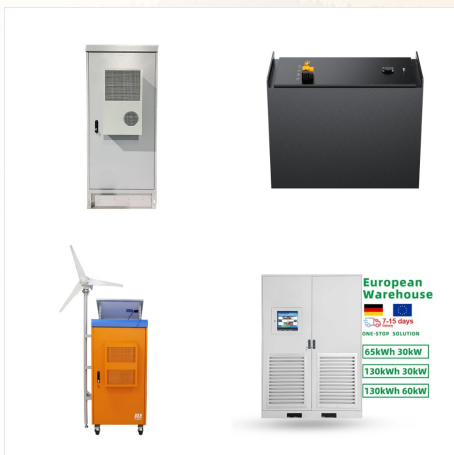




Driving it is a state procurement mandate of 1.8 GW of energy storage, 500 MW of which must be behind-the-meter and 1 GW of which the California PUC is targeting for installation by 2026. The partially complete 500 MW Maverick solar-storage project in the jurisdiction of Riverside Local 440 is likely to overtake Moss Landing, but probably not



growing fleet of battery storage resources to maintain the flexibility and resilience of the power grid. This is especially true in the Western U.S., where states like California, Washington, and Oregon have ambitious decarbonization goals. California is projected to need 79 GW of new renewable generation



In California, electricity demand is highest in the late afternoon and early evening hours when the sun sets, causing solar resources to drop off before winds pick up later in the evening. The battery storage fleet provides a critical energy bridge during this time of day.

# GRID ENERGY STORAGE IN CALIFORNIA



At 8:10 pm on that day, 6,177MW of power was being fed into the California Independent System Operator (CAISO) grid from battery energy storage system (BESS) resources, exceeding the contributions of the four other biggest sources of power: renewables (4,603MW), natural gas (5,121MW), large-scale hydroelectric (4,353MW), and energy imports ???



The project will deliver 20 megawatts and 80 megawatt-hours of electricity to California's grid. Bulking up on energy storage is crucial for California to reach its target of deriving 100%



To meet this target, California will need new, emissions-free, and cost-effective resources for ensuring grid reliability 24/7. Interest in long-duration energy storage (LDES) ??? which can store excess renewable energy during periods of low energy demand and release it when demand is high ??? has been growing as a potential solution.

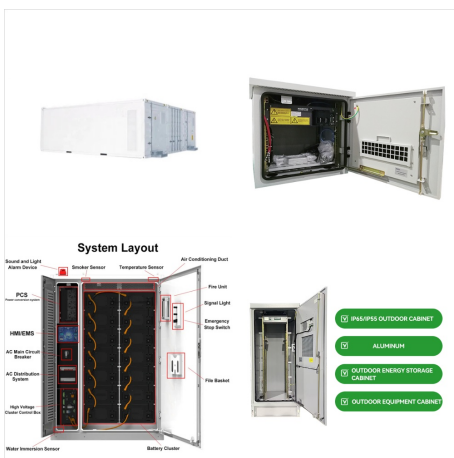
# GRID ENERGY STORAGE IN CALIFORNIA



We are excited to share the release of the updated Energy Storage Survey, showcasing California's remarkable progress in energy storage deployment. The state has added over 3,000 MW of battery storage capacity in the last six months alone, bringing the total to more than 13,300 MW ??? a 30% increase since April 2024 (). This rapid expansion strengthens ???



The project in Goleta, California, as it looks under construction. Image: Gridstor. Updated 8 June 2023: Gridstor VP of policy and strategy Jason Burwen offered some more details on the project to Energy-Storage.news. The ???



The two projects (pictured) are sited at a Southern California Edison substation in Santa Ana, California. Image: Convergent Energy + Power. Convergent Energy + Power has celebrated the successful commissioning and start of commercial operations at two battery energy storage system (BESS) projects with a combined capacity of 60MWh in California, US.

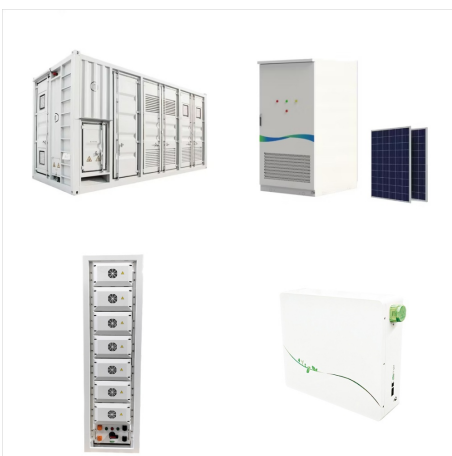
# GRID ENERGY STORAGE IN CALIFORNIA



MW/1,200MWh phase one of the Moss Landing battery energy storage system (BESS) was connected to California's power grid and began operating in December 2020. Construction on the 100MW/400MWh phase two expansion was started in September 2020, while its commissioning took place in July 2021.



