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Planning for a Clean and Reliable Grid

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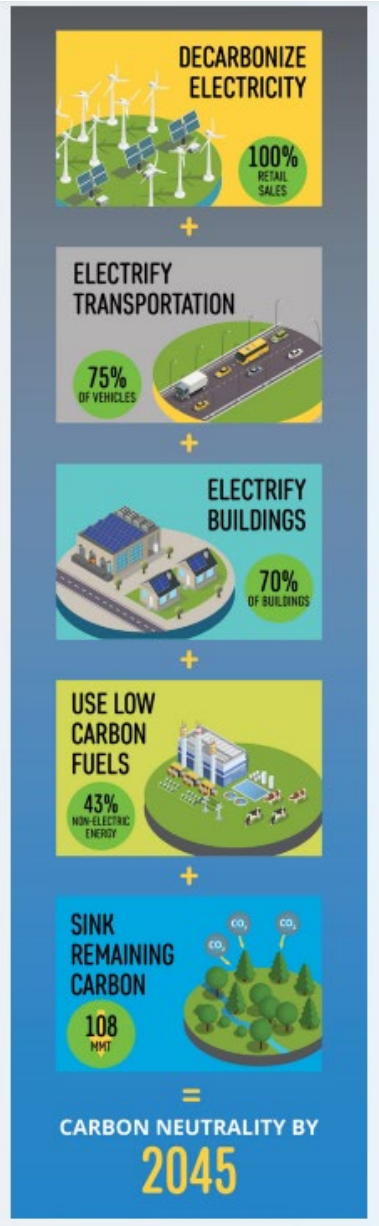
Overview

- The pathway to carbon neutrality by 2045
- Ensuring grid reliability in the clean energy transition
- Role of the CPUC's Integrated Resource Planning (IRP) process
- Near- and mid-term reliability initiatives and outlook

Pathway to Economywide Decarbonization by 2045

- Deep decarbonization of the electric sector
  - Must decarbonize more quickly than currently required to support electrification-related load growth
  - 80 GW of new utility-scale clean generation and 30 GW of utility-scale energy storage will be required in the next 25 years – required annual development rate is two to three times higher than historical levels
- Significant electrification of transportation and buildings
  - Electrification of the transportation sector, the largest contributor to California emissions, could reduce its emissions by over 80%
  - Electrification of building space and water heating offers an opportunity to provide flexible loads, which can be optimized to use power when it is most efficient and reduces grid upgrade cost
- Use of low-carbon fuels for hard-to-electrify applications



Ensuring Grid Reliability in the Clean Energy Transition

- Transition from natural gas and nuclear resources to renewable and storage resources
  - Approximately 6,000 MW of capacity[1/] is scheduled to be retired by 2025
  - CPUC has authorized over 13,000 MW of new capacity resources to be online by 2028
- Expand scope of CAISO's transmission planning process to ensure transmission system can reliably meet state's clean energy goals
  - Produce a 20-year outlook in addition to CAISO's annual 10-year plan
  - Study high-electrification and increasingly clean scenarios, consistent with those developed in the CPUC's IRP

1/ Capacity quantities refer to Net Qualifying Capacity (NQC), not nameplate capacity

Role of the CPUC's IRP

- ***Objective:*** Reduce the cost of achieving GHG reductions and other policy goals by looking across load serving entities and resource types to identify solutions to reliability, cost, or other concerns that might not otherwise be found.
- Overview of the two major steps in the IRP process:
  - First, it identifies an optimal portfolio for meeting state policy objectives and encourages the LSEs to procure towards that future.
  - Second, it collects and aggregates the LSEs collective efforts for planned and contracted resources to compare the expected system to the identified optimal system. The CPUC considers a variety of interventions to ensure LSEs are progressing towards an optimal future.
- The IRP is coordinated with other agency efforts:
  - Electric-sector GHG targets are informed by **California Air Resources Board's (CARB) Scoping Plan**
  - Load forecasts are based on **California Energy Commission's (CEC) Integrated Energy Policy Report (IEPR)**
  - Final system plans are used in the **California Independent System Operator's (CAISO) Transmission Planning Process (TPP)**

Near- and Mid-term Reliability Outlook

- Reliability conditions continue to improve from the emergency events of 2020 through the addition of new resources, but the grid remains vulnerable to extreme events.
- California Energy Commission's (CEC's) reliability study shows that capacity ordered by the California Public Utilities Commission (CPUC) should be sufficient to diminish reliability concerns from 2023 through 2026, but project development concerns remain.
- Assembly Bill 205, passed in late June, authorizes the Department of Water Resources to administer a $2.2 billion "Strategic Reliability Reserve" to extend the life of existing generation facilities, secure new emergency and temporary power, and develop new, clean generation facilities during extreme climate events.
  - Addresses risks beyond a 1-in-10 reliability standard such as climate change induced load risk, project delays, wildfire risks to transmission, etc.
  - Funded through the state budget

Questions?