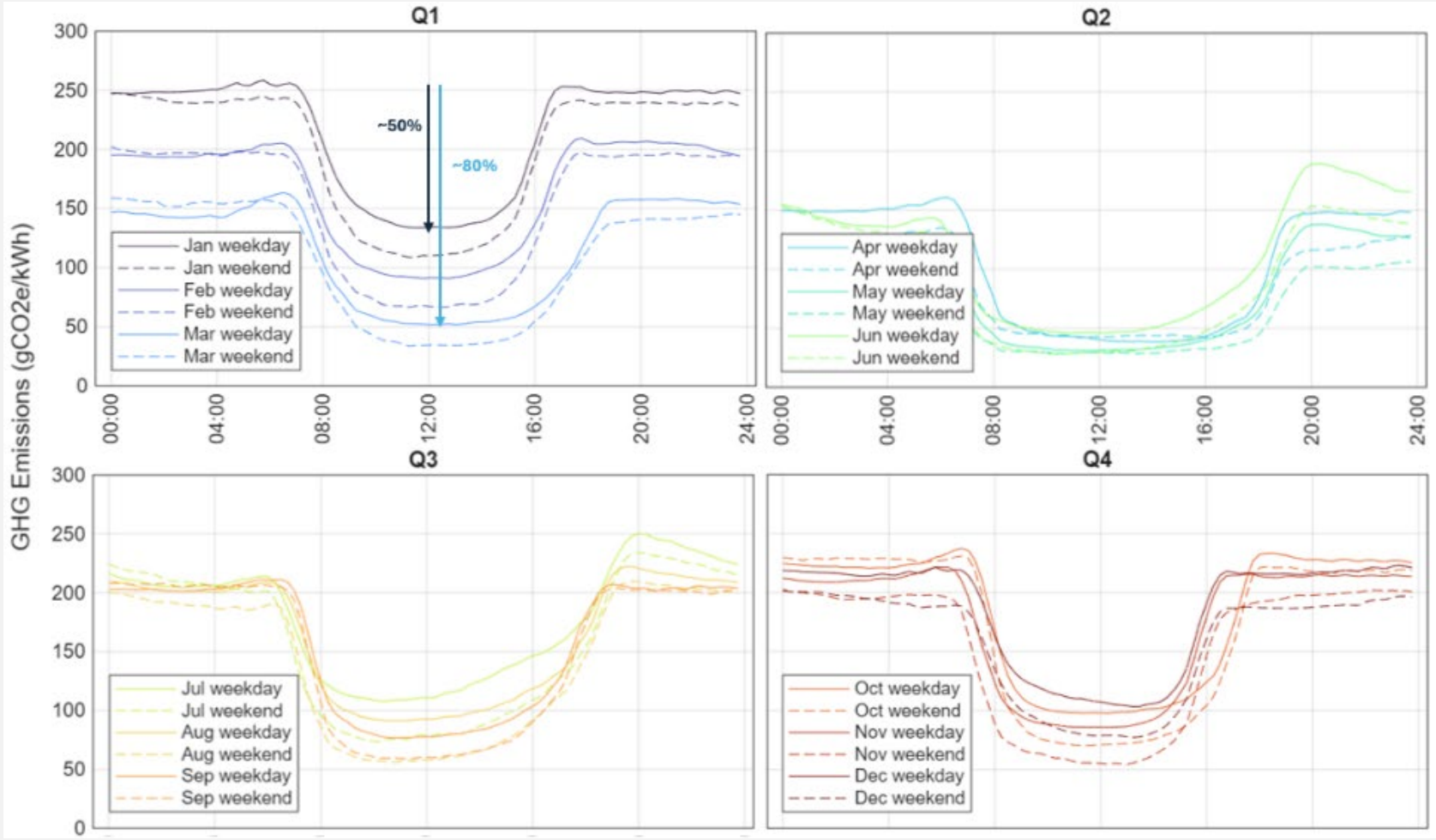
MDHD | NREL Optimization

2024 Weekday and Weekend Average CAISO GHG Emissions by Month

Emissions

- Average emissions generally lowest daily between 9 a.m. and 4 p.m.
- Evening grid electricity generally produces 2x to 4x midday emissions.
- Many fleets have flexibility to delay charging from highest emissions (after 7 p.m.) and highest cost (4 – 9 p.m.) to midday periods



NREL NATIONAL RENEWABLE ENERGY LABORATORY

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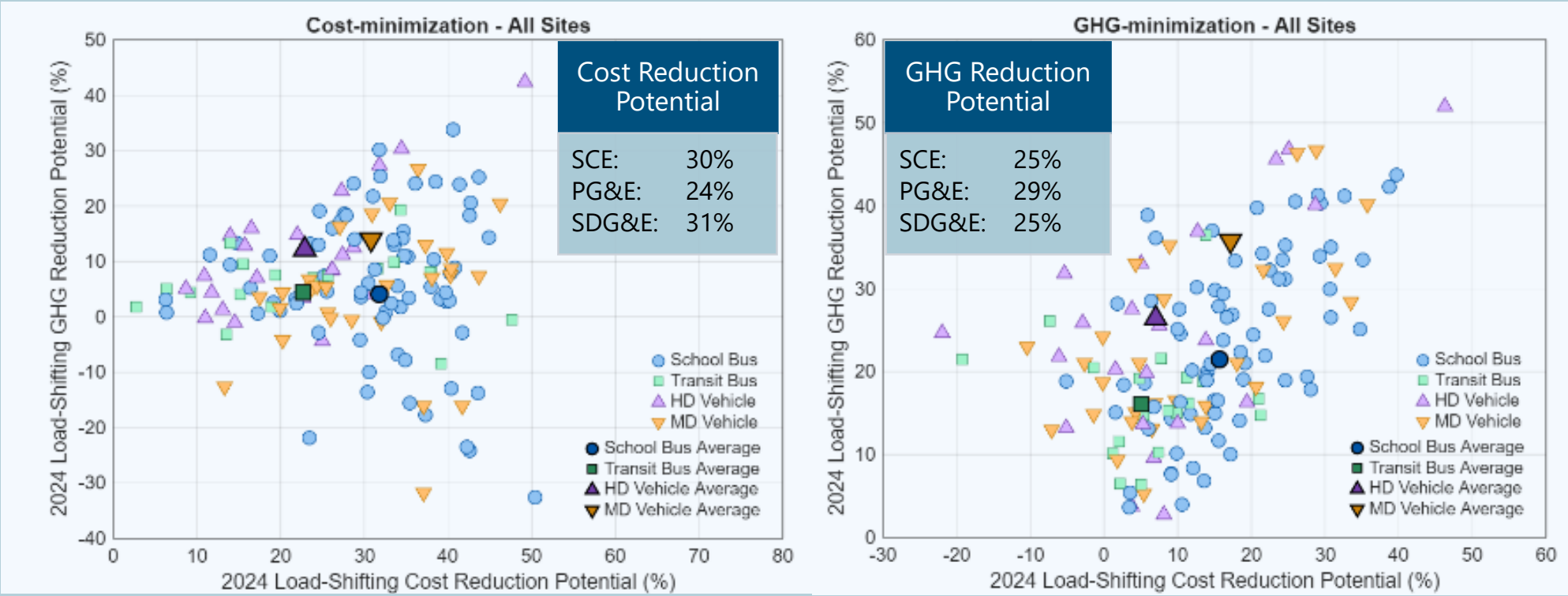
MDHD | NREL Optimization

Available Improvements in Utility Bills and GHG Emissions

- Electricity emissions are much lower during daylight hours than otherwise
- Optimizing charging for costs could save 24% to 31%, and optimizing emissions could save similarly. Both models show that most sites can optimize cost and emissions together.

- SCE and PG&E offer the lowest pricing midday, when emissions are also lowest.
- A **larger *midday* reduction** in rates by PG&E and SDG&E could create a stronger price signal for fleets to charge their vehicles at that time when costs and emissions are lowest, instead of at 9 p.m., at least part of the week.
- SDG&E's lowest costs are between 12 a.m. and 6 a.m. for most of the year, limiting the emphasis on lower emissions midday.*

* pursuant to ongoing General Rate Case

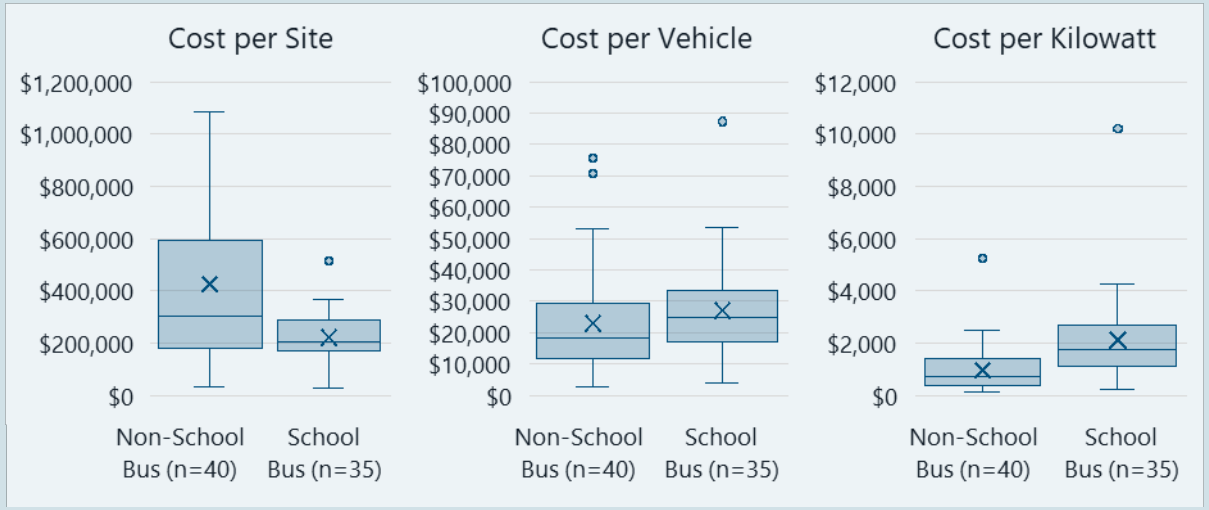


MDHD | Utility Infrastructure Costs

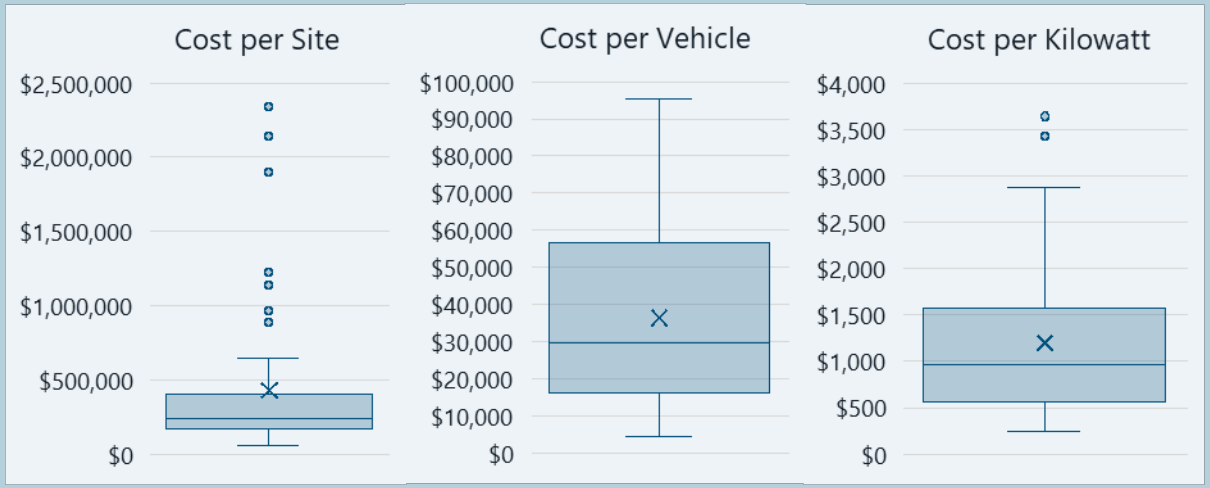
Utility Costs per Site, Vehicle, and Kilowatt for Closed-Out PTD Sites

- **Costs** include Utility-funded **TTM plus BTM** for financially closed-out sites.
- 40% of sites have utility-owned BTM, 60% have customer-owned BTM.
- **Larger sites** have **lower costs** per vehicle and per kilowatt than smaller sites, although the scale effect is relatively modest.
- There is a mix of L2 and DCFC across market sectors.
- School bus sites are cheaper than non-school bus sites

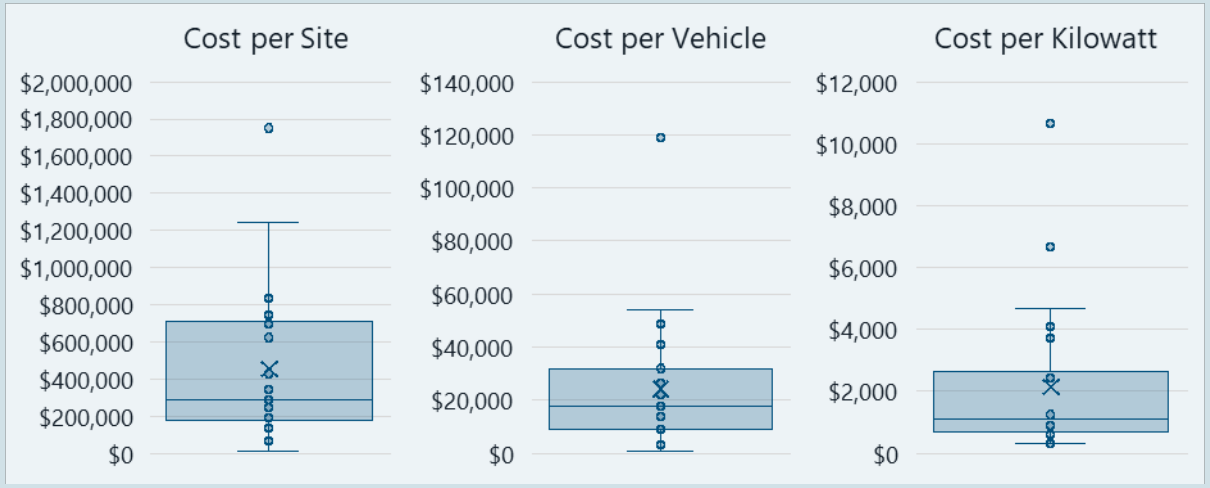
PG&E EV Fleet (75 sites)



