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The CPUC's Integrated Resource Planning (IRP) Process

CEC Workshop on AB 525
June 27, 2022



California Public
Utilities Commission

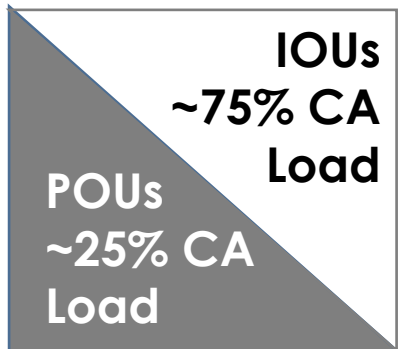
Integrated Resource Planning (IRP) in California Today

- The objective of IRP is to reduce the cost of achieving greenhouse gas (GHG) reductions and other policy goals by looking across individual LSE boundaries and resource types to identify solutions to reliability, cost, or other concerns that might not otherwise be found.
- Goal of the 2019-2021 IRP cycle was to ensure that the electric sector is on track to help California reduce economy-wide GHG emissions 40% from 1990 levels by 2030, per SB 32, and to explore how achievement of SB 100 2045 goals could inform IRP resource planning in the 2020 to 2032 timeframe.
- The IRP process has two parts:
 - 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.

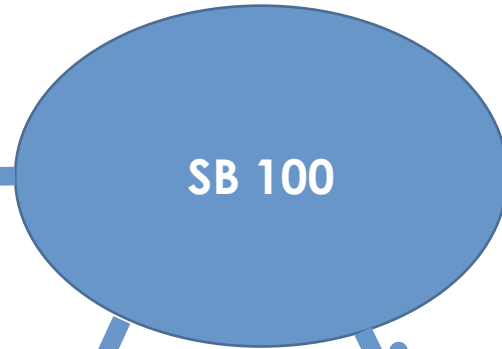
California's Electricity Planning Ecosystem

- Economy-wide plan to reach GHG targets
- Updated every 5 years

- Demand forecast for infrastructure planning
- Updated annually



- Establishes GHG target within CARB's range for CPUC-jurisdictional LSEs
- Orders procurement + oversees compliance
- Annually transmits portfolios for CAISO transmission planning



- Zero carbon electricity by 2045
- Joint agency report, every 4 years

SB 350: CARB sets electric sector GHG target range



- Assess transmission needs
- Conceptually approves new projects
- Updated annually



- Plans filed per SB 350 + CPUC guidance
- Procurement in compliance w/ CPUC directives

How IRP Analysis Informs Resource Planning

- The ongoing IRP process uses capacity expansion and production cost modeling tools to identify the optimal mix of resources needed to reliably meet state goals.
- This modeling:
 - considers resource costs and operational restrictions,
 - measures reliability for the entire CAISO system provided by diverse sets of resources, and
 - incorporates other constraints such as a target cap on carbon emissions from the electric sector.
- This provides the analytical foundation for the Commission to administer the IRP process and, if needed, require load-serving entities to procure resources to meet California's goals for zero-carbon resources by 2045.

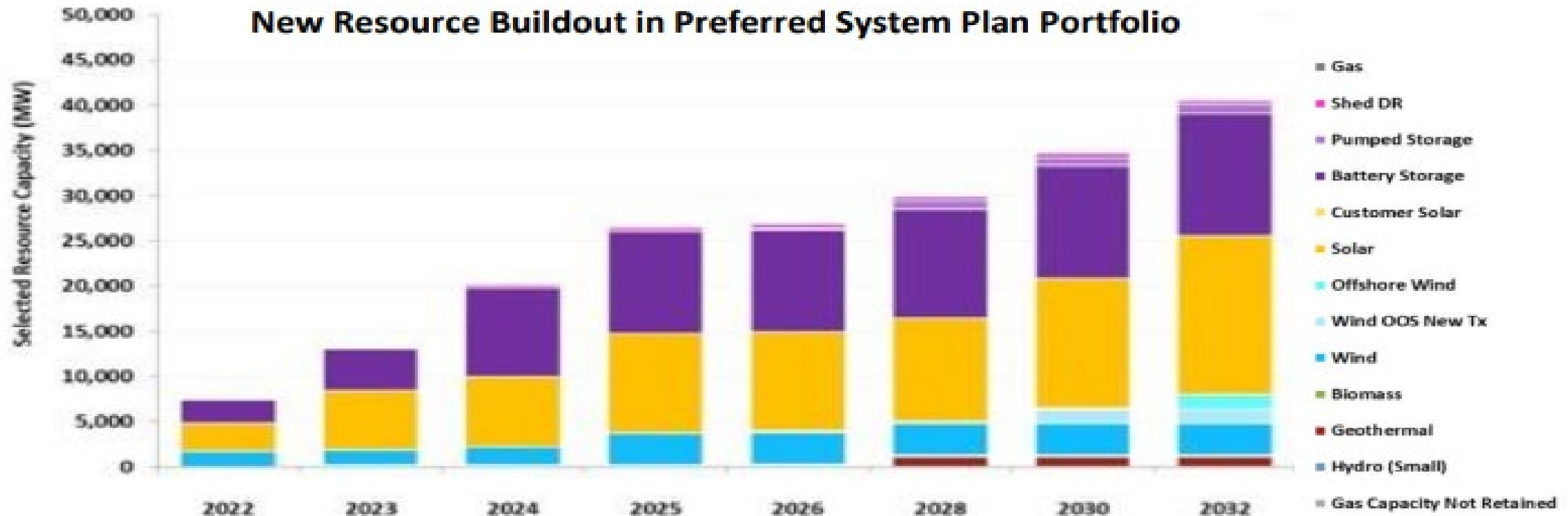
IRP Modeling

- CPUC's IRP process uses two complimentary modeling tools:
 - The publicly available RESOLVE resource planning model identifies future portfolios of new and existing resources that meet the GHG emissions planning target.
 - The Strategic Energy Risk Valuation Model (SERVM) examines system reliability once an optimal portfolio has been determined by RESOLVE.
- Key assumptions include:
 - Load forecasts from the CEC's Integrated Energy Policy Report (IEPR), updated annually.
 - Resource costs, performance, and potential data from transparent, publicly available data sources.
 - Constraints on the total amount of GHG emissions from the electricity sector, most recently set by the Commission at 38 million metric tons (MMT) in 2030.

Most Recent “Preferred System Plan”

Adopted February 10, 2022 (D.22-020-04)

- Uses updated NREL offshore wind resource profiles and cost assumptions.
- Incorporates the resource plans of LSEs who included offshore wind in their IRPs.



Includes 1.7 GW of offshore wind in 2032

How CPUC's IRP Interacts with CAISO's Transmission Planning Process (TPP)

- CAISO annually analyzes and authorizes transmission needs based on CEC demand forecasts and IRP resource portfolios.
 - Last year the CAISO's analysis of the IRP future resource mix led to approval of \$3 billion investment in transmission upgrades.
- Also for 2021-22 TPP CPUC asked CAISO to analyze transmission impacts of 8.3 GW of offshore wind resources in the north and central coast call areas (under a 30 MMT GHG emissions limit).
- CAISO also published a "20-Year Transmission Outlook" that considered transmission needs from a significant amount of offshore wind resources.
- This week the CPUC is sending to CAISO a portfolio with "high electrification" demand assumptions under a 30 MMT GHG emission limit for analysis during this TPP cycle.