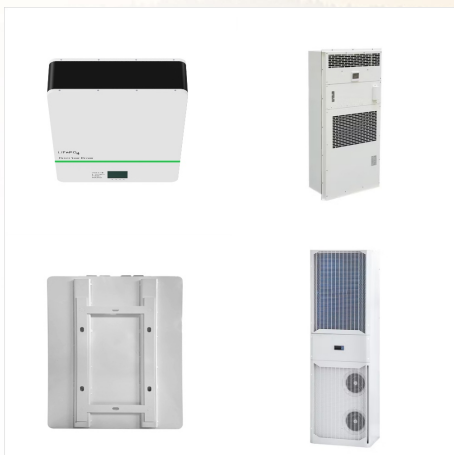


The latest data from the California Energy Commission shows that in 2021, 59% of the state's energy came from renewable and zero-carbon resources. But to fully meet our goals, it will take investment from both the public and private sectors, and modernizing our rules to ensure we can build the clean energy projects we need to power our state.



Solar energy in California falls into two categories: solar thermal and solar photovoltaic. The California Energy Commission licenses solar thermal plants above 50 megawatts and promotes solar photovoltaic installation through the Renewables Portfolio Standard, with building efficiency standards, and as a partner in the California Solar Initiative.



Battery storage and dispatchable green hydrogen will be critical compliments to variable wind and solar resources in California, according to SDG& E. The roadmap calls for 40 GW of new battery storage and 20 GW of dispatchable green hydrogen to come online over the next two decades.

CALIFORNIA RENEWABLE ENERGY BATTERY



The Victor Valley Wastewater Reclamation Authority intended to develop an energy management system that uses an experimental energy management controller (smart controller) coupled with an innovative battery storage technology (flow battery) and improve power quality to increase recycled water generation. The energy management system would stop violations of ???



The California Energy Commission's Electric Program Investment Charge (EPIC) program supports innovations and strategies to advance clean energy technologies that help California meet its energy goals. One of those goals includes making better use of locally available renewable energy to increase resiliency and address climate change impacts such as ???



In 2023, California was the nation's fourth-largest electricity producer and accounted for about 5% of all U.S. utility-scale (1-megawatt and larger) power generation. 22 Renewable resources, including hydropower and small-scale (less than 1-megawatt) customer-sited solar photovoltaic (PV) systems, supplied 54% of California's total in-state electricity ???

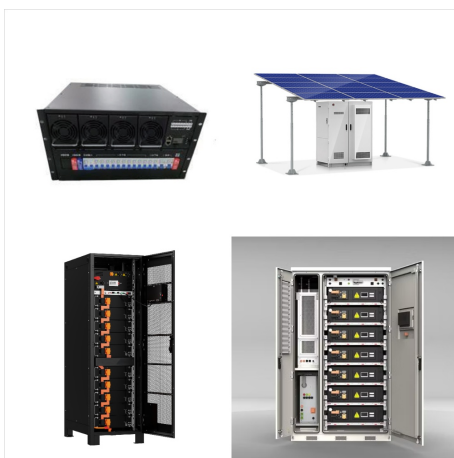
CALIFORNIA RENEWABLE ENERGY BATTERY



This report provides a description of the state of battery storage resources in the California ISO and Western Energy Imbalance Market. We evaluate the performance of batteries using several key metrics, and assess the recent market enhancements for battery resources. 1 California ISO, 20 Year Transmission Outlook, May 2022, p 2:



The California Energy Commission (CEC) has approved a \$30 million grant to Form Energy to build a long-duration energy storage project that will continuously discharge to the grid for 100 hours. The 5 MW / 500 MWh iron-air battery storage is the largest long-duration energy storage project to be built in California and the first in the state to



Prior to Feb. 1, 2023 The Batteries trend chart displayed battery storage and all hybrids, including renewable components, wind and solar. As of Feb. 1, 2023 The majority of the hybrid resources are displayed in the Hybrid charts, and the remaining hybrids will transfer when requirements for providing component-level telemetry are met. There is