SCE Charge Ready Transport (55 sites)



SDG&E Power Your Drive for Fleets (23 sites)



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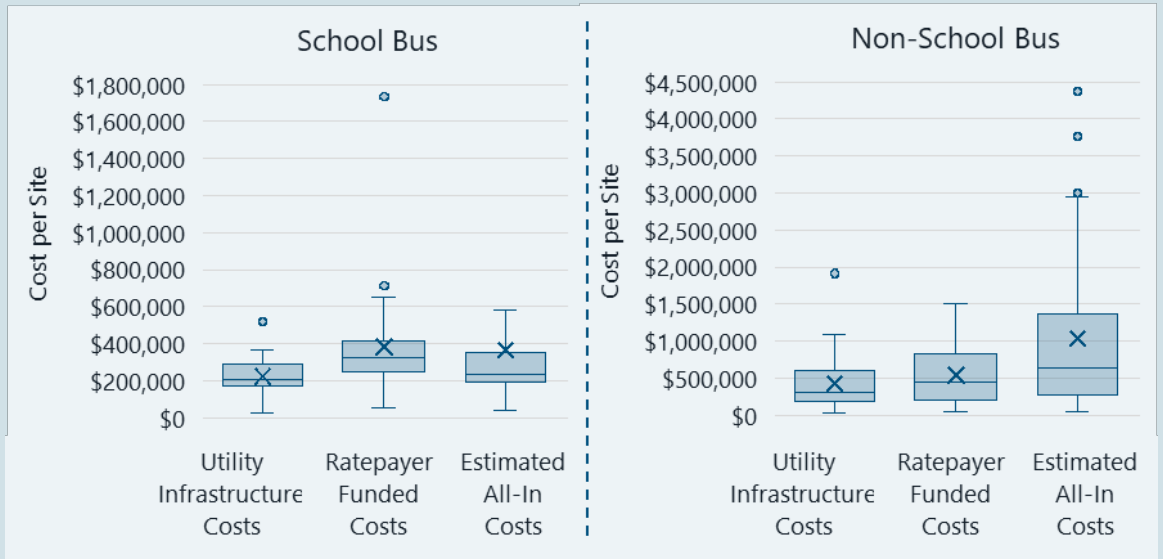
MDHD | Costs Per Site

Costs Organized by Three Perspectives Across Closed-Out PTD Sites

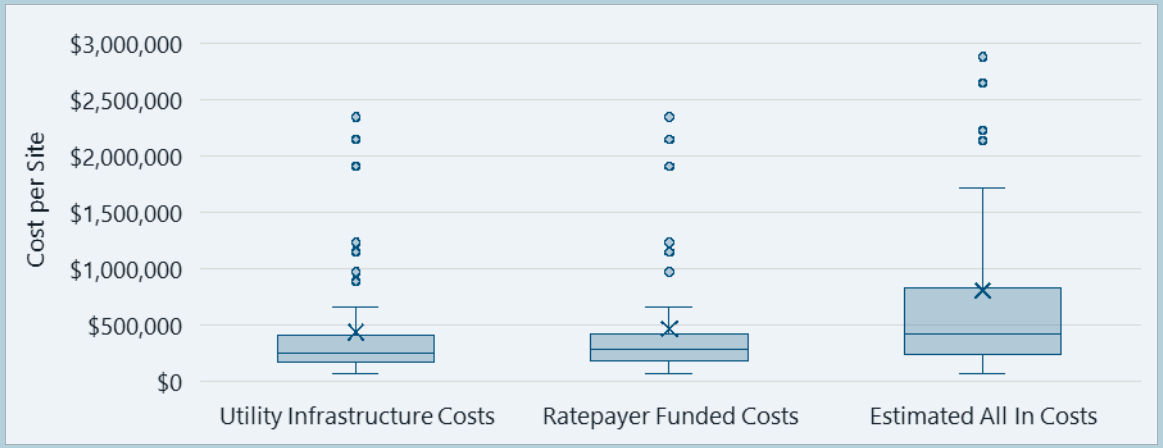
Distribution of site-level costs for all sites

- **Utility Infrastructure Costs.** Actual site costs paid by the Utility for TTM and BTM infrastructure/rebates, including capital and labor costs.
- **Ratepayer-Funded Costs.** Actual site costs paid for by the Utility for TTM, BTM (or BTM incentive if infrastructure is customer owned), and EVSE rebates.
- **Estimated All-in Costs.** Estimated costs of installing the site borne by the Utility and the customer including capital and labor costs. The value is calculated by summing TTM, BTM, and EVSE costs.

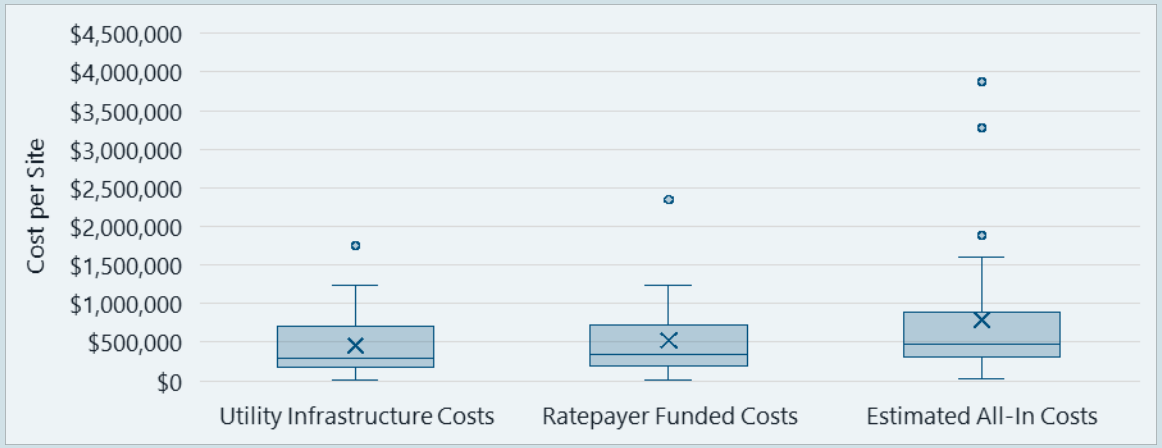
PG&E EV Fleet (75 sites)



SCE Charge Ready Transport (55 sites)



SDG&E Power Your Drive for Fleets (23 sites)



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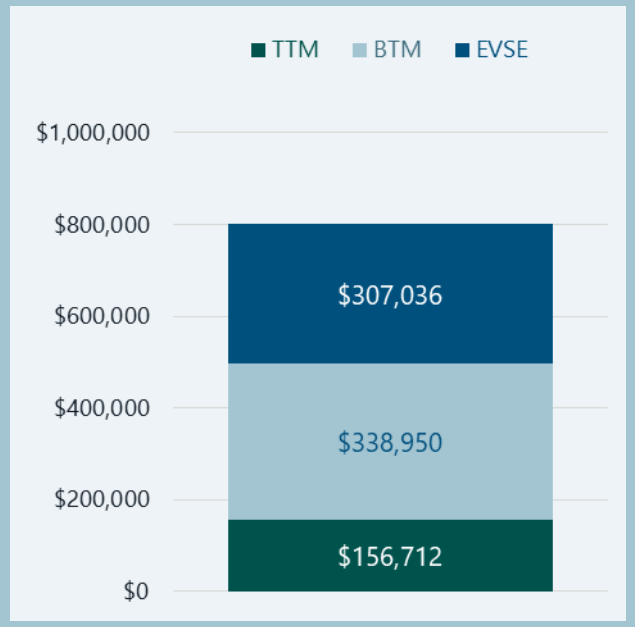
MDHD | Average Estimated All-In Costs across Closed-Out PTD Sites

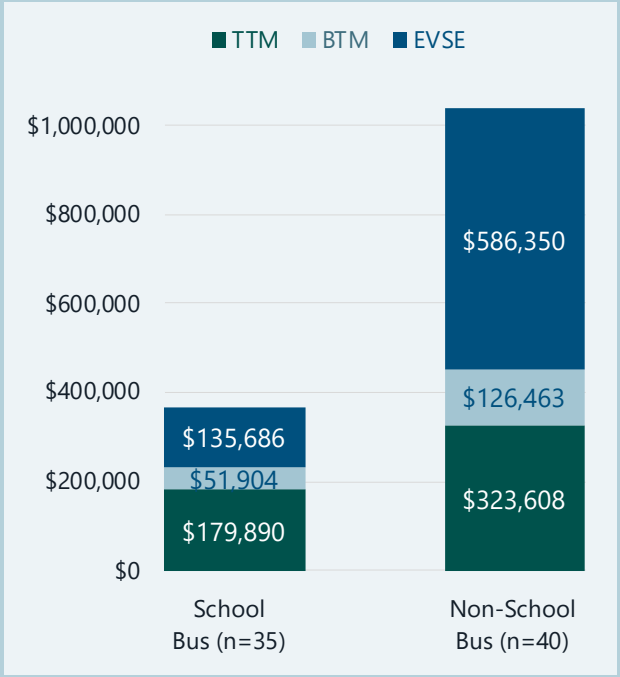
These figures show the distribution of site-level costs for the all sites.

- **EVSE is the largest estimated cost** for PG&E non-school bus and SDG&E sites
- **BTM is the largest estimated cost** across SCE sites, followed closely by estimated EVSE, then TTM

SCE Charge Ready Transport (55 sites)



PG&E EV Fleet (75 sites)



SDG&E Power Your Drive For Fleets (23 sites)

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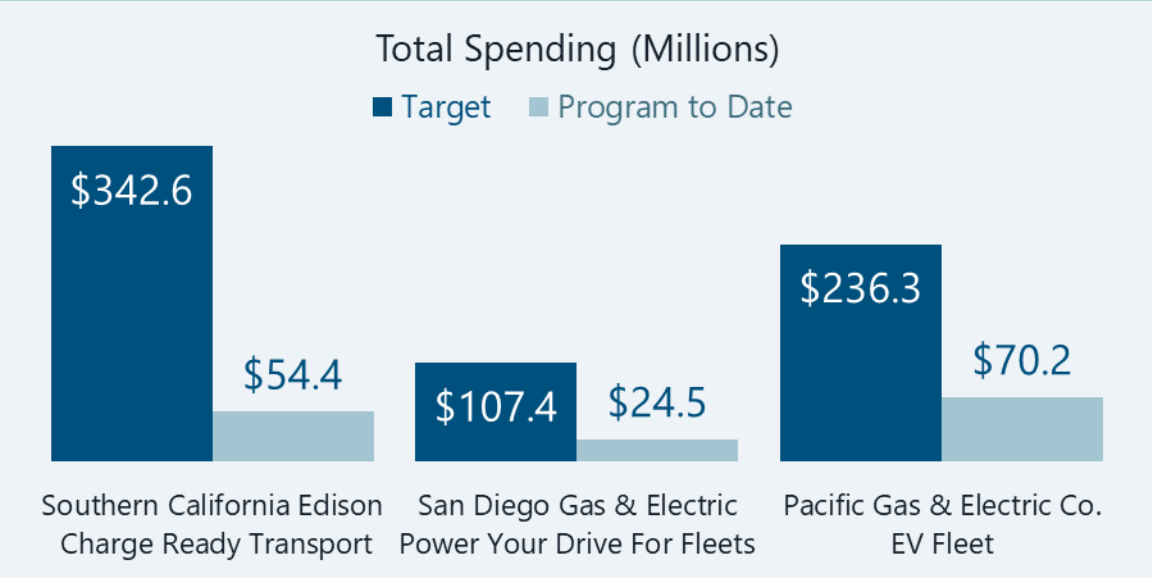
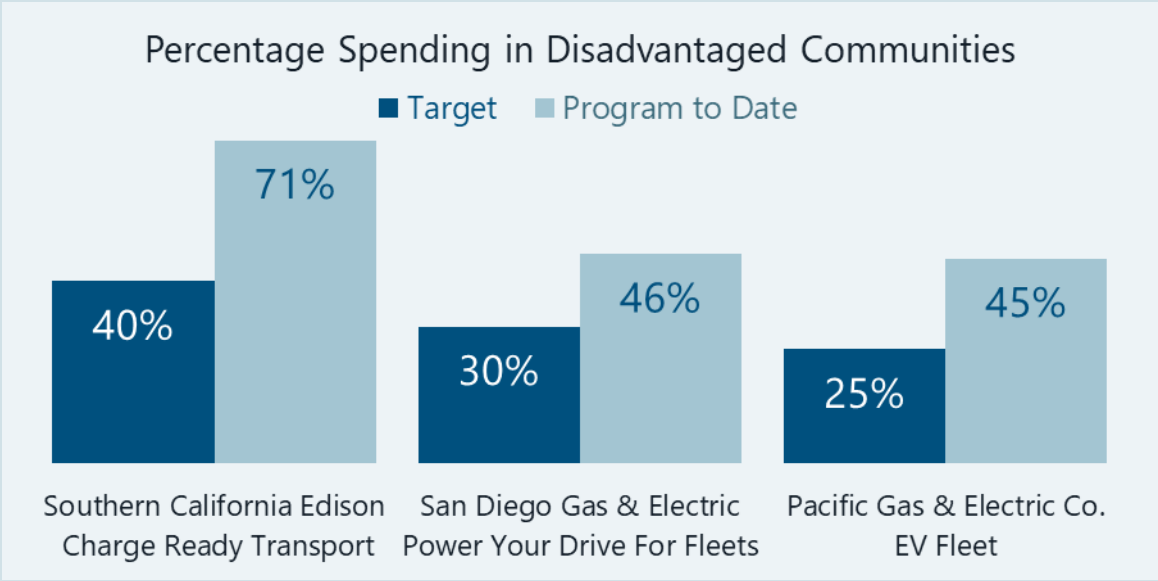
MDHD | Lessons Learned

PG&E reported that outside of the dedicated budget to the transit bus market sector, the EV Fleet program expects to be fully subscribed by the end of 2025.



