

Long-duration energy storage (LDES) is a potential solution to intermittency in renewable energy generation. In this study we have evaluated the role of LDES in decarbonized electricity...

4 &#0183; Long-duration energy storage (LDES) is a key resource in enabling zero-emissions electricity grids but its role within different types of grids is not well understood. Using the Switch capacity ...

The DOE Long Duration Storage Shot defines "long duration" as  $\geq 10$  h of discharge, while the Advanced Research Projects Agency-Energy (ARPA-E) Duration Addition to electricity Storage (DAYS) program focuses on resources capable of 10-100 h duration.

As the world transitions to decarbonized energy systems, emerging long-duration energy storage technologies will be critical for supporting the widescale deployment of renewable energy sources.

Long-term energy storage is an essential component of our current and future energy systems. Today, long-term storage (LTS) is easily accessed: energy sits in the form of hydrocarbons and we "discharge" energy from hydrocarbon reserves but never recharge them - fossil resource consumption that is driving our changing climate.

Exploring different scenarios and variables in the storage design space, researchers find the parameter combinations for innovative, low-cost long-duration energy storage to potentially make a large impact in a more affordable and reliable energy transition.

This study reviews current uses of energy storage and how those uses are changing in response to emerging grid needs, then assesses how the power generation industry and academia are defining long-duration storage and organizing research efforts to develop commercial technologies.

Long-duration electricity storage systems (10 to  $\sim 100$  h at rated power) may significantly advance the use of variable renewables (wind and solar) and provide resiliency to electricity supply interruptions, if storage assets that can be widely deployed and that have a

We review candidate long duration energy storage technologies that are commercially mature or under commercialization. We then compare their modularity, long-term energy storage capability and average capital cost with varied durations.

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