Utility-Scale Solar Power Plant Market Size & Share Analysis - Growth Trends and Forecast (2026 - 2031)
Industry: Renewable Energy (Solar & Wind)
URL: https://www.mordorintelligence.com/industry-reports/utility-scale-solar-power-plant-market

Utility-Scale Solar Power Plant Market Size and ShareMarket Overview

Study Period	2021 - 2031
Market Volume (2026)	339.27 gigawatt
Market Volume (2031)	645.11 gigawatt
Growth Rate (2026 - 2031)	13.71 %
Fastest Growing Market	Middle East and Africa
Largest Market	Asia-Pacific
Market Concentration	Low
Major Players	*Disclaimer: Major Players sorted in no particular order

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Utility-Scale Solar Power Plant Market Analysis by Mordor IntelligenceThe Utility-Scale Solar Power Plant Market size in terms of installed base is expected to grow from 303.42 gigawatt in 2025 to 339.27 gigawatt in 2026 and is forecast to reach 645.11 gigawatt by 2031 at 13.71% CAGR over 2026-2031. The utility-scale solar power plant market is supported by lower generation costs, growing electricity demand from data centers, renewable capacity targets, wider use of battery storage, and a growing need for power systems to add new capacity without extending their dependence on imported fuels or conventional generation with longer construction schedules, particularly in regions where power demand is rising quickly, predictably, and across multiple demand centers. Utility-scale projects now compete on grid access, storage design, and long-term offtake terms as much as on module pricing, because the strongest equipment cost position cannot overcome a delayed connection, uncertain approvals, weak customer credit, or an inability to sell electricity during the most valuable hours. Developers with contracted revenue, grid-ready land, access to financing, established construction partners, and a clear path through permitting are better placed to advance large projects and maintain momentum when equipment markets, policy rules, or wholesale power prices change during development. The utility-scale solar power plant market also faces delays from grid connections, permitting, land use, and periods of low daytime power prices, which can increase development costs, alter the risk profile of expected revenue, and shift investment toward projects with stronger contracts, co-located storage, more advanced grid studies, or access to jurisdictions that can provide coordinated approvals and transmission development.

Key Report Takeaways

* By technology, solar PV held 97.2% of the utility-scale solar power plant market share in 2025 and is forecast to grow at a 14.7% CAGR through 2031.
* By geography, Asia-Pacific held 68.4% of the utility-scale solar power plant market share in 2025, while the Middle East and Africa is forecast to grow at a 15.2% CAGR through 2031.

Note: Market size and forecast figures in this report are generated using Mordor Intelligence’s proprietary estimation framework, updated with the latest available data and insights as of January 2026.

Global Utility-Scale Solar Power Plant Market Trends and InsightsDrivers Impact

Analysis*

Driver | (~) % Impact on CAGR Forecast | Geographic Relevance | Impact Timeline |
Utility-Scale Solar Cost Competitiveness Against Fossil Generation | +3.20% | Global, with pronounced effect in North America, EU, APAC, MEA | Short term (≤ 2 years) |
Corporate PPAs and Hyperscaler Electricity Procurement | +2.40% | North America (primary), EU, APAC (emerging) | Short term (≤ 2 years) |
Solar-Plus-Storage for Firm Renewable Capacity | +2.10% | North America, APAC, MEA | Medium term (2–4 years) |
Renewable-Energy Targets and Energy-Security Policies | +2.00% | Global, with peak impact in EU, India, Middle East | Medium term (2–4 years) |
Safe-Harbored Project Pipelines Before Incentive Deadlines | +1.30% | North America (US) | Short term (≤ 2 years) |
Co-Located Solar, Green Hydrogen, and Industrial Loads | +0.80% | China, EU, Middle East, South America | Long term (≥ 4 years) |
Source: Mordor Intelligence |

Utility-Scale Solar Cost Competitiveness Against Fossil Generation

Utility-scale solar power plant market growth continues because solar remains a low-cost source of new electricity in many markets. IRENA reported that more than 90% of utility-scale renewable projects commissioned in 2025 generated power below the cost of the cheapest new fossil fuel alternative in their markets[1]International Renewable Energy Agency, “Renewable Power Generation Costs in 2025,” International Renewable Energy Agency, irena.org. IRENA placed the global average utility-scale solar PV cost at USD 44/MWh in 2025. This cost position shifts development decisions toward the ability to deliver electricity when the system needs it, rather than simply producing the largest possible volume during daylight hours, and it makes the interaction between solar assets, storage systems, grid constraints, and customer demand increasingly important to project economics. Developers are therefore adding storage and seeking contracts that recognize dependable delivery. Public solar research programs also continue to support further cost reductions and technology improvement.

