TROY TECHNICAL

NEXT-GENERATION ENERGY STORAGE WEEKLY REPORT

September 12 - September 18, 2026 | Issue 2026-W37

Cell-level evidence, manufacturing yield, safety and bankable supply

19	10
ANALYZED ARTICLES	PRIORITY THEMES

Issued 2026-09-18 | English edition | fixed approved cover artwork

Next-Generation Energy Storage: the boundary moved from isolated claims to qualification evidence

19 English articles were reviewed independently from the Japanese edition. Ten themes are retained for management decisions.

SIGNAL 01 | ACTIVE MATERIALS

R3 Lithium Acquires Former Ascend Elements Facility in Georgia, Launches Commercial Lithium Carbonate

R3 Lithium has launched commercial-scale lithium carbonate production from recycled battery materials at a former Ascend Elements facility in Covington, Georgia, aiming to strengthen the domestic EV battery supply chain.

SIGNAL 02 | CELL DESIGN

Hithium Unveils 4 MWh Sodium-Ion BESS with 20,000 Cycle Life and 30-Year Design

Hithium, a Chinese battery manufacturer, has introduced its new 4 MWh "∞Power N4.0MWh" sodium-ion battery energy storage system, featuring an advanced 785 Ah cell.

SIGNAL 03 | MANUFACTURING

Ore Energy Secures $43M Series A for Iron-Air Battery Commercialization, Completes EDF Pilot

Ore Energy has raised $43 million in Series A funding to accelerate the commercialization of its iron-air battery, offering 24-100 hours of grid-scale storage.

SIGNAL 04 | SYSTEM VALIDATION

US Utilities Plan 24 GW of New Battery Storage by 2026 Amidst Interconnection

US utilities are slated to bring approximately 24 gigawatts (GW) of new utility-scale battery storage online in 2026, according to a February 2026 report by the U.S. Energy Information Administration (EIA).

DECISION

Focus this week's management attention on cell-level evidence, manufacturing yield, safety and bankable supply. Move only when the linked evidence can be reproduced under your own operating conditions.

THREE MANAGEMENT MOVES

1. Buyers: compare technologies under the same duty cycle, safety envelope and total system cost.
2. Suppliers: connect materials claims to electrode processing, yield, validation and secured capacity.
3. Executives: track cycle life, fast charge, safety abuse, yield, cost, sourcing and warranty.

EVIDENCE DISCIPLINE

FACT states what the collected English source reports. BUSINESS READ and ACTION are editorial interpretations. UNKNOWN lists information that the source file does not establish. A linked article is not treated as independent confirmation of every claim.

Five numbers or evidence anchors that require conditions

$15 milli on
A01

SOURCE-BOUND CONDITION
The company acquired the plant on July 26, 2026, officially commencing operations on September 10, and concurrently secured $15 million in Series A funding.

4 MW
A02

SOURCE-BOUND CONDITION
Hithium, a Chinese battery manufacturer, has introduced its new 4 MWh "∞Power N4.0MWh" sodium-ion battery energy storage system, featuring an advanced 785 Ah cell.

$43 milli on
A10

SOURCE-BOUND CONDITION
Ore Energy has raised $43 million in Series A funding to accelerate the commercialization of its iron-air battery, offering 24-100 hours of grid-scale storage.

24 g
A13

SOURCE-BOUND CONDITION
US utilities are slated to bring approximately 24 gigawatts (GW) of new utility-scale battery storage online in 2026, according to a February 2026 report by the U.S.

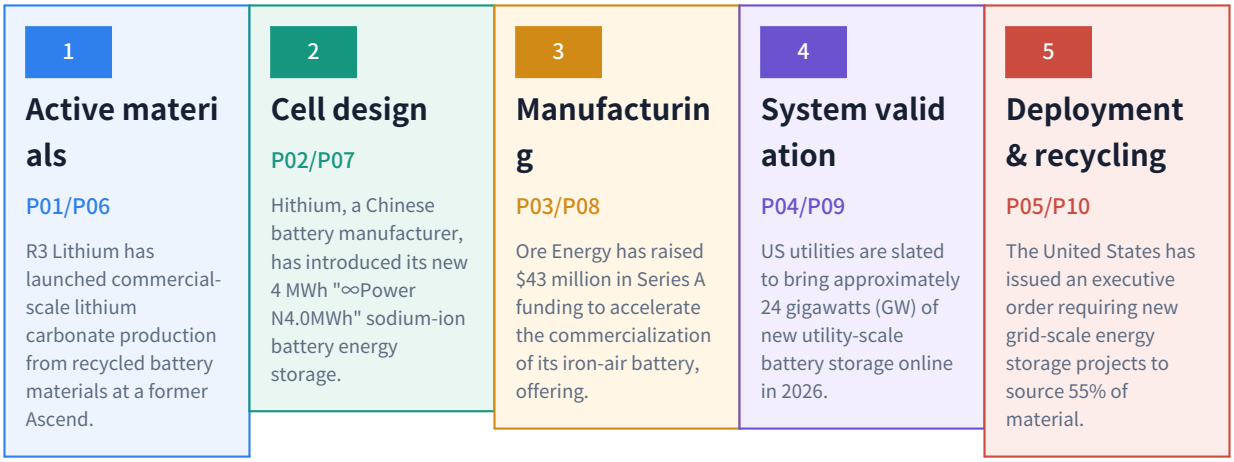
55%
A12

SOURCE-BOUND CONDITION
The United States has issued an executive order requiring new grid-scale energy storage projects to source 55% of material costs from non-Chinese entities by 2026 to qualify for tax credits, aiming to disentangle the US.

HOW TO USE THESE NUMBERS
Each value is shown with the condition stated in the collected English article. Do not compare values across different test methods, device sizes, operating temperatures or commercial stages without normalizing those conditions.

Where the value chain moved

Each stage combines one leading theme and one supporting theme. The report treats handoffs as evidence transfers, not decorative arrows.



EVIDENCE REQUIRED AT EACH HANDOFF

Active materials to Cell design	Transfer test conditions, acceptance criteria, failure data, owner and decision date. Recheck cycle life, fast charge, safety abuse, yield, cost, sourcing and warranty.
Cell design to Manufacturing	Transfer test conditions, acceptance criteria, failure data, owner and decision date. Recheck cycle life, fast charge, safety abuse, yield, cost, sourcing and warranty.
Manufacturing to System validation	Transfer test conditions, acceptance criteria, failure data, owner and decision date. Recheck cycle life, fast charge, safety abuse, yield, cost, sourcing and warranty.
System validation to Deployment & recycling	Transfer test conditions, acceptance criteria, failure data, owner and decision date. Recheck cycle life, fast charge, safety abuse, yield, cost, sourcing and warranty.

COMMON CONTROL POINT

No theme moves to a commercial commitment until a named owner has reproduced the relevant evidence and documented cycle life, fast charge, safety abuse, yield, cost, sourcing and warranty.

Priority map: maturity and business impact

P01	R3 Lithium Acquires Former Ascend Elements Facility in Georgia, Launches Commercial Lithium Carbonate
P02	Hithium Unveils 4 MWh Sodium-Ion BESS with 20,000 Cycle Life and 30-Year Design
P03	Ore Energy Secures $43M Series A for Iron-Air Battery Commercialization, Completes EDF Pilot
P04	US Utilities Plan 24 GW of New Battery Storage by 2026 Amidst Interconnection
P05	US Mandates 55% Non-Chinese Sourcing for Grid Storage Batteries by 2026, Threatening Delays
P06	U.S. Sees Multi-Billion Dollar Construction Boom in Metal and Battery Recycling, with Redwood
P07	US Utility-Scale Battery Storage Capacity Surges to 43.6 GW by End of 2025
P08	Form Energy, Google, and Xcel Partner to Build One of the World's Largest
P09	EU Battery Passport Mandate by 2027 Aims to Close 'Second-Life Gap' for 2kWh+
P10	U.S. Executive Order Excludes Chinese Batteries from Grid-Scale Storage, Opens LFP Market for

REPRODUCIBLE POSITIONING RULE

Horizontal position uses five discrete stages: Research, Prototype, Joint evaluation, Product adoption and Scale. Vertical position uses three impact levels: single use, multiple customers and multiple supply tiers. Bubble diameter reflects the editorial score inherited from the weekly selection rubric.

FACT is source-bound. BUSINESS READ, ACTION and UNKNOWN are explicit editorial layers.

P01 R3 Lithium Acquires Former Ascend Elements Facility in Georgia, Launches Commercial Lithium Carbonate

A01 | Active materials | Product adoption

Date not stated

FACT

R3 Lithium has launched commercial-scale lithium carbonate production from recycled battery materials at a former Ascend Elements facility in Covington, Georgia, aiming to strengthen the domestic EV battery supply chain. The company acquired the plant on July 26, 2026, officially commencing operations on September 10, and concurrently secured $15 million in Series A funding. This initiative is expected to mitigate supply chain pressures by providing a crucial source of lithium for the rapidly expanding U.S.

WHY IT MATTERS

The decision relevance is cell-level evidence, manufacturing yield, safety and bankable supply. The signal should be tested at the application and operating-system level, not accepted from a headline alone.

BUSINESS READ

For operating companies, compare the reported change with current qualification, sourcing and product-roadmap assumptions. For suppliers, connect materials claims to electrode processing, yield, validation and secured capacity.

ACTION

Within 30 days, compare technologies under the same duty cycle, safety envelope and total system cost; record the evidence and owner against P01.

UNKNOWN

Still unproven or incompletely stated: cycle life, fast charge, safety abuse, yield, cost, sourcing and warranty.

EDITORIAL SCORE 22/25 | MATURITY 4/5 | IMPACT 3/3

P02 Hithium Unveils 4 MWh Sodium-Ion BESS with 20,000 Cycle Life and 30-Year Design

A02 | Cell design | Scale-up

Date not stated

FACT

Hithium, a Chinese battery manufacturer, has introduced its new 4 MWh "∞Power N4.0MWh" sodium-ion battery energy storage system, featuring an advanced 785 Ah cell. This system boasts an impressive 20,000-cycle life and a 30-year design life, positioning it as a highly durable and cost-effective alternative to lithium-ion solutions. Mass production and supply are slated for 2027, initially targeting utility-scale applications before expanding to commercial, industrial, and residential sectors.

WHY IT MATTERS

The decision relevance is cell-level evidence, manufacturing yield, safety and bankable supply. The signal should be tested at the application and operating-system level, not accepted from a headline alone.

BUSINESS READ

For operating companies, compare the reported change with current qualification, sourcing and product-roadmap assumptions. For suppliers, connect materials claims to electrode processing, yield, validation and secured capacity.

ACTION

Within 30 days, compare technologies under the same duty cycle, safety envelope and total system cost; record the evidence and owner against P02.

UNKNOWN

Still unproven or incompletely stated: cycle life, fast charge, safety abuse, yield, cost, sourcing and warranty.

EDITORIAL SCORE 22/25 | MATURITY 5/5 | IMPACT 2/3

FACT is source-bound. BUSINESS READ, ACTION and UNKNOWN are explicit editorial layers.

P03 Ore Energy Secures $43M Series A for Iron-Air Battery Commercialization, Completes EDF Pilot

A10 | Manufacturing | Joint evaluation

Date not stated

FACT

Ore Energy has raised $43 million in Series A funding to accelerate the commercialization of its iron-air battery, offering 24-100 hours of grid-scale storage. The company successfully completed a pilot with EDF in France and secured a 1 GWh supply deal with Dutch utility Budget Thuis. Utilizing only iron, water, and air, this technology boasts a lower Levelized Cost of Storage (LCOS) than lithium-ion batteries and eliminates reliance on critical minerals.

WHY IT MATTERS

The decision relevance is cell-level evidence, manufacturing yield, safety and bankable supply. The signal should be tested at the application and operating-system level, not accepted from a headline alone.

BUSINESS READ

For operating companies, compare the reported change with current qualification, sourcing and product-roadmap assumptions. For suppliers, connect materials claims to electrode processing, yield, validation and secured capacity.

ACTION

Within 30 days, compare technologies under the same duty cycle, safety envelope and total system cost; record the evidence and owner against P03.

UNKNOWN

Still unproven or incompletely stated: cycle life, fast charge, safety abuse, yield, cost, sourcing and warranty.

EDITORIAL SCORE 21/25 | MATURITY 3/5 | IMPACT 3/3

P04 US Utilities Plan 24 GW of New Battery Storage by 2026 Amidst Interconnection

A13 | System validation | Product adoption

Date not stated

FACT

US utilities are slated to bring approximately 24 gigawatts (GW) of new utility-scale battery storage online in 2026, according to a February 2026 report by the U.S. Energy Information Administration (EIA). This rapid expansion follows over 40 GW added in the previous five years, addressing urgent transmission needs driven by data centers and manufacturing.

WHY IT MATTERS

The decision relevance is cell-level evidence, manufacturing yield, safety and bankable supply. The signal should be tested at the application and operating-system level, not accepted from a headline alone.

BUSINESS READ

For operating companies, compare the reported change with current qualification, sourcing and product-roadmap assumptions. For suppliers, connect materials claims to electrode processing, yield, validation and secured capacity.

