

ACEC Energy Market Brief

Winter 2024

Market Scope

The growing power market, with an estimated construction put-in-place (CPIp) value of \$117 billion for 2023 makes it the 4th largest market in the engineering design industry and is anticipated to grow by an estimated 6% compound annual growth rate (CAGR) from 2023 to 2027 according to preliminary data from the ACEC Research Institute's 2023 Economic Assessment and Forecast. The power market also accounts for 11% of the total dollar value of design and construction work done in the U.S. (see pie chart below). The brief includes research and insights into fuel resources, energy production and consumption, electric energy, hydroelectric power, nuclear power, solar energy, wood energy and the electric and gas utility industries.

Top Clients

The list below features the top 10 global energy storage developers to watch for growth over the next 12 months, according to a 2023 Tamarindo Energy Storage Report. Energy storage allows electricity from renewable sources like wind and solar to be stored and used when needed. It can alleviate stress on the grid during peak demand and temper price spikes for the end consumer.

Rank	Energy Storage Developer	Headquarters
1	Powin	Tualatin, OR
2	Jupiter Power	Austin, TX
3	Energy Dome	Milan, IT
4	Eelpower	London, UK
5	East Point Energy	Charlottesville, VA
6	KX Power	London, UK
7	Malta Inc.	Cambridge, MA
8	Arlington Energy	London, UK
9	Sunamp	Edinburgh, UK
10	RheEnergise	London, UK

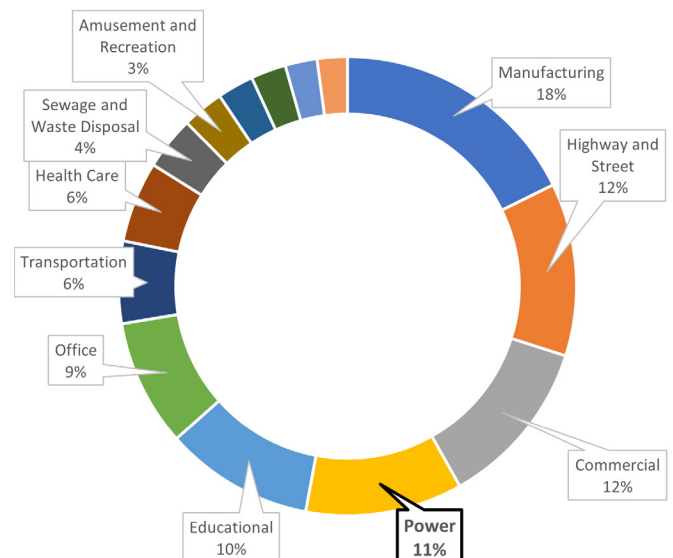
Source: Tamarindo Energy Storage Report

5 Current Market Trends

- ▶ **1. US is #1 Exporter of LNG:** In 2023, the U.S. became the number one exporter of liquefied natural gas (LNG) in the world. As of October 2023, the U.S. had the largest LNG export capacity in operation at 92.9 million metric tons per year (see chart on page 2), and in December 2023 U.S. LNG reached an all-time monthly high of 8.6 million tons (source: CSIS). Reuters reported that supply increased due to Freeport LNG and Calcasieu Pass, two LNG exporters but the "Shale Revolution" (hydraulic fracturing technology and horizontal drilling stimulated by public and private investment and innovations) and geopolitical tensions between Russia and Europe in 2022 propelled the U.S. forward. As Europe sought to replace gas imports from Russia, the U.S. became the largest exporter of global spot and short-term volumes

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Top 10 Markets in 2023 by CPIp

