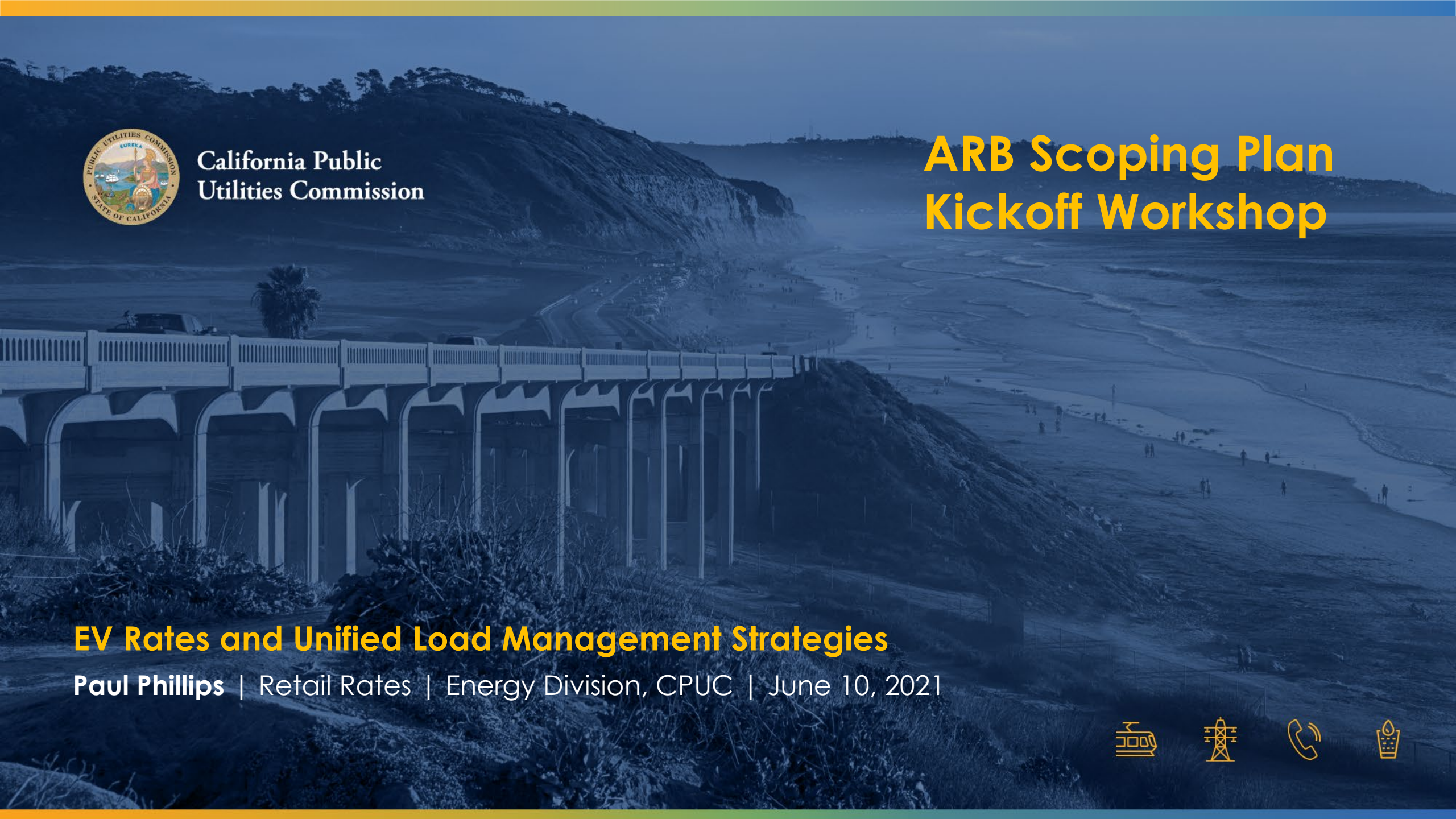


California Public Utilities Commission

ARB Scoping Plan Kickoff Workshop

EV Rates and Unified Load Management Strategies

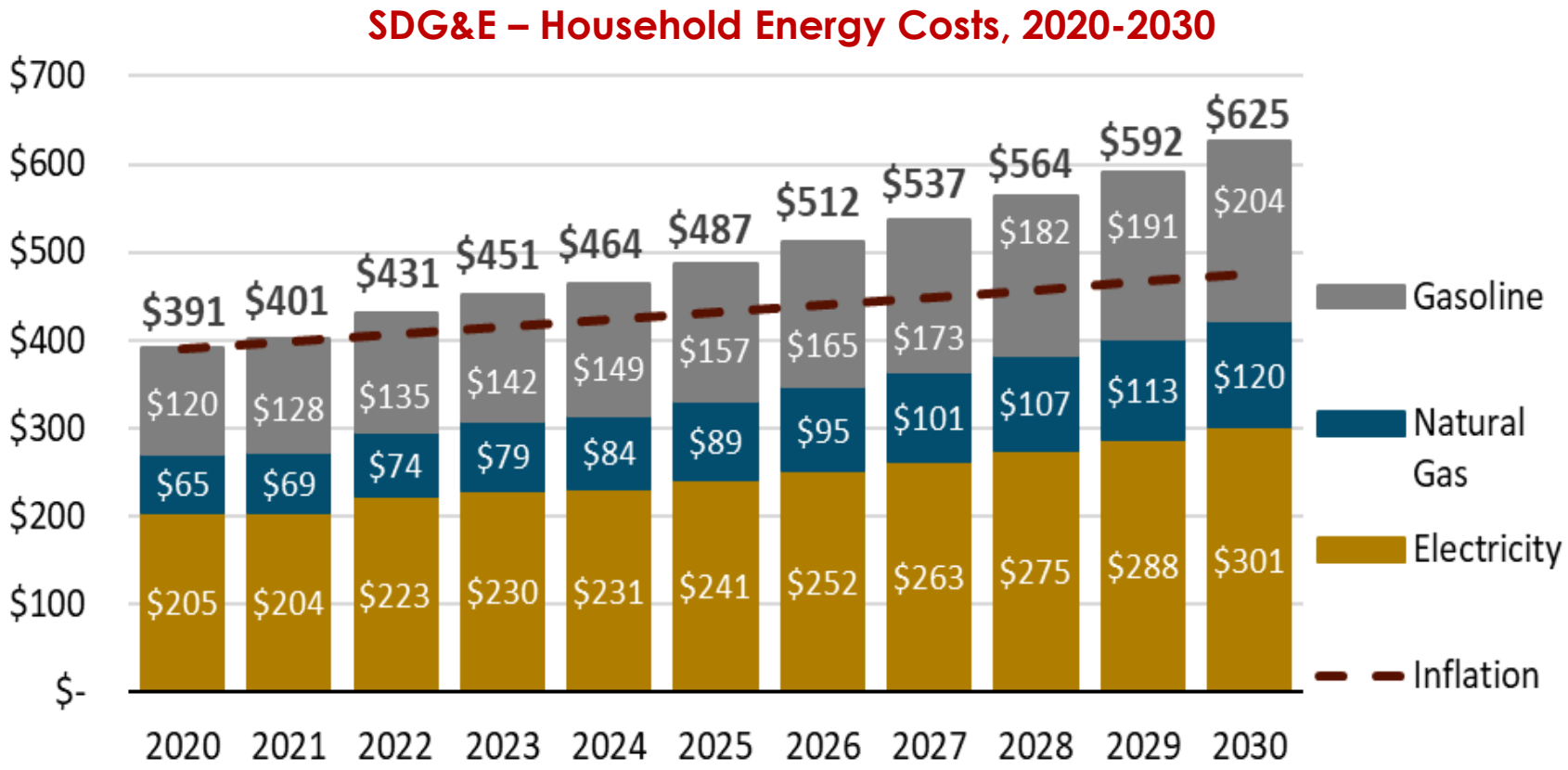
Paul Phillips | Retail Rates | Energy Division, CPUC | June 10, 2021

Electrification and Affordability: A Tale of Two States

- **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 outstripped 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.



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.