

**DOCKETED**

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**CALIFORNIA ENERGY COMMISSION**

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Sacramento, California 95814

[energy.ca.gov](http://energy.ca.gov)

CEC-70 (Revised 7/22)

**IN THE MATTER OF:**

*Long Duration Energy Storage Analysis  
(E3)*

DOCKET NO. 20-MISC-01

NOTICE OF REMOTE-ACCESS  
WORKSHOP

RE: Long Duration Energy Storage Analysis  
with Energy and Environmental Economics,  
Inc. (E3)

## **Notice of Staff Workshop on Long Duration Energy Storage Analysis May 9, 2023**

10:00 a.m. – 12:00 p.m.

Remote Access Only

See Attendance Instructions.

The California Energy Commission (CEC) will host a workshop to present the results of Energy & Environmental Economics, Inc.'s (E3) final analysis as part of the grant agreement "Assessing Long-duration Energy Storage Deployment Scenarios to Meet California's Energy Goals" funded under the Electric Program Investment Charge (EPIC). This final analysis assesses the roles and cost targets for long duration energy storage (LDES) to meet California's energy goals in a varied set of scenarios through 2045.

The public can participate in the workshop consistent with the attendance instructions below. The CEC aims to begin promptly at the start time posted and the end time is an estimate based on the proposed agenda. The workshop may end sooner or later than the posted end time. This workshop will be recorded, and the recording will be posted on this workshop's event page.

### **Agenda**

E3 will present their final analysis of California's energy grid with respect to the need for energy storage, including long-duration energy storage, to reach California's energy goals established by Senate Bill 100 (SB 100) (De León, Chapter 312, Statutes of 2018). Input from vendors, researchers, community stakeholders, and others will identify opportunities for future research and contribute to the team's upcoming Final Project Report.

The presentation will include:

1. Review of the challenges and strategies with modeling the long duration energy storage on California's grid, as well as opportunities for future research to better understand the value of LDES.
2. The modeling approach developed in the New Modeling Toolkit, which is an update to E3's RESOLVE model used in the SB 100 Joint Agency Report.
3. Review of the data sources, assumptions, and characteristics of the project's final scenario and the modeling sensitivities.
4. Discussion of the scenario analysis results including least-cost portfolios with different penetrations of LDES and the expected value of LDES in providing services and support to the grid.
5. Evaluation of policies & incentives to support deployment of LDES.

CEC staff and the E3 project team will seek feedback from the public, stakeholders, and attendees on the following questions:

1. Do stakeholders have feedback on the framing of scenario results and value of LDES under different policy futures?
2. Are there other LDES incentive or deployment calculations stakeholders would like to see addressed in the final report?
3. Are stakeholders aware of any other deployment considerations that should be addressed in the final report?

## **Background**

California has established aggressive goals for greenhouse gas (GHG) reductions, both in the electric sector and economy wide. In 2018, Governor Brown extended those goals by signing SB 100, which requires all retail electricity to be supplied by zero-carbon resources by 2045, and an executive order calling for the state to achieve carbon neutrality by 2045 (EO B-55-18). Previous studies by E3 have indicated that GHG reductions of 90 percent or more in the electricity sector are achievable with today's technology. This includes a mix of solar photovoltaics; wind resources from in state, out of state, and offshore; and existing energy storage technologies such as lithium-ion batteries and pumped hydro or compressed air. However, reaching a GHG reduction of 100 percent may require newer technologies, including different types of long-duration energy storage.

This project is evaluating a scenario with different mixtures of existing and emerging long-duration storage technologies, including thermal, kinetic, and chemical energy storage, and varied cost ranges. Development of the scenario and modeling sensitivities considered stakeholder feedback from a [previous workshop](https://www.energy.ca.gov/event/workshop/2022-03/staff-workshop-research-assess-long-duration-energy-storage-deployment) held on March 29, 2022, located at

<https://www.energy.ca.gov/event/workshop/2022-03/staff-workshop-research-assess-long-duration-energy-storage-deployment> . The modeling sensitivities include:

- Understanding the impact of roundtrip efficiency on LDES value.
- Varied levels of load flexibility on the grid.
- Varied capacity levels of offshore wind and firm generation.
- Decreasing GHG- and criteria pollutant-emitting generation.

