

DOCKETED

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Energy Storage Innovations to Support Grid Reliability Concept

Additional submitted attachment is included below.



January 12, 2024

California Energy Commission
715 P Street
Sacramento, CA 95814

RE: Docket 23-ERDD-01 – Energy Storage Innovations to Support Grid Reliability Concept

Dear Commission Members and Staff:

Redflow appreciates the opportunity to provide comments on the CEC's concept paper on Energy Storage Innovations to Support Grid Reliability. The CEC has been world-leading in its support of innovative energy storage technologies in support of the transition to a zero carbon energy system, and the programs that the CEC develop have been some of the most innovative in the world and are very successful at creating the ecosystem necessary to ensure that California succeeds in its energy transition.

Redflow manufactures long duration energy storage systems made from zinc bromine, a safe and environmentally friendly alternative to lithium ion. Our technology is modular and scalable from tens of kWh to hundreds of MWh, and can operate in a wide range of environmental conditions without additional cooling or heating. With more than 270 deployments around the world, Redflow's technology has been deployed in a variety of applications and the company is scaling its manufacturing to support deployment at scale and for new use cases, including the provision of grid services in both behind-the-meter and front-of-meter situations.

Given Redflow's high level of technological readiness, Redflow has chosen to respond to the General and Group 2 questions from the CEC below:

General

1. Do the Project Groups described in Section IV.A address the primary objectives of the solicitation to enable more strategic and high-value implementation of energy storage to support grid reliability?

Yes, although the DOD Energy Storage Grand Challenge cost target of \$0.05/kWh is vague and leaves significant room for manipulation. It was also set prior to COVID, and supply chain impacts from COVID may cause this target to be unrealistic without accounting for inflation.

2. In addition to the target performance metrics outlined in Section IV.A regarding LCOS, calendar life, and roundtrip efficiency, what other metrics should be reported?

Commercially deployed projects often require performance targets for energy capacity degradation over time and annual system availability. For a technology to be commercially viable, these metrics should be evaluated against commercially competitive technologies, and therefore they should be reported as part of this solicitation.



3. CEC is considering releasing this funding opportunity as a two-phase solicitation that includes a Pre-Application Abstract phase and Full Application phase. Projects that are successful in the Abstract phase will have two months to prepare a Full Application. Is this approach preferable to applicants or should the CEC consider a one-phase solicitation without the Pre-Application Abstract phase?

This approach is preferable, as it provides an opportunity for the project team to provide context that may not always be apparent in a written submission.

4. Are the draft funding levels and match requirements appropriate to achieve the desired outcomes of each Group?

The funding levels and match requirements are generally appropriate, except for the 10% match requirement for disadvantaged, low income and tribal communities. This requirement represents a significant barrier to participation for many of such communities, as they, by their nature, do not have capital to provide. The match requirement should therefore be removed for projects in disadvantaged, low income and tribal communities. Alternatively, the 10% match requirements should be converted into a preference in the evaluation process, but not a hard requirement.

Group 2

1. Is a four-year project timeline feasible for Group 2 projects to meet the objectives of the solicitation? Are there any potential barriers or challenges in implementing these types of projects over four years?

Provided CEQA is sufficiently progressed and there are no unforeseen interconnection barriers, four years is sufficient. Redflow recommends CEC grant contract terms allow flexibility for unforeseen interconnection challenges that may arise during project implementation.

2. Are there any use cases missing from Table 1 that should be included?

In the T&D Related category and /or the site-specific & local services category, Redflow suggests adding a category specifically for wildfire resilience. Alternatively, Redflow suggests that high wildfire risk areas could be added as an additional community type that projects in which projects could benefit from a lower match funding requirement.

3. What are some examples of innovative use cases for commercial Li-ion batteries that are worth exploring in this solicitation?

Most types of lithium ion batteries are fully commercialized and therefore Redflow encourages the CEC to look closely at the TRL of the li-ion technology used in a bid to this solicitation in order to determine eligibility.



4. Is the minimum scale of demonstration (>100 kW capacity) reasonable?

Redflow suggests this could be significantly higher – perhaps ≥ 250 kW – given the \$5 million minimum award amount in this category. Redflow also suggests a minimum discharge duration capability at the minimum power rating of 4 hours or more.

5. Do the Group 2 requirements sufficiently encourage projects to be in and benefitting disadvantaged communities, low-income communities, or Native American tribes?

No. As noted above, the 10% match funding requirement for these communities represents a significant barrier to participation. By their nature, they typically do not have capital to provide. We therefore believe the match requirement should be removed for projects in disadvantaged, low income and tribal communities.

6. To maximize the impact and benefits of Group 2 demonstrations, what partnerships are most critical?

To maximize the impacts of Group 2 demonstrations, technology providers typically need to have strong project developer partners, as most technology providers do not have the capital or capability to go through the incredibly complex, capital intensive and time consuming project development process. Furthermore, often such technology providers will require partnerships with other types of equipment providers, such as for power electronics, microgrid controllers, etc.

7. What barriers and opportunities exist for partnerships with utilities or other stakeholders to demonstrate transmission or distribution-connected energy storage use cases?

We believe T&D benefits are a particularly underdeveloped set of services that grid connected energy storage can provide, and are encouraged by this and other CEC solicitations that seek solutions to T&D use cases.

Barriers to the provision of front-of-meter services for new grid technologies can be numerous, from performance bond requirements that are difficult for startups to obtain, to cybersecurity and other codes and standards that are best solved collaboratively with utilities rather than imposed by utilities as a requirement for startups to solve independently.

8. What data would be useful to gather and publish for measurement and verification purposes and to inform bankability and replicability?

Redflow recommends that data on RTE, capacity, and availability are all provided for M&V purposes. In particular, data demonstrating how RTE, capacity and availability are affected by environmental conditions and use cases (e.g. high vs low power applications, daily cycling vs less frequent or more frequent use, and ambient temperatures when cycling) could significantly advance the knowledge of stakeholders and provide critical data to the industry.

9. Is the 12-month minimum demonstration period requirement reasonable for Group 2 projects?

Yes.



In addition to comments on the above questions, Redflow wishes to point out that CEC funding programs often have other very real barriers to building the kind of partnerships that will make commercialization programs such as this one successful. To name a few:

- CEC budgets typically don't allow for any sort of contingency in the budget, which can make design/build projects extremely high risk to developers;
- Typically, CEC grants of this nature primarily benefit technology providers, which is as intended. However, for a technology provider to successfully execute a CEC grant, they usually need to involve other for-profit companies such as project developers that don't receive direct benefits from the successful execution of a CEC grant. CEC's prohibition of profit for the grant recipient can make it extremely difficult for technology partners to recruit best-in-class partners, because the rules severely diminish the pool of for-profit companies that are willing to participate. This is particularly problematic for small LLCs that operate on a for-profit basis, because the "salary" of owners of LLCs are, under tax law, considered a profit share from the LLC.
- The CEC should provide additional guidance around how federal tax credits impact grants – in particular, issues such as potential bonus credits, and the monetization of tax credits without sufficient tax liability to property take them as a normal credit.
- In addition, the CEC needs to provide clarity of whether grants have taxable impacts as income on recipients' tax returns, as taxation of grant dollars can represent a significant element of risk and potential losses for grant recipients.

Thank you for considering our feedback, and for the opportunity to participate in this stakeholder process.

With Sincere Appreciation,

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