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CALIFORNIA ENERGY COMMISSION

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Request for Information

Long Duration Energy Storage Demonstration Solicitation

Docket # 23-ERDD-08

Due Date: February 16, 2024

Purpose of Request

The California Energy Commission (CEC) is seeking information for a potential future grant funding opportunity (GFO) that will focus on research and demonstration to advance non-Lithium-ion (non-Li) long-duration energy storage (LDES) technologies aimed at helping California meet its clean energy and climate goals. The purpose of the Request for Information (RFI) is to help define critical demonstration and system capacity needs in non-Li LDES and identify high-impact use cases that a future GFO should target to maximize the benefits of government investments in energy storage.

Background

As California accelerates the deployment of renewable energy sources to meet decarbonization goals, the electricity grid will continue to evolve to accommodate more renewable energy and the importance of LDES will continue to grow to help maintain grid reliability. Hence, the CEC is pursuing the demonstration and deployment of emerging LDES technologies that use alternatives to commercial lithium-ion (Li-ion) technologies. These non-Li technologies can help California achieve its ambitious goal of deploying 19.5 gigawatts (GWs) of energy storage by 2035 and 52 GWs by 2045. To meet this challenging objective, the CEC is collaborating with industry partners to diversify the state's energy storage portfolio. In the fiscal year 2022-2023 and 2023-2024, the CEC received \$140 million in general funds and \$190 million in Greenhouse Gas Reduction Funds (GGRF), respectively to support this effort through the LDES program. The CEC used initial LDES program funds to award grant agreements that will deploy five distinctive non-Li LDES technologies. For future competitiveness, non-Li technology systems must be 20-40 megawatt-hours (MWh) in size today and aim to scale up to 200-400 MWh or more in the next 3-6 years.

The anticipated GFO will fund approximately \$70 million for multiple non-Li LDES demonstration projects in California with the goal of supporting a diverse portfolio of energy storage systems that offer essential capacity and grid services to the electrical grid and lead to fostering diversity and competition in the California storage market.

Request for Information

The following questions are designed to elicit information that will help CEC structure the planned solicitation. While there is no requirement to respond to all RFI questions, stakeholders are encouraged to respond to questions they feel most suit their focus, knowledge, and expertise.

LDES System Demonstration – questions aimed more for technology developers, but open to all respondents:

1. According to the California legislation that authorized the LDES program, all demonstration projects must have a system capacity of a minimum of 1 MW for at least 8 hours¹. Given this requirement and the current state of your non-Li LDES, which of the following system sizes could you deliver in the next 18 months to 2 years? Additionally, which system size would help your technology reach the 200-400 MWh system size in the next 3-6 years?
 - System size of 8-10 MWh
 - System size of 10-20 MWh
 - System size of 20-30 MWh
2. What would be the range of the estimated project costs in a direct current (DC) configuration for demonstrating each of the three different system sizes listed in question 1 for your non-Li LDES system as a function of the location of deployment? Additionally, what would be the life expectancy of the demonstrated project? Would it be considered pre-commercial or commercial, and have an expected life of 10-20 years or longer? Please explain.
3. For the system sizes listed in question 1, what is the maximum amount of match funding that a technology provider and selected end customer can contribute towards one of the proposed future grants - 20%, 30%, 40%, or higher?
4. What type of incentives can be leveraged to make a LDES system demonstration more attractive from a financial standpoint? What will be the maximum amount of incentive that a technology provider and selected end user could obtain for the system sizes listed in question 1?
5. Considering that California is aggressively planning to procure energy storage and has already approved over 8 GWs of Li-ion systems, when do you anticipate your non-Li system will be able to compete with Li-ion systems in terms of price and performance for a future commercial solicitation if the price range is \$350-\$450 per kilowatt-hour (kWh) delivered in a DC configuration? Please explain.
6. What demonstration system size would be needed to persuade you to at least partially automate the majority of your LDES system manufacturing capability to deliver a future order in the range of 200-400 MWh in a 12-24-month delivery window?
 - a. What is the largest system on a kWh basis you have fielded and have been operating to date?
 - b. What is the largest system on a kWh basis that you have a firm order to deliver in the next 12-18 months?

¹ Assembly Bill (AB) 205 (2022) https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=202120220AB205

Demonstration Sites – questions targeting site hosts and adopters, but open to all respondents:

7. How can funded LDES projects better prioritize benefits for under-resourced (low-income and disadvantaged) communities and Tribes? Should benefits to under-resourced communities and Tribes be strict requirements in the solicitation or incentivized through solicitation scoring criteria bonus points? Should match fund requirements be reduced or potentially eliminated? What are the potential barriers to the funding and development of successful LDES projects in under-resourced and tribal communities? Please explain. Specific examples are welcomed.
8. Should demonstration projects be required to be located in Tier 2 or 3 High Fire-Threat District areas (as defined by the CPUC²)? Or should these siting locations be incentivized through solicitation scoring criteria bonus points? Please explain.
9. Do demonstration projects provide more value in certain service territories (i.e. investor-owned utilities, publicly-owned utilities, community choice aggregators, rural electric cooperatives, and electric service providers)? If so, why?
10. Is there any preference for behind-the-meter or front-of-the-meter demonstrations for the system size ranges listed in question 1? If so, why?
 - a. For a behind-the-meter installation, does your LDES technology have any advantages to the utility regarding the utility interconnection agreement?
 - b. If you are considering a front-of-the-meter configuration, have you applied for a CAISO reservation? If so, when would that reservation become effective?
11. Are you considering a project for which the interconnection agreement is already approved?

