Program Advisory Council Meeting
Q2 2024

July 24, 2024

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Agenda

Introduction | Safety	5 minutes
Meeting Timeline | Market Update | Fun Fact!	5 minutes
EV Fleet Program Updates	8 minutes
EV Fast Charge Program Updates	5 minutes
EV Charge Schools Program Updates	5 minutes
EV Charge Parks Program Updates	5 minutes
Submetering	25 minutes
Flex Connect	15 minutes
VGI Pilots	5 minutes
Q & A	10 minutes
Survey Questions	1 minute
Conclusion	2 minutes

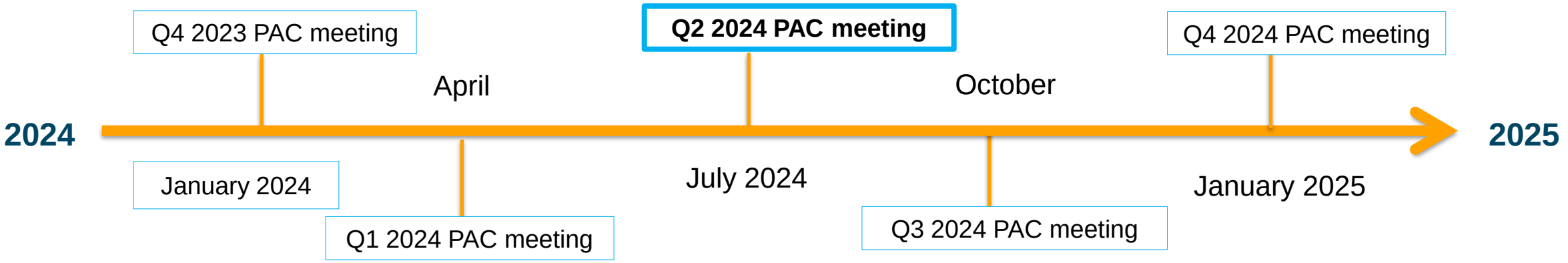
Safety


STAY SAFE in the SUN
SHOWER
Take cool showers to bring down your body temperature
SLAP
Use sunscreen minimum 30 SPF to protect your skin from the harmful UV rays
WRAP
Wrap around sunglasses to protect the eyes
HAT
Wear a wide brimmed hat
HYDRATE
Don't wait for thirst to set in. Drink at least 8 glasses of H_2O
EAT
Eat foods that contain significant amounts of water
SHADE
Always seek shade, particularly between 11am - 4pm
COVER UP
Loose-fitting, long-sleeved shirts & long trousers provide the best protection from the sun's harmful rays

Clean Energy Transportation Program Advisory Council Meetings

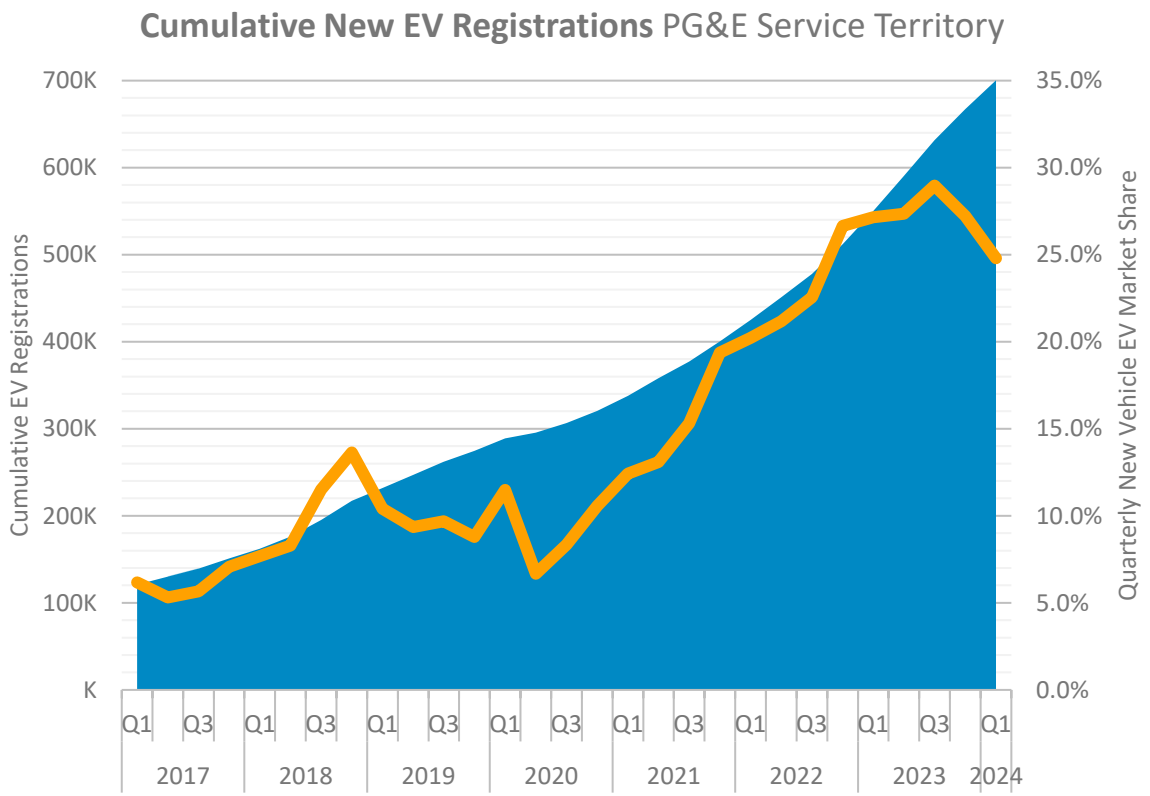
Overview

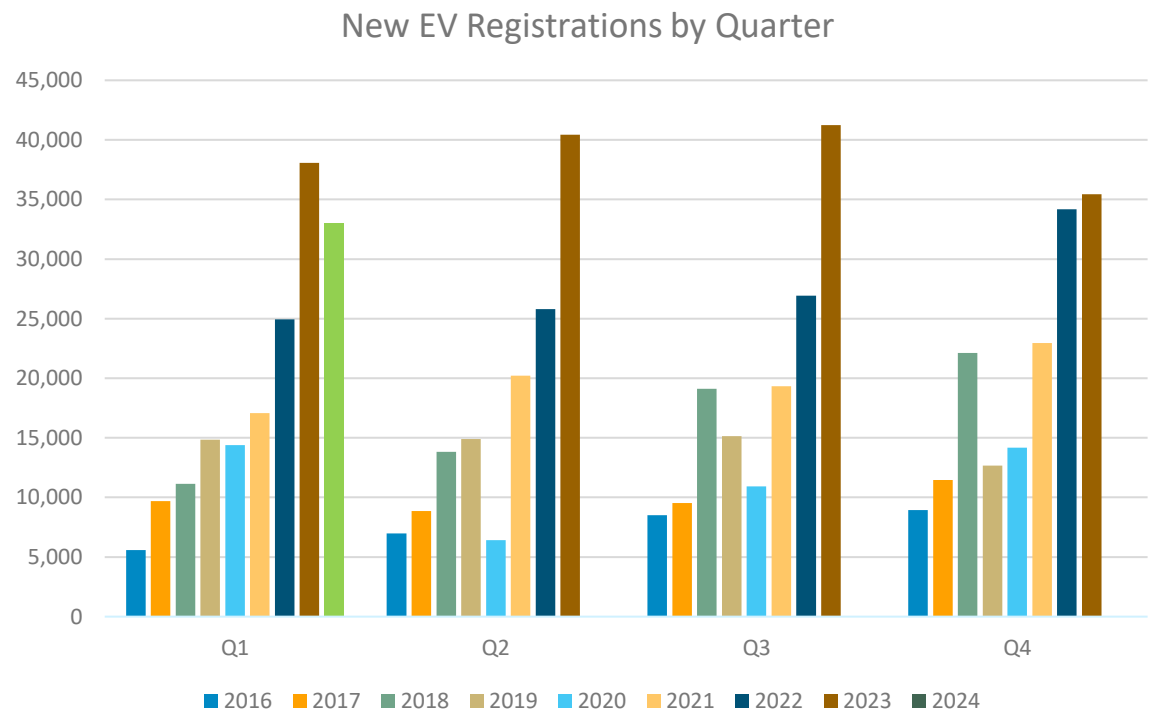
- PG&E has expanded our efforts on transportation electrification (TE) with several filings, pilots and programs in progress
- CPUC has directed PG&E to consult a Program Advisory Council (PAC) in the development of key TE pilots and programs to gain feedback from industry stakeholders
- This platform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



