LDES NATIONAL CONSORTIUM

The National Consortium for the Advancement of LDES Technologies

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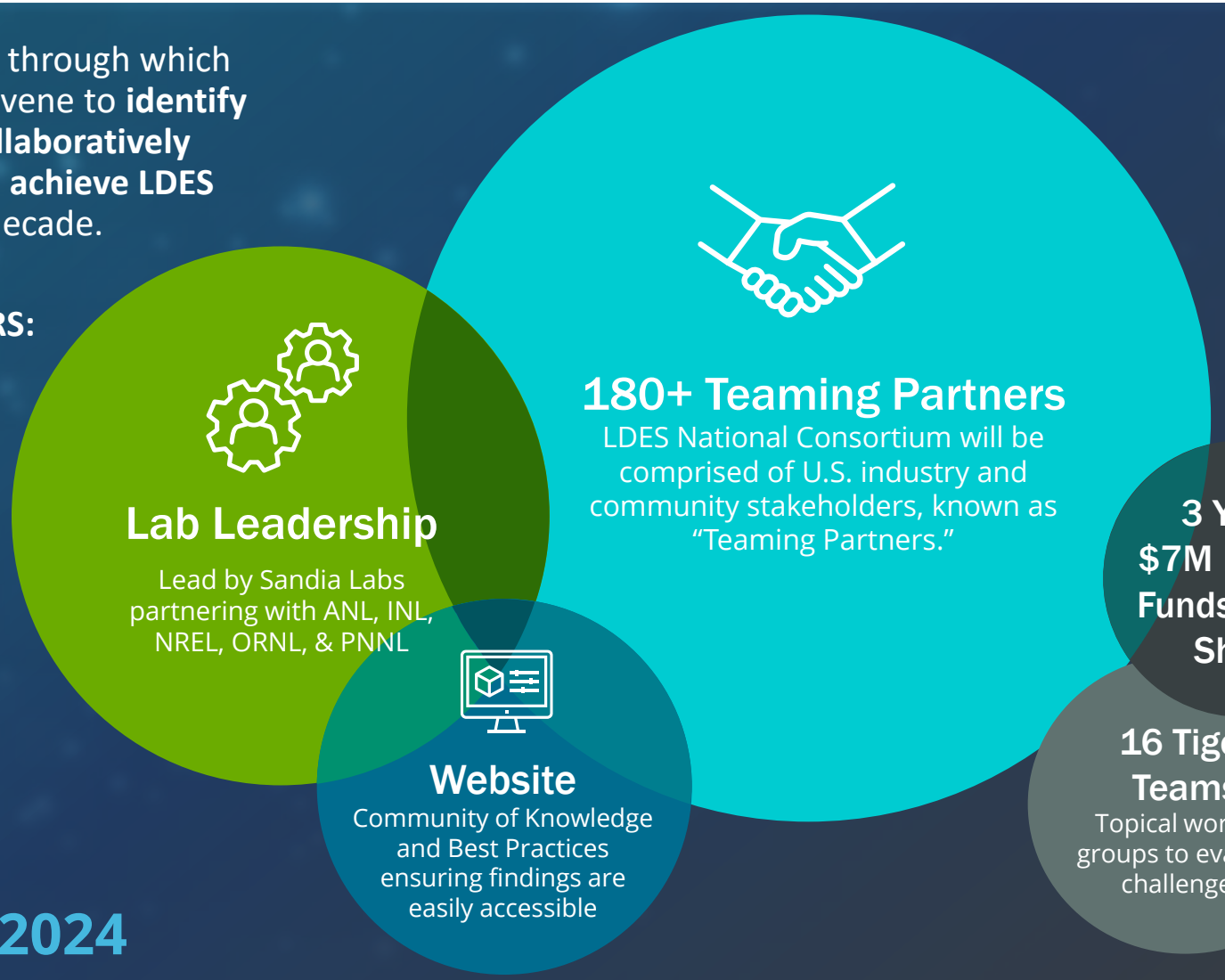
THE NATIONAL CONSORTIUM FOR THE ADVANCEMENT OF LDES TECHNOLOGIES

The LDES National Consortium provides a forum through which stakeholders across the LDES ecosystem can convene to **identify barriers, determine potential synergies, and collaboratively develop and implement strategies necessary to achieve LDES technology commercialization** within the next decade.