Corporate PPAs and Hyperscaler Electricity Procurement

Corporate power purchase agreements are creating a clearer demand base for the utility-scale solar power plant market. Data centers need large volumes of electricity and often need long-term supply agreements before construction can proceed. These contracts improve revenue visibility for developers and can help attract project financing, because lenders and investors can assess a known customer, a defined contract term, and a more predictable stream of payments instead of relying on uncertain wholesale market prices throughout the operating life of an asset. The financing model is especially important for solar projects that require transmission upgrades or storage assets. Google and TotalEnergies signed 2 long-term solar agreements totaling 1 GW for Texas data centers in February 2026. The utility-scale solar power plant market benefits when corporate buyers accept longer terms and more direct involvement in project delivery.

Solar-Plus-Storage for Firm Renewable Capacity

Battery storage is changing the role of solar projects in the utility-scale solar power plant market. A hybrid plant can store some daytime output and deliver it during evening demand periods. This gives developers a stronger response to intermittent generation and lower midday prices, while also allowing them to make a more useful offer to utilities that need capacity during evening peaks or to corporate buyers that want a more consistent supply profile than standalone solar can provide. The Solar Energy Industries Association reported that U.S. utility-scale battery storage reached more than 57 GWh and 28 GW in 2025[2]Solar Energy Industries Association, “Energy Storage Market Outlook Q1 2026,” Solar Energy Industries Association, seia.org. California, Texas, and Arizona accounted for 74

% of that capacity. Research on grid-connected PV shows that storage creates val ue through timing and energy trading, rather than solely through lower curtailme nt[3]Energy Photovoltaics, “Enhanced Value of Grid-Connected PV With Battery Sto rage in a Negative Price Environment,” EPJ Photovoltaics, epj-pv.org.

Renewable-Energy Targets and Energy-Security Policies

Government capacity targets give the utility-scale solar power plant market a pi peline that extends beyond short-term power prices. China’s 2026 to 2030 plannin g period continues to support large solar development, including projects in des ert and Gobi areas[4]National Energy Administration, “2025 Renewable Energy Grid -Connected Operations,” National Energy Administration, nea.gov.cn. National pla ns can shorten the path from policy targets to auctions, land allocation, and tr ansmission planning, provided that responsible agencies coordinate their procure ment schedules with the approvals, grid studies, equipment supply, and construct ion capacity required to turn stated objectives into operational power plants. T his approach matters in markets that are building a domestic project pipeline fr om a low base. It also gives specialist independent power producers a reason to enter markets that receive less attention than China or the United States. Polic y support is most effective when permitting, land access, and grid planning adva nce at the same pace.

Restraints Impact Analysis*

Restraint | (~) % Impact on CAGR Forecast | Geographic Relevance | Impact Timeli ne |
Grid Interconnection Queues and Transmission Bottlenecks | -1.90% | North Americ a (US primary), EU, India | Short term (≤ 2 years) |
Permitting, Land-Use, and Community-Consent Delays | -1.30% | North America, EU, Australia | Short term (≤ 2 years) |
Trade Restrictions and Foreign-Entity Sourcing Rules | -0.90% | North America, E U (secondary) | Medium term (2–4 years) |
Midday Curtailment, Negative Pricing, and Revenue Cannibalization | -0.80% | EU (Germany, Spain, France), Australia, APAC | Medium term (2–4 years) |
Source: Mordor Intelligence |
Grid Interconnection Queues and Transmission Bottlenecks

Grid access is a major constraint on the utility-scale solar power plant market in North America and parts of Europe. Lawrence Berkeley National Laboratory reco rded more than 10,300 U.S. projects seeking interconnection at the end of 2024, representing 1,400 GW of generation capacity. The median time from application t o commercial operation had increased from under 2 years for the 2000 to 2007 coh ort to more than 4 years for the 2018 to 2024 cohort. Long studies and uncertain upgrade costs increase the capital needed before construction, tying up develop ment budgets for longer periods and making it harder for project sponsors to dec ide whether a prospective site can deliver enough value after the cost and timin g of network upgrades are known. They favor developers that can carry projects t hrough extended approval periods. A peer-reviewed study found that 80% of projec ts entering U.S. interconnection queues ultimately withdraw.