Utility spending in disadvantaged communities exceeds targets across all programs; however, overall spending in MDHD programs remains low, and only one of three Utilities is currently on pace to meet its site and vehicle goals.



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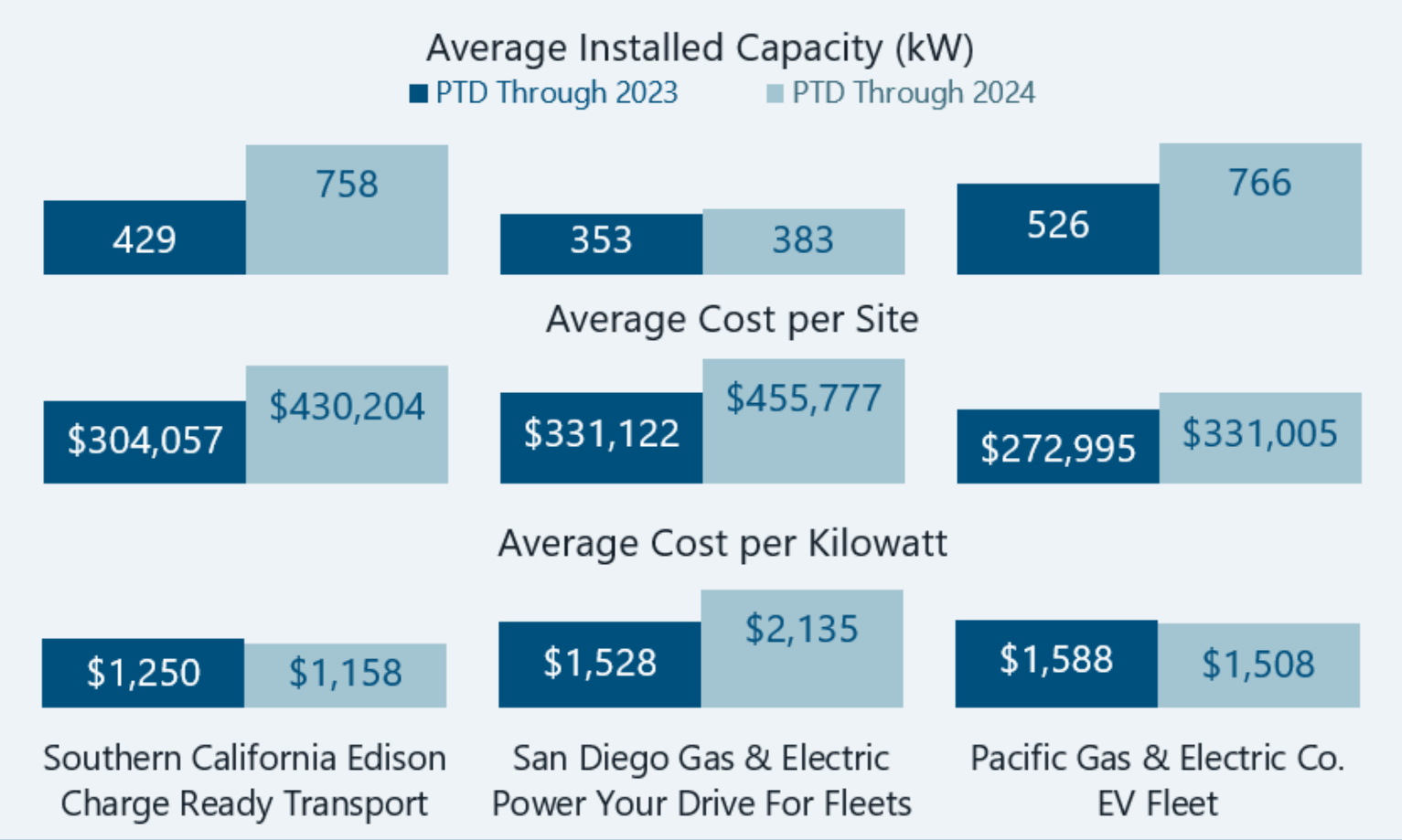
MDHD | Lessons Learned

The average installed capacity per site for the three MDHD programs increased for PTD sites through 2024, resulting in an increase in the average cost per site and a decrease in the average cost per kilowatt.



There is a strong relationship between installed capacity and cost per kilowatt, with **larger sites in general having a lower cost per kilowatt than smaller sites**.

Based on additional EY2024 analysis of **weighted average** cost compared to **simple average** cost:

- When weighting by the installed capacity of sites, the weighted average cost is higher and the weighted average cost per kilowatt is lower

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MDHD | Lessons Learned

Per Delphi panels conducted for EY2024, market share is projected to increase by 2035 to:

- **54%** for transit buses
- **52%** for electric transportation refrigeration units
- **48%** for delivery vehicles*

However, the panels forecasted that both transit bus and delivery vehicle market share will fall short of CARBs Innovative Clean Transit (ICT) and ACT sales requirements.

*Delivery vehicles are a subsector of Medium-Duty Vehicles

Transit Buses

- **Supply chain challenges around manufacturing and reliability** cited as reasons for not meeting requirements

Electric Transportation Refrigeration Units

Several major factors influenced panelists' projections of impacts to early adoption:

- Unclear status of California regulations and federal policy
- High capital costs
- Technology immaturity

Delivery Vehicles

- Forecasted to reach a lower market share than previously estimated and fall short of ACT sales requirements
- Uncertainty around **policy and funding** anticipated to slow adoption in near term
- Yet, improving economics expected to accelerate growth in 2030s, leading to **infrastructure** as primary constraint

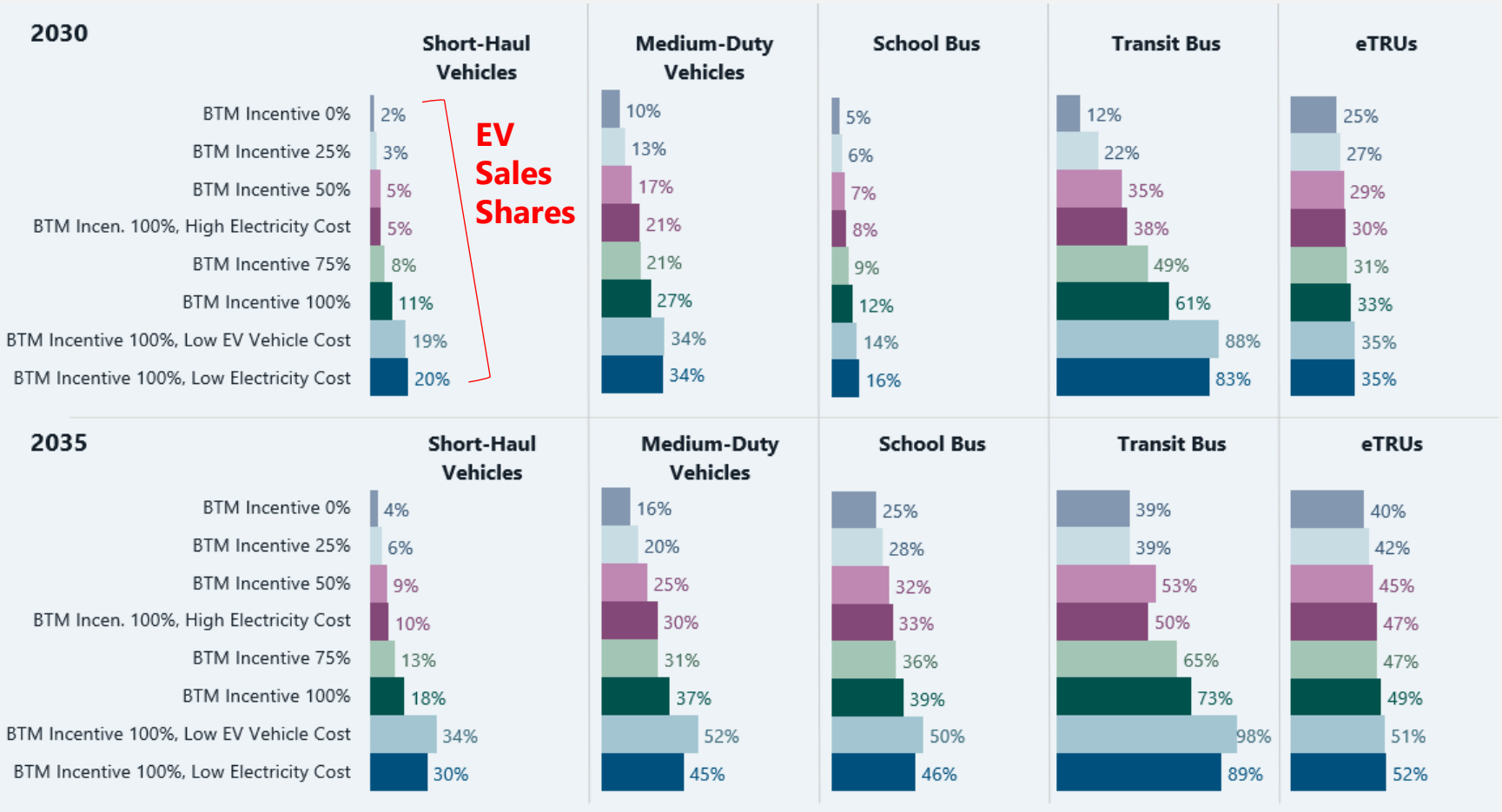
MDHD | Truck Choice Model

New EV Sales Share in Five Market Sectors Statewide

Highlights

Figure shows EV sales shares across scenarios of BTM incentive, electricity cost, and vehicle cost

- **100%** BTM leads to a **two to three times higher** share of EV sales compared with the no incentive scenario
- 2035 is higher across all scenarios because of assumed reductions in vehicle costs and in risk



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Public Charging

Schools, Parks and Beaches,
and PG&E EV Fast Charge

CADMUS

Public Charging | Program Overview – Actuals and Targets (slide 1 of 2)

	Liberty		PG&E		
Program Targets					
	Schools	Parks and Beaches	Schools	Parks and Beaches	EV Fast Charge
	• 17 schools • 56 L2 and 2 DCFC ports	• 3 sites • 5 dual-pedestal ports	• 40% DAC • 22 K–12 schools • 4 or 6 L2 ports per location	• 25% DAC • 15 state parks and beaches • 40 L2 and 3 DCFC ports	• 25% DAC • 30 to 40 sites • 234 DCFC ports
Actual PTD					
	• 1 site • 8 ports	• 0 sites • 0 ports	• 12 sites • 72 L2 ports	• 0 sites • 0 ports	• 29 sites • 152 DCFC ports

Public Charging | Program Overview - Actuals and Targets (slide 2 of 2)

	SCE		SDG&E	
Program Targets	Schools	Parks and Beaches	Schools	Parks and Beaches
	• 40% DAC • 40 K-12 schools • 250 L2 ports	• 25% DAC • 21 state parks and beaches • 120 L2, 10 DCFC, and 15 mobile ports	• 40% DAC • 30 schools • 184 L2 and 12 DCFC ports	• 50% DAC • 74 charging ports at 12 state parks and beaches • 66 ports at 10 city and county parks (100% DAC)
Actual PTD	• 22 sites • 172 L2 ports	• 0 sites • 0 ports	• 19 sites • 167 L2 and 7 DCFC ports	• 11 sites • 82 L2 and 8 DCFC ports

Public Charging | 2024 Findings

Population of Activated Sites in EY2024 (#)

20

Ports Installed in Analyzed Sites (#)

145

Electric Energy Consumption (MWh)

3,826

Petroleum Displacement (diesel gallons equivalent)

259,628

GHG Emission Reduction (metric ton [MT] GHG)

2,222

GHGs include carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O) multiplied by their respective Global Warming Potentials (GWP) as defined by the Intergovernmental Panel on Climate Change (IPCC) published fifth assessment (AR5; see the Methodology section for more details).

