

# Caiso energy storage interconnection



GEL Battery



Lithium Battery



Container storage system



Power Battery





## Overview

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What are CAISO's interconnection reforms?

The interconnection reforms are part of an agreement among CAISO, the PUC and the California Energy Commission that aims to better coordinate resource and transmission planning, interconnection processes and resource procurement. CAISO is working with stakeholders on additional reforms to its interconnection rules.

How many GW of interconnection requests does CAISO have?

CAISO has over 500 GW of interconnection requests, “10 times more than its roughly 50 GW peak load,” which has kept its focus on reducing the queue, said LBNL Energy and Environmental Policy Research Scientist and Engineer Will Gorman.

Is CAISO's interconnecting process a major obstacle to California's decarbonization?

Although CAISO has opened the door for one of the world's largest operating clean energy portfolios, its process for interconnecting new projects has become unwieldy, obsolete and a major obstacle to California's decarbonization, according to participating transmission owners and power plant developers.

How many GW does CAISO have in its interconnection queue?

When CAISO started its interconnection reform stakeholder process in May 2023, the grid operator had 185 GW in its active interconnection queue, it said in its FERC application. It has another 347 GW from “Cluster 15,” its most recent annual interconnection window, which is on hold.

What is CAISO doing with FERC?

CAISO is working with stakeholders on additional reforms to its interconnection rules. Also, FERC is reviewing the grid operator's plan for



complying with the agency's Order 2023, which set requirements for generator interconnection processes across the United States.

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## Caiso energy storage interconnection

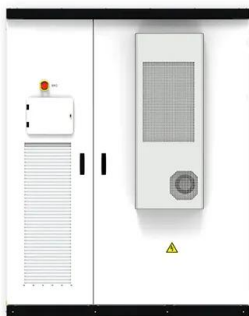
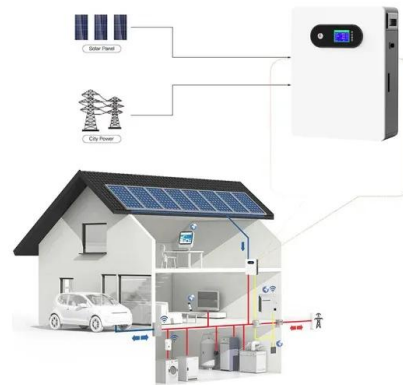
### FERC approves CAISO interconnection reform plan

The Federal Energy Regulatory Commission on Monday approved the California Independent System Operator's plan to reform its generator interconnection process, including ...



### Briefing on Renewables and Energy Storage in the Generator

245,456 MW of renewable and energy storage capacity 37% in various stages of the study process and will finish Nov. 2021 97,643 MW renewable energy (stand alone & hybrid / co-located) 147,812 MW of energy storage 51% stand alone, 49% as a



### [Energy storage enhancements discussion](#)

CAISO - PUBLIC 2. Require energy bids alongside ancillary service awards Page 6 o Operators noted storage resources can run out of SOC, resulting in an inability to provide ancillary services -Storage schedules with ancillary services may become infeasible o ISO

### Innovative solutions emerge to reduce 2.5-TW US clean energy

CAISO has over 500 GW of interconnection requests, "10 times more than its roughly 50 GW peak load," which has kept its focus on reducing the queue, said LBNL Energy ...



### Energy Storage Interconnection Draft Final Proposal

California ISO Energy Storage Interconnection M& ID / T.Flynn 2 The operational impact of the 10 MW BTM storage addition to Project A would be exactly the same as the operational impact of the 10 MW storage addition to Project B. As such, there is no



### CAISO Proposes Interconnection Queue Process Overhaul

The revamp is vital to help the state add the gigawatts of renewable resources and storage it needs to meet its 100% clean energy mandate by 2045, CAISO said in an issue paper and straw proposal



### [Special Report on Battery Storage](#)

Department of Market Monitoring California ISO- July 2023 Special Report on Battery Storage 4 1.2 Key findings o Battery storage capacity grew from about 500 MW in 2020 to 5,000 MW in May 2023 in the CAISO balancing area. Over half of this capacity is





### CAISO Energy Storage Interconnection Initiative

By Michael J. Gergen, Eli Hopson, and Andrew H. Meyer The California Independent System Operator ("CAISO") is moving forward with a stakeholder initiative to examine issues with connecting energy storage facilities to the CAISO controlled grid under the CAISO's existing interconnection rules, and to develop new policies as needed to clarify and ...