Permitting, Land-Use, and Community-Consent Delays

Permitting and land use decisions can delay the utility-scale solar power plant market even when equipment and financing are available. Projects on previously d eveloped land can avoid some environmental and local land-use conflicts. The dev elopment schedule becomes less predictable when approvals involve several public bodies or unclear timelines. Delays raise carrying costs and can weaken the val ue of a power purchase agreement before a project reaches construction, especial ly when the contract was negotiated under earlier equipment prices, financing co nditions, or power demand assumptions that may no longer apply by the time final permits are available. These conditions give an advantage to jurisdictions that create designated energy zones and coordinated approvals. They can also move de

velopers toward brownfields, industrial land, and other sites with a lower approval burden.

*Our forecasts treat driver/restraint impacts as directional, not additive. The impact forecasts reflect baseline growth, mix effects, and variable interactions.

Segment AnalysisBy Technology: Solar PV Dominates as CSP Retains a Dispatchable-Power Role

Solar PV accounted for 97.2% of the utility-scale solar power plant market size in 2025 and is projected to expand at a 14.7% CAGR through 2031. Its position reflects lower module costs, established engineering and construction capability, and a supply chain that can support large procurement programs across many countries. Developers can install PV rapidly after they secure land, grid access, equipment, and a power purchase agreement, which makes the technology useful for utilities seeking capacity additions within a defined planning period and gives planners a practical option when demand forecasts indicate the need for material new generation before alternative large power assets can be delivered. China’s desert and Gobi projects provide a substantial base for centralized solar PV development and show how land planning can support projects at a very large scale.

PV developers are also responding to a more complex procurement environment, because trade rules and ownership requirements can change the list of module suppliers that qualify for a project, affect the timing of equipment orders, alter the cost of compliant products, and require closer coordination between project developers, suppliers, investors, and offtake counterparties. Bifacial, TOPCon, and back-contact cell products can improve output from available land, which helps developers make better use of sites with different levels of solar irradiation. Projects serving data centers or government-linked buyers may require supply chains that meet Foreign Entity of Concern rules, increasing the value of transparent sourcing and dependable delivery schedules. Concentrated solar power remains a smaller technology, but thermal storage can support generation after sunset without relying on standalone battery systems. China had 2.1 GW of operational CSP capacity by mid-2026 and 3.2 GW under construction across 26 additional projects, while IRENA reported a CSP cost of USD 115/MWh in 2025.

Geography Analysis

Asia-Pacific accounted for 68.4% of installed capacity in 2025 and remains the largest regional base for the utility-scale solar power plant market. China, India, Japan, South Korea, and Australia combine large electricity systems with active solar development, although their auction rules, grid planning, domestic manufacturing policies, and project approval procedures differ. Global PV capacity passed 3 TW in 2025, and nearly 40 countries installed at least 1 GW for the first time, showing that solar deployment is broadening beyond its longest-established markets. China remains central because large land areas, domestic manufacturing, and state-backed development can support very large projects, while India adds a major auction-driven pipeline and a growing local supply base that supports equipment procurement and construction activity, broadening the region’s ability to deploy utility projects through both centralized development zones and competitive procurement processes.

The Middle East and Africa is projected to record a 15.2% CAGR through 2031, the fastest regional rate in the utility-scale solar power plant market. Saudi Arabia’s renewable plans create a multi-year requirement for large projects, and sta

te utility offtake, government procurement, and high-irradiance land support scale in the Gulf. African markets are moving from smaller project pipelines toward broader utility activity, although financing terms, transmission networks, developer capability, and the credit quality of electricity buyers vary considerably across countries, meaning that project success often depends on careful contract design, development partners with local experience, and realistic assessment of the grid work needed before commercial operations begin. The opportunity favors companies that combine project development, financing, construction management, local stakeholder engagement, and long-term operations rather than relying on a single development capability. Storage is likely to become more relevant as countries add large solar volumes, seek greater control over when power reaches the grid, and respond to the revenue risk created when daytime generation is plentiful, because solar assets that can shift at least part of their output can better match evening demand, improve their contractual offer, and reduce exposure to periods of weak wholesale pricing.

