

NextGenEnergyStorage

Weekly Intelligence Report

2026-07-19 | 21 articles | 9 countries

troy-technical.jp

This Week's Keyword

Sodium-Ion Surge

LDES & AI Data Center BESS Drive Market

21

articles

Total Articles Analyzed

9

countries

Source Countries

11.275

GWh

Largest BESS Deal

100

hours

Longest Duration BESS

All 21 Articles This Week — 5-Axis Evaluation Matrix

How to read columns — Tech Novelty: degree of breakthrough Market Proximity: closeness to commercialization Market Impact: industry-wide effect Data Reliability: quantitative data & peer review US/EU Relevance: direct impact on US/European companies & supply chains

#	Article Title	Type	Tech Novelty	Market Proximity	Market Impact	Data Reliability	US/EU Relevance	Summary
#01	Hitachi BESS Solutions	Corporate Strategy						Hitachi Energy offers integrated grid-to-cell BESS for C&I;/data centers, optimizing energy and ensuring resilience.
#02	LDES Accelerates	New Product						Form Energy unveils 100-hour iron-air battery, while CATL plans 1 GWh sodium-ion rollout, accelerating LDES.
#03	ESS Bridge Na-Ion	New Product						ESS Tech launches 1.2 MWh modular sodium-ion battery "ESS Bridge" with zero thermal runaway, securing \$1B.
#04	US Na-Ion Push	Corporate Strategy						US firms Peak Energy, ESS Inc., Unigridd accelerate sodium-ion commercialization, with Peak planning 4 GWh/year plant.
#05	CA BESS Project	Project Deployment						Avantus and Fluence partner for 800 MWh California BESS project, using US-made components, targeting 2028.
#06	Japan Na-Ion R&D;	Research Program						Japan's 14-entity consortium, with NEDO funding, aims for mass production of sodium-ion batteries for utility ESS.
#07	Stable Li-S Cell	Research						Chongqing University develops stable 2.22 Ah Li-S pouch cell with "electron-injection softening strategy," 1000+ cycles.
#08	Faraday 3 Zn Battery	New Product						SuperDielectrics unveils "Faraday 3" aqueous zinc battery with 13x longer cycle life, zero thermal runaway for data centers.
#09	Argonne Li-S Boost	Research						Argonne National Lab boosts all-solid-state Li-S battery performance by high-speed mixing, retaining >80% after 450 cycles.
#10	BYD GWh Deal	Corporate Strategy						BYD Energy Storage secures 11.275 GWh battery deal for Abu Dhabi's 19 GWh "Round the Clock" solar-plus-storage project.
#11	CA Project Finance	Project Deployment						Avantus secures \$525M financing for California's Aratina 2 solar-plus-storage project, targeting late 2026 operation.
#12	India BESS Policy	Policy						India waives transmission charges for RE-BESS projects and plans 200+ GWh domestic battery manufacturing by 2030.

#	Article Title	Type	Tech Novelty	Market Proximity	Market Impact	Data Reliability	US/EU Relevance	Summary
#13	MISO BESS Permit	Project Deployment	●○○○ ○	●●●○ ○	●●○○ ○	●●●● ○	●●●● ●	Spearmint Energy secures permit for 150MW/600MWh Midwater BESS project in Minnesota for MISO grid.
#14	US LVO Battery	Corporate Strategy	●●●○ ○	●●●○ ○	●●●○ ○	●●○○ ○	●●●● ●	Tyfast Energy and AIion partner to accelerate US production of LVO lithium batteries for high-performance applications.
#15	Brownfield BESS	Project Deployment	●○○○ ○	●●●○ ○	●●○○ ○	●●●● ○	●●●● ●	Nofar USA closes deal for 400 MWh brownfield BESS project, targeting late 2028 commercial operation.
#16	CATL EU Na-Ion	Corporate Strategy	●●●○ ○	●●●● ○	●●●● ●	●●●● ○	●●●● ●	CATL and Alfen partner to deploy 5 GWh of "Tener Sodium" sodium-ion battery storage in Europe from 2027.
#17	AI DC BESS Shift	Market Overview	●●○○ ○	●●●● ●	●●●● ○	●●○○ ○	●●●● ●	AI data centers are rapidly adopting BESS over diesel for power, enhancing grid stability and efficiency.
#18	CO2 Battery LDES	New Product	●●●● ○	●●●○ ○	●●●● ○	●●○○ ○	●●●○ ○	Energy Dome and SEC partner for Victoria's first 10-hour, 20MW/200MWh CO2 Battery plant for LDES.
#19	Australia VRFB	Project Proposal	●●○○ ○	●●●○ ○	●●●○ ○	●●●○ ○	●●●○ ○	Idemitsu Australia proposes nation's largest 108MW/864MWh vanadium flow battery at a former coal mine site.
#20	Google Solar+BESS	Project Deployment	●○○○ ○	●●●○ ○	●●●● ○	●●●● ○	●●●● ●	Google breaks ground on Steel River Energy Center: 2.5 GW solar, 2.9 GWh battery storage for AI data centers.
#21	Distributed DC Pilot	Pilot Program	●●●○ ○	●●●○ ○	●●●○ ○	●●○○ ○	●●●● ●	Sunrun expands "Distributed Data Center" pilot, integrating computing with home solar and batteries for grid benefits.

●●●●○ High ●●●○ Med-High ●●○○○ Med ●○○○○ Low | Yellow highlight = featured article

Three Questions That Demand Your Decision This Week

❶ Is your LDES strategy diversified enough?

Form Energy's iron-air (100-hour), Energy Dome's CO₂ battery, and VRFBs are emerging as viable long-duration alternatives to Li-ion. Are you evaluating these non-lithium options for multi-day grid stability and resource independence?

❷ How will Chinese sodium-ion dominance impact your market share?

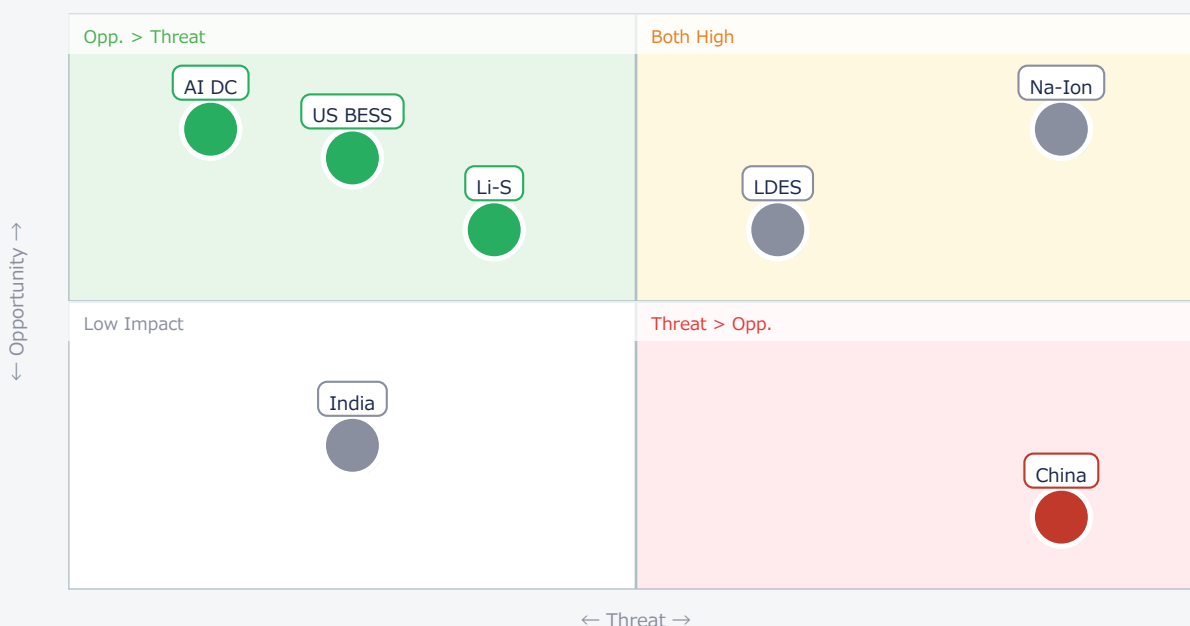
CATL is aggressively deploying 1 GWh of Na-ion in China and 5 GWh in Europe by 2027. US/EU firms must assess if their Na-ion commercialization and manufacturing plans (e.g., Peak Energy's 4 GWh/year) can compete on scale and cost.

❸ Is your data center power infrastructure ready for the AI surge?

AI workloads are driving a rapid shift from diesel to BESS for data center power, with Google building 2.9 GWh storage. US/EU data center operators and BESS suppliers must adapt quickly to this demand for resilient, sustainable, and safe solutions.

Opportunities vs. Threats for US/European Companies

Opportunity vs. Threat Matrix for US/European Companies



Item	Quadrant	↑ Opportunity	↓ Threat
● Na-Ion	Critical	New market entry	Chinese dominance
● LDES	Critical	Grid stability	Tech diversification
● AI DC	Opp.	New BESS market	Diesel obsolescence
● Li-S	Opp.	High-energy IP	Long R&D; cycle
● China	Threat	—	Market share loss
● US BESS	Opp.	Domestic supply	Cost competition
● India	Ref.	Emerging market	Local competition

Deep Dive ① — Long-Duration Storage Accelerates

#02 | 2026/07/15 | Corporate Knights | Tech Novelty ●●●○ Proximity ●●●○ Market Impact ●●●● Data Reliability ●●●○ US/EU Relevance ●●●●

Form Energy's iron-air battery offers an impressive 100-hour storage duration, significantly outperforming conventional lithium-ion for grid applications. Concurrently, CATL plans to commercially deploy its first sodium-ion energy storage system in September 2026, targeting 1 GWh shipment across four sectors by year-end.

These advancements signal a pivotal shift towards longer-duration and more sustainable grid energy storage solutions. Iron-air batteries leverage abundant, inexpensive materials, while sodium-ion technology promises lower production costs and enhanced supply chain security, crucial for integrating intermittent renewables.

► Strategic Analyst's Perspective

Strategic Analyst's Perspective: Form Energy's 100-hour claim is a significant leap, but real-world efficiency and degradation rates over such long durations need more data. CATL's 1 GWh target is realistic given their manufacturing scale. Scaling manufacturing and ensuring long-term performance stability are key barriers. [Opportunity] US/EU LDES developers can integrate these new chemistries to diversify portfolios, reduce reliance on critical minerals, and meet multi-day storage needs. [Threat] Existing Li-ion BESS providers face competition from lower-cost, longer-duration alternatives. Chinese manufacturers are rapidly capturing market share. Next Actions: [R&D;] Evaluate iron-air and sodium-ion LDES technologies for pilot projects by Q4 2026. [Strategy] Develop competitive response plans to Chinese sodium-ion market entry by Q1 2027.

Deep Dive ② — CATL's Sodium-Ion Entry into Europe

#16 | 2026/07/16 | CnEVPost | Tech Novelty ●●●○ Proximity ●●●○ Market Impact ●●●● Data Reliability ●●●○ US/EU Relevance ●●●●

Chinese battery giant CATL and Dutch energy storage firm Alfen have signed an MOU to deploy 5 GWh of "Tener Sodium" sodium-ion battery energy storage systems across Europe, starting in 2027. This marks CATL's inaugural European market entry for its sodium-ion batteries.

The Tener Sodium system boasts a 25-30 year lifespan, over 15,000 cycles, and approximately 2% improved round-trip efficiency. This partnership aims to mitigate lithium price volatility and offer a sustainable, cost-effective grid storage solution for the European market.

