EV Rates and Unified Load Management Strategies

Paul Phillips | Retail Rates | Energy Division, CPUC | June 10, 2021
Household energy costs and rates are rising and disproportionately impacting affordability for low- to moderate-income Californians, particularly in hotter climate zones.

Bundled residential rates have long outrun inflation: our IOUs are gradually climbing the national rankings as their average residential bills increase year over year.

NEM and DER customers tend to be disproportionately wealthier homeowners that can arbitrage advanced rate offerings and reduce bill impacts by investing in the DER trifecta: EVs, solar PV, storage technologies.

Conversely, lower-income customers may experience higher cost of service without the benefits: they’re less likely to participate in such BTM offerings and yet more likely to pay for incremental costs displaced by BTM customers.

Electrification should lead to lower household energy costs: however, up-front investments in EVs and other DERs for lower-income Californians can be a barrier to participation.
Household Energy Costs Are Projected to Increasingly Exceed Inflation Over the Next Decade

- An accelerating trend for all three major IOUs.
- **Main drivers:**
  - kWh sales decline, behind-the-meter resources; load departure.
  - Rate sensitivity to large capital investments due to smaller customer base and lower economies of scale.
- Increased electrification and decreasing natural gas and gasoline will stabilize this trend.

### SDG&E – Household Energy Costs, 2020-2030

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DER Growth and Electrification

Grid Conditions Rapidly Changing:
- Doubling of rooftop solar ~ 20 GW
- 3.5x growth in BTM storage ~ 5.5 GWh storage capacity
- Transportation Electrification 5M EVs ~ 250 GWh aggregate storage capacity

Building Decarbonization:
- Substantial growth of smart, flexible end uses (devices/plugs)
- Smart thermostats, water heaters, heat pumps

- All of this necessitates rate designs and incentives for enhanced, system-wide, highly flexible load management.
A Unified Vision: Increasing Electrification, EV Rate Offerings and Integrated Load Management Strategies

• **Vision:** A future that leverages a menu of optional and mandatory advanced rates and demand response strategies to effectuate a more robust, dynamic, transactive DER marketplace and widespread load management.

• More effective demand response (DR) and retail rate design strategies that leverage opportunities enabled by long term electrification.

• To better address a steep evening ramp and other grid issues associated with the growth of renewables, electrification, and DER adoption to support and accelerate California’s clean energy goals.

• To promote fair and secure compensation mechanisms and automation technologies in an increasingly transactive bidirectional grid.
Addressing Grid Management Challenges Through Pricing Design and Incentives

• A Call to Action: RTP / EV tariff options are absolutely critical to this vision as a potential anchor in a declining kWh sales environment.

- We’re looking at increasing reliability and stability challenges, both in terms of resource management and IOU revenue stability.
- Steep evening ramp and renewable curtailment issues.
- Siloed and somewhat inefficient rate design and load-modifying DR programs.
- Managed EV load growth and incentives will be essential to containing cost of service increases.
- And as noted, increasing affordability challenges are already upon us.

- Need to address inefficient non-coincident demand charges and further explore capacity subscription options.
- VGI, RATES pilots have already provided compelling results.
Recent and Ongoing EV Rate Applications and Decisions at the CPUC

The Commission has authorized rates to provide incentives for EV adoption:

- **D.19-10-055: PG&E’s Commercial Electric Vehicle Rate**
  - A new commercial electric vehicle rate and the creation of a new class of customers choosing to take service on the rate.
  - Subscription charge metered in 10 kW increments for customers with a maximum demand of 100 kW, and in 50 kW increments for all other customers.

- **D.20-12-023: SDG&E Rate for Electric Vehicle High Power Charging (EV-HP)**
  - New rate for separately-metered electric vehicle charging loads with an aggregated maximum demand of 20 kW or greater, excluding single-family residential customers.
  - Subscription charge metered in 10 kW increments for customers with a maximum demand of 150 kW, and in 25 kW increments for all other customers.
PG&E’s Proposed Day Ahead Hourly Real Time Pricing Commercial EV Pilot Rate

- **PG&E’s Proposed DAHRTP-CEV Pilot Rate:**
  - A rate rider that would replace the current TOU generation rates on Schedules BEV-1 and BEV-2.
  - Day ahead hourly rate pilot for up to 50 participating BEV customers.
  - Generation rate derived from CAISO’s day-ahead (DA) hourly wholesale market, forecasted load and zero-emission generation.
  - Distribution, Transmission, and non-bypassable charges would be the same as the CEV rate.
  - Addresses a need for an expanding menu of flexible rate options desired by EV customers.
  - Allows PG&E and the CPUC to evaluate and address potential revenue shortfall / cost shift related issues on such advanced rates.
Key Issues for RTP Implementation

• Ongoing areas of inquiry for implementation of real time pricing (RTP):
  • Key factors include the uncertainty regarding revenue recovery and cost shifts,
  • Nascence of certain customer supporting vendor networks and technologies,
  • Community Choice Aggregator (CCA) and other Energy Service Provider (ESP) participation, bill impacts,
  • Other considerations re: operational infrastructure, flexibility and scalability.
  • It’s critical to promote more dynamic energy and capacity options across the board.

• Future wide-scale, integrated unified load management strategies, both optional and mandatory, are in the process of being explored by the CPUC.