

COVER STORY

INDIA'S SOLAR & STORAGE SURGE

Powering The Future With Hybrid Energy Solutions

In Focus 

**Solar & Storage's
Role In India's
Energy Security**

And Peak Demand
Management

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Lead Story 

Beyond Megawatts:
How Storage Is
Rewriting India's
Renewable Power
Playbook

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CERC Rejects TANGEDCO's Plea For Detailed Power Drawal Data In ISTS Charges Dispute

The Central Electricity Regulatory Commission (CERC) rejected Tamil Nadu Generation and Distribution Corporation's (TANGEDCO) request for detailed power drawal data from Inter-State Generating Stations, in connection with its dispute over ISTS charges. CERC ruled that the block-wise data sought was not relevant to deciding issues under the CERC Sharing Regulations, 2020. TANGEDCO's main petition on transmission charges will still be examined.

RERC Proposes Demand Flexibility And DSM Regulations 2026 To Tackle Rajasthan's Duck Curve Challenge

The Rajasthan Electricity Regulatory Commission (RERC) issued a draft of Demand Flexibility and DSM Regulations, 2026 to address solar-driven "duck curve" issues. The draft proposes shifting consumption to daylight hours and incentivizing efficiency, mandates DISCOMs to have DSM cells, and introduces aggregated load participation. It also includes targets and penalties to ease evening demand peaks and reduce costs.



RERC Approves New Intra-State Transmission Connectivity Framework For Rajasthan Power Grid

Rajasthan Electricity Regulatory Commission approved a new procedure for granting intra-state transmission connectivity after stakeholder consultations. The framework tightens timelines for projects to use granted connectivity, requires fees and bank guarantees, and strengthens technical standards and monitoring. It aims to prevent speculative capacity blocking and improve transparency and efficiency in grid connectivity for all applicants.



GERC Grants Final Hearing Chance In Wind-Solar Hybrid Tariff Petition In Gujarat

The Gujarat Electricity Regulatory Commission (GERC) granted one final hearing opportunity in a petition on a wind-solar hybrid tariff framework. Despite GUVNL saying the relief was already covered by existing tariff orders, GERC adjourned and asked absent parties to appear next. If they fail to attend, the Commission may decide based on records without further adjournments.



Ministry of Environment, Forest, And Climate Change Expands GHG Emission Intensity Targets To Refineries, Petrochemicals, And Textiles Under 2025 Amendment

India's Ministry of Environment, Forest, and Climate Change widened its GHG emission intensity reduction targets in the 2025 amendment to include refineries, petrochemical, and textile sectors. This directs more industrial sectors to meet emission intensity standards under environmental compliance, strengthening national climate action.

OERC Notifies Grid Support Charges Regulations 2026 For Captive Power Plants In Odisha

Odisha Electricity Regulatory Commission (OERC) notified the Grid Support Charges Regulations, 2026, defining charges applicable to captive power plants that utilise grid infrastructure. This new regulation will impact captive generators in Odisha, outlining grid support cost responsibilities and compliance for power plants accessing transmission and distribution networks.

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NERC Approves Dual Power Supply For HT And EHT Consumers To Improve Reliability In Rajasthan

The Rajasthan Electricity Regulatory Commission (NERC) approved a regulation allowing high-tension (HT) and extra-high-tension (EHT) consumers to have dual power supplies. This shift aims to improve supply reliability by reducing outages and enhancing energy security for industrial and large consumers in Rajasthan's electricity system.



KERC Schedules Public Hearing On Draft Regulations To Reduce Cross-Subsidy In Karnataka Electricity Sector

The Karnataka Electricity Regulatory Commission (KERC) set a public hearing for draft regulations targeting cross-subsidy reduction in the state's electricity tariffs. This draft aims to lower cross-subsidy levels over time by defining reductions in cost allocations between consumer categories, aligning with equitable tariff principles for the Karnataka electricity market.



CSERC Clarifies Group And Virtual Net Metering Rules, Boosting Renewable Energy Adoption In Chhattisgarh

The Chhattisgarh State Electricity Regulatory Commission clarified operational aspects of group and virtual net metering to remove implementation ambiguities. The clarification allows multiple consumers to share renewable generation benefits under defined conditions, improves billing transparency, and streamlines eligibility norms. These measures are expected to accelerate rooftop and distributed renewable energy adoption across residential, commercial, and institutional consumers in the state.

APTEL Upholds PSPCL Tariff Reduction, Remands Payment Structure to PSERC

The Appellate Tribunal for Electricity upheld the tariff reduction approved for Punjab State Power Corporation Limited, but remanded the payment structure issue back to the Punjab State Electricity Regulatory Commission. While affirming the tariff decision, APTEL directed PSERC to reassess payment-related aspects, ensuring regulatory consistency and fairness for stakeholders involved in the power procurement framework.

Ministry Of Power Unveils Draft National Electricity Policy 2026 To Transform Power Sector And Achieve Energy Independence

The Ministry of Power released the Draft National Electricity Policy 2026, outlining reforms to strengthen energy security, expand renewable capacity, modernize grids, and improve the financial viability of DISCOMs. The policy emphasizes energy storage, demand flexibility, domestic manufacturing, and market-based mechanisms, aiming to support India's goal of energy independence while ensuring an affordable, reliable, and sustainable electricity supply nationwide.

DERC Seventh Amendment Expands Virtual Net Metering 2025 And Cuts Solar Adoption Costs In Delhi

The Delhi Electricity Regulatory Commission issued the Seventh Amendment to its net metering regulations, expanding virtual net metering provisions. The amendment enables consumers without suitable rooftops to participate in solar projects and reduces overall adoption costs. It simplifies procedural requirements and broadens consumer eligibility, supporting Delhi's renewable energy targets and encouraging greater participation in distributed solar generation.



Ministry Of Power Revises Row Compensation Guidelines For Faster Land Valuation

The Ministry of Power revised the Right of Way compensation guidelines to accelerate land valuation and acquisition for transmission projects. The updated norms aim to standardize compensation, reduce disputes, and speed up project execution. This move is expected to support faster expansion of transmission infrastructure critical for renewable energy integration and grid reliability across states.

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CERC Recognizes GST Hike As "Change In Law," Boosting Financial Security For Solar Projects

The Central Electricity Regulatory Commission ruled that the increase in GST on renewable energy equipment qualifies as a "change in law." This recognition allows solar developers to seek compensation, protecting project economics from unforeseen tax impacts. The decision strengthens financial certainty for renewable energy projects and reinforces investor confidence in India's regulatory framework.

Himachal Pradesh Sets New Solar Tariffs For 2026-27, Ranging From ₹3.34 To ₹3.52 Per Unit To Boost Renewable Energy

The Himachal Pradesh Electricity Regulatory Commission approved new solar tariffs for FY 2026-27, ranging between ₹3.34 and ₹3.52 per unit. The tariffs vary by project size and category, aiming to promote solar deployment while maintaining cost competitiveness. The decision supports the state's renewable energy goals and encourages private sector participation.



Rajasthan Approves Tariffs For 1000 MW/2000 MWh Battery Storage Project After Competitive Bidding

Rajasthan approved tariffs for a 1,000 MW/2,000 MWh standalone battery energy storage project selected through competitive bidding. The project will provide peak power support, grid balancing, and renewable integration services. This approval marks a significant step in scaling utility-scale energy storage and strengthening grid flexibility in the state.

Bureau Of Energy Efficiency Strengthens RE Push Through Draft Renewable Consumption Obligation Mechanism

The Bureau of Energy Efficiency released a draft Renewable Consumption Obligation framework to expand renewable energy usage beyond traditional power consumers. The mechanism proposes mandatory renewable consumption targets for designated entities and introduces compliance pathways. This initiative aims to accelerate clean energy adoption across sectors and support India's broader decarbonization objectives.



HPERC Proposes New Solar Tariffs For FY 2026-27, Seeks Stakeholder Feedback

The Himachal Pradesh Electricity Regulatory Commission proposed new solar tariffs for FY 2026-27 and invited stakeholder comments. The draft tariffs cover different solar project categories and capacities, reflecting updated cost assumptions. HPERC aims to ensure tariff rationality while promoting renewable energy deployment aligned with the state's power procurement requirements.



DERC Extends Business Plan Regulations 2023 For FY 2026-27, Updates Distribution Loss And RPO Targets

The Delhi Electricity Regulatory Commission extended its Business Plan Regulations, 2023, through FY 2026-27. The extension includes revised targets for distribution losses and renewable purchase obligations. This move provides regulatory continuity for DISCOMS while reinforcing efficiency improvements, renewable compliance, and long-term planning in Delhi's electricity distribution sector.



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CERC Grants 25-Year Transmission License To POWERGRID Mandasaur Augmentation For Major Renewable Integration Project

CERC granted a 25-year transmission license to POWERGRID Mandasaur Augmentation Limited for a key transmission project supporting renewable energy integration. The project will strengthen evacuation infrastructure in Madhya Pradesh and nearby regions, facilitating large-scale renewable capacity addition and enhancing grid reliability under India's expanding clean energy landscape.



India Introduces Battery Aadhaar System To Enable End-To-End Traceability And Sustainable Battery Management

India introduced a Battery Aadhaar system to digitally track batteries across their lifecycle, from manufacturing to recycling. The system assigns a unique identity to each battery, improving traceability, compliance with Extended Producer Responsibility norms, and sustainable disposal. It supports efficient battery management for EVs and energy storage, strengthening India's circular economy and environmental accountability.