► Strategic Analyst's Perspective

Strategic Analyst's Perspective: CATL's stated cycle life and efficiency are impressive and, if validated at scale, represent a strong value proposition. Their rapid market entry strategy is highly credible given their track record. European regulatory hurdles might pose initial challenges, but the Alfen partnership is strategic. [Opportunity] European utilities and grid operators gain a new, cost-effective, and sustainable LDES option. Materials suppliers for sodium-ion components could find new markets. [Threat] This is a direct, large-scale competitive threat to US/EU BESS manufacturers and integrators, potentially displacing existing Li-ion solutions and solidifying Chinese dominance. Next Actions: [Procurement] Assess CATL's Tener Sodium specs and pricing against existing suppliers by Q4 2026. [Strategy] Develop urgent strategies to counter Chinese Na-ion market entry in Europe, focusing on differentiation or partnerships by Q1 2027.

Deep Dive ③ — Argonne Boosts Solid-State Li-S

#09 | 2026/07/12 | CiVL | Tech Novelty●●●●○ Proximity●○○○○ Market Impact●●●●● Data Reliability●●●●● US/EU Relevance●●●●●

Researchers at Argonne National Laboratory discovered that a high-speed mixing technique significantly enhances the performance of all-solid-state lithium-sulfur batteries. By mixing solid electrolyte and cathode materials at 2,000 rpm for five hours, this method induces halide segregation within the battery.

This novel approach improves both energy density and cycle life, with batteries maintaining full performance after 100 cycles and over 80% performance after 450 cycles. This marks a significant advancement in overcoming interfacial resistance, a primary challenge for all-solid-state batteries.

► Strategic Analyst's Perspective

Strategic Analyst's Perspective: The findings from a national lab are highly reliable. While 450 cycles is an improvement for Li-S, it's still relatively low for commercial EV applications, but significant for early-stage ASSLS. Scaling this specific mixing process for mass production, ensuring material consistency, and further improving cycle life and energy density remain major challenges. [Opportunity] US/EU battery R&D; firms and IP holders can leverage this insight for novel interface engineering in ASSLS and other solid-state chemistries, potentially leading to breakthrough patents. [Threat] Failure to invest in fundamental research like this could leave US/EU companies behind in the race for next-generation, high-energy-density batteries, ceding leadership to Asian competitors. Next Actions: [R&D;] Initiate internal research programs to replicate and expand on Argonne's high-speed mixing technique for ASSLS by Q4 2026. [IP/Legal] Monitor patent landscape for interface engineering in solid-state batteries.

Other Notable Articles

Chongqing University Team Develops 2.22 Ah Stable Lithium-Sulfur Pouch Cell (EurekAlert!)

TN●●●●● P○○○○○ MI●●●●● DR●●●●● UR●●●○○

Chinese academic breakthrough in Li-S stability (1000+ cycles, 389 Wh/kg) signals long-term threat to Li-ion.

SuperDielectrics Unveils "Faraday 3" Aqueous Zinc Battery (TechRadar)

TN●●●○○ P●●●○○ MI●●●○○ DR●●●○○ UR●●●●●

UK firm's aqueous zinc battery with zero thermal runaway and 13x cycle life is a strong contender for data centers.

BYD Energy Storage Secures 11.275 GWh Battery Supply Deal (Electrek)

TN○○○○○ P●●●●● MI●●●●● DR●●●○○ UR●●●●●

BYD's massive 11.275 GWh deal in Abu Dhabi underscores overwhelming Chinese dominance in grid-scale storage.

AI Data Centers Reshape Power Infrastructure (ESS News)

TN●●○○○ P●●●●● MI●●●○○ DR●●○○○ UR●●●●●

AI data centers are rapidly shifting from diesel to BESS for power, creating a massive market for storage solutions.

Google Breaks Ground on Record-Setting Steel River Energy Center (Google Blog)

TN○○○○○ P●●●○○ MI●●●○○ DR●●●○○ UR●●●●●

Google's 2.9 GWh BESS project for AI data centers highlights hyperscalers' commitment to clean energy.

Recommended Actions This Week

Action recommendations based on article evaluation matrix and opportunity/threat analysis.

■ Immediate (this week)

- [Executive] Review competitive intelligence on Chinese sodium-ion battery market entry in Europe and US.
- [R&D;] Prioritize internal assessment of long-duration energy storage (LDES) technologies beyond Li-ion.

■ Short-term (1 month)

- [Procurement] Initiate discussions with alternative battery chemistry suppliers (Na-ion, Zn-air, flow) for future projects.
- [Strategy] Develop a roadmap for integrating BESS solutions into data center designs, replacing diesel backups.
- [R&D;] Explore partnerships or licensing opportunities for advanced Li-S battery research (e.g., Argonne's work).

■ Medium-long term (quarter+)

- [Business Dev] Identify and engage with US-based LDES and Na-ion manufacturers for potential collaborations or investments.
- [Legal/IP] Conduct a comprehensive IP landscape analysis for next-gen battery chemistries, especially solid-state and non-lithium.
- [Strategy] Re-evaluate long-term supply chain resilience, considering geopolitical risks and the shift towards abundant materials like sodium and iron.

troy-technical.jp/en | Original curation. Article copyrights belong to respective authors. | Gemini API + Claude | 2026-07-19

NextGenEnergyStorage — Selected Articles

Date: 2026-07-19

Articles: 21

Table of Contents

- #01 Hitachi Energy Delivers Integrated Grid-to-Cell BESS Solutions for Commercial, Industrial, and Data Center Resilience
- #02 Long-Duration Grid Storage Accelerates: Form Energy's 100-Hour Iron-Air Battery & CATL's 1 GWh Sodium-Ion Rollout
- #03 ESS Tech Unveils 1.2 MWh Modular Sodium-Ion Battery System "ESS Bridge" with Zero Thermal Runaway for Utilities and Data Centers
- #04 Three US BESS Companies Accelerate Sodium-Ion Commercialization, Peak Energy to Build 4 GWh/Year Manufacturing Facility
- #05 Avantus and Fluence Partner for 800 MWh BESS in California's Rexford 2 Solar-Plus-Storage Project, Boosting Domestic Manufacturing
- #06 Japan's 14-Entity Public-Private Consortium Launches Sodium-Ion Battery Commercialization Project with NEDO Funding, Targeting Mass Production Tech for Utility ESS
- #07 Chongqing University Team Develops 2.22 Ah Stable Lithium-Sulfur Pouch Cell with "Electron-Injection Softening Strategy," Achieving Over 1000 Cycles
- #08 SuperDielectrics Unveils "Faraday 3" Aqueous Zinc Battery, Offering 13x Longer Cycle Life and Zero Thermal Runaway for Data Centers
- #09 Argonne National Laboratory Boosts All-Solid-State Lithium-Sulfur Battery Performance by High-Speed Mixing, Retaining Over 80% Performance After 450 Cycles
- #10 BYD Energy Storage Secures 11.275 GWh Battery Supply Deal for Abu Dhabi's "Round the Clock" Renewable Energy Project, The World's Largest Solar-Plus-Storage Initiative
- #11 Avantus Secures \$525 Million in Construction Financing for California's Aratina 2 Solar-Plus-Storage Project, Targeting Commercial Operation by End of 2026
- #12 India Waives Inter-State Transmission Charges for RE-Attached BESS Projects by June 2028, Plans Over 200 GWh Domestic Manufacturing Capacity by 2030
- #13 Spearmint Energy Secures Site Permit for 150MW/600MWh Midwater Battery Storage Project in MISO Grid
- #14 Tyfast Energy and AIion Partner to Accelerate U.S. Production of LVO Lithium Batteries for High-Performance Applications
- #15 Nofar USA Closes Deal for 400MWh Brownfield BESS Project, Targeting Late 2028 Commercial Operation
- #16 CATL and Alfen to Deploy 5GWh of Tener Sodium-Ion Battery Storage in Europe from 2027

#17 AI Data Centers Reshape Power Infrastructure, Shifting from Diesel to BESS for Enhanced Grid Stability and Efficiency

#18 Energy Dome and SEC Partner to Develop Victoria's First 10-Hour, 20MW/200MWh CO2 Battery Storage Project

#19 Idemitsu Australia Proposes Nation's Largest 108MW/864MWh Vanadium Flow Battery at Former Coal Mine Site

#20 Google Breaks Ground on Record-Setting Steel River Energy Center in Arkansas: 2.5GW Solar, 2.9GWh Battery Storage

#21 Sunrun Expands "Distributed Data Center" Pilot, Integrating Computing Hardware with Home Solar and Battery Networks

#01 Hitachi Energy Delivers Integrated Grid-to-Cell BESS Solutions for Commercial, Industrial, and Data Center Resilience

Published July 11, 2026 Hitachi Energy Japan



OVERVIEW

Hitachi Energy is offering comprehensive grid-to-cell Battery Energy Storage System (BESS) solutions for commercial, industrial, and data center applications, aiming to reduce energy costs, manage grid constraints, and ensure operational continuity. These integrated systems combine grid connections, power electronics, automation, digital services, and battery systems to optimize energy usage. This holistic approach guarantees reliable and resilient operations for critical infrastructure.

Background

The global energy landscape is undergoing a rapid transformation, driven by the imperative to reduce carbon emissions, integrate intermittent renewable energy sources, and ensure stable power supply for increasingly digitalized economies. Commercial and industrial sectors, alongside the burgeoning data center industry, face unique challenges in energy management, including volatile energy costs, grid reliability issues, and the critical need for continuous operation. Battery Energy Storage Systems (BESS) are emerging as a pivotal technology to address these complex demands.

Key Findings

- Hitachi Energy provides advanced "grid-to-cell" BESS solutions tailored for commercial, industrial, and data center environments.
- These solutions are designed to deliver significant benefits, including substantial reductions in energy costs for end-users.
- The systems effectively mitigate grid constraints, offering enhanced flexibility and stability to local and regional power networks.
- A core feature is the assurance of operational continuity, critical for industries where downtime can lead to substantial financial losses and disruptions.
- Hitachi Energy's BESS integrates several key components: robust grid connections, state-of-the-art power electronics, intelligent automation, comprehensive digital services, and high-performance battery systems.
- This integrated approach facilitates the optimization of energy usage patterns, enabling efficient load shifting, peak shaving, and demand response capabilities.
- The holistic system design ensures reliable and resilient operations, supporting critical infrastructure against power fluctuations and outages.

Significance & Outlook

Hitachi Energy's BESS solutions represent a significant step forward in developing resilient and sustainable energy infrastructures. By optimizing energy usage and enhancing grid stability, these systems contribute directly to the decarbonization efforts and the broader adoption of renewable energy. For data centers, which are massive energy consumers with zero-downtime requirements, these solutions are particularly transformative, providing unparalleled power reliability and efficiency.

