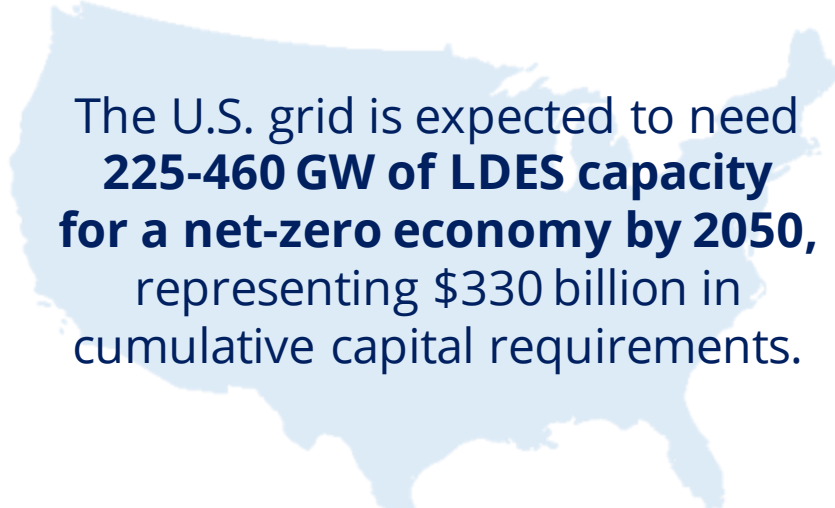



Liftoff Opportunities Snapshot: Long Duration Energy Storage

Long Duration Energy Storage (LDES) includes technologies that store energy over long periods for future use.



The U.S. grid is expected to need **225-460 GW of LDES capacity for a net-zero economy by 2050**, representing \$330 billion in cumulative capital requirements.

LDES represents an attractive opportunity for companies.

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1. Capital deployment opportunities are expected to total \$330 billion by 2050.
 2. LDES can tap into a diverse set of revenue streams including but not limited to energy and capacity payments, ancillary services, time-of-use arbitrage, and demand management.
 3. Many LDES systems are both modular and scalable, reducing investment risk.

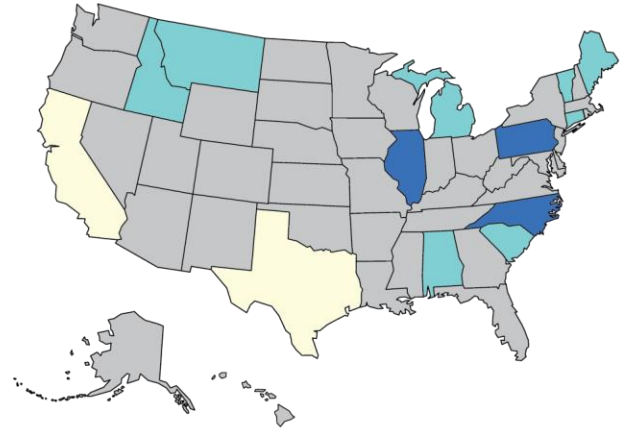
LDES has the potential to play a **significant role in the decarbonization by the U.S. power system**—from bulk power to resiliency and behind-the-meter applications.

LDES technologies are expected to be the **least-cost option** to provide **stability and flexibility to the grid as variable renewables expand.**

Specialization in Alternative Electric Power Subcluster by State, 2021

- High Employment Specialization and Share
- High Employment Specialization
- High Employment Share

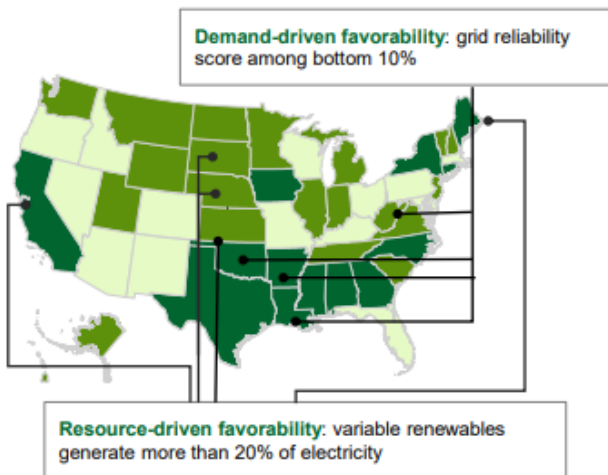
Source: <https://clustermapping.us/>



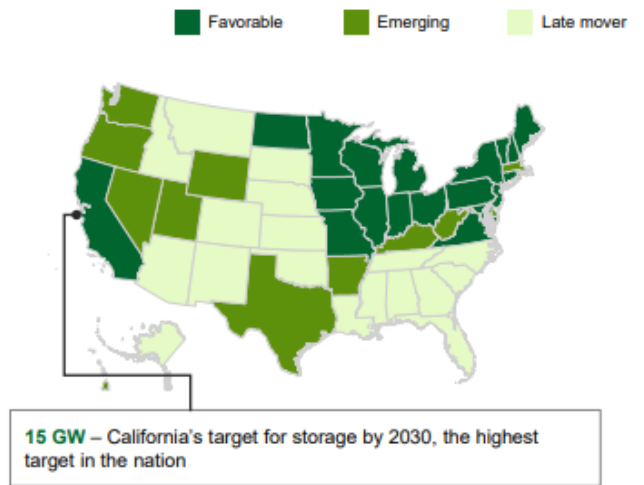
Over the next 5–10 years, LDES's cost, efficiency, and risks are expected to improve with continued R&D, economies of scale of deployment, and manufacturing / supply chain improvements resulting from modularized, industrial-scale facilities and workforces.

LDES Employment Readiness Among U.S. States

Grid conditions



Policy and market construct



Renewables penetration drives favorable grid conditions in the **Midwest**, while **grid reliability issues** create compelling LDES opportunities in the **Midwest and Southeast**.

Strong policy on the west coast and in the Northeast/Mid-Atlantic is driving favorable conditions. **Capacity payments in the Midcontinent Independent System Operator** potentially create a favorable market.

The information in this flyer is based on the [Pathways to Commercial Liftoff: Long Duration Energy Storage](#) report.