EV Market Update

714,530 EVs registered in PG&E service territory through April 2024





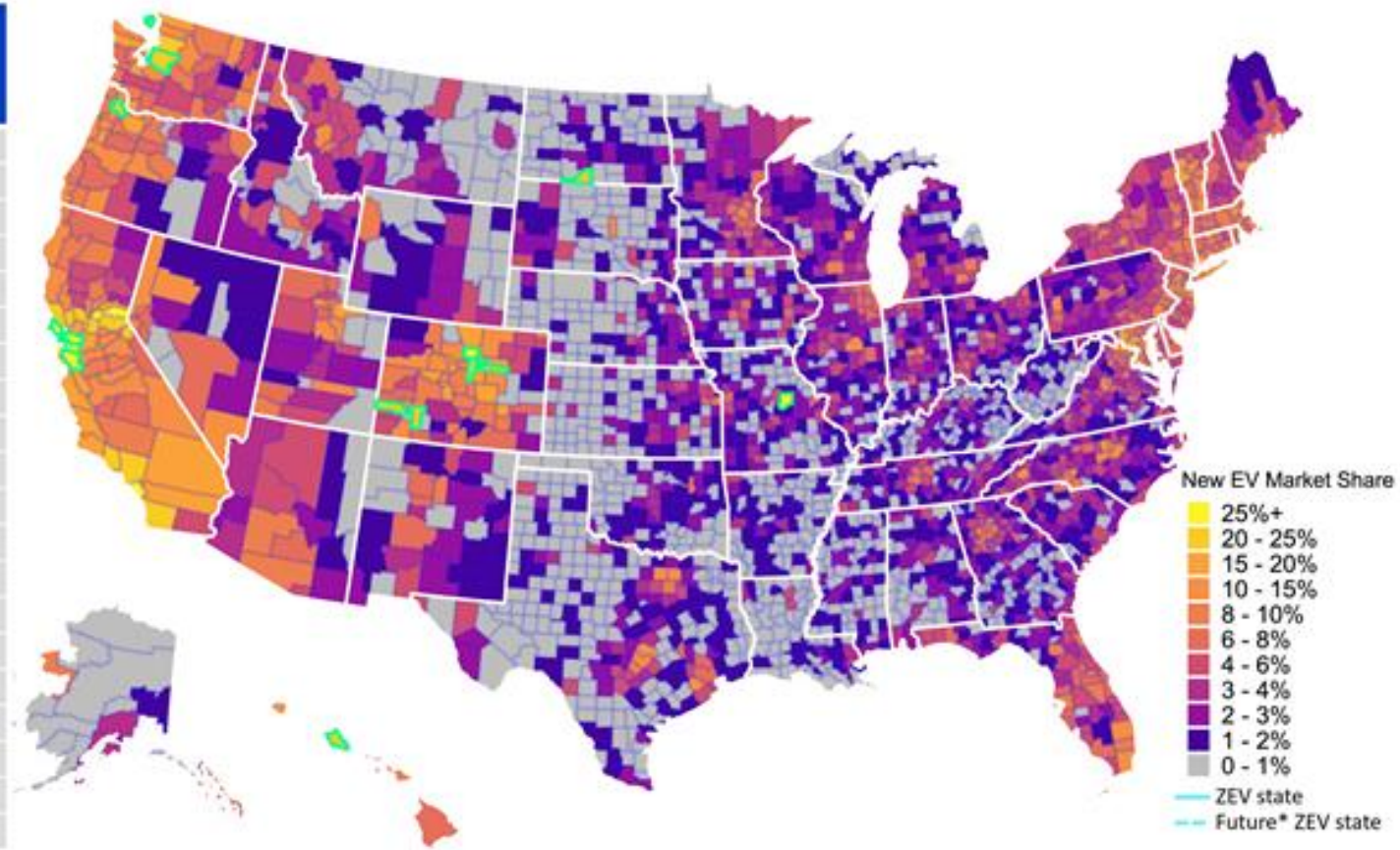
Source: EPRI, Based on external registration data through Jan. 2024

EV Fun Fact

U.S. EV share of new vehicle sales YTD hits 9.3%

(Jan 1 through April 30, 2024)

Top 5 counties in CA & Top 15 counties outside CA	New EV market share
Santa Clara, CA	40.0%
Marin, CA	38.0%
Alameda, CA	35.9%
San Francisco, CA	33.3%
Contra Costa, CA	30.4%
Callaway, MO	35.3%
Boulder, CO	31.8%
San Juan, WA	26.9%
Bristol Bay, AK	25.0%
Hinsdale, CO	25.0%
Sioux, ND	25.0%
San Miguel, CO	24.8%
Broomfield, CO	24.0%
King, WA	23.5%
Denver, CO	23.0%
Jefferson, CO	20.7%
District of Columbia	20.6%
Arapahoe, CO	20.4%
Honolulu, HI	20.4%
Washington, OR	20.3%



Source: EPRI

SB 350 Standard Review Projects

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EV Fleet

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EV Fleet Program Update

Status as of 6/30/2024

	Sites	MDHD EVs Committed
Applications	536	-
Viable Contracts[1]	271	5,648
Construction Complete	88	1,778
Activated	74	1,227

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

Program Budget Overview

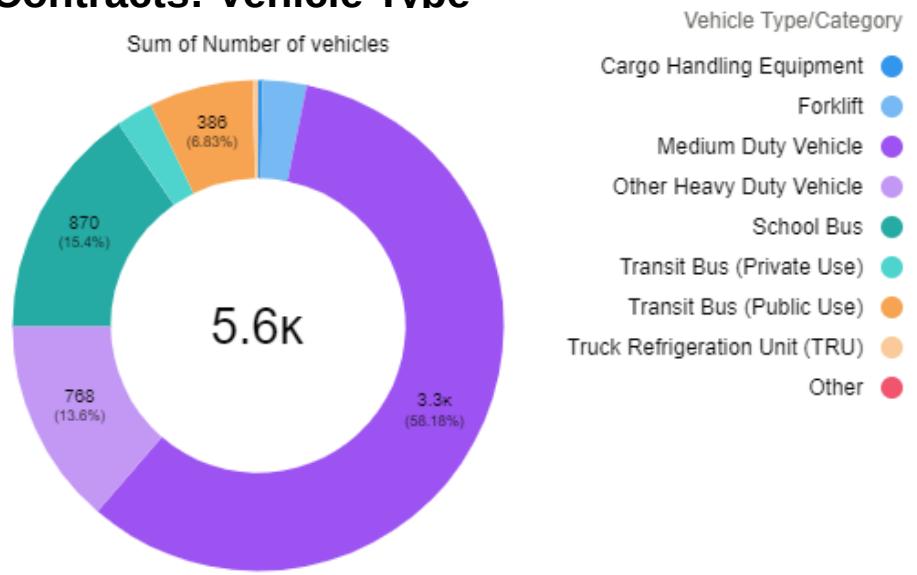
Spend-to-Date	Remaining Funds
$59.1M	$177.2M