ACTION

Within 30 days, compare technologies under the same duty cycle, safety envelope and total system cost; record the evidence and owner against P04.

UNKNOWN

Still unproven or incompletely stated: cycle life, fast charge, safety abuse, yield, cost, sourcing and warranty.

EDITORIAL SCORE 21/25 | MATURITY 4/5 | IMPACT 3/3

FACT is source-bound. BUSINESS READ, ACTION and UNKNOWN are explicit editorial layers.

P05 US Mandates 55% Non-Chinese Sourcing for Grid Storage Batteries by 2026, Threatening Delays

A12 | Deployment & recycling | Product adoption

Date not stated

FACT

The United States has issued an executive order requiring new grid-scale energy storage projects to source 55% of material costs from non-Chinese entities by 2026 to qualify for tax credits, aiming to disentangle the US battery market from China. Analysts warn this mandate could lead to deployment delays, increased costs, and project cancellations.

WHY IT MATTERS

The decision relevance is cell-level evidence, manufacturing yield, safety and bankable supply. The signal should be tested at the application and operating-system level, not accepted from a headline alone.

BUSINESS READ

For operating companies, compare the reported change with current qualification, sourcing and product-roadmap assumptions. For suppliers, connect materials claims to electrode processing, yield, validation and secured capacity.

ACTION

Within 30 days, compare technologies under the same duty cycle, safety envelope and total system cost; record the evidence and owner against P05.

UNKNOWN

Still unproven or incompletely stated: cycle life, fast charge, safety abuse, yield, cost, sourcing and warranty.

EDITORIAL SCORE 21/25 | MATURITY 4/5 | IMPACT 3/3

P06 U.S. Sees Multi-Billion Dollar Construction Boom in Metal and Battery Recycling, with Redwood

A03 | Active materials | Product adoption

Date not stated

FACT

The U.S. metal and mineral sector is experiencing a multi-billion dollar construction boom in battery recycling, exemplified by Redwood Materials' massive expansion in Nevada. This project aims to increase copper foil production to 35,000 tons and cathode active material recovery to approximately 100,000 tons annually by 2028. These significant investments are crucial for fortifying the domestic supply chain and boosting the U.S. clean energy economy.

WHY IT MATTERS

The decision relevance is cell-level evidence, manufacturing yield, safety and bankable supply. The signal should be tested at the application and operating-system level, not accepted from a headline alone.

BUSINESS READ

For operating companies, compare the reported change with current qualification, sourcing and product-roadmap assumptions. For suppliers, connect materials claims to electrode processing, yield, validation and secured capacity.

ACTION

Within 30 days, compare technologies under the same duty cycle, safety envelope and total system cost; record the evidence and owner against P06.

UNKNOWN

Still unproven or incompletely stated: cycle life, fast charge, safety abuse, yield, cost, sourcing and warranty.

EDITORIAL SCORE 21/25 | MATURITY 4/5 | IMPACT 2/3

FACT is source-bound. BUSINESS READ, ACTION and UNKNOWN are explicit editorial layers.

P07 US Utility-Scale Battery Storage Capacity Surges to 43.6 GW by End of 2025

A06 | Cell design | Product adoption

Date not stated

FACT

U.S. utility-scale battery storage capacity has expanded at an annual average rate of 70% over the past three years, reaching 43.6 gigawatts (GW) by the end of 2025. The Trump administration has expressed strong support for battery storage, aligning with government goals to enhance AI and defense sectors, and is backing efforts to bolster domestic battery production.

WHY IT MATTERS

The decision relevance is cell-level evidence, manufacturing yield, safety and bankable supply. The signal should be tested at the application and operating-system level, not accepted from a headline alone.

BUSINESS READ

For operating companies, compare the reported change with current qualification, sourcing and product-roadmap assumptions. For suppliers, connect materials claims to electrode processing, yield, validation and secured capacity.

ACTION

Within 30 days, compare technologies under the same duty cycle, safety envelope and total system cost; record the evidence and owner against P07.

UNKNOWN

Still unproven or incompletely stated: cycle life, fast charge, safety abuse, yield, cost, sourcing and warranty.

EDITORIAL SCORE 21/25 | MATURITY 4/5 | IMPACT 2/3

P08 Form Energy, Google, and Xcel Partner to Build One of the World's Largest

A19 | Manufacturing | Research

Date not stated

FACT

Form Energy, Google, and Xcel Energy are collaborating on a $1 billion project to create one of the world's largest iron-air batteries, projected to produce 30 GWh of energy at an exceptionally low cost of $33 to $50 per kilowatt-hour. This ambitious initiative aims to provide long-duration energy storage solutions for large facilities, including data centers, paving the way for accelerated grid decarbonization and stable renewable energy integration.

WHY IT MATTERS

The decision relevance is cell-level evidence, manufacturing yield, safety and bankable supply. The signal should be tested at the application and operating-system level, not accepted from a headline alone.

BUSINESS READ

For operating companies, compare the reported change with current qualification, sourcing and product-roadmap assumptions. For suppliers, connect materials claims to electrode processing, yield, validation and secured capacity.

ACTION

Within 30 days, compare technologies under the same duty cycle, safety envelope and total system cost; record the evidence and owner against P08.

UNKNOWN

Still unproven or incompletely stated: cycle life, fast charge, safety abuse, yield, cost, sourcing and warranty.

EDITORIAL SCORE 21/25 | MATURITY 1/5 | IMPACT 2/3

FACT is source-bound. BUSINESS READ, ACTION and UNKNOWN are explicit editorial layers.

P09 EU Battery Passport Mandate by 2027 Aims to Close 'Second-Life Gap' for 2kWh+

A17 | System validation | Research

Date not stated

FACT

The EU Battery Passport will become mandatory for all batteries over 2kWh entering the EU market after February 18, 2027, enhancing transparency and traceability with QR codes linked to approximately 80 data points. While designed to promote battery second-life applications, challenges such as legacy battery integration, compliance costs, and incomplete technical regulations risk pushing viable batteries to premature recycling.

WHY IT MATTERS

The decision relevance is cell-level evidence, manufacturing yield, safety and bankable supply. The signal should be tested at the application and operating-system level, not accepted from a headline alone.

BUSINESS READ

For operating companies, compare the reported change with current qualification, sourcing and product-roadmap assumptions. For suppliers, connect materials claims to electrode processing, yield, validation and secured capacity.

ACTION

Within 30 days, compare technologies under the same duty cycle, safety envelope and total system cost; record the evidence and owner against P09.

UNKNOWN

Still unproven or incompletely stated: cycle life, fast charge, safety abuse, yield, cost, sourcing and warranty.

EDITORIAL SCORE 21/25 | MATURITY 1/5 | IMPACT 2/3

P10 U.S. Executive Order Excludes Chinese Batteries from Grid-Scale Storage, Opens LFP Market for

A07 | Deployment & recycling | Product adoption

Date not stated

FACT

A late August executive order from the Trump administration effectively bans Chinese-made batteries from U.S. grid-scale energy storage systems. This policy shift could cause short-term project delays and cost increases, given the current reliance on Chinese cells for domestic energy storage installations. Under the new rules, starting in 2026, new energy storage projects must source at least 55% of their material costs from non-Chinese and non-restricted countries to qualify for tax credits.

WHY IT MATTERS

The decision relevance is cell-level evidence, manufacturing yield, safety and bankable supply. The signal should be tested at the application and operating-system level, not accepted from a headline alone.

BUSINESS READ

For operating companies, compare the reported change with current qualification, sourcing and product-roadmap assumptions. For suppliers, connect materials claims to electrode processing, yield, validation and secured capacity.

ACTION

Within 30 days, compare technologies under the same duty cycle, safety envelope and total system cost; record the evidence and owner against P10.

UNKNOWN

Still unproven or incompletely stated: cycle life, fast charge, safety abuse, yield, cost, sourcing and warranty.

EDITORIAL SCORE 20/25 | MATURITY 4/5 | IMPACT 2/3

Playbook and 0-5 year roadmap

STAKEHOLDER	NOW | 0-30 DAYS	NEXT | 1-12 MONTHS	LATER | 1-5 YEARS
Operating companies	compare technologies under the same duty cycle, safety envelope and total system cost	Run production-like qualification with explicit acceptance and stop criteria.	Build a portfolio and architecture that can absorb technology and supplier changes.
Materials, equipment and technology suppliers	connect materials claims to electrode processing, yield, validation and secured capacity	Create shared reliability, process-window and failure-analysis data with customers.	Standardize interfaces, traceability, lifecycle support and recovery services.
Trading, investment and legal teams	Map cycle life, fast charge, safety abuse, yield, cost, sourcing and warranty.	Contract for capacity, quality, change notice, liability, alternatives and exit.	Diversify regional, technical and customer concentration risk.

ROADMAP

NOW | 0-30 DAYS
Evidence ledger
Owner: Strategy + quality
Deliverable: claim, source, condition, owner

NOW | 0-30 DAYS
Risk screen
Owner: Procurement + legal
Deliverable: unknowns, alternatives, stop

NEXT | 1-12 MONTHS
Joint qualification
Owner: R&D + supplier
Deliverable: process window and failure data

NEXT | 1-12 MONTHS
Commercial gate
Owner: Business + finance
Deliverable: unit economics and capacity

LATER | 1-5 YEARS
Platform strategy
Owner: Executive team
Deliverable: portfolio and interface roadmap

LATER | 1-5 YEARS
Service layer
Owner: Operations + channel
Deliverable: monitoring, maintenance and recovery

GO / NO-GO GATES

GATE	OWNER	REQUIRED EVIDENCE	NO-GO CONDITION
G1 Evidence	**Quality**	Source, test conditions and reproducibility	No traceable evidence
G2 Integration	**R&D**	Interface, process window and failure analysis	Cannot meet system conditions
G3 Commercial	**Business**	Capacity, total cost, contract and alternatives	Economics or supply cannot be supported
G4 Lifecycle	**Operations**	Monitoring, maintenance, change notice and exit	No accountable operating plan

ANALYZED ARTICLES | ITEMS 01-10

Every title and URL is displayed in full. URLs wrap without shortening and remain clickable. A verified-reference label means the translated HTML did not retain its original source URL.

ID	FULL ARTICLE TITLE	FULL SOURCE / VERIFIED REFERENCE URL - CLICKABLE
A01	R3 Lithium Acquires Former Ascend Elements Facility in Georgia, Launches Commercial Lithium Carbonate Production from Battery Recycling with $15M Series A Funding	https://www.thecooldown.com/green-tech/battery-recycling-facility-covington-georgia/
A02	Hithium Unveils 4 MWh Sodium-Ion BESS with 20,000 Cycle Life and 30-Year Design, Targeting 2027 Mass Production	https://www.pv-magazine.com/2026/09/16/hithium-launches-4-mwh-sodium-ion-bess-with-new-785ah-cell/
A03	U.S. Sees Multi-Billion Dollar Construction Boom in Metal and Battery Recycling, with Redwood Materials Leading Nevada Plant Expansion to Scale Copper Foil and Cathode Active Material Production	https://www.industrialinfo.com/news/article/us-metal-battery-recycling-construction-means-big-spending--362419
A04	EV Battery Market Surges 30% to 1.2 TWh in 2025; LFP Dominates >55% Share, Driving 8% Price Drop Amidst Non-China Nickel Push	https://www.cruxinvestor.com/posts/30-ev-battery-growth-expands-markets-for-lithium-non-china-nickel-supply
A05	End-of-Life EV Batteries Unlock Value in Second-Life Applications and Critical Material Recycling	https://thisistbs.com/en/publications/stories/used-electric-vehicle-batteries
A06	US Utility-Scale Battery Storage Capacity Surges to 43.6 GW by End of 2025 with Trump Administration Support	https://shalemag.com/us-battery-storage-trump-support/
A07	U.S. Executive Order Excludes Chinese Batteries from Grid-Scale Storage, Opens LFP Market for South Korean Players	https://finance.biggo.com/news/38209267-9b00-4ed3-90d5-cb2e95cf23e5
A08	Advanced Multi-Layered Safety Measures Evolve to Manage Explosion Risks in Containerized Battery Storage Systems	https://envirotecmagazine.com/2026/09/10/managing-explosion-risk-in-battery-storage-systems/
A09	EU Retains Battery Recycling Targets: 65% for Lithium-Based by 2025, 50% Lithium Recovery by 2027	https://environment.ec.europa.eu/news/waste-batteries-recycling-targets-remain-fit-purpose-2026-09-11_en
A10	Ore Energy Secures $43M Series A for Iron-Air Battery Commercialization, Completes EDF Pilot, and Inks 1GWh Deal with Budget Thuis	https://www.indexbox.io/blog/ore-energy-iron-air-battery-43m-series-a-edf-pilot-and-1gwh-budget-thuis-deal/

ANALYZED ARTICLES | ITEMS 11-19

Every title and URL is displayed in full. URLs wrap without shortening and remain clickable. A verified-reference label means the translated HTML did not retain its original source URL.