Himachal Pradesh Unveils 2025 Grid Code To Modernize State Electricity Operations And Enhance Reliability

Himachal Pradesh notified the 2025 Grid Code to modernize power system operations and improve reliability. The code defines updated technical standards, scheduling, forecasting, grid discipline, and renewable integration requirements. It aims to enhance coordination among utilities, ensure system security, and align state grid operations with evolving renewable energy and market-based electricity frameworks.

CSERC Sets 2025-26 Levelized Tariffs For Small Hydro, Solar, Biogas, And Co-Generation Projects In Chhattisgarh



CSERC approved levelized tariffs for small hydro, solar, biogas, and cogeneration projects for FY 2025-26. The tariffs vary by technology and capacity, reflecting updated cost assumptions. This decision provides pricing certainty to developers while supporting diversified renewable energy growth and encouraging investment across multiple clean energy segments in Chhattisgarh.

MERC Approves MSEDCL's Plan To Procure 2000 MW/4000 MWh Battery Energy Storage Capacity In Maharashtra

MERC approved MSEDCL's proposal to procure 2,000 MW/4,000 MWh of battery energy storage capacity through competitive bidding. The procurement aims to support peak demand, grid balancing, and renewable energy integration. This approval marks a major step toward large-scale energy storage deployment in Maharashtra's evolving power system.

RERC Rules Against Load Factor Rebate Claim For Behind-The-Meter Solar Plants In Rajasthan

RERC rejected claims for load factor rebate by consumers using behind-the-meter solar installations. The Commission ruled that such plants do not qualify for rebates applicable to grid-connected consumption patterns. The decision clarifies tariff applicability and prevents unintended revenue loss for DISCOMs while reinforcing regulatory consistency in Rajasthan's rooftop and captive solar framework.

KSERC's Third Amendment Removes Fuel Surcharge Ceiling To Reflect Actual Power Costs In Kerala

KSERC issued its third amendment, removing the ceiling on fuel surcharge adjustments. The change allows utilities to recover actual power procurement costs more accurately. By linking tariffs to real fuel and purchase expenses, the amendment aims to improve utility cash flows while enhancing transparency in electricity pricing for Kerala's consumers.

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GERC Invites Consultancy Bids For Finalizing Gujarat Electricity Grid Code Regulations 2026

GERC invited consultancy bids to assist in drafting and finalizing the Gujarat Electricity Grid Code Regulations, 2026. The consultant will support technical reviews, stakeholder consultations, and alignment with national standards. The initiative aims to update grid operation norms, strengthen system security, and support increasing renewable energy penetration in Gujarat.

GERC Invites Consultants To Finalize Grid-Interactive Battery Storage Regulations 2026 In Gujarat

GERC issued a tender seeking consultants to develop the Grid-Interactive Battery Energy Storage Regulations, 2026. The assignment includes defining operational, technical, and commercial frameworks for storage systems. The move reflects Gujarat's focus on integrating battery storage into grid operations to support renewable energy management and system flexibility.

CSERC Clarifies Wheeling, Distribution Losses, And DSM Charges For Open Access Consumers In Chhattisgarh

CSERC clarified the applicability of wheeling charges, distribution losses, and deviation settlement mechanism charges for open access consumers. The clarification addresses billing methodology and responsibilities of stakeholders, reducing disputes. It aims to improve transparency and consistency in open access operations, supporting competitive power procurement in Chhattisgarh.

MNRE Unveils Guidelines For Secure And Centralized Monitoring Of Rooftop Solar Under PM Surya Ghar

MNRE released guidelines for secure, centralized monitoring of rooftop solar systems under the PM Surya Ghar scheme. The framework enables real-time data tracking, cybersecurity safeguards, & performance monitoring. These measures aim to improve system reliability, transparency, & accountability while supporting large-scale deployment of residential rooftop solar across India.



Ministry Of Power Releases Draft Flexible Captive Power Rules To Boost India's Renewable Energy Growth

The Ministry of Power issued draft rules introducing flexibility in captive power arrangements. The proposal eases ownership and consumption norms, enabling renewable-based captive projects to scale efficiently. The draft aims to reduce compliance barriers, promote clean energy adoption by industries, and enhance operational flexibility while safeguarding grid and regulatory interests.

CERC Draft Regulations 2025 Pave The Way For Integrated Energy Storage In India's Power Sector

CERC released Draft Regulations 2025 to facilitate integrated energy storage deployment across generation, transmission, and distribution segments. The draft defines participation models, cost recovery mechanisms, and operational roles for storage assets. These regulations aim to support renewable integration, grid stability, and market development in India's evolving power sector.

CERC Allows Removal Of Former Power Buyers From Solar Change In Law Dispute

CERC allowed the removal of former power purchasers from a solar change-in-law dispute, noting they no longer had contractual obligations. The decision streamlines adjudication by limiting proceedings to relevant parties, reducing legal complexity, and ensuring faster resolution of compensation claims related to regulatory or tax changes affecting solar projects.



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APERC Directs Discoms To Implement Monthly Settlement For Solar Rooftop Prosumers

The Andhra Pradesh Electricity Regulatory Commission (APERC) has instructed all state distribution companies (DISCOMs) to begin monthly energy settlement for rooftop solar prosumers, replacing annual or seasonal settlement. The move aims to improve billing transparency and incentivize rooftop solar adoption by allowing prosumers to settle energy generation and consumption on a monthly basis, aligning billing with actual generation patterns and reducing financial uncertainty. This directive strengthens rooftop solar integration into the grid and could boost investment in decentralized clean energy across Andhra Pradesh by making prosumer economics more predictable and fair.



"Monthly settlement for rooftop solar prosumers not only improves transparency but also strengthens grid integration, setting a practical model for sustainable energy governance in the state."

Bihar Moves Ahead With 190 MW Battery-Backed Wind-Solar Hybrid Power Procurement

Bihar is advancing a tender to procure 190 MW of hybrid power combining wind, solar, and battery storage to bolster peak supply and grid reliability. The procurement is designed to provide dispatchable renewable power even during non-solar hours, reducing dependence on fossil fuels for peak demand. The tariff for this assured power has been adopted at ₹4.72 per kWh, reflecting the value of storage-backed, reliable renewable delivery. A trading margin of ₹0.07 per kWh will also be paid to SECI for facilitating arrangements between the generator and Bihar State Power Holding Co. Ltd.

CERC Adopts Tariffs For 2100 MW Firm And Dispatchable Renewable Energy With Storage

The Central Electricity Regulatory Commission (CERC) has formally adopted tariffs discovered for 2,100 MW of firm and dispatchable renewable energy with energy storage through a competitive bidding process led by NHPC Limited. The order confirms tariff rates (approximately ₹4.37-₹4.38 per kWh) and approves a trading margin of ₹0.07 per kWh for NHPC as intermediary procurer. This move supports the procurement of renewable power that can meet peak demand by pairing generation with storage, enhancing grid stability, and advancing India's transition to a dependable clean energy supply.



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TNERC Approves 1500 MW RTC Power Procurement To Address Tamil Nadu's Rising Energy Deficit

The Tamil Nadu Electricity Regulatory Commission (TNERC) approved a medium-term procurement of 1,500 MW round-the-clock (RTC) power by Tamil Nadu Power Distribution Corporation Ltd (TNPDC) for five years, combining an existing 800 MW requirement with an additional 700 MW. This approval aims to tackle projected supply shortfalls due to rising demand and intermittent renewable generation. The RTC procurement under a Finance, Own, and Operate model is expected to provide stable, cost-effective power at around ₹5.50 per unit, reducing reliance on expensive short-term market purchases during shortages.

CERC Grants Change In Law Relief For 320 MW Rajasthan Solar Project Over GST Hike And GIB Protection Costs

The Central Electricity Regulatory Commission (CERC) granted change-in-law (CIL) relief to a 320 MW solar project in Rajasthan, recognizing increased costs due to the Goods and Services Tax (GST) hike and Great Indian Bustard (GIB) protective measures. This relief adjusts the project's tariff or compensation framework to account for additional mandated costs outside the developer's control. By recognizing GST increases and environmental compliance expenses as valid CIL events, CERC aims to protect project viability, investor confidence, and long-term renewable energy commitments, especially where regulatory or policy changes alter project economics.

CERC Rejects TANGEDCO's Plea For Detailed Power Drawal Data In ISTS Charges Dispute

The Central Electricity Regulatory Commission (CERC) dismissed TANGEDCO's petition seeking detailed power drawal data in its dispute over Inter-State Transmission System (ISTS) charges. TANGEDCO had argued that discrepancies in data impacted charge calculations, but CERC held that the existing data and charge framework were sufficient and rejected the need to mandate granular drawal details. The order upholds current ISTS charge procedures, reinforcing regulatory clarity and consistency in how transmission costs are allocated and calculated among utilities without requiring expanded data disclosure.



GERC Approves Settlement For 2 MW Solar Captive Power Project Dispute In Gujarat

The Gujarat Electricity Regulatory Commission (GERC) approved an out-of-court settlement in a dispute between Ultra Denim Ltd and Dakshin Gujarat Vij Co. Ltd concerning a 2 MW captive solar project that injected power into the grid without formal wheeling or commissioning approval. Both parties agreed that a wheeling agreement would be executed going forward, with Ultra Denim withdrawing its legal petition. GERC directed DGVCL to sign the agreement quickly so the commissioning certificate can be issued, enabling the project to achieve regulatory compliance while formalizing solar grid access.