Lessons Learned/Best Practices

Program is striving to navigate cost increases and meet proposed site goal by:

- Reducing cost threshold for projects that are not eligible for EVSE rebates
- Increasing marketing activities targeting small businesses and schools
- Leveraging forthcoming Transportation Electrification Advisory Services (TEAS) program to provide additional customer support

Viable Contracts: Vehicle Type

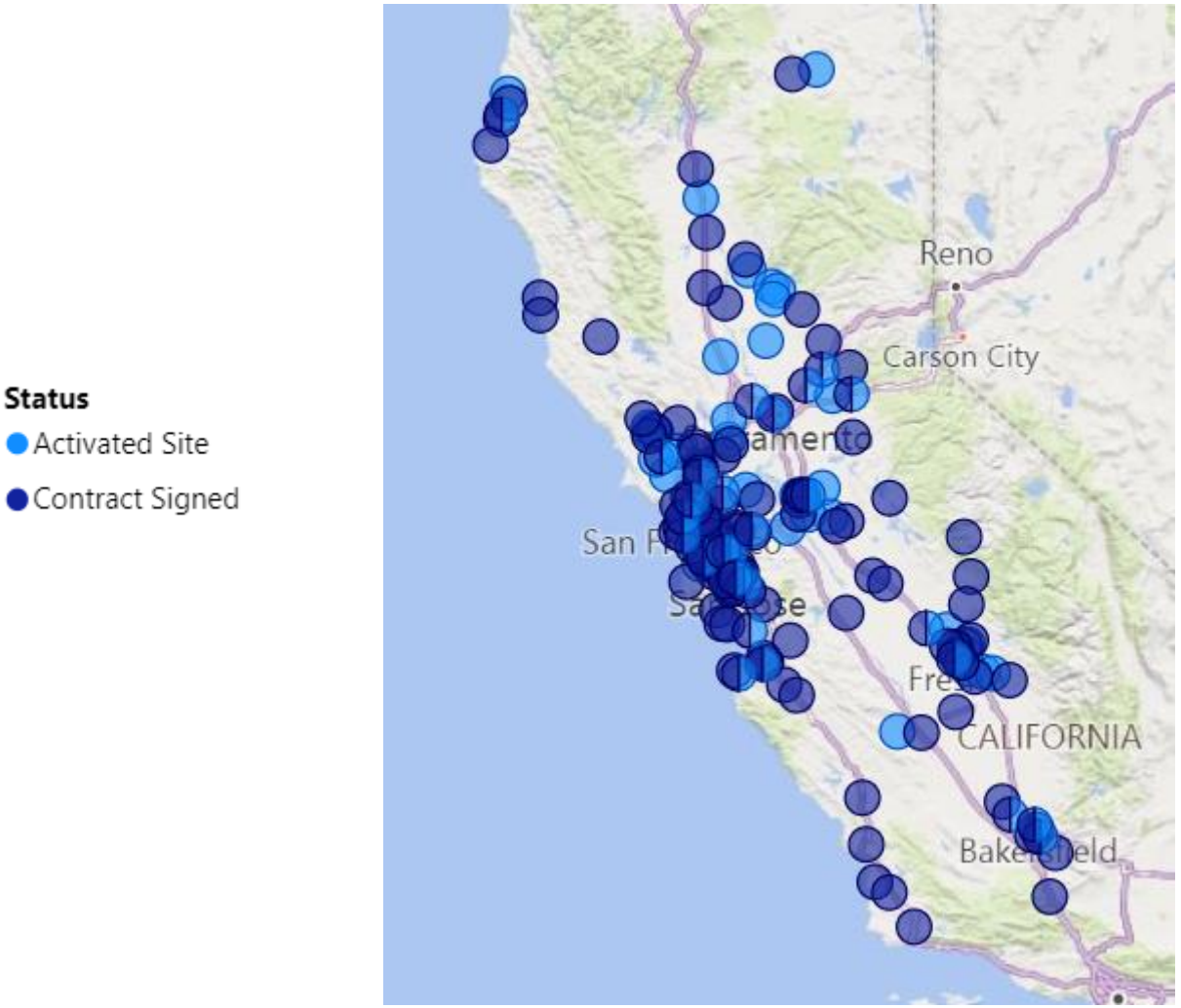


Program Highlights

- 122 of the 271 signed contracts **(45%) are in DACs**
- 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
- Program has reached 87% of its vehicle target (6,500 vehicles), still behind on number of sites enrolled
- Tier 3 Advice Letter filed with CPUC to modify site goal – proposed range of 375 to 440 sites for program; currently pending with CPUC

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 6/30/2024

	Sites	Ports
Applications	272	1,225
Contracted Sites	39	209
Constructed	28	142
Activated	21	100

Contracted site counts exclude cancelled projects

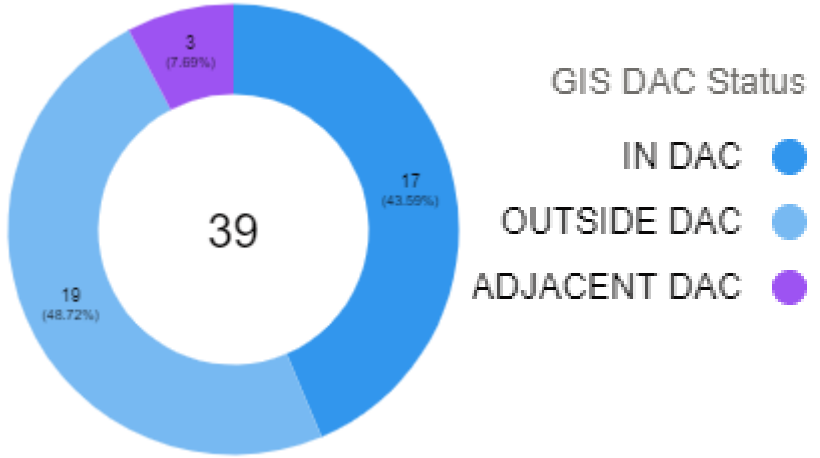
Program Budget Overview

Spend-to-Date	Remaining Funds
$17.2M	$5.2M

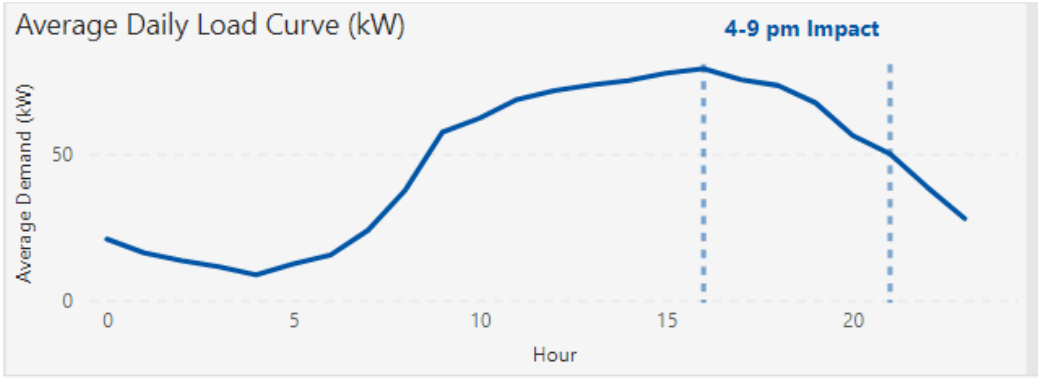
Lessons Learned:

- Per kWh pricing strategies vary between site hosts.
  - Range from 35 cents - 76 cents per kWh
  - TOU rates masked by many

