Grid Storage is Projected to Rapidly Grow
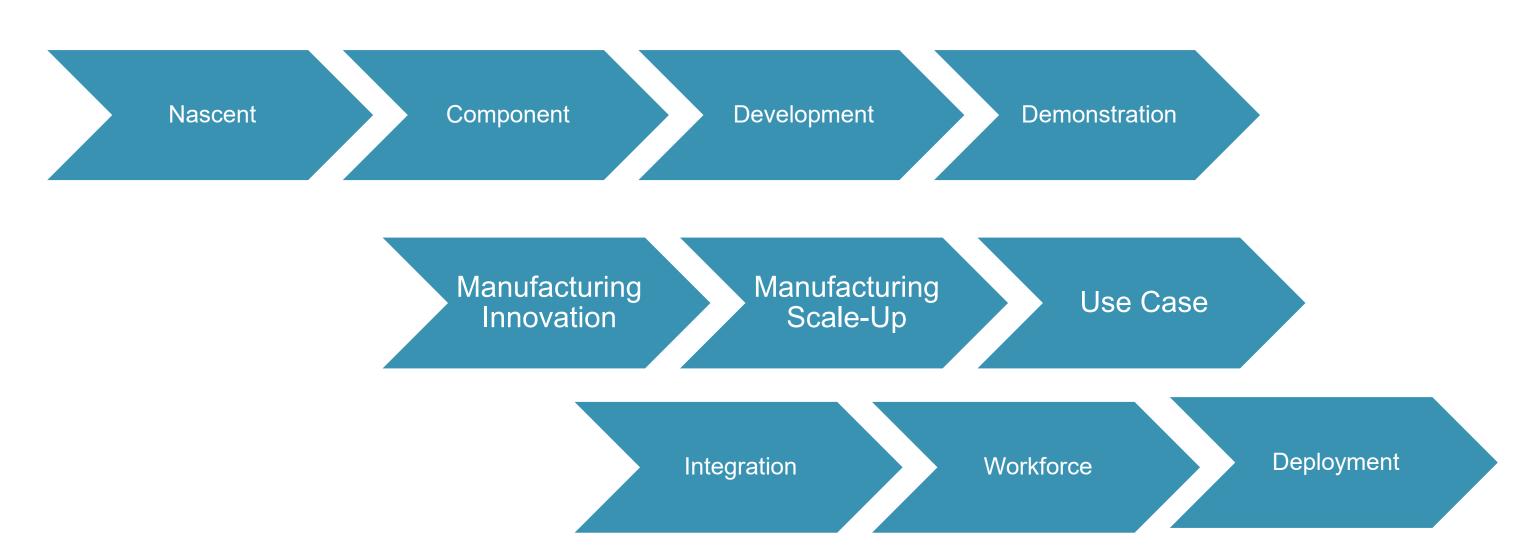
Projected U.S. Stationary Storage Deployment (GW)

