

Improving reliability and environmental justice en route to 85 percent clean electricity in California by 2030

In September 2018, California adopted Senate Bill 100 (SB 100)—one of the nation’s first and most ambitious legislative requirements to achieve 60 percent renewable electricity sales by 2030, increasing to 100 percent zero-carbon by 2045. In February 2022, the California Public Utilities Commission (CPUC) voted to lower California’s statewide power sector greenhouse gas planning target to 38 million metric tons of carbon dioxide equivalent by 2030, translating to 86 percent clean electricity by 2032.

A technical analysis by Telos Energy and GridLab found that California can reliably achieve 85 percent carbon-free electricity by 2030 under a range of potential stressors, including retiring at least one third of California’s remaining natural gas-fired capacity, limiting hydropower availability, constraining imported power, and enduring conditions similar to the August 2020 heat waves. An accompanying Energy Innovation policy paper incorporates insights from the technical analysis to address how California can successfully navigate this transition. It offers policymakers a suite of no-regrets actions that can further strengthen reliability beyond what was revealed in the technical analysis and ensure the transition improves equity within the state.

The CPUC’s decision to order procurement exceeding the pace of SB 100 suggests the California legislature does not need to set more ambitious clean electricity targets for 2030, but could set an additional targets for 2035 to ensure a faster transition. Any new targets should be complemented by support to and supervision over the CPUC, California Energy Commission (CEC), California Independent System Operator (CAISO), and the state’s utilities to ensure they have the tools and directives they need to meet clean electricity goals, enhance reliability, and advance environmental justice.

ACCELERATING AND DIVERSIFYING CLEAN ENERGY DEPLOYMENT

California needs to sustain a rapid buildout of clean energy resources to reach 85 percent clean by 2030. Resource diversity can reduce overreliance on any single resource, bolstering reliability. Transmission and interconnection reform can also remove deployment roadblocks. To accelerate and diversify clean energy deployment:

- The CPUC should **address barriers to resource procurement** by tracking, identifying, and resolving issues with individual projects that are critical for the transition to a clean and equitable energy future. It should also **incentivize more diverse supply-side resources** (like offshore wind and geothermal) and **err on the side of over-procurement** by anticipating high vehicle and building electrification.
- The CPUC, the CEC, and CAISO should **improve reliability evaluation tools**, including incorporating the technical report’s method of using simpler models across many weather years and stress testing many possible resource portfolios against extreme scenarios. They should also **refine their approach to evaluating resource adequacy** in a renewables- and storage-dominant system.

- The CPUC and utilities should coordinate with CAISO on its transmission expansion planning process to **increase transmission** and further solutions that would benefit multiple potential deployment scenarios; CAISO should also **reform its interconnection process** to prioritize shovel-ready projects.

REDUCING DEPENDENCE ON NATURAL GAS CAPACITY

Absent a concerted effort to retire natural gas power plants, they will run less frequently in an 85 percent clean electricity system but may stay online—potentially cycling on and off more often in a process that emits high levels of local air pollution. To ensure just and equitable outcomes for disadvantaged communities (DACs):

- The CPUC, in coordination with CAISO and the CEC, should **plan a phase-out of all natural gas plants**, including retiring all plants in DACs by 2030 if deemed feasible. The plan should be enforceable and updated regularly to reflect changes to the energy system and state policy goals.
- The CPUC and CAISO should **quantify and share the local reliability value of natural gas plants**, enabling utilities to coordinate and procure clean energy portfolios to replace them.
- The legislature and CEC should **provide resources to DACs** where natural gas plants are located to develop clean energy investment plans that support these communities through the energy transition.
- The CEC should **rigorously study the local pollution impacts of higher natural gas plant cycling** in a high-renewables grid, seeking ways to minimize harm and prioritize plants for retirement.

LEVERAGING DEMAND-SIDE RESOURCES

Demand-side resources like energy efficiency, rooftop solar, and demand response (DR) can hedge against the risk of deploying new clean supply-side resources too slowly; they can also provide complementary reliability, resiliency, and public safety benefits, as they lie closest to the affected load. To boost their value:

- CAISO and the CPUC should **refine existing DR resource markets** to ensure they deliver their forecasted load reductions when called upon and are appropriately compensated for their services.
- The CPUC should closely **monitor and expand its newly established demand-side programs** to address reliability needs in 2022 and 2023, such as growing its Market Access program to reach more customers.
- The legislature should **expand funding to increase broadband access** and, with the CEC, **incentivize the development and deployment of technologies that can shed or shift load** (e.g., smart water heaters).
- The CEC should **study how demand-side resources can replicate the value natural gas-fired power plants provide** in an 85 percent clean electricity system to replace such plants with clean alternatives.

IMPROVING REGIONAL COORDINATION

Greater coordination among Western states can reduce the costs of maintaining a reliable system by adding resource and load diversity, maximizing the use of clean energy, making it easier and cheaper to trade electricity, and optimizing energy storage operations. To make regional coordination more effective:

- The legislature should **re-examine expanding CAISO** within California and across the West, given Western states' growing clean energy ambitions and interest in joining regional markets. Any legislation should include protections around governance, emissions leakage, resource shuffling, and environmental justice.
- In parallel, CAISO should **continue work on its Extended Day-Ahead Market initiative**.
- The CEC should **seek to understand how uncontracted import availability may change** as the West decarbonizes in order to better withstand low-import periods while minimizing reliance on natural gas.
- The CPUC should closely **monitor its accounting of imports for reliability**, eventually reassessing whether more stringent requirements on import availability are needed to further mitigate performance risk.