DAC Targets: Signed Contracts



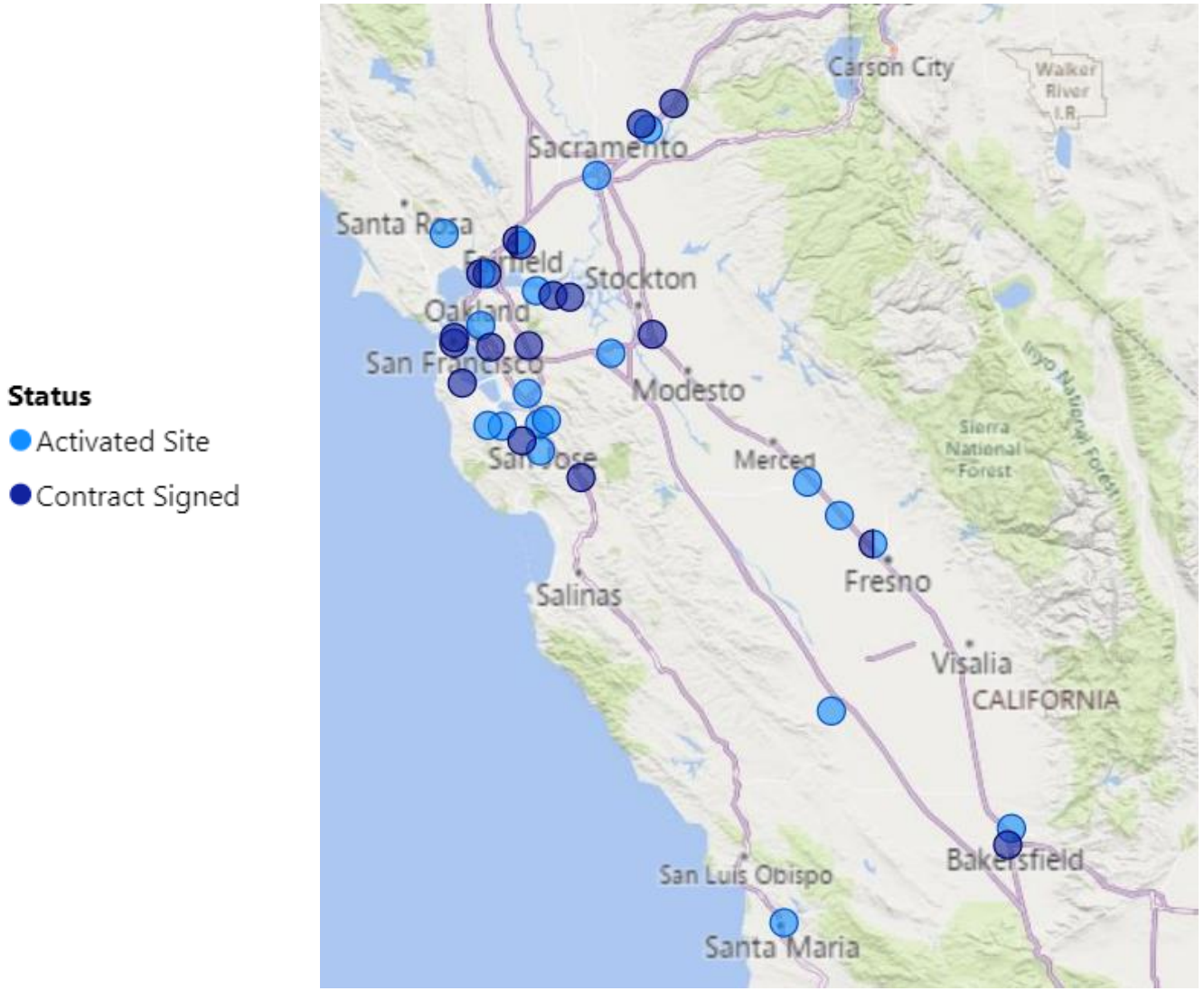
Portfolio-wide Utilization Trends



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 6/30/2024

	Sites	Ports*
Applications	78	468
Contracted Sites	15	90
Constructed	11	66
Activated	11	66

**Targeting 6 ports per site; Sites and port counts reflect cumulative totals*

Program Updates

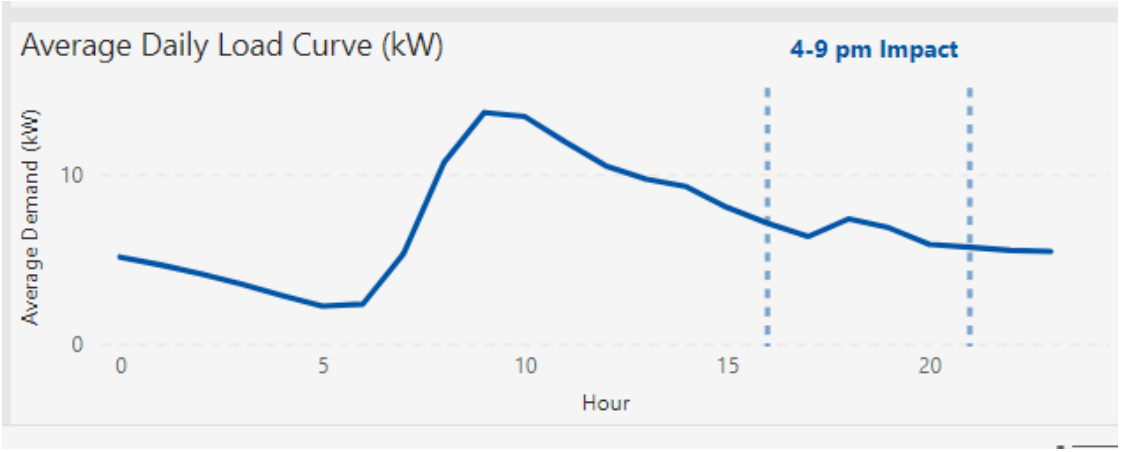
- No longer recruiting new sites
- Final two sites were contracted in early Q2
- EV Curriculum available online to every K-12 school in PG&E territory

  www.energizeschools.org/evcurriculum.html

Program Budget Overview

Spend-to-Date	Remaining Funds
$4.3M	$1.4M

Average Daily Load Curve



Source: SRP Evaluation Dashboard

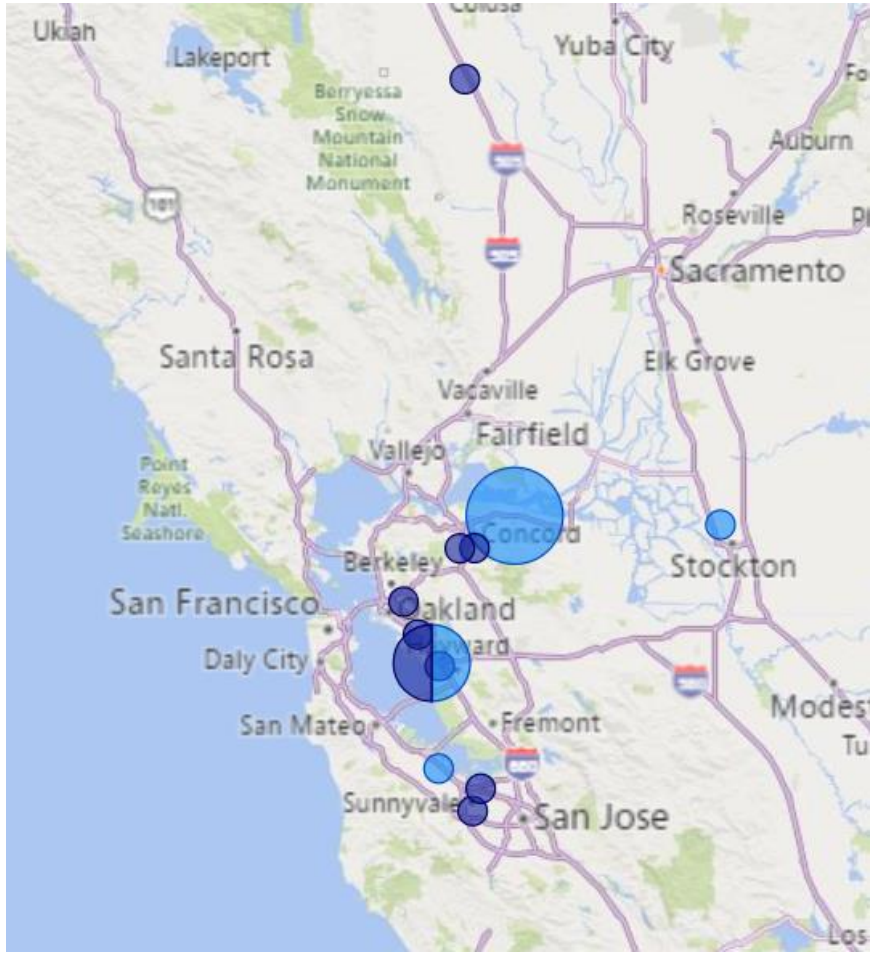
Lessons Learned/Best Practices

- Timing of construction with summer break is very important to most schools.
- Preliminary trends indicate different schools have very different levels of utilization, despite all having the same number and types of chargers installed.

