



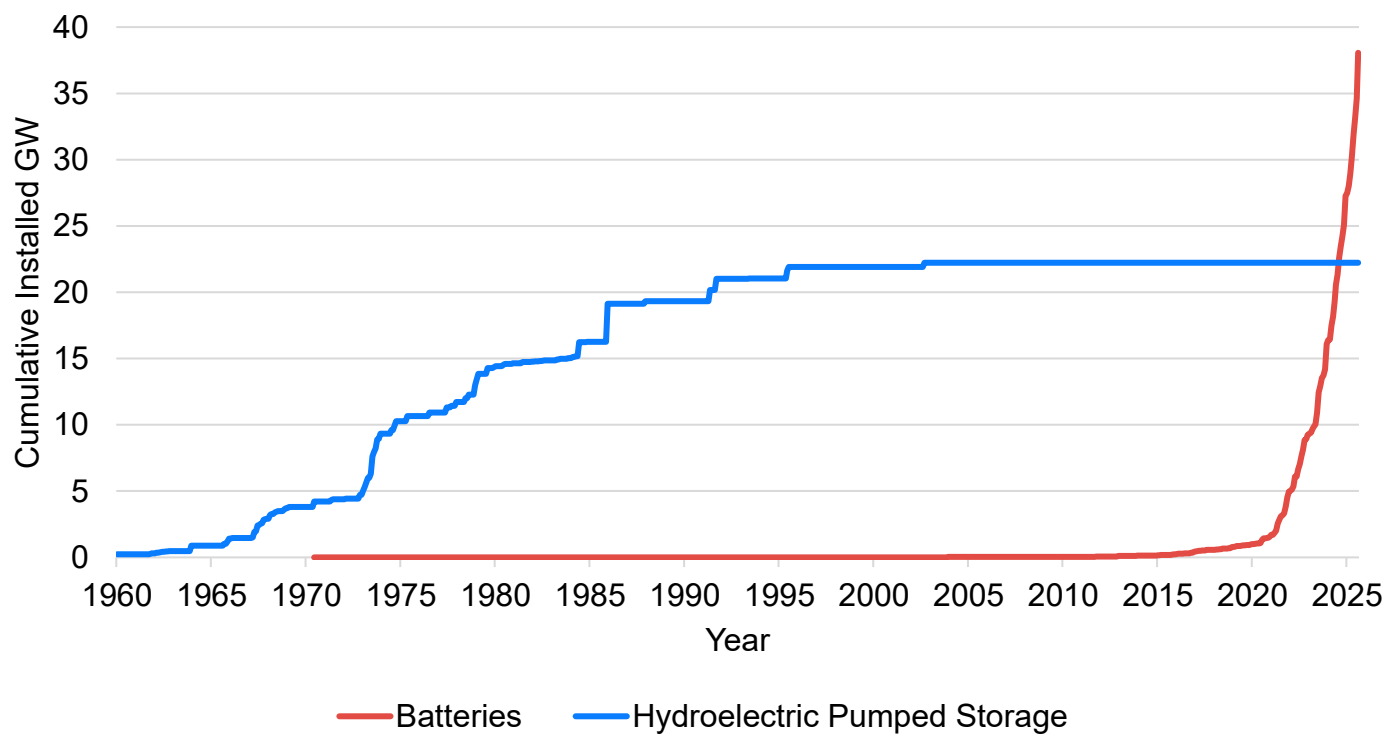
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After the Hockey Stick

