DOCKETED	
Docket Number:	16-OIR-06
Project Title:	Senate Bill 350 Disadvantaged Community Advisory Group
TN #:	261875
Document Title:	Item 7 - SB 100 Scoping Plan - DACAG_25.02
Description:	N/A
Filer:	Dorothy Murimi
Organization:	California Energy Commission
Submitter Role:	Commission Staff
Submission Date:	2/19/2025 3:26:52 PM
Docketed Date:	2/19/2025

Senate Bill 100 Report

California Energy Commission

Presenter: Jacqueline Gilyard Jones, Energy Assessments Division

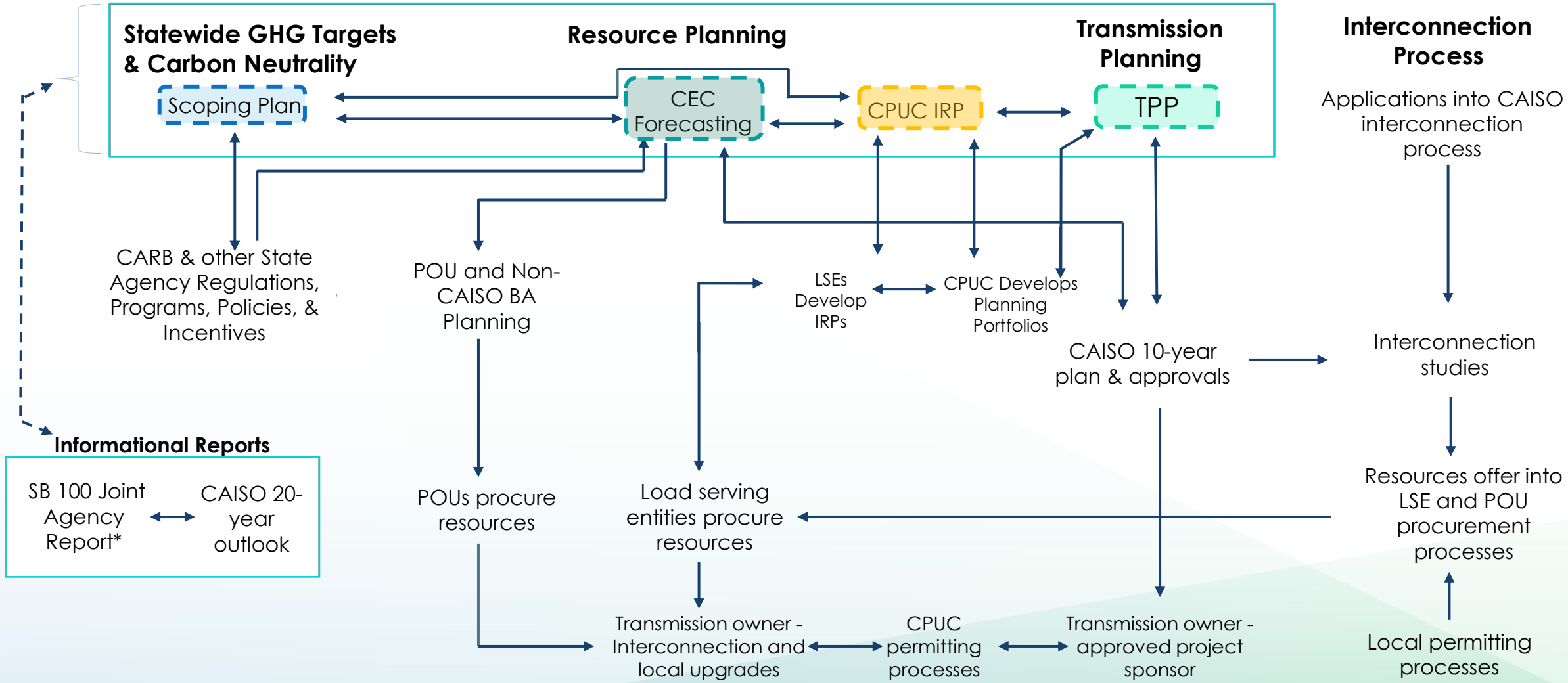
Date: February 21, 2025

Meeting Goals

1. In preparation for the draft results, the goal is to inform the audience of the role of the SB 100 report in the energy planning landscape. The presenters will discuss:
    a) SB 100 - Jacqueline Jones - CEC
    b) Scoping Plan – Stephanie Kato - CARB