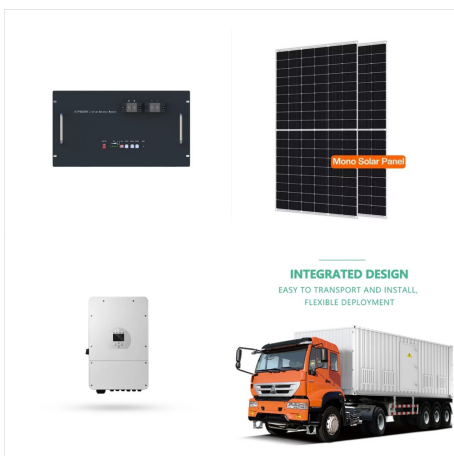
CALIFORNIA RENEWABLE ENERGY BATTERY



The DRECP is a collaborative effort between the BLM, U.S. Fish and Wildlife Service, California Energy Commission, and California Department of Fish and Wildlife. The Arlington Solar Energy Center, also in Riverside County, will generate 364 megawatts and will include 242 megawatts of battery energy storage.



Assembly Bill (AB) 2143 (2022, Carillo) established Public Utilities (Pub. Util.) Code ?769.2 requiring that, beginning on January 1, 2024, large customer-sited renewable electrical generation (solar or otherwise) facilities, and any associated battery storage, that enroll in tariffs designed for these projects (e.g., net energy metering or



April 12 (Reuters) - A major battery plant near Los Angeles will be among the largest in the world when it comes online later this year, promising to shore up California's power grid during

CALIFORNIA RENEWABLE ENERGY BATTERY



From January to mid-July of this year, zero-carbon, renewable energy exceeded demand in California for 945 hours during 146 days ??? equivalent to a month-and-a-half of 100% fossil-fuel-free



The California Independent System Operator (ISO) has seen continued growth of clean energy this spring, including record-setting solar generation and battery output. It marks the fifth consecutive year that solar has hit new peaks within the ISO footprint, while battery storage has become a major resource for grid reliability in just the last few years.



-megawatt lithium-ion battery bank is big even for California, which boasts about 55% of the nation's power storage capacity, according to data from the U.S. Energy Information Administration.

CALIFORNIA RENEWABLE ENERGY BATTERY



Gov. Gavin Newsom said Thursday that California continued to rapidly add the battery storage that is crucial to the transition to cleaner energy, but admitted it was still not ???



Increase solar energy, battery energy storage, wind energy, geothermal resources, pumped storage, and more to reduce reliance on natural gas-???red energy as quickly as possible. May 2021: California announced a historic agreement with the federal government to advance offshore wind along the California coast ??? a 399-square-mile



The Decision allows battery storage to be paired with solar projects and creates a pathway for potential expansion beyond the program capacity cap. New Community Renewable Energy Program. California's solar capacity also exceeds the peak demand of the entire system on many days of the year. The California Independent System Operator

CALIFORNIA RENEWABLE ENERGY BATTERY



A 182.5-megawatt energy storage system in Northern California that was designed and constructed in a partnership between Tesla and Pacific Gas and Electric Company is now operational, the utility announced. The system is one of nine projects that would bring PG&E's total battery energy storage system capacity to more than 3,330 MW by 2024.

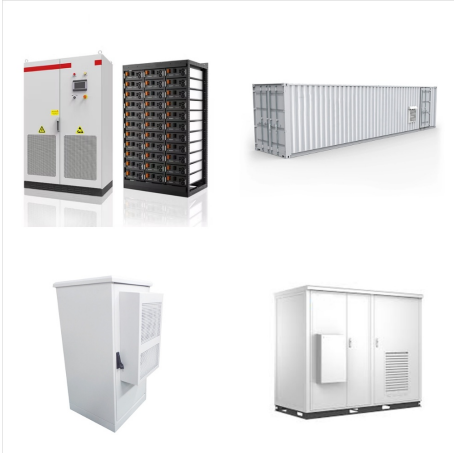


Keywords: Cuberg, Energy density, lithium-metal battery pouch cells, lithium-ion battery, battery cycle-life, high energy density, California Energy Commission. Please use the following citation for this report: Haines, Megan; Anne Juggernaut, and Olivia Risset. 2024. Improved Batteries for California's Zero - Emissions Vehicle Future.