Local Emissions	Reduction (kg)
Particulate Matter (PM_{10})	12
Particulate Matter ($PM_{2.5}$)	11
Reactive Organic Gases (ROG)	263
Carbon Monoxide (CO)	5,691

Public Charging | 2024 Findings by Pilot/Program Type

Population of Activated Sites in EY2024 (#)

Schools Pilot	7
Parks Pilot	2
EV Fast Charge	11

Ports Installed in Analyzed Sites (#)

Schools Pilot	52
Parks Pilot	25
EV Fast Charge	68

Electric Energy Consumption (MWh)

Schools Pilot	40
Parks Pilot	83
EV Fast Charge	3,703

Petroleum Displacement (diesel gallons equivalent)

Schools Pilot	2,699
Parks Pilot	5,614
EV Fast Charge	251,315

GHG Emission Reduction (metric ton [MT] GHG)

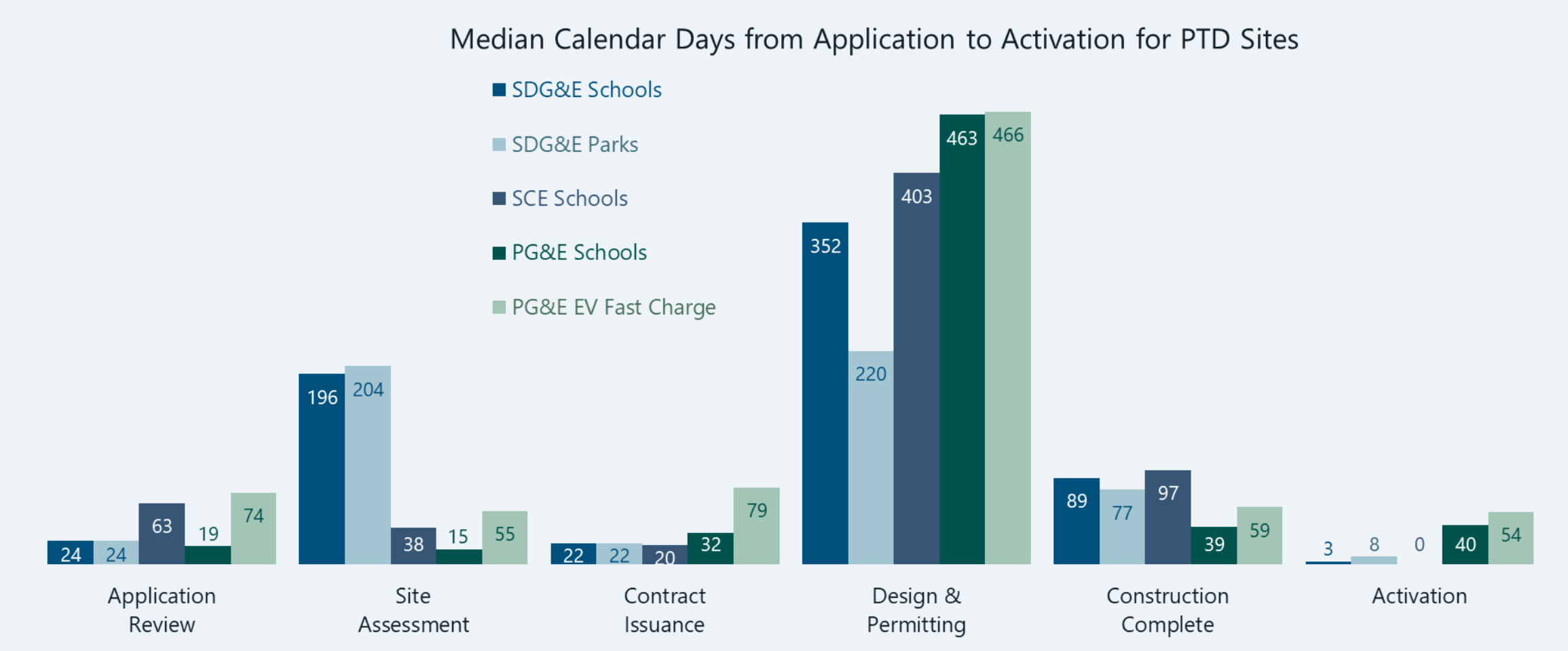
Schools Pilot	24
Parks Pilot	49
EV Fast Charge	2,149

GHGs include carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O) multiplied by their respective Global Warming Potentials (GWP) as defined by the Intergovernmental Panel on Climate Change (IPCC) published fifth assessment (AR5; see the Methodology section for more details).

Local Emissions	**Schools Pilot**	**Parks Pilot**	**EV Fast Charge**
Particulate Matter (PM_{10})	0.1	0.3	11.6
Particulate Matter ($PM_{2.5}$)	0.1	0.2	10.7
Reactive Organic Gases (ROG)	2	3	147
Carbon Monoxide (CO)	59	123	5,509

Public Charging | Site Timelines

Phase with longest duration across all programs is Design & Permitting



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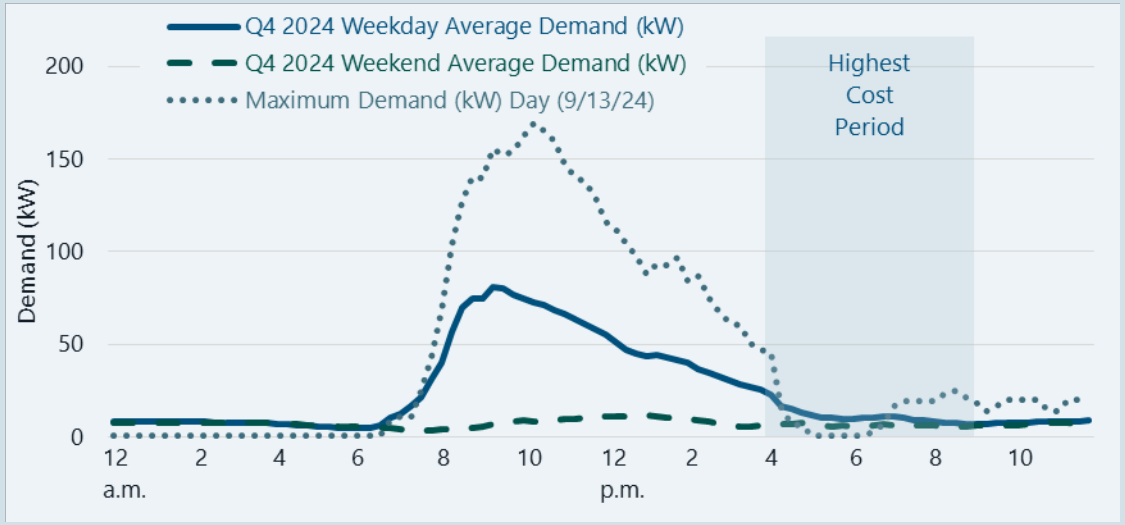
Public Charging | Average Demand

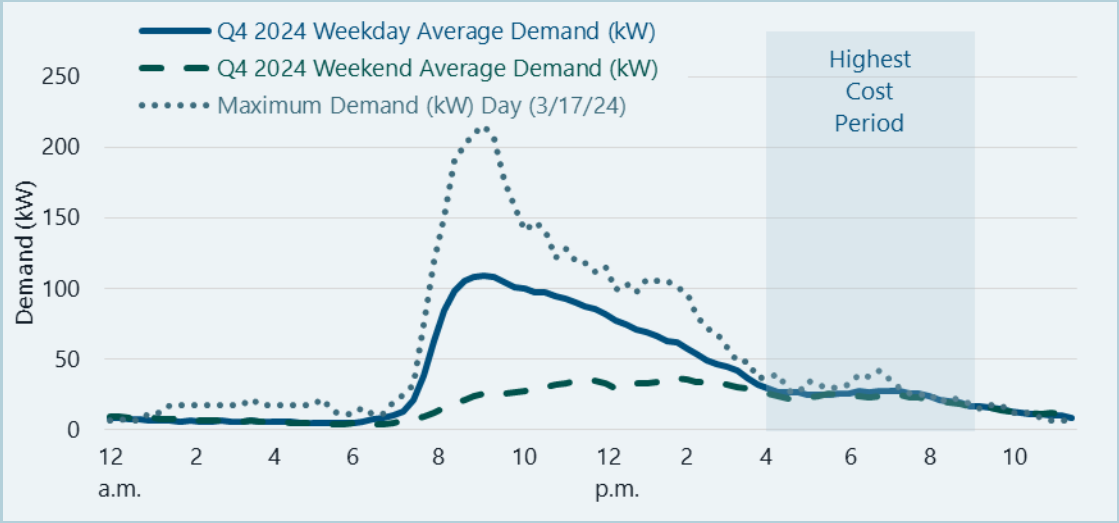
AB 1082 Schools

- **School district charging** is typical of workplace; ramping up quickly as EV drivers arrive to work and tapering off thereafter to end the business day.
- A few individual school sites show significantly higher weekend and overnight charging compared to the average **likely highlighting local communities benefiting** from these projects.
- **High Utilization** days exemplify what the portfolios could become as they continue to mature.

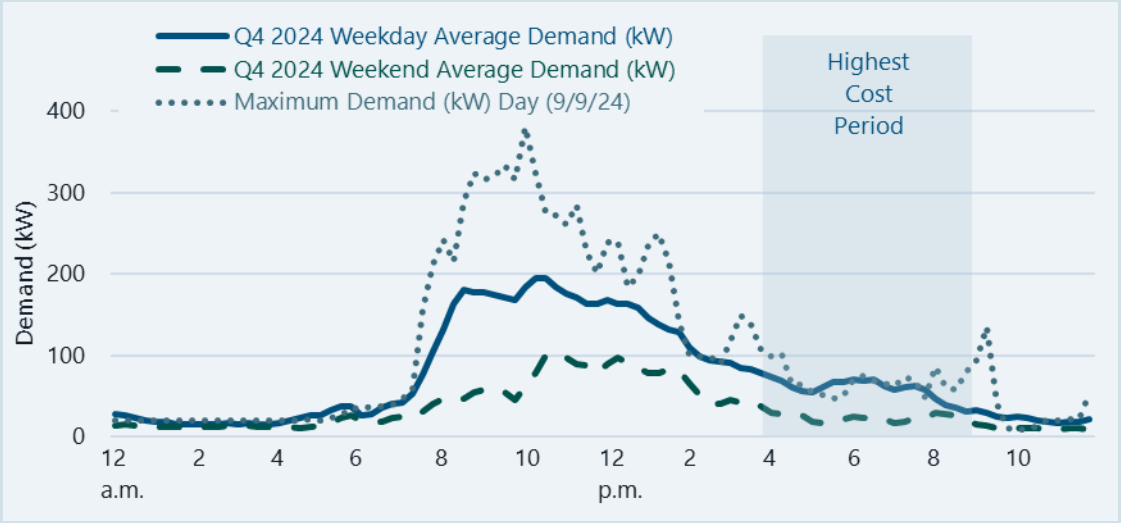
PG&E Schools Pilot



SCE Schools Pilot



SDG&E Schools Pilot



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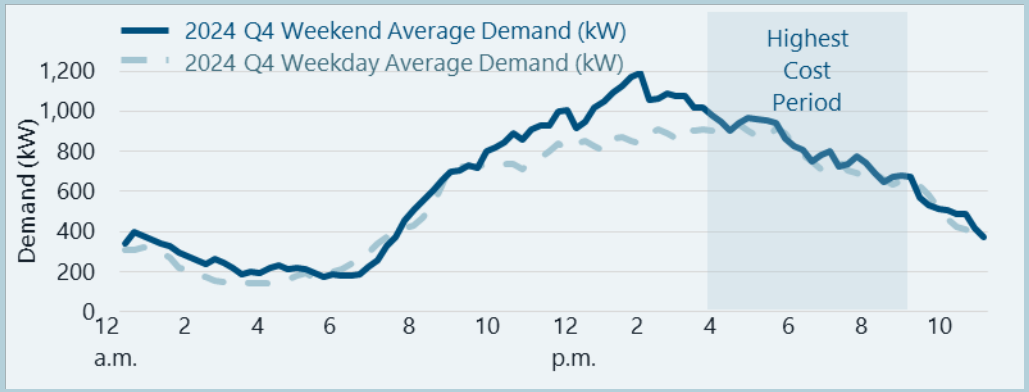
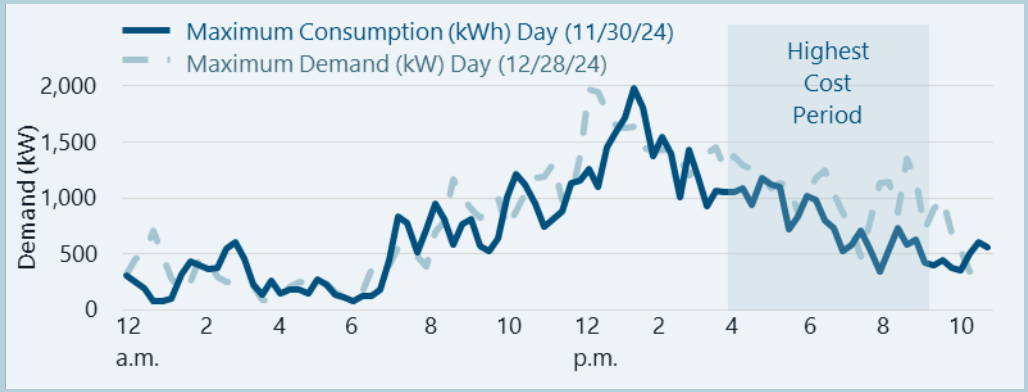
Public Charging | Energy Trends

EV Fast Charge and AB1083 Parks

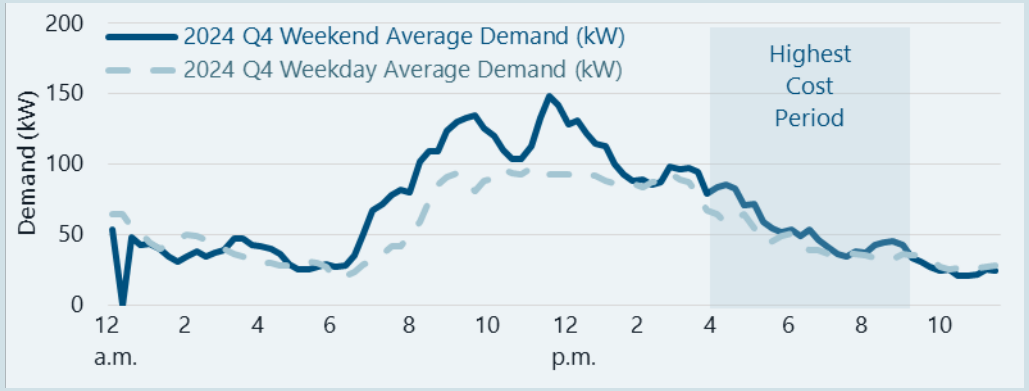
- **Public oriented sites** have higher demand and consumption on weekends than on weekdays.
- Overnight charging is not as heavily utilized but provides value to the community.