California Electricity Planning Processes

Primary Electricity Planning Processes

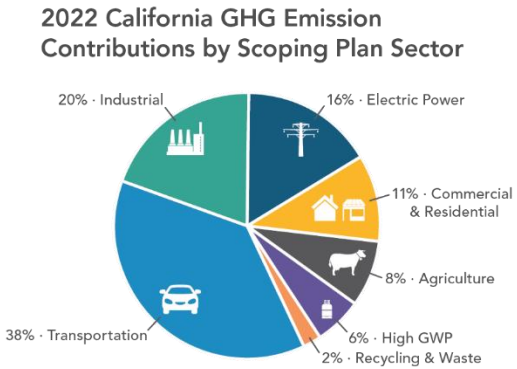


*-statutorily mandated

California's Climate Policy Framework

GHG Targets & Goals

Legislation & Executive Orders: Total GHGs (AB 32/SB 32) or sector targets (SB 1383/SB 100), etc.



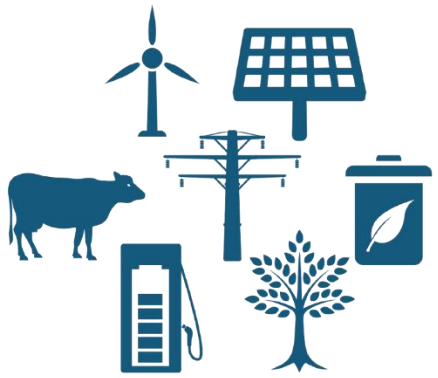
Scoping Plan

Actionable plan across all sectors

Updated every 5 years

Action

Regulations & Incentives: Advanced Clean Cars, climate change investments, Integrated Resource Plan (IRP), etc.



Projects

Examples: Zero-emission trucks, energy infrastructure and renewables, compost facilities, digesters, etc.

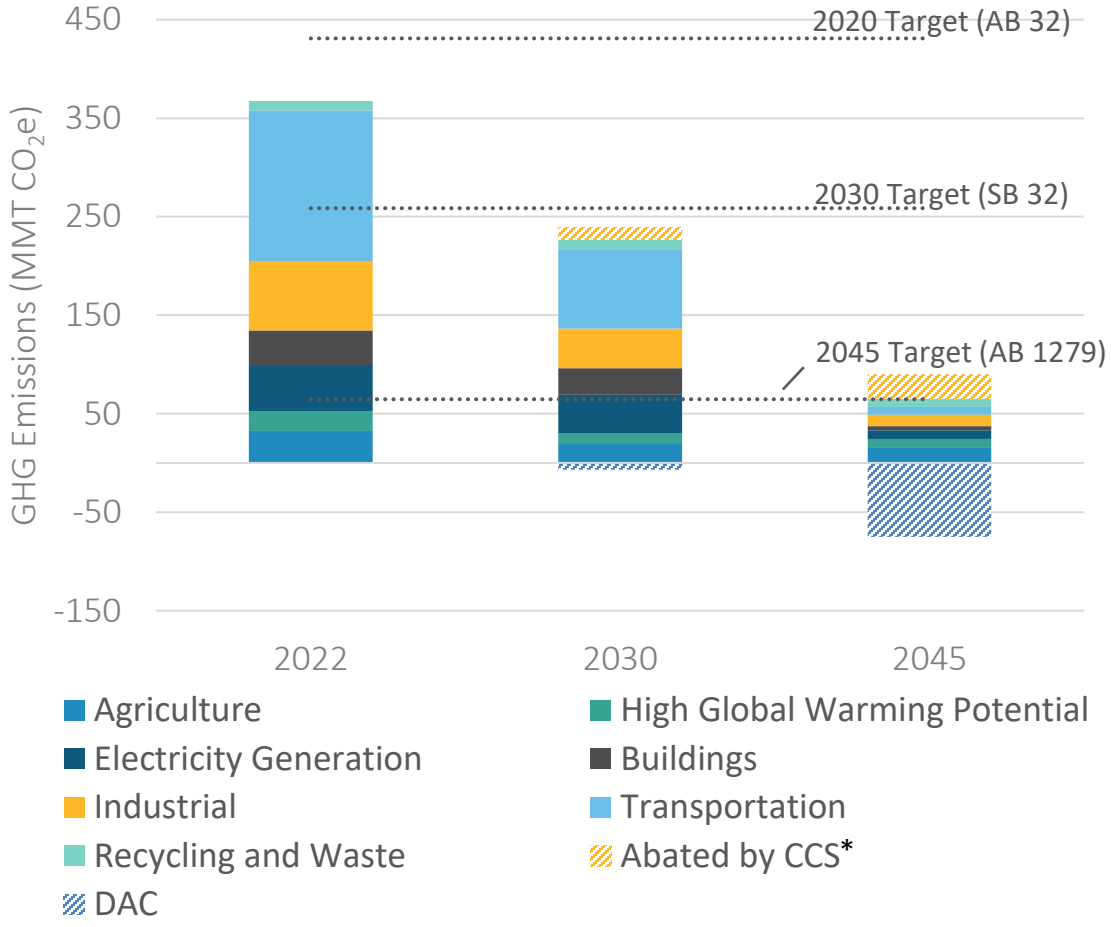
2022 Scoping Plan Update
California's Strategy for Achieving Carbon Neutrality