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 6/30/2024

		Sites	Ports*
Applications		0	0
Contracted Sites		0	0
Constructed		0	0
Activated		0	0

Program Budget Overview

Spend-to-Date	Remaining Funds
$504K	$5.04M

Lessons Learned / Best Practices

- Limited number of Parks located in DACs will make it difficult to reach target of 25%.

Program Update

- Master Services Agreement between State Parks and PG&E was executed in Q2.
- Focus of installations will be for public use, but Parks vehicles will also have access under same terms as public.
- PG&E will release RFP in Q3/Q4 for EVSPs that qualify for program and would serve as "customer of record" for all Parks sites.

Additional Program Updates

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EV Submetering

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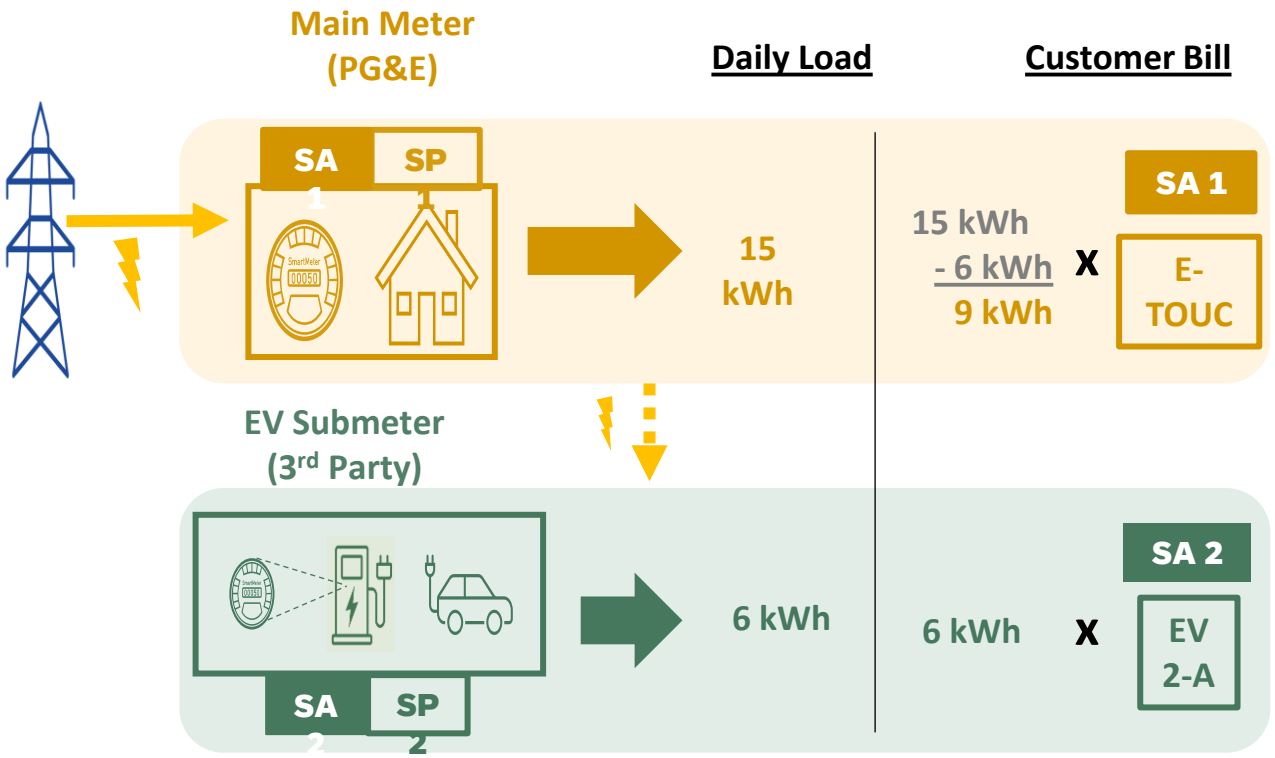
EV Submetering Update

Overview of Submetering



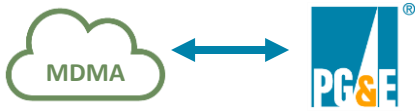
Submetering Key Points

- Available to all residential & commercial customers (EV2-A, BEV-1, BEV-2 rates)
- Separate submeters owned privately, not by a utility; can be socket-based, utility-integrated non-traditional, or embedded in EVSE
- Submeters must meet strict certification/testing requirements to ensure accurate metrology
- Interval data is managed, validated & transmitted to utilities via a third-party Meter Data Management Agent (MDMA)
- Interval data must conform to data specifications & be transmitted monthly
- At PG&E, submetered charging will be billed using subtractive billing

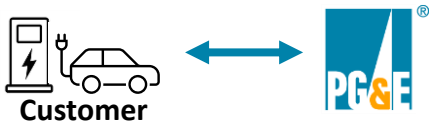
Focus of the conversation today is on challenges to MDMA registration, device certification, and customer enrollment

PG&E's Submetering Enrollment and Billing Process can be segmented into four general categories for MDMA approval & customer enrollment

Pre-Enrollment

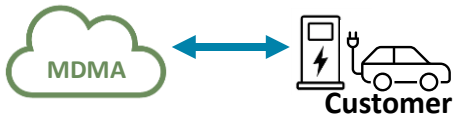


- MDMA registers with PG&E
- PG&E approves a product list (APL)

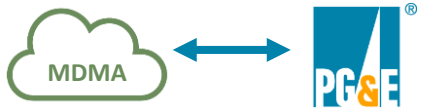


- PG&E develops ME&O
- PG&E develops rate comparison tools

Enrollment

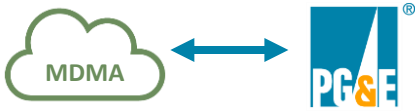


- MDMA coordinates customer enrollment



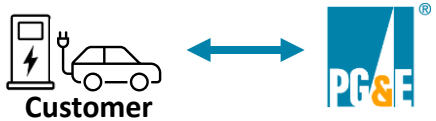
- MDMA sends PG&E enrollment request and customer information
- PG&E establishes an EV Service Agreement and establishes submeter account

Meter Data Transfer



- MDMA sends customer interval data to PG&E for billing

Billing



- PG&E calculates energy charges based on selected rates
- PG&E presents bill to the customer

EV Submetering Status and Challenges

MDMA & Customer enrollment status

MDMA Outreach

- IOUs reached out to 66 potential MDMAs in 2022 and 2023: only three stated potential interest, one responded to next-step questionnaire

Limited Initial Interest

- Six MDMAs are interested, all on the commercial side. Zero customers enrolled.
- All MDMAs would be serving themselves or their own customers, not necessarily open for public enrollment

One MDMA is Moving Forward with Registration

- One is in final stages of approval process, pending data transfer test

Challenges Identified

Chicken-and-egg Scenario

- MDMAs are uncertain about volume of customer interest, but customers can't join without an MDMA in place

High Set-up Costs

- High costs for data infrastructure setup, equipment certification, & submeter installation/maintenance; only valid in California

Customer Barriers

- Customers who already have an EVSE installed face barriers to participation

EV Submetering Discussion

Discussion Questions: Understanding & addressing participation challenges

1. What are your motivations for pursuing EV submetering (as an MDMA, hardware provider, or customer) and do you feel that your needs are being/will be met by participating?
   Does anything stand out as a deficiency or strength of the EV submetering option?