ID	FULL ARTICLE TITLE	FULL SOURCE / VERIFIED REFERENCE URL - CLICKABLE
A11	Trump Executive Order Casts Uncertainty Over US Grid Battery Growth, Imposing Restrictions on Foreign-Made Components Amidst China's Dominance	https://www.canarymedia.com/articles/batteries/trump-emergency-order-grid-battery-growth
A12	US Mandates 55% Non-Chinese Sourcing for Grid Storage Batteries by 2026, Threatening Delays and Cost Hikes	https://daily.dev/posts/can-the-us-battery-market-untangle-from-china--wxbls5vqq
A13	US Utilities Plan 24 GW of New Battery Storage by 2026 Amidst Interconnection Backlogs	https://investingnews.com/us-utilities-plan-24-gw-of-new-battery-storage-in-2026-as-interconnection-waits-stretch/
A14	FlexGen and Lightshift Energy Deploy 16 Battery Storage Projects in PJM & ISO-NE, Activating Over 25MW/85MWh	https://www.flexgen.com/resources/blog/flexgen-partners-lightshift-energy-its-16-battery-energy-storage-projects-pjm-iso-ne
A15	B2U Storage Solutions to Expand ERCOT Second-Life Battery Projects with Over 50 MWh Addition in Six Months	https://www.utilitydive.com/news/second-life-battery-project-is-b2us-second-in-ercot-with-more-on-the-wa/830409/
A16	On-Grid Battery Energy Storage Systems Market Projected to Hit $141.37 Billion by 2035 with 15.6% CAGR	https://www.acumenresearchandconsulting.com/press-releases/on-grid-battery-energy-storage-systems-market
A17	EU Battery Passport Mandate by 2027 Aims to Close ' Second-Life Gap' for 2kWh+ Batteries	https://autorecyclingworld.com/battery-passports-closing-the-second-life-gap/
A18	India Mandates Long-Duration Energy Storage for New Solar & Wind Projects Starting 2027, Extending to 4-Hour Storage by 2029	https://www.energy-storage.news/long-duration-energy-storage-conversation-gains-traction-in-india-despite-4-hour-battery-storage-focus/
A19	Form Energy, Google, and Xcel Partner to Build One of the World's Largest Iron-Air Batteries: 30 GWh at $33-50/kWh	https://www.facilitiesdive.com/news/airjoule-27m-deal-could-help-push-water-from-air-technology-into-data-cent/830420/

NextGenEnergyStorage — Selected Articles

Date: 2026-09-20

Articles: 19

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#16 On-Grid Battery Energy Storage Systems Market Projected to Hit $141.37 Billion by 2035 with 15.6% CAGR

#17 EU Battery Passport Mandate by 2027 Aims to Close 'Second-Life Gap' for 2kWh+ Batteries

#18 India Mandates Long-Duration Energy Storage for New Solar & Wind Projects Starting 2027, Extending to 4-Hour Storage by 2029

#19 Form Energy, Google, and Xcel Partner to Build One of the World's Largest Iron-Air Batteries: 30 GWh at $33-50/kWh

#01 R3 Lithium Acquires Former Ascend Elements Facility in Georgia, Launches Commercial Lithium Carbonate Production from Battery Recycling with $15M Series A Funding

Published September 15, 2026 CleanTechnica USA

OVERVIEW

R3 Lithium has launched commercial-scale lithium carbonate production from recycled battery materials at a former Ascend Elements facility in Covington, Georgia, aiming to strengthen the domestic EV battery supply chain. The company acquired the plant on July 26, 2026, officially commencing operations on September 10, and concurrently secured $15 million in Series A funding. This initiative is expected to mitigate supply chain pressures by providing a crucial source of lithium for the rapidly expanding U.S. electric vehicle market.

IN DEPTH

Key Findings: R3 Lithium Revives Recycling Plant, Boosts US Lithium Supply

R3 Lithium has officially commenced commercial-scale lithium carbonate production from recycled battery materials at a facility in Covington, Georgia, previously owned by Ascend Elements. The company acquired the plant on July 26, 2026, and announced the start of operations on September 10, marking a significant step towards bolstering the domestic supply of critical battery minerals. In tandem with this operational launch, R3 Lithium also successfully closed a $15 million Series A funding round.

Technical & Process Details

The core of R3 Lithium's operation involves extracting high-purity lithium carbonate from "black mass" – the output of shredded spent lithium-ion batteries. This hydrometallurgical process is designed to efficiently recover valuable metals like lithium, cobalt, and nickel, enabling a circular economy for battery materials. By repurposing an existing facility, R3 Lithium is able to accelerate its market entry and reduce the capital expenditure and environmental footprint typically associated with greenfield projects, a crucial advantage in a rapidly evolving industry.

Background & Context

The United States faces increasing demand for lithium due to the aggressive expansion of its electric vehicle (EV) manufacturing sector. Current global lithium supplies are concentrated, leading to concerns about supply chain resilience and geopolitical dependencies. R3 Lithium's domestic recycling efforts directly address these vulnerabilities by providing a localized and sustainable source of lithium. This move is aligned with national strategies to de-risk critical mineral supply chains and support the domestic battery ecosystem, minimizing reliance on foreign imports and promoting a more secure energy transition.

Strategic Significance & Outlook

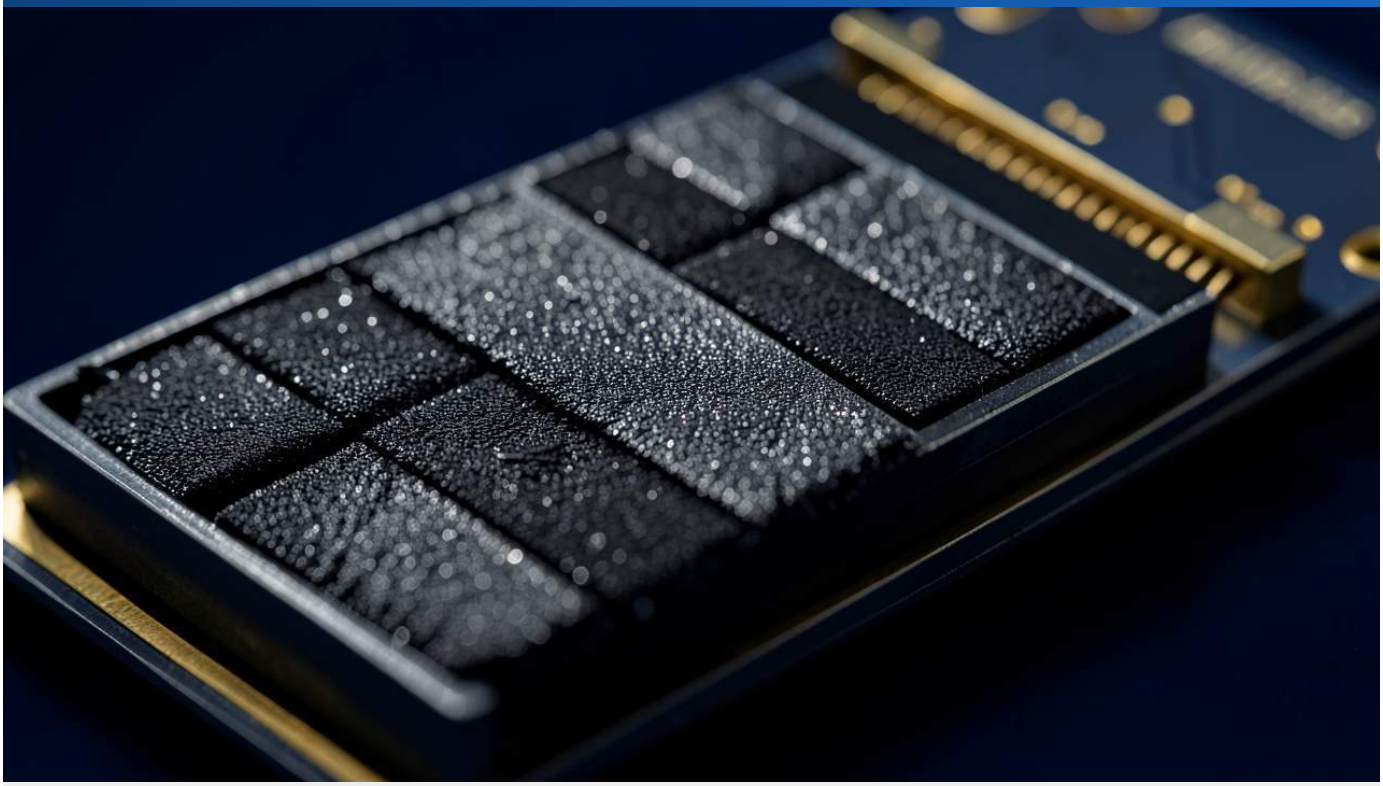
The initiation of commercial operations and the successful Series A funding position R3 Lithium as a key player in the nascent U.S. battery recycling industry. This venture is critical for creating a closed-loop supply chain for EV batteries, reducing the need for virgin mining, and improving the overall sustainability profile of the EV sector. Future plans likely include scaling up production capacity and refining the recycling processes to meet the escalating demand for battery-grade materials, contributing significantly to the long-term competitiveness of the U.S. EV industry.

Source: https://www.thecooldown.com/green-tech/battery-recycling-facility-covington-georgia/

Collected: September 18, 2026 | Automated Research System (Gemini API)

#02 Hithium Unveils 4 MWh Sodium-Ion BESS with 20,000 Cycle Life and 30-Year Design, Targeting 2027 Mass Production

Published September 16, 2026 pv magazine Global China



OVERVIEW

Hithium, a Chinese battery manufacturer, has introduced its new 4 MWh "∞Power N4.0MWh" sodium-ion battery energy storage system, featuring an advanced 785 Ah cell. This system boasts an impressive 20,000-cycle life and a 30-year design life, positioning it as a highly durable and cost-effective alternative to lithium-ion solutions. Mass production and supply are slated for 2027, initially targeting utility-scale applications before expanding to commercial, industrial, and residential sectors.

IN DEPTH

Key Findings: Hithium to Mass Produce High-Durability 4 MWh Sodium-Ion BESS in 2027

Chinese battery manufacturer Hithium has announced the launch of its "∞Power N4.0MWh" sodium-ion battery energy storage system (BESS), integrating a new 785 Ah cell. This system is distinguished by its market-leading durability, offering a 20,000-cycle life and a 30-year design life. Hithium plans for mass production and supply to commence in 2027, with an initial focus on utility-scale applications, subsequently broadening its reach to commercial, industrial, and residential markets.

Technical & Performance Details

The "∞Power N4.0MWh" system is built around Hithium's proprietary 785 Ah sodium-ion cells. Sodium-ion batteries are gaining traction as a viable alternative to lithium-ion counterparts due to their lower material costs and reduced geopolitical risks associated with lithium sourcing. The announced 20,000-cycle life and 30-year design life place this system at the forefront of BESS longevity, promising significant reductions in long-term operational and maintenance costs. The 4 MWh capacity is well-suited for large-scale energy storage applications, facilitating the integration of renewable energy sources and enhancing grid stability.

Background & Context

The global energy storage market is experiencing rapid growth, driven by the increasing deployment of renewable energy and the escalating demand for affordable, safe, and sustainable large-scale storage solutions. While lithium-ion batteries dominate the current market, challenges such as fluctuating raw material prices and supply chain constraints highlight the need for diversified battery chemistries. Sodium-ion technology, utilizing abundant sodium as a primary raw material, emerges as a promising solution to these challenges. Hithium's commercialization of a large-scale system underscores the maturation of sodium-ion batteries from research novelty to a practical, impactful solution for the energy transition.

Strategic Significance & Outlook

Upon its mass production in 2027, Hithium's "∞Power N4.0MWh" system is poised to introduce new competition into the grid-scale energy storage market. The combination of low cost and high durability makes sodium-ion batteries particularly attractive for deployment in developing economies and regions with limited access to lithium resources. It is anticipated that sodium-ion technology will either complement or partially displace lithium-ion batteries, thereby enhancing the overall diversity and resilience of the battery storage market. This development is crucial for meeting global decarbonization targets and ensuring energy security in the coming decades.

Source: https://www.pv-magazine.com/2026/09/16/hithium-launches-4-mwh-sodium-ion-bess-with-new-785ah-cell/

#03 U.S. Sees Multi-Billion Dollar Construction Boom in Metal and Battery Recycling, with Redwood Materials Leading Nevada Plant Expansion to Scale Copper Foil and Cathode Active Material Production

Published September 11, 2026 Industrial Info USA

OVERVIEW

The U.S. metal and mineral sector is experiencing a multi-billion dollar construction boom in battery recycling, exemplified by Redwood Materials' massive expansion in Nevada. This project aims to increase copper foil production to 35,000 tons and cathode active material recovery to approximately 100,000 tons annually by 2028. These significant investments are crucial for fortifying the domestic supply chain and boosting the U.S. clean energy economy.

IN DEPTH

Key Findings: U.S. Battery Recycling Attracts Billions in Construction, Redwood Materials Expands Significantly

The United States is witnessing a multi-billion dollar construction investment wave across its metal and mineral sector, with a significant focus on battery recycling initiatives. At the forefront of this trend is Redwood Materials, which is undertaking a substantial expansion of its lithium-ion battery and consumer electronics recycling facility in Nevada. This expansion project is projected to boost annual copper foil production to 35,000 metric tons and cathode active material recovery to approximately 100,000 metric tons by 2028, underscoring a robust drive towards strengthening domestic supply chains.

