Energy Storage Deployments Are Critical for California's Transition to a GHG-Free Power System

California needs massive deployments of energy storage to meet its SB 100 goals affordably and reliably. Energy Storage can help solve many of California's challenges and is an urgently needed, no-regrets solution for helping address:

- **Sunsetting of the Natural Gas Fleet:** All natural gas plants in the state must be retired by 2045. Currently 43% of energy generated in California is from natural gas[1]. Energy storage will be instrumental to a successful replacement of that capacity.
- **Meeting EV Charging Demand:** Demand for electricity is growing due to the increased adoption of electric vehicles. Storage can help stabilize the grid for DC fast charger clusters without the need for transmission upgrades.
- **Curbing High Electricity Costs:** California needs tools like energy storage to keep electric service costs affordable for all Californians. Energy storage helps prevent curtailment and improves efficiency across the power system, thereby lowering costs per kWh produced for all ratepayers.
- **Integrating a Very High Penetration of Renewables:** By 2030, 60% of the state's power mix must be generated from renewable sources, with much coming from intermittent wind and solar. Storage is a GHG-free resource that firms renewable assets, reduces curtailment, and stabilizes the grid.

1 California Energy Commission 2017 Total System Electric Generation

Energy storage is a no-regrets investment for California and is needed to help reach SB 100 clean energy goals. Energy storage is a diverse asset class of many technologies and use cases that can be deployed anywhere, reprogrammed and repurposed, and integrated with existing assets to optimize system performance and lower costs.

CESA is a non-profit membership-based advocacy group committed to advancing the role of energy storage in the electric power sector through policy, education, outreach and research.

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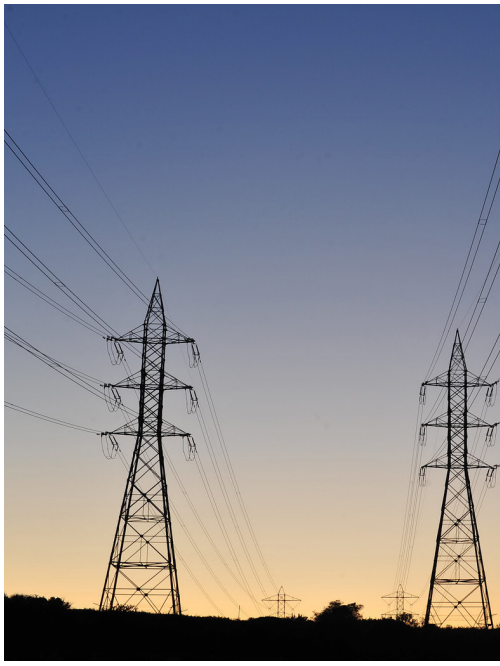
Diverse Storage Applications can Meet California's Diverse Needs

Energy storage is being deployed to meet location-specific grid needs:



Replace Natural Gas Plants

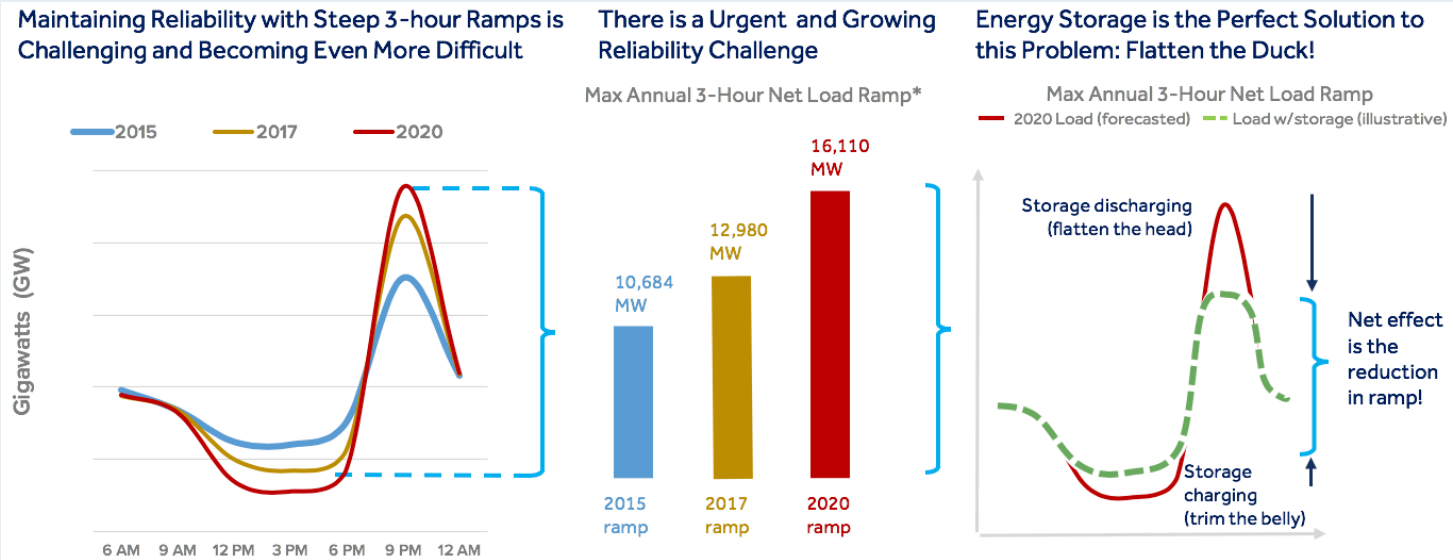
- **Aliso Canyon -** 99.5 MW of energy storage was procured and operational in 2017 to address reliability issues stemming from limitations of the Aliso Canyon natural gas storage facility
- **Moss Landing -** 567.5 MW of energy storage procured to reduce reliance on costly backstop procurement of natural gas

Reduce Local Emissions

- **Oakland Clean Energy Initiative -** 20 MW / 80 MWh battery energy storage project to replace an aging jet fuel-fired power plant in downtown Oakland

Reduce Solar Curtailment

- **LADWP Beacon Solar Project -** 20 MW / 10 MWh battery energy storage project paired with 250 MW of solar generation located in the Mojave Desert outside Los Angeles



*Source: CAISO Flexible Capacity Needs Assessment Process 2016-2019 (2015 and 2017 actual load, 2020 forecast from Final 2019 Needs Assessment Fig 1, p.8)

The CPUC Reference System Plan suggests that gigawatts of energy storage will be required to integrate the forecast renewable generation that will be installed through 2030. CESA analysis finds that the need for storage may be underestimated in light of SB 100 due to modeling assumptions around storage costs, hybrid storage, curtailment, and gas resources.

Energy storage enables the state to meet its climate goals and grid diverse needs