2. What are the use cases you want to address by participating in CA's EV submetering option?
   How might those evolve over time?

3. When thinking about your specific use case(s) for EV submetering, both now and in the future, what has it been like to make a business case to support your participation?

4. If you are engaged in similar programs in other U.S. markets/states, how do the EV submetering requirements for CA's IOUs compare?
   What would be your ideal setup to work with submetering across markets?

Want to discuss further? Email evsubmetering@pge.com – we'd love your feedback!

Flex Connect

Website Link: Fact Sheet

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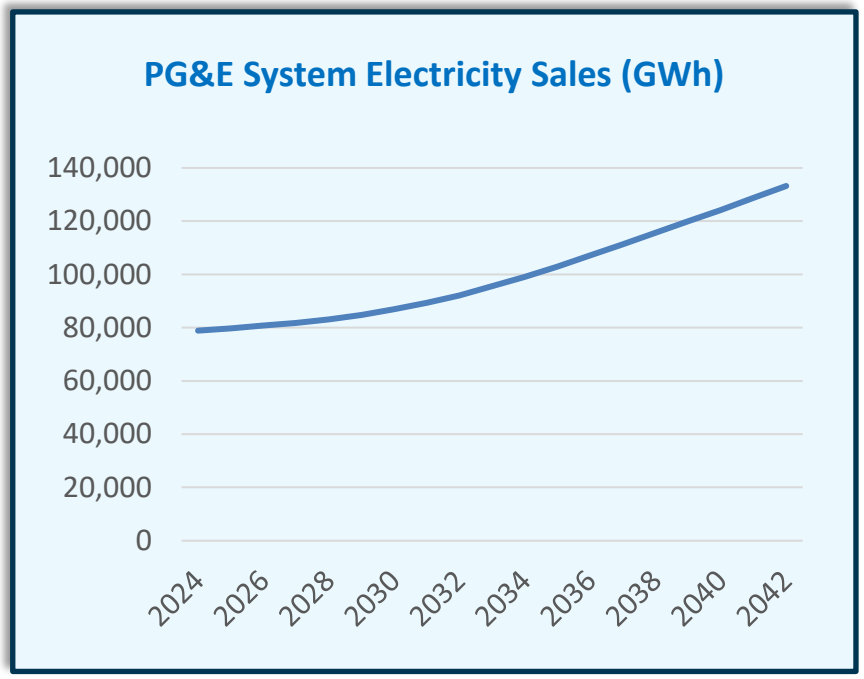
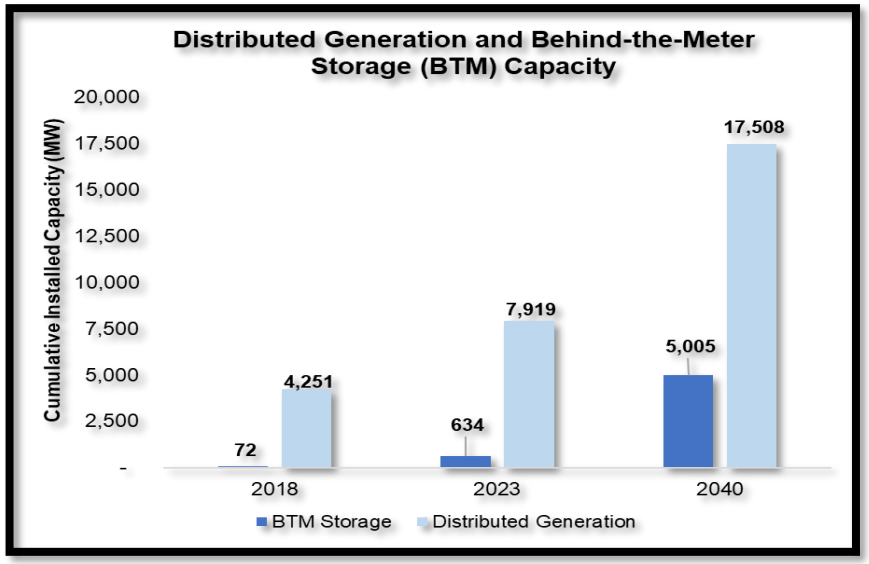
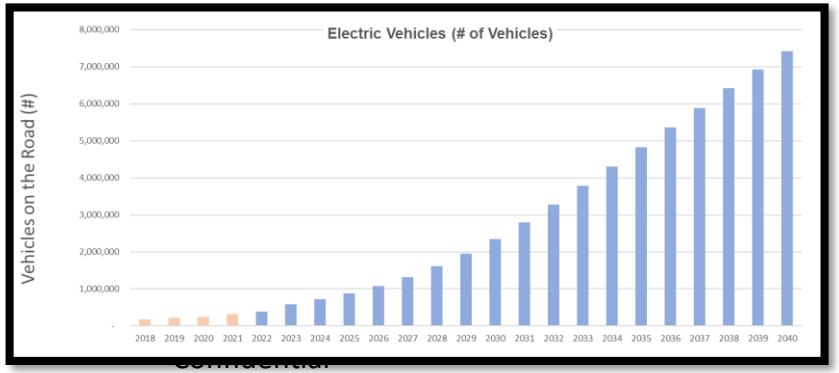
Context Setting: The need for new DER Management Tools & Processes

PG&E anticipates increased load driven by EV adoption and building electrification – coupled with continued adoption of distributed solar, significant growth of behind-the-meter storage and flexible loads.

New tools and processes to orchestrate Distributed Energy Resources (DERs) are necessary to safely and effectively operate the grid.







7/25 PG&E Innovation Summit announcing DERMS Initiative

Source: PG&E's Spring 2023 Annual Load Forecast

PG&E's Flexible Service Connection Concept

Flexible Service Connection aims to allow customers with controllable loads to connect to the system without waiting for a service upgrade as a bridge solution