Project Details and Technical Significance

Redwood Materials' Nevada facility utilizes advanced recycling processes to recover critical metals from end-of-life lithium-ion batteries and electronic devices. The current expansion is not merely about increasing processing capacity but also enhancing the quality and volume of recovered materials to integrate them back into the battery manufacturing supply chain. The target figures of 35,000 tons of copper foil and 100,000 tons of cathode active material are particularly impactful, as they represent a substantial reduction in reliance on virgin mining and are pivotal for establishing a sustainable, circular economy for battery production.

Background & Industry Context

The escalating global demand for electric vehicles (EVs) and the transition to renewable energy sources have created an immense appetite for battery materials. However, the mining and refining of these materials pose significant environmental challenges and geopolitical risks due to concentrated supply chains. The U.S. government, through policies like the Inflation Reduction Act (IRA), has been actively promoting domestic manufacturing and recycling to build a resilient supply chain. The multi-billion dollar investments currently underway are a direct response to these policy incentives and the burgeoning market demand, signifying a national commitment to energy independence and environmental stewardship.

Strategic Significance & Outlook

These large-scale investment projects are set to accelerate the growth of the U.S. battery recycling industry, laying a fundamental groundwork for the nation's clean energy economy. Redwood Materials' expansion, in particular, marks a critical step towards realizing a circular economy model, which is expected to drive down battery manufacturing costs, reduce environmental impact, and stabilize supply chains in the long run. By fostering such domestic capabilities, the U.S. aims to significantly enhance its international competitiveness in battery technology and manufacturing, securing its position in the future energy landscape.

Source: https://www.industrialinfo.com/news/article/us-metal-battery-recycling-construction-means-big-spending--362419

Collected: September 18, 2026 | Automated Research System (Gemini API)

#04 EV Battery Market Surges 30% to 1.2 TWh in 2025; LFP Dominates >55% Share, Driving 8% Price Drop Amidst Non-China Nickel Push

Published September 18, 2026 Crux Investor UK

OVERVIEW

The EV battery market expanded by 30% to 1.2 TWh in 2025, driven significantly by the cost-effectiveness of Lithium Iron Phosphate (LFP) batteries, which captured over 55% of global deployments. This growth spurred lithium demand across both LFP and nickel-rich chemistries, with LFP offering a >40% cost advantage over NMC, resulting in an 8% average battery price drop that intensified profit pressures throughout the supply chain. Despite China maintaining over 80% of manufacturing capacity, non-Chinese markets still rely on nickel-containing chemistries for approximately 80% of their batteries, highlighting the urgent need for diversified, non-China nickel supply chains.

IN DEPTH

Key Findings

The electric vehicle (EV) battery market experienced a phenomenal 30% year-on-year growth in 2025, reaching 1.2 terawatt-hours (TWh) of deployment. This rapid expansion was largely influenced by an 8% average reduction in battery prices and the dominant market share of Lithium Iron Phosphate (LFP) batteries, which accounted for over 55% of global deployments.

Technical / Market Details

The 2025 surge in EV battery deployments significantly boosted demand for lithium in both LFP and nickel-containing chemistries. LFP batteries emerged as a market leader due to their substantial cost advantage, being over 40% cheaper than their Nickel Manganese Cobalt (NMC) counterparts. This aggressive pricing strategy accelerated EV adoption but simultaneously exerted considerable profit pressure across the entire battery supply chain, from raw material extraction to finished product manufacturing. China continues to be a pivotal player, controlling more than 80% of global EV battery manufacturing capacity. However, outside of China, approximately 80% of deployed EV batteries still rely on nickel-containing chemistries, making the securement of non-Chinese nickel supply a critical strategic imperative for international markets aiming to reduce geopolitical and supply chain risks.

Background & Context

The rapid evolution of the EV market transcends mere automotive innovation; it is a primary driver for advancements in the broader energy storage sector. The ascendancy of LFP batteries signals a growing preference for cost-efficiency, safety, and diversified resource sourcing over maximum energy density in many applications. Global supply chain resilience and mitigating geopolitical risks have become paramount, pushing many nations to seek diversification away from China-centric supply networks for critical materials like nickel. While declining battery prices are excellent for consumer adoption, they mandate relentless cost optimization and technological innovation at every stage of the value chain, from mining and refining to cell production and integration.

Strategic Significance & Outlook

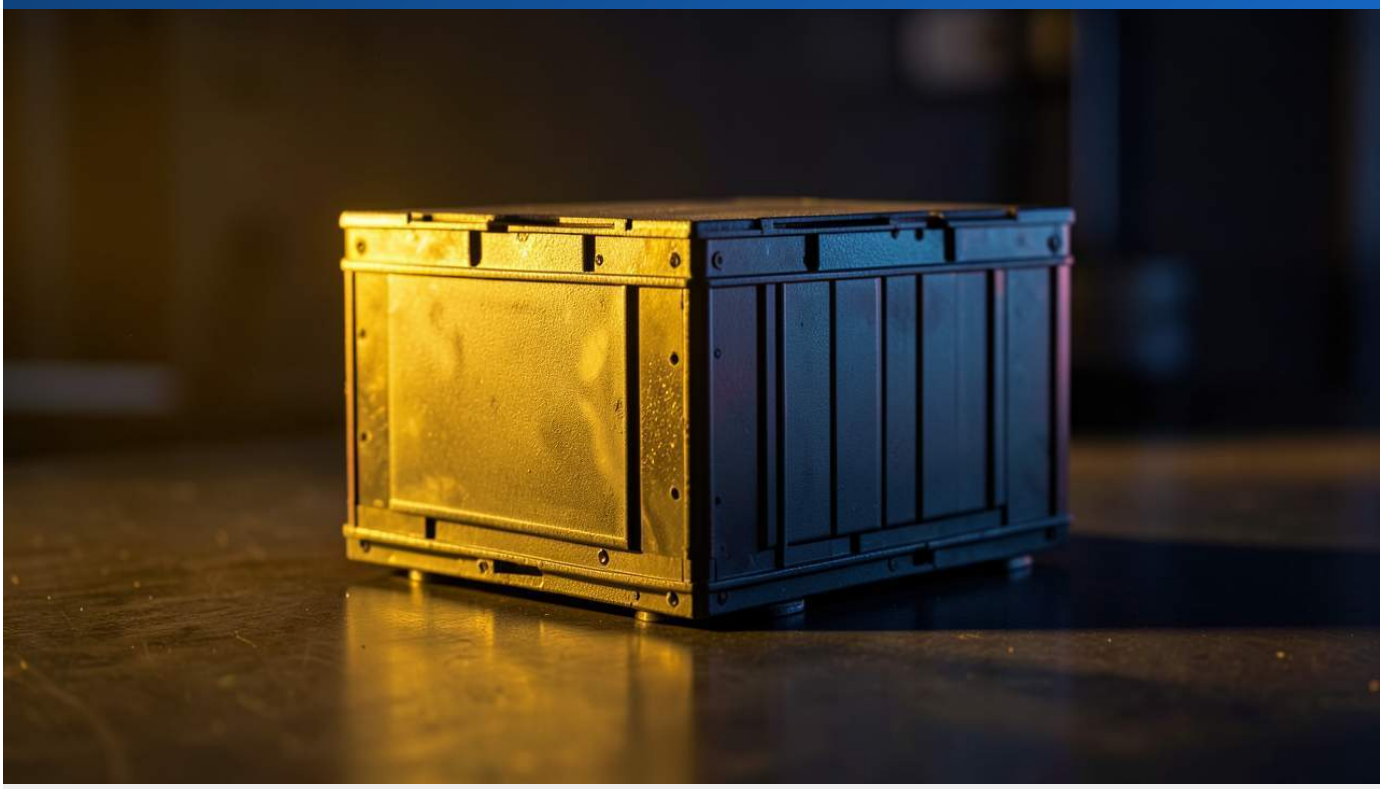
The 2025 market trends clearly delineate the future trajectory for next-generation energy storage. One path involves the accelerated pursuit of cost-performance through LFP technology, while the other emphasizes the urgent need for non-Chinese nickel supply sources and a fundamental restructuring of global battery supply chains to reduce dependencies. These dynamics will catalyze further investments in novel mining and refining techniques, advanced recycling technologies, and the development of diverse battery chemistries. In the long term, sustained reductions in battery prices and continued performance improvements will broaden EV adoption and foster the development of grid-scale energy storage systems integrated with renewable energy sources. The intensifying competition will spur innovation, accelerating the transition towards a more sustainable and distributed energy infrastructure worldwide.

Source: https://www.cruxinvestor.com/posts/30-ev-battery-growth-expands-markets-for-lithium-non-china-nickel-supply

Collected: September 18, 2026 | Automated Research System (Gemini API)

#05 End-of-Life EV Batteries Unlock Value in Second-Life Applications and Critical Material Recycling

Published September 10, 2026 Vertex AI Search Unknown



OVERVIEW

Even with diminished performance, used electric vehicle (EV) batteries are finding significant new economic value through second-life applications and material recycling, rather than being discarded. These applications include solar energy storage, grid balancing, and industrial/residential backup power, capitalizing on remaining capacity for less demanding stationary roles. However, high costs associated with inspection, disassembly, transport, testing, and installation present substantial hurdles, necessitating further technological advancements and efficient business models.

IN DEPTH

Key Findings

Used electric vehicle (EV) batteries, even after their performance degrades for automotive applications, are increasingly being recognized not as waste but as valuable assets for second-life applications and material recycling. This approach promises to unlock significant economic value and contribute to sustainable energy systems.

Technical / Clinical Details

Second-life applications for EV batteries are diverse and critical for integrating renewable energy and enhancing grid stability. Key uses include:

- **Energy Storage for Solar Power:** Mitigating the intermittency of renewable sources and ensuring a stable power supply.
- **Grid Balancing Systems:** Contributing to grid stability and providing auxiliary power during peak demand.
- **Industrial and Residential Backup Energy:** Ensuring reliable power supply during outages or surges in electricity demand.

These applications are viable because batteries deemed insufficient for EV range and power can still offer substantial capacity for stationary storage, which has less stringent performance requirements. However, widespread adoption is challenged by the complex and costly processes involved in accurately assessing the remaining capacity and health of individual batteries, ensuring safe disassembly, managing efficient transport logistics, and integrating them into new systems. These initial investment and operational expenses currently act as significant barriers.

Background & Context

The burgeoning adoption of EVs is leading to a dramatic increase in the volume of retired batteries, posing global challenges related to environmental impact and resource sustainability. Critical materials such as lithium, cobalt, and nickel, essential for battery manufacturing, can be recovered through recycling, thus reducing reliance on virgin resources and enhancing supply chain resilience. The push for a circular economy and environmental protection has also spurred governments worldwide to strengthen battery recycling regulations, aiming to internalize environmental costs and foster sustainable practices.

Strategic Significance & Outlook

The market for used EV battery reuse and recycling is poised for rapid growth in the coming years. Technological innovations, particularly in automated inspection and sorting processes, are expected to significantly improve cost-efficiency, thereby accelerating the deployment of second-life batteries. Government incentives and stricter regulations will likely foster new business models and drive the development of necessary industrial infrastructure. Crucially, the application of these batteries in long-duration energy storage systems is becoming an indispensable component for expanding renewable energy penetration, making them central to the construction of next-generation power grids.

Source: https://thisistbs.com/en/publications/stories/used-electric-vehicle-batteries

Collected: September 18, 2026 | Automated Research System (Gemini API)

#06 US Utility-Scale Battery Storage Capacity Surges to 43.6 GW by End of 2025 with Trump Administration Support

Published September 11, 2026 Energy Network Media Group USA

OVERVIEW

U.S. utility-scale battery storage capacity has expanded at an annual average rate of 70% over the past three years, reaching 43.6 gigawatts (GW) by the end of 2025. The Trump administration has expressed strong support for battery storage, aligning with government goals to enhance AI and defense sectors, and is backing efforts to bolster domestic battery production. Following an additional 8.3 GW in the first half of 2026, bringing the total to 52 GW, the administration announced over $2 billion in investments for battery and critical mineral production in August, including a $1.4 billion loan to next-generation battery company Sila Nanotechnologies. This initiative aims to strengthen domestic supply chains and secure energy independence.

IN DEPTH

Key Findings

The United States has witnessed an extraordinary surge in utility-scale battery storage capacity, which grew at an impressive annual average rate of 70% over the last three years, culminating in 43.6 gigawatts (GW) by the close of 2025. The Trump administration has articulated robust support for battery storage, aligning this with national objectives to fortify the AI and defense sectors, and has announced significant investment plans to bolster domestic battery production.

Technical / Clinical Details

The dramatic increase in U.S. battery storage primarily serves to integrate intermittent renewable energy sources and enhance grid stability. By the end of 2025, 43.6 GW of storage capacity was operational, marking a substantial year-over-year increase. An additional 8.3 GW was added in the first half of 2026, elevating the total capacity to 52 GW. This rapid expansion is underpinned by supportive federal and state policies, alongside continuous improvements in battery technology cost-efficiency and performance.