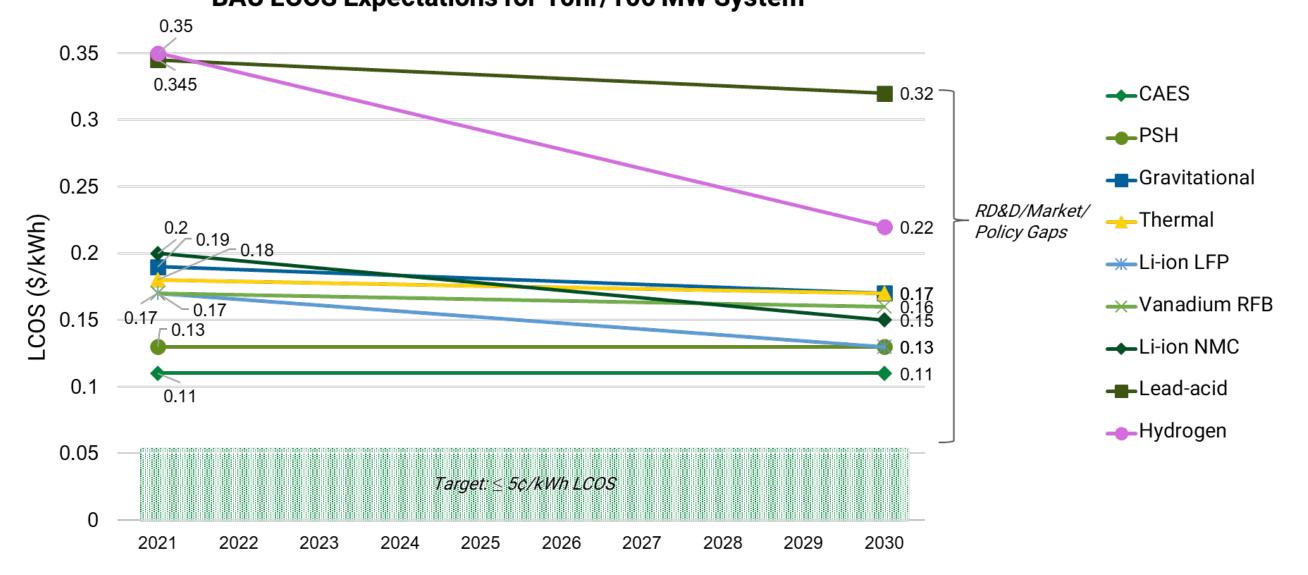— IHS — WoodMac — BNEF

California: ~2-11 GW LDES by 2030

The road to deployment has many steps

Nascent → Component → Development → Demonstration

Manufacturing Innovation → Manufacturing Scale-Up → Use Case

Integration → Workforce → Deployment

Many technologies, zero projected to reach low cost* under BAU…

BAU LCOS Expectations for 10hr/100 MW System

Legend:
- CAES
- PSH
- Gravitational
- Thermal
- Li-ion LFP
- Vanadium RFB
- Li-ion NMC
- Lead-acid
- Hydrogen

RD&D/Market/Policy Gaps

Data points (2021 → 2030):
- 0.35 → 0.32 (Lead-acid)
- 0.345
- 0.35 → 0.22 (Hydrogen)
- 0.2, 0.19, 0.18
- 0.17
- 0.13
- 0.11
- 0.17, 0.16, 0.15, 0.13

Target: ≤ 5¢/kWh LCOS

LCOS ($/kWh) vs years 2021–2030

*Long Duration Storage Shot establishes goal of $0.05/kWh Levelized Cost of Storage for LDES by 2030

Defining AI

"a machine-based system that can, for a given set of human-defined objectives, **make predictions, recommendations, or decisions influencing real or virtual environments**. Artificial intelligence systems use machine- and human-based inputs to perceive real and virtual environments; abstract such perceptions into models through analysis in an automated manner; and **use model inference to formulate options for information or action.**" –E.O. on AI, October 30, 2023
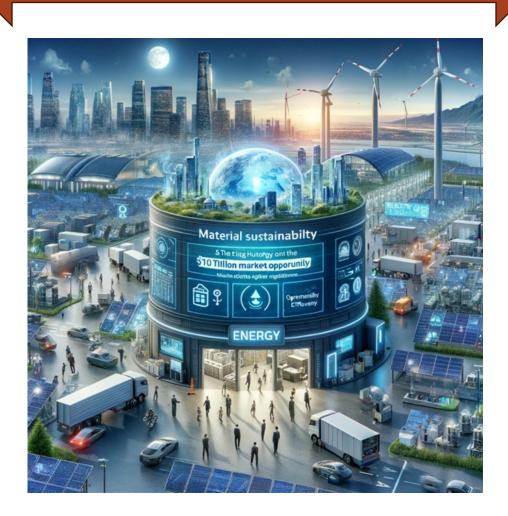
For the purposes of today, broadest definition of AI will be taken.

Two major drivers for today…

Energy Storage Grand Challenges to Solve

Acceleration of Transformational AI