Customer Value

Quicker connections

- Avoid Long Wait Times
- More Available Energy
- Improved Utility Partnership

Distribution Value

Improved customer experience

- Unlock Available Capacity
- Higher Grid Utilization
- Operational Flexibility

Energy System Value

Support industry goals

- Timely Energization
- Cost Effectiveness
- Manage Grid Constraints

Real World Example of Potential Benefits

Hour of the Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	71%	71%	71%	20%	20%	20%	20%	20%	20%	20%	71%	71%
1	71%	71%	71%	20%	20%	20%	20%	20%	20%	20%	71%	71%
2	71%	71%	71%	20%	20%	20%	20%	20%	20%	20%	71%	71%
3	71%	71%	71%	20%	20%	20%	20%	20%	20%	20%	71%	71%
4	71%	71%	71%	20%	20%	20%	20%	20%	20%	20%	71%	71%
5	71%	71%	71%	20%	20%	20%	20%	20%	20%	20%	71%	71%
6	71%	71%	71%	20%	20%	20%	20%	20%	20%	20%	71%	71%
7	71%	71%	71%	20%	20%	20%	20%	20%	20%	20%	71%	71%
8	71%	71%	71%	20%	20%	20%	20%	20%	20%	20%	71%	71%
9	71%	71%	71%	20%	20%	20%	20%	20%	20%	20%	71%	71%
10	71%	71%	71%	20%	20%	20%	20%	20%	20%	20%	71%	71%
11	71%	71%	71%	20%	20%	20%	20%	20%	20%	20%	71%	71%
12	71%	71%	71%	20%	20%	20%	20%	20%	20%	20%	71%	71%
13	71%	71%	71%	20%	20%	20%	20%	20%	20%	20%	71%	71%
14	71%	71%	71%	20%	20%	20%	20%	20%	20%	20%	71%	71%
15	71%	71%	71%	20%	20%	20%	20%	20%	20%	20%	71%	71%
16	71%	71%	71%	20%	20%	20%	20%	20%	20%	20%	71%	71%
17	71%	71%	71%	20%	20%	20%	20%	20%	20%	20%	71%	71%
18	71%	71%	71%	20%	20%	20%	20%	20%	20%	20%	71%	71%
19	71%	71%	71%	20%	20%	20%	20%	20%	20%	20%	71%	71%
20	71%	71%	71%	20%	20%	20%	20%	20%	20%	20%	71%	71%
21	71%	71%	71%	20%	20%	20%	20%	20%	20%	20%	71%	71%
22	71%	71%	71%	20%	20%	20%	20%	20%	20%	20%	71%	71%
23	71%	71%	71%	20%	20%	20%	20%	20%	20%	20%	71%	71%

STATUS QUO: Planning Limits for 3.8MW EV Charging Station

Hour of the Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
1	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
2	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
3	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
4	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
5	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
6	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
7	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
8	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
9	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
10	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
11	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
12	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
13	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
14	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
15	100%	100%	100%	100%	100%	100%	100%	100%	87%	100%	100%	100%
16	100%	100%	100%	100%	100%	100%	89%	94%	83%	100%	100%	100%
17	100%	100%	100%	100%	100%	100%	75%	83%	71%	100%	100%	100%
18	100%	100%	100%	100%	100%	100%	59%	68%	64%	100%	100%	100%
19	100%	100%	100%	100%	100%	100%	63%	66%	56%	100%	100%	100%
20	100%	100%	100%	100%	100%	100%	64%	66%	59%	100%	100%	100%
21	100%	100%	100%	100%	100%	100%	75%	76%	73%	100%	100%	100%
22	100%	100%	100%	100%	100%	100%	85%	87%	84%	100%	100%	100%
23	100%	100%	100%	100%	100%	100%	85%	94%	88%	100%	100%	100%

FLEX CONNECT: Can Support Full Request ~90% of the time on Average

Key Takeaway – If a customer can reduce consumption for 3 months during 3-11PM we can serve their full load request

Real World Example of Potential Benefits

Hour of the Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%
1	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%
2	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%
3	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
4	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
5	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
6	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
7	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
8	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
9	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
10	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
11	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
12	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
13	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
14	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
15	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
16	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
17	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
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22	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%
23	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%

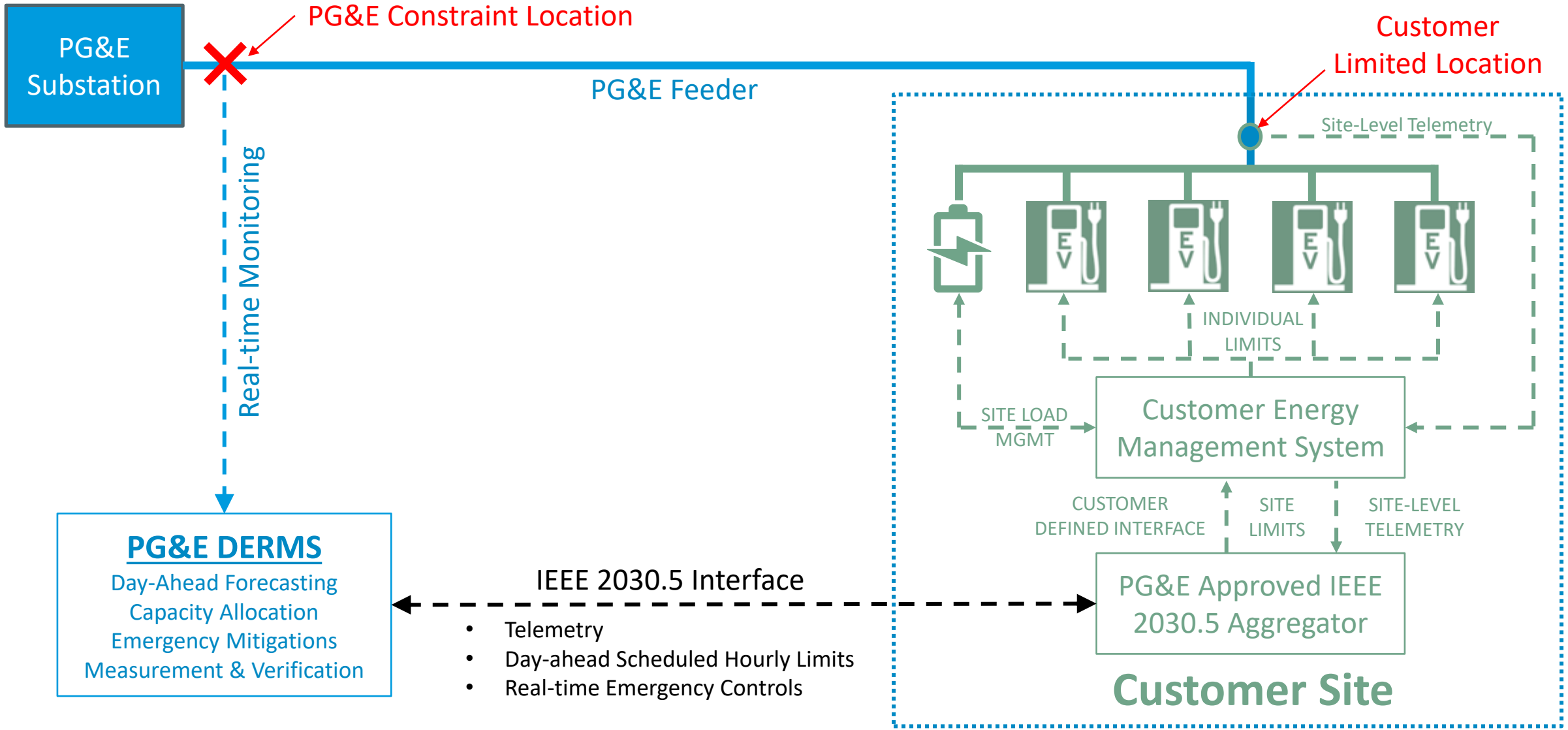
STATUS QUO: Planning Limits for 5MW EV Charging Station

Hour of the Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	100%	100%	100%	99%	86%	83%	75%	63%	73%	72%	100%	100%
1	100%	100%	100%	100%	81%	86%	76%	68%	74%	72%	100%	100%
2	100%	100%	100%	99%	86%	84%	76%	70%	78%	74%	100%	100%
3	100%	100%	100%	98%	85%	82%	76%	69%	70%	75%	100%	100%
4	100%	100%	100%	95%	84%	75%	63%	61%	56%	68%	100%	100%
5	98%	94%	93%	87%	70%	68%	49%	50%	47%	59%	100%	92%
6	84%	81%	82%	80%	73%	58%	40%	37%	39%	49%	86%	83%
7	76%	77%	75%	74%	46%	45%	34%	29%	36%	43%	76%	79%
8	72%	73%	72%	77%	48%	39%	32%	29%	33%	42%	65%	73%
9	76%	77%	76%	82%	61%	41%	33%	34%	36%	48%	66%	76%
10	76%	77%	77%	78%	53%	38%	31%	30%	34%	47%	64%	76%
11	80%	78%	84%	81%	55%	40%	30%	29%	32%	45%	65%	75%
12	81%	77%	80%	76%	54%	35%	27%	24%	25%	43%	66%	77%
13	78%	78%	78%	82%	41%	35%	27%	24%	28%	37%	73%	80%
14	81%	78%	77%	77%	41%	36%	20%	26%	34%	40%	75%	80%
15	82%	79%	88%	73%	45%	33%	19%	20%	31%	42%	77%	80%
16	83%	79%	87%	78%	46%	38%	27%	30%	33%	45%	80%	85%
17	86%	85%	91%	80%	57%	46%	34%	37%	40%	50%	88%	88%
18	90%	86%	91%	80%	64%	53%	41%	41%	42%	49%	91%	91%
19	97%	91%	93%	84%	67%	58%	48%	43%	48%	51%	95%	96%
20	99%	97%	95%	78%	69%	59%	48%	45%	51%	57%	97%	99%
21	100%	100%	99%	91%	74%	65%	55%	53%	54%	56%	100%	100%
22	100%	100%	100%	94%	81%	74%	64%	60%	64%	62%	100%	100%
23	100%	100%	100%	97%	84%	81%	71%	64%	67%	67%	100%	100%