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India's Energy Surge: From Shortages to Surplus by 2025

In 2025, India's power sector made a historic shift from chronic energy shortages to a robust surplus, as highlighted in the Ministry of Power's Year-End Review. Peak electricity demand reached 242.49 GW while shortages dropped to just 0.03%, a dramatic improvement from a decade earlier. Non-fossil fuel capacity exceeded 50% of total installed capacity by October, five years ahead of target, driven mainly by renewables, especially solar. Rural electricity availability improved markedly, with average daily supply rising to over 22 hours. National grid expansion and policy reforms underpinned stronger reliability, supporting economic activity and rising per-capita consumption.

India Generates 297,802.56 MU Renewable Power in 2025, Solar and Wind Account for Over 85% of Output

India's renewable generation in 2025 reached 297,802.56 MU, marking a significant contribution to the country's electricity supply and reflecting rapid clean energy growth. Solar power led with 164,542.97 MU, propelled by large solar parks, rooftop systems, and open-access projects supported by government incentives and private investments. Wind energy added 104,006.54 MU, highlighting its ongoing role. Together, solar and wind accounted for over 85% of renewable generation, with other renewables like biomass, bagasse, and small hydro adding diversity. December solar output rose sharply, reinforcing renewables as a core pillar of India's energy mix.

Rajasthan Leads With 27% Of India's Solar PV Capacity In 2025, Gujarat At 18.8%, Strong 2026 Growth Forecast

By the end of 2025, India's total installed solar PV capacity reached 135,809.94 MW, with Rajasthan leading at 36,658.35 MW — 27% of the national total — followed by Gujarat at 25,529.4 MW (18.8%). Together, the top three states, including Maharashtra, contributed nearly 60% of India's solar capacity. Around 38 GW of new solar capacity was added in 2025, up nearly 39% year-on-year. India also expanded domestic solar module manufacturing capacity beyond 122 GW. Analysts forecast continued strong growth in 2026, driven by utility-scale projects and supportive policy measures.

India's Solar Surge: 38 GW Added In 2025 Driving Renewable Energy Growth

In 2025, India achieved an unprecedented solar capacity boom, adding 38 GW of new capacity, underscoring the sector's role in driving renewable growth. This expansion was supported by favorable government policies, strong investor confidence, and accelerated project execution across utility, rooftop, and hybrid installations. Domestic solar PV module manufacturing capacity reached about 122 GW, strengthening self-reliance and reducing import dependence. By year-end, solar capacity accounted for over a quarter of the nation's total installed power, contributing substantially to energy security, jobs, and rural electrification. The surge highlights solar's central role in India's clean energy transition.

Energy Storage Technologies Take Center Stage In India's Renewable Power Transition – CEA

India's renewable power transition is increasingly hinging on advanced energy storage technologies, according to the Central Electricity Authority (CEA). As solar and wind penetration rises, storage's role has expanded from traditional pumped hydro to include batteries for grid support, frequency regulation, and energy arbitrage. Lithium-ion systems dominate current deployments, offering modular scalability, while emerging sodium-ion batteries promise cost and sustainability advantages. With storage critical for balancing intermittent renewables and stabilizing supply, a mix of technologies — including hydrogen and pumped hydro — will be essential to support India's clean energy growth.

Global Renewable Energy Workforce Hits Record 16.6 Million In 2024 Amid Shifting Dynamics—IRENA Report

Global renewable energy employment reached a record 16.6 million jobs in 2024, but growth slowed with only a 2.3% increase compared to 2023, according to the latest IRENA-ILO review. Solar photovoltaics remained the largest employer with about 7.3 million jobs, followed by biofuels, hydropower, and wind. China dominated job creation, accounting for roughly 44-58% of roles, while employment in countries like India and the United States rose modestly. The report highlights uneven growth across regions and underscores the need for inclusive policies to support workforce development as renewable deployment accelerates globally.



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India's Solar Capacity Crosses 140 GW, Drives Renewable Energy Growth into 2026

India's renewable energy sector maintained strong momentum in 2025-26, with total installed solar photovoltaic capacity reaching 140,601.75 MW by January 2026. Solar now accounts for two-thirds of the country's renewable mix, excluding large hydro. The year 2025 saw nearly 37.95 GW in new solar additions, one of the highest ever, with another 4.79 GW added in January 2026. Wind and hybrid projects also grew, pushing total non-large hydro renewable capacity to around 212 GW. Ground-mount, rooftop, and off-grid solar installations all expanded. Government policies like PLI incentives and tax reforms supported project execution and domestic manufacturing.



How Hybrid Solar Solutions Help African Consumers Manage Smart Meters And TOU Tariffs

Across many African nations, utilities are deploying smart meters and Time-of-Use (TOU) tariffs, where electricity prices vary throughout the day, raising costs during peak demand. Traditional solar alone isn't enough under these systems, so hybrid solar solutions—combining PV with battery storage and intelligent inverters—are becoming key. These systems let users store excess daytime solar power and discharge it during peak tariff periods, helping reduce expensive grid dependence. They can also smooth demand spikes recorded by smart meters. In commercial settings, hybrid systems cut high peak charges and lower reliance on diesel generators, improving reliability and cost-effectiveness.



South Asia's Energy Transition Struggle Amid Rising Demand And Fossil Fuel Dependence

South Asia, home to nearly a quarter of the world's population, faces steep energy demand growth alongside heavy reliance on fossil fuels and imports. About 80 % of primary energy production comes from fossil sources, and coal accounts for around 67 % of electricity generation, especially in India. Renewable sources like solar and wind are expanding but remain a small share of the overall energy mix. Ambitious renewable targets exist, yet financial, policy, and infrastructure challenges hinder progress. High public debt, weak utilities, subsidies, and import vulnerabilities further complicate the region's energy transition toward cleaner systems.



Renewables and Nuclear to Supply Half of Global Electricity by 2030: IEA

According to the IEA's Electricity 2026 report, global electricity demand is expected to grow by over 3.5% annually through 2030. Renewable energy paired with nuclear power is projected to supply 50 % of global electricity by the end of the decade, up from 42 % today. Solar growth is pivotal, with renewables on track to surpass coal generation. Nuclear output also hit record levels. However, expanding grid infrastructure and enhancing flexibility are critical to integrating this capacity. Although natural gas use may increase in some regions, coal's role is expected to decline, keeping CO₂ emissions broadly flat through 2030.

Battery Energy Storage Overtakes Hydropower, Reshaping The Global Power Grid – Rystad

In 2025, battery energy storage systems surpassed pumped hydropower to become the world's largest operational energy storage technology, with over 250 GW online. Rapid deployment, especially in China and the U.S., reflects a shift toward storage as a core grid component that balances variable solar and wind generation, offering fast response and shifting energy from low-price periods to high demand. Installations are expected to exceed 130 GW in 2026. Batteries are increasingly replacing fossil generation in places like Australia and California. Cost reductions and technological improvements extend system lifetimes, strengthening investment and grid stability worldwide.





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COVER STORY

INDIA'S SOLAR & STORAGE SURGE

Powering The Future With Hybrid Energy Solutions

India is witnessing a decisive shift in its clean energy journey as solar power and energy storage increasingly move forward together. What began as a rapid solar capacity expansion is now evolving into a more balanced and reliable hybrid energy model, where solar generation is paired with battery storage to address grid stability, peak demand, and round-the-clock power needs. This solar and storage surge is becoming central to India's long-term energy security and climate goals.

Over the last decade, India has built one of the world's largest solar markets, crossing the 70 GW installed capacity mark and continuing to add new projects at scale. However, the rapid rise of solar has also exposed structural challenges. Solar generation is concentrated during daytime hours, while electricity demand peaks in the evening. This mismatch has increased curtailment risks, stressed transmission networks, and highlighted the limits of a solar-only approach. Energy storage, particularly battery energy storage systems, is now emerging as the missing link.

Policy direction has played a key role in accelerating this transition. Government tenders increasingly mandate the inclusion of storage alongside solar, especially for peak power supply and firm dispatchable renewable energy. Hybrid tenders combining solar, wind, and storage are gaining momentum, offering assured power delivery during non-solar hours. Viability gap funding for battery storage projects and clearer market signals for ancillary services are also improving project bankability and investor confidence.

From a technology perspective, falling battery costs are reshaping project economics. Lithium-ion battery prices have declined sharply over the past decade, making large-scale storage commercially viable for grid applications. At the same time, improvements in battery efficiency, lifecycle performance, and energy density are supporting longer-duration storage solutions. While lithium-ion dominates today, India is also exploring alternatives such as sodium-ion batteries, flow batteries, and pumped hydro storage to diversify its storage mix and reduce import dependence.

The impact of solar and storage integration is already visible at the grid level. Storage-enabled solar plants can smooth power output, reduce ramping pressure on conventional power plants, and help manage the "duck curve" effect caused by high daytime solar generation. For distribution companies, storage offers a way to reduce peak power procurement costs and improve supply reliability. For consumers, especially commercial and industrial users, hybrid systems support energy cost savings and resilience against outages.

Domestic manufacturing is another critical dimension of India's solar and storage surge. The production-linked incentive schemes for solar modules and advanced chemistry cell batteries aim to build a strong local supply chain. While challenges remain in terms of scale, raw material access, and technology depth, these efforts are expected to reduce import dependence and create long-term industrial capacity.