- Varied rates of transportation electrification.

In addition to developing the final scenario, E3 has further developed grid modeling tools to assess the growing portfolio of energy technologies.

### **Attendance Instructions**

**Remote** participants may join via Zoom by internet or phone.

- **To join via Zoom.** Click on the [zoom join link here](#) or login in at <https://zoom.us/> and enter the Webinar ID **823 4176 5390** and passcode **032465** and follow all prompts.
- **To join by telephone.** Call toll-free at (888) 475-4499 or toll at (669) 219-2599. When prompted, enter the Webinar ID **823 4176 5390** and passcode **032465**.

**Zoom Closed Captioning Service.** At the bottom of the screen, click the Live Transcript CC icon and choose "Show Subtitle" or "View Full Transcript" from the pop-up menu. To stop closed captioning, close the "Live Transcript" or select "Hide Subtitle" from the pop-up menu. If joining by phone, closed captioning is automatic and cannot be turned off. While closed captioning is available in real-time, it can include errors.

**Zoom Difficulty.** Contact Zoom at (888) 799-9666 ext. 2, or the CEC Public Advisor at [publicadvisor@energy.ca.gov](mailto:publicadvisor@energy.ca.gov), or by phone at (916) 957-7910.

### **Public Comment.**

The CEC encourages the use of its electronic commenting system. Visit the [e-commenting page](#) for this docket at <https://efiling.energy.ca.gov/EComment/EComment.aspx?docketnumber=20-MISC-01> . Enter your contact information and a subject title that describes your comment. Comments may be included in the "Comment Text" box or attached as a downloadable, searchable document in Microsoft® Word or Adobe® Acrobat®. The maximum file size allowed is 10 MB.

**Oral comments** will be accepted at the end of the workshop. Comments may be limited to three minutes or less per speaker and one person per organization. To comment via Zoom, use the "raise hand" feature so the administrator can announce your name and unmute you. To comment via telephone, press \*9 to "raise your hand" and \*6 to mute/unmute.

**Written comments** may be submitted to the Docket Unit by 5:00 p.m. on May 2, 2023.

Written and oral comments, attachments, and associated contact information (including address, phone number, and email address) will become part of the public record of this proceeding with access available via any internet search engine. Written comments may also be submitted by email. Include docket number 20-MISC-01 and 2020 Miscellaneous Proceedings in the subject line and email to [docket@energy.ca.gov](mailto:docket@energy.ca.gov).

A paper copy may be mailed to:

California Energy Commission  
Docket Unit, MS-4  
Docket No. 20-MISC-01  
715 P Street

Sacramento, California 95814

**Public Advisor.** The CEC's Public Advisor assists the public with participation in CEC proceedings. To request assistance, interpreting services, or reasonable modifications and accommodations, call (916) 957-7910 or email [publicadvisor@energy.ca.gov](mailto:publicadvisor@energy.ca.gov) as soon as possible but at least five days in advance of the workshop. The CEC will work diligently to meet all requests based on availability.

**Media Inquiries.** Email [mediaoffice@energy.ca.gov](mailto:mediaoffice@energy.ca.gov) or call (916) 654-4989.

**Inquiries.** Email Jeffrey Sunquist at [jeffrey.sunquist@energy.ca.gov](mailto:jeffrey.sunquist@energy.ca.gov) or call (916) 776-0816.

**Availability of Documents:** Documents and presentations for this meeting will be available at the CEC's docket log for docket number [20-MISC-01](#), at <https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=20-MISC-01>. When new information is posted, an email will be sent to those subscribed to the *Electric Program Investment Charge (EPIC) Program* and *Energy Research and Development* email subscriptions. To receive these notices or notices of other email subscription topics, visit [Subscriptions](#), at <https://www.energy.ca.gov/subscriptions> .

**Dated:** April 21, 2023, at Sacramento, California.

Jonah Steinbuck

Director of the Energy Research and Development Division  
Energy Research and Development Division

**Subscriptions:** Electric Program Investment Charge (EPIC) Program; Energy Research and Development