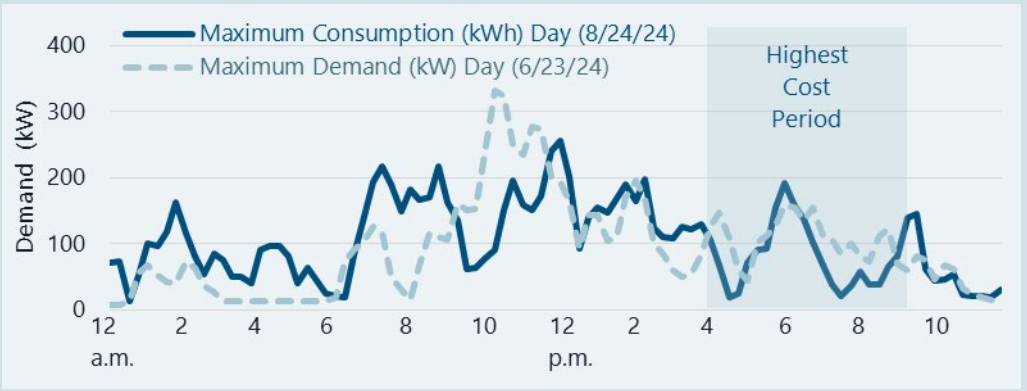
PG&E EV Fast Charge





SDG&E Parks Pilot





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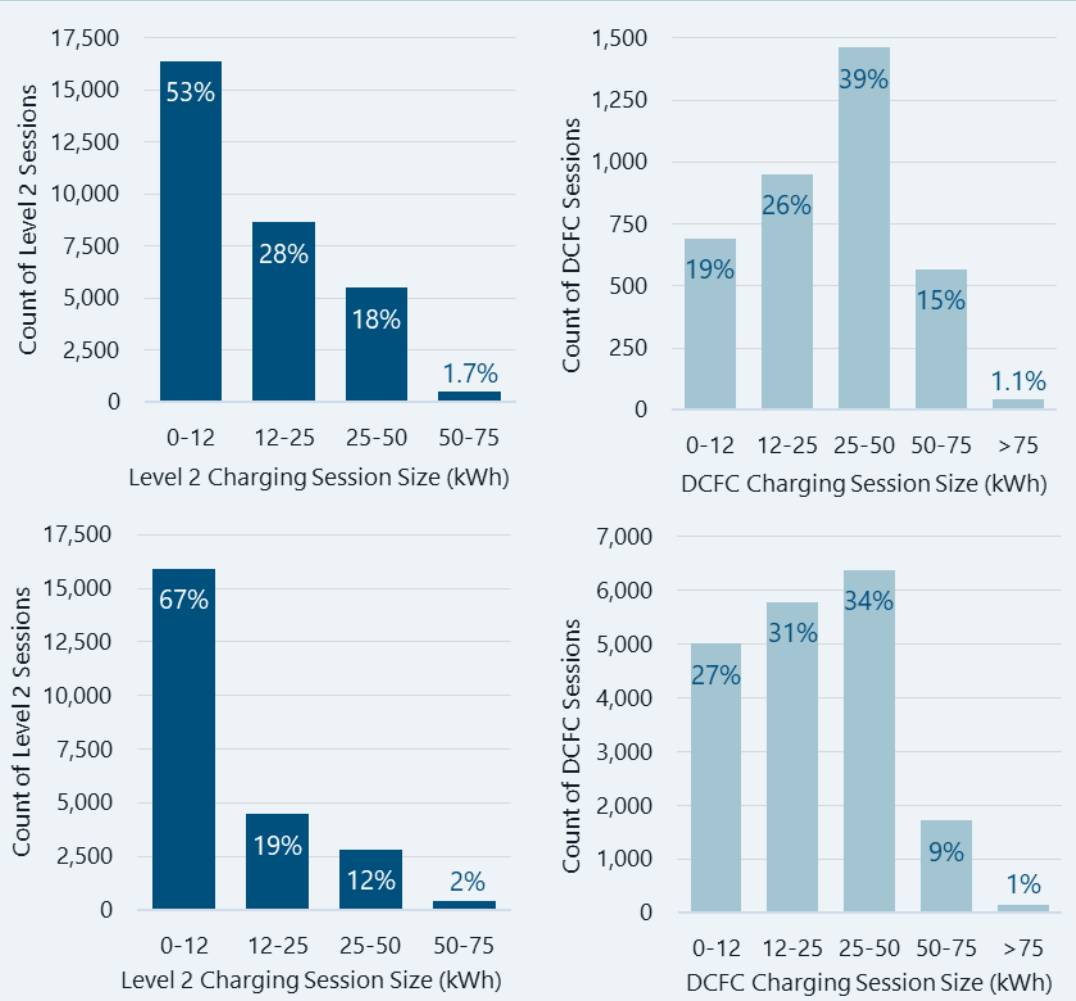
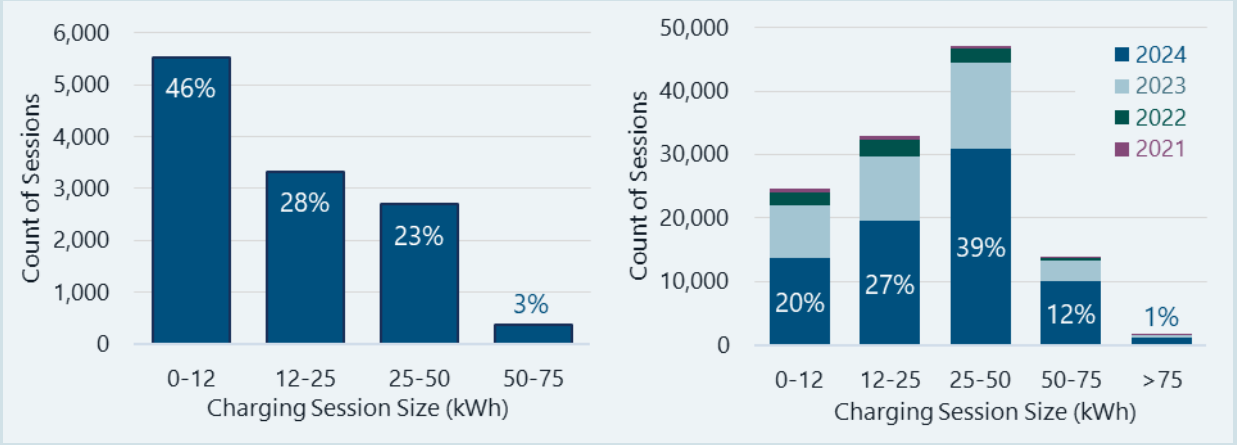
Public Charging | Charging Sessions

Charging Session Count by Consumption Size (kWh) for PTD Sites

SDG&E Schools Pilot (Top) and Parks Pilot (Bottom)

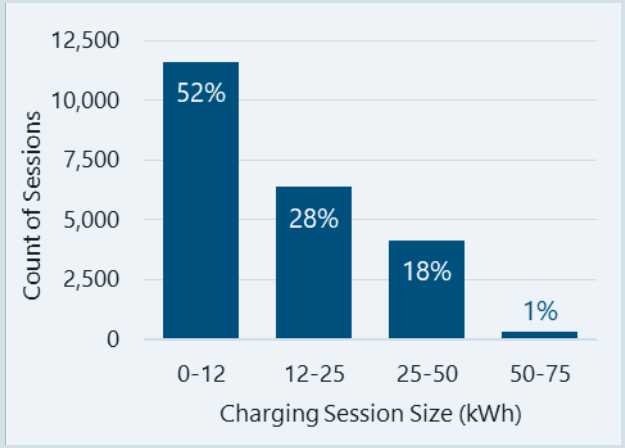


PG&E Schools Pilot (Left) and EV Fast Charge (Right)



- **Charging Session utilization** varies by charger type, with DCFC charging often consuming much more energy.
- **PG&E DCFC** program shows charging sessions have gotten larger, potentially related to availability of larger battery EVs.
- **Level 2 charging** is predominantly under 25 kWh.

SCE Schools Pilot



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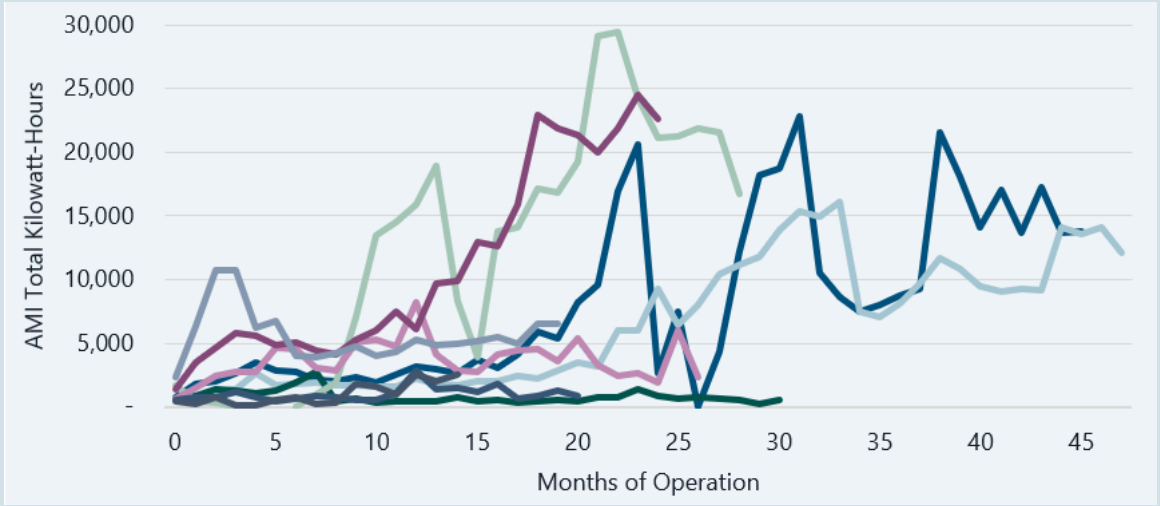
Public Charging | Site Maturation

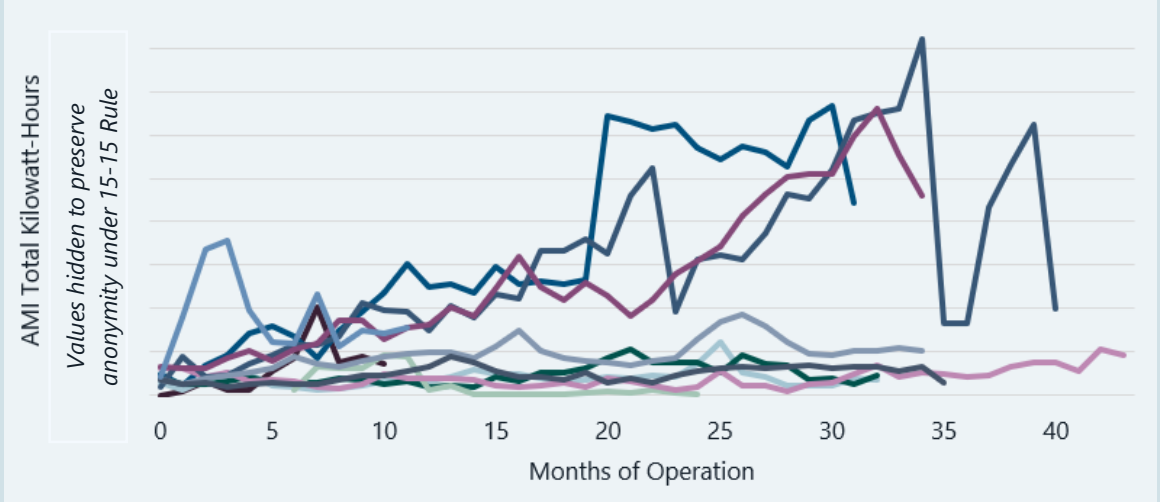
- **Utilization and energy consumption** varies significantly by site over their lifetimes.
- Sites with higher overall utilization are also utilized more quickly, highlighting driver adoption of these sites.
- Utilization may reflect the level of EV adoption in the region or nearby charging sites with lower energy pricing.
- Commissioning delays seen at multiple sites (mostly a single NSP) of 6-15 months (considered months before Zero) are not depicted but had a material impact on utilization and benefits.

PG&E EV Fast Charge



SCE Schools Pilot

SDG&E Parks Pilot



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Public Charging | Retail Pricing to EV Drivers

- **Pricing** may influence the utilization rates of a given **public charging** site and the perception of driving an EV.
- Many public sites are not communicating Time-of-Use rates to EV drivers, but doing so could improve electricity emissions and benefits.
- Most public pricing is close to $0.50/kWh and is less competitive with fuel-efficient gas cars.