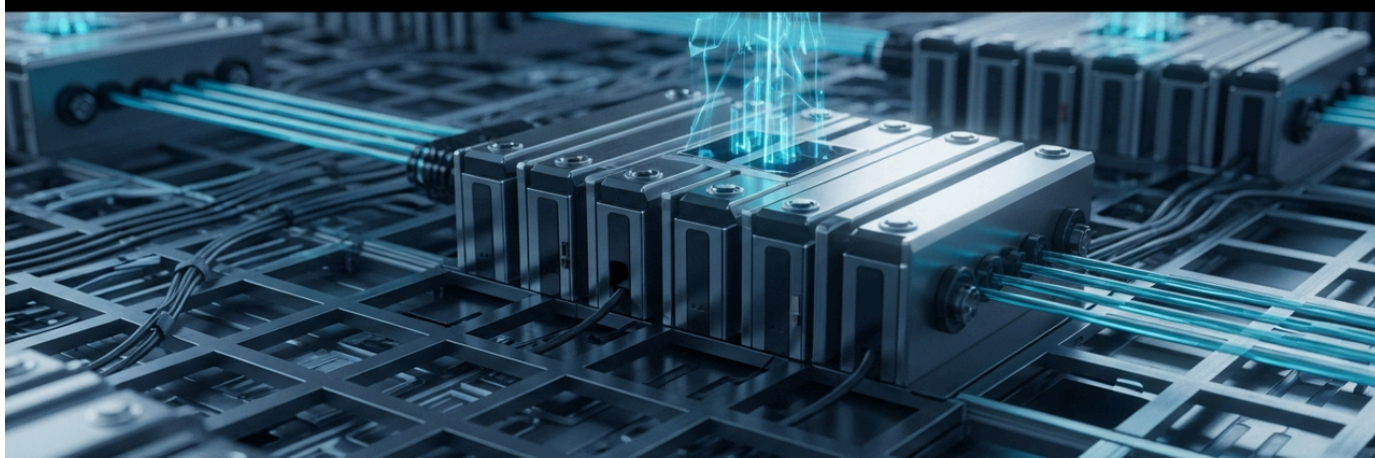
The integration of digital services and automation further positions these BESS as intelligent assets capable of adapting to dynamic energy demands and market conditions. This holistic approach not only addresses immediate energy challenges but also lays the groundwork for future smart grids, where decentralized energy resources and advanced control systems will play a central role. Hitachi Energy's commitment to these comprehensive solutions underscores the growing importance of integrated energy storage in the global energy transition.

Source: <https://www.hitachienergy.com/products-and-solutions/energystorage/battery-energy-storage-system>

Collected: July 17, 2026 | Automated Research System (Gemini API)

#02 Long-Duration Grid Storage Accelerates: Form Energy's 100-Hour Iron-Air Battery & CATL's 1 GWh Sodium-Ion Rollout

Published July 15, 2026 Corporate Knights Unknown



OVERVIEW

Form Energy has developed an iron-air battery technology capable of storing and discharging power for up to 100 hours, offering a significant advantage over conventional lithium-ion batteries for grid applications. Concurrently, CATL plans to commercially deploy its first sodium-ion energy storage system in September 2026, aiming to ship 1 GWh of batteries across four sectors by the end of the year. These advancements highlight a pivotal shift towards longer-duration and more sustainable grid energy storage solutions.

Background

The increasing integration of intermittent renewable energy sources, such as solar and wind, into national grids has intensified the demand for advanced energy storage systems. Current grid batteries, predominantly lithium-ion, excel at short-duration storage but fall short in providing multi-day energy reserves necessary for grid stability when renewables are offline for extended periods. This critical gap is driving innovation in long-duration energy storage (LDES) technologies.

Key Findings

- Form Energy has made significant strides with its iron-air battery technology, demonstrating the capability to store and discharge electricity for an impressive duration of up to 100 hours. This far surpasses the typical 4-6 hour capacity of standard lithium-ion grid batteries.
- The iron-air battery leverages abundant and inexpensive materials, primarily iron, which inherently offers a cost advantage and reduces reliance on critical minerals. This makes it a highly competitive solution for large-scale, long-duration applications.
- In parallel, CATL, a global leader in battery manufacturing, is poised to enter the long-duration storage market with its sodium-ion battery technology. The company has announced plans for the commercial deployment of its inaugural sodium-ion energy storage system in September 2026.
- CATL's ambitious goal is to ship 1 Gigawatt-hour (GWh) of these sodium-ion batteries across four different sectors by the close of 2026. This indicates a strategic move to diversify beyond lithium and capitalize on the cost-effectiveness and abundant supply of sodium.

Significance & Outlook

These developments signify a crucial inflection point in grid-scale energy storage. Form Energy's 100-hour iron-air battery addresses the fundamental intermittency challenge of renewables by providing multi-day storage, ensuring continuous power supply even during prolonged periods of low renewable generation. This could drastically reduce the need for fossil fuel peaker plants and accelerate the transition to fully decarbonized grids.

CATL's commercialization of sodium-ion batteries for grid storage, with a target of 1 GWh shipment by year-end, further validates the growing viability of non-lithium alternatives. Sodium-ion technology, utilizing earth-abundant materials, promises lower production costs and enhanced supply chain security. Both technologies are set to play a transformative role in enabling higher penetrations of renewable energy and building more resilient, sustainable, and cost-effective electricity grids globally. The combined efforts of these innovators are paving the way for a truly stable and renewable energy future.

Source: https://vertexaisearch.cloud.google.com/grounding-api-redirect/AUZIYQF6IzK-WuJ-ipY2HXsWaG4GYgrTHhMEuHn36eaX6DpQw7ZUS4QASSTQhDdCc-hBo6uRN51Ktxn5CwKNbQ6FpD_XXp-CsC81CKnAjfbOuXaNJ2rBreLxLgPgykbS-3-L7oRNgbualHczHpx9QWKJePdZVpvYU2ft358veXsSv6oQ3oDvM0MoDHvQ58Ifbf_JXnmTMkz1CLCYQzBOoiOMg

Collected: July 17, 2026 | Automated Research System (Gemini API)

#03 ESS Tech Unveils 1.2 MWh Modular Sodium-Ion Battery System "ESS Bridge" with Zero Thermal Runaway for Utilities and Data Centers

Published July 14, 2026 Utility Dive USA



OVERVIEW

ESS Tech has launched "ESS Bridge," a 1.2 MWh modular sodium-ion battery system designed for utility, commercial, industrial, and data center applications. This innovative system can deliver up to 4.8 MWh within a standard 20-foot container, meeting the escalating power demands of AI workloads while entirely eliminating the risk of thermal runaway. The company has already secured over \$1 billion in early customer opportunities, following its announcement to procure 8.5 GWh of sodium-ion cells from Alsym Energy.

Key Findings

ESS Tech has introduced its new "ESS Bridge" sodium-ion battery system, a modular solution tailored for utilities, commercial and industrial sectors, and particularly data centers. This system delivers 1.2 MWh of energy capacity per block, with the ability to scale up to 4.8 MWh within a conventional 20-foot battery container by integrating multiple blocks. A critical advantage of the ESS Bridge is its inherent safety profile, boasting zero risk of thermal runaway compared to lithium-ion counterparts, alongside its capability to power the rapidly expanding demands of AI workloads.

Technical & Product Details

- **System Name:** ESS Bridge
- **Battery Type:** Sodium-ion battery
- **Base Module Capacity:** 1.2 MWh
- **Max Capacity per Container:** 4.8 MWh (with multiple blocks in a 20-foot container)
- **Key Features:**
 - Zero thermal runaway risk
 - Addresses high-power needs of AI data centers
 - High modularity and scalability
 - Applicability for Long-Duration Energy Storage (LDES)

The ESS Bridge system leverages sodium-ion battery cells and modules sourced from Alsym Energy. ESS Tech had previously announced plans in late April 2026 to procure a total of 8.5 GWh of cells and modules from Alsym Energy. Since then, the company has successfully secured over \$1 billion in early customer opportunities, underscoring strong market confidence and demand for its sodium-ion solution.

Background & Industry Context

Sodium-ion battery technology is garnering significant attention as a next-generation energy storage solution due to the abundance and lower cost of sodium compared to lithium, offering enhanced supply chain stability and cost competitiveness. These advantages are particularly valuable in sectors with extremely high power consumption and stringent safety requirements, such as data centers. As the demand for safer, more sustainable alternatives to lithium-ion batteries grows, products like the ESS Bridge are poised to address critical market needs.

Strategic Significance & Outlook

The ESS Bridge is expected to make substantial contributions to decarbonization efforts and grid stabilization by providing reliable and cost-effective energy storage in burgeoning markets like utilities and AI-driven data centers. The rapid accumulation of over \$1 billion in early customer opportunities is a robust indicator of the technology's readiness for swift commercial deployment. ESS Tech's sodium-ion battery technology is positioned to potentially become a new standard for long-duration energy storage solutions in the coming years.

Source: <https://www.utilitydive.com/news/ess-tech-launches-12-mwh-sodium-ion-battery-building-block-system/825204/>

#04 Three US BESS Companies Accelerate Sodium-Ion Commercialization, Peak Energy to Build 4 GWh/Year Manufacturing Facility

Published July 10, 2026 Energy-Storage.news USA



OVERVIEW

Three US-based BESS companies—Peak Energy, ESS Inc, and Unigrid—are pushing for the commercialization of sodium-ion batteries in the US and Europe. Peak Energy plans to establish a 4 GWh/year sodium-ion BESS manufacturing facility in Sacramento, California, while Unigrid has begun shipping its first-generation residential sodium-ion BESS, "Na+Casa," in Europe. These initiatives aim to address the growing demand for alternatives to lithium-ion technology, offering more cost-effective and sustainable energy storage solutions.

Key Findings

US-based battery energy storage system (BESS) companies Peak Energy, ESS Inc, and Unigrid are actively pursuing the commercialization of sodium-ion battery technology across the US and European markets. Notably, Peak Energy has announced plans to establish a large-scale sodium-ion BESS manufacturing facility in Sacramento, California, with an annual production capacity of 4 GWh, aiming to significantly bolster domestic supply and production capabilities for stationary storage systems.

Technical & Business Details

- **Peak Energy:** Set to build a 4 GWh/year sodium-ion BESS manufacturing facility in Sacramento, California. This move is expected to substantially increase the supply capacity of sodium-ion batteries in the US market, catering to the demand for large-scale stationary storage systems.
- **ESS Inc.:** While no specific new product launches were detailed in the provided information, ESS Inc. continues to invest in sodium-ion technology as a lithium-ion alternative, pursuing a strategy to meet diverse market needs.
- **Unigrid:** Has commenced shipping its first-generation residential sodium-ion BESS, "Na+Casa," in the European market. This represents a pioneering effort to introduce sodium-ion batteries into the home energy storage sector, offering a new alternative for decentralized energy systems.

These corporate initiatives underscore the potential for sodium-ion batteries to become a crucial energy storage technology across a wide array of applications, including electric vehicles (EVs), stationary power storage, and even consumer electronics.

Background & Industry Context

In recent years, sodium-ion batteries have garnered significant attention as an alternative technology due to rising raw material costs and supply chain instabilities associated with lithium-ion batteries. Sodium is far more abundant globally than lithium, leading to lower procurement costs and making it a more sustainable resource. Furthermore, sodium-ion batteries offer inherent safety advantages, including a lower risk of thermal runaway, which is particularly beneficial for large-scale stationary energy storage systems. The accelerated commercialization efforts in the US and Europe are seen as strategic moves by these nations to enhance energy security and achieve decarbonization targets.

Strategic Significance & Outlook

The push for commercialization of sodium-ion batteries by Peak Energy, ESS Inc, and Unigrid holds the potential to significantly transform the global energy storage market. The establishment of a large-scale manufacturing facility in the US, in particular, will enhance the resilience of the domestic supply chain and accelerate the transition away from lithium dependence. The introduction of residential systems in Europe will foster broader adoption of sodium-ion batteries among consumers, contributing to the realization of decentralized energy systems. These developments indicate that sodium-ion batteries are poised to become a major technology alongside lithium-ion in the future energy mix.