MAJOR DELIVERABLES OVER NEXT THREE YEARS:

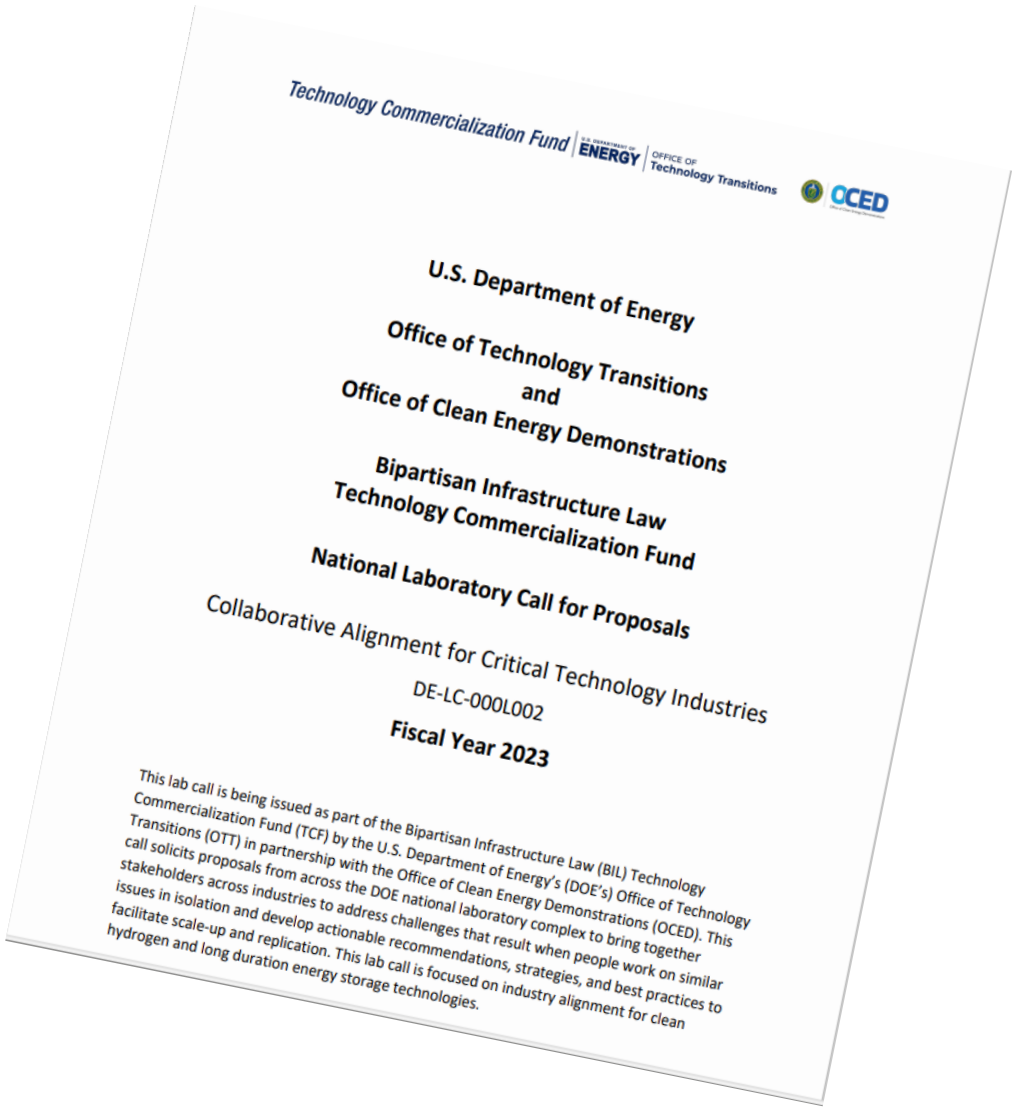
- LDES Demonstrations & Deployments Tracking System
- LDES Technology Maturity Evaluation Framework
- Assessment of Utility Needs for LDES
- Geographical Readiness Assessments
- Evaluation of US Wholesale Markets
- Evaluation of US Retail Markets
- Full Set of Commercial Pathways Recommendations
- Networking and Community Outreach



National Launch: January 2024

DOE's Lab-only Proposal Call.

