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RockRise (Black & Veatch_Cykyl Systems) Comments to EPIC Draft Solicitation

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?

Answer: Yes, 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. Specifically, Group 1 focuses on applied research and development to improve energy storage value, safety, and sustainability, which will contribute to the overall goal of increasing the deployment of energy storage to enhance grid reliability. Group 2 focuses on multiple-use case demonstrations for energy storage value stacking, which will help maximize the benefits and value of future energy storage procurements to support grid reliability.

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?

Answer: In addition to the target performance metrics outlined in Section IV.A regarding LCOS, calendar life, and roundtrip efficiency, the solicitation should also require applicants to provide detailed information and plans on several other metrics, including:
- How much of the 52,000MW the proposed innovation could meet by 2045.
- Potential cost savings the proposed innovation could provide compared to existing technologies. (CAPEX, OPEX, avoided costs, etc.)
- Potential Environmental impact (or improvement) of the proposed innovation, such as waste, air/water pollutants/contamination, fire, etc.
- Potential maximum duration of power & degradation (for storage) that can be expected from the proposed innovation (close to #1)

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?

Answer: The approach of a two-phase solicitation with a short (1-2 page) Pre-Application Abstract phase (no longer than 30 days) followed by a Full Application phase can be advantageous for both the applicant and the funding agency. The Pre-Application Abstract phase allows applicants to provide a brief summary of their

proposed project and receive feedback from the funding agency before submitting a full application. This can help ensure that the applicant is focusing on the most relevant aspects of their proposed project and increase the likelihood of success in the Full Application phase. Additionally, the Pre-Application Abstract phase can help the funding agency better manage the review process and allocate resources more efficiently.

That said, the disadvantage of this approach is that it might lengthen the total time of the application, review and award process. One of the main disadvantages of government funding for technology startups is that it can be a slow process. We recommend the CEC review the overall timeline with an aim to reduce the time of a two phase process to be at least as fast as a single phase approach.

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

Answer: Overall, the draft funding levels and match requirements appear to be appropriate for achieving the desired outcomes of each Group, as they provide sufficient funding to support the development and demonstration of innovative energy storage technologies and use cases while also requiring a significant cost-share from the applicants to ensure a strong commitment to the project.

Group 1

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

Answer: A three-year project timeline is feasible for Group 1 projects to meet the objectives of the solicitation, as long as the project team has a clear and well-defined project plan that considers potential barriers and challenges and has adequate contingency for meeting the 3 year timeline.

That said, Perhaps a more flexible timeline, wherein 3 years (or any number) is treated as a guideline more than a requirement would show that the goal is to find the best option, not just an arbitrarily timely one. Similarly, if a particular ES technology demo could move faster than 3 years for a group 1 project or 4 years for a group 2, and yet still achieve all the expected goals with rigor and integrity, that should also be allowed. In fact, if shown feasible, a path for a project to achieve both group 1 and group 2 objectives, should also be enabled along with shorter timelines.

2. What level of analysis would an applicant be able to provide to demonstrate supply chain sustainability improvements of a proposed innovation? For example, could applications be expected to describe the source and lifecycle impacts of relevant materials, ethics or workforce implications, and/or manufacturing scale-up capabilities?

Answer: The level of analysis could be two fold, reflecting that a new technology can

both improve one or more unsatisfactory sustainability aspects and/or may degrade one or more sustainability aspects. Too commonly, a new tech effort is either asked to show too much sustainability perfection including in relation to matters it doesnâ€™t touch or is not asked at all about any new issues that tech may bring about that are not normally given attention.
For any area that a tech claims a sustainability improvement that is critical to its value, that amount of improvement needs to be documented to a level commensurate with the value advance claimed, in terms of both the size of the absolute change and the degree of certainty of that value being realized.
In particular, applicants might be asked to demonstrate how the critical materials, components and other resources needed for their technology can successfully scale to enable its rapid commercialization without substantial negative impacts or constraints. The degree to which this can be demonstrated could be one of the ways the CEC evaluates applicants.

3. What data would be useful to gather and publish to validate technology improvements and accelerate commercialization?

Answer: To validate technology improvements and accelerate commercialization, gathering and publishing data on the performance, efficiency, and reliability of the technology is critical. Specific measures of projected substantive improvements in known bottlenecks, performance shortfalls, or collateral impacts should be detailed in advance, with verification by third parties. All relevant parameters, such as LCOS, CapEx, OpEx, round trip efficiency, supply chain impact and waste production, as well as social and environmental impacts, should be considered. The CEC can will accelerate commercialization simply by providing the funding anticipated in this solicitation by putting its certification and endorsement behind to technologies that demonstrate a sufficiently substantial level of advance. We also recommend that the CEC include planning for post-pilot scale-up and commercialization as part of the requirements for award. This could include , backed up by the data it publishes, including financial, regulatory, and political assistance from CEC or similar entities. By doing so, potential investors, customers, and partners can better understand the technology's potential impact, and its certification funding by a reputable organization can increase its credibility and marketability.

4. What emerging technologies can be demonstrated to further reduce energy storage safety risks?

Answer: No comment at this time.

5. Are there additional energy storage applied R&D or innovation opportunities not captured by this Group 1 concept?

Answer: Besides advances in the type of tech or how well it performs, advances in how a tech is scaled are also critical. Since the problem is so big, and because doing a real lot more of something is not the same as just doing more of a smaller size thing,

opportunities related to advantages in scaling might also be good to include among the technologies available for Group 1.

6. Should there be separate qualifications or target metrics for short-duration and long-duration storage within Group 1?