Source: <https://www.energy-storage.news/us-based-bess-companies-peak-energy-ess-inc-and-unigrid-aim-to-commercialise-sodium-ion-in-us-europe/>

#05 Avantus and Fluence Partner for 800 MWh BESS in California's Rexford 2 Solar-Plus-Storage Project, Boosting Domestic Manufacturing

Published July 15, 2026 Energy-Storage.news USA



OVERVIEW

Renewable energy developer Avantus has partnered with Fluence Energy to deploy a 200 MW/800 MWh battery energy storage system (BESS) for its Rexford 2 solar-plus-storage project in Tulare County, California. Fluence will provide its "Smartstack" platform, utilizing US-made components, and turnkey EPC services. This system will supply clean energy to 84,000 homes, with construction commencing in 2027 and commercial operation slated for late 2028, expected to create union jobs and generate significant local tax revenue.

Key Findings

Leading renewable energy developer Avantus has entered a strategic partnership with energy storage solutions provider Fluence Energy to deploy a 200 MW/800 MWh advanced battery energy storage system (BESS) for its large-scale Rexford 2 solar-plus-storage project in Tulare County, California. Fluence will supply its "Smartstack" platform, which incorporates US-manufactured components, along with comprehensive engineering, procurement, and construction (EPC) services for the entire project. This collaboration is designed to simultaneously enhance clean energy supply and fortify the domestic supply chain.

Technical & Project Details

- **Project Name:** Rexford 2 Solar-Plus-Storage Project
- **Location:** Tulare County, California, USA
- **BESS Capacity:** 200 MW / 800 MWh (4-hour duration)
- **Households Served:** Approximately 84,000 homes
- **System:** Fluence Smartstack battery storage platform
- **Domestic Manufacturing:** Smartstack utilizes components manufactured within the US, strengthening the domestic supply chain.
- **Job Creation:** The project is expected to create over 500 union jobs and generate millions of dollars in local tax revenue.
- **Schedule:** Construction is slated to begin in 2027, with commercial operation anticipated in late 2028.
- **Environmental Consideration:** Designed for minimal environmental impact, utilizing previously developed land.

The Rexford 2 project represents a critical milestone towards achieving California's aggressive renewable energy targets. Avantus is also advancing other significant projects, including having secured over \$525 million in construction financing for its Aratina 2 solar-plus-storage project in Southern California.

Background & Industry Context

California is at the forefront of aggressive decarbonization policies and renewable energy adoption goals, making large-scale battery energy storage systems indispensable for integrating intermittent renewable sources like solar power. Furthermore, US government incentives, such as those provided by the Inflation Reduction Act (IRA), actively encourage the use of domestically manufactured components, a factor that underpinned Fluence's decision to adopt US-made parts for its Smartstack system. This approach is expected to bolster energy security and foster economic growth.

Strategic Significance & Outlook

The Rexford 2 project is poised to significantly contribute to the stabilization and reliability of California's electricity grid. Its substantial 800 MWh storage capacity will address evening peak demands and fluctuations in renewable energy output, ensuring a cleaner, more sustainable power supply. Fluence's domestic manufacturing strategy will strengthen the battery supply chain within the US, potentially creating a ripple effect for other large-scale storage projects. The success of this project positions the integration of solar PV and large-scale battery storage as a model for global energy transition efforts.

Source: <https://www.energy-storage.news/avantus-progresses-california-solar-plus-storage-projects-fluence-providing-domestic-content-bess/>

#06 Japan's 14-Entity Public-Private Consortium Launches Sodium-Ion Battery Commercialization Project with NEDO Funding, Targeting Mass Production Tech for Utility ESS

Published July 13, 2026 東京理科大学 Japan



OVERVIEW

A 14-entity Japanese consortium, spearheaded by Tokyo University of Science and bolstered by ¥760 million from NEDO, has commenced a national demonstration project for the mass production and commercialization of sodium-ion batteries (NIBs). This initiative aims to establish critical manufacturing technologies for large-scale energy storage systems (ESS) for utility companies, leveraging NIBs' abundant and cost-effective resources to enhance energy security and address diverse storage needs.

Background

The widespread adoption of lithium-ion batteries faces significant challenges due to price volatility and the uneven global distribution of critical raw materials like lithium, cobalt, and nickel, posing risks to energy security. In response, sodium-ion batteries (NIBs), which utilize abundant and inexpensive sodium as their primary raw material, are emerging as a globally recognized next-generation energy storage solution. The Japanese government views the rapid practical application of domestically developed NIBs as a national strategic imperative to secure stable power supplies for key industries, including automotive manufacturing and energy infrastructure. This initiative also seeks to bolster Japan's competitive edge in a sector where Chinese companies currently hold a leading position.

Key Findings

A consortium of 14 Japanese academic, industrial, and government organizations has launched a major demonstration project to accelerate the mass production and societal deployment of sodium-ion batteries (NIBs). This national initiative, spearheaded by Tokyo University of Science and funded by approximately ¥760 million from NEDO's "Innovative Battery Technology Development and Advanced Analysis" program, is primarily focused on establishing mass production technologies for large-scale energy storage systems (ESS) tailored for utility applications. The project leverages Japan's pioneering work in NIBs, building upon Professor Shinichi Komaba's world-first demonstration of stable NIB operation in 2011. Its overarching goal is to reduce reliance on rare metals, mitigate supply chain risks, and enhance cost competitiveness by utilizing abundant sodium resources.

Project Details

The joint demonstration project involves a robust collaboration:

- **Participating Entities:** 14 public-private organizations, led by Tokyo University of Science.
- **Funding:** Approximately ¥760 million provided by NEDO.
- **Primary Objective:** To establish foundational mass production technologies and accelerate the early commercialization of sodium-ion batteries.

- **Initial Application Focus:** Large-scale energy storage systems (ESS) specifically for power utilities.
- **Technological Heritage:** The project builds on Japan's foundational research in NIBs, notably Professor Shinichi Komaba of Tokyo University of Science, who first demonstrated stable NIB operation globally in 2011.

A core aim of this initiative is to reduce global reliance on scarce raw materials like lithium, cobalt, and nickel. By leveraging abundant and cost-effective sodium, the project seeks to resolve critical supply chain vulnerabilities and significantly enhance cost competitiveness in the battery market. The establishment of these foundational technologies is poised to address the escalating demand for diverse battery applications, encompassing electric vehicles (EVs), grid-scale power regulation, and data center backup power.

Strategic Significance & Outlook

Backed by NEDO, this concerted public-private endeavor is anticipated to be a significant catalyst for the societal integration of sodium-ion batteries in Japan. Developing mass production capabilities for the ESS market is deemed critical for accelerating the adoption of renewable energy sources and enhancing grid stability, thereby diversifying the national energy mix. Looking ahead, with potential applications extending to electric vehicles and data centers, this initiative positions Japan to establish leadership in next-generation energy storage technologies. The development of resource-independent energy storage solutions is considered paramount for bolstering international energy security and fostering a sustainable global society.

Source: https://www.tus.ac.jp/today/archive/20260713_1151.html

#07 Chongqing University Team Develops 2.22 Ah Stable Lithium-Sulfur Pouch Cell with "Electron-Injection Softening Strategy," Achieving Over 1000 Cycles

Published July 15, 2026 EurekAlert! China



OVERVIEW

A research team from Chongqing University has achieved a practical-level, stable lithium-sulfur (Li-S) pouch cell with 2.22 Ah capacity and 389 Wh kg^{-1} energy density, employing an "electron-injection softening strategy" combined with a $\text{Co}_9\text{S}_8\text{-Mn}_3\text{O}_4\text{@CNF}$ cathode. This innovative Li-S battery demonstrated an initial specific capacity of 761 mAh g^{-1} at a high 5C rate and exhibited stable cycling performance for over 1000 cycles. This breakthrough represents a significant step towards enabling long-life, high-energy-density Li-S batteries for practical applications.

Key Findings

Researchers at Chongqing University have successfully developed a practical lithium-sulfur (Li-S) pouch cell that combines high energy density with extended cycle life. Their innovation involves utilizing a composite cathode material of cobalt-manganese oxides (Co₉S₈-Mn₃O₄) and carbon nanofibers (CNF), along with a novel "electron-injection softening strategy." This approach has enabled the creation of a 2.22 Ah Li-S pouch cell with an energy density of 389 Wh kg⁻¹, achieving an initial specific capacity of 761 mAh g⁻¹ at a fast 5C charge/discharge rate and maintaining stable cycling performance for over 1000 cycles.

Technical & Clinical Details

- **Capacity:** 2.22 Ah
- **Energy Density:** 389 Wh kg⁻¹
- **Cathode Material:** Co₉S₈-Mn₃O₄/Carbon Nanofiber (CNF) composite
- **Core Technology:** Electron-injection softening strategy, which effectively suppresses the dissolution and migration of polysulfides—a major cause of performance degradation in Li-S batteries—and enhances the stability of the electrode interface.
- **Cycling Performance:** Demonstrated stable operation for over 1000 cycles at a high 5C charge/discharge rate, maintaining an initial specific capacity of 761 mAh g⁻¹.
- **Stability:** The strategy was confirmed to significantly improve stability by modulating the electronic structure at the electrode interface, reducing barriers to Li-S reactions.

This research addresses two major challenges that have hindered the practical application of Li-S batteries: the polysulfide shuttle effect and the instability of the electrode interface. The electron-injection softening strategy optimizes electron transfer characteristics at the interface, promoting the kinetics of sulfur reduction reactions while suppressing undesirable side reactions, thereby extending battery life.

Background & Industry Context

Lithium-sulfur batteries hold immense promise as next-generation high-performance batteries, with a theoretical energy density potentially five times that of current lithium-ion batteries (2600 Wh kg^{-1}). They are considered a game-changer for applications requiring light weight and high energy density, such as drones, electric aircraft, and long-range electric vehicles. However, practical implementation has been impeded by challenges like the polysulfide shuttle effect and the instability of the lithium metal anode. Chongqing University's latest achievement represents a crucial step towards overcoming these hurdles.

Strategic Significance & Outlook

The developed "electron-injection softening strategy" offers a practical approach to significantly enhance the stability of high-energy Li-S batteries. This breakthrough not only accelerates the commercialization of Li-S batteries but also deepens the fundamental understanding of electrode interface electron modulation in next-generation electrochemical energy storage devices. In the future, this work could lead to the development of even higher energy density and longer-lasting batteries, potentially bringing revolutionary advancements, especially in the aerospace and electric transportation sectors.

Source: <https://www.eurekalert.org/news-releases/1136194>

#08 SuperDielectrics Unveils "Faraday 3" Aqueous Zinc Battery, Offering 13x Longer Cycle Life and Zero Thermal Runaway for Data Centers

Published July 13, 2026 TechRadar UK



OVERVIEW

SuperDielectrics has announced its "Faraday 3" aqueous zinc battery, which holds the potential to transform entire data centers into energy storage units. Tests by QinetiQ revealed exceptional performance, including up to 13 times longer high-power cycle life compared to lithium-ion batteries, 100C discharge in 36 seconds, and complete absence of thermal runaway. With its first commercial deployment anticipated in early 2027, this innovative battery is garnering significant interest as a solution to the surging power demands of AI data centers.

Key Findings

SuperDielectrics has developed a groundbreaking aqueous zinc battery, dubbed "Faraday 3," whose high performance and safety have been independently validated through tests conducted by QinetiQ. This battery has the potential to enable entire data centers and other large-scale facilities to function as integrated energy storage systems. Particularly noteworthy are its high-power cycle life, which is up to 13 times longer than conventional lithium-ion batteries, its ability to discharge at an extremely high rate of 100C in just 36 seconds, and the complete elimination of thermal runaway risk.

