

4TH ANNUAL
ENERGY STORAGE GRAND CHALLENGE
SUMMIT

ESGC
Decadal
Challenge

August 8, 2024



ESGC Decadal Challenge

- **OBJECTIVE:** Map progressive, meaningful stages from today's state-of-art to final storage shot goals, and activities to achieve
- **PROCESS:** Identify key challenges as those that DOE can help to address
 - **HOW:**
 - Ideate milestone focused plan in a highly collaborative, cross-track approach that aligns with specific topics of interest
 - **WHO:**
 - LEAD: Decadal Challenge Steering Team
 - SUPPORT: Four ESGC National Lab Tracks
 - US Ecosystem: Collaborate with public/private for broader engagement.

Decadal Challenge Team

The Steering Committee will Develop The Challenge

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Structure Aligns With The Four Tracks



Topic/Sector	Year 1	Year 2 & 3	Years 4-8	Years 9 - 10
Technology Development				
Cost Reduction	<i>Short Term Milestone/Target</i>	<i>Intermediate Term Milestone/Target</i>	<i>Long Term Milestone/Target</i>	<i>Final Milestone/Target</i>
Performance Improvement	<i>Short Term Milestone/Target</i>	<i>Intermediate Term Milestone/Target</i>	<i>Long Term Milestone/Target</i>	<i>Final Milestone/Target</i>
Markets and Valuation				
LDES Valuation and Markets	<i>Short Term Milestone/Target</i>	<i>Intermediate Term Milestone/Target</i>	<i>Long Term Milestone/Target</i>	<i>Final Milestone/Target</i>
Policy Analysis	<i>Short Term Milestone/Target</i>	<i>Intermediate Term Milestone/Target</i>	<i>Long Term Milestone/Target</i>	<i>Final Milestone/Target</i>
Investment, Commercialization, & Scale Up				
Investments	<i>Short Term Milestone/Target</i>	<i>Intermediate Term Milestone/Target</i>	<i>Long Term Milestone/Target</i>	<i>Final Milestone/Target</i>
Emerging Tech. Commercialization	<i>Short Term Milestone/Target</i>	<i>Intermediate Term Milestone/Target</i>	<i>Long Term Milestone/Target</i>	<i>Final Milestone/Target</i>
Manufacturing, Supply Chain, and Workforce				
Manufacturing	<i>Short Term Milestone/Target</i>	<i>Intermediate Term Milestone/Target</i>	<i>Long Term Milestone/Target</i>	<i>Final Milestone/Target</i>
Supply Chain	<i>Short Term Milestone/Target</i>	<i>Intermediate Term Milestone/Target</i>	<i>Long Term Milestone/Target</i>	<i>Final Milestone/Target</i>
Cross Cutting				
...				
Cross Cutting	<i>Short Term Milestone/Target</i>	<i>Intermediate Term Milestone/Target</i>	<i>Long Term Milestone/Target</i>	<i>Final Milestone/Target</i>

Tech Development- Detailed Example



Develop a set of qualifying metrics, tools and initial state-of-the-art that lay the ground-work to enable the technology pipe-line for ESGC roadmap in the Decadal Timeframe

Topic/Sector	Year 1	Year 2 & 3	Years 4-8	Years 9 - 10
Identify Cost Competitive, Deployable Energy Storage Systems for Gigawatt Scale Storage				
Cost Reduction	Establish TRL, Maturity Level and key technical parameters. Complete Structured Review of energy storage technologies.	Identify pathways to get to cost targets. Leverage LDES demonstration projects to establish achievable cost targets.		
Techno-economic Analysis of Storage Technologies				
LDES Valuation and Markets	Develop tools and show technology to reach Levelized Cost of Storage (LCOS) < 15¢/kWh < 5¢/kWh by 2034.	Demonstrate pathway to achieve LCOS with > 3000 cycles.		
ESGC Cost and Performance Database (move to markets)				
Cost and Performance Database	Expand Cost and Performance Database to new LDES technologies with annual refreshment.			

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