Answer: Yes and no. Short and long duration do need to respond to certain differing metrics as well as some common ones, but another question might be to ask whether a given technology intended for long duration storage might also serve as short duration storage.

7. Should real-world field demonstrations be required or optional for Group 1 projects?

Answer: Real-world field demonstrations should be required for Group 1 projects. Field demonstrations provide an opportunity to validate the performance, reliability, and safety of energy storage technologies in real-world conditions. This can help to build confidence in the technology and accelerate its commercialization. Additionally, field demonstrations can help to identify any potential barriers or challenges that may impact the deployment of the technology at scale and inform future R&D efforts. While laboratory testing is important for evaluating the performance of energy storage systems under controlled conditions, field demonstrations are necessary to validate their performance and reliability in real-world settings. Therefore, requiring real-world field demonstrations for Group 1 projects is essential for ensuring the success of these projects.

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?

Answer: The four-year project timeline for Group 2 projects outlined in the solicitation is feasible to meet the objectives, but there may be potential barriers or challenges in implementation, such as complexity in integration, resource availability, and unforeseen circumstances. To mitigate these risks, the CEC may consider providing flexibility in the project timeline, allowing for extensions if necessary, and providing support and resources, such as technical assistance, additional funding, or access to specialized equipment or personnel.

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

Answer: No, they the use cases presented in table 1 appear to be sufficient at this time.

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

Answer: No comment at this time.

4. Is the minimum scale of demonstration capacity reasonable?

Answer: The draft solicitation calls for a minimum size of 100 kW of power output. The final solicitation should clarify if there is an associated minimum duration of storage corresponding to that output, for example 1 hr. While the minimum scale of demonstration capacity outlined in the solicitation appears to be reasonable, applicants may want to demonstrate the potential for their proposed innovation or combination to reach much larger capacities in the future. This could be achieved through the use of scalable design and manufacturing processes, as well as through projections for future deployment and potential market share.

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

Answer: Overall, while the Group 2 requirements do include provisions to encourage projects to be located in and benefit disadvantaged communities, low-income communities, or Native American tribes, there may be additional measures that could be taken to further support and incentivize these efforts. For example, the CEC could provide additional technical assistance or resources to help applicants identify and engage with these communities, or could provide additional funding or incentives for projects that have a significant impact on these communities.

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

Answer: To maximize the impact and benefits of Group 2 demonstrations, partnerships with key stakeholders across the energy storage and electricity sectors will be critical. This could include utilities, regulators, technology providers, project developers, engineering/construction contractors, and other relevant stakeholders. Overall, partnerships with key stakeholders across the energy storage and electricity sectors will be critical to maximizing the impact and benefits of Group 2 demonstrations, and the CEC should encourage and facilitate collaboration and coordination among these stakeholders.

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

Answer: For a grid-tied demonstration, NOT a project that is connected to a â€œdemonstration gridâ€□.

Barriers:
- complexity of integrating (pre-commercialized) energy storage with the grid and transmission or distribution infrastructure. This can require significant planning,

coordination, and testing, which can be time-consuming and costly.
- regulatory and financial barriers that can hinder the deployment of (pre-commercialized) energy storage at scale. For example, regulatory frameworks may not be optimized for energy storage, which can result in financial and market barriers that can hinder the deployment of energy storage at scale.

Opportunities
- Given achievement of commercialization, utilities can benefit from energy storage by using it to reduce peak demand, improve reliability, and integrate renewable energy resources. In addition, energy storage can help utilities to meet regulatory requirements and improve customer satisfaction.

Partnerships with utilities and other stakeholders will be critical to work through barriers and leverage opportunities. This could include working with utilities to identify specific demonstration opportunities and use cases, as well as collaborating on research and development efforts to improve the performance and cost-effectiveness of energy storage. Additionally, the CEC can help support these partnerships by providing technical assistance, research support, and funding opportunities that are aligned with the needs and priorities of utilities and other stakeholders.

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

Answer: To support measurement and verification purposes and to inform bankability and replicability, there are several types of data that would be useful to gather and publish:
- Performance data: This includes data on the energy storage system's performance, such as its efficiency, round-trip efficiency, discharge time, and response time. This data can be used to evaluate the system's performance and efficiency over time and to compare it with other energy storage systems.
- Economic data: This includes data on the system's economic performance, such as its cost-effectiveness, return on investment, and payback period. This data can be used to evaluate the system's financial performance and to assess its bankability and replicability.
- Environmental data: This includes data on the system's environmental impact, such as its carbon footprint and emissions reduction potential. This data can be used to evaluate the system's environmental benefits and to support sustainability goals.
- Operational data: This includes data on the system's operation and maintenance, such as its uptime, maintenance costs, and service life. This data can be used to evaluate the system's reliability and to inform decisions around maintenance and replacement.

Overall, gathering and publishing this data can help support measurement and verification purposes, inform bankability and replicability, and support the growth and development of the energy storage market.

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

Answer:: While the 12-month minimum demonstration period requirement is generally reasonable for Group 2 projects, applicants should carefully consider the specific needs and requirements of their proposed project and determine whether a longer demonstration period may be necessary to fully demonstrate the capabilities and potential of their proposed innovation or combination. For instance, the 12-month minimum demonstration period may not be sufficient for all projects, particularly those that involve more complex or innovative technologies. In these cases, longer demonstration periods may be necessary to fully evaluate and optimize the system's performance and capabilities given the number of new elements that need to be tested and& proven. Each new element may need a year itself.