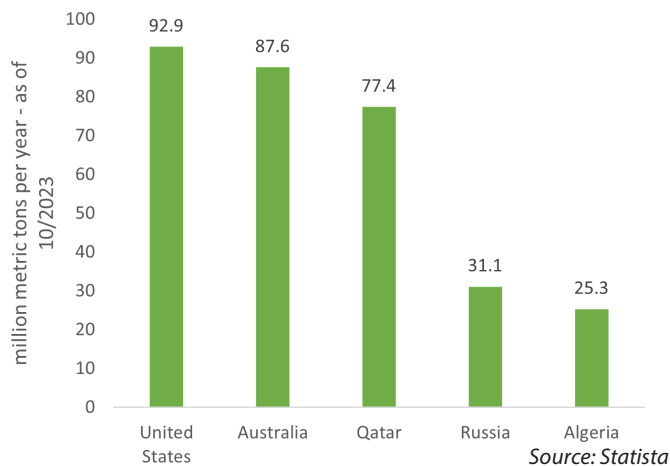


Source: U.S. Census Bureau

Current Market Trends, *continued*

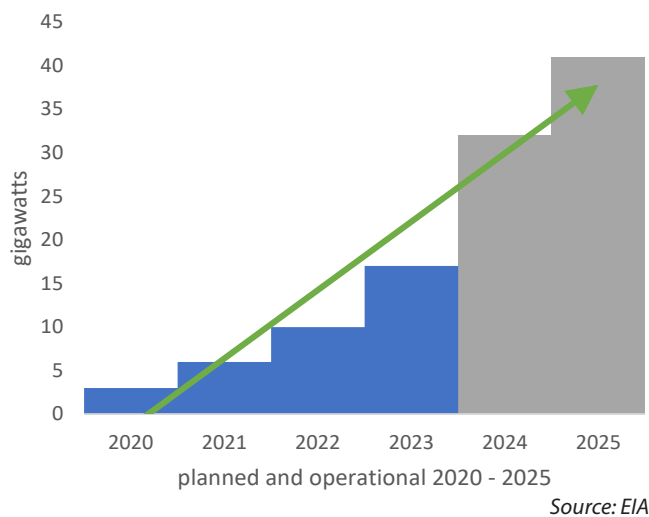
(immediate and day-to-day transactions), exporting 34% LNG (source: EIA). The demand and supply of LNG is strong and plentiful in the U.S., but leaders struggle with permitting to obtain the necessary infrastructure and pipelines to transport LNG (see GA section on page 3).

Top 5 Countries by LNG Export Capacity



- ▶ **2. Battery Storage Capacity to Double by 2024:** Battery energy storage capacity in the U.S. is expected to experience extreme growth in the next three years. Storage hit a new operational capacity high of 7,322 mega-watt hours (MWh) in Q3 2023, (source: U.S. Energy Storage Monitor Report) and between 2022 and 2025 storage is expected to increase from 7.8 gigawatts (GW) to 30 GW, (see chart below for projected growth). Battery storage is an essential element to diversify a clean energy mix. It is an enabler of renewable sources allowing power generated by solar and wind to be used later. The Inflation Reduction Act (IRA) allocated \$370 billion to clean-energy investments, and solar generation is expected to grow 75% and wind 11% by 2025 (source: EIA).

Annual US Battery Storage Capacity



- ▶ **3. Rapid DER Growth:** The distributed energy resources (DER) market is expected to double between 2022 and 2027 with a value of \$68 billion per year (source: Wood Mackenzie). In the wake of the energy transition, the demand for DERs is growing quickly. DERs are small-scale energy resources such as rooftop solar panels, battery storage and electric vehicles (EVs). Virtual power plants (VPPs), also growing in popularity for their ability to provide power generation and a low-cost alternative, are a cloud-based coalition of DERs. The Federal Energy Regulatory Commission (FERC) also issued Order No. 2222 with the goal of providing opportunities in the DER market by allowing aggregates of DERs to participate in regional markets and receive compensation in return.

- ▶ **4. An Election Year Could = A Volatile Utility Market:** An impending presidential election would impact energy policy, tax credits and grant funding for potential future energy projects creating a volatile outlook for utilities in 2024. Interest rates will become a focus as energy developers weigh costs for renewable projects. Investment in the energy efficient market has never been higher, breaking records in 2022 at \$600 billion. In 2023 spending was driven by the sales of EVs. Overall EV sales grew by more than 35% and one in seven cars sold in 2023 were EVs (source: IEA). If the White House changes hands it is anticipated that investments could swing from low-carbon alternatives back to fossil fuels. Irrespective of which party wins the White House in November, developers in the energy market will still grapple with financial pressures including higher borrowing costs.