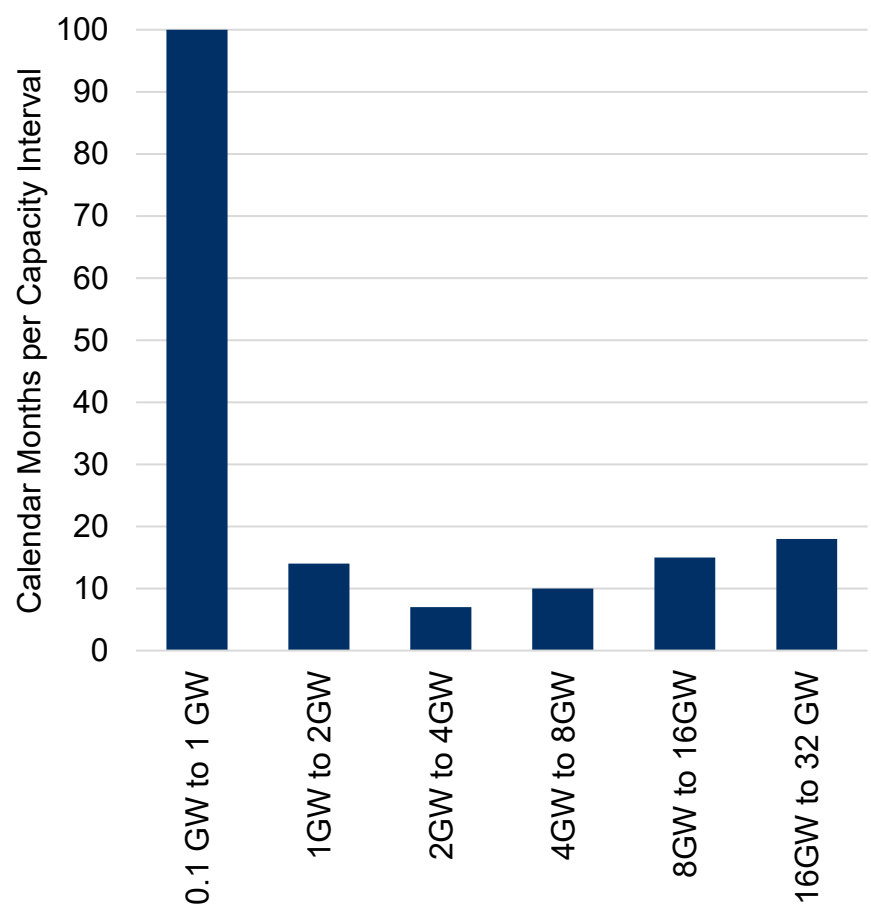
Opportunities for Long Duration Storage

Historic Storage Deployment

U.S. Energy Storage Installed Capacity Batteries vs Pumped Hydro

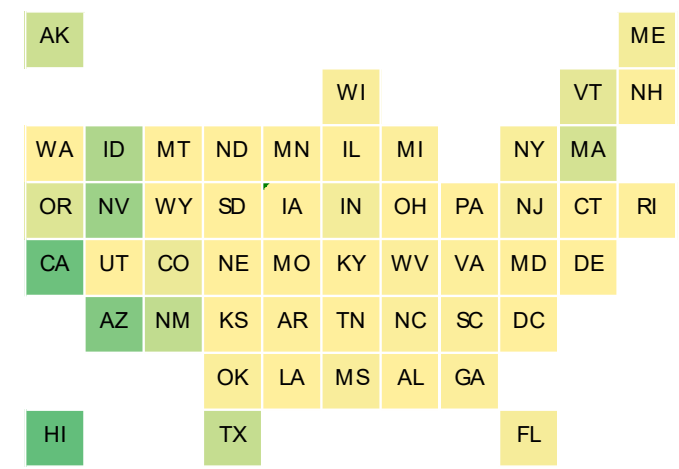
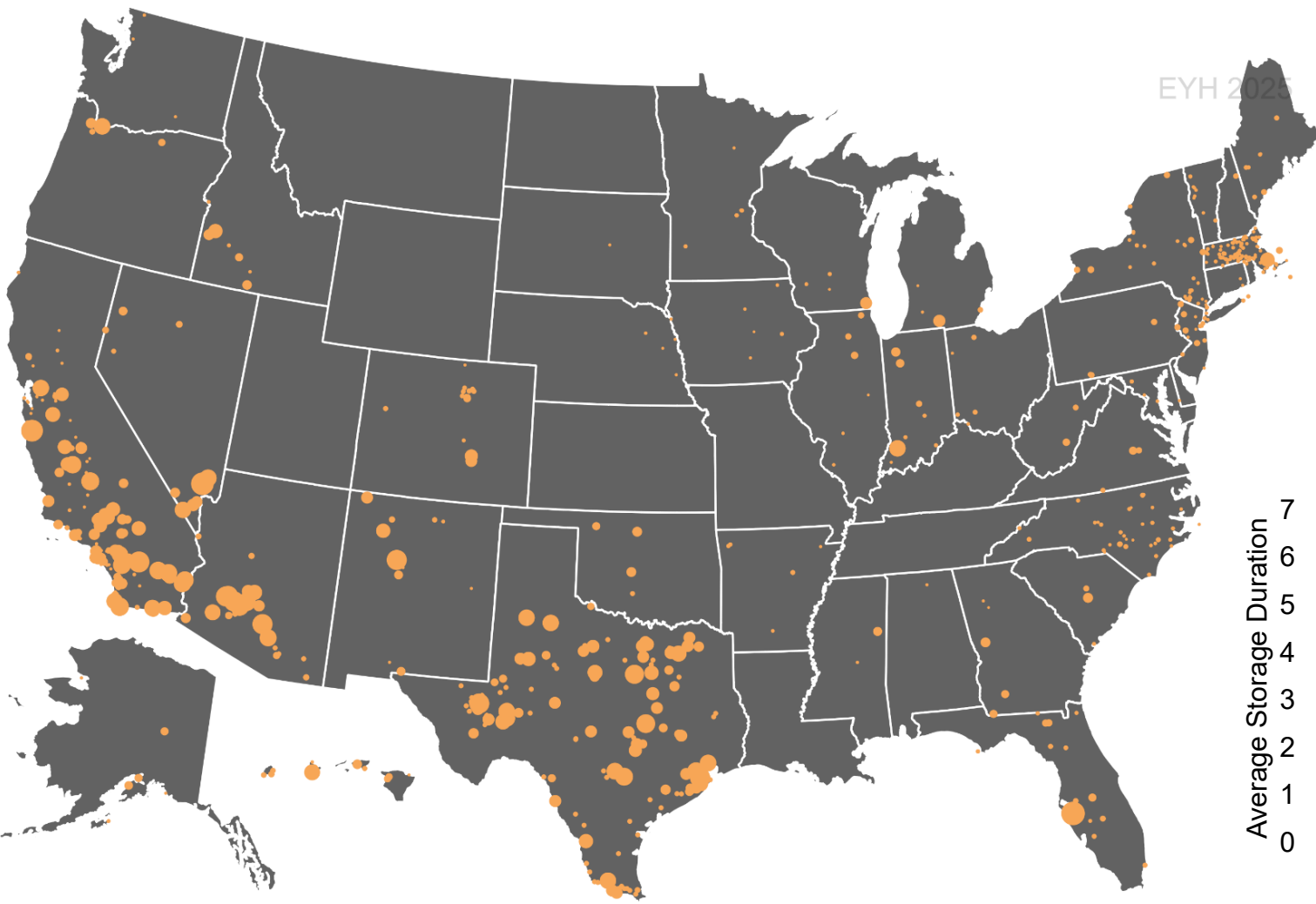