Technical & Product Details

- **Product Name:** Faraday 3
- **Battery Type:** Aqueous Zinc Battery
- **Testing Authority:** QinetiQ
- **Key Performance Metrics:**
 - High-power cycle life: Up to 13 times longer than lithium-ion batteries
 - Discharge capability: Achieves 100C discharge in 36 seconds (indicates extremely high power delivery)
 - Safety: Zero thermal runaway risk
 - Modality: Utilizes an aqueous electrolyte

By employing an aqueous electrolyte, the Faraday 3 eliminates flammable organic solvents, thereby ensuring intrinsic safety. This characteristic is exceptionally advantageous for data centers, where stringent safety standards are paramount, and for large-scale energy storage systems critical for grid stabilization. Furthermore, zinc is more abundant and less expensive to procure than lithium, contributing to supply chain stability.

Background & Industry Context

In today's digital economy, data centers are major drivers of power consumption, and the surge in AI workloads, in particular, presents new challenges for power infrastructure. These facilities require stable power supply, emergency backup, and continuous improvement in sustainability. While conventional lithium-ion batteries offer superior performance in many aspects, concerns regarding cost, resource limitations, and especially safety—due to thermal runaway risks—have been raised. SuperDielectrics' Faraday 3 provides an innovative solution to these challenges, enabling sustainable and safe operation of data centers.

Strategic Significance & Outlook

The first commercial deployment of SuperDielectrics' Faraday 3 aqueous zinc battery is slated for early 2027, potentially bringing a transformative shift to the data center industry. Its inherent safety, free from thermal runaway risks, and exceptional cycle life are critical factors for meeting the needs of AI and other high-load computing applications. If widely adopted, this technology could significantly contribute to reducing data center operating costs, enhancing reliability, and lowering environmental impact, with long-term potential to stabilize the broader electricity grid. The evolution of aqueous battery technology is set to open new frontiers in energy storage.

Source: <https://www.techradar.com/pro/we-have-not-ruled-this-out-the-water-based-battery-that-could-turn-whole-data-centers-into-energy-storage>

#09 Argonne National Laboratory Boosts All-Solid-State Lithium-Sulfur Battery Performance by High-Speed Mixing, Retaining Over 80% Performance After 450 Cycles

Published July 12, 2026 CiVL USA



OVERVIEW

Researchers at Argonne National Laboratory discovered that a high-speed mixing technique significantly enhances the performance of all-solid-state lithium-sulfur batteries. By mixing solid electrolyte and cathode materials at 2,000 rpm for five hours, this method induces halide segregation within the battery, improving both energy density and cycle life. Batteries fabricated using this process maintained full performance after 100 charge-discharge cycles and over 80% performance after 450 cycles, marking a significant advancement.

Key Findings

Researchers at Argonne National Laboratory have demonstrated the effectiveness of a high-speed mixing technique as a novel approach to dramatically improve the performance of all-solid-state lithium-sulfur batteries. This groundbreaking method significantly enhances the battery's energy density and cycle life, showing remarkable stability with over 80% capacity retention after an impressive 450 charge-discharge cycles.

Technical & Clinical Details

- **Battery Type:** All-solid-state lithium-sulfur batteries
- **Core Technology:** High-speed mixing process
- **Mixing Conditions:** Solid electrolyte and cathode materials were mixed at 2,000 revolutions per minute (rpm) for 5 hours.
- **Mechanism of Action:** High-speed mixing intentionally induces halide segregation within the battery. This segregation optimizes the interfacial properties between the electrode and electrolyte, enhancing ion conductivity and suppressing unwanted side reactions.
- **Performance Improvements:**
 - Enhanced energy density
 - Extended cycle life
 - 100% performance retention after 100 cycles
 - Over 80% performance retention after 450 cycles

This technology addresses one of the primary challenges of all-solid-state batteries: reducing the high interfacial resistance between the solid electrolyte and electrodes. By facilitating smoother ion transport, it enables higher performance. While traditional solid-state battery manufacturing often aims for homogeneous mixing, this research achieves performance gains by intentionally creating specific inhomogeneities (segregation), offering new design guidelines for solid-state battery research.

Background & Industry Context

All-solid-state batteries are considered next-generation power sources, offering numerous advantages over conventional lithium-ion batteries that use liquid electrolytes, including enhanced safety (reduced risk of leakage and thermal runaway), higher energy density, and faster charging capabilities. These attributes make them highly anticipated for applications in electric vehicles (EVs) and large-scale energy storage systems. Lithium-sulfur all-solid-state batteries, in particular, are attractive for their use of abundant and inexpensive sulfur, aligning with sustainability and cost reduction goals. However, high interfacial resistance between the solid electrolyte and electrodes has been a major barrier to their practical implementation. Argonne's achievement represents a critical breakthrough in overcoming this bottleneck.

Strategic Significance & Outlook

The improvement in all-solid-state lithium-sulfur battery performance through high-speed mixing directly contributes to extending EV range, shortening charging times, and enhancing safety and efficiency in data centers and grid-scale storage. If this technology can be integrated into mass production processes, it is expected to accelerate the commercialization of all-solid-state batteries and significantly contribute to the widespread adoption of high-performance, safe energy storage solutions. Furthermore, it provides new insights into interface engineering-based material design, potentially influencing the direction of future battery research and development.

Source: <https://civl.com/news/story/argonne-national-laboratory-researchers-boost-solid-state-battery-performance-us-094886bc>

#10 BYD Energy Storage Secures 11.275 GWh Battery Supply Deal for Abu Dhabi's "Round the Clock" Renewable Energy Project, The World's Largest Solar-Plus-Storage Initiative

Published July 10, 2026 Electrek China



OVERVIEW

BYD Energy Storage has won a monumental contract to supply 11.275 GWh of battery storage for the "Round the Clock (RTC)" renewable energy project, led by Masdar in Abu Dhabi. This pioneering project integrates a 5.2 GW solar array with a total 19 GWh battery system, with BYD's Haohan storage system comprising the majority. This contract unequivocally demonstrates the overwhelming dominance of Chinese manufacturers in the grid-scale storage market.

Key Findings

BYD Energy Storage has secured a monumental contract to supply an impressive 11.275 GWh of battery energy storage systems (BESS) for the "Round the Clock (RTC)" renewable energy project, currently under development by Masdar in Abu Dhabi, United Arab Emirates (UAE). This groundbreaking initiative is set to be the world's largest solar-plus-storage project, combining a 5.2 GW solar photovoltaic array with a total battery system capacity of 19 GWh, with BYD's "Haohan" storage system playing a pivotal role in this massive deployment.

Technical & Project Details

- **Project Name:** Round the Clock (RTC) Renewable Energy Project
- **Location:** Abu Dhabi, United Arab Emirates (UAE)
- **Lead Developer:** Masdar
- **Battery Supplier:** BYD Energy Storage
- **BYD Supplied Capacity:** 11.275 GWh
- **Overall Battery System Capacity:** 19 GWh
- **Solar PV Capacity:** 5.2 GW
- **System Utilized:** BYD's Haohan storage system
- **Objective:** To provide clean, reliable 24/7 power supply and accelerate the UAE's energy transition.

This project is designed to store surplus solar power generated during the day and discharge it during the evening peak demand or periods of low solar irradiation, thereby stabilizing the grid and maximizing the utilization of renewable energy. BYD's Haohan system was selected for its large-scale storage capabilities and high efficiency, essential for meeting the complex requirements of this project.

Background & Industry Context

As renewable energy adoption accelerates globally, the demand for large-scale energy storage systems to complement the intermittency of solar and wind power is rapidly increasing. Grid-scale battery storage, in particular, plays a critical role in grid stabilization, frequency regulation, and peak shifting, making it an indispensable component for achieving energy transition goals. In recent years, Chinese battery manufacturers have emerged as global leaders in both the EV battery and grid-scale storage markets, driven by their technological prowess and cost competitiveness. BYD's substantial contract underscores this dominant position. The UAE, in its bid to diversify its economy away from oil and transition towards a sustainable future, is actively investing in large-scale renewable energy projects.

Strategic Significance & Outlook

The Abu Dhabi RTC project is poised to establish a new benchmark for grid-scale storage as one of the world's largest integrated renewable energy systems. The supply of 11.275 GWh by BYD Energy Storage clearly demonstrates the decisive advantage Chinese manufacturers hold in terms of technology, production capacity, and cost competitiveness within the global large-scale energy storage market. The success of this project will serve as a powerful case study for utilities and governments worldwide, illustrating how the integration of renewable energy with massive battery storage can deliver clean, reliable 24/7 power. It will significantly contribute to the UAE's energy transition objectives and further accelerate the evolution of the global energy storage market.

Source: <https://electrek.co/2026/07/10/byd-masdar-11-gwh-rtc-storage-abu-dhabi/>

Collected: July 17, 2026 | Automated Research System (Gemini API)

#11 Avantus Secures \$525 Million in Construction Financing for California's Aratina 2 Solar-Plus-Storage Project, Targeting Commercial Operation by End of 2026

Published July 11, 2026 Earnings Cycle Outlook USA



OVERVIEW

Renewable energy developer Avantus announced it has secured over \$525 million in construction financing for its Aratina 2 solar-plus-storage project in California. This substantial financing package, provided by leading financial institutions BBVA, CIBC, and Santander, will accelerate the deployment of hybrid renewable energy assets. The project, currently under construction, is slated to begin commercial operation by late 2026, contributing to California's clean energy goals.

Key Findings

Renewable energy development firm Avantus has announced the securing of over \$525 million in construction financing for its significant Aratina 2 solar-plus-storage project in California. This substantial financing package, facilitated through a syndicated loan from major financial institutions including BBVA, CIBC, and Santander, provides a strong impetus for the company's deployment of hybrid renewable energy assets. The Aratina 2 project, currently under construction, aims for commercial operation by the end of 2026, playing a crucial role in accelerating California's clean energy transition.

Project Details

- **Project Name:** Aratina 2 Solar-Plus-Storage Project
- **Location:** California, USA
- **Financing Amount:** Over \$525 million USD
- **Lenders:** BBVA, CIBC, Santander
- **Project Composition:** Combination of solar photovoltaic generation and a Battery Energy Storage System (BESS)
- **Current Status:** Under construction
- **Expected Commercial Operation Date:** By the end of 2026
- **Objectives:** Meeting California's renewable energy targets, stabilizing the electricity grid, and reducing reliance on fossil fuels.

This project is designed to maximize solar power output during the day and store surplus energy in batteries, enabling a stable power supply even during nighttime or periods of low solar irradiance. Such hybrid systems are critical for overcoming the intermittency challenges of renewable energy and enhancing grid reliability.

Background & Industry Context

California leads the United States in aggressive clean energy policies, with an ambitious goal of achieving 100% clean electricity by 2045. Meeting this target necessitates large-scale solar power generation and complementary energy storage systems to manage its variability. Recent federal incentives, such as those under the Inflation Reduction Act (IRA), have further stimulated private investment in large-scale renewable energy development. Avantus's success in securing substantial financing demonstrates effective synergy between policy and market conditions, indicating the formation of a healthy ecosystem for clean energy investment.

Strategic Significance & Outlook

The securing of significant funding for the Aratina 2 project and its early commercial operation target by late 2026 underscore the steady progress of California's energy transition. This project will not only significantly increase clean power supply capacity but also serve as a model demonstrating the cost-effectiveness and reliability of energy storage technologies. The active investment by major financial institutions in such large-scale renewable energy projects is evidence that sustainable infrastructure is recognized as an attractive investment opportunity yielding long-term returns. The success of Aratina 2 is expected to catalyze the development of similar hybrid renewable energy projects in other regions and countries in the future.