Looking ahead, solar and storage together are set to redefine India's power system. As electric vehicles, green hydrogen, and the electrification of industries grow, flexible and reliable clean power will be essential. Hybrid energy solutions provide that flexibility, enabling renewable energy to move from being a supplementary source to a dependable backbone of the grid. India's solar and storage surge is not just about adding capacity, but about building a future-ready energy system that is cleaner, smarter, and more resilient.



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Beyond Megawatts: How Storage Is Rewriting India's Renewable Power Playbook

For more than a decade, India's renewable energy journey was measured in megawatts. Each new solar park, every record-breaking tariff, and each annual capacity addition reinforced a singular narrative: scale was success. The country raced toward ambitious clean energy targets, built some of the world's largest solar installations, and transformed itself into one of the most competitive renewable markets globally.

But as 2026 unfolds, it is increasingly clear that the industry has entered a new phase — one that cannot be measured in megawatts alone.

The real transformation is happening in megawatt-hours.

Across Gujarat, Andhra Pradesh, Bihar, Rajasthan, Karnataka, Madhya Pradesh, and Uttar Pradesh, a cluster of large-scale battery energy storage system (BESS) announcements is reshaping India's renewable landscape. Standalone storage installations, hybrid solar-plus-BESS bids, merchant storage plays, and gigafactory expansions collectively signal that storage is no longer supplementary technology.

It is becoming structural infrastructure.



➤ FROM CAPACITY TO CONTROL

At the centre of this transition lies a simple grid reality: solar generation peaks during the day, but demand often peaks after sunset.

As renewable penetration deepens in states like Gujarat and Rajasthan, midday power prices soften, curtailment risks rise, and evening ramp requirements grow steeper. Thermal fleets — built for baseload stability — struggle with flexibility demands. Transmission corridors face congestion during solar hours, yet shortages appear during evening peaks. Storage resolves this imbalance.

One of the clearest signals of this evolution is:



➤ KPI GREEN ENERGY – 445 MW / 890 MWH STANDALONE BESS – GUJARAT

This large-scale, two-hour configuration marks KPI Green Energy's decisive entry into utility-scale storage. The sizing is strategic. Two-hour systems are particularly suited for peak shaving, ramp support, and congestion management — precisely the pressure points in Gujarat's high-renewable grid.

More importantly, this is not a pilot.

It reflects commercial confidence in storage as an investable infrastructure asset.

Standalone BESS is emerging as a new asset class. Developers are increasingly modelling revenue through combinations of capacity payments, time-of-day arbitrage, ancillary services participation, and grid support contracts. For independent power producers, storage is evolving into a parallel growth vertical rather than an add-on.

➤ STORAGE AS GRID INFRASTRUCTURE

Equally significant is who is now leading storage procurement.

Bondada Engineering - 225 MW / 450 MWh BESS - Andhra Pradesh (Awarded by AP TRANSCO)

The award of this project demonstrates that transmission utilities are embedding storage directly within grid planning. This is not merely about renewable integration. It is about strengthening transmission infrastructure, mitigating congestion, and enhancing reliability.

When storage becomes part of regulated transmission frameworks, its risk profile changes. Cost recovery improves bankability. Financing becomes more structured. Long-term grid integration becomes institutionalised.

That institutionalisation is even more visible in:



POWERGRID - 150 MW / 300 MWh Standalone BESS at Kalikiri Substation - Andhra Pradesh

By integrating BESS at the substation level, POWERGRID is positioning storage as core transmission infrastructure. Such systems can defer expensive line upgrades, stabilise voltage, provide frequency regulation, and enhance contingency response.

This marks a structural shift: storage is moving from the periphery of renewable deployment to the centre of grid architecture.

Eastern India is also entering the storage era with strategic intent.

India's Largest Battery Energy Storage System - Bihar

This development signals that storage is no longer confined to high-solar western states. For Bihar, BESS represents grid modernisation, peak demand management, and reliability enhancement. Its importance lies not just in scale, but in geographic diversification — confirming that storage is becoming a national priority.

MID-SCALE UTILITY STORAGE



➤ THE RISE OF MID-SCALE UTILITY STORAGE

Not all projects are mega-scale, but mid-sized deployments are equally critical in deepening market maturity.

Rajesh Power Services Limited (RPSL) - 65 MW / 130 MWh BESS - Gujarat

This project reflects how diversified energy players are stepping into storage. Mid-scale systems support distribution-level balancing, renewable smoothing, and industrial load management. These assets form the connective fabric of a decentralised storage ecosystem.

> THE HYBRID IMPERATIVE

If standalone storage addresses grid stress, hybrid solar-plus-storage projects are rewriting procurement strategy itself.

The era of solar-only bids is steadily giving way to integrated renewable solutions. Dispatchability now commands premium value.

Pace Digitek - 250 MW Solar + 1100 MWh BESS - Pavagada, Karnataka

Pairing 250 MW of solar with 1100 MWh of storage suggests a roughly four-hour discharge configuration — sufficient to deliver firm evening supply and compete in round-the-clock tenders.

Longer-duration storage unlocks new contractual possibilities. It reduces curtailment exposure, enhances grid alignment, and allows renewable assets to compete with conventional peaking resources.

Equally telling is tariff competitiveness.

ACME Solar - 220 MW Solar + BESS - Madhya Pradesh (₹2.764 per unit)

This bid demonstrates that integrated solar-plus-storage can remain viable within India's aggressively priced power market. The perception of storage as prohibitively expensive is rapidly fading. Falling battery costs, improved system optimisation, and refined revenue modelling are compressing hybrid tariffs.

Hybridisation is no longer experimental.

It is becoming strategic baseline.

INDIA IS NO LONGER BUILDING RENEWABLE CAPACITY — IT IS BUILDING RENEWABLE CONTROLLABILITY

> MERCHANT STORAGE: MARKET CONFIDENCE IN ACTION

Another milestone in 2026 is the emergence of merchant storage.

Juniper Green Energy - 100 MWh Merchant BESS - Rajasthan

This project represents a shift toward market-based revenue optimisation. Merchant BESS relies on intraday arbitrage, peak price spreads, and ancillary service revenues rather than long-term contracted offtake.

The significance lies not in scale alone, but in signal.

Developers are increasingly confident in the depth and liquidity of India's power exchanges. Storage is stepping into competitive markets.



> MANUFACTURING THE STORAGE ECONOMY

Deployment acceleration depends on supply chain resilience. India's ambitions in storage cannot rely indefinitely on imported systems. Industrial capacity is scaling in parallel.

Ddev Plastiks - 5 GWh BESS Manufacturing Entry - India

This move reflects strategic diversification into a rapidly expanding energy segment and the convergence of industrial capability with clean energy demand.

GoodEnough Energy - 7 GWh BESS Gigafactory - Uttar Pradesh

The commissioning of this gigafactory strengthens domestic supply chains and positions the company among India's largest battery manufacturers. Domestic production reduces import dependency, mitigates currency exposure, and aligns with broader industrial policy objectives.

Storage is not just energy infrastructure.

It is industrial transformation.

> THE NEW REVENUE ARCHITECTURE

Across these diverse projects, a new commercial architecture is emerging.



Financial institutions are adapting underwriting models to account for degradation curves, cycling frequency, and multi-stream cash flows. Bankability is strengthening, though regulatory clarity around ancillary pricing and long-term market design remains critical.

For solar developers, the implications are strategic. Pure solar projects face midday price cannibalisation and curtailment risks in high-penetration states. Hybridisation mitigates these pressures. Developers capable of integrating storage technically, financially, and operationally are likely to command stronger portfolio resilience.

> THE OPTIMISATION ERA

Viewed in isolation, each of these projects is noteworthy. Taken together, they represent a systemic pivot.

Standalone BESS in Gujarat and Andhra Pradesh strengthens flexibility. Transmission-integrated storage institutionalises the asset class. Hybrid projects in Karnataka and Madhya Pradesh redefine competitiveness. Merchant storage in Rajasthan signals market maturity. Manufacturing expansion in Uttar Pradesh builds industrial resilience. Deployment in Bihar broadens geographic reach.

The pattern is increasingly clear: India is moving from renewable capacity expansion to renewable power optimisation.

The first phase of India's solar revolution proved that megawatts could be added at scale and at record-low cost.

The next phase demands control — the ability to deliver renewable power precisely when it is needed, not just when it is generated.

Beyond megawatts lies a more sophisticated metric of success: reliability, flexibility, and dispatchability.

The projects emerging across India in 2026 demonstrate that the industry understands this shift. Storage is no longer peripheral. It is strategic. It is investable. It is industrialising.

And in rewriting the renewable power playbook, India is not merely enhancing its clean energy credentials — it is redefining the economics of its power system for the decade ahead.



INDIA'S RENEWABLE FUTURE IS NO LONGER JUST ABOUT MEGAWATTS, IT IS NOW ABOUT FLEXIBILITY, RELIABILITY, AND CONTROL."



Solar + Storage Business Models Winning in India CAPEX vs OPEX, C&I Projects, and Bundled Solutions

India's solar-plus-storage market is moving from pilot projects to commercially scalable deployments, driven by falling battery costs, grid constraints, and the growing need for reliable power. As developers, investors, and consumers gain experience, clear business models are emerging—particularly around CAPEX versus OPEX structures, commercial and industrial (C&I) adoption, and bundled energy solutions.