California Environmental Quality Act (CEQA):

12. What would be the typical footprint range needed to deploy certain LDES systems for the three system size ranges listed in question 1?
13. When a GFO is posted, proposals are generally due to the CEC within 8 to 12 weeks, and the CEQA process is generally required for the CEC to award grant funding to a project. The CEC has learned from the initial LDES projects that the LDES systems have a greater footprint than systems exempted from CEQA. Therefore, an environmental impact report or negative declaration is normally required for the potential projects, as are other actions required by CEQA. For the system size ranges listed in question 1, how long would it take to complete the CEQA process (and the National Environmental Policy Act (NEPA) if applicable) for your LDES system, and approximately how much would these processes cost?
14. Is it reasonable to require that all GFO applicants complete discretionary permitting and CEQA through their local public agency before submitting a proposal for a project in the sizes defined in question 1? Please explain.

² [California Public Utilities Commission Fire-Threat Maps and Fire-Safety Rulemaking](https://www.cpuc.ca.gov/industries-and-topics/wildfires/fire-threat-maps-and-fire-safety-rulemaking)

15. If the timeline and costs are not feasible, what preliminary CEQA studies or information would you recommend be completed before proposals are submitted to the CEC? Additionally, how long would it take to complete the preliminary CEQA studies or information for your proposed LDES technology for the system size ranges listed in question 1?
16. What environmental process would be required if your project were not subject to CEQA? Additionally, how long would it take to complete the environmental process for your proposed LDES technology for the system size ranges listed in question 1?

Greenhouse Gas (GHG) Reductions:

17. As stated in the "Background" section of this RFI, the funds are provided by GGRF, and therefore, CEC is required to track GHG reductions provided by the installed systems.
 - a. What combination of LDES and renewables is needed to maximize the GHG reductions from a project?
 - b. Is there a difference in what your technology can provide in GHG reductions if installed in a behind-the-meter or front-of-the-meter configuration?

Others

18. What lessons have you learned from the LDES projects you have demonstrated, deployed, or operated to date? What major technical, economic, or policy barriers have affected the demonstration, deployment, or operation of LDES systems in the last two to four years? What are some potential solutions to these barriers? How can future funding from this GFO help solve these barriers?
19. Are there any additional comments or input you want the CEC to consider as they develop this future GFO?

How to Provide Information

Respondents to this RFI should not include any proprietary or confidential information. Comments may be submitted through 5:00 p.m. PST on February 16, 2024, using the [e-commenting feature for docket 23-ERDD-08](#), at <https://efiling.energy.ca.gov/EComment/EComment.aspx?docketnumber=23-ERDD-08>.

To use the e-commenting system, respondents will be asked for a full name, email address, comment title, and either a comment or an attached document (.doc, .docx, or .pdf format). After a challenge-response test is used by the system to ensure that responses are generated by a human user and not a robot, click on the "Agree & Submit Your Comment" button to submit the information to the CEC's Docket Unit.

Written comments, attachments, and associated contact information included within the documents and attachments will become part of the viewable public record and searchable on the internet.

Respondents to this RFI are encouraged to use the electronic filing system described above to submit information. If you are unable to submit electronically, a paper copy of your information may be sent to:

California Energy Commission
Docket Unit, MS-4
Re: Docket No. 23-ERDD-08
715 P Street
Sacramento, CA 95814-5512

Alternatively, you may email responses to docket@energy.ca.gov with the subject line "23-ERDD-08: RFI LDES".

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 as soon as possible but at least five days in advance of the submission due date of the RFI Comments. The CEC will work diligently to meet all requests based on availability.

Media Inquiries. Email mediaoffice@energy.ca.gov or call (916) 654-4989.

General Inquiries: Email Hatice Gecol at hatice.gecol@energy.ca.gov or call (916) 776-0688.

Availability of Documents: Documents for this RFI will be available at the CEC's [docket log for docket number 23-ERDD-08](#), at <https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=23-ERDD-08>.

When new information is posted, an email will be sent to those subscribed to the Long Duration Energy Storage (LDES), Energy Research and Development, Electric Program Investment Charge (EPIC) Program, Distributed Generation, Decarbonization Topics, Energy System Infrastructure Planning, Tribal Program, and Disadvantaged Communities Advisory Group. To receive these notices or notices of other email subscription topics, visit [Subscriptions](#), at <https://www.energy.ca.gov/subscriptions>.

Dated: December 29, 2023 at Sacramento, California.

Cammy Peterson
Deputy Director
Energy Research and Development Division

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