Months to Double Capacity

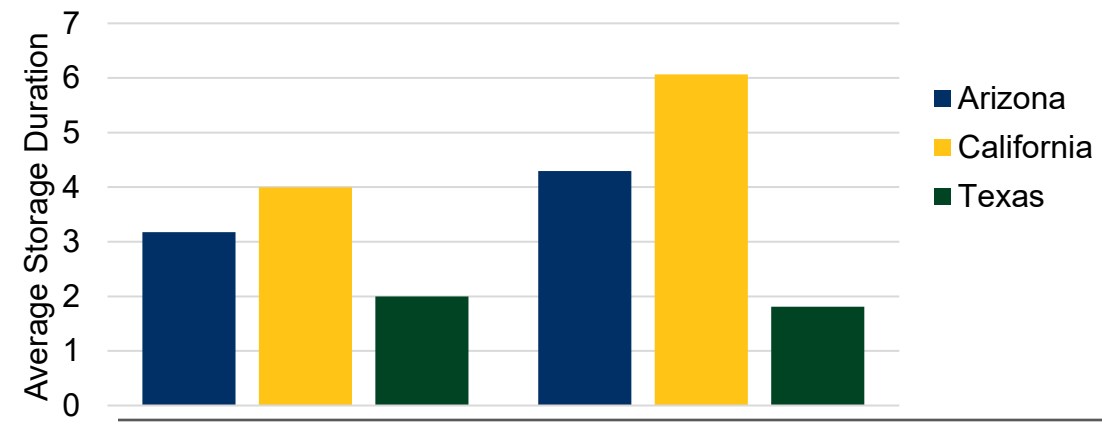


Deployment Geography

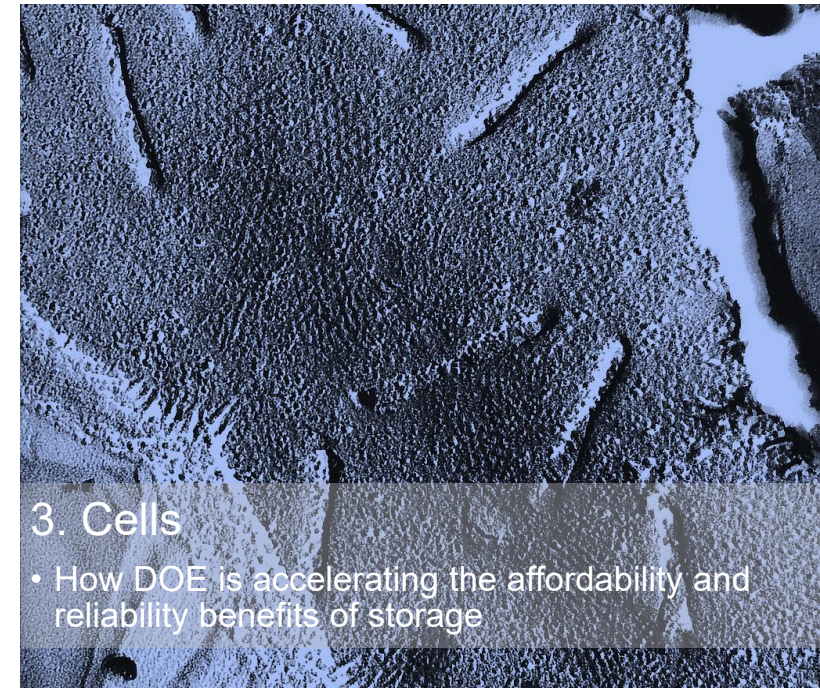
Energy Storage Installations as of July 2025