Traditionally, CAPEX-based models have dominated India's renewable energy landscape. Under this approach, project owners invest upfront in solar and battery assets and benefit from long-term savings on electricity costs. In the C&I segment, large manufacturers, data centers, and logistics hubs prefer CAPEX models because they offer direct control over assets and higher returns over a 15–25 year lifecycle. The addition of storage strengthens this model by enabling peak shaving, demand charge reduction, and backup power, improving overall project economics. Falling lithium-ion battery prices and improved system efficiencies are making CAPEX-funded solar-plus-storage increasingly attractive, especially for energy-intensive industries.

However, OPEX models are gaining rapid traction, particularly among mid-sized C&I consumers. In this structure, a third-party developer owns and operates the solar-plus-storage system, while the customer pays a fixed tariff or monthly fee. This model reduces upfront capital requirements and shifts performance and maintenance risks to the service provider. For businesses focused on balance sheet efficiency, OPEX offers predictable energy costs and protection against grid outages without long-term asset ownership. As financial institutions become more comfortable underwriting hybrid solar-storage projects, OPEX models are expected to scale faster in urban and industrial clusters.

C&I projects are currently the strongest growth driver for solar-plus-storage in India. Rising grid tariffs, power quality issues, and stricter sustainability targets are pushing companies to seek reliable and clean energy solutions. Storage allows C&I users to increase solar self-consumption, avoid costly peak-hour power, and ensure business continuity. Sectors such as pharmaceuticals, IT parks, cold storage, and EV charging infrastructure are increasingly adopting behind-the-meter solar-plus-storage systems, supported by state-level incentives and open access regulations.

Bundled solutions are emerging as a key differentiator in the market. Instead of selling solar and storage as separate components, developers are offering integrated packages that combine generation, storage, energy management software, and long-term service agreements. These bundled models simplify decision-making for customers and improve bankability for lenders. Energy-as-a-service offerings, which include performance guarantees and uptime commitments, are particularly attractive to C&I customers seeking reliability over ownership.

From a business perspective, winning models in India balance cost competitiveness with risk mitigation. CAPEX models work best for large, energy-intensive users with long-term planning horizons, while OPEX and bundled solutions are better suited for customers seeking flexibility and low upfront exposure. As policies evolve and storage becomes integral to grid stability, solar-plus-storage business models in India are expected to mature rapidly, creating new opportunities across the value chain.

"FROM CAPEX CONTROL TO OPEX FLEXIBILITY, SOLAR-PLUS-STORAGE IS REDEFINING HOW INDIA'S C&I SECTOR POWERS GROWTH."



Bankability Of Solar & Storage Projects: What Investors Are Looking For

Investors evaluating solar and storage projects in India are increasingly focused on the bankability of these assets as the market matures and capital continues to flow into renewables. Bankability refers to the likelihood that a project will generate stable, predictable cash flows over its life, underpinned by strong technical, financial, and contractual fundamentals. For solar and storage, particularly in the Indian context, clear visibility on revenue streams, risk mitigation, credible off-takers, and robust technology choices are critical determinants of investor confidence.

One of the foremost considerations for investors is the strength and predictability of revenue. In the Indian market, power purchase agreements (PPAs) with creditworthy counterparties are essential. Historically, concerns around the financial health of distribution companies (DISCOMs) have weighed heavily on investor sentiment. Projects with state-backed entities or those that have payment security mechanisms—such as escrow accounts, payment security funds, or letter of credit arrangements—are seen as more bankable. These mechanisms provide assurance that cash flows will not be interrupted by delayed payments, which is especially important for projects combining solar with battery storage, where the capital costs are higher.

Another key factor is the regulatory framework. Stable and transparent policy regimes at both central and state levels give investors confidence in the long-term viability of their investments. For solar projects, clarity on tariffs, customs duty, and GST treatment for equipment, and renewable energy certificates is important. For storage systems, evolving regulations around dispatch, grid services, and participation in ancillary markets create opportunities but also uncertainties. Investors look for jurisdictions with clear rules on how storage will be compensated, whether through capacity payments, energy arbitrage, or grid support services, to ensure a diversified and predictable revenue mix.

Technology risk is another significant aspect of bankability. Investors prefer proven photovoltaic (PV) modules and battery technologies with strong warranties and performance guarantees from reputable manufacturers. This minimizes the risk of under-performance and expensive replacements. In solar PV, the trend toward higher efficiency modules and bifacial technology is attractive, but banks and funds often require conservative yield assessments and independent technical due diligence. For storage, the choice of battery chemistry, degradation profiles, and system design directly impacts both performance and safety, making rigorous testing and certification essential.

Operational risk management also influences bankability. Investors assess the strength of the engineering, procurement, and construction (EPC) contractor, as well as the operations and maintenance (O&M) strategy. Experienced partners with a track record of delivering on time and within budget, and with robust O&M plans, reduce execution risk and enhance confidence in stable long-term returns.

Finally, investors increasingly consider environmental, social, and governance (ESG) factors. Projects that demonstrate strong community engagement, land use compliance, and environmental stewardship tend to attract premium capital, including from global institutional investors.

In summary, bankability in solar and storage projects in India hinges on secure revenue structures, clear regulatory support, tested technologies, competent execution, and solid risk mitigation frameworks. Meeting these criteria helps projects stand out in a competitive funding environment and unlock the capital needed to accelerate the transition to a clean energy future.



**BANKABLE SOLAR
PROJECTS ARE
BUILT ON SECURE
PPAS, RELIABLE
CASH FLOWS,
AND TRUSTED
COUNTERPARTIES**



Solar + Storage (BESS) Checklist

Indian Gigafactory 2026 Edition: The most critical infrastructure for 24/7 Green Power

In India's varied solar irradiance zones, achieving a "Net Zero" facility requires more than just panels. It requires an integrated Power Management System (PMS). This infographic focuses on the three pillars: Generation Efficiency, Storage Longevity, and Grid Stability. In the 2026 landscape, intermittent power is a liability—your Solar+BESS must be "Dispatchable."

Generation & Efficiency	Battery Energy Storage (BESS)	Structural & Electrical Integrity	Smart Management & Backup
✔ Module Selection: Use high-efficiency Bi-facial Mono-PERC or TopCon modules (Efficiency >22%). ✔ Tilt & Tracking: Seasonal tilt optimization or dual-axis tracking to maximize Yield-per-Acre. ✔ Inverter Loading Ratio (ILR): Maintain an ILR of 1.2 to 1.5 to ensure maximum BESS charging during peak sun hours. ✔ Soiling Mitigation: Automated robotic dry-cleaning systems to prevent 15-30% efficiency loss in dusty Indian corridors.	✔ Chemistry: LFP (Lithium Iron Phosphate) is mandatory for safety and thermal stability in high Indian ambient temperatures. ✔ C-Rating Compliance: Designed for 0.5C to 1C discharge rates to handle factory surge loads. ✔ Depth of Discharge (DoD): Configure systems for 80-90% DoD to maximize cycle life (>6000 cycles). ✔ Thermal Management: Active liquid cooling for battery racks to maintain internal temperatures below 30°C.	✔ Wind Loading: Structures designed for 180 km/h wind speeds (Coastal/Cyclone zones). ✔ Earthing & Lightning Protection: Advanced SPD (Surge Protection Devices) and chemical earthing for sensitive power electronics. ✔ Fire Suppression: Aerosol-based or clean-agent fire suppression integrated at the rack level. ✔ Switchgear & Protections: DC isolators and rapid-shutdown capability for O&M safety.	✔ Microgrid Controller: AI-driven EMS (Energy Management System) for seamless transition between Grid, Solar, and Battery. ✔ Forecasting Tools: Satellite-linked cloud cover forecasting to predict generation drops. ✔ Redundancy: N+1 redundancy on Power Conversion Systems (PCS). ✔ Black Start Capability: Ability for the BESS to restart the factory grid during a total blackout.



QUICK COMPARISON: EXPERT CHOICE VS. BUDGET MISTAKE

Feature	 The Budget Mistake	 The Expert Choice (2026)
Module Tech	Polycrystalline / Standard Mono	Bi-facial TopCon with Glass-Glass back
Storage Type	Lead-Acid or standard NMC	LFP with Liquid Cooling
Monitoring	Basic SCADA (Manual Reporting)	Digital Twin with AI Predictive Analytics
O&M	Manual Cleaning (Water Waste)	Robotic Dry Cleaning (Waterless)

Pro-Tip For the Indian Market

Always demand a PVSyst & Shadow Analysis Report from the vendor before purchasing. This ensures that nearby structures or high-tension lines don't create "hotspots" on your panels. In India's monsoon climate, proper drainage and mounting height are non-negotiable to prevent waterlogging damage.

PVSyst Simulation = Mandatory in 2026

Indian Gigafactory Solar Checklist :Based on 2026 industry standards for Renewable Integration. Solar + BESS can offset 70-90% of factory energy costs. Efficiency is a financial must.

Disclaimer: This article is based on publicly available information. Readers are advised to verify details through official announcements or primary sources before drawing conclusions or making decisions.



SS) Checklist

Infrastructure for 24/7 Green Power



Structural & Electrical Integrity

-  **180 km/h Wind Rating**
-  **DC Isolators & Rapid Shutdown**
-  **Switchgear & Protections**

Smart Management & Backup

-  **Microgrid Controller:** AI dimert CNS, Boregy Managements splaend for scamtest trartation
-  **Forecasting Tools** S-dollitise lhlved clord coove forecasting at onaket generation drops
-  **Redundancy:** Mi-I redunibosity on Power Conesision Systems (PGS)
-  **Black Start Capability**

Pro-Tip:- Indian Market: PVSyst & Shadow Andlysis Report is Mandatory!