As part of the Trump administration’s support package, over $2 billion in investments for battery and critical mineral production companies were announced in August. This includes a substantial $1.4 billion loan to Sila Nanotechnologies, a next-generation battery firm, which is expected to accelerate the development and production of its high-energy-density silicon anode battery technology. Such investments are pivotal for the U.S. to establish leadership in battery technology and localize its supply chain.

Background & Context

The U.S. power grid confronts a dual challenge: aging infrastructure and the increasing variability introduced by expanding renewable energy integration. Battery storage systems play an indispensable role by storing renewable electricity and dispatching it on demand, thereby enhancing grid stability and mitigating blackout risks. Furthermore, the advancements in AI technologies and the escalating power demands from the defense sector intensify the need for reliable energy storage solutions. The administration's support transcends conventional energy policy, forming an integral part of a broader strategy aimed at national security and economic competitiveness.

Strategic Significance & Outlook

This substantial government investment and policy backing are poised to significantly strengthen domestic battery manufacturing capabilities, reducing reliance on foreign supply chains. Investments in cutting-edge technologies, such as those by Sila Nanotechnologies, are expected to drive further improvements in battery performance and cost reduction, thereby boosting market competitiveness. Consequently, accelerated integration of renewable energy and the development of a more resilient, self-sufficient power grid are anticipated. Investors and businesses should actively explore opportunities in U.S.-based battery manufacturing and storage projects, leveraging this strong governmental support.

Source: https://shalemag.com/us-battery-storage-trump-support/

#07 U.S. Executive Order Excludes Chinese Batteries from Grid-Scale Storage, Opens LFP Market for South Korean Players

Published September 13, 2026 BigGo Finance USA

OVERVIEW

A late August executive order from the Trump administration effectively bans Chinese-made batteries from U.S. grid-scale energy storage systems. This policy shift could cause short-term project delays and cost increases, given the current reliance on Chinese cells for domestic energy storage installations. Under the new rules, starting in 2026, new energy storage projects must source at least 55% of their material costs from non-Chinese and non-restricted countries to qualify for tax credits. Consequently, South Korean battery companies are emerging as key alternative LFP suppliers in the U.S. market.

IN DEPTH

Key Findings

The Trump administration, via an executive order issued in late August, has effectively barred Chinese-made batteries from U.S. grid-scale energy storage systems. This pivotal decision is set to reshape the domestic energy storage market, notably opening new opportunities for South Korean battery manufacturers as alternative Lithium Iron Phosphate (LFP) suppliers.

Technical / Clinical Details

This executive order addresses national security concerns within the U.S. supply chain. Specifically, new energy storage projects commencing in 2026 and beyond will be required to source at least 55% of their battery material costs from countries other than China and other designated restricted nations, in order to qualify for federal incentives such as investment tax credits (ITC). Given that a significant portion of current U.S. grid-scale storage installations rely on Chinese-made lithium-ion battery cells, this regulation is anticipated to cause project delays and cost increases in the short term.

However, this policy shift will particularly impact the LFP battery market. LFP batteries, renowned for their cost-effectiveness and superior safety, are widely adopted for grid-scale storage, with Chinese companies historically dominating the supply. The exclusion measure is now positioning South Korean firms like LG Energy Solution, Samsung SDI, and SK ON to rapidly emerge as alternative LFP battery cell suppliers in the U.S. market, securing significant new business opportunities.

Background & Context

Amid escalating trade and technological tensions between the U.S. and China, the security of critical infrastructure and supply chains has become a paramount concern in U.S. national strategy. Energy storage is crucial for the proliferation of renewable energy and strengthening grid resilience, making the diversification and localization of battery supply an imperative for U.S. energy independence. This latest measure is seen as part of a broader strategy to reduce U.S. dependence on China for clean energy technology supply chains and enhance cooperation with allied nations.Strategic Significance & Outlook

This executive order holds the potential to fundamentally alter how energy storage projects are implemented in the United States. While short-term disruptions are expected, the long-term impact will likely foster diversification and resilience within the U.S. battery supply chain. South Korean companies, in particular, are poised to establish themselves as major players in the U.S. LFP battery market, gaining substantial opportunities to expand their market share. Investors should consider strategies that adapt to this new market landscape, potentially through partnerships and investments with non-Chinese suppliers, especially those in South Korea. This policy is set to reconfigure the global battery industry's competitive landscape.

Source: https://finance.biggo.com/news/38209267-9b00-4ed3-90d5-cb2e95cf23e5

Collected: September 18, 2026 | Automated Research System (Gemini API)

#08 Advanced Multi-Layered Safety Measures Evolve to Manage Explosion Risks in Containerized Battery Storage Systems

Published September 10, 2026 Envirotec Magazine UK

OVERVIEW

The rapid growth of containerized Battery Energy Storage Systems (BESS) necessitates robust safety designs and operations to address lithium-ion battery risks like thermal runaway, flammable gas generation, and fire propagation. Modern BESS safety integrates multi-layered protection, including monitoring, gas and fire detection, ventilation, containment, suppression, and explosion protection. Innovative systems like BESS-Saf effectively manage explosion risks by using low-burst pressure explosion vent panels, ensuring controlled pressure relief and directing emissions away from evacuation routes.

IN DEPTH

Key Findings

With the rapid proliferation of containerized Battery Energy Storage Systems (BESS), robust safety designs and operational protocols have become paramount to address the inherent risks of lithium-ion batteries, including thermal runaway, flammable gas generation, and fire propagation. The industry is evolving towards multi-layered protection strategies that combine advanced monitoring, detection, ventilation, containment, suppression, and explosion protection to manage these potential hazards.

Technical / Clinical Details

Due to their high energy density, lithium-ion batteries are susceptible to thermal runaway, a self-propagating chain reaction that can lead to a rapid increase in internal temperature, release of flammable gases, and ultimately, fire or explosion. To mitigate these risks, modern BESS integrate a comprehensive suite of safety measures:

- **Advanced Monitoring Systems:** Real-time surveillance of individual battery cell and module parameters (temperature, voltage, current) for early detection of abnormal conditions.
- **Gas and Fire Detection:** Deployment of flammable gas sensors and smoke detectors to promptly identify gases or smoke indicative of the initial stages of thermal runaway.
- **Robust Ventilation Systems:** Efficient removal of detected flammable gases to reduce the risk of explosive atmospheres.
- **Fire Containment and Suppression:** Designs that isolate compromised cells or modules to prevent fire propagation to other battery units. This often includes automatic extinguishing and cooling systems.
- **Explosion Protection:** Systems such as BESS-Saf incorporate low-burst pressure explosion vent panels strategically located on the container. These panels ensure a controlled release of pressure during an explosion, directing blast forces and flames away from critical areas like evacuation routes or adjacent equipment.

These combined measures aim to minimize the operational risks associated with BESS deployment.

Background & Context

BESS are indispensable infrastructure for integrating growing volumes of renewable energy and stabilizing modern power grids. However, past incidents involving BESS fires and explosions have raised significant public safety and asset protection concerns. This has driven the industry to implement more stringent safety standards and develop sophisticated safety technologies. Regulatory bodies are also introducing new guidelines and certification schemes for BESS design, installation, and operation, elevating safety measures beyond mere technical requirements to critical regulatory compliance.

Strategic Significance & Outlook

BESS safety technologies are expected to continue evolving, leading to the development of more robust and intelligent protection systems. Future innovations are anticipated in AI-powered predictive analytics, preventive maintenance techniques to pre-empt thermal runaway, and enhanced module-level containment strategies. These technological advancements will further accelerate BESS adoption and ensure a safer transition to clean energy. Investors and project developers should recognize that investing in advanced safety technologies not only mitigates accident risks but also contributes to reduced insurance premiums and enhanced project reliability.

Source: https://envirotecmagazine.com/2026/09/10/managing-explosion-risk-in-battery-storage-systems/

Collected: September 18, 2026 | Automated Research System (Gemini API)

#09 EU Retains Battery Recycling Targets: 65% for Lithium-Based by 2025, 50% Lithium Recovery by 2027

Published September 11, 2026 EU Environment EU

OVERVIEW

The European Commission has affirmed that existing EU targets for battery recycling efficiency and material recovery remain appropriate under the 2023 Battery Regulation, requiring no immediate revision. Key mandates include a minimum 65% recycling efficiency for lithium-based batteries by December 31, 2025, and 50% material recovery for lithium by December 31, 2027. This stability provides a clear regulatory framework, supporting sustainable resource management and encouraging investment in the European battery recycling industry.

IN DEPTH

Key Findings

The European Commission has concluded its initial review under the Battery Regulation, affirming that current EU targets for waste battery recycling efficiency and material recovery remain fit for purpose. This decision means there will be no immediate revision of targets, maintaining the existing obligations to achieve minimum recycling efficiencies of 75% for lead-acid batteries, 65% for lithium-based batteries, 80% for nickel-cadmium batteries, and 50% for other waste batteries by December 31, 2025. Material recovery targets, including 90% for cobalt, copper, lead, and nickel, and 50% for lithium, also remain unchanged for achievement by December 31, 2027.

Technical / Clinical Details

These ambitious targets apply universally across all types of waste batteries, encompassing portable batteries, light means of transport (LMT) batteries, starting, lighting, and ignition (SLI) batteries, industrial batteries, and electric vehicle (EV) batteries. Recycling efficiency is calculated as the total weight of materials recovered from the recycling process divided by the total weight of waste batteries treated. The material recovery targets are specifically designed to incentivize the re-entry of critical metals into the recycling loop, thereby enhancing the security of raw material supply within the EU.

Background & Context

Europe has established a comprehensive regulatory framework that covers the entire lifecycle of batteries, from production to collection and recycling. This is crucial as demand for batteries rapidly escalates due to the proliferation of electric vehicles and the expansion of renewable energy storage. Ensuring resource sustainability and environmental protection is paramount. Maintaining existing targets provides a stable signal to the recycling industry, fostering investment and technological innovation, and forms a core component of the EU's broader circular economy strategy.

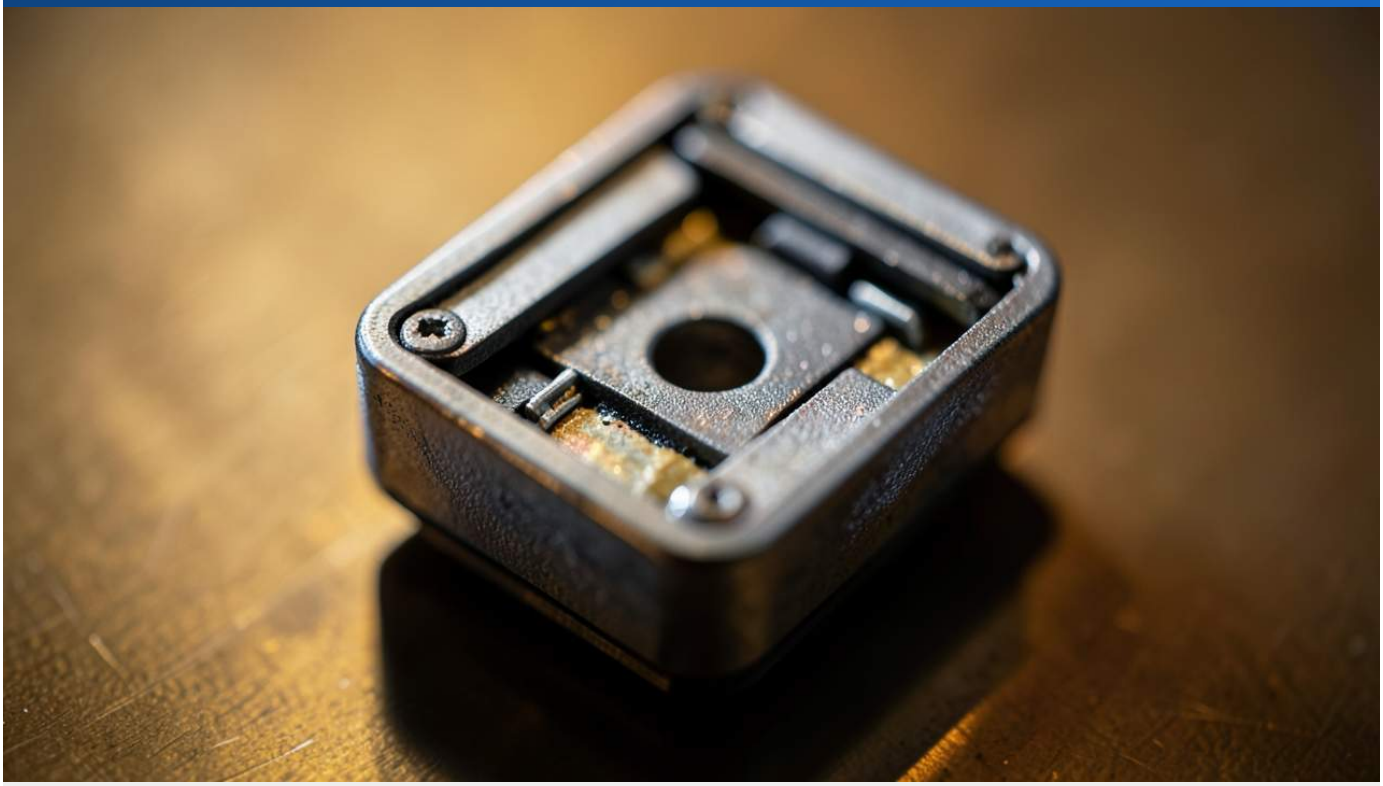
Strategic Significance & Outlook

The European Commission will continue to monitor the evolution of battery technologies and market dynamics, reserving the option to review targets in the future if deemed necessary. The next comprehensive review is scheduled for August 18, 2031. This approach allows the EU to adapt to new technological and economic challenges while sustaining its competitiveness and commitment to sustainability across the battery value chain. Achieving these targets is pivotal for the EU's green deal objectives and its strategic autonomy in the battery sector.