Source: <https://bwwd.ca.gov/expert-time/Avantus-Secures-525-Million-in-Construction-Financing-for-California-SolarPlusStorage-Project-40-17467>

Collected: July 17, 2026 | Automated Research System (Gemini API)

#12 India Waives Inter-State Transmission Charges for RE-Attached BESS Projects by June 2028, Plans Over 200 GWh Domestic Manufacturing Capacity by 2030

Published July 11, 2026 XBattery India



OVERVIEW

The Indian government has introduced an exemption from inter-state transmission charges for Battery Energy Storage System (BESS) projects co-located with renewable power plants and commissioned by June 2028. Furthermore, the 2026-27 Union Budget introduced customs duty exemptions for BESS manufacturing inputs, strongly supporting domestic production. Indian conglomerates plan over 200 GWh of battery manufacturing capacity by 2030, aiming to reduce reliance on imported cells and deploy storage systems at the pace required for the domestic grid.

Key Findings

India is implementing a series of significant policies to accelerate the adoption of Battery Energy Storage Systems (BESS) and bolster domestic manufacturing capabilities. The government has introduced an exemption for inter-state transmission system (ISTS) charges for BESS projects co-located with renewable energy power plants that commence commercial operation by June 2028. Additionally, the Union Budget for 2026-27 included customs duty exemptions for inputs required for BESS manufacturing, providing strong support for establishing a domestic battery supply chain and enhancing production capacity.

Policy & Business Details

- **ISTS Charge Exemption:** Applicable to BESS projects co-located with renewable energy power plants and commissioned by June 2028. This measure reduces the integration costs for renewables and storage, improving project economics.
- **Customs Duty Exemption:** Introduced in the 2026-27 Union Budget for intermediate inputs necessary for BESS manufacturing. The objective is to incentivize domestic manufacturing of BESS components and systems, thereby lowering costs.
- **Domestic Manufacturing Capacity Target:** Leading Indian conglomerates are pursuing plans to establish over 200 GWh of battery manufacturing capacity by 2030, intended to meet demand for both electric vehicles (EVs) and grid-scale storage.
- **Strategic Goals:** To reduce import dependence for battery cells and deploy energy storage at a pace aligned with the needs of the domestic power grid.

These policies are part of a comprehensive strategy by India to enhance energy security and support its rapidly expanding renewable energy market.

Background & Industry Context

India faces the dual challenges of rapid economic growth and increasing electricity demand, alongside a national push for renewable energy adoption as a climate change mitigation strategy. Solar power, in particular, has seen rapid proliferation, but its intermittency poses challenges for grid stabilization. BESS is an essential technology for absorbing fluctuations in renewable energy output and maintaining power system stability. However, India currently relies heavily on imported battery cells, leading to concerns about supply chain vulnerability. The newly announced tax exemptions and manufacturing capacity enhancement measures serve as powerful incentives to build a domestic BESS ecosystem and increase energy self-reliance.

Strategic Significance & Outlook

The proactive policy support from the Indian government and investment plans by domestic corporations position India to become a significant player in the global battery manufacturing and energy storage markets. The ISTS charge exemption will substantially improve the economic viability of renewable energy-attached BESS projects, accelerating their deployment. Furthermore, customs duty exemptions for BESS manufacturing will foster domestic technological development and the formation of production hubs, contributing to job creation and economic growth. If the target of over 200 GWh manufacturing capacity by 2030 is realized, India will be able to reduce import dependence and pursue its energy transition at its own pace. This foreshadows India's emergence as a new supply hub in the global energy storage market.

Source: <https://xbattery.energy/learn/grid-scale-bess>

#13 Spearmint Energy Secures Site Permit for 150MW/600MWh Midwater Battery Storage Project in MISO Grid

Published July 16, 2026 Business Wire USA



OVERVIEW

Spearmint Energy has obtained a site permit from the Minnesota Public Utilities Commission for its 150 MW / 600 MWh Midwater Energy Storage Project in Freeborn County, Minnesota. This approval marks a critical step for the utility-scale battery energy storage system (BESS), designed to provide essential grid stability and renewable energy integration services to the Midcontinent Independent System Operator (MISO) network. The project underscores the increasing importance of large-scale storage in modernizing U.S. power infrastructure and achieving decarbonization goals.

Key Findings

Spearmint Energy has officially received the site permit from the Minnesota Public Utilities Commission for its Midwater Energy Storage Project in Freeborn County, Minnesota. This significant regulatory approval paves the way for the construction of a substantial 150 MW / 600 MWh standalone Battery Energy Storage System (BESS), slated for interconnection with the vast Midcontinent Independent System Operator (MISO) transmission network.

Technical & Project Details

The Midwater Energy Storage Project is designed to dramatically enhance the grid's capacity for integrating renewable energy within the rapidly expanding MISO operational area. This BESS will facilitate the supply of power during peak demand periods and store surplus energy from intermittent renewable sources, thereby increasing the flexibility and reliability of grid operations. As a standalone project, its dispatch will respond directly to market needs, contributing to the wholesale energy market.

Background & Industry Context

The United States is witnessing a growing demand for large-scale energy storage solutions to maintain grid stability and reliability amidst the accelerating deployment of renewable energy. Regional transmission organizations like MISO are actively supporting such projects to achieve clean energy targets and stabilize power supply. BESS technology, known for its rapid response times and scalability, is particularly favored for grid-scale applications.

Strategic Significance & Outlook

The acquisition of this site permit signifies the project's transition to the construction phase. Once operational, the Midwater Energy Storage Project is expected to bolster energy security across Minnesota and the broader MISO grid, contributing significantly to carbon emission reduction goals. Looking ahead, such large-scale BESS installations are anticipated to play a pivotal role in powering high-demand consumers, including the burgeoning AI data center sector.

Source: <#>

Collected: July 17, 2026 | Automated Research System (Gemini API)

#14 Tyfast Energy and Alion Partner to Accelerate U.S. Production of LVO Lithium Batteries for High-Performance Applications

Published July 16, 2026 Business Wire USA



OVERVIEW

Tyfast Energy Corp., developer of patented Lithium Vanadium Oxide (LVO) anode technology, has signed an MOU with Alion™ Energy Systems Inc. to advance the U.S. production of LVO-enabled lithium batteries. This collaboration aims to deliver domestically manufactured, innovative battery solutions for applications prioritizing high power, rapid charging, and enhanced safety. It represents a significant stride in strengthening U.S. battery supply chains and accelerating the commercialization of next-generation, high-performance battery technology.

Key Findings

Tyfast Energy Corp. has entered into a Memorandum of Understanding (MOU) with Alion™ Energy Systems Inc. to collaboratively advance the U.S. production of lithium batteries featuring Tyfast's proprietary Lithium Vanadium Oxide (LVO) anode technology. This strategic partnership is poised to bolster the domestic battery supply chain and expedite the commercialization of this advanced battery chemistry within the United States.

Technical & Project Details

The LVO anode technology developed by Tyfast Energy offers substantial advantages over traditional graphite anodes, including superior high-power delivery, ultra-fast charging capabilities, and enhanced safety characteristics. The inherent structural stability of LVO materials facilitates rapid lithium-ion intercalation and de-intercalation, enabling quick charging cycles and prolonged performance over extensive lifetimes. This technology is particularly well-suited for demanding applications such as electric vehicles (EVs), grid-scale renewable energy storage, and specialized industrial uses where power density and safety are paramount.

Background & Industry Context

In recent years, the U.S. government has prioritized policies aimed at strengthening domestic manufacturing capabilities for critical clean energy technologies and mineral supply chains. Onshoring lithium battery production is considered essential for mitigating geopolitical risks, fostering economic growth, and ensuring energy independence. The Tyfast and Alion collaboration aligns directly with these national imperatives, serving as a potential blueprint for producing advanced battery technologies within the U.S.

Strategic Significance & Outlook

This MOU marks a crucial step in transitioning LVO-enabled lithium batteries from prototype development to commercial-scale production. Both companies intend to jointly optimize manufacturing processes and overcome scaling challenges to supply high-performance, safe batteries to the U.S. market. This initiative holds the potential to position the United States as a leader in the next generation of energy storage and electrified mobility solutions, reducing reliance on foreign supply chains and boosting domestic innovation.

Source: <#>

Collected: July 17, 2026 | Automated Research System (Gemini API)

#15 Nofar USA Closes Deal for 400MWh Brownfield BESS Project, Targeting Late 2028 Commercial Operation

Published July 17, 2026 Business Wire USA



OVERVIEW

Nofar USA has finalized a transaction for a new approximately 400 MWh battery energy storage system (BESS) project, to be constructed on a brownfield site. The project has already secured site plan approvals and grid interconnection agreements, with construction slated to commence within 12 months for commercial operation by the end of 2028. This initiative is significant for its dual approach of repurposing existing infrastructure and advancing renewable energy integration in the U.S.

Key Findings

Nofar USA has successfully completed a transaction for a new battery energy storage system (BESS) project with an approximate capacity of 400 MWh. Notably, this project is strategically located on a brownfield site, demonstrating an efficient approach to land use and minimizing environmental impact through the repurposing of existing infrastructure.

Technical & Project Details

The newly secured BESS project boasts critical pre-approvals, including site plan approval and a grid interconnection agreement, indicating a high degree of project certainty. Nofar USA plans to initiate construction within the next 12 months, with a target for commercial operation by the end of 2028. The 400 MWh capacity is substantial, enabling the provision of diverse grid services such as stabilizing regional transmission networks, facilitating renewable energy integration, and meeting peak demand requirements. Utilizing a brownfield site also offers potential advantages in terms of accelerated development timelines and optimized infrastructure costs, leveraging prior industrial utility access.

Background & Industry Context

The rapid expansion of renewable energy in the United States has led to an escalating demand for large-scale storage solutions that can mitigate intermittency and ensure grid stability. Brownfield sites, which are previously developed industrial or commercial lands, are becoming increasingly attractive for energy projects due to their existing utility infrastructure, access roads, and often streamlined permitting processes compared to greenfield developments. This trend supports both environmentally sustainable development and economic efficiency within the energy sector.

Strategic Significance & Outlook

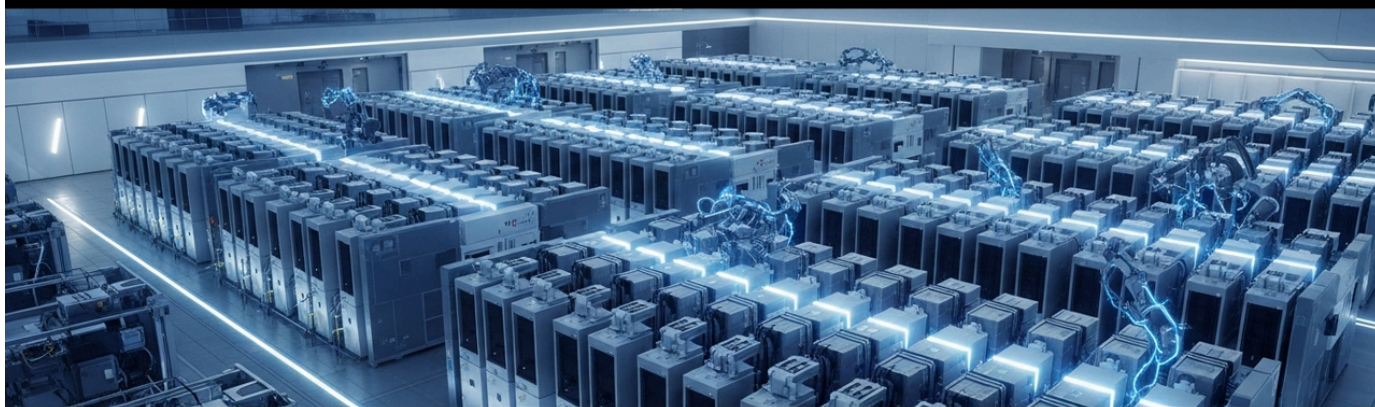
The commencement of commercial operation for this project will not only strengthen Nofar USA's footprint in the U.S. market but also contribute significantly to the nation's overall energy storage capacity. Its progression towards a late 2028 launch will aid in achieving grid modernization and decarbonization objectives, setting a positive precedent for other developers considering brownfield re-utilization. This is expected to further accelerate the deployment of renewable energy projects across the country.