-  Always demand a PVSyst & Shadow Analysis Report from the vender before purtfussing. This restures that recttly stecturte ar high tensieve lines don't create: **Hotspots** on your panels. to india's monsoon climate proper distinage and rhounting Height are non registabile to prevem watet.
-  **Ensure no " Hotspots ' on Panels**

Indian Gigafactory Solar Checklist – Based on 2026 Industry standards

Solar + BESS can oflier Po: 96% dfflee y mergy nass. Efficiency = A Financial must.

Solar & Storage's Role In India's Energy Security And Peak Demand Management



India's energy demand is rising steadily, driven by economic growth, urbanisation, electrification of transport, and expanding industrial activity. At the same time, the country faces growing challenges in ensuring energy security, managing peak demand, and reducing dependence on fossil fuel imports. In this context, solar power combined with energy storage systems is emerging as a critical pillar of India's power sector transformation.

Solar energy has already become the backbone of India's renewable capacity addition. With some of the lowest solar tariffs globally and strong policy support, utility-scale and rooftop solar installations continue to grow across states. However, solar generation is inherently intermittent and peaks during daytime hours, while India's electricity demand often surges in the evening. This mismatch has highlighted the need for reliable storage solutions to balance supply and demand.

Energy storage, particularly battery energy storage systems, is increasingly seen as the missing link in India's clean energy transition. By storing excess solar power generated during the day and dispatching it during evening and night-time peak hours, storage helps smoothen load curves and reduces stress on the grid. This capability is especially important as thermal power plants face operational constraints and hydropower output becomes less predictable due to changing rainfall patterns.

From an energy security perspective, solar and storage together reduce India's reliance on imported coal, oil, and gas. Fossil fuel imports expose the country to global price volatility and geopolitical risks. Expanding domestic renewable generation backed by storage strengthens supply resilience and supports long-term price stability. It also aligns with India's broader goals of reducing carbon emissions and meeting its net-zero commitments.

Peak demand management is another area where solar-plus-storage is proving its value. Several states are witnessing record peak loads during summer months due to higher cooling demand. Traditionally, meeting these peaks required costly peaking power plants or short-term power purchases. Storage-enabled solar projects can now provide flexible capacity during peak hours, often at competitive costs. Policymakers are increasingly recognising this, as reflected in recent tenders that mandate storage alongside renewable capacity.

The government has taken steps to accelerate storage deployment through policy frameworks, viability gap funding mechanisms, and inclusion of storage in renewable purchase obligations. Distribution companies are also beginning to see storage as a tool to improve grid reliability and reduce power procurement costs during high-demand periods.

As India moves towards a power system with higher renewable penetration, the role of solar and storage will become even more central. Together, they offer a practical solution to energy security concerns while enabling efficient peak demand management. Their combined deployment is set to play a decisive role in building a resilient, flexible, and sustainable electricity system for the country.

**"INDIA'S SOLAR-PLUS-STORAGE SHIFT
MARKS THE TRANSITION FROM
EXPERIMENTATION TO ECONOMICALLY
DRIVEN, SCALABLE ENERGY SOLUTIONS."**

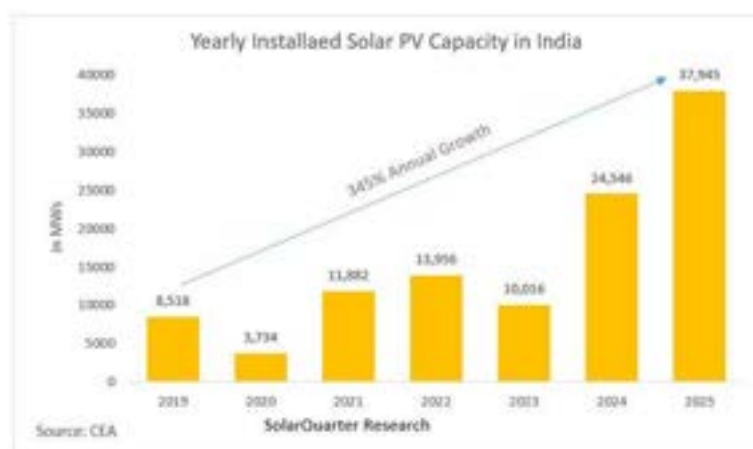
India Achieves Record 38 GW Solar PV Installations in 2025

India's solar PV market has entered a decisive growth phase, crossing 135,809.94 MW of cumulative installed capacity by the end of 2025. This now accounts for over 26% of India's total installed power capacity of around 514 GW, underlining the central role solar energy plays in the country's power transition. The year 2025 alone recorded a strong 38.8% year-on-year growth compared to 2024, reflecting both policy momentum and market maturity.

Annual solar PV installations in calendar year 2025 reached approximately 37.945 GW, a sharp rise from 24.546 GW in 2024. This makes 2025 the best year ever for solar installations in India, breaking all previous records since large-scale solar deployment began under the National Solar Mission (NSM) in 2014. The pace of installations highlights how solar has moved from a policy-driven sector to a core pillar of India's energy infrastructure.

A look at the yearly installation trend shows a temporary dip in 2020, when capacity additions fell to their lowest levels due to COVID-19 disruptions that brought economic activity to a near standstill. However, the post-pandemic recovery has been swift and sustained. Driven by the government's ambitious target of 500 GW of renewable energy by 2030, with 280 GW expected from solar PV alone, the sector has regained and accelerated its growth trajectory.

“INDIA'S RECORD 38 GW SOLAR INSTALLATIONS IN 2025 MARK A DEFINING MILESTONE IN THE NATION'S CLEAN ENERGY TRANSITION.”



Between 2019 and 2025, annual solar installations increased from just 8.518 GW to 37.945 GW, representing a cumulative growth of over 345%. This rapid expansion has been supported not only by demand but also by domestic manufacturing under the Atmanirbhar Bharat initiative. By December 2025, India's installed solar PV module manufacturing capacity crossed 120 GW, as listed under the MNRE's Approved List of Models and Manufacturers (ALMM-I). Further momentum is expected with the planned rollout of ALMM List-II for solar PV cells, likely from June 2026, which will strengthen backward integration.

Solar PV now accounts for over 65% of installed renewable capacity, excluding large hydro. On the generation side, renewable energy has recently crossed 50% of total power generation, temporarily surpassing coal. With continued policy support, grid-scale storage development, and falling technology costs, renewables—led by solar—are increasingly positioned to challenge coal not just in capacity, but also as a reliable source of base-load power in the coming years.



Power Market Evolution: How Storage Will Reshape Electricity Trading

India's power market is changing faster than ever. For many years, electricity trading mainly depended on coal-based generation, seasonal hydro output, and short-term demand fluctuations. Prices in the Day Ahead Market (DAM) and Real Time Market (RTM) moved largely on the availability of thermal power and weather-driven renewable generation. Now, with the rapid rise of solar and wind capacity, the market is entering a new phase where energy storage could become the most decisive factor in price discovery and trading strategy.



Solar power has grown at record speed across India. Midday generation is often high, especially during sunny months, pushing exchange prices down. At the same time, evening demand peaks when solar output falls, creating price spikes. This gap between low afternoon prices and high evening prices is opening up new trading opportunities. Battery Energy Storage Systems (BESS) are emerging as the bridge that can capture low-cost power and release it when demand and prices rise.

The evolution of power exchanges such as the Indian Energy Exchange and the Power Exchange India Limited has already introduced products like the Green Day Ahead Market and longer-duration contracts. But as storage capacity increases, trading patterns will become more dynamic. Instead of just buying or selling power based on immediate demand, market participants will increasingly think in terms of time-shifting energy. A megawatt-hour will no longer have a single value; its value will depend on when it is stored and when it is dispatched.

For distribution companies, storage can reduce dependence on expensive peak power purchases. By charging batteries when prices are low and discharging during high-price hours, they can manage procurement costs more efficiently. For renewable energy developers, storage provides firm and dispatchable renewable energy, improving their ability to sign long-term contracts and participate in peak supply tenders. This is particularly important as regulators push for round-the-clock renewable power and firm supply obligations.

Ancillary services and grid balancing markets are also expected to expand. Storage systems can respond within seconds, offering frequency control and grid support. As more intermittent renewable energy enters the system, grid operators will need flexible resources to maintain stability. Storage is well-suited for this role, and its participation in ancillary markets could create additional revenue streams beyond simple energy arbitrage.



IN INDIA'S EVOLVING POWER MARKET, THE TRUE VALUE OF ELECTRICITY WILL NO LONGER BE DEFINED BY HOW IT IS GENERATED, BUT BY WHEN IT IS DELIVERED."

The policy environment is gradually adapting to this shift. Government tenders for standalone storage and renewable-plus-storage projects are increasing. Financial institutions are exploring new risk assessment models for storage-backed projects. As costs of lithium-ion batteries decline and alternative chemistries such as sodium-ion and flow batteries advance, the economic case for storage is strengthening.

However, challenges remain. Market rules must evolve to fully value the multiple services that storage provides. Clear frameworks for capacity payments, ancillary services compensation, and co-location with renewable plants are still developing. There is also the question of how storage assets will be treated in transmission planning and open access regulations.