Source: https://environment.ec.europa.eu/news/waste-batteries-recycling-targets-remain-fit-purpose-2026-09-11_en

#10 Ore Energy Secures $43M Series A for Iron-Air Battery Commercialization, Completes EDF Pilot, and Inks 1GWh Deal with Budget Thuis

Published September 10, 2026 IndexBox.io USA



OVERVIEW

Ore Energy has raised $43 million in Series A funding to accelerate the commercialization of its iron-air battery, offering 24–100 hours of grid-scale storage. The company successfully completed a pilot with EDF in France and secured a 1 GWh supply deal with Dutch utility Budget Thuis. Utilizing only iron, water, and air, this technology boasts a lower Levelized Cost of Storage (LCOS) than lithium-ion batteries and eliminates reliance on critical minerals. Ore Energy aims for GWh-scale manufacturing by 2028, advancing its Gen2 cell technology.

IN DEPTH

Key Findings

Ore Energy has successfully secured $43 million in Series A funding to expedite the commercialization of its iron-air battery technology, designed for long-duration grid storage, offering 24 to 100 hours of continuous power. The company has already completed a successful pilot project with French energy giant EDF and secured a substantial 1 GWh supply agreement with Budget Thuis, a Dutch energy retailer. This dual progress highlights the strong market demand for cost-effective and geopolitically de-risked storage solutions essential for the deep integration of renewable energy sources.

Technical / Clinical Details

Ore Energy's iron-air battery utilizes only abundant and inexpensive materials: iron, water, and air. The technology stores electrical energy through the reversible chemical reaction of iron oxidation (rusting) and then retrieves it as electricity when needed. This approach eliminates dependence on critical and geopolitically sensitive metals such as lithium and cobalt, significantly reducing supply chain risks. The company asserts that its system can achieve a lower Levelized Cost of Storage (LCOS) compared to existing lithium-ion batteries, providing a significant economic advantage for long-duration grid applications. Currently, Ore Energy is advancing its second-generation cell technology with an ambitious goal of GWh-scale manufacturing by 2028.

Background & Context

The rapid expansion of renewable energy generation presents a significant challenge to power grids due to its inherent variability. Intermittent sources like solar and wind require large-scale, long-duration energy storage to ensure a stable and consistent power supply. While lithium-ion batteries are well-suited for short-duration storage, they face cost and lifespan limitations for applications requiring more than 24 hours of storage. Iron-air batteries, such as those developed by Ore Energy, emerge as a promising candidate to bridge this long-duration storage gap. Their use of abundant materials and reduced supply chain risks aligns perfectly with national energy security strategies, enhancing their strategic value.

Strategic Significance & Outlook

The $43 million funding and the significant contract with major energy players like EDF and Budget Thuis indicate that Ore Energy's iron-air battery technology is gaining strong commercial traction. Achieving GWh-scale manufacturing by 2028 could profoundly impact the global power market, further accelerating the adoption of renewable energy. If deployed at scale, this technology is expected to contribute to reducing reliance on fossil fuels and building a more sustainable and resilient energy infrastructure. The continued development of the company's second-generation cells and its further market expansion will be key areas to watch.

Source: https://www.indexbox.io/blog/ore-energy-iron-air-battery-43m-series-a-edf-pilot-and-1gwh-budget-thuis-deal/

Collected: September 18, 2026 | Automated Research System (Gemini API)

#11 Trump Executive Order Casts Uncertainty Over US Grid Battery Growth, Imposing Restrictions on Foreign-Made Components Amidst China's Dominance

Published September 10, 2026 Canary Media USA

OVERVIEW

A Trump administration executive order on grid cybersecurity, announced in late August, risks slowing growth in the US energy storage market by banning foreign-made technology, particularly from China. With China manufacturing approximately two-thirds of lithium-ion batteries used in US grid equipment, the battery sector is projected to be most affected. The Department of Energy is slated to issue clarifying regulations within 120 days, but the order could cause immediate supply chain uncertainty and project delays, necessitating urgent domestic manufacturing ramp-up.

IN DEPTH

Key Findings

A late August executive order from the Trump administration concerning grid cybersecurity is poised to introduce significant uncertainty into the growth trajectory of the US energy storage market. This order prohibits the use of foreign-made power grid equipment, specifically targeting technologies that could be exploited for hacking or disruption. Given that China manufactures approximately two-thirds of the lithium-ion batteries utilized in US grid installations, the battery market is anticipated to bear the brunt of this impact. This raises concerns about potential delays and increased costs for Battery Energy Storage System (BESS) projects, which are crucial for the expanded integration of renewable energy.

Technical / Clinical Details

The executive order's core objective is to restrict the use of technology, particularly equipment designed, developed, manufactured, or supplied by "foreign adversaries," to enhance the security and resilience of the US electric power system. While the intent is national security, the ramifications are substantial given China's dominant position in the global battery supply chain. Lithium-ion batteries are widely used in electric vehicles (EVs) and large-scale grid storage, with much of their key components and assembly occurring in China. This order will compel US companies across the entire battery supply chain—from cells to modules and system integration—to aggressively pursue new procurement strategies and invest in domestic manufacturing capabilities.

Background & Context

The United States is actively promoting the deployment of large-scale energy storage systems to accelerate its transition to clean energy. However, this effort has been challenged by an over-reliance on specific foreign nations for critical technological components. The executive order aims to mitigate this dependency and bolster domestic supply chains due to national security concerns. The energy storage industry is likely to face short-term challenges, including supply chain disruptions, increased costs, and project delays, upon the order's enforcement. Nevertheless, it also presents a long-term opportunity to stimulate the development of a robust domestic battery manufacturing ecosystem within the US.

Strategic Significance & Outlook

The US Department of Energy is expected to issue rules and regulations clarifying the order's implications within 120 days, which will serve as a crucial guide for the industry. This executive order marks a significant turning point for the US in strengthening its energy infrastructure security. The industry will need to explore non-Chinese supply sources, invest in domestic manufacturing, or accelerate the development and adoption of alternative storage technologies, such as iron-air batteries or flow batteries. While this policy may introduce temporary uncertainty into the pace of growth for the US energy storage market, it simultaneously presents an opportunity to revitalize domestic industries and diversify supply chains.

Source: https://www.canarymedia.com/articles/batteries/trump-emergency-order-grid-battery-growth

#12 US Mandates 55% Non-Chinese Sourcing for Grid Storage Batteries by 2026, Threatening Delays and Cost Hikes

Published September 10, 2026 daily.dev (technologyreview.com) USA

OVERVIEW

The United States has issued an executive order requiring new grid-scale energy storage projects to source 55% of material costs from non-Chinese entities by 2026 to qualify for tax credits, aiming to disentangle the US battery market from China. Analysts warn this mandate could lead to deployment delays, increased costs, and project cancellations. While domestic manufacturing capacity from players like LG Energy Solutions and Samsung SDI is expected to meet US demand by 2030, these solutions are projected to be more expensive than Chinese imports.

IN DEPTH

Key Findings

The U.S. government has issued an executive order mandating that new grid-scale energy storage projects procure at least 55% of their material costs from non-Chinese sources by 2026 to qualify for tax credits. This move, aimed at reducing reliance on Chinese-made batteries, has prompted warnings from analysts about potential deployment delays, increased costs, and even project cancellations within the domestic market.

Technical / Clinical Details

The executive order is a strategic attempt to de-couple the U.S. battery supply chain from China's significant global dominance. Specifically, to be eligible for federal tax credits starting in 2026, over 55% of the material costs for batteries used in grid-scale storage projects must originate from the U.S. or countries deemed reliable by the U.S. This directive impacts various stages of the battery supply chain, including raw material extraction, processing, and cell manufacturing. Currently, China holds a commanding share across the lithium-ion battery supply chain, exerting considerable influence from raw material sourcing to finished product assembly.

Background & Context

This policy stems from broader U.S. efforts to onshore critical supply chains due to geopolitical risks and economic security concerns. The Inflation Reduction Act (IRA) has already spurred over $110 billion in clean energy investments within its first year, with the domestic battery supply chain being a central focus. However, analysts caution that the new sourcing requirements could slow down battery deployment, elevate project costs, and potentially lead to the cancellation of some planned initiatives. In the short term, domestic battery manufacturing capabilities from companies such as LG Energy Solutions, Samsung SDI, Ford, and SK On are projected to grow and potentially meet U.S. demand by approximately 2030. Nevertheless, these domestic options are anticipated to be more expensive than imports from China, potentially passing on higher costs to consumers and businesses.

Strategic Significance & Outlook

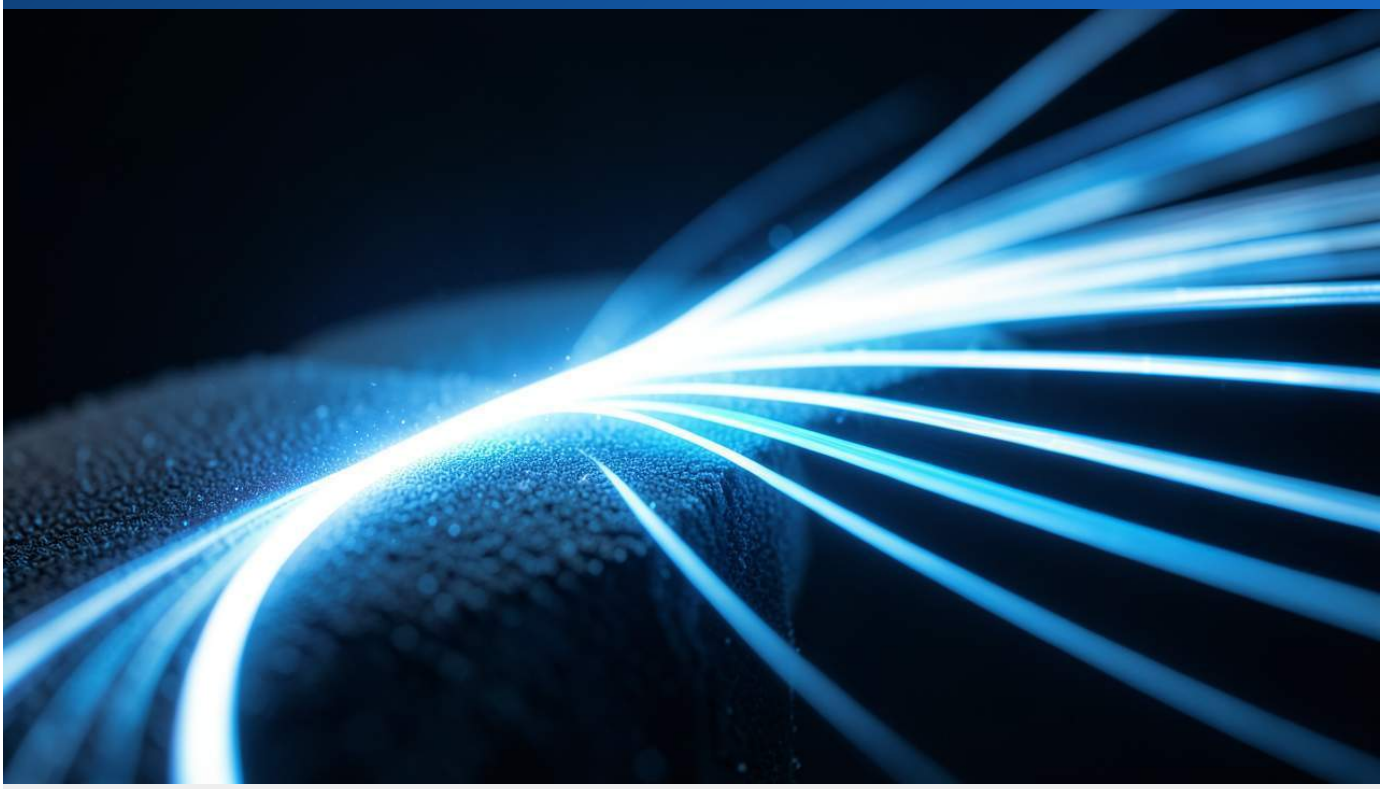
The executive order represents a transformative shift for the U.S. battery market. In the long run, it could bolster the domestic battery supply chain and enhance energy security. However, the process will require overcoming significant challenges, including establishing a robust domestic manufacturing ecosystem, cultivating a skilled workforce, and securing a stable supply of critical raw materials. A combination of government incentives and private investment will be key to addressing these hurdles and enabling the U.S. to establish a competitive position in the global battery market. Concurrently, this policy may accelerate the restructuring of international supply chains and foster diverse battery technologies and sourcing partners.