FLEX CONNECT

Key Takeaway – Some sites can still have access to partial power despite being limited to 0MW during the daytime hours

Illustrative Site Configuration



Utility vs Customer Responsibilities

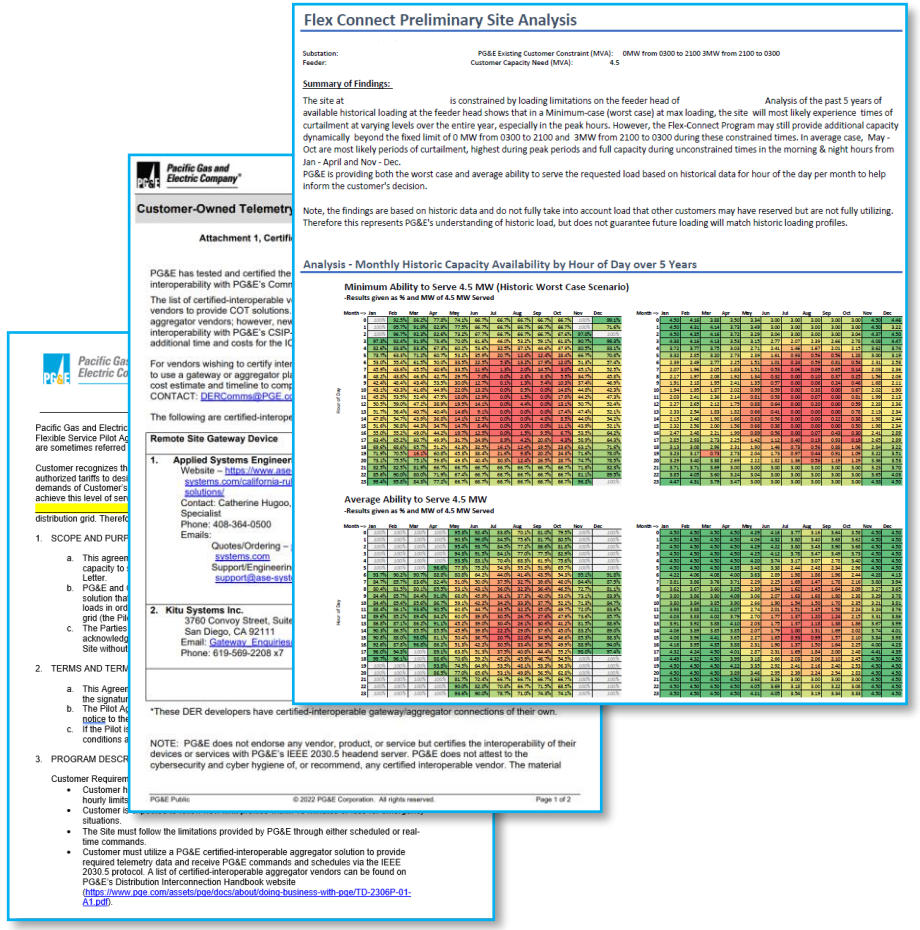
1) Preliminary Site Analysis
2) Aggregator Approved Vendor List
3) Customer Participation Agreement

PG&E

- Site analysis
- Testing and commissioning
- Automated day-ahead schedule w/ hourly limits
- On-going technical and program support

Customer

- Signed agreement
- Control system & Metering
- Aggregator integration
- Telemetry
- Single Line Diagram & Description of Operations



Customer Journey for participation in Flexible Service Connection MVP

In 2024 PG&E will be working to standardize customer engagement and site evaluation processes based on initial learnings

1 Identify

Customer identifies a site and PG&E checks eligibility

2 Evaluate

PG&E evaluates suitability for MVP & provides Customer with historical site analysis

3 Agree

Customer evaluates benefits and agrees to program terms

4 Build

Customer contracts with aggregator and controls vendors

5 Deploy

PG&E supports Customer with testing and commissioning

6 Operate

Customer automatically adheres to PG&E day-ahead hourly limit schedule

Customer Site Considerations

Ideal Site

- Existing site, or in service in 2024, or
- Timeline for capacity is 2025+
- Flexible loads or local generation

Program Limitations

- Not all capacity constrained sites will be suitable for the initial pilot
- Pilot is limited to constraint at the feeder head or substation bank level

Flex Connect

Interested in learning more? Contact me!

Website Link: Flex Connect Fact Sheet

Neema Yazdi
Email: Neema.Yazdi@pge.com
Phone: 415.629.5979

VGI Pilots

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Vehicle-to-Home (V2H) Pre-Pilot Activities

Status as of 06/30/2024

PG&E has enabled 2 customers to use their electric vehicle as a resource for backup power through V2H technology.

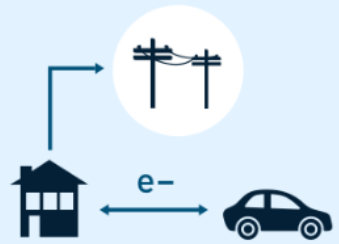
Ford Motor Company Field Demo

PG&E collaboration with Ford to enable first-to-market F-150 Lightning EV and bidirectional charging system, which consists of the Ford Charge Station Pro and the Sunrun Home Integration System.

- **2023 Q3 – 2 Field Demonstration Installations completed in July**
- **2023 Q4 – Completed testing the V2H backup power functionality**
- **System monitoring will continue for 12 months**
- **2024 Q2 – Both customers have experienced outages since their installation and been able to power their homes successfully.**

Vehicle to Everything (V2X) Pilot Programs

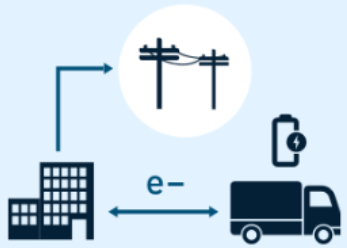
Pilot #1: Residential



Enrollment: We have 2 customers fully enrolled!

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

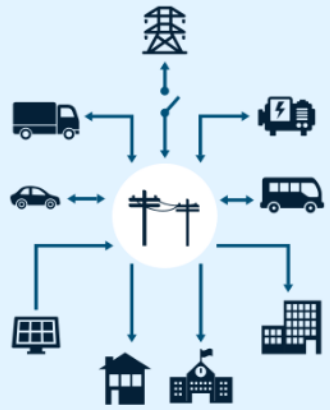
Pilot #2: Commercial



Enrollment: One customer with 73 chargers expected to be fully enrolled this month.

Eligible Equipment: Tellus bidirectional chargers paired with BYD School Buses

Pilot #3: microgrids



Phase 1 - Testing Cohort / Redwood Coast Airport Microgrid:

- Parking lot construction started
- New completion date estimated Q1 2025

Phase 2 – Incentive Cohort

- Open enrollment Q4 2024
- Customer eligibility expansion approved

Q & A

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Survey Questions

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