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Nextpower EPIC V Comments

Additional submitted attachment is included below.

[redacted]

RE: Docket 25-EPIC-01 – Electric Program Investment Charge 2026–2030 Investment Plan (EPIC V)

As California experiences rapid load growth, increasing renewable energy curtailment, and rising costs associated with grid expansion, EPIC V has an opportunity to advance research, development, and demonstration activities that improve affordability, reliability, and resilience for electricity ratepayers. Consistent with EPIC V's focus on leveraging distributed energy resources, load flexibility, and accelerated integration of clean resources, Nextpower recommends prioritizing research that increases utilization of existing grid infrastructure, reduces renewable curtailment, streamlines integration of beneficial loads, and develops scalable pathways for commercialization of emerging energy technologies. California has an opportunity to become a national leader in next-generation distributed energy architectures that align growing electric demand with clean energy resources while delivering measurable benefits to ratepayers. Specifically, Nextpower recommends that EPIC V include research and demonstration initiatives focused on:

<u>DC-Coupled Renewable Energy Systems</u>

Support demonstration projects that integrate solar generation, battery storage, and other distributed energy resources through advanced DC-coupled architectures. These systems can reduce conversion losses, increase renewable energy utilization, improve resilience, and reduce distribution system impacts while increasing utilization of existing grid infrastructure compared to traditional AC-coupled configurations.

Research should evaluate performance, economics, interoperability, controls, and scalability, including potential benefits such as reduced interconnection costs, deferred distribution infrastructure upgrades, and improved resilience during grid outages.

<u>Repowering Architectures</u>

California's growing fleet of solar resources is beginning to enter major equipment replacement and modernization cycles, creating an opportunity to increase renewable utilization and system value while leveraging existing generation sites and interconnection infrastructure. Demonstration projects should evaluate approaches that increase asset productivity, reduce renewable curtailment, improve operational flexibility, and extend the useful life of existing clean energy assets without requiring new points of interconnection or major transmission upgrades.

Particular emphasis should be placed on repowering strategies that combine solar generation, battery storage, and flexible end-use loads through DC-coupled architectures. Research should assess the technical, economic, and grid benefits of utilizing existing interconnection capacity

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more efficiently, supporting load growth with lower infrastructure costs, improving resilience, and accelerating deployment timelines relative to greenfield development. Repowering research can help maximize the value of existing renewable energy facilities and associated interconnection infrastructure, reducing the need for costly new grid investments while supporting California's reliability and decarbonization goals.

Flexible Loads and Grid-Supportive Microgrids

California is experiencing significant growth in electricity demand from emerging high-power loads, creating new opportunities to align load growth with renewable energy resources and existing grid infrastructure. EPIC V should explore innovative approaches for integrating flexible, high-utilization loads with renewable generation and energy storage assets in ways that provide measurable benefits to grid reliability, renewable utilization, and ratepayer affordability. Demonstration projects should evaluate how flexible loads can be integrated with renewable energy systems and operated as grid-supportive resources that increase renewable utilization, reduce curtailment, alleviate transmission constraints, and provide dispatchable demand-side flexibility that supports reliability and affordability. Potential applications may include computing infrastructure and other emerging high-power loads that can respond dynamically to grid and renewable energy conditions.

Particular attention should be given to high DC/AC ratio renewable energy facilities, point-of-interconnection, front-of-meter, and customer-sited architectures that increase utilization of renewable generation and existing interconnection infrastructure while supporting grid reliability and reducing infrastructure costs. Demonstrations should evaluate how flexible loads can absorb excess renewable generation, reduce curtailment, improve utilization of existing transmission infrastructure, and lower overall system costs associated with serving rapidly growing electric demand. Such projects could help establish California as a national leader in integrating flexible loads with clean energy resources while creating scalable models for reducing renewable curtailment, improving grid utilization, and lowering long-term costs for ratepayers.

These recommendations support EPIC V priorities related to **DER Integration** through advanced DC-coupled architectures, microgrids, and flexible loads; **100% Net Zero Carbon** through renewable utilization, curtailment reduction, and integration of flexible loads with clean energy resources; and **Climate Adaptation and Resilience** through local generation, islandable microgrids, and improved resilience to extreme weather events and grid disruptions.

Nextpower appreciates the opportunity to provide input and looks forward to supporting California's clean energy innovation ecosystem.

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