



September 4, 2026

Subject: Comments on SPS's Revised 2026 IRP *Statement of Need* and *Action Plan*

The Long Duration Energy Storage Council ("LDES Council") respectfully submits comments to the Southwestern Public Service ("SPS")'s 2026 IRP's Revised *Statement of Need* and *Action Plan*. The LDES Council appreciated SPS and Xcel Energy for the opportunity to participate in discussions at its workshops on August 26 and 27.

The LDES Council is a global trade association focused on advancing the deployment and adoption of long duration energy storage ("LDES").¹ LDES encompasses a suite of technologies that store energy and dispatch it as power, heat, or cooling for extended periods of 8 hours or longer, including chemical, thermal, mechanical, and electrochemical technologies. The LDES Council represents members across all categories, with LDES technologies already being deployed across six continents today.²

The LDES Council is submitting written comments on SPS's 2026 IRP because decisions made now about the *Statement of Need*, *Action Plan*, and modeling assumptions will directly shape which resources are eligible for and ultimately selected in future procurements. The modeling results already demonstrate that LDES can be part of a diverse, least-cost portfolio but fully capturing its value requires evaluating a range of durations and recognizing benefits beyond short-term energy arbitrage: firming capacity, renewable/carbon-free integration, resilience, avoided system overbuild, and long-term customer cost savings. **The LDES Council's comments therefore aim to ensure that SPS's planning framework appropriately represents the differentiated capabilities of LDES at different durations and most accurately evaluates the most cost-effective resources to meet state policy objectives: future reliability, affordability, and clean-energy needs.**

These written comments provide:

1. Assessment of IRP Modeling Results for LDES and Recommendations for Future Modeling
2. Comments on the Revised *Statement of Need*, Regarding Resource Category Definitions
3. Comments on the *Action Plan*, Regarding Procurement Framework Plans

¹ LDES Council. [Ldescouncil.com](https://ldescouncil.com)

² LDES Council. Project Map. <https://ldescouncil.com/project-map/>



Assessment of IRP Modeling Results for LDES and Recommendations for Future Modeling

I. Current Modeling Limits LDES to a Generic 100-Hour BESS

We appreciate that SPS's preliminary modeling already demonstrates potential system value from LDES, including the economic selection of 100-hour storage and a sensitivity in which a 100-hour LDES resource can replace existing thermal capacity at Quay on an essentially cost-competitive basis while maintaining zero expected unserved energy. Those are important findings that depict the need for longer duration storage.

The primary concern with the current modeling is that it appears to jump from four-hour BESS directly to a generic 100-hour BESS. Modeling LDES only as a 100-hour BESS does not capture the range of commercially available LDES technologies, durations, cost structures, and operating characteristics. Including intermediate duration classes would allow the model itself to determine whether those resources can meet SPS's identified needs at lower system cost. We therefore encourage SPS, as it continues its planning and procurement process, to avoid treating the choice as simply one between four-hour batteries and 100-hour storage.

II. LDES Cost Assumptions

As highlighted in the LDES Council's *2026 Cost Benchmarking Report*, continued deployment, manufacturing scale-up, and innovation could enable cost reductions of up to 47% by 2030 across certain LDES technologies.³ Ensuring that system modelling appropriately represents a range of emerging storage technologies can therefore help support innovation, industrial scale-up, and future affordability for consumers. According to the report, costs are declining for all types of LDES technologies between 2025 and 2030, up to 47%. The report presents costs on a consistent basis across a wide range of LDES solutions, providing practical insights for long-term planning, modeling, and policy design. Updating cost assumptions to reflect the rapidly improving economics of LDES will help SPS identify more affordable reliability solutions and reduce long-term costs for consumers.

III. Why Modeling Storage by Multiple Durations will achieve SPS's Mandate for its IRP

The value of storage as a flexibility resource depends on the specific resource portfolio and evolves as the portfolio and system needs change. Inaccurate modeling assumptions could therefore lead to the selection of storage with a duration that does not best match system needs.

Importantly, LDES is not a single storage technology or duration category, spanning electrochemical, chemical, mechanical, and electrochemical technology families. It includes both technologies that store power and discharge power, technologies that store power, convert to heat, and discharge back as power,

³ Long Duration Energy Storage Council & Electric Power Research Institute. (2026). Cost benchmarking for long duration energy storage solutions.



and technologies that store power and discharge as heat for industrial demand. Resources can provide 8, 12, 16, 24, 48, 72, 100, 200, or more hours of storage, and those different durations can serve different system needs. A 100-hour BESS can supply power for multiday outages and extended durations, but it is more expensive than a 4-hour BESS. Shorter duration, longer duration, and multi-day storage hold varying cost requirements, and each category serves a distinct system need in a least-cost portfolio. The U.S. Department of Energy's Pathways to Commercial Liftoff report for LDES recognizes this distinction directly, dividing the market into short-duration, inter-day (10–36 hour), and multi-day/week (36–160+ hour) segments, each with its own cost and performance trajectory.⁴