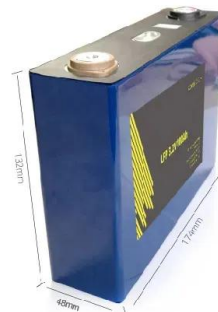


### Energy Storage and Distributed Energy Resources Phase 4 ...

enhance energy storage provisions in the market o ISO and CPUC call for procurement of 3,300 MW of additional resource adequacy resources by 2023 to make up for gas retirements o Most of the resources in the interconnection queue are energy storage

### Grid connection backlog grows by 30% in 2023, dominated by ...

With grid interconnection reforms underway across the country, a Berkeley Lab-led study shows nearly 2,600 gigawatts of energy and storage capacity in transmission grid interconnection queues The backlog of new power generation and energy storage seeking



### CASCADE ENERGY STORAGE EXPANSION interconnection ...

CASCADE ENERGY STORAGE EXPANSION interconnection request with ID 1835 queued on 5/3/2021 with proposed completion date 10/2/2024. Interconnection.fyi provides live updating data, maps and charts of ISO and utility distribution & transmission grid interconnection queue requests in the United States.



Stakeholder Comments Template

1 CESA Comments on CAISO Interconnection Process Enhancement Topics Submitted by Company Date Submitted Jin Noh 703-507-8809 jnoh@storagealliance California Energy Storage Alliance ("CESA") August 30, 2017 The California Energy



Interconnection Process Enhancements 2021

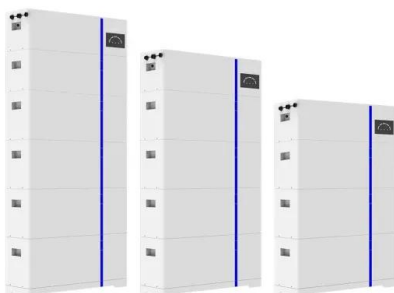
4 "Resolving Interconnection Queue Logjams - Lessons for CAISO from the US and Abroad" October 2021, Rob Gramlich, Michael Goggin, Jay Caspary, Jesse Schneider. 5 For more information on the 2018 IPE initiative please refer to the initiative webpage at

**California ISO tackles 'broken' interconnection process as queue ...**

An unprecedented surge this year in requests to connect new renewable energy and battery storage resources to California's electric transmission grid has emerged as both a ...



**ESS**



**CAISO interconnection improvements proposed by SEIA, CESA, ...**

California's grid operator CAISO has launched a stakeholder process to consider how to improve the interconnection process for utility-scale generation and storage, inviting ...



## A Look into the Performance of CAISO's Two Largest Batteries in ...

CAISO has quickly established itself as a hotbed for large-scale energy storage. CAISO added 2,419 megawatts (MW) of storage during 2021, a more than 10-fold increase in battery storage capacity from the summer of 2020 to the summer of 2021, and interconnection queues continue to fill up with storage and storage-hybrid resources.



## Implementation of Hybrid Energy Storage Generating Facilities

The energy storage interconnection initiative also identified non-interconnection related issues that should be addressed. To address these issues, the CAISO collaborated with the California

## Innovative solutions emerge to reduce 2.5-TW US clean energy

Innovative solutions emerge to reduce 2.5-TW US clean energy interconnection backlog CAISO, SPP and ERCOT are streamlining the process of connecting renewables, energy storage and other projects



### ESS



## [Interconnection Process Enhancements 2021](#)

The Interconnection Process Enhancements (IPE) Initiative is the ISO's ongoing commitment to improve its Generator Interconnection and Deliverability Allocation Procedures (GIDAP) and ...