North America and Europe face mature power systems and a more demanding set of execution constraints within the utility-scale solar power plant market. The U.S. Energy Information Administration reported 43.4 GW of planned utility-scale solar additions in the United States for 2026, with Texas representing 40% of planned capacity and data center demand reinforcing the case for long-term offtake agreements. Interconnection studies, transmission upgrades, and federal land approvals can delay North American projects even after developers secure prospective buyers, equipment, and construction funding. European markets retain policy support for solar, yet merchant revenue can weaken when daytime supply exceeds demand and pushes down wholesale prices, increasing the importance of contracts, storage, and flexible demand. South America offers high solar resource in Brazil and Chile, while transmission limits and country-specific policy risks can restrain project timing and require developers to adopt location-specific grid and offtake strategies.

Competitive Landscape

The utility-scale solar power plant market is fragmented globally, although meaningful concentration exists within individual countries and regions. The supplied assessment indicates that no single developer held more than a low-single-digit share of global new capacity additions, leaving room for national utilities, independent power producers, government-linked developers, and diversified energy companies to compete for projects. Chinese state-owned enterprises benefit from domestic supply chains and state-backed financing, and CHN Energy, China Three Gorges Renewables, and State Power Investment Corporation remain important participants in Asia-Pacific. Gulf developers use government-linked offtake and financing to support very large projects, often through long-term arrangements with state utilities that reduce revenue uncertainty and help mobilize capital for construction.

Companies in the utility-scale solar power plant market are competing on revenue security, supply resilience, storage capability, land availability, and their ability to complete projects with dependable grid access, because these factors determine whether a project can move from an early development concept into a financeable asset with a credible construction schedule and a revenue profile that lenders and equity investors can support. Long-term power purchase agreements can provide a clearer financing base and reduce exposure to low daytime prices, while storage can improve the delivery profile of a project by moving energy into higher-value periods, giving developers more choices in how they sell electricity and allowing offtakers to receive a supply profile that better reflects their operating requirements. Large developers such as NextEra and Adani Green Energy use contracted offtake, hybrid portfolios, construction capability, and scale to

extend their pipelines across multiple projects and regions. CHN Energy completed a 400 MW solar, storage, and hydrogen project at Yangkou Port in June 2026, linking solar generation with an industrial hydrogen outlet that can use power outside a conventional grid power purchase agreement. This project illustrates why developers are examining industrial demand, including refineries, steel producers, and chemical plants, as a potential complement to utility and corporate offtake.

Consolidation is becoming more important in the utility-scale solar power plant market where smaller developers face larger interconnection costs, long approval periods, tighter sourcing rules, or project financing pressure, because larger platforms can spread development risk across portfolios, fund prolonged studies and upgrades, maintain specialist teams, and retain projects until market conditions permit construction or an orderly sale. TerraForm Power acquired the 1.56 GW Steward Creek Solar project in Illinois from Hexagon Energy in February 2026, expanding its pre-construction pipeline toward 7 GW. EQT agreed to acquire Copia Power in July 2026, combining a power platform with AI infrastructure exposure and a pipeline of solar and storage projects near data center campuses. These moves show investor interest in platforms that can align power development with rising data center demand, access larger pools of capital, and manage the extended schedules that often define grid-connected projects, particularly when the platform can combine operating assets, development rights, storage capability, customer relationships, and an understanding of the infrastructure needs associated with major new electricity loads. The utility-scale solar power plant market will continue to favor companies with grid-ready projects, reliable supply chains, flexible revenue models, and the financial capacity to keep assets moving through lengthy development cycles.

Utility-Scale Solar Power Plant Industry Leaders* CHN Energy Investment Group Co., Ltd.

* State Power Investment Corporation Limited

* NextEra Energy, Inc.

* Enel Green Power S.p.A.

* China Three Gorges Renewables (Group) Co., Ltd.

* *Disclaimer: Major Players sorted in no particular order

Recent Industry Developments* July 2026: EQT acquires Copia Power. Swedish infrastructure investor EQT agreed to acquire Copia Power, a US platform developing over 25 GW of solar and storage co-located with AI data center campuses, with 2.6 GW already in operation or under construction. The deal signals a convergence between utility-scale solar asset ownership and AI infrastructure real estate, establishing a new investment archetype for institutional capital.
* June 2026: CHN Energy completes solar-hydrogen-storage project in Jiangsu. The 400 MW PV plus electrochemical storage plus 1,500 m³/hour hydrogen production facility at Yangkou Port went fully operational, delivering 482 metric tons of green hydrogen annually for Yangtze River Delta industrial users.
* February 2026: TerraForm Power acquires 1.56 GW Steward Creek Solar in Illinois. The acquisition from Hexagon Energy expands TerraForm's pre-construction pipeline to nearly 7 GW, primarily in PJM and SERC. Phase 1 construction starts in 2027, targeting commercial operation in 2029.