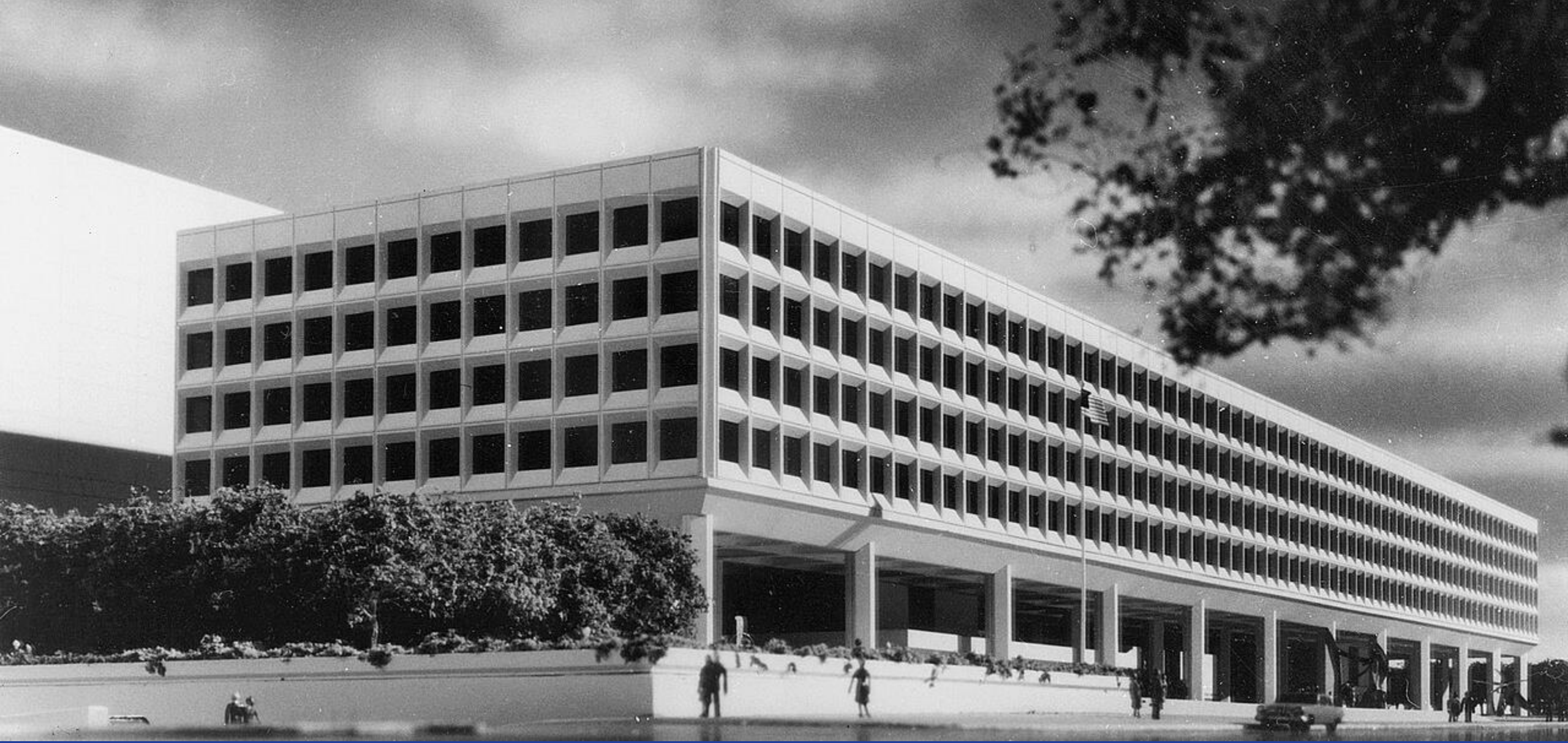


Average Duration by Year (Selected States)



Outline





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Beyond Classic* Energy Storage Use Cases



**First order system: one controllable resource; Second/higher-order system: two or more controllable resources*



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Second-Order Use Cases: Enhancing Baseload



