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Testimony Neither For Nor Against
LD 1130, "An Act to Advance Long-duration Energy Storage"
April 2, 2025

Senator Lawrence, Representative Sachs, and distinguished members of the Joint Standing Committee on Energy, Utilities and Technology,

My name is Heather Sanborn, here today as Public Advocate, to testify neither for nor against LD 1130, "An Act to Advance Long-duration Energy Storage."

At the OPA, we think it is critical to utilize whatever sort of technology that helps us to **most cost-effectively** reach state goals. We do think there is great opportunity for long-duration energy storage (LDES) to play a key role in that cost-effective strategy. Our testimony today suggests consideration of a broader definition of long-duration energy storage than the one in the bill as drafted. As the charts below[1] and on the next page[2] detail, there are a number of different kinds of LDES technology that are at varying stages of commercial readiness. Only a few of these technologies are likely to be described as "batteries." We recommend taking a broader approach to the definition so that other types of LDES can be considered, to the extent that they provide cost-effective solutions.

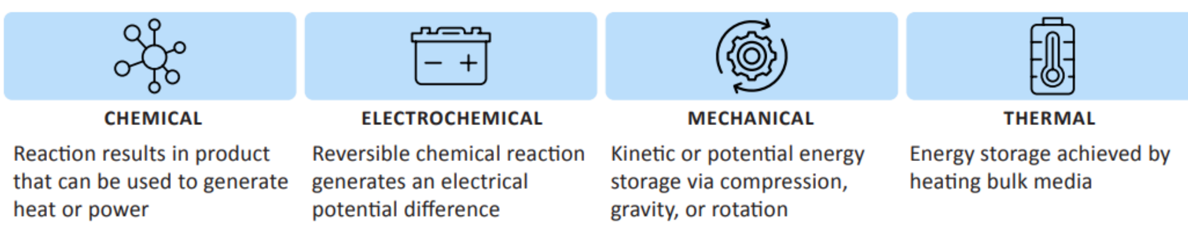

Figure 1: LDES technology types.

For more details on these types of energy storage and their potential use cases, we direct you to a recent publication from EPRI, the Edison Electric Institute, and the U.S.

[1] Long-Duration Energy Storage Use Cases, EPRI, Long Duration Energy Storage Council, Edison Electric Institute (EEI), and the United States Department of Energy (DOE) at 2. https://www.ldescouncil.com/assets/pdf/3002030919_LongDurationEnergyStorageUseCases_APrimeronDefiningApplicationstoAidinTechnologySelection.pdf

[2] "Pathways to Commercial Liftoff: Long Duration Energy Storage," U.S. Department of Energy, (March 2023) at 13.

Department of Energy. [3] The report points out that each type of LDES technology has a different set of strengths and weaknesses. Accordingly, "it will not be a one-size-fits-all-world with a single LDES technology dominating deployment; more likely, there will be a portfolio of resources of different technology types that each serve different energy needs and use cases."[4] We recommend adopting language in this bill that encompasses all of these options.

Key LDES storage types and parameters

Energy storage form	Technology	Market readiness	Max deployment size, MW	Max nominal duration, Hours	Average RTE[1] %
Mechanical	Novel pumped hydro (PSH)	Commercial	10–100	0–15	50–80
	Gravity-based	Pilot	20–1,000	0–15	70–90
	Compressed air (CAES)	Commercial	200–500	6–24	40–70
	Liquid air (LAES)	Pilot (commercial announced)	50–100	10–25	40–70
	Liquid CO_2	Pilot	10–500	4–24	70–80
Thermal	Sensible heat (eg, molten salts, rock material, concrete)	R&D/pilot	10–500	200	55–90
	Latent heat (eg, aluminum alloy)	Commercial	10–100	25–100	20–50
	Thermochemical heat (eg, zeolites, silica gel)	R&D	na	na	na
Chemical	Power-to-gas-(incl. hydrogen, syngas)-to-power	Pilot (commercial announced)	10–100	500–1,000	40–70
Electrochemical	Aqueous electrolyte flow batteries	Pilot/commercial	10–100	25–100	50–80
	Metal anode batteries	R&D/pilot	10–100	50–200	40–70
	Hybrid flow battery, with liquid electrolyte and metal anode	Commercial	>100	25–50	55–75

1. Power-to-power only. RTEs of systems discharging other forms of energies such as heat can be significantly higher.

Thank you for your time, attention, and consideration of this testimony. The Office of the Public Advocate looks forward to working with the Committee on LD 1130 and will be available if requested for the work session to assist the Committee in its consideration of this bill.

Respectfully submitted,

Heather Sanborn
Public Advocate

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[3] Long-Duration Energy Storage Use Cases, EPRI, Long Duration Energy Storage Council, Edison Electric Institute (EEI), and the United States Department of Energy (DOE) https://www.ldescouncil.com/assets/pdf/3002030919_LongDurationEnergyStorageUseCases_APrimeronDefiningApplicationstoAidinTechnologySelection.pdf

[4] Id. at 2.