Table of Contents for Utility-Scale Solar Power Plant Industry Report1. INTRODUC

Global Utility-Scale Solar Power Plant Market Report ScopeA utility-scale solar power plant is a large solar photovoltaic (PV) or concentrated solar power (CSP) facility designed to generate electricity in bulk and supply it to the electricity grid. These plants typically have capacities ranging from tens of megawatts to several gigawatts and are developed by utilities, independent power producers (IPPs), or large energy companies. Unlike residential or commercial rooftop solar systems, utility-scale plants use ground-mounted solar arrays, centralized inverters, transformers, and grid-interconnection infrastructure. Their electricity is primarily sold through power purchase agreements (PPAs), electricity markets, or utility procurement programs.

The global utility-scale solar power plant market is segmented by technology and geography. By technology, the market is segmented into solar photovoltaic (PV) and concentrated solar power (CSP). The report also covers the market size and f

orecasts for the global utility-scale solar power plant market across 26 countri
es in key regions. For each segment, the market sizing and forecasts have been p
rovided on the basis of volume (GW).

By TechnologySolar Photovoltaic (PV) |
Concentrated Solar Power (CSP) |
By GeographyNorth America | United States |
 | Canada |
 | Mexico |
Europe | Germany |
 | France |
 | Italy |
 | Spain |
 | United Kingdom |
 | Poland |
 | Russia |
 | Rest of Europe |
Asia-Pacific | China |
 | India |
 | Japan |
 | South Korea |
 | Australia |
 | Indonesia |
 | Vietnam |
 | Thailand |
 | Rest of Asia-Pacific |
South America | Brazil |
 | Argentina |
 | Chile |
 | Rest of South America |
Middle East and Africa | Saudi Arabia |
 | United Arab Emirates |
 | Egypt |
 | South Africa |
 | Morocco |
 | Rest of Middle East and Africa |
By Technology | Solar Photovoltaic (PV) |
 | Concentrated Solar Power (CSP) |
 | |
By Geography | North America | United States |
 | | Canada |
 | | Mexico |
 | |
Europe	Germany
	France
	Italy
	Spain
	United Kingdom
	Poland
	Russia
	Rest of Europe
Asia-Pacific	China
	India
	Japan
	South Korea
	Australia
	Indonesia
	Vietnam
	Thailand
	Rest of Asia-Pacific

South America	Brazil
	Argentina
	Chile
	Rest of South America
Middle East and Africa	Saudi Arabia
	United Arab Emirates
	Egypt
	South Africa
	Morocco
	Rest of Middle East and Africa

Key Questions Answered in the ReportWhat is the forecast growth rate for utility-scale solar power plants? The utility-scale solar power plant market is projected to increase from 339.27 GW in 2026 to 645.11 GW by 2031, representing a 13.71% CAGR. Cost competitiveness, corporate power purchase agreements, renewable targets, and storage deployment support this outlook.

Which technology leads utility-scale solar development? Solar PV held 97.2% of installed capacity in 2025 and is forecast to expand at a 14.7% CAGR through 2031. Its lead reflects mature equipment supply, large construction capability, and fast deployment after project approvals are complete.

Which region has the largest utility-scale solar base? Asia-Pacific held 68.4% of installed capacity in 2025, supported by large development activity in China and India. Manufacturing capability, capacity targets, auction pipelines, and large electricity systems reinforce the region’s position.

Which region is expected to grow fastest through 2031? The Middle East and Africa is forecast to record a 15.2% CAGR, supported by large procurement programs and high solar resource. The regional pipeline depends on finance, grid delivery, and reliable long-term offtake.

Why are developers adding battery storage to solar projects? Storage can shift solar output to higher-value periods and improve the reliability of delivery to utilities and corporate buyers. It can also allow a project to participate in a broader set of power contracts that value timing, availability, or capacity alongside delivered energy. It also gives projects a better response to low midday prices and evening demand.

What are the main barriers to new solar plant construction? Grid connection queues, transmission upgrades, permitting, land use requirements, and revenue pressure during midday periods can delay or weaken projects. Smaller developers may be affected more because they have less capacity to carry costs through long approval periods.