"H.F. Lee natural gas plant 1" by Duke Energy, CC BY-NC-ND 2.0



Second-Order Use Cases: Enhancing Delivery



Photo by [Kleefuk](#) via Wikimedia Commons CC BY 4.0





FLIR

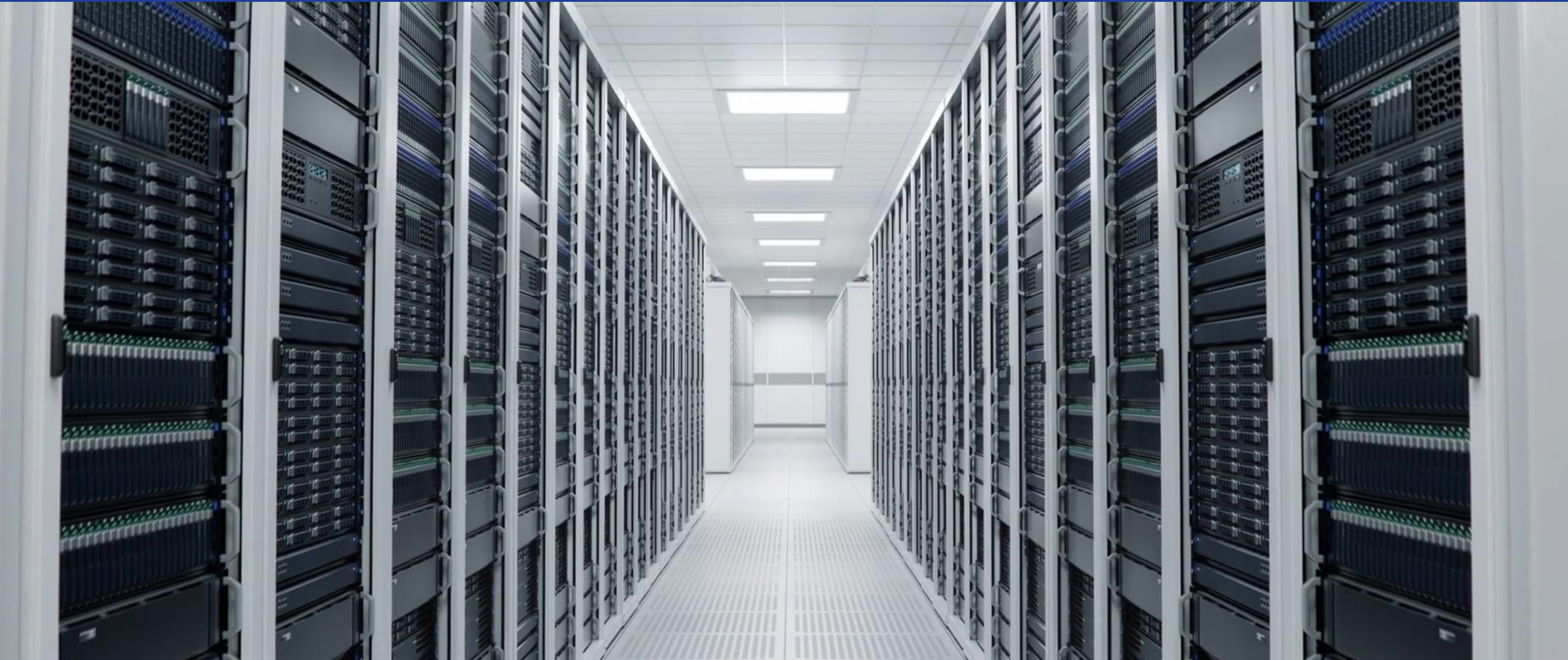
Second-Order Use Cases: Increasing Affordability



Photo by [Andrew Parlette](#) via Wikimedia Commons CC BY 4.0



Second-Order Use Cases: Data Centers





Adjacent Lessons for the Storage Industry



Capabilities to Derisk and Accelerate Market Readiness



Secretary Wright with Venkat Srinivasan at the Materials Engineering Research Facility, Argonne National Lab



Secretary Wright with Will Chueh at the SLAC National Accelerator Laboratory-Stanford Battery Center



Secretary Wright at the Grid Storage Launchpad | Photo: Andrea Starr | Pacific Northwest National Laboratory

