California Community Choice Association

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1. Please provide a summary of your organization's comments on the Issue Paper & Straw Proposal on Outage Management, Nonlinearity, & SOC Clarification and May 9, 2025 meeting discussion:

The California Community Choice Association (CalCCA) appreciates the opportunity to comment on the Storage Design and Modeling Issue Paper and Straw Proposal. In summary, these comments recommend that the CAISO:

- Evolve its Outage Management System (OMS) to align with storage-specific outage types and characteristics;
- Revise its proposed path forward for representing nonlinearity to implement a Master File parameter expeditiously, and in the interim, direct storage resources to use the "Technical Limitations Not in the Market Model" outage card; and
- Explore the state-of-charge (SOC) definition to ensure accurate representation of unit capabilities.

2. Please provide your organization's comments on Outage Management Enhancements:

CalCCA supports the CAISO's straw proposal to evolve its OMS to align with storage-specific outage types. Resources participating in the CAISO markets should be able to accurately represent their availability to the CAISO. There is currently a lack of clarity around how best to do so for storage resources using the existing OMS functionality. For these reasons, the CAISO should move forward with its straw proposal to assess how to enhance OMS to better reflect storage availability.

3. Please provide your organization's comments on Representation of Nonlinearity:

The CAISO should revise its proposed path forward for representing nonlinearity, implement a Master File parameter expeditiously, and in the interim, direct storage resources to use the "Technical Limitations Not in the Market Model" outage card. The Issue Paper and Straw Proposal explains that lithium-ion battery storage systems exhibit nonlinearity, in which their charging and discharging capabilities change as they approach their SOC limits at rates that are not easily predictable.[1] Ahead of summer 2025, the CAISO proposes to use the "Plant Trouble" nature of work outage card, a resource adequacy availability incentive mechanism (RAAIM) applicable outage card. When these outage cards are used for nonlinearity, the CAISO proposes the resource include a note in the outage card to state that the outage is related to nonlinearity. Longer term, the CAISO indicates that integrating resource-specific values into the Master File is the "most desirable and lasting" alternative.[2]

CalCCA agrees that a Master File parameter is the best way to reflect nonlinearity. The CAISO should, as the preferred and most durable approach, seek to expeditiously implement a Master File parameter. In the interim, however, the CAISO will need to provide clarity around which outage card storage resources should use to reflect non-linearity. The CAISO should not rely on the "Plant Trouble" outage card, which is RAAIM-applicable and does not accurately describe the reason for the outage. Nonlinearity is a fundamental characteristic of the resource, not always an issue of unavoidable outage. Nonlinearity for storage resources is comparable to the operational characteristics of multi-stage generating (MSG) resources. Like MSG resources, which have multiple operating configurations and only one such configuration can be operated in any one interval, storage resources can have different operating characteristics that they operate under depending on their state-of-charge. The CAISO's longer-term solution is aligned with how MSG operating configurations are reflected. The "Plant Trouble" outage card, on the other hand, is used when "plant equipment fails or is in danger of imminent failure

resulting in curtailment of dispatchable capacity."[3] When an outage truly reflects the definition of "Plant Trouble," RAAIM application (or unforced capacity application) should apply to provide resources with incentives to perform planned maintenance to avoid equipment failures and improve the reliability of the resource. Nonlinearity does not fall within this definition, however.

Instead, the CAISO should apply the "Technical Limitations Not in the Market Model" outage card to reflect nonlinearity in the interim. This outage card is used when to "provide notification that resource is unavailable due to technical limitations not captured in the CAISO market model and that result in infeasible dispatches because they are inconsistent with the resource's design capabilities."[4] This definition better reflects the reason for submitting an outage card in cases of nonlinearity. The CAISO's ultimate goal is to modify the market model to adequately reflect non-linearity through the Master File. It would be contradictory to apply RAAIM to non-linearity in the interim, when the long-term solution is to reflect this characteristic in the market model. The CAISO should specify that storage resource non-linearity should be reflected through the "technical limitations not in the market model" outage type, which is RAAIM exempt, until a Master File parameter can be implemented to reflect these characteristics. If the CAISO is concerned that this outage card will be used inappropriately to avoid RAAIM when the resource is not experiencing nonlinearity constraints, the CAISO should work with owners/operators of storage resources and the Department of Market Monitoring to define clearly when resources can use this outage to address nonlinearity.

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[1] *See* Issue Paper and Straw Proposal, at 9.

[2] *Id.*, at 12.

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[3] CAISO, *Business Practice Manual for Outage Management*, Version 30 (July 27, 2023), at 22.

[4] *Ibid.*

4. Please provide your organization's comments on SOC Clarification:

CalCCA supports the CAISO's plan to explore SOC in this initiative to ensure SOC accurately represents each units' capabilities. In the Issue Paper and Straw Proposal, the CAISO discusses the need to further clarify the expectations related to the energy available from storage devices. The CAISO also introduces the term "inaccessible energy," in which "a resource appears to have available energy based on its telemetered SOC," but "underlying limitations could prevent it from fully adhering to dispatch instructions."[1] It would be helpful for this initiative to clarify the definition of SOC and its relationship to energy availability. CalCCA generally agrees with California Energy Storage Alliance that what CAISO defines as inaccessible "is in fact accessible, but at different operational parameters and with costs not currently reflected in the market."[2] Alignment regarding SOC expectations is a worthwhile objective for this initiative.

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[1] Issue Paper and Straw Proposal, at 13.

[2] *Id.*, at 15.

5. Please provide any additional comments:

CalCCA has no additional comments at this time.