The real transformation will be psychological as much as technical. Electricity trading will shift from a supply-driven mindset to a flexibility-driven one. Traders will analyze not only generation forecasts but also storage state-of-charge data, price spreads, and grid congestion signals. The future power market may revolve around who can best manage flexibility rather than who can simply produce the cheapest kilowatt-hour.

As India moves deeper into the Solar & Storage era, the question is no longer whether storage will reshape electricity trading, but how quickly market participants can adapt. The next wave of competition may not be about generation capacity alone, but about mastering time itself in the power market.

Hybrid Solar Plants: Integrating AI And Smart Grid Technologies For Maximum Efficiency

Hybrid solar plants are emerging as a game-changer in the renewable energy sector, combining traditional solar photovoltaic (PV) systems with energy storage solutions, advanced grid management, and artificial intelligence (AI) technologies to optimize performance and efficiency. These plants are designed to address common challenges in solar energy generation, such as intermittency, variability in sunlight, and grid instability, while ensuring a reliable and cost-effective power supply.

The integration of AI in hybrid solar plants enables intelligent forecasting, predictive maintenance, and real-time optimization of energy generation and consumption. Machine learning algorithms can analyze historical weather data, solar irradiance patterns, and energy demand trends to predict output levels accurately. This allows plant operators to make informed decisions about energy storage, load management, and grid dispatch, reducing waste and increasing overall efficiency. AI-driven systems can also detect anomalies in equipment performance, such as inverter faults or panel degradation, before they cause significant downtime, minimizing operational losses.

Smart grid technologies complement AI by providing dynamic and responsive energy management capabilities. Hybrid solar plants connected to smart grids can adjust their output in real-time to match fluctuations in electricity demand and supply. Advanced sensors and communication networks enable two-way energy flows, allowing excess solar power to be stored in batteries or fed back into the grid efficiently. This flexibility not only stabilizes the grid but also supports peak shaving and load shifting strategies, which reduce the need for expensive fossil fuel-based backup generation.

Energy storage plays a crucial role in hybrid solar plants. Batteries or other storage technologies store excess energy generated during peak sunlight hours and release it during periods of low solar production or high demand. When integrated with AI and smart grid management, storage systems can be optimized to maximize economic returns and ensure grid stability. For instance, AI can determine the most profitable times to charge or discharge batteries based on electricity tariffs, renewable energy incentives, or local grid conditions, enhancing the plant's financial viability.

Several case studies worldwide demonstrate the benefits of hybrid solar plants with AI and smart grid integration. In Europe and North America, pilot projects have reported efficiency gains of up to 20% compared to conventional solar plants. These systems also contribute to decarbonization efforts by enabling higher penetration of renewable energy into the grid while reducing reliance on conventional power plants. As technology costs decrease and AI algorithms become more sophisticated, hybrid solar plants are expected to become a mainstream solution for utility-scale and commercial solar projects.

Hybrid solar plants integrating AI and smart grid technologies represent the future of solar energy generation. By combining intelligent forecasting, predictive maintenance, responsive grid management, and optimized energy storage, these systems deliver higher efficiency, reliability, and economic returns. They address the inherent challenges of solar power while supporting sustainable energy goals, making them a critical component of modern energy infrastructure and a key driver of the global transition toward clean energy.



Inside The Grid: How Storage Is Redefining Power Dispatch In India

India's power system is changing faster than ever before. For decades, electricity dispatch in the country was simple. Coal-based plants were scheduled to run steadily, hydropower filled some gaps, and demand patterns were predictable. But today, with solar and wind capacity expanding rapidly across states like Rajasthan, Gujarat, Tamil Nadu, and Karnataka, the grid is facing a new reality. Renewable energy is clean and affordable, but it is also variable. This is where energy storage is quietly transforming the way power is dispatched inside the grid.



India has already crossed 212 GW of renewable capacity, with solar leading the growth. Solar generation peaks during midday, when demand is often moderate. In the evening, when households switch on lights and appliances, solar output falls sharply. This mismatch creates what grid operators call the “duck curve.” Earlier, coal plants had to ramp up quickly to meet this evening’s surge. However, coal units are not designed for frequent ramping, and this affects efficiency and costs.

Energy storage is now stepping in as a flexible balancing tool. Battery Energy Storage Systems (BESS) can store surplus solar power during the day and discharge it within seconds during peak demand. This ability to respond instantly is changing dispatch strategy. Instead of only adjusting generation, grid operators can now schedule storage as a dispatchable resource. In simple terms, stored power can be treated almost like a power plant that turns on exactly when needed.

The policy ecosystem is also evolving. The Ministry of Power has introduced guidelines to support storage procurement, while agencies like SECI are bundling solar projects with storage to ensure firm and dispatchable renewable energy. Several states are issuing tenders for standalone BESS projects. These projects are not just about adding capacity; they are about enhancing reliability, frequency control, and grid stability.

Another major shift is happening in ancillary services. Earlier, frequency regulation depended largely on thermal generators. Now, storage systems can inject or absorb power in milliseconds, helping maintain grid frequency close to 50 Hz. This improves overall system health and reduces stress on conventional plants. As India’s renewable share rises toward the 500 GW non-fossil target by 2030, such fast-response systems will become essential.



INDIA’S ENERGY TRANSITION IS NO LONGER JUST ABOUT GENERATING RENEWABLE POWER—IT IS ABOUT MASTERING THE ART OF DELIVERING IT AT THE RIGHT TIME.”

Pumped hydro storage is also gaining attention. With long-duration storage capability, it can support multi-hour peak demand and seasonal balancing. Several projects are under development across hilly states. Unlike batteries, pumped hydro can provide large-scale storage for extended durations, making it a strong complement to solar parks.

Financial models are evolving as well. Earlier, power purchase agreements were based on energy supply alone. Now, new contracts are structured around availability during peak hours. This is redefining how value is measured in the power market. Storage is not just selling units of electricity; it is selling flexibility, reliability, and time-shifting capability.

The most interesting transformation is invisible to consumers. When a light turns on in the evening, few realize that the electricity may have been generated hours earlier by a solar plant and stored in a battery hundreds of kilometers away. The grid is becoming smarter, more responsive, and more data-driven.

India’s transition is no longer just about adding renewable megawatts. It is about managing them intelligently. Storage is moving from being a supporting technology to becoming the backbone of modern power dispatch. As more projects come online and costs continue to fall, the real story unfolding inside the grid is not just about clean energy. It is about control, precision, and the power to deliver electricity exactly when it is needed most.

The Role Of Solar Storage In Reducing Grid Dependence And Blackouts

In recent years, the integration of solar energy with storage systems has emerged as a critical solution for reducing dependence on the conventional electricity grid and preventing blackouts. As countries worldwide increase their share of renewable energy, solar power has become an essential source of clean electricity. However, solar generation is inherently intermittent, as it depends on sunlight availability, which fluctuates throughout the day and is affected by seasonal and weather variations. This intermittency creates challenges for maintaining a stable and reliable power supply. Solar energy storage, typically in the form of battery systems, provides a practical and effective solution to this problem by storing excess energy generated during peak sunlight hours and releasing it when demand is high or sunlight is unavailable.

Energy storage systems enhance grid stability by balancing supply and demand. During the day, solar panels often generate more electricity than immediate consumption requires. Without storage, this surplus is either wasted or fed into the grid, potentially causing voltage fluctuations and stress on the network. By storing this excess energy in batteries, households, commercial establishments, and utilities can use the stored power during peak demand periods, evening hours, or even during grid outages. This reduces the reliance on traditional grid electricity, which is often sourced from fossil fuel-based power plants, helping to cut greenhouse gas emissions and improve energy security.

Solar storage also plays a crucial role in mitigating blackouts, particularly in regions with weak or overburdened grids. Grid failures often occur when electricity demand exceeds supply, or when sudden fluctuations in generation occur due to variable renewable sources. Battery systems act as a buffer, supplying power during these critical moments and preventing disruptions in electricity supply. In addition, advanced storage solutions can participate in demand response programs, automatically discharging power to stabilize the grid when required. This capability is increasingly important as more solar capacity is added, and traditional grids face challenges in managing the variability of renewable energy.

The economic benefits of solar storage are equally significant. For consumers, investing in solar with storage reduces dependence on expensive peak-time grid electricity, lowering electricity bills. For utilities, widespread deployment of storage systems reduces the need for expensive infrastructure upgrades and emergency power plants to handle peak demand. Furthermore, by enabling a more decentralized energy system, storage supports the development of microgrids and off-grid solutions, particularly in rural or remote areas where grid connectivity is limited or unreliable. This not only ensures continuous power supply but also fosters energy independence for communities.



Government policies and incentives are playing an important role in accelerating the adoption of solar storage. Subsidies, tax benefits, and favorable regulatory frameworks encourage both residential and commercial consumers to integrate storage with their solar installations. Technological advancements in battery efficiency, cost reduction, and lifecycle management further strengthen the case for widespread adoption. Countries that have embraced solar storage solutions report lower blackout incidents, improved grid reliability, and higher overall energy resilience.

Solar storage represents a transformative advancement in modern energy systems. By storing excess solar power and delivering it when needed, it reduces dependence on the conventional grid, mitigates blackouts, enhances energy security, and provides economic and environmental benefits. As technology continues to evolve and costs decline, the role of solar storage in creating resilient and sustainable energy systems will only grow, making it an indispensable component of the renewable energy transition.