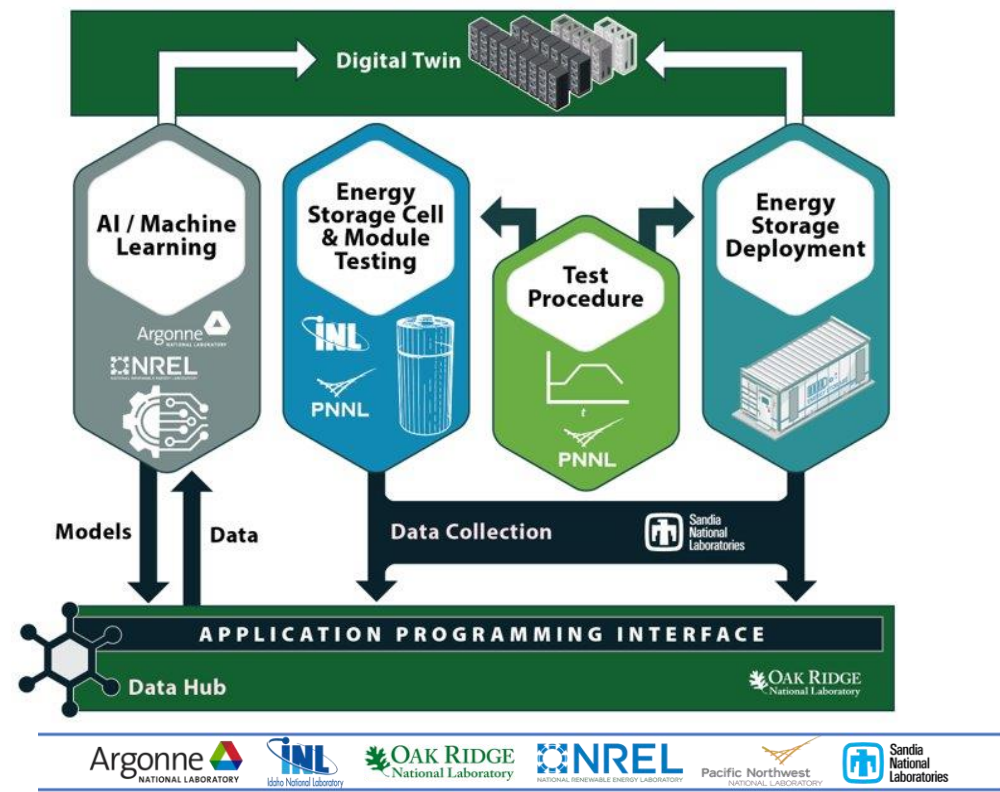
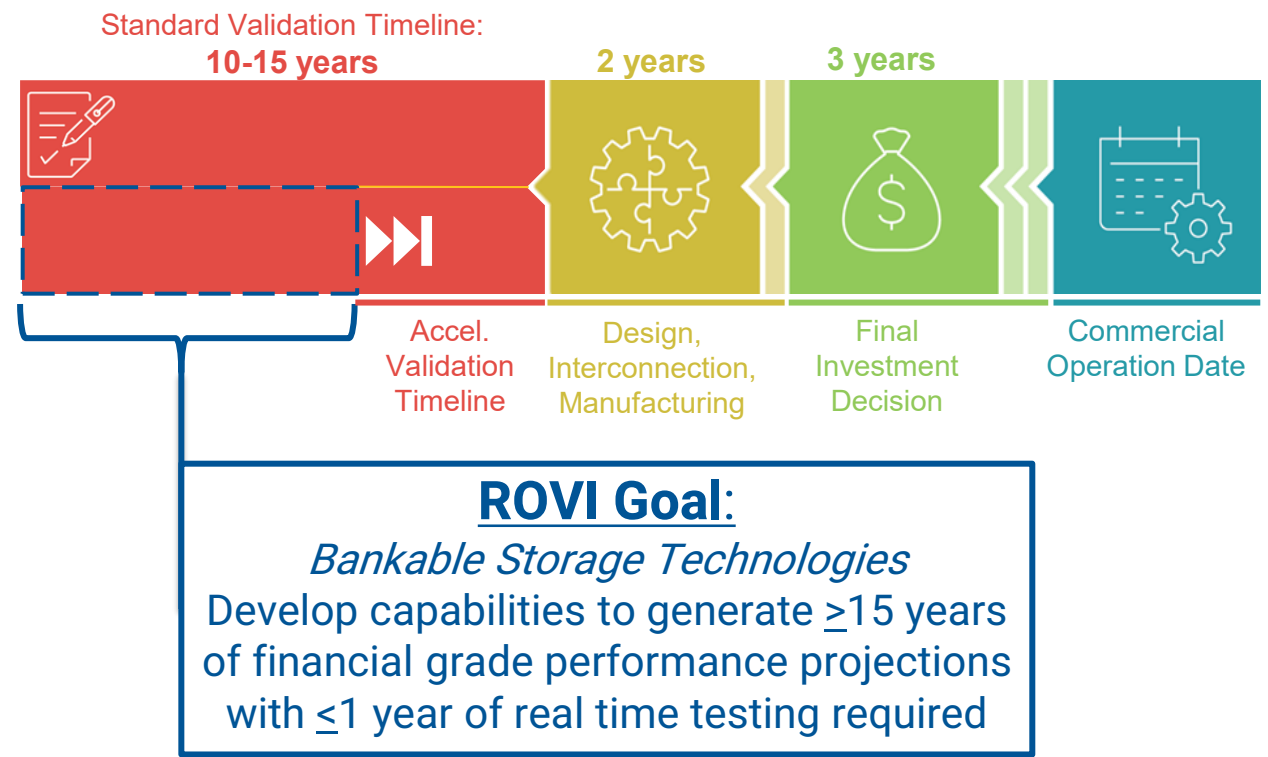


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A person with short dark hair and glasses is sitting on a grey couch in a modern office environment. They are wearing a blue denim jacket over a black t-shirt and grey cargo pants. Their right hand is raised in a gesture. In the background, there is a large screen displaying a green and blue geometric pattern. The text "Hi, I'm Feng, I've been here at PNNL for 7 years" is overlaid in white with a black outline.