Source: https://daily.dev/posts/can-the-us-battery-market-untangle-from-china--wxbls5vqq

Collected: September 18, 2026 | Automated Research System (Gemini API)

#13 US Utilities Plan 24 GW of New Battery Storage by 2026 Amidst Interconnection Backlogs

Published September 14, 2026 INN USA



OVERVIEW

US utilities are slated to bring approximately 24 gigawatts (GW) of new utility-scale battery storage online in 2026, according to a February 2026 report by the U.S. Energy Information Administration (EIA). This rapid expansion follows over 40 GW added in the previous five years, addressing urgent transmission needs driven by data centers and manufacturing. However, these new projects face significant bottlenecks due to lengthy interconnection queues, necessitating flexible solutions like NOMAD Power Solutions' mobile BESS to bridge temporary capacity gaps.

IN DEPTH

Key Findings

The U.S. Energy Information Administration (EIA) reported in February 2026 that U.S. utilities plan to bring approximately 24 gigawatts (GW) of new utility-scale battery storage capacity online during 2026. This monumental deployment continues a rapid expansion trend, with over 40 GW added in the preceding five years, underscoring the critical role of battery storage in the clean energy transition.

Technical / Clinical Details

This planned 24 GW addition is designed to address pressing grid needs driven by burgeoning electricity demand from data centers, manufacturing facilities, and other large industrial loads. Battery Energy Storage Systems (BESS) are indispensable for integrating intermittent renewable energy sources and enhancing overall grid stability. EIA data suggests that many of these projects are catalyzed by federal incentives and state-level clean energy mandates. A significant hurdle, however, is the prolonged queue for grid interconnection approvals, which creates a bottleneck that delays the operationalization of ready projects. This systemic issue highlights the challenge of rapidly expanding grid infrastructure to match the pace of BESS deployment.

Background & Context

The United States is aggressively pursuing decarbonization targets and grid modernization initiatives. Battery storage dramatically improves grid reliability and efficiency by storing power from intermittent sources like solar and wind, discharging it when demand peaks. Over the past few years, U.S. utility-scale battery storage capacity has surged, concentrated primarily in states with high renewable energy penetration such as Texas, California, and Arizona. The interconnection backlog reflects both the rapid surge in electricity demand and the inability of existing transmission infrastructure to keep pace. Companies like NOMAD Power Solutions are addressing this by developing mobile, utility-grade, truck-transportable battery energy storage systems. These solutions offer flexibility, allowing utilities to monetize existing nodes during periods when permanent upgrades are pending, and then relocate the assets once local constraints are resolved.

Strategic Significance & Outlook

The planned 24 GW of battery storage in 2026 represents a pivotal step towards decarbonizing and stabilizing the U.S. electric grid. Resolving interconnection queues is an urgent priority, necessitating streamlined regulatory processes and accelerated investment in transmission infrastructure. Innovative solutions like mobile BESS will play a crucial role in bridging short-term capacity gaps. In the long term, these investments are expected to bolster U.S. energy security and lay the foundation for a more sustainable and resilient power system. Furthermore, this large-scale deployment will catalyze further innovation and cost reductions in battery technology, accelerating the development of next-generation storage solutions.

Source: https://investingnews.com/us-utilities-plan-24-gw-of-new-battery-storage-in-2026-as-interconnection-waits-stretch/

Collected: September 18, 2026 | Automated Research System (Gemini API)

#14 FlexGen and Lightshift Energy Deploy 16 Battery Storage Projects in PJM & ISO-NE, Activating Over 25MW/85MWh

Published September 16, 2026 FlexGen USA

OVERVIEW

FlexGen has partnered with Lightshift Energy to deploy 16 battery energy storage projects across the PJM and ISO-NE power markets. Six projects are already operational, providing over 25MW/85MWh of flexible storage capacity to regional grids. An additional 10 projects are under construction, poised to add over 55MW/200MWh, with FlexGen's HybridOS® Energy Management System (EMS) enabling efficient operation and diverse market strategies for these systems.

IN DEPTH

Key Findings

FlexGen, in a strategic partnership with Lightshift Energy, is deploying a total of 16 battery energy storage projects across the PJM and ISO-NE power market regions. Six of these projects are already complete and operational, providing over 25MW/85MWh of flexible storage capacity to the regional power grids, significantly enhancing system stability and renewable energy integration.

Technical / Clinical Details

These projects are built upon FlexGen's advanced HybridOS® Energy Management System (EMS). Designed for seamless integration with battery OEMs, HybridOS® EMS delivers sophisticated analytics and AI-driven insights, empowering energy storage owners to execute diverse power market strategies efficiently. This allows for maximizing revenue through various grid services, including frequency regulation, peak shaving, and energy arbitrage. The six completed projects collectively deliver at least 25MW of power and 85MWh of energy. Furthermore, the ten projects currently under construction are slated to provide an additional 55MW of power and over 200MWh of energy. These systems facilitate the integration of various generation types, such as solar and wind, improving grid stability while maximizing economic returns.

Background & Context

In large independent system operator (ISO) controlled power markets like PJM (Mid-Atlantic and Eastern U.S.) and ISO-NE (New England), the increasing penetration of renewable energy sources presents growing challenges for maintaining grid stability and enhancing reliability. Battery Energy Storage Systems (BESS) are critical solutions for addressing these challenges by complementing the intermittency of renewables, alleviating transmission congestion, and serving as backup power during emergencies. The partnership between FlexGen and Lightshift Energy exemplifies the acceleration of large-scale BESS deployment in the U.S., leveraging the combined expertise of both companies to achieve highly efficient and reliable operations in these complex power markets.

Strategic Significance & Outlook

The ongoing deployment of these projects by FlexGen and Lightshift Energy represents a significant advancement towards modernizing and decarbonizing the U.S. electric grid. With the remaining ten projects coming online, battery storage capacity in the PJM and ISO-NE regions will substantially increase, enabling greater integration of renewable energy and enhanced grid resilience. The evolution of intelligent energy management technologies, such as FlexGen's HybridOS® EMS, will be key to further enhancing the value of battery storage systems and improving returns on investment for power market participants. This partnership is expected to enable even larger BESS projects in the future, contributing to the establishment of a more stable and sustainable power infrastructure.

Source: https://www.flexgen.com/resources/blog/flexgen-partners-lightshift-energy-its-16-battery-energy-storage-projects-pjm-iso-ne

Collected: September 18, 2026 | Automated Research System (Gemini API)

#15 B2U Storage Solutions to Expand ERCOT Second-Life Battery Projects with Over 50 MWh Addition in Six Months

Published September 15, 2026 Utility Dive USA

OVERVIEW

B2U Storage Solutions is expanding its second-life battery projects in Texas' ERCOT market, planning to deploy over 50 MWh of additional storage capacity within the next six months. Strategic supply agreements with Waymo and increasing electric vehicle (EV) penetration bolster the company's access to retired EV batteries suitable for stationary storage. This initiative provides a cost-effective and environmentally friendly solution for grid stabilization and renewable energy integration.

IN DEPTH

Key Findings

B2U Storage Solutions is accelerating the expansion of its second-life battery energy storage projects within the Texas ERCOT power market, with plans to deploy over 50 MWh of additional storage capacity over the next six months. This initiative is designed to maximize the value of used electric vehicle (EV) batteries and enhance the sustainability of the power grid.

Technical / Clinical Details

B2U's business model specializes in repurposing EV batteries that have reached the end of their automotive life for use in stationary energy storage systems. These 'second-life' batteries, while no longer optimal for EV demands, retain significant capacity suitable for grid support functions such as peak shaving, frequency regulation, and renewable energy integration. The company has established a strategic battery supply agreement with Waymo, providing a stable foundation for securing high-quality used EV batteries. Furthermore, the rising adoption rate of EVs signifies a growing future supply of second-life batteries, strongly bolstering B2U's expansion efforts. B2U possesses proprietary technology and systems to efficiently integrate and manage these batteries, with its current portfolio in the Texas ERCOT market already exceeding 50 MWh across multiple projects.

Background & Context

Global power markets are increasingly demanding large-scale energy storage solutions to accommodate the growth of renewable energy sources and manage electricity demand fluctuations. Concurrently, the mass production of EV batteries and their end-of-life disposal present environmental and resource efficiency challenges. Utilizing second-life batteries offers an innovative solution to both these issues. Compared to new battery systems, second-life batteries can offer substantial cost reductions, enhancing the economic viability of large-scale energy storage deployments. The Texas ERCOT market, with its high penetration of renewable energy (especially wind and solar), particularly needs such flexible storage solutions for grid stabilization and congestion relief.

Strategic Significance & Outlook

The planned deployment of over 50 MWh of additional second-life battery storage by B2U Storage Solutions in the ERCOT market underscores the company's growth trajectory and highlights the critical role of second-life batteries in the sustainable energy transition. This expansion is expected to reduce the environmental impact of new battery manufacturing and alleviate demand for critical raw materials, all while leveraging existing infrastructure. In the future, as more EV batteries become available for the second-life market, companies like B2U are poised to scale further, contributing to the decarbonization and resilience of global power grids. Continued technological innovation and policy support in this sector could position second-life batteries as a core component of next-generation energy storage solutions.

Source: https://www.utilitydive.com/news/second-life-battery-project-is-b2us-second-in-ercot-with-more-on-the-wa/830409/

Collected: September 18, 2026 | Automated Research System (Gemini API)

#16 On-Grid Battery Energy Storage Systems Market Projected to Hit $141.37 Billion by 2035 with 15.6% CAGR

Published September 11, 2026 Acumen Research and Consulting International

OVERVIEW

The global on-grid Battery Energy Storage Systems (BESS) market is forecast to surge from $33.09 billion in 2025 to $141.37 billion by 2035, exhibiting a robust Compound Annual Growth Rate (CAGR) of 15.6%. BYD Company Limited emerged as the market leader in 2025, surpassing Tesla with approximately 60 GWh of BESS shipments. This exponential growth is driven by the accelerating integration of renewable energy and the critical need for grid modernization.

IN DEPTH

Key Findings

The global market for on-grid Battery Energy Storage Systems (BESS) is poised for significant expansion, with projections indicating a leap from $33.09 billion in 2025 to $141.37 billion by 2035. This represents an impressive Compound Annual Growth Rate (CAGR) of 15.6% from 2026 to 2035. The report highlights North America as a key region, securing the second-largest market share, with its utility-scale battery storage capacity expanding from 43.6 GWh to approximately 52 GWh between late 2025 and mid-2026. A notable shift in market leadership occurred in 2025, where BYD Company Limited surpassed Tesla, becoming the leading on-grid battery storage provider with around 60 GWh of BESS shipments.

Technical and Market Details

The core drivers behind this market surge are the escalating adoption of renewable energy sources such as solar and wind power, coupled with the imperative to enhance grid stability and reliability. BESS solutions are critical for managing the intermittency of renewables, smoothing power supply, and mitigating the impact of fluctuating electricity prices. The technological advancements in battery chemistry, particularly in lithium-ion systems, are making these solutions more cost-effective and efficient for grid-scale applications. Additionally, supportive government policies and incentives aimed at decarbonization and energy independence are catalyzing investments in large-scale energy storage projects globally.

Background & Context

The energy sector is undergoing a profound transformation, with a global push towards cleaner energy and more resilient grid infrastructure. Traditional fossil-fuel based power generation struggles to accommodate the dynamic nature of renewables, making energy storage a foundational component for the future grid. The competitive landscape is intensifying, with established automotive battery manufacturers like BYD leveraging their scale and expertise to dominate the stationary storage market. The rapid growth in North America, for instance, reflects aggressive policy targets and utility investments in modernizing their infrastructure to incorporate more distributed and renewable energy assets.

Strategic Significance & Outlook

The projected growth of the on-grid BESS market underscores its pivotal role in the ongoing global energy transition. For utilities, BESS offers enhanced grid flexibility, ancillary services, and peak shaving capabilities, leading to more efficient and reliable power delivery. For investors, the market presents lucrative opportunities in manufacturing, deployment, and operational services, particularly as economies of scale continue to drive down costs. The displacement of dominant players by emerging powerhouses like BYD indicates a dynamic and rapidly evolving competitive environment. Further innovation in battery longevity, safety, and circular economy practices (e.g., recycling) will be crucial for sustaining this growth and achieving ambitious climate goals.

Source: https://www.acumenresearchandconsulting.com/press-releases/on-grid-battery-energy-storage-systems-market

Collected: September 18, 2026 | Automated Research System (Gemini API)

#17 EU Battery Passport Mandate by 2027 Aims to Close 'Second-Life Gap' for 2kWh+ Batteries

Published September 14, 2026 Auto Recycling World EU (Europe連合)

OVERVIEW

The EU Battery Passport will become mandatory for all batteries over 2kWh entering the EU market after February 18, 2027, enhancing transparency and traceability with QR codes linked to approximately 80 data points. While designed to promote battery second-life applications, challenges such as legacy battery integration, compliance costs, and incomplete technical regulations risk pushing viable batteries to premature recycling. Practical support for small-to-medium-sized dismantlers, repairers, and second-life operators is critical for the scheme's success.