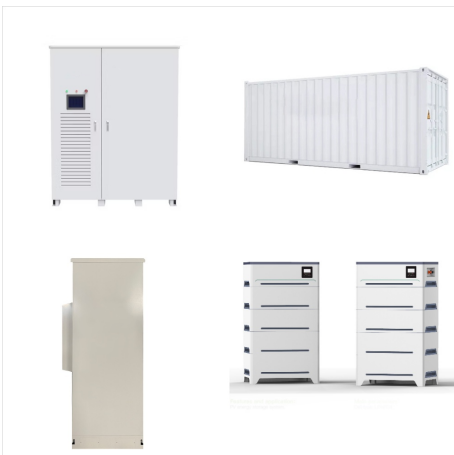


California's Electric Grid. California has set a goal to reach 100% carbon-free electricity by 2045. The state is making progress - as of 2022, about 37% of California's energy mix comes from natural gas and about 54% comes from non greenhouse gas emitting and renewable resources (Figure 1). Of the current renewable energy sources, about 17% comes ???

CALIFORNIA RENEWABLE ENERGY BATTERY



Low-income households in California may soon have access to one of the best solar and battery incentives in the country and an opportunity to drastically lower their energy costs. On November 2, the California Public Utilities Commission (CPUC) proposed rules for allocating \$280 million for the Self-Generation Incentive Program (SGIP) .

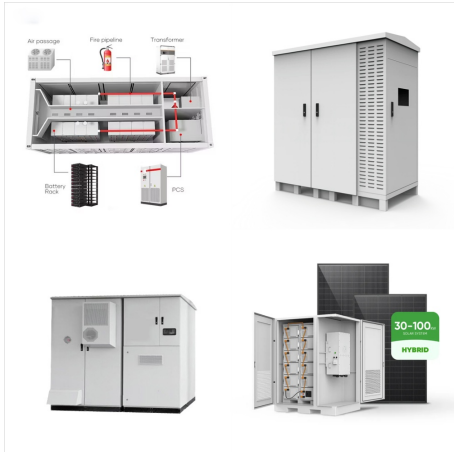


Our state established a landmark policy (SB 100, 2018) requiring 100% of our electricity to come from renewable energy and zero-carbon resources by 2045. This plan marks our progress ???



SACRAMENTO ??? The California Energy Commission (CEC) today joined with the U.S. Department of Energy (DOE) to announce California is launching the first of two federally-funded Inflation Reduction Act (IRA) Residential Energy Rebate Programs.. Applications are open for the first phase of the Home Electrification and Appliance Rebates (HEAR or HEEHRA in ???

CALIFORNIA RENEWABLE ENERGY BATTERY



California Energy Commission funding supports SMUD's decarbonization goals. Sacramento, Calif. ??? SMUD's long-duration battery storage project in partnership with ESS Tech, Inc. has been awarded a \$10 million grant from the California Energy Commission to demonstrate a groundbreaking 3.6-megawatt, 8-hour iron flow battery project and set the foundation for ???

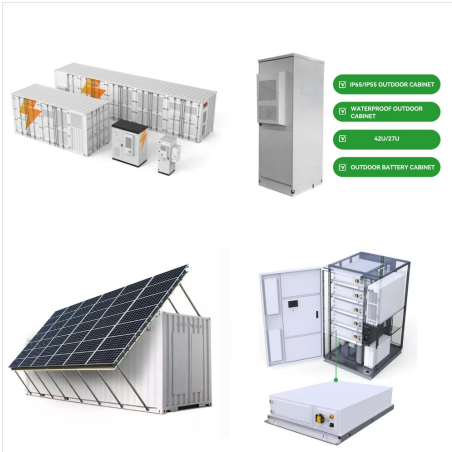


Moreover, on April 11, solar alone provided more than 100 percent of demand for the first time ever in California: solar supply exceeded demand for 1.5 hours, reaching a peak of 102.4 percent of



-megawatt lithium-ion battery bank is big even for California, which boasts about 55% of the nation's power storage capacity, according to data from the U.S. Energy Information Administration.

CALIFORNIA RENEWABLE ENERGY BATTERY



SCE deserves admiration for pioneering the use of renewables, demand management, and intelligent battery energy storage systems (BESS) to replace old power plants and peakers. SCE meets growing demand for electricity even as it shuttered two large nuclear plants and navigated the massive the Aliso Canyon natural gas storage failure of a supplier.



During the afternoon of April 24, 2021, the state's renewable generation hit a new all-time high, with 94 percent of California's electricity coming from solar, wind and other clean energy sources. In May 2021, California announced a historic agreement with the federal government to advance offshore wind along the California coast



Adding storage also makes renewable energy more profitable, says Wesley Cole, an energy analyst with the National Renewable Energy Laboratory. such as California, battery prices still need to