- ▶ **5. Securing Supply Chain of Critical Minerals, a Must:** Critical minerals such as cobalt, graphite, lithium, nickel, copper, and manganese are vital for the energy transition. However, they are rare elements only found in certain geographic regions with limited resources to mine and process them. China currently dominates global mineral processing (source: Brookings). The U.S. imports 12 key minerals and China is the primary source of those imports (source: DOE). To reduce carbon emissions, securing the supply chain for these critical minerals will need to be a priority for the U.S. The IRA invested \$110 billion into clean energy and \$70 billion for the U.S. battery supply chain.

- √ See the GA section on page 3 for more about federal funding opportunities and how you can get involved with the Energy or Water and Environment Committees at ACEC National.

Government Affairs Action

ACEC advances policy and legislation to promote member firm interests related to climate, clean energy, sustainability, and resilience, and to improve the efficiency of the permitting process. ACEC is currently tracking:

▶ **Environmental Review and Permitting (ER&P):** ACEC will continue to build on recent amendments of NEPA to address many ER&P barriers to infrastructure investments under BIL/IRA. ACEC will advocate for bipartisan support in the U.S. House and Senate for reforms to streamline project delivery, including judicial review and other changes to regulatory frameworks under relevant federal environmental laws e.g., Clean Water Act and Clean Air Act, among others.

√ The recent administration has put a temporary pause on LNG export approvals. This is a new development that ACEC will monitor alongside member firms.

▶ **BIL/IRA Energy Funding:** ACEC supports energy appropriations aligned with key funding and incentive programs created or expanded under BIL/IRA and is opposed to any major cuts to those programs. (e.g., DOE Loan Program Office, Office of Clean Energy Demonstrations). ACEC will partner with segment stakeholders in power generation, petrochemical, and building efficiency to advocate for robust funding of the programs with key members of Congress via letters of support, and congressional briefings. ACEC will also leverage the **Engineering and Public Works Roadshow** initiative to identify and demonstrate energy projects in members' districts and states showcasing the value of the programs.

▶ **BIL/IRA Implementation/Oversight:** ACEC expects Congressional oversight of major newly created and funded energy programs under BIL/IRA concerning climate mitigation, resilience, workforce requirements and environmental justice. ACEC will proactively identify any policy issues and incorporate into the engagement strategy for key committees and agencies.

▶ **BIL/IRA Regulatory/Grant Opportunities:** A proposed rule regarding hydrogen tax benefits favors renewables power generation over natural gas and nuclear. ACEC will review and consider opportunities for comment on energy related Federal agency regulatory proposals. ACEC will coordinate with key agencies like the DOE and General Services Administration to conduct webinars on grant opportunities.

√ To join ACEC's Energy or Water and Environment Committees today email ngomez@acec.org or lschloesser@acec.org

Business Development Insight

Monetizing Underutilized Spaces with Solar

Environmentalists are against the development of solar farms on greenfields pushing developers to look for creative alternatives. Opportunity locations could include:

- underused parking lots;
- large retail super centers; and
- brownfields.

The U.S. has an estimated two billion parking spaces and the surge in teleworking and push for public transportation has left many spaces empty. Solar canopies built over parking lots can generate electricity and provide shade for cars and consumers.

According to a Yale School of the Environment study in Connecticut this idea could provide a third of the state's power, help meet their governor's target of a zero-carbon electric sector by 2040, and serve environmental goals.