IN DEPTH

Key Findings

The European Union is set to implement a mandatory 'EU Battery Passport' for all batteries exceeding 2kWh placed on the EU market after February 18, 2027. This groundbreaking regulation aims to significantly enhance transparency and traceability across the entire battery lifecycle. The core objective is to bridge the 'second-life gap,' preventing reusable batteries from being prematurely recycled by providing comprehensive data that facilitates their repurposing and extending their useful life.

Technical / Clinical Details

Each battery will be affixed with a QR code, granting access to an electronic record encompassing approximately 80 data points. These data include critical information such as chemical composition, rated capacity, carbon footprint, supply chain due diligence, and performance and durability metrics. This digital 'fingerprint' will provide a detailed history from manufacturing through operational use to end-of-life, enabling accurate assessment of a used battery's health and residual value. This transparency is crucial for promoting not only efficient recycling but also the widespread adoption of second-life applications in stationary storage, electric vehicle charging, and other sectors.

However, the implementation faces substantial hurdles. Key challenges include integrating data from 'legacy batteries' already in circulation, managing the high compliance costs for industry stakeholders, and finalizing the technical rules for data collection and sharing. These factors could disproportionately affect small and medium-sized enterprises (SMEs) involved in dismantling, repairing, and second-life operations. Without adequate practical support and clearer guidelines, there's a tangible risk that potentially reusable batteries might still be shunted into early recycling due to information asymmetry or prohibitive compliance burdens, thereby undermining the passport's primary objective.

Background & Context

The rapid proliferation of electric vehicles (EVs) is leading to an unprecedented volume of end-of-life batteries, making their sustainable management a critical environmental and economic imperative. Promoting battery reuse is central to the circular economy model, as it conserves valuable raw materials, reduces environmental impact, and fosters new business opportunities. The EU Battery Passport represents a pioneering regulatory effort by Europe to lead in sustainable battery management, leveraging digital twin concepts to maximize resource efficiency and sustainability across the battery value chain. This initiative reflects a global trend towards greater accountability and sustainability in technology production.

Strategic Significance & Outlook

The introduction of the EU Battery Passport is poised to revolutionize the battery industry by establishing new standards for transparency and accountability. Increased data availability will empower consumers, manufacturers, recyclers, and new second-life businesses to make more informed decisions, enhancing efficiency across the entire battery value chain. This could significantly increase the proportion of batteries that find a second life, extending their economic and environmental utility. For the scheme to be truly effective, comprehensive technical and financial support for SMEs, alongside the promotion of international data standardization, will be paramount. Overcoming these challenges will allow the EU to set a global precedent for a circular battery economy, driving innovation and sustainable practices worldwide.

Source: https://autorecyclingworld.com/battery-passports-closing-the-second-life-gap/

#18 India Mandates Long-Duration Energy Storage for New Solar & Wind Projects Starting 2027, Extending to 4-Hour Storage by 2029

Published September 15, 2026 Energy-Storage.news India

OVERVIEW

India's Central Electricity Authority (CEA) has proposed mandating energy storage equivalent to at least 10% of project capacity for new ground-mounted solar and onshore wind projects commissioned after July 2027. This mandate further extends the required storage duration from two to four hours for projects starting July 2029. This policy shift signifies a growing momentum for long-duration energy storage (LDES) discussions among developers and procurers, moving beyond India's traditional focus on short-duration firm capacity.

IN DEPTH

Key Findings

The Central Electricity Authority (CEA) of India has put forth a proposal to mandate the integration of energy storage systems, equivalent to at least 10% of project capacity, for all new ground-mounted solar and onshore wind power projects commissioned after July 2027. Further strengthening this commitment, the CEA plans to extend the mandatory storage duration from the current two hours to four hours for projects operational from July 2029. This progressive policy indicates a significant pivot in India's energy strategy, underscoring a growing recognition and active discussion around long-duration energy storage (LDES) technologies among developers and buyers, moving beyond the traditional emphasis on short-term grid stability.

Technical / Clinical Details

Currently, India's grid-scale storage market predominantly focuses on providing short-duration firm capacity, typically less than two hours. The proposed mandate, however, reflects a crucial understanding of the need for extended energy storage to enhance grid stability and effectively integrate larger proportions of intermittent renewable energy. Specifically, new solar and wind projects will be required to store a portion of their generated power for a minimum of four hours, capable of dispatching it when needed. This capability is vital for ensuring stable power supply during periods of low renewable output, such as night-time for solar or calm conditions for wind farms.

This policy change is expected to accelerate investment in LDES technologies beyond conventional lithium-ion batteries. Solutions like flow batteries, compressed air energy storage (CAES), molten salt storage, and iron-air batteries, which offer lower costs for longer discharge durations, are likely to gain significant traction. These LDES technologies can store energy for several hours to multiple days, providing essential flexibility to grid operations as the share of renewable energy continues to grow within India's power mix.

Background & Context

India is experiencing a rapid increase in electricity demand driven by robust economic growth and a burgeoning population. Concurrently, the nation is aggressively pursuing renewable energy targets as part of its climate change commitments and energy security strategy. However, the inherent variability of renewable sources poses significant challenges for grid stability and reliable power delivery. While short-duration storage has addressed immediate frequency regulation and peaking power needs, the increasing penetration of renewables necessitates more extensive, longer-duration storage solutions to ensure continuous and balanced power supply. The CEA's proposal signifies a strategic shift to adapt to these evolving grid requirements and future-proof India's power infrastructure.

Strategic Significance & Outlook

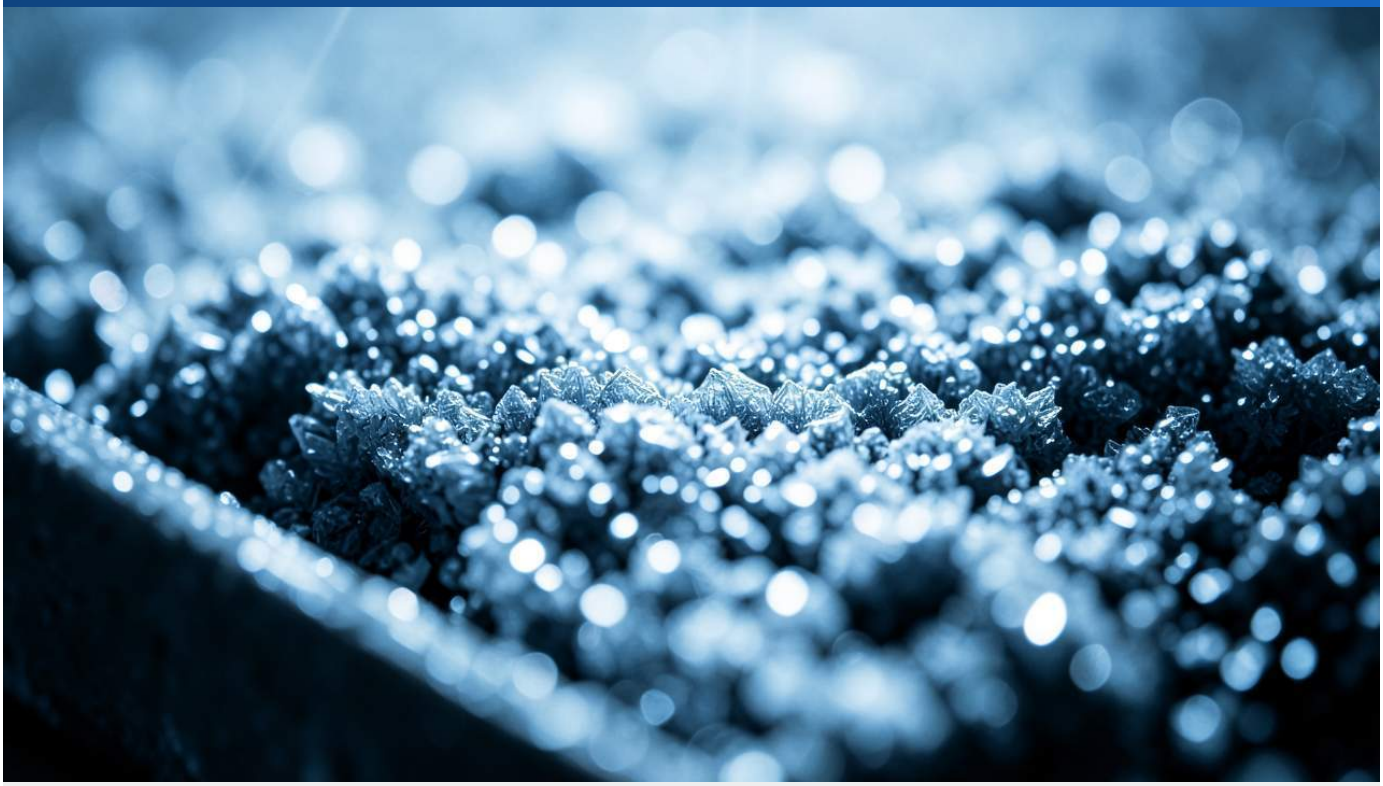
If implemented, this mandate will position India as one of the largest LDES markets globally, fostering rapid development and deployment of LDES technologies and potentially driving down their costs. Developers and investors will likely explore a wider array of long-duration storage technologies beyond lithium-ion, seeking opportunities in the Indian market. The success of LDES widespread adoption will, however, depend on technological maturity, cost competitiveness, and the establishment of local supply chains. India's proactive stance could serve as a model for other developing nations grappling with similar challenges in renewable energy integration and grid stabilization, paving the way for a more resilient and sustainable global energy landscape.

Source: https://www.energy-storage.news/long-duration-energy-storage-conversation-gains-traction-in-india-despite-4-hour-battery-storage-focus/

Collected: September 18, 2026 | Automated Research System (Gemini API)

#19 Form Energy, Google, and Xcel Partner to Build One of the World's Largest Iron-Air Batteries: 30 GWh at $33-50/kWh

Published September 15, 2026 Facilities Dive USA



OVERVIEW

Form Energy, Google, and Xcel Energy are collaborating on a $1 billion project to create one of the world's largest iron-air batteries, projected to produce 30 GWh of energy at an exceptionally low cost of $33 to $50 per kilowatt-hour. This ambitious initiative aims to provide long-duration energy storage solutions for large facilities, including data centers, paving the way for accelerated grid decarbonization and stable renewable energy integration. The innovative 100-hour iron-air battery technology is expected to play a critical role in transforming grid reliability and energy economics.

IN DEPTH

Key Findings

A significant collaboration involving Form Energy, Google, and Xcel Energy is advancing towards the creation of one of the world's largest iron-air battery projects, boasting a staggering 30 gigawatt-hours (GWh) of energy capacity. This monumental $1 billion initiative is targeting an exceptionally low energy production cost of $33 to $50 per kilowatt-hour, aiming to provide groundbreaking long-duration energy storage solutions for large-scale facilities, including critical data centers. This partnership signifies a major leap in addressing the global need for affordable and reliable grid-scale energy storage.

Technical / Clinical Details

At the core of this project is Form Energy's proprietary 100-hour iron-air battery technology. This innovative system utilizes abundant and inexpensive iron as its primary electrode, reacting with oxygen from the air to store and release energy. During charging, oxygen is absorbed, causing the iron to oxidize into rust (iron hydroxide); during discharge, oxygen is released, and the rust reverts to iron, generating electricity. This chemical process enables a vastly longer discharge duration compared to traditional lithium-ion batteries, which rely on more expensive and rarer metals, leading to substantial manufacturing cost reductions.

The 30 GWh storage capacity is immense, capable of powering a city-scale load for multiple days, making it indispensable for overcoming the intermittency of renewable energy sources. The targeted cost of $33 to $50 per kWh is highly competitive for long-duration grid storage, rendering the transition to clean energy more economically viable. The involvement of tech giant Google and utility provider Xcel Energy underscores the practical and large-scale applicability of this technology, moving it beyond research into significant commercial deployment for both utility-scale grids and energy-intensive commercial operations.

Background & Context

The global acceleration towards renewable energy adoption has created an urgent demand for large-scale energy storage systems to stabilize power grids against the variability of solar and wind generation. While lithium-ion batteries excel at short to medium-duration storage, the challenge of storing energy for multiple days has remained a significant hurdle, primarily due to cost and scalability. Form Energy's iron-air battery addresses this 'long-duration storage gap,' attracting considerable attention from the power sector and industries with critical uptime requirements, such as data centers. For data centers, which demand 24/7 reliable power, cost-effective long-duration storage is crucial for decarbonization efforts and operational resilience.

Strategic Significance & Outlook

This collaboration between Form Energy, Google, and Xcel Energy marks a transformative moment for the future of energy infrastructure. Successful deployment of this project will provide compelling evidence of the commercial viability of iron-air battery technology, potentially catalyzing similar large-scale, long-duration storage initiatives worldwide. Industries, particularly data centers, will gain a new pathway to secure stable, clean power supplies, reduce operational costs, and significantly lower their carbon footprint. This endeavor is expected to accelerate the decarbonization of electricity grids, making the vision of renewable energy as a primary baseload power source more tangible and economically achievable, serving as a critical milestone in the global energy transition.

Source: https://www.facilitiesdive.com/news/airjoule-27m-deal-could-help-push-water-from-air-technology-into-data-cent/830420/