Miles per Gallon	Cost per Gallon		
	$4	$5	$6
	Cost per mile		
50	$0.08	$0.10	$0.12
25	$0.16	$0.20	$0.25

3 Miles per kWh	Cost per kWh		
	$0.25	$0.50	$0.75
	Cost per mile		
	$0.083	$0.167	$0.25

SCE Schools

TOU rates (10 sites)

- Costs ranged from $0.12/kWh to $0.75/kWh.
- On-Peak compared to Super-Off-Peak ranged from 125% to 330% higher ($0.05 to $0.35/kWh higher).

Flat rates (11 sites)

- Costs ranged from $0.30/kWh to $0.53/kWh.
- Idle fees ranged from $3/hour to $20/hour to encourage people to vacate charging stations.

PG&E Schools

12 sites

- One had free charging for a period.
- One charged $0.60/kWh with $0.50/hour idle fees.
- Three used **TOU rates**.

PG&E EVFC

25 sites

- 75% use flat rates with idle fees from $2 to $60/hour. Six sites also charge $1/session.
- Sites using **TOU rates** increased On-Peak pricing by 10% to 200%.
- Pricing is typically $0.42/kWh to $0.69/kWh, with some as low as $0.25/kWh.

SDG&E Parks and Schools

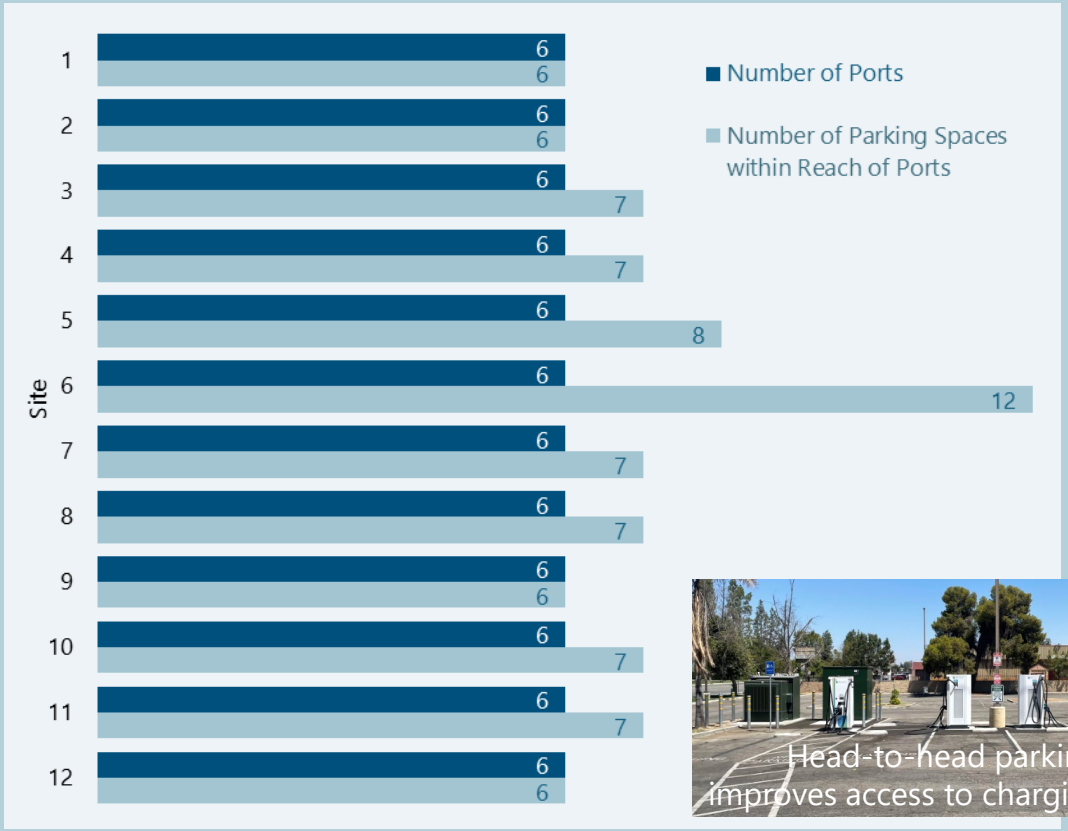
TOU rates (30 sites)

- $0.25/kWh, $0.50/kWh, and $0.75/kWh per time period.
- An increase of 200% and 300% compared to Super-Off-Peak.

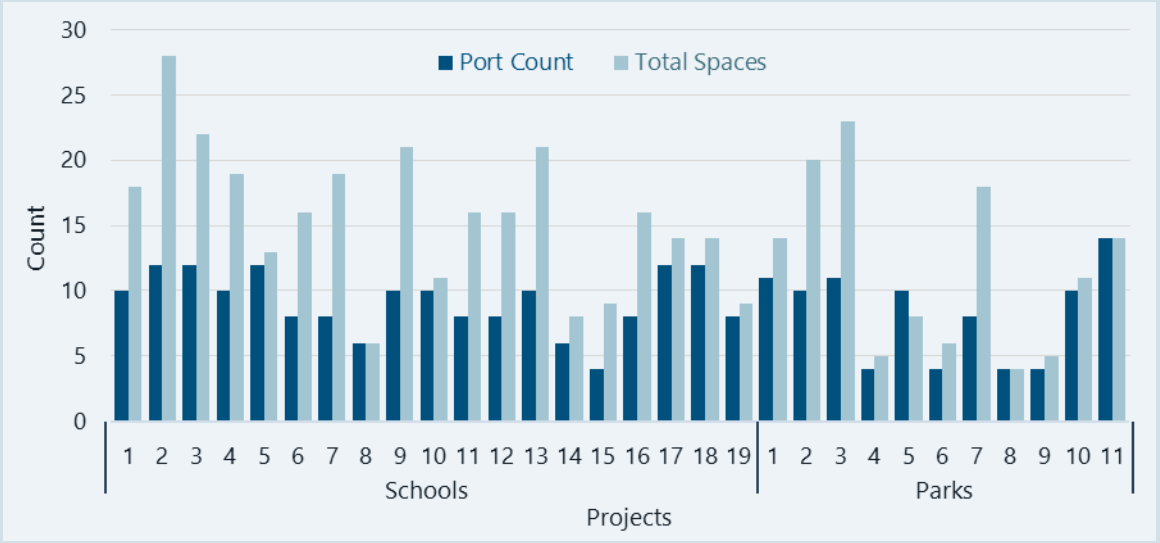
Public Charging | Parking Layout Trends

Some sites have higher access in terms of parking spaces per port. Though not a design goal, this facilitates turnover of charging ports in congested parking lots and increases resiliency in the event that a charging station is out of order or inaccessible.

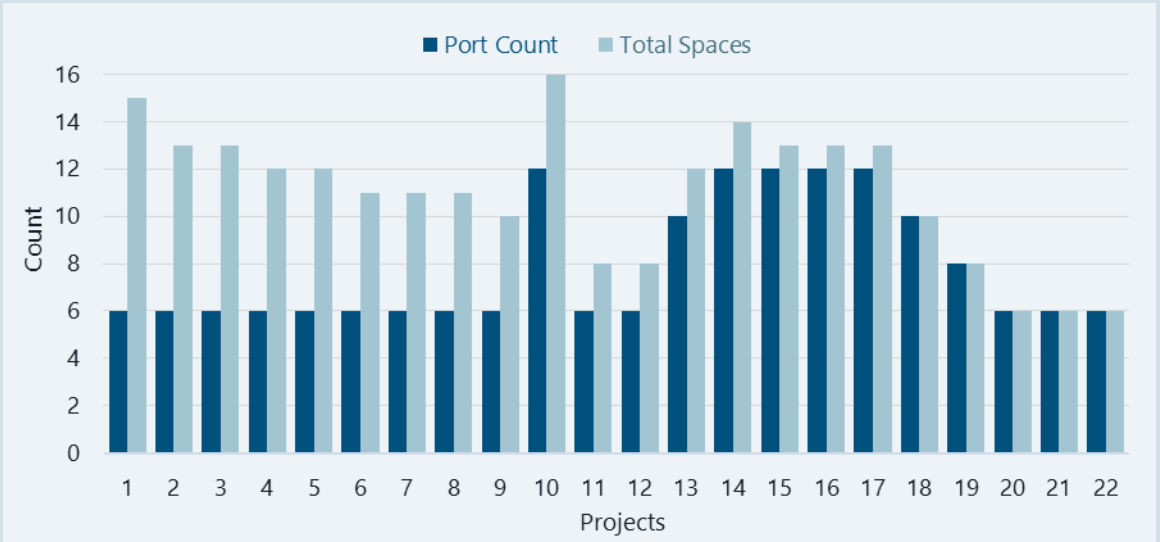
PG&E Schools Pilot



SDG&E Schools and Parks Pilots



SCE Schools Pilot



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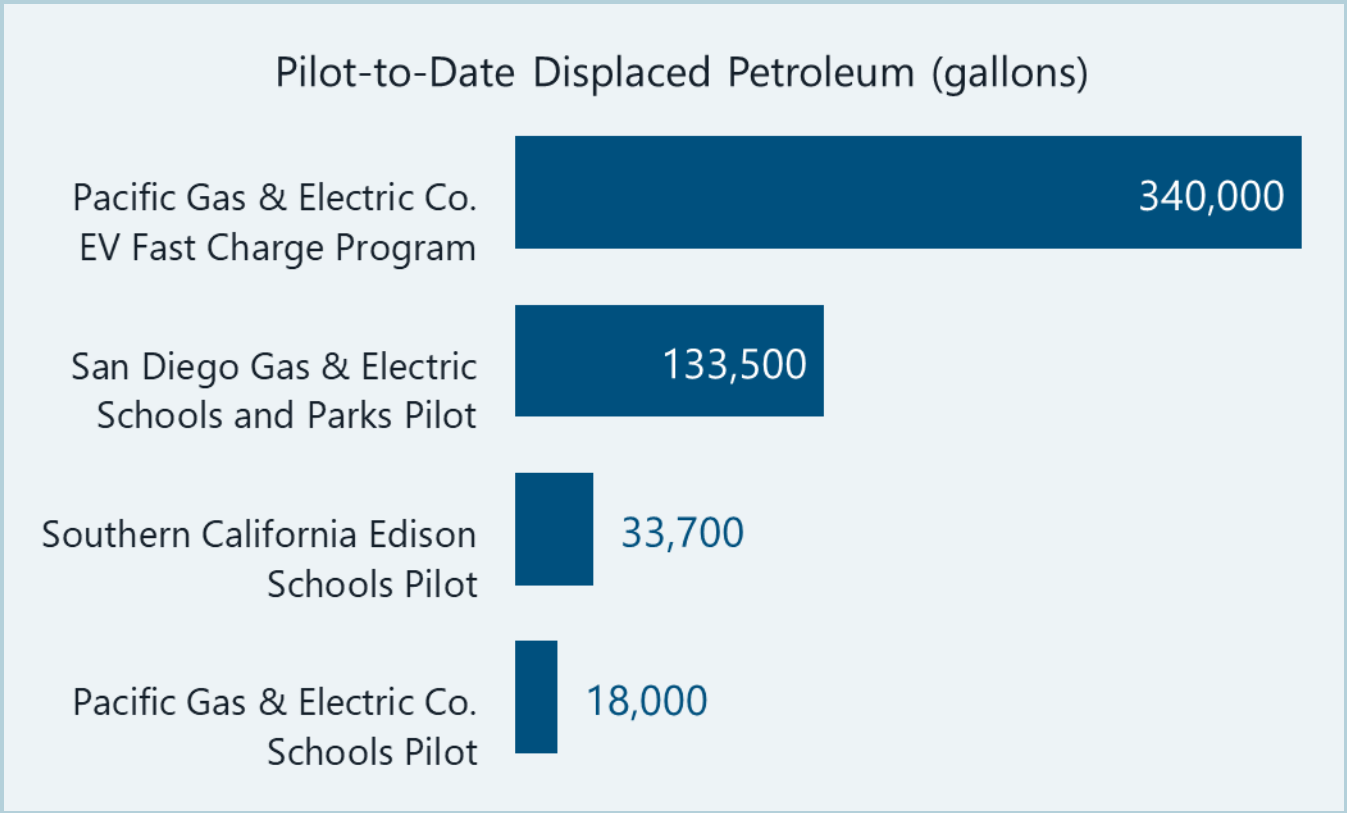
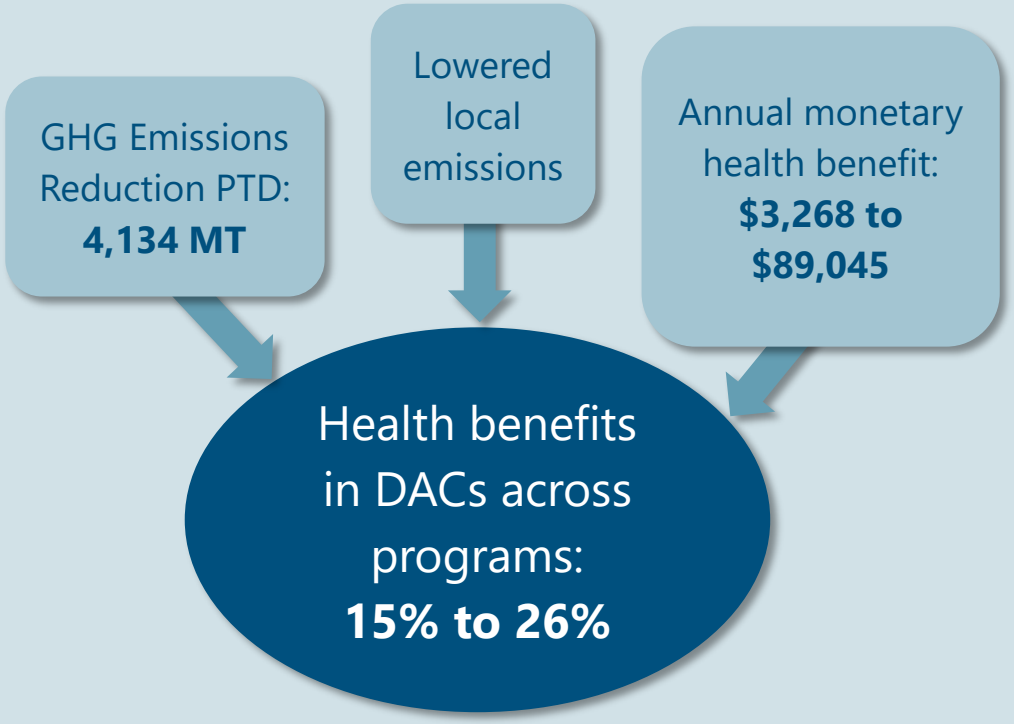
Public Charging | Lessons Learned

The Schools and Parks Pilots sites and the EV Fast Charge program sites continue to displace petroleum, reduce GHG and local emissions, and achieve health impacts overall and within disadvantaged communities.