- Released in the summer of 2023.
- U.S. DOE Office of Technology Transitions and Office of Clean Energy Demonstrations
- Funding provided by Bipartisan Infrastructure Law Technology Commercialization Fund.
- Intended to address commercialization challenges that arise when many entities working in similar areas work in isolation.
- 50% cost-sharing requirement due to the opportunity being defined as a demonstration project.
- Sandia applied as lead lab with five lab partners.



Technology Commercialization Fund | ENERGY | Office of Technology Transitions | OCED

U.S. Department of Energy

Office of Technology Transitions
and
Office of Clean Energy Demonstrations

Bipartisan Infrastructure Law
Technology Commercialization Fund

National Laboratory Call for Proposals

Collaborative Alignment for Critical Technology Industries

DE-LC-000L002

Fiscal Year 2023

This lab call is being issued as part of the Bipartisan Infrastructure Law (BIL) Technology Commercialization Fund (TCF) by the U.S. Department of Energy's (DOE's) Office of Technology Transitions (OTT) in partnership with the Office of Clean Energy Demonstrations (OCED). This call solicits proposals from across the DOE national laboratory complex to bring together stakeholders across industries to address challenges that result when people work on similar issues in isolation and develop actionable recommendations, strategies, and best practices to facilitate scale-up and replication. This lab call is focused on industry alignment for clean hydrogen and long duration energy storage technologies.

11 Challenges—Pulled directly from the DOE's Lift-Off Report.

1. Cost of an LDES system needs to come down by 2030
2. LDES technologies must achieve 7-15% improvement in roundtrip efficiency to compete with Li-ion storage and hydrogen.
3. The specific needs related to LDES workforce training (i.e., skills and training) are presently not well defined.
4. A uniform approach toward developing resource adequacy compensation for LDES technologies does not exist, in either regulated markets (PUC evaluation) or competitive markets (ISO/RTO).
5. A comprehensive assessment of necessary supply chain improvements specific to LDES technologies does not presently exist.
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
7. Presently, there is no publicly available evaluation of LDES technologies against primary competitive factors.
8. LDES is not included in most utility grid firming plans.
9. LDES use cases require market changes at the wholesale level.
10. ISO and RTO markets will need to develop support mechanisms.
11. State-level policymaking specific to LDES has been very limited.

We have released our first set of Industry Recommendations

- The recommendations address the commercialization challenges referenced by the DOE's 2023 Lift-off Report.
- The 11 challenges were assigned to the 16 Tiger Teams; most of the challenges now have 5-10 recommendations associated with them.
- Along with making the recommendations, we will be developing an implementation tracking system to track results. (Findings will be included in forthcoming assessment reports).

Challenge #1:

Cost of an LDES system needs to come down by 2030.

