Smart Electric Power Alliance

Case Study: Pacific Gas & Electric—V2X Pilots

The State of Bidirectional Charging in 2023

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About SEPA

The Smart Electric Power Alliance (SEPA) is dedicated to helping electric power stakeholders address the most pressing issues they encounter as they pursue the transition to a clean and modern electric future and a carbon-free energy system by 2050. We are a trusted partner providing education, research, standards, and collaboration to help utilities, electric customers, and other industry players across three pathways: Electrification, Grid Integration, Regulatory and Business Innovation. Through educational activities, working groups, peer-to-peer engagements and advisory services, SEPA convenes interested parties to facilitate information exchange and knowledge transfer to offer the highest value for our members and partner organizations. For more information, visit www.sepapower.org.

Disclaimer

Utility Programs: Pacific Gas & Electric (PG&E)

V2X Pilots

Background

Pursuant to California Senate Bill 676, requiring the CPUC to establish strategies on promoting EV integration into the electrical grid (also known as Vehicle Grid Integration (VGI)), the CPUC issued D.20-12-029 that would allow PG&E, and other IOUs, to investigate VGI through pilots and demonstration projects. In compliance, PG&E submitted four proposed VGI pilots.[1] In March 2022, the California Public Utilities Commission (CPUC) approved a budget of $11.7 million for PG&E to conduct three short-term pilots aimed to address different applications of vehicle-to-everything.[2] The three pilots will allow PG&E to test different applications of bidirectional charging across different customer and vehicle classes.[3] Customers will benefit from leveraging EVs as backup power in vehicle-to-home (V2H) and vehicle-to-building (V2B) applications and will receive performance-based incentives from the Emergency Load Reduction Program (ELRP). The upfront and performance based incentives are designed to help offset the costs of purchasing and installing a bidirectional EV charger.

Utility Interest

PG&E believes that EV will be the largest source of stored energy available on the grid in the future. PG&E has ambitious plans for how EVs will be utilized to meet its strategic goals. These goals include two million electric vehicles participating in VGI (V1G and/or V2X) by 2030. These pilots are intended to help accelerate initial participation, creating an opportunity to help build the market for such solutions while providing the learnings required to inform and enable the creation and launch of scaled utility programs.

V2X Residential

Eligibility & Requirements

- Customers must have a standard split-phase 240V electrical service
- Must use approved vehicles/ chargers
- Enrollment in the Vehicle-Grid Integrations portion of the ELRP

Incentives

- $2,500 upfront

  or
- $3,000 for Disadvantaged Communities
- Plus up to $2,175 in performance incentives

Goals

- Explore how light-duty vehicles help single-family homes & the electric grid
- Provide backup power to the home
- Optimize EV charging & discharging to integrate with renewable power
- Align EV charging & discharging with real-time cost of energy procurement

1 Public Utilities Commission of the State of California. (October 13, 2022). Pacific Gas & Electric Company ELC (Corp ID 39) Status of Advice Letter 6259E.

2 Public Utilities Commission of the State of California. (May 5, 2022). Resolution (E5192).

3 PG&E Corporation (May 2022). PG&E to Launch New Pilots Studying Electric Vehicle Bidirectional Charging Technology at Homes, Businesses and with Microgrids.

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V2X Commercial

Eligibility & Requirements

- Customers must have a standard three-phase electrical service
- Must use approved vehicles/ chargers
- Enrollment in the Vehicle-Grid Integrations portion of the ELRP

Incentives

- For chargers <50 kW:
  - $2,500 upfront

    or
  - $3,000 for Disadvantaged Communities
  - Plus up to $3,625 in performance incentives
- For chargers >50 kW:
  - $4,500 upfront

    or
  - $5,000 for Disadvantaged Communities
  - Plus up to $3,625 in performance incentives

Goals

- Explore how medium- and heavy-duty, and possibly light-duty, EVs at commercial facilities could help customers & the electric grid
- Provide backup power to the building
- Optimize EV charging and discharging to support deferral of distribution grid upgrades
- Align EV charging & discharging with real-time cost of energy procurement

V2X Microgrids

Eligibility & Requirements

- PG&E customers who are connected to a multi-customer microgrid subject to Public Safety Power Shutoffs
- Must use approved vehicles/ chargers
- Eligibility will be determined after application review

Incentives

- Up to $3,750 for performance
- Can stack incentives with V2X Residential or V2X Commercial programs

Goals

- Explore how light-duty and medium- to heavy-duty vehicles plugged into community microgrids can support community resiliency during Public Safety Power Shutoff events.
- Customers will be able to discharge their EVs into the community microgrid to support temporary power
- Customers will be able to charge from the microgrid if there is excess power

Emergency Load Reduction Program

The ELRP program is a 5-year pilot program that offers customers $2/kWh for load reduction during an event.[4] Exportation to the grid will be counted as part of the load reduction.[5] The program runs between May and October, with events occurring between 4-9 pm. The events can last between 1-5 hours and may be called on consecutive days. Participants will not be asked to participate for more than 60 hours per year.

Vehicle-to-Grid Export Rate

In Oct. 2022, the CPUC gave approval to PG&E to establish one of the nation's first "vehicle-to-grid" export compensation mechanisms for commercial EV charging customers.[6] The approval involved a settlement agreement with the Vehicle-Grid Integration Council (VGIC), Electrify America LLC, and the CPUC's Public

4 PG&E and Olivine Climate Response. (n.d.). Emergency Load Reduction Program.

5 PG&E and Olivine Climate Response. (n.d.). Customer FAQ.

6 Gazda, M. (October, 26, 2022). PG&E to Offer Nation's First Vehicle-To-Grid Export Rate for Commercial Electric Vehicles. *PG&E Currents*.

Advocate's Office. The approval will allow PG&E to design a V2G rate by Oct. 2023 that will allow electric vehicles to respond to near-real-time grid conditions and allow vehicles to support peak energy demand periods. The rate will be available to commercial customers with charging equipment paired with stationary energy storage systems.

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