Source: <#>

Collected: July 17, 2026 | Automated Research System (Gemini API)

#16 CATL and Alfen to Deploy 5GWh of Tener Sodium-Ion Battery Storage in Europe from 2027

Published July 16, 2026 CnEVPost China, Netherlands



OVERVIEW

Chinese battery giant CATL and Dutch energy storage firm Alfen have signed an MOU to deploy a total of 5 GWh of "Tener Sodium" sodium-ion battery energy storage systems across Europe, including the Netherlands and other Western European countries, starting in 2027. This marks CATL's inaugural European market entry for its sodium-ion batteries, which boast a 25-30 year lifespan and approximately 2% improved round-trip efficiency. The partnership is a landmark development, mitigating lithium price volatility and offering a sustainable, cost-effective grid storage solution.

Key Findings

CATL, a leading Chinese battery manufacturer, has signed a Memorandum of Understanding (MOU) with Alfen NV, a Dutch energy storage solutions provider, to deploy 5 GWh of its "Tener Sodium" sodium-ion battery energy storage systems across Europe, starting in 2027. This landmark collaboration will see the Tener Sodium system introduced into the European market for the first time, offering a compelling lithium-independent and sustainable solution for large-scale grid storage.

Technical & Project Details

The Tener Sodium system from CATL is distinguished by its exceptional performance and longevity. Specifically, these sodium-ion batteries achieve a cycle life of over 15,000 charge-discharge cycles, with an expected operational lifespan ranging from 25 to 30 years. Furthermore, the system demonstrates an approximate 2% improvement in round-trip efficiency compared to conventional systems, directly translating to reduced energy losses and optimized operational costs. Alfen's decision to adopt this technology is driven by goals of material diversification, cost optimization, and reduced exposure to the volatile fluctuations in lithium prices. Sodium's abundance on Earth, coupled with its lower cost relative to lithium, provides significant advantages in terms of supply chain stability and economic competitiveness.

Background & Industry Context

The European Union (EU) is aggressively pursuing ambitious renewable energy targets and requires robust, large-scale energy storage solutions to ensure grid stability amidst increasing intermittency. Concurrently, global lithium supply constraints and price volatility present substantial challenges for the energy storage industry. In this context, sodium-ion batteries have rapidly gained traction as a viable alternative to lithium-ion, lauded for their cost-effectiveness, abundant resource base, and inherent safety. The partnership between CATL and Alfen represents a critical milestone for this technology's commercial entry into the European market, poised to play an indispensable role in accelerating the continent's energy transition.

Strategic Significance & Outlook

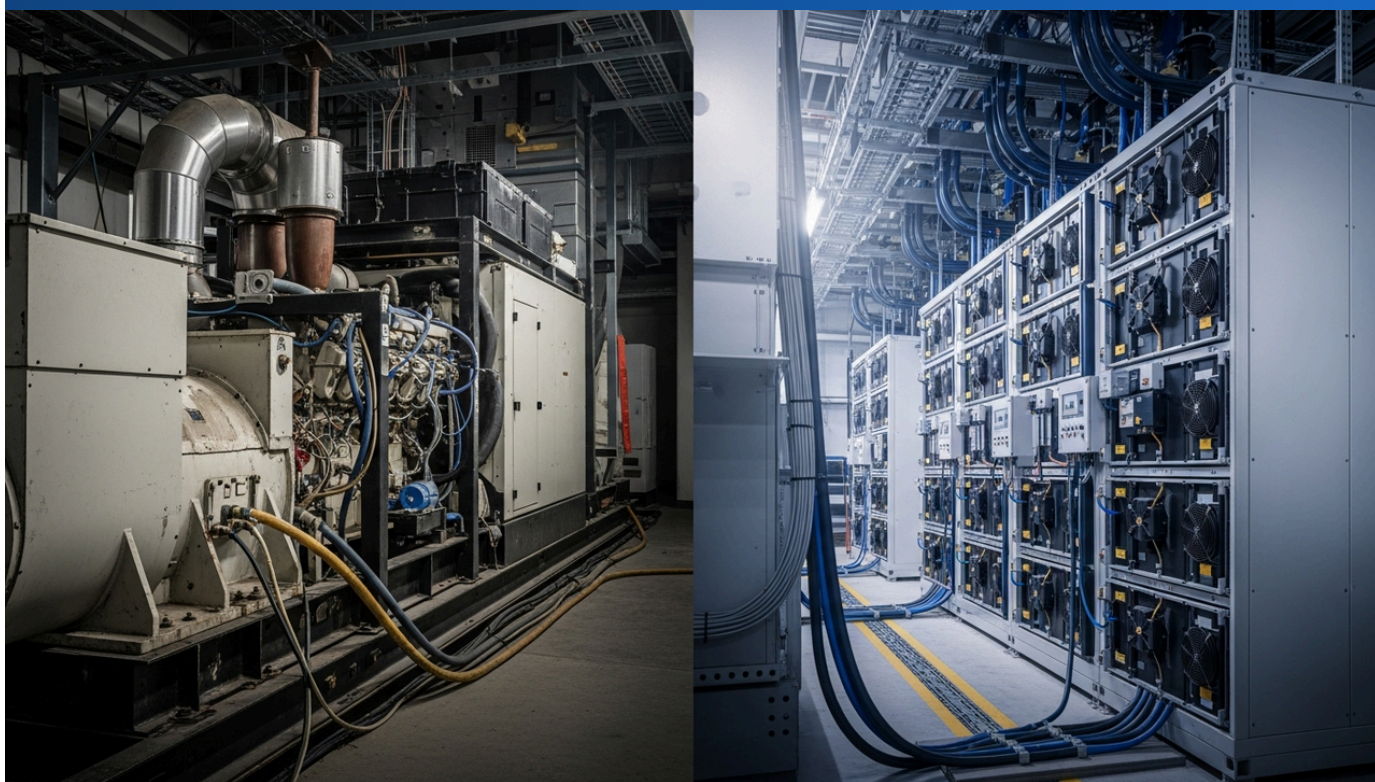
The deployment of the Tener Sodium system through this partnership will introduce a new, viable option to the European energy storage market, further accelerating the integration of renewable energy sources. Its extended lifespan of over 25 years and high efficiency make it an attractive investment for utilities and industrial customers, promising long-term operational stability and cost reductions. This move not only validates the reliability and practicality of sodium-ion battery technology but is also expected to catalyze its broader adoption in the global energy storage market. Ultimately, it has the potential to diversify the current lithium-heavy battery landscape, contributing to a more resilient and sustainable global energy infrastructure.

Source: <https://cnevpost.com/2026/07/16/catl-sodium-battery-storage-europe-alfen-deal/>

Collected: July 17, 2026 | Automated Research System (Gemini API)

#17 AI Data Centers Reshape Power Infrastructure, Shifting from Diesel to BESS for Enhanced Grid Stability and Efficiency

Published July 15, 2026 ESS News Global



OVERVIEW

Data center power infrastructure is rapidly transitioning from traditional diesel backups to Battery Energy Storage Systems (BESS), driven by utility demand response requirements and regional policies. Hyperscale operators are adopting BESS to manage AI workload power supply, reduce capital expenditure, and simplify grid integration, making BESS a standard component in new data center designs. This shift significantly enhances data center sustainability and grid resilience.

Key Findings

The power infrastructure for data centers, particularly those supporting AI workloads, is undergoing a dramatic transformation, moving away from traditional diesel generator backups to Battery Energy Storage Systems (BESS). This paradigm shift is being accelerated by utility demand response requirements and regional policies promoting renewable energy integration, solidifying BESS's position as a standard component in contemporary data center design.

Technical & Project Details

Hyperscale data center operators are realizing multiple benefits from BESS implementation. Firstly, BESS enables efficient management of consistent power delivery essential for demanding AI workloads. Secondly, it offers potential reductions in Capital Expenditure (CAPEX) and operational costs compared to diesel generators. Moreover, BESS simplifies grid integration and allows for more flexible power management. Specifically, it can offset peak power demands, alleviate strain on the electrical grid, and ensure instantaneous power delivery. A variety of battery chemistries, including lithium-ion, but also emerging aqueous batteries and long-duration flow batteries, are being deployed to meet the diverse needs of data centers.

Background & Industry Context

The proliferation and advancement of AI have led to an exponential increase in data center power consumption, raising concerns about their environmental footprint and impact on grid stability. Traditional diesel backups posed challenges related to emissions, fuel storage, and operational complexity. In contrast, BESS addresses these issues by offering cleaner power delivery, high reliability, and the ability to participate in demand response programs. Policy mandates for renewable energy integration and incentives for distributed energy resources across many regions are further fueling this transition, making BESS an economically and environmentally compelling solution.

Strategic Significance & Outlook

Battery storage will play an increasingly indispensable role in enabling AI data centers to meet sustainability targets and enhancing the resilience of the broader power grid. The adoption of BESS facilitates the evolution of data centers from mere power consumers to active participants in grid services, fostering "grid-interactive data centers." In the future, the combination of BESS with advanced power conversion technologies such as solid-state transformers (SSTs) is expected to further improve data center power efficiency and reliability, establishing new benchmarks for critical infrastructure power supply.

Source: <https://www.ess-news.com/2026/07/15/data-center-power-shifts-favor-bess-solid-state-transformers/>

Collected: July 17, 2026 | Automated Research System (Gemini API)

#18 Energy Dome and SEC Partner to Develop Victoria's First 10-Hour, 20MW/200MWh CO2 Battery Storage Project

Published July 10, 2026 Energy Dome (Press Release) Australia



OVERVIEW

Italian cleantech firm Energy Dome has partnered with Australia's State Electricity Commission (SEC) to develop Victoria's first 10-hour, 20 MW / 200 MWh CO2 Battery plant in the Latrobe Valley. This compressed carbon dioxide battery system aims to bolster grid strength and stability through physical inertia and ancillary services, offers a 30+ year lifespan, and claims significant cost advantages over lithium-ion, without reliance on critical minerals. This marks a pivotal breakthrough for long-duration energy storage in Australia.

Key Findings

Energy Dome, an Italian cleantech company, has forged a strategic partnership with Australia's State Electricity Commission (SEC) to develop Victoria's inaugural 10-hour, 20 MW / 200 MWh compressed carbon dioxide (CO₂) battery plant in the Latrobe Valley. This groundbreaking project is anticipated to play a crucial role in grid stabilization and renewable energy integration, offering a long-duration energy storage solution that is notably independent of critical minerals.

Technical & Project Details

Energy Dome's CO₂ Battery technology stores and releases energy by phase-transforming carbon dioxide between its liquid and gaseous states at ambient temperatures. Specifically, it uses electricity to compress and liquefy CO₂, then, when power is needed, the liquid CO₂ is expanded to drive a turbine and generate electricity. This system provides physical inertia and grid services that enhance the strength and stability of the electricity network. With a 20 MW power output and 200 MWh storage capacity, this plant will be Victoria's longest-duration grid battery, offering 10 hours of discharge capability to ensure stable power supply, particularly during evening peaks and periods of low renewable generation. Energy Dome asserts that its CO₂ Battery offers significant cost advantages over lithium-ion batteries and boasts a design life exceeding 30 years.