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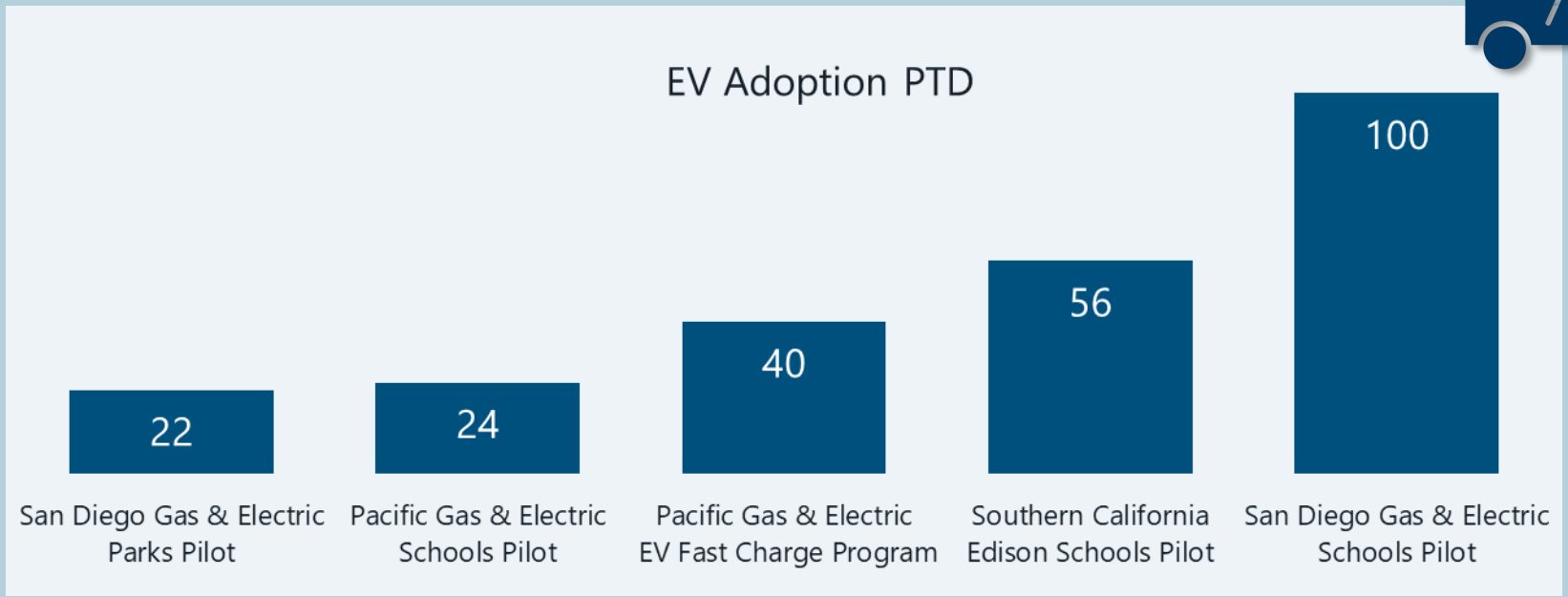
Public Charging | Lessons Learned

The Schools and Parks Pilots' sites and the EV Fast Charge program sites continue to modestly promote EV adoption in surrounding neighborhoods.



The pilots and program contribute to EV adoption in households neighboring the charging infrastructure.

To date the Utility investments have had an economically meaningful impact on EV adoption, contributing to adoption of nearly 250 EVs collectively.

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Any questions?

CADMUS

Thank You

Michael Colby

Project Manager

Michael.Colby@Cadmusgroup.com

Ziga Ivanic

Technical Director

Zivanic@energetics.com

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MDHD | Time-of-Use Rates

Hourly TOU Electricity Rates and Average Carbon Intensity

TOU On-Peak Energy Costs

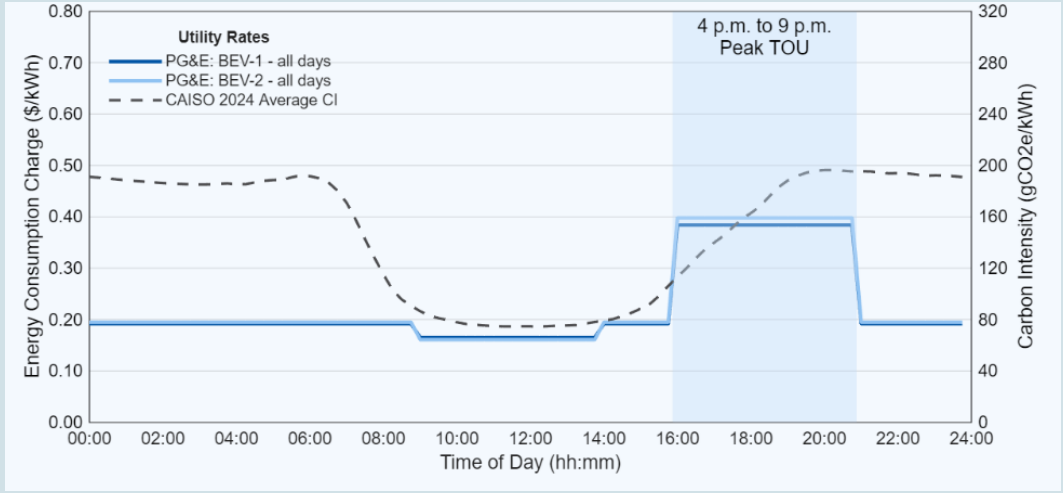
- SCE: $0.11/kWh–$0.66/kWh (depending on time of year and day)
- PG&E: ~$0.40/kWh
- SDG&E: ~$0.25/kWh (depending on time of year)

TOU Off-Peak and Super-Off Peak Energy Costs

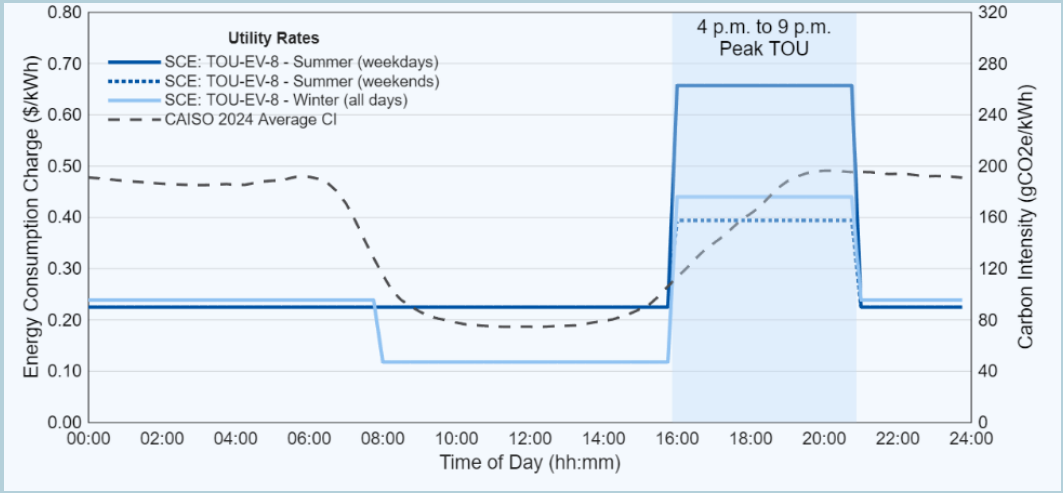
- PG&E: $0.20/kWh
- SDG&E: $0.12/kWh–$0.13/kWh

In many cases, lower-cost TOU periods correlate with **lower carbon intensity of the grid**

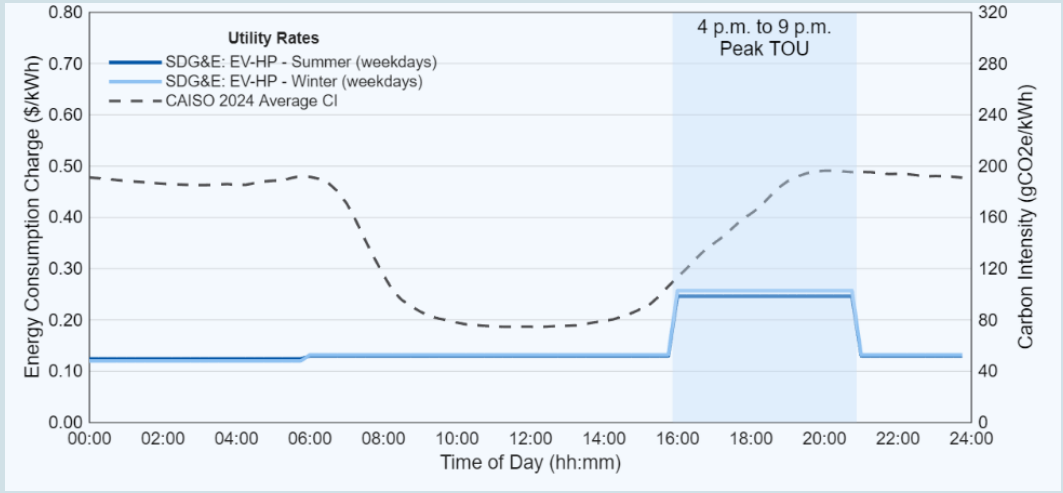
PG&E EV Fleet



SCE Charge Ready Transport



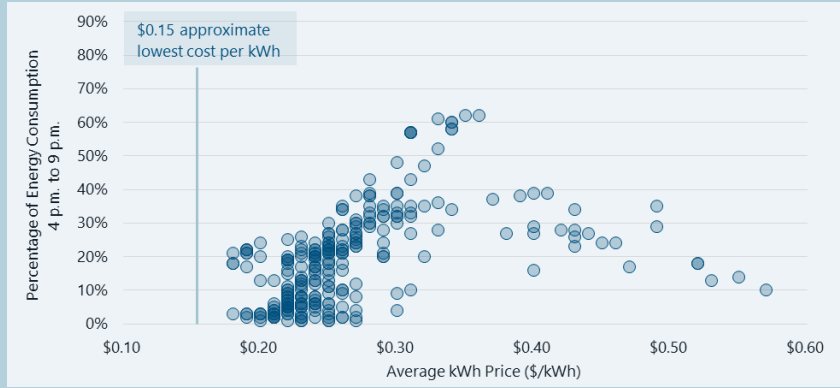
SDG&E Power Your Drive for Fleets



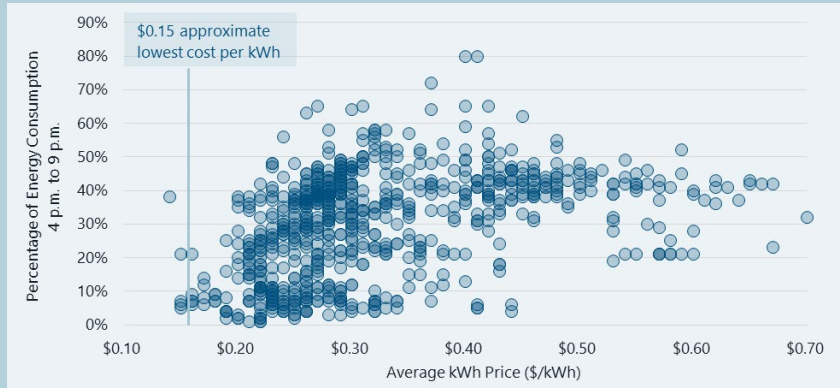
MDHD | Grid Impacts – Billing

These figures show PG&E EV Fleet percentage of monthly energy consumed from 4 p.m. to 9 p.m. versus the average energy price for consumption billing months for PTD sites.