Intraday Storage (8–24 hours) Differentiation: Specifically, 8–24-hour LDES can address system needs that extend beyond the daily cycling and shorter peak periods typically served by SDES. It allows utilities to shift larger volumes of energy across extended periods of high demand or renewable scarcity, especially when shorter-duration resources may be depleted. This creates distinct portfolio value by reducing the risk of oversaturated SDES capacity or costly new generation buildouts needed to maintain reliability. It maximizes existing and new grid assets on both the supply and demand side. On the demand side, thermal energy storage (TES) can provide similar flexibility by shifting electricity consumption away from peak or constrained periods while storing energy as heat for use over extended durations.

Multi-day Storage (24+ hours) Differentiation: Because 24 hour or longer storage shifts large quantities of energy across multiple days, rather than within a single daily cycle as is the case with short-duration storage, it serves a distinct function on the grid. Specifically, LDES allows utilities to address extended periods of high demand or low renewable output and scarcity that shorter-duration resources may be unable to serve. This capability provides distinct portfolio value by delivering firm, dispatchable capacity comparable to a natural gas peaker plant, but without combustion emissions. LDES can also reduce the amount of other capacity needed to meet the same reliability and clean energy objectives by capturing larger quantities of renewable generation and making that energy available for dispatch over extended periods.

Differentiation of storage durations is increasingly adopted by statute in other states. These include Virginia's 2026 energy storage bill, which establishes carveouts for 10–24 hour storage and carveouts for 24 hour or more storage;⁵ Michigan's 2023 Energy Storage and Clean Energy Act, which establishes short-duration, long-duration, and multi-day storage as separate statutory categories;⁶ Massachusetts' 2024

⁴ U.S. Department of Energy. (2023). *Pathways to commercial liftoff: Long duration energy storage opportunities*. Office of Technology Transitions.

⁵ Long Duration Energy Storage Council. (2026, April 17). US: Virginia's new law advances landmark long duration energy storage targets. <https://ldescouncil.com/us-virginias-new-law-advances-landmark-long-duration-energy-storage-targets/>

⁶ Michigan Public Service Commission. 2023 energy legislation. State of Michigan. <https://www.michigan.gov/mpsc/commission/workgroups/2023-energy-legislation>



Clean Energy Grid Act, which sets separate procurement targets for mid-duration (4 to 10 hours), long-duration (more than 10 to 24 hours), and multi-day (more than 24 hours) storage resources.⁷

Integrated resource planning provides an opportunity to guide decisions about which durations and resource characteristics can contribute to the most reliable and least-cost portfolio, rather than determining those characteristics in advance. Longer duration storage technologies may be a more cost-effective and efficient solution, but their durations must be modeled to understand their fitness with specific grid needs. In the future, SPS and Xcel Energy should treat durations as different categories in the modeling, and utilities should issue procurements to reflect this.

The U.S. Department of Energy emphasizes the importance of modeling multiple durations, outlining the best way to model in utility IRPs in its 2024 report *Best Practices in Integrated Resource Planning*.⁸ Rather than assuming a single storage duration in advance, it recommends that planners should first identify the reliability, capacity, flexibility, and energy needs of the system and then evaluate a range of storage durations and operating characteristics against those needs. This approach allows the modeling to determine the optimal duration and configuration based on system value and cost, which can then inform procurement requirements based on the performance attributes the system actually needs.

Comments on the *Statement of Need*

I. **The *Statement of Need* Should Define the Categories of Need to Inform Stakeholders, the Commission, and Potential Bidders of the Diverse Role of LDES Across System Needs**

The LDES Council appreciates that the revised *Statement of Need* now recognizes a broader role for LDES than energy shifting alone. The Revised draft now provides definitions of resource categories identified for accredited capacity need in the *Statement of Need*: firm resources, dynamic balancing resources, and carbon-free resources. This helps clarify the breakdown of cumulative accredited capacity need by category and is defined in such a way that LDES is recognized for its functions to system needs.

The LDES Council recognizes that these categories and the modeling projections in the tables for each category will not be used as part of bid evaluation and are intended only to provide an informational look at a set of options. However, it is important that this information still provides a suite of options for configurations and attributes to procure based on, rather than specific technologies, each with varying accredited capacity contributions. Recognizing that standalone LDES, behind-the-meter and customer-sited LDES, and hybrid configurations incorporating LDES can fulfill accredited capacity needs will

⁷ Massachusetts General Court. (2024). S.2967: An Act promoting a clean energy grid, advancing equity and protecting ratepayers. 193rd General Court of the Commonwealth of Massachusetts.
<https://malegislature.gov/Bills/193/S2967>

⁸ Biewald, B., Glick, D., Kwok, S., Takahashi, K., Carvallo, J. P., & Schwartz, L. (2024). *Best practices in integrated resource planning: A guide for planners developing the electricity resource mix of the future*. Lawrence Berkeley National Laboratory and Synapse Energy Economics. U.S. Department of Energy, Office of Electricity.



encourage utilities to focus on identifying the best technologies based on system needs, rather than relying on prescribed assumptions based on generic technology.