Energy storage will play an increasingly important role in California's transitioning energy system. Specifically, long-duration storage (storage with a duration of eight or more hours) will be important during critical periods such as nighttime and during cloudy days, particularly in winter. This project examines various scenarios to better understand the value of long-duration ???



Form Energy snags \$30M grant for California's largest long-duration energy storage project The company plans to build a 5-MW/500-MWh iron-air battery storage project at a Pacific Gas & Electric



# GRID ENERGY STORAGE IN CALIFORNIA



Pacific Gas and Electric (PG& E) proposed building nine new battery energy storage projects totaling around 1,600 MW of power capacity. If approved by the California Public Utilities Commission (CPUC), the nine projects (details below) would bring PG& E's total battery energy storage system capacity to more than 3.3 GW by 2024.



Energy Storage in California: Assembly Bill 2514 and Meeting Our Goals In 2010, California took a major step to accelerate energy storage deployment with the passage photovoltaic storage initiative, and grid-scale zinc batteries being tested in San Ramon (CAISO 2019). Additionally, SGIP, via its Energy Storage Equity and Resilience Budgets



This project studied the value of long duration energy storage (LDES) to support decarbonization at three geographic levels: (a) meeting Senate Bill 100 (De Le?n, Chapter 312, Statutes of 2018) and statewide electric sector decarbonization planning, (b) providing local capacity and criteria air pollutant reductions in a Los Angeles Basin case study, and (c) ???

# GRID ENERGY STORAGE IN CALIFORNIA



SCE boldly recognized the potential of large grid-scale energy storage and awarded AES a 20-year power purchase agreement (PPA) to provide 100MW/400 MWh of energy storage using a Fluence integrated system of ???



Electrical Energy Storage (EES) refers to systems that store electricity in a form that can be converted back into electrical energy when needed. 1 Batteries are one of the most common forms of electrical energy storage. The first ???



The project in Goleta, California, as it looks under construction. Image: Gridstor. Updated 8 June 2023: Gridstor VP of policy and strategy Jason Burwen offered some more details on the project to Energy-Storage.news. The Goleta facility is a merchant resource, but has a resource adequacy (RA) contract with utility Southern California Edison (SCE), he said.

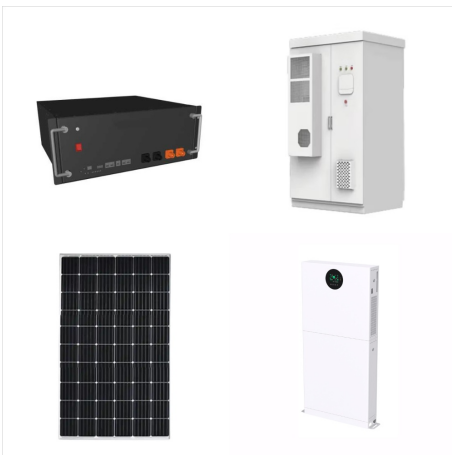
# GRID ENERGY STORAGE IN CALIFORNIA



Battery storage is taking off in California with nearly 1.2 GW of capacity added in the last year and expected to double before the end of the year, despite COVID-19-related supply chain delays that have helped boost natural gas demand, along with lower hydro and imported generation. Not registered?



A new player is taking the stage in the highly charged California electricity market. Enter lithium-ion energy storage. The world saw this revolution coming years ago, but momentum has been accelerating ever since the summer of 2019, when California regulators and utilities first predicted peak hour shortfalls in September of 2020.. The regulators noted that the "peak hour ???

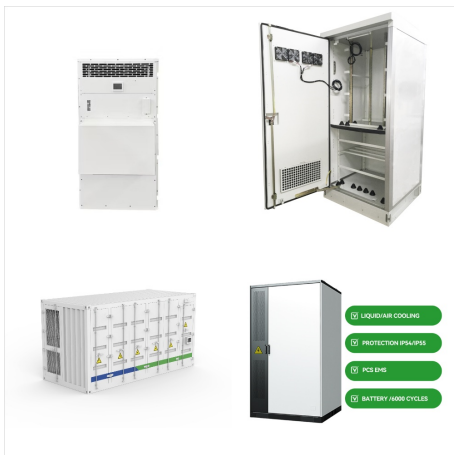


Source: CEC analysis of California ISO data. Learn more about the benefits of battery storage, see Storage: An intersection between reliability today and climate goals of tomorrow (California ISO), California ISO shows dramatic impact of storage added to the grid (California ISO), and CEC's Midterm Reliability Analysis. \*Battery capacity additions are the limited energy storage ???