**Hi, I'm Feng,
I've been here at
PNNL for 7 years**

Rapid Operational Validation Initiative (ROVI)





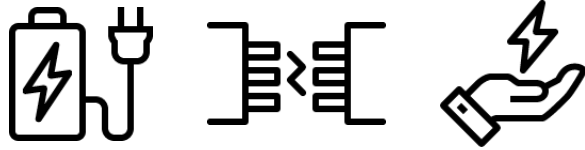
PNNL offers a third-party testing environment to provide battery companies with independent data about their grid-scale systems.

Visit the “Apply to Test” Portal for more information:



The GSL represents the commitment of the Department of Energy's Office of Science, Office of Electricity, the State of Washington, PNNL, and Battelle to advance the next generation of breakthroughs in energy storage materials and technologies.

Closed Prizes



Beyond the Meter Energy Storage Integration Prize

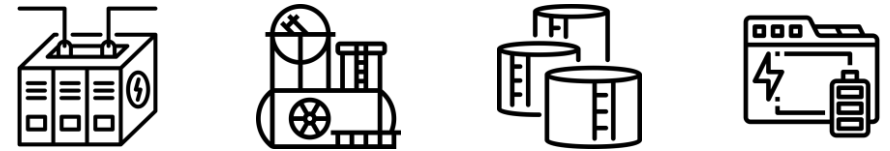
Total Prize Pool: \$4,100,000

- Phase 1 up to 6 winners will receive \$350,000 each (\$2,100,000)
- Phase 2 up to 2 winners will receive \$1,000,000 each (\$2,000,000)

In this two-phase prize, companies and coalitions will:

- Share how their behind-the-meter grid-edge technology solution supports improved integration with different energy systems and vendors in the grid
- Outline a plan to partner and integrate with grid-edge technology vendors
- Describe their approach to demonstrate their technology and plans to collaborate with other grid industry leaders

Phase 1 Prize Competition closed 4/30/2026 (Judging/Selection Underway)



Energy Storage Innovations Round 2 Prize

Total Prize Pool: \$300,000

- Up to 5 Champions will receive up to \$50,000 each
- Up to 5 Finalists will receive up to \$10,000 each

This single-phase prize:

- Targets less-conventional ESS use cases (e.g., remote communities, extreme conditions) and innovative, less-mature, electricity-discharging technologies that differ from commercially established solutions.
- Promotes development of transformative ESS concepts with early consideration of pathways to deployment and commercialization.
- Requires a benefit-cost analysis, alignment with DOE priorities, and risk assessment with mitigation strategies.

Prize Competition closed 3/13/2026 (Judging/Selection Underway)

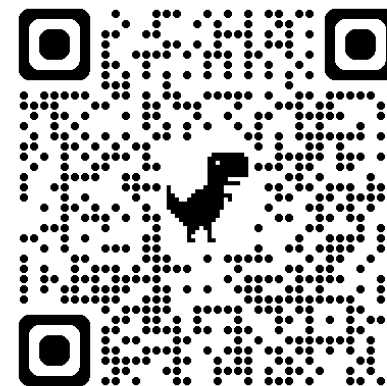




Launched July 7
Submissions due October 8

Storage Design Strategies to Ease Production (STEP) Prize

\$500K Opportunity to integrate robust manufacturability and supply chain strategies directly into the design of novel energy storage technologies.



Market Readiness: Assisting Decisionmakers



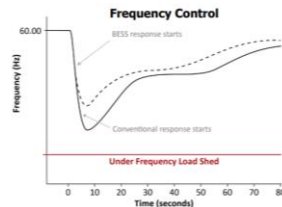
FERC

"And I'm so proud that last year, the Commission issued Order No. 841. This rule removes barriers to the participation of electric storage resources in the capacity, energy, and ancillary services markets operated by the regional organized power markets that FERC oversees."
- FERC Chair N. Chatterjee, 7/2019



NERC

"Battery storage [i]nstallations in the Texas and Western Interconnections are improving frequency control. These improvements are a result of quicker response times arresting the frequency closer to the target of 60Hz."
- NERC 6/2025



State Commissions

Vermont Public Utility Commission
PROPOSED RULE REGARDING THE INSTALLATION, CONSTRUCTION, OPERATION, AND AGGREGATION OF ENERGY STORAGE FACILITIES

8/20/2025
Docket #21-3883

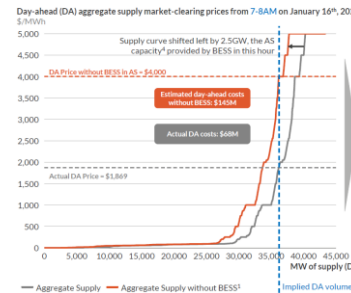


Duke

"Duke, through an ERCOT stakeholder committee, create[d] a special pilot project...to demonstrate the major technical capabilities of the BESS." - 2012

Regional Transmission Operators

"Across January 15th and 16th, BESS saved a total of \$750M in costs to the day-ahead market [in ERCOT]."
- Aurora Energy Research, 4/2024



DTE

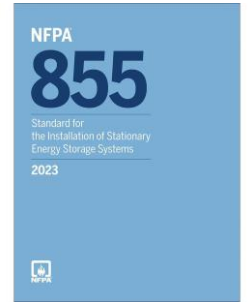
"This [DOE] project successfully demonstrated an early stage CES [Community Energy Storage] system" – DTE, 2015

Utilities

"DTE is seeking between 1,500-3,000 MW of firm MISO-accredited capacity from qualifying resources including...thermal, storage, emerging technologies, distributed energy resources, and other capacity resources."