Policy Shifts And Regulatory Updates Driving



India's solar and energy storage sector is undergoing significant changes in 2026 as new policies and regulations encourage wider adoption of clean energy. The country is working to achieve its ambitious target of 500 GW of non-fossil fuel capacity by 2030, and recent government initiatives are designed to make renewable power more reliable and cost-effective. These measures are creating opportunities for both large-scale and decentralized solar projects while supporting the growth of energy storage solutions.

One major regulatory development comes from the Ministry of Power, which has mandated that future solar tenders include co-located energy storage systems. Projects will need to integrate storage with at least two hours of capacity equivalent to 10% of the solar installation. This requirement aims to reduce the impact of solar intermittency, stabilize the grid, and meet peak electricity demand. Analysts expect this move to drive around 14 GW of solar and 28 GWh of storage deployment by 2030.

In addition to storage mandates, the government has extended the waiver on inter-state transmission charges for energy storage projects until June 2028. This policy helps lower one of the key cost barriers for battery systems linked to renewable energy, making storage deployment more attractive to developers and utilities. Industry groups are also urging the government to introduce targeted tax reforms in the upcoming Union Budget, expand Production Linked Incentive schemes for solar and storage manufacturing, and rationalize GST and customs duties for storage equipment. These measures are expected to reduce project costs and support domestic manufacturing.

Solar & Storage Adoption In 2026



The government is also updating its Approved List of Models and Manufacturers framework. From mid-2026, solar projects will be required to use modules and cells meeting the revised ALMM criteria. This aims to ensure quality standards and boost domestic manufacturing, while careful timing and exemption rules are being applied to prevent disruptions in the market.

Regulatory innovation is also visible at the state and distribution level. Some electricity regulators have approved grid-scale battery storage to improve supply reliability and support renewable integration. For example, Delhi has allowed the installation of over 55 MW of grid-scale batteries, which will help balance peak demand and enable smoother solar integration.

Household adoption of rooftop solar continues to be encouraged through schemes such as PM Surya Ghar: Muft Bijli Yojana. These programs provide significant subsidies and net-metering benefits, driving decentralized solar installations. Early progress indicates strong uptake, particularly in states like Rajasthan, Maharashtra, and Gujarat.

The market outlook for battery energy storage is increasingly optimistic. Large-scale solar-plus-storage tenders are expected across several states in 2026, with Rajasthan emerging as a key focus area. These regulatory developments, combined with fiscal incentives and manufacturing reforms, are helping India move from setting capacity targets to actual deployment. By fostering both grid-scale and rooftop solutions, India is steadily creating a more reliable, integrated, and cost-effective solar and storage ecosystem that supports the country's clean energy ambitions.

INSIDE INDIA'S EXPANDING ENERGY STORAGE TENDER PIPELINE

India's energy storage landscape is entering a decisive scale-up phase. Over the past few weeks, a wave of tenders from central utilities, state discoms, and public sector undertakings has underscored a clear message: Battery Energy Storage Systems (BESS) are no longer pilot projects or regulatory experiments—they are becoming core grid assets.

The most striking development comes from **M.P. Power Management Company Limited** in Madhya Pradesh, which has invited bids for a massive 750 MW/1,500 MWh BESS project. This is among the largest standalone storage procurements seen at the state level and signals a maturing understanding of storage as firm capacity support rather than merely ancillary infrastructure. At the other end of the spectrum, **Uttarakhand Jal Vidyut Nigam Limited (UJVN)** has issued multiple tenders totaling 150 MWh and an additional 40 MWh across Uttarakhand—demonstrating how smaller, strategically located storage assets can address localized grid challenges in hydro-dominant systems.



“
INDIA'S ENERGY STORAGE
MARKET IS MOVING
DECISIVELY BEYOND PILOT
PROJECTS, WITH BATTERY
SYSTEMS RAPIDLY BECOMING
CORE ASSETS IN LARGE-SCALE
GRID PLANNING.
”



Transmission utilities are also stepping firmly into the storage domain. **Power Grid Corporation of India Limited** (POWERGRID) has floated several tenders, including 25 MW/100 MWh and 20 MW/80 MWh BESS projects in Odisha, and a 100 MW/400 MWh package in Tamil Nadu. In parallel, it has issued a 220 kV substation expansion tender in Rajasthan to integrate 300 MW of solar along with BESS. This convergence of transmission augmentation and storage integration highlights a structural shift: grid planners are increasingly viewing storage as embedded within network planning, not as a downstream afterthought.

The generation side is equally active. **NTPC Green Energy Limited** has issued a tender for a 6 MW floating solar project coupled with 24 MWh of battery storage in Chhattisgarh—a hybrid configuration that reflects the growing preference for firmed renewable power. Meanwhile, **NTPC Renewable Energy Limited** (NTPC REL) has

floated a global tender for a substantial 1,000 MWh BESS project at its Bikaner solar plant in Rajasthan. This project, given its scale, is expected to serve as a benchmark for tariff discovery and technology competitiveness in large-scale storage deployment.

In southern India, **NLC India Limited** has issued a global tender for a 250 MW/500 MWh BESS project in Tamil Nadu. Such international tenders indicate growing confidence in India's storage market among global OEMs and integrators. Competitive global participation is likely to drive down costs while enhancing technological standards, especially in advanced lithium-ion chemistries and integrated energy management systems.

States are also recognizing storage as a reliability enhancer. **Punjab** has invited

bids for 500 MW/1,000 MWh of battery storage aimed at boosting grid reliability and peak management. With agricultural loads and seasonal demand spikes, Punjab's move could become a template for other agrarian states grappling with similar load curves.

Eastern India is seeing notable diversification. **West Bengal State Electricity Distribution Company Limited** (WBSEDCL) has floated 3.5 MW rooftop solar tenders integrated with battery storage across West Bengal. While smaller in capacity, these distributed storage-linked rooftop projects point toward a future where behind-the-meter and distribution-level storage complement utility-scale installations. Similarly, **Defence Research and Development Organisation** (DRDO) has issued an EOI for a 5 MW solar PV project with BESS in Odisha under the RESCO model, indicating that storage adoption is spreading across strategic and institutional segments.

SEVERAL THEMES EMERGE FROM THIS FLURRY OF ACTIVITY

01

Scale is accelerating

Projects ranging from 20 MW to 750 MW—and storage capacities touching 1,500 MWh—demonstrate that utilities are moving beyond demonstration scale. India's target of 500 GW of non-fossil capacity by 2030 necessitates flexible balancing solutions, and BESS is increasingly the preferred instrument.

02

Procurement diversity is expanding

We see standalone storage tenders, hybrid renewable-plus-storage projects, rooftop solar with batteries, and even substation-level integration. This reflects regulatory clarity around storage as a distinct asset class, eligible for viability gap funding and long-term contracting structures.

03

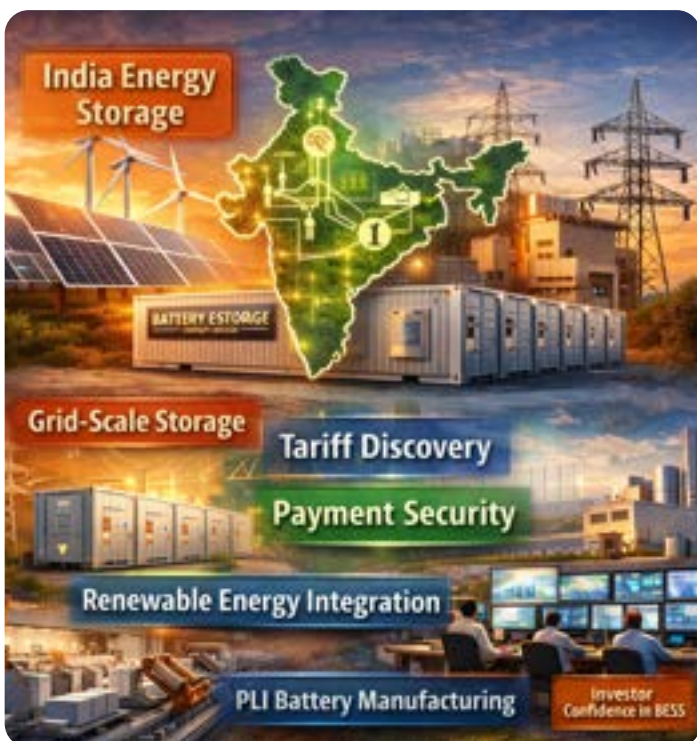
Geographic spread is broadening

From Madhya Pradesh and Rajasthan in central and western India, to Tamil Nadu in the south, Odisha and West Bengal in the east, and Uttarakhand in the north—the storage opportunity is now pan-India. This dispersion is critical for developing a balanced domestic supply chain and installation ecosystem.

04

Global participation is intensifying

With entities such as NTPC REL and NLC India issuing global tenders, India is positioning itself as one of the most attractive growth markets for battery manufacturers and system integrators worldwide. Falling battery prices globally, coupled with domestic policy incentives, are aligning to make large-scale BESS increasingly bankable.



05

However, challenges remain

Tariff discovery will be closely watched—especially for gigawatt-hour-scale procurements.

The financial health of state discoms, payment security mechanisms, and clarity around ancillary service markets will significantly influence investor confidence. Additionally, localization of battery manufacturing under initiatives like PLI schemes must keep pace to reduce import dependency.