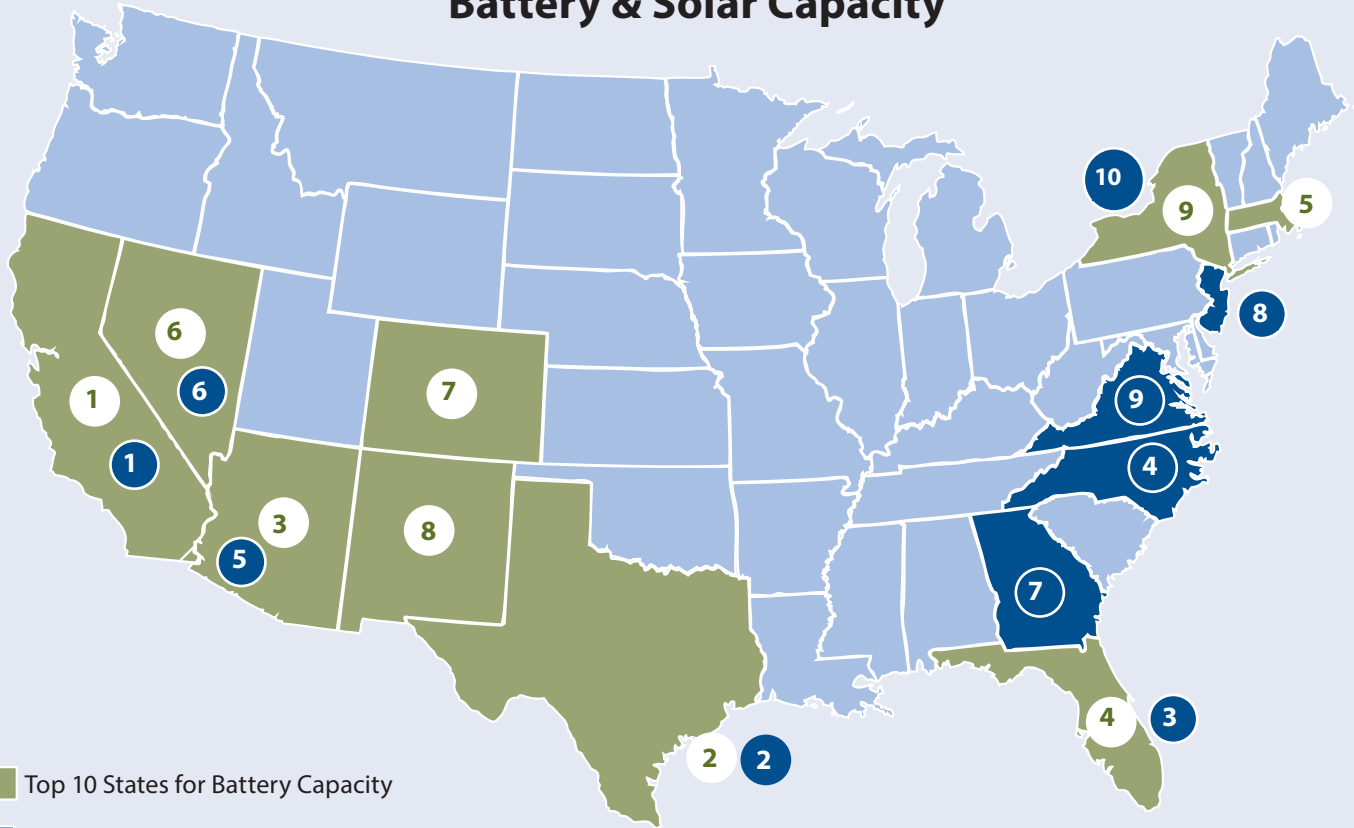
Large retail supercenters, including Walmart, are installing photovoltaic solar canopies that also provide charging stations to EVs. An article in ScienceDirect titled "Electric vehicle charging potential from retail parking lot solar photovoltaic awnings", found that if Walmart deployed 11.1 GW of solar canopies it would provide 90% of Americans within 15 miles enough solar electricity for 346,000 EV charging stations.

Building solar arrays on brownfields, including landfills, is another emerging trend. These locations tend to have access to the grid and public roads turning properties into economic opportunities. According to the DOE, there are approximately 450,000 brownfield sites. The IRA also established a tax credit bonus to support brownfield development. Here is a list of the top 10 solar developers in the U.S. in 2023 ranked by total capacity in megawatts.

Rank	Solar Developer	Megawatt Capacity
1	NextEra Energy Resources	923 MW
2	Cyress Creek Renewables	769 MW
3	Recurrent Energy	490 MW
4	AP Solar Holdings LLC	477 MW
5	Savion	460 MW
6	Lightsource BP	451 MW
7	Florida Power & Light Company	447 MW
8	Silicon Ranch Corporation	383 MW
9	EDF Renewable Energy	330 MW
10	National Grid Renewables	324 MW

Source: Enverus Foundations

Top 10 States With the Most Installed Battery & Solar Capacity



■ Top 10 States for Battery Capacity

■ Top 10 States for Solar Capacity

Source: EAI as of November 2023, Hawaii not pictured #10, SEIA 2023 Report

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Diana Alexander is ACEC's director of private market resources. She can be reached at: dalexander@acec.org

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