### FERC approves CAISO interconnection queue reforms despite ...

Despite CAISO describing the changes--which will impact prospects for energy storage projects--as "essential" in dealing with "recent dramatically increased levels of requests to interconnect to the CAISO-controlled grid," it appears that not everyone is happy.



### Grid Resource Interconnection Portal (GRIP) , California ISO

The Grid Resource Interconnection Portal (GRIP) application provides interconnection customers with the ability to input, track, and manage interconnection requests. Access the GRIP login page Grid Resource Interconnection Process (GRIP) User Guide 09/27/2024, 3:25 PM

### Implementation of Hybrid Energy Storage Generating Facilities

TECHNICAL BULLETIN Page 5 of 28 energy storage resources.2 The November 2014 draft final proposal in the Energy Storage Interconnection initiative concluded that the CAISO's existing interconnection rules accommodate the interconnection



### Deliverability Assessment Methodology Revisions

Transmission Planning Process (TPP), and the Generation Interconnection Process (GIP) reliability studies, and not from the CAISO deliverability test. If additional reliability concerns remain with the generation interconnection process, additional reliability test



### Generator interconnection , California ISO

The generator interconnection planning process provides a pathway for power plants to interconnect to the ISO controlled grid. We provide information and resources to help you ...



### **Battery energy storage in the United States to hit 140 GW by 2030?**

In fact, in ERCOT, battery energy storage projects with signed Interconnection Agreements have become commercially operational at a 100% rate. So, let's assume projects will continue to become commercially operational at a similar rate. This results in a

### Energy Storage Interconnection

California ISO Issue Paper & Straw Proposal M& ID / T.Flynn Page 7 scope of this initiative), and some that are not. These are discussed in more detail below in sections 3.1 and 3.2, respectively. Because only a portion of this broad spectrum of energy storage



### **Comment Template**

CESA was an active participant in the Energy Storage Interconnection Initiative in 2014 that 1 CESA Comments on CAISO Interconnection Process Enhancement Topics, submitted on August 30, 2017, pp. 2-4. 2 These "adverse impacts" include adverse flow



### California Public Utilities Commission Scaling Up and Crossing ...

CPUC Scaling Up and Crossing Bounds iv 2023 Preferred System Plan An outcome of the PU's 2022-2023 Integrated Resource Plan cycle and the adopted portfolio that meets a statewide 30 million metric tons (MMT) greenhouse gas target for the electric



### Library , Energy storage interconnection , California ISO

The California ISO manages the flow of electricity across high-voltage, long-distance power lines, operates a competitive wholesale energy market, and oversees transmission planning. This initiative will examine issues with connecting energy storage facilities to the

### Library , Energy storage interconnection , California ISO

Energy storage interconnection. 35 Documents. 35 of 35 results. This initiative will examine issues with connecting energy storage facilities to the ISO controlled grid under ...



### Energy Storage Enhancements

Issue Exceptional Dispatches (ED) for two storage resources to hold SOC 2. Issue another ED for one storage resource with a HOLD ED to move SOC Market participants should see: Different ED types for storage resources are being settled properly



## California Independent System Operator Corporation

IOP/GA/IR/R. Emmert Page 1 of 7 California Independent System Operator Corporation Memorandum To: ISO Board of Governors From: Neil Millar, Vice President, Infrastructure & Operations Planning Date: July 21, 2022 Re: Briefing on renewable and energy storage in the generator interconnection queue



### Backlog of Generation, Energy Storage Interconnection Requests ...

Backlog of Generation, Energy Storage Interconnection Requests Grew in 2023 April 15, 2024 Paul Ciampoli You are here Home "Yet, these slowdowns were more than offset by enormous growth in other regions -- particularly CAISO (which had a record the

### CAISO interconnection reform plan draws support from SoCal Ed, ...

CAISO interconnection reform plan draws support from SoCal Ed, PG& E, PUC However, renewable energy developers and trade groups urged the Federal Energy Regulatory Commission to reject provisions



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