



ECONOMICS AND VALUATION

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Mission Statement

The purpose of the Economics and Valuation Tiger Team is to evaluate the methods, models, and tools for defining the costs and value of the services offered by LDES, and the gaps that persist in defining, measuring, and monetizing the value of LDES from a system, societal, and operator perspective.

The purpose of the Economics and Valuation Team revolves around the consideration of several key issues:

- 1) Key challenges to accurately assessing LDES cost and performance, what demonstration pathways exist for reducing the cost of LDES?
- 2) Taxonomies of benefits streams offered by LDES and what affects those values.
- 3) Methods, models, and tools for assigning values to services offered by LDES.
- 4) Pathways to commercial liftoff for LDES.
- 5) How to capture the benefits of flexibility and other services not traditionally included in resource planning efforts.

Economics and Valuation Tiger Team

Patrick Balducci (Argonne) – Economics and Valuation Tiger Team Lab Lead

Hope Corsair (ORNL) – Economics and Valuation Tiger Team Back-up Lead

Gabe Murtaugh (LDES Council) – Economics and Valuation Tiger Team Industry Advisor

- **Team comprised of 72 members** that include representatives of technology developers, industry organizations, small and large utilities, several state agencies, national laboratories, universities, energy commissions, and market operators.
- **Team met seven times (149 attendees, 21 per meeting)** between February and August 2024.
- We established seven teams that thus far have developed 8 recommendations for addressing key challenges to LDES adoption.



Challenges/Recommendations Defined in LDES Liftoff Study

- **Challenge #1: Cost of an LDES system needs to come down by 2030.**
 - *Recommendation: Drive cost reductions by segment through targeted investment and share lessons learned through publicly available databases and reports. (Target: DOE)*
- **Challenge #4: A uniform approach toward developing resource adequacy compensation for LDES technologies does not exist, in either regulated markets or competitive markets.**
 - *Recommendation: Move away from compensation paradigms that introduce revenue uncertainty. (Target: FERC, ISOs)*
- **Challenge #6: There is presently a lack of resources regarding how to evaluate grid upgrades or expansions that will be necessary to accommodate both new variable renewable generation sites and LDES systems.**
 - *Prepare a guidance document for regulators, market operators, and utilities that outlines the fundamental components to be included in an evaluation of LDES, and includes guidance regarding metrics, frameworks, application of new tools/data sets, and other support information as required. That guidance should be followed by the provision of technical assistance. (Target: DOE)*
- **Challenge #10: ISO and RTO markets will need to develop support mechanisms**
 - *Recommendation: A comprehensive study of which support mechanisms already exist and which need to be developed in ISO/RTO markets for LDES, including LDES technologies under development. (Target: DOE)*

“Few support mechanisms for energy storage have been implemented by ISOs and RTOs. Those that exist vary dramatically between markets, having in common only that they tend to be focused on short-duration battery storage.”



Challenges/Recommendations Defined by Economics/Valuation Team

- **Challenge #1: Presently, there are no robust roadmaps for achieving US decarbonization or reliable and detailed estimations of cost for the transition to a future decarbonized grid.**
 - Recommendations still under development.
- **Challenge #2: There is currently limited means to comprehensively assess RD&D pathways and to define the investments required to achieve significant LDES cost reductions by 2030 and beyond.**
 - *Preliminary Recommendation #1: Define a unified approach to calculating levelized cost of storage, ensuring it encompasses the entire system lifecycle. (Target: DOE for Research Support and IEEE, ESIG, EPRI, or other entities for working group support)*
 - *Preliminary Recommendation #2: Continue investment in Storage Innovations 2030 and the enhanced targeting of high-value RD&D investment for Federal and non-Federal resources. (Target: DOE)*
- **Challenge #3: The social cost of carbon is not treated comprehensively in most investment planning efforts, thus putting renewables and integrating technologies such as LDES at a competitive disadvantage.**
 - Recommendations still under development.

“SI 2030 presented a framework for identifying high value research, development, and deployment targets for 10 LDES technologies. This and other similar efforts can chart the path for DOE to support fundamental breakthroughs for core LDES technologies.”