Non-Price Criteria - Resource Optionality: e.g. "ability to adapt to new market rules or changes in such rules, ...ability to add future storage to the site, etc."

– DTE All-Source RFP, 2/2025



PNNL & SNL
Since 2016

Local Jurisdictions

"NFPA 855 has requirements that training of operations staff as well as emergency responders be provided by the system owner or operator."

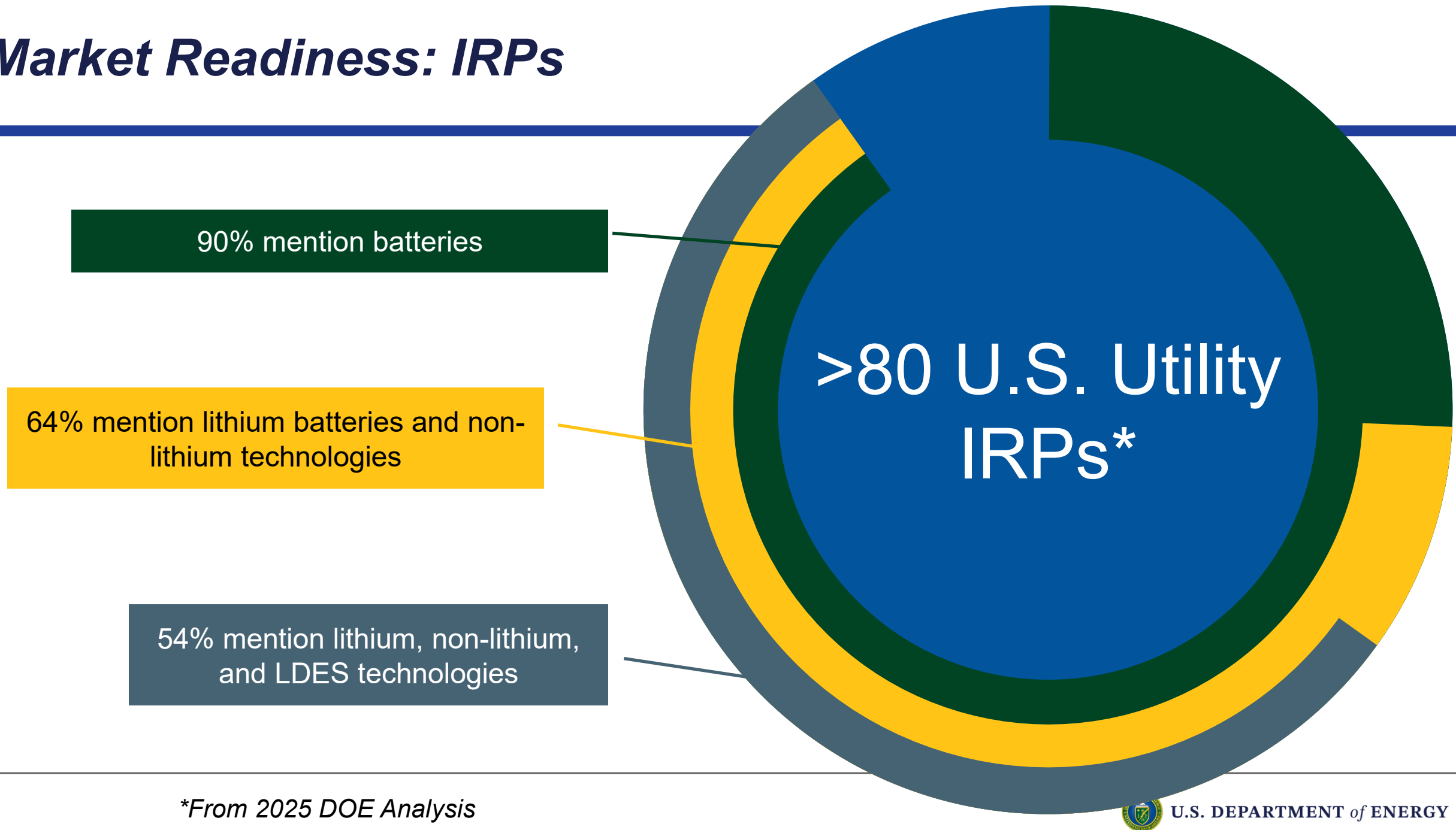
"Language in local codes [and] ordinances is frequently adapted from standard NFPA 855"

PNNL, Siting and Permitting of Energy Storage, 2025



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Market Readiness: IRPs



**From 2025 DOE Analysis*



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