# GRID ENERGY STORAGE IN CALIFORNIA



WHAT TO KNOW: California has increased battery storage by 757% in only four years, and now has enough to power 6.6 million homes for up to four hours ??? essential progress in cutting pollution, fighting climate change, and creating a more reliable grid. SACRAMENTO ??? New data show California has built out more than 6,600 megawatts (MW) of battery storage, ???



California has passed 5GW of grid-scale battery storage energy storage (BESS) projects, grid operator CAISO has revealed. The state has long been a leader for BESS deployments, with an ambitious renewable energy ???



To accommodate the storage needed to ensure grid reliability as renewable energy grows, the operator of California's electricity system is working to improve how it models energy storage to



# GRID ENERGY STORAGE IN CALIFORNIA



This project studied the role of LDES in the future of California's decarbonizing grid and developed tools, data, and approaches for other proceedings (like the California Public Utilities ???)



Signposts to watch as energy storage revolutionizes the grid. As energy storage helps redefine the power sector, strategic adoption becomes paramount. The dynamic interplay of technological advances, policy evolution, and market dynamics can underscore energy storage's pivotal role. Cameron Murray, "Battery storage helping California

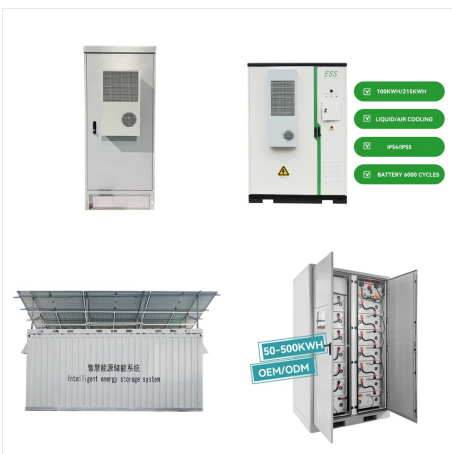


SCE boldly recognized the potential of large grid-scale energy storage and awarded AES a 20-year power purchase agreement (PPA) to provide 100MW/400 MWh of energy storage using a Fluence integrated system of lithium batteries, electronics, and advanced software. Then, Fluence was an AES/Siemens joint-venture. Now Fluence is a public company.

# GRID ENERGY STORAGE IN CALIFORNIA



GridStor develops, owns, and operates grid-scale battery energy storage systems to support a dependable power supply in the regions we serve. Determined. Our leadership team has over 200 years of combined experience in developing, building, and operating over 100 gigawatts of power generation and storage projects.



more intermittent. We will not be able to build a reliable, clean electric grid using solar and wind energy alone. California needs more diverse clean energy resources ??? including batteries, clean hydrogen, and long-duration storage - and a wide range of technologies and resources to meet the unprecedented growth in

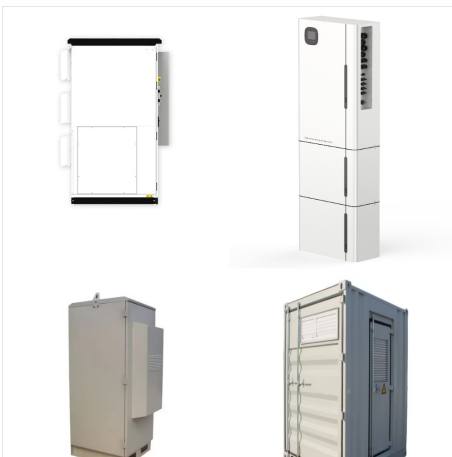


WHAT TO KNOW: California has increased battery storage by 757% in only four years, and now has enough to power 6.6 million homes for up to four hours ??? essential progress in cutting pollution, fighting climate change, ???

# GRID ENERGY STORAGE IN CALIFORNIA



California is a world leader in energy storage with the largest fleet of batteries that store energy for the electricity grid. Energy storage is an important tool to support grid reliability and complement the state's abundant renewable energy resources.



SACRAMENTO ??? Non-fossil-fuel sources now make up 61 percent of retail electricity sales in California thanks to historic investment that has led to an extraordinary pace of development in new clean energy generation, according to the latest data compiled by the California Energy Commission (CEC). Sources eligible under the Renewables Portfolio ???



This graph helps assess upcoming grid conditions by comparing the forecasted amount of energy demand compared to the amount contracted under the state's RA program. RA capacity 1-hour interval RA is energy designated by the state to be bid into the market for the reliable operation of the power grid, minus the impacts of outage derates.