Background & Industry Context

Australia, especially Victoria, is aggressively transitioning away from coal-fired power and accelerating renewable energy adoption, making the need for large-scale, long-duration energy storage solutions an urgent priority. However, conventional lithium-ion batteries may not fully address all long-duration storage requirements due to their specific discharge durations and resource constraints. Non-lithium-based technologies like the CO₂ Battery present an attractive alternative, offering advantages in terms of resource abundance, safety, and cost efficiency. The partnership with SEC underscores the Victorian government's proactive stance in investing in clean energy technologies and leading the energy transition.

Strategic Significance & Outlook

The success of this project could establish a new viable option for the long-duration energy storage market in Australia and globally, particularly disrupting the current high reliance on critical minerals. The deployment of the CO2 Battery will improve grid reliability and support the expanded integration of renewable energy, contributing to Victoria's ambitious goals of 65% renewable energy by 2030 and 95% by 2035. In the long term, this technology is expected to become a standard long-duration storage solution within renewable energy grids worldwide, fostering a more resilient and diversified energy future.

Source: <https://energydome.com/energy-dome-to-deliver-victorias-first-10-hour-battery-in-partnership-with-sec/>

Collected: July 17, 2026 | Automated Research System (Gemini API)

#19 Idemitsu Australia Proposes Nation's Largest 108MW/864MWh Vanadium Flow Battery at Former Coal Mine Site

Published July 13, 2026 Renew Economy Australia



OVERVIEW

Idemitsu Australia has proposed building Australia's largest vanadium redox flow battery (VRFB) with 108 MW output and 864 MWh capacity (8-hour discharge) at the former Muswellbrook coal mine site in New South Wales' Hunter region. If constructed, this VRFB will offer superior longevity, enhanced safety, and scalability. The plan contributes to a national strategy of transforming former coal power sites into clean energy hubs.

Key Findings

Idemitsu Australia has put forth a proposal for the construction of Australia's largest vanadium redox flow battery (VRFB) at the former Muswellbrook coal mine site in the Hunter region of New South Wales. This ambitious project boasts a substantial capacity of 108 MW of power output and 864 MWh of energy storage over an 8-hour discharge period, signifying a crucial step in the company's post-coal mine closure redevelopment strategy towards sustainable clean energy provision.

Technical & Project Details

The proposed vanadium flow battery distinguishes itself from conventional battery technologies through its inherent advantages: exceptional longevity, non-flammable safety profile, and superior scalability. Its 8-hour discharge capability will enable the absorption of fluctuations from renewable energy sources, such as solar during the day and wind at night, ensuring a stable and prolonged power supply. Utilizing a former coal mine site allows for the leveraging of existing grid connection infrastructure, potentially reducing development costs and timelines. The modular nature of VRFBs, where storage capacity can be easily expanded by simply increasing the electrolyte volume, makes it highly adaptable to future increases in power demand.

Background & Industry Context

Australia, while being a major coal exporter, is rapidly accelerating its transition to renewable energy and decarbonization, making large-scale, long-duration energy storage solutions absolutely critical. The trend of converting former coal mine sites into renewable energy hubs holds significant national importance, both for diversifying the economy and creating new employment opportunities in regional communities. Vanadium flow batteries are gaining prominence as a compelling alternative to lithium-ion for long-duration storage in such contexts, with the potential to leverage local resources and labor in mining regions.

Strategic Significance & Outlook

The realization of this large-scale VRFB project will mark a pivotal milestone in Australia's energy transition strategy. The Muswellbrook coal mine site's clean energy precinct conversion could serve as a model for similar projects in other former coal regions, contributing to regional economic revitalization. It will also solidify Australia's position as a leader in long-duration energy storage technology. Looking ahead, such projects are foundational to enabling intermittent renewable energy sources to function as baseload power, building a more stable and sustainable electricity supply system for the nation.

Source: <https://reneweconomy.com.au/australias-biggest-vanadium-flow-battery-planned-for-clean-energy-precinct-at-former-coal-mine/>

Collected: July 17, 2026 | Automated Research System (Gemini API)

#20 Google Breaks Ground on Record-Setting Steel River Energy Center in Arkansas: 2.5GW Solar, 2.9GWh Battery Storage

Published July 14, 2026 Google Blog USA



OVERVIEW

Google has commenced construction on the Steel River Energy Center in Mississippi County, Arkansas, its largest-ever solar and battery storage project, designed to power its AI data centers. Initially, the project will provide 1.6 GW of solar and 1.9 GWh of battery storage, with plans to expand to 2.5 GW solar and 2.9 GWh storage, capable of powering over 315,000 Arkansas homes. This initiative represents a pioneering effort to simultaneously decarbonize data center operations and deliver clean energy to local communities.

Key Findings

Google has officially broken ground on the Steel River Energy Center in Mississippi County, Arkansas, marking the commencement of the company's largest-ever solar and battery storage project. This monumental hybrid facility is designed to power Google's AI data centers, clearly demonstrating the tech giant's commitment to large-scale clean energy deployment and contributing significantly to regional power grids.

Technical & Project Details

The Steel River Energy Center is set to initially operate with 1.6 GW of solar generation capacity and 1.9 GWh of battery storage. The project will leverage advanced solar panels from First Solar and batteries manufactured at LG's Phoenix factory. Future plans include an expansion to 2.5 GW of solar and a substantial 2.9 GWh of battery storage, a scale capable of supplying electricity to over 315,000 homes in Arkansas. This integrated system will ensure an uninterrupted supply of clean power to data centers by buffering the intermittency of solar generation with battery storage, simultaneously enhancing the stability and resilience of the local electricity grid.

Background & Industry Context

With the rapid advancement and proliferation of AI, major technology companies like Google face the dual challenge of meeting escalating data center power demands while simultaneously decarbonizing their energy sources. Google has set an ambitious goal to operate on 24/7 carbon-free energy by 2030, and the Steel River Energy Center represents a critical strategic investment towards achieving this objective. Such large-scale renewable energy and storage projects are indispensable for mitigating the environmental impact of data center energy consumption and establishing a model for sustainable digital infrastructure.

Strategic Significance & Outlook

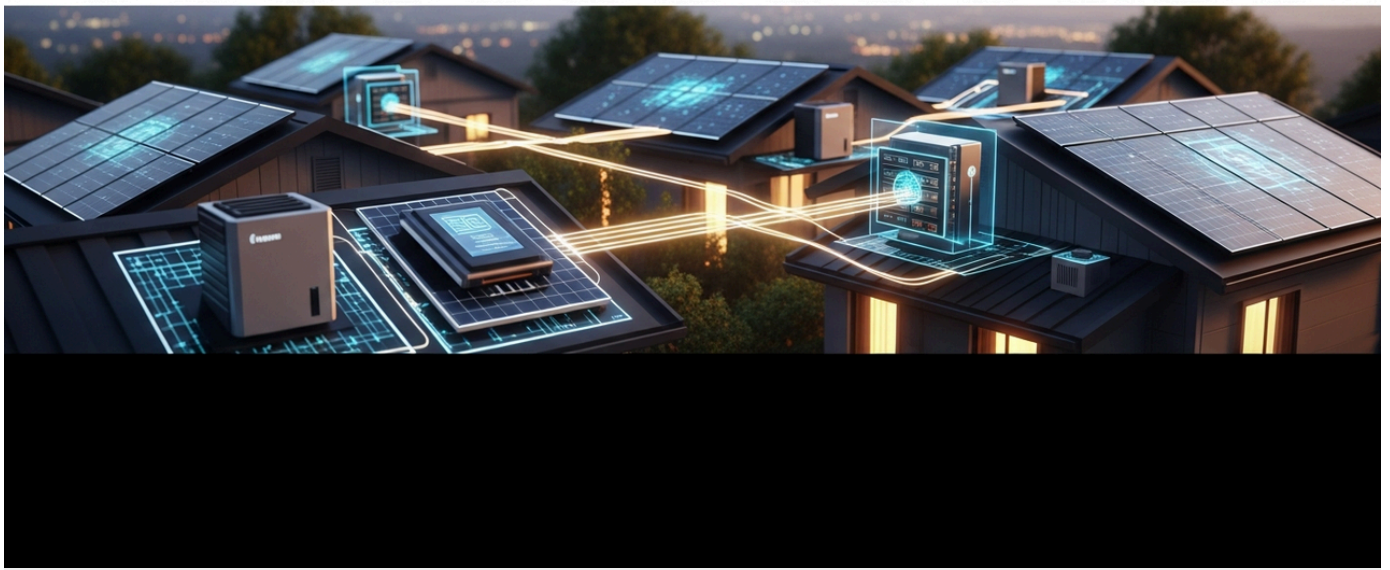
The Steel River Energy Center will establish a new benchmark for sustainable power supply to data centers. This project will contribute to Google's carbon-free goals as well as regional economic development and job creation. In the future, such hybrid renewable energy facilities are anticipated to become a standard power supply model for data centers globally, playing a vital role in decarbonizing and strengthening entire electricity grids. Furthermore, large-scale BESS will facilitate optimized power management for AI workloads, becoming an indispensable component in future AI data center designs.

Source: <https://blog.google/innovation-and-ai/infrastructure-and-cloud/global-network/steel-river-arkansas/>

Collected: July 17, 2026 | Automated Research System (Gemini API)

#21 Sunrun Expands "Distributed Data Center" Pilot, Integrating Computing Hardware with Home Solar and Battery Networks

Published July 15, 2026 Utility Dive USA



OVERVIEW

Sunrun is expanding its "Distributed Data Center" pilot program, integrating computing hardware into homes equipped with its solar and battery energy storage systems. This innovative initiative aims to benefit the electricity grid by increasing the utilization of existing residential infrastructure, thereby enhancing demand response and grid resilience. The program demonstrates the potential for distributed energy resources to create new value beyond traditional energy provision.

Key Findings

Sunrun has announced the expansion of its "Distributed Data Center" pilot program. This groundbreaking initiative is based on the concept of integrating computing hardware into residences that already feature Sunrun's home solar power systems and battery energy storage systems (BESS). The program explores the potential for homes to evolve beyond mere power consumers, becoming distributed grid assets that provide both computing capacity and energy storage.

Technical & Project Details

This pilot program involves the battery systems installed in Sunrun customer homes hosting computing hardware designed to process a portion of data center workloads. This approach maximizes the utilization of existing residential infrastructure, particularly the batteries and solar installations. Specifically, computing tasks can be performed during off-peak electricity demand hours, while during periods of high demand, the systems can either supply power to the grid or reduce demand, thereby optimizing the overall grid load. Such a distributed approach holds the potential to reduce the construction and operational costs of centralized data centers, while simultaneously significantly bolstering grid demand response capabilities and resilience.

Background & Industry Context

The rapid advancements in technologies like AI and blockchain have led to an explosive increase in computing demand, placing immense strain on centralized data centers' power consumption. Concurrently, the proliferation of renewable energy has created new challenges in managing and integrating distributed energy resources (DERs) into the grid. Sunrun's "Distributed Data Center" concept ingeniously merges these two trends, enabling homes to function as part of a "Virtual Power Plant (VPP)" that generates value in both energy and computing domains.

Strategic Significance & Outlook

The success of this pilot program could redefine the economic value of home battery systems and solar power, fostering new business models. In the future, this could lead to the formation of vast distributed computing and energy storage networks involving millions of homes, potentially revolutionizing grid reliability and efficiency. This represents a truly innovative approach that blurs the lines between the energy and technology sectors, offering new revenue opportunities for consumers and paving the way for a more decentralized and resilient digital and energy future.

Source: <https://www.utilitydive.com/news/sunrun-distributed-data-center-pilot-taps-its-home-solar-and-battery-netw/825314/>

Collected: July 17, 2026 | Automated Research System (Gemini API)