II. LDES Now Qualifies for Each Definition of Resource Categories, Firm, Dynamic Balancing, and Carbon-Free

As described in earlier sections, LDES technologies are diverse and come with differing cost assumptions and attributes, such as operational characteristics, ramping capabilities, size, asset lifetimes, and supply chain requirements. The updated definitions in the redlines for resource categories support these operational realities that better align system needs with attributes, rather than specific technologies. Depending on its configuration and duration, an LDES resource may provide firm capacity, dynamic balancing, carbon-free energy, or several of those attributes simultaneously. Based on the new definitions in the *Statement of Need* for the resource categories, LDES is described to fit each:

1. Firm Resources: LDES are firm resources under configurations paired excess renewable generation or baseload generation, capable of providing dependable capacity turned on and off when the system needs it.
2. Dynamic Balancing Resources: LDES are dynamic balancing resources as was originally recognized, helping balance the system by responding to changing supply, load, and operating conditions over shorter timeframes. They provide flexibility, ramping capability, storage, and demand response.
3. Carbon-free Resources: LDES also support compliance with carbon-free or renewable energy policy objectives, providing electricity when charged from carbon-free energy, and allowing for a greater concentration of fleet supply from renewables.

We also support SPS's statement that the ranges identified in the *Statement of Need* are not intended to be technology-specific procurement targets and its broader goal of addressing system needs through a holistic, all-source solicitation. We encourage SPS to carry that principle through to the design of its procurements by defining needs in terms of services and attributes rather than assigning technologies to mutually exclusive resource categories.

Comments on the Action Plan

I. Support for the Long Lead Resource Acquisition Plan (LL RAP)

A dedicated **Long-Lead Resource Acquisition Process, or LL RAP**, for covered years 2035-2040, is important for LDES resources because of the early procurement visibility required for financing. While some LDES technologies can be deployed relatively quickly, others require longer development, permitting, manufacturing, interconnection, or construction timelines than conventional short-duration batteries. A dedicated long lead time pathway can help ensure that resources capable of meeting SPS's needs in the 2035–2040 period are able to begin development early enough to actually be available when the system needs them.



As SPS develops the LL RAP, we offer some examples of other utilities and grid operators who have designed a procurement mechanisms for resources with longer lead times. Ontario's grid operator, IESO, issued a long lead time ("LLT") RFP for long duration energy storage technologies.⁹ The Long-term 2 RFP targets capacity needs to meet peak demand periods by 2029 or later. In California, the CPUC has authorized pathways to add resources with longer lead times, recognizing that these resources often provide additional benefits, such as long lifetimes. New York has also set up a procurement mechanism for long lead-times, allowing for resources with longer lead times to expand their deployment schedules into the 2030s, a longer COD compliance requirement than other resources.¹⁰

II. Support for LDES Eligibility for the Site-Specific Procurement of Quay County Site

The Quay replacement opportunity provides a useful near-term application of LDES technologies able to compete economically to provide firm and dispatchable capacity. Given that SPS's own sensitivity analysis found that a 100-hour LDES replacement for Quay could be essentially cost-competitive while maintaining zero expected unserved energy, we encourage SPS to ensure that the eventual Quay solicitation explicitly allows LDES resources to compete to identify the resource or set of resources that can meet the identified reliability need at the lowest overall system cost.

III. Support for LDES Eligibility for All-Source RFP

Overall, we encourage SPS to use the RFP procurements as an opportunity to preserve optionality rather than prematurely narrowing it. Technology-neutral, attribute-based procurement, consideration of multiple LDES durations, long-term contracting, asset lifetime evaluation, and realistic development timelines would allow SPS to discover through competitive procurement which resources can most reliably and affordably meet its long-term system needs.

Conclusion

The LDES Council appreciates SPS for its consideration of the above comments to inform its final *Statement of Need and Action Plan*. The LDES Council's comments are to ensure that SPS's planning framework appropriately represents the differentiated capabilities of LDES at different durations and most accurately evaluates the most cost-effective resources to meet state policy objectives: future reliability, affordability, and clean energy needs.

Sincerely,

⁹ Independent Electricity System Operator. (2026). "Long Lead-Time RFP." <https://www.ieso.ca/Sector-Participants/Resource-Acquisition-and-Contracts/Long-Lead-Time-RFP>

¹⁰ New York State Energy Research and Development Authority. (2025). Appendix A: ISC formulas for ISCRFP 2025. New York State Department of Public Service.



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