Ref #	Action-based Recommendation	Recipient
1-1	Conduct further analysis to evaluate the driver of LDES costs—power or energy—and the various elements of the LCOS that can be targeted for reductions, to determine how LCOS can be improved to address LDES more effectively (or be substituted with another methodology).	Self-assigned to LDES National Consortium-- Technology Development, Evaluation and Testing Tiger Team
1-2	Assess the opportunities for increased levels of LDES demonstrations / pilot programs in specific states to facilitate the scaling of LDES technologies, which in turn will promote cost reductions. Where applicable, restructured states that have imposed restrictions on utility ownership of energy storage assets should be encouraged to reconsider this policy to allow utilities to own, build, and operate LDES in the commercial scalability of LDES can be accelerated with utility-scale	The assessment of specific states is self-assigned to the LDES National Consortium—Policy & Regulations Tiger Team. Once assessments are complet specific recommendations will submitted either directly to sta regulatory commissions or diss through NARUC or NASEO.
1-3	Develop, and make publicly available, a public repository of targeted investment data and shared lessons learned of LDES investments through public databases and reports, which will enable LDES cost reductions by segment. (This recommendation recognizes that similar efforts are underway with external organizations such as EPRI, the DOE-OTT, and Sightline and thus incorporate collaboration to the fullest extent possible.)	The development of the reposi assigned to the LDES National Consortium—Investor Confider Economics & Valuation Tiger Te Upon completion the repositor made publicly available via the Consortium's Website.

Challenge #2:

LDES technologies must achieve 7-15% improvement in roundtrip efficiency to compete with Li-ion storage and hydrogen.

Ref #	Action-based Recommendation	Recipient(s)
2-1	Prepare list of factors that influence roundtrip efficiencies organized by technology type and assumptions regarding how these factors can be influenced, and by which industry players. This list of factors should be 1) prioritized in terms of which factors are essential to address and 2) assigned levels of complexity to implement.	Self-assigned to the LDES National Consortium-- Technology Development, Evaluation & Testing and Use Case Development Tiger Teams.
2-2	Conduct an RTE assessment based on LDES technology type.	Self-assigned to the LDES Na Consortium—Technology De Evaluation and Testing and U Development Tiger Teams. Upon completion of this add assessment, more-granular recommendations will be m and end users for their techn development and market ev
2-3	Assess the potential for additional DOE-sourced R&D funding opportunities that could be made available to enhance the performance of existing LDES technologies and further enable the development of new high-performance technologies	Self-assigned to the LDES Na Consortium—Technology De Evaluation & Testing and Inv Confidence Tiger Teams.

Challenge #3:

The specific needs related to LDES workforce training (i.e., skills and training) are presently not well defined.

Ref #	Action-based Recommendation	Recipient(s)
3-1	Conduct a comprehensive assessment of current needs for workers in the LDES industry must be conducted before more specific recommendations can be developed. Assess opportunities to correlate existing workforce programs relevant to LDES (e.g., chemicals sector, electricians, etc.) to DOE pilot/demonstration projects in current need of trained workers.	Self-assigned to the LDES National Consortium—Workforce Development Tiger Team.
3-2	Define mechanisms that will enable increased communication between the LDES industry, academia/training providers, and communities with high unemployment or underemployment to increase the ways in which shared knowledge can be leveraged to improve workforce training specific to LDES technologies.	Self-assigned to the LDES National Consortium—Workforce Development Tiger Team for further analysis. Upon completion of analysis, recommended mechanisms, at the state level recommendations will likely be submitted to state departments of labor. At the federal level, which is more likely appropriate as LDES workforce is a nation-wide issue, this recommendation would likely be submitted to the US DOL or to DOE.

Tiger Teams are continuing to identify additional challenges and accompanying Industry Recommendations.

Website Information

The Community of Knowledge & Best Practices Website is the official name for the LDES National Consortium's public facing Website.

- **The Website will be the primary repository for the output of the LDES National Consortium, along with knowledge-sharing information that seeks to enhance the public's understanding of LDES and the role it will play in the energy future of the US.**
- **It is anticipated that the Website will include, but is not limited to:**
  - Continually updated list of Industry Recommendations
  - A list of participating Teaming Partners that includes organization name, URL, primary point of contact name and title, and contact information (after approval from the Teaming Partner organization).
  - A glossary of "LDES common terminology" with suggestions on how key terms should be defined.
  - A library of previously published LDES materials developed by our national Lab Partners and DOE offices.
  - LDES Technology Evaluation Matrix
  - LDES Demonstrations & Deployment Project Tracking System

ldesconsortium.sandia.gov

THANK YOU!

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