Zero Emission Vehicles and Grid Resilience

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Outline

- Role of the CPUC and Electric Utilities
- Electric charging and grid resilience
- Vehicle-Grid Integration (VGI)
Zero Emissions Vehicles (ZEVs) will grow quickly as percentage of all vehicles

2029: CA Air Resources Board requires that all new transit buses be ZEV
2030: CA Energy Commission’s (CEC) assessment projects 8 million light-duty cars on the road
2030: CEC projects 180,000 medium/heavy duty vehicles on the road
2035: Governor Newsom’s Executive Order mandates that all new light-duty cars be ZEV
2035: Executive Order mandates that all off-road vehicles and drayage trucks be ZEV, where feasible
2045: Executive Order mandates all new MD/HD vehicles be ZEV, where feasible
Role of the CPUC and Utilities

Infrastructure Investment
  • Distribution grid that can support EV charging
  • Make-ready infrastructure for EV chargers
    • Utility side of the meter: wiring and conduit
    • Customer side of the meter: panel upgrades, additional wiring and conduit

Minimizing Impacts on Grid
  • Rate Design
  • VGI
CPUC has authorized over $1.5B in utility investment across dozens of programs

- Light-duty vehicles: $723
- Medium- and heavy-duty vehicles: $765
- Off-road: $8
- DCFC: $40

Authorized

Proposed
Transportation Electrification Framework (TEF)

Overarching Commission policy for Transportation Electrification

- Draft proposal issued in February 2020 (available at www.cpuc.ca.gov/zev)
- Robust stakeholder participation
- Initial policy decision expected Q2 2021

TEF identifies the IOUs’ role in ensuring availability of charging during outages as:

- Customer communication
- Backup power resources
- Availability of public charging, including in rural areas
- Repairing damage to utility TE infrastructure
Public Safety Power Shutoffs (PSPS)

• **Definition:** PSPS events are temporary power shut-offs to areas that contain infrastructure that could cause a wildfire

• CPUC has issued several decision with detailed guidance on how utilities can call PSPS events
  • Utilities are required to develop detailed communication plans for PSPS events
  • Utilities are required to provide 48-72 hours notice
  • Utilities must complete a Transportation Resilience Needs Assessment prior to the 2021 fire season
    • Study transportation infrastructure that is affected by power outages such as bridges, tunnels, traffic lights, and EV charging
Public Safety Power Shutoffs (PSPS)

• By the 2021 wildfire season, utilities must execute plans to ensure that mobile EV fast charging is available and priority access is granted to customers impacted by de-energization events, especially along major transportation corridors

• Utilities’ public websites and mobile apps must communicate the location, number, and accessibility of all Level 3 charging stations and publicly available Level 2 charging stations in proximity to areas impacted by PSPS

• Utilities must coordinate with charging providers to reinforce networks and key charging locations with backup generation
Vehicle Grid Integration: crucial next step in TE development

VGI is an umbrella term for a host of measures and behaviors that better integrate EV charging with the electric grid

- **VGI**: smart charging (i.e. charging that is responsive to TOU or dynamic price signals)
- **Vehicle-to-Grid (V2G)**: vehicle batteries feeding power back to the grid
- **Vehicle-to-Home (V2H) or Vehicle-to-Load (V2L)**: vehicle batteries providing power to home or other customer electric load for example during power outages
Benefits of VGI

- Reduce grid impact or even create grid benefit from additional electric load.

- Deliver grid services by providing power back to the grid during needed times.

- Reduce customer cost of charging by allowing drivers to employ managed charging.

- Reduce customer cost of ownership by allowing drivers to earn revenue from their cars.
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