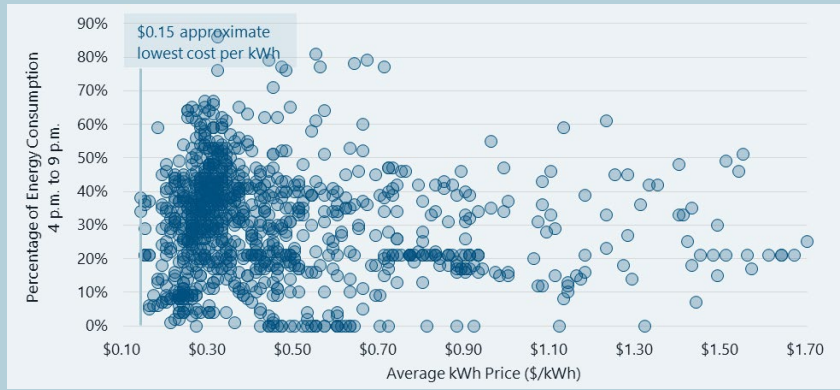
High consumption billing months (>20 MWh) highlight the potential financial opportunity to use load management to reduce costs.



Medium consumption billing months (5 MWh to 20 MWh) show a higher proportion above $0.40 than in the largest billing months.



Low consumption billing months (<5 MWh) show a correlation between average energy price and consumption from 4 p.m. to 9 p.m. Sites with the **lowest monthly energy consumption** often have less opportunity for the lowest costs but **can leverage load management to mitigate bills based on TOU periods**.



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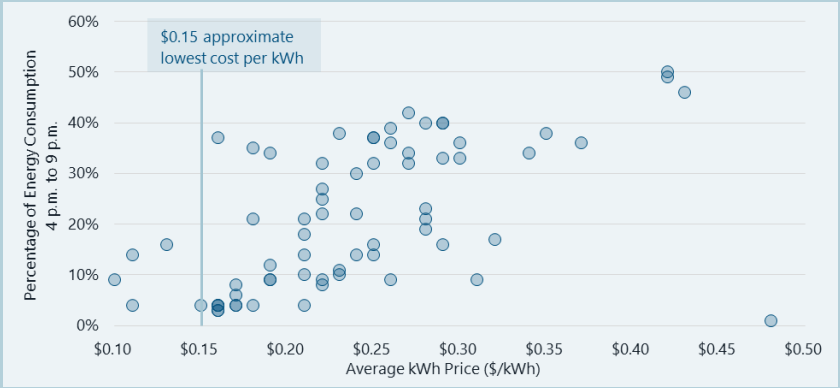
MDHD | Grid Impacts – Billing

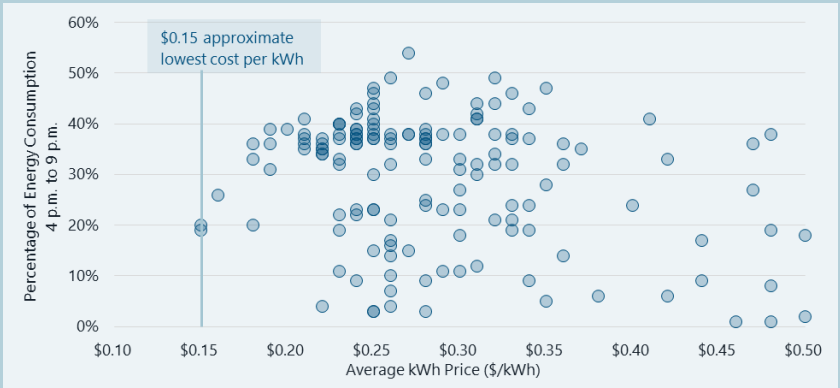
These figures show SDG&E Power Your Drive For Fleets percentage of monthly energy consumed from 4 p.m. to 9 p.m. versus the average energy price of consumption billing months for PTD sites.

SDG&E uses **capacity subscriptions**, billing demand using increments of 10 kW or 25 kW and including overage fees instead of a per-kilowatt fee.

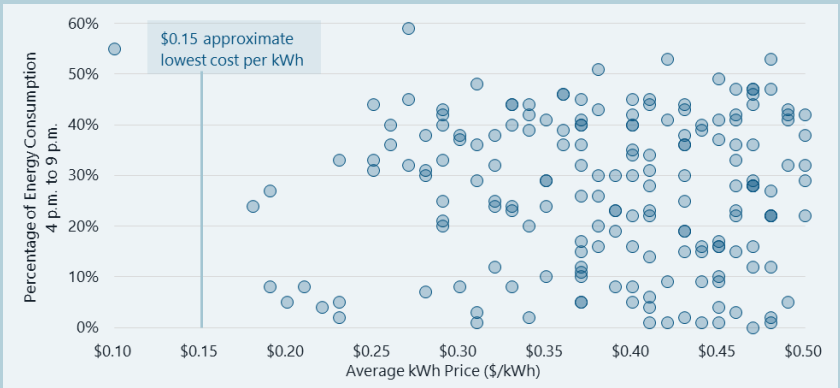
High consumption billing months (>15 MWh) show a trend of higher average cost per kilowatt-hour accompany increased proportion of charging between 4 p.m. and 9 p.m.



Medium consumption billing months (5 MWh to 15 MWh) hovering around $0.35/kWh. Fewer data points make correlating to 4 p.m. to 9 p.m. for challenging than other utilities.



Low consumption billing months (<5 MWh) often have less opportunity for the lowest costs but **can still influence their bills based on TOU periods (via load management)**.



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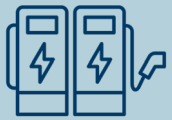
MDHD | EY2024 Recommendations

Recommendation 1.1: To continue advancing MDHD electrification, the Evaluation Team recommends that the State of California **maintain and/or strengthen** the set of incentives currently offered for MDHD fleets.

Recommendation 2.1: **Extend the existing programs in the absence of FC1-BTM support** if programs are not yet fully subscribed and funding remains by the scheduled program end date.

Recommendation 2.2: **Share committed spending for projects that are not yet fully closed out**, even if these are estimates, as Utility-reported spending is still relatively low compared to approved program budgets.

Recommendation 2.3: PG&E should undertake a similar process as SCE and SDG&E to **proactively track activated sites' progress toward fulfilling their VAPs** to ensure that program participants are meeting their obligations as a response to the EY2023 recommendation.



Recommendation 4.1: Consider **mandating that all new EVSE technology included in the approved product list be capable of performing basic load management services**, such as rules-based charging. Utilities should also consider **requiring all NSPs to offer load management capabilities** to allow fleet operators to implement more cost-effective charging behavior.

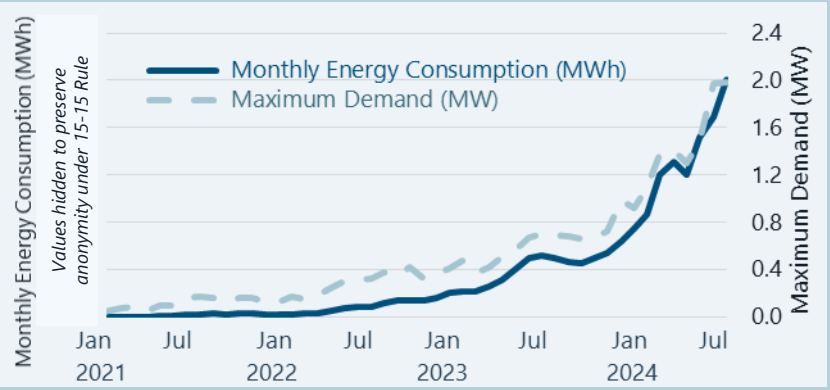
Recommendation 4.2: Be proactive about **holding annual technical assistance sessions with fleet managers who have charging flexibility and potential to achieve substantial energy savings**. These technical assistance sessions—ideally held in person—could help connect the fleet manager with the office that pays the electricity bills to give fleet managers a better understanding of the impacts of TOU rates on operational costs.

Public Charging | Energy Trends

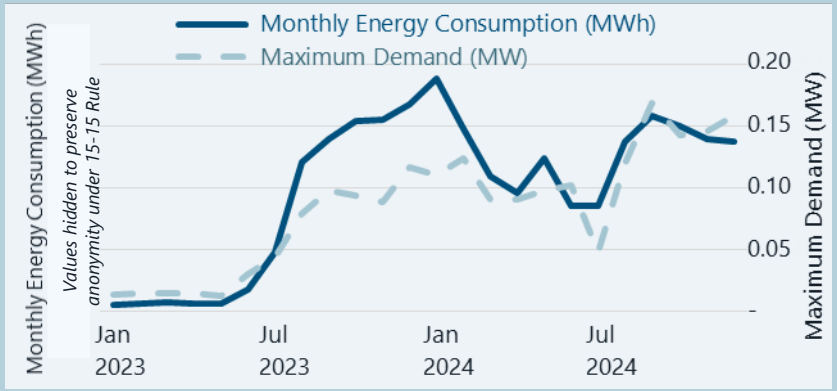
Monthly Energy Consumption and Maximum Demand

PG&E

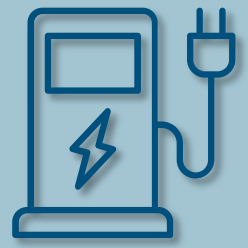
EV Fast Charge



Schools Pilot

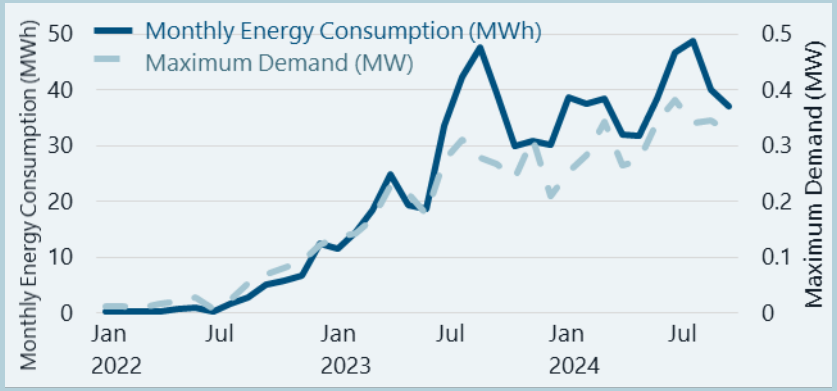


Monthly consumption and demand continue to grow as sites are completed and mature in utilization

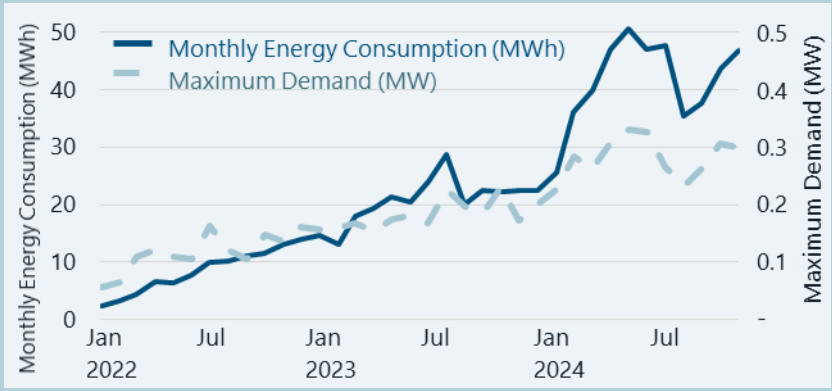


SDG&E

Schools Pilot

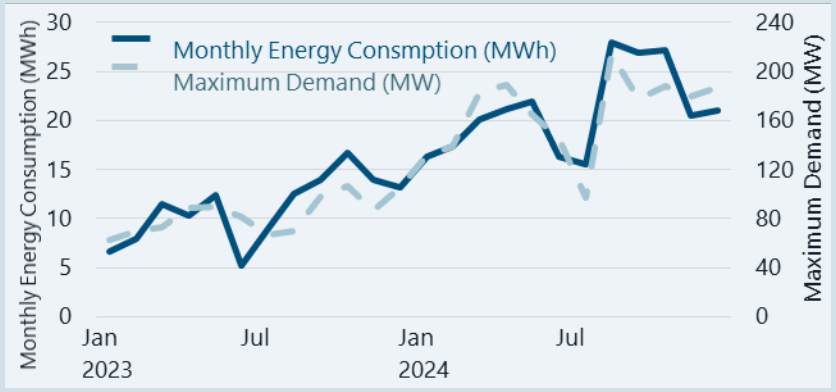


Parks Pilot



SCE

Schools Pilot



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Public Charging | Lessons Learned

Although higher-than-expected site costs and delays continue to be a challenge for the Schools and Parks Pilots and the EV Fast Charge program, committed staff have worked diligently to mitigate these costs.

2024 **Budgetary Reviews**

- SCE program staff used actual site cost data to **improve forecasts** for all Standard Review Projects (SRP) programs.
- PG&E EV Fast Charge staff determined in 2023 through a budget exploration that about **five more sites could be built**, which were secured in 2024.
- In 2024, PG&E Schools Pilot staff continued to **identify several key strategies** as effective for keeping **school site costs low**:
  - Pre-desktop reviews
  - Regular reviews of actual costs
  - Open communication during construction

Staff have continued to adjust the program design and processes and to conduct ongoing budgetary reviews.

2024 **Program Processes**

SCE Schools Pilot staff focused on improving communication with the schools and EVSE providers as more schools transitioned to maintenance for their operational sites.

Public Charging | Lessons Learned

Although cross-jurisdiction coordination was a significant challenge in previous years, the deep commitment all Utility staff have maintained for the Parks Pilot is beginning to show positive results.

2021

Plan for all Utilities to enter into collective participation agreement with DPR

2022

Utilities separated efforts, pursuing independent agreements with DPR

2023

SCE secured its first 8 site-specific addendum agreements and SDG&E continued capitalizing on inclusion of local parks

2024

SDG&E and PG&E successfully signed the MPA, SCE secured final site addendum, and Liberty is hopeful about signing the MPA in 2025