2030: 48% reduction below 1990

- Increased ambition from SB 32 40% target
- Scoping Plan scenario incorporates 20 $MMTCO_2e$ of mechanical carbon dioxide removal (CCUS/DAC*) in 2030
- 462x increase in renewable hydrogen

2045: 85% reduction below 1990

- Need CCUS and carbon dioxide removal to compensate for residual emissions to achieve carbon neutrality



*CCUS: carbon capture, utilization, and storage; DAC: direct air capture; CCS: carbon capture and sequestration

Ambitious Action Delivers Huge Benefits

Unprecedented Deployment of Clean Technology and Nature-Based Climate Solutions

37x total on-road ZEVs

6x electric appliances in residences

1700x hydrogen supply

4x installed wind/solar generation capacity

9x battery storage

> 2.5 Million acres of NWL climate action per year

In 2045 relative to 2022

Significant GHG Reductions

94% decrease in liquid petroleum fuel demand

91% decrease in fossil gas used in buildings

66% decrease in methane emissions from agriculture

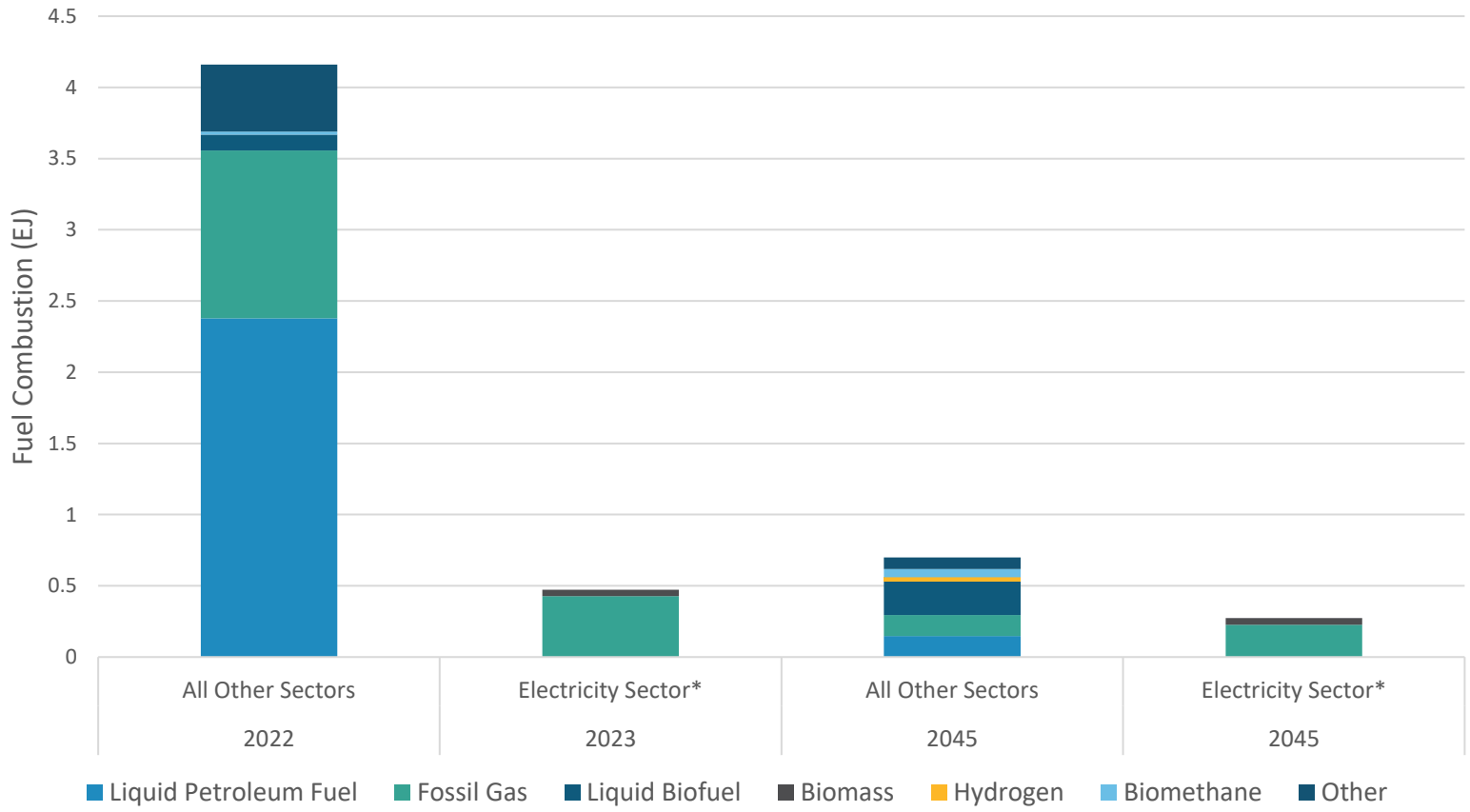
10% reduction in wildfire emissions

Scoping Plan Scenario
Electric Sector Actions

- Electric Sector emissions and resource-related assumptions
  - 38 $MMTCO_2e$ target by 2030*
  - 30 $MMTCO_2e$ target by 2035
  - SB 100 2030 and 2045 goals for renewable and zero-carbon electricity
- Other resource assumptions per Governor's direction
  - 20 GW of offshore wind by 2045
  - Meet increased demand for electrification without new fossil gas-fired resources
- Applied carbon removal to reach statutory target for 85% economy-wide anthropogenic emissions reductions by 2045

*Electric sector 2030 GHG planning target range of 30-38 $MMTCO_2e$ established in Scoping Plan Board Resolution 22-21

Fossil Fuel Combustion Declines Significantly Across all Sectors



- Fossil gas use by electricity sector decreases by 47% in 2045 compared to today
- Electricity sector emissions in 2045 of ~8 MMTCO_2e (reflects 16.7 MMT CO_2 captured emissions to achieve AB 1279)

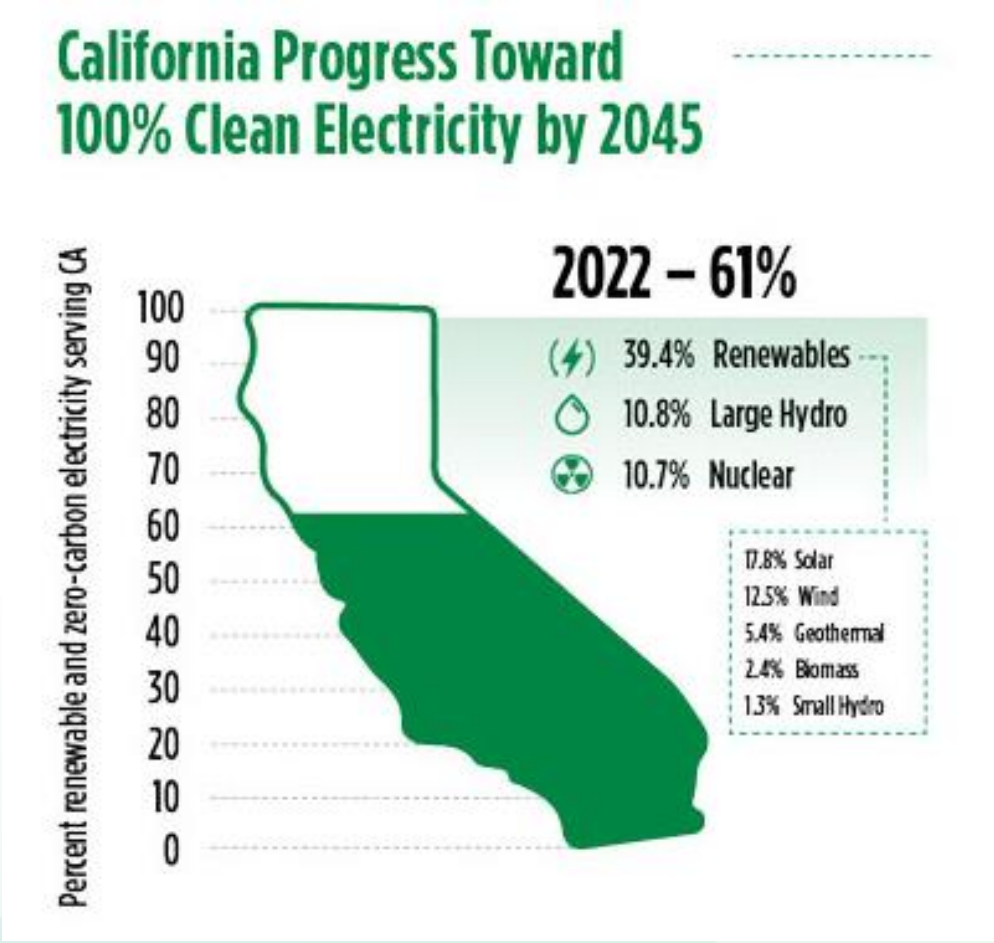
*RESOLVE outputs start with 2023. Excludes fuel combustion from imported electricity.

SB 100 Goal – 100% Clean Energy Act of 2018

SB 100 sets a 2045 goal of powering all retail electricity sold in California and state agency electricity needs with renewable and zero-carbon resources. SB 1020 established interim targets for 2035 & 2040.

Year	Retail Sales (Thousand GWh)	% Clean Electricity
2022*	250	61%
2035	320	90%
2040	360	95%
2045	385	100%

* actuals



Clean Energy Serving California

What is the SB 100 Joint Agency Report?

- **A joint agency effort** – between the CEC, CARB, and CPUC.
- **An iterative and ongoing effort** to report progress and assess barriers and opportunities to implementing the 100% clean electricity policy. Reports are due every 4 years.
- Analysis that considers **hypothetical future scenarios** to feasibly achieve SB 100's clean energy goals reliably, affordably, and equitably.
- **Implementation** of the SB 100 target is carried out via **independent and collaborative efforts** at various state and local entities.

2021 Report Results

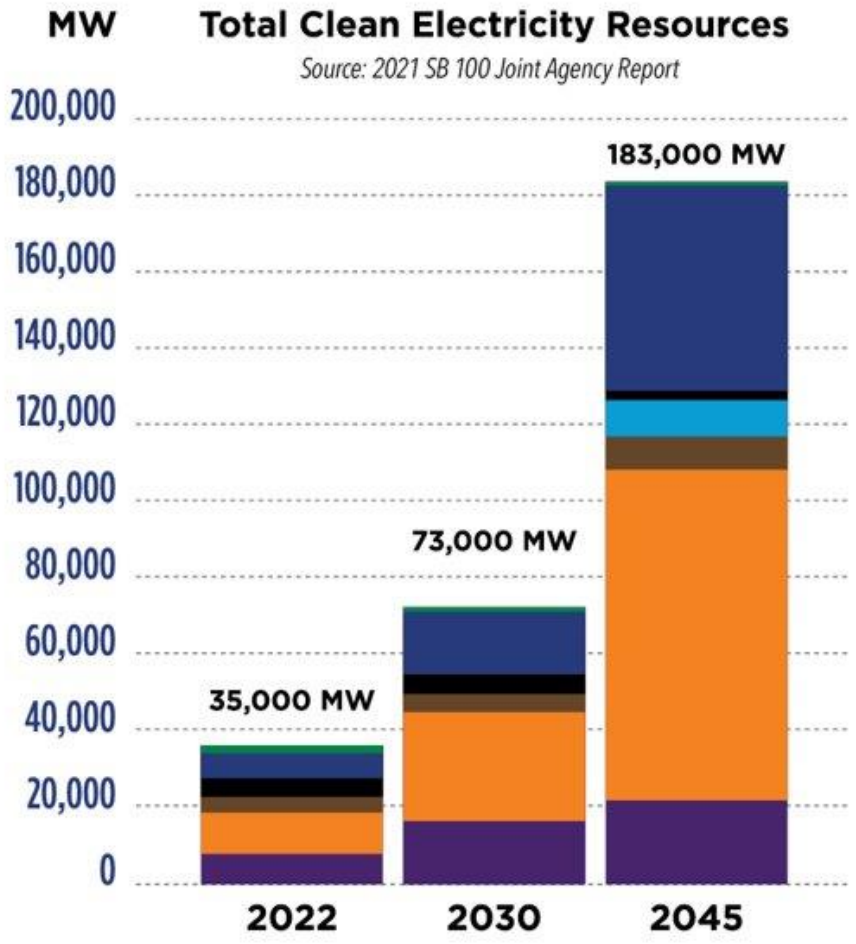
To provide 100% clean electricity by 2045,

California will build an unprecedented amount of new utility-scale clean energy resources

Totals represent new and existing resources. The 2021 SB 100 Joint Agency Report projects the need for 148,000 MW of new resources by 2045.

In addition, California also expects new capacity from energy efficiency, customer solar and demand response.

- Biomass
- Battery Storage
- Geothermal
- Offshore Wind
- Long Duration Energy Storage
- Utility-Scale Solar
- Wind



2025 SB 100 Report Opportunities:

- **Report on current statewide efforts** toward clean electricity progress and **identify opportunities** to enhance state efforts.
- **Study alternate scenarios** to understand the impact of uncertainty in cost, technology innovation, and project development on achieving SB 100.

2025 Report: Modeling Scenarios

Reference	Existing resource plans replace the base resource, including the CPUC's Preferred System Plan through 2039, & POU Resource Plans.
Base	Least cost model based on current demand scenario and resource cost projections. Existing Resource Plans through 2030.
Base - High Hydrogen	Base scenario with high hydrogen demand scenario, accounting for increased hydrogen production.
Minimum Compliance	Base scenario without constraints on GHG emissions. This scenario is focused on SB 100 compliance only.
DER Focus	Higher levels of distributed energy resources, including BTM and FTM generation and storage resources, and demand flexibility.
Resource Diversification	Procurement and technology advancements for a variety of existing and emerging resources able to be used for SB 100 compliance.
Geographic Diversification	Expanded regional transmission allowing for greater energy exchanges between California and the rest of the WECC.
Combustion Resource Retirement	Transition from combustion power plants to only non-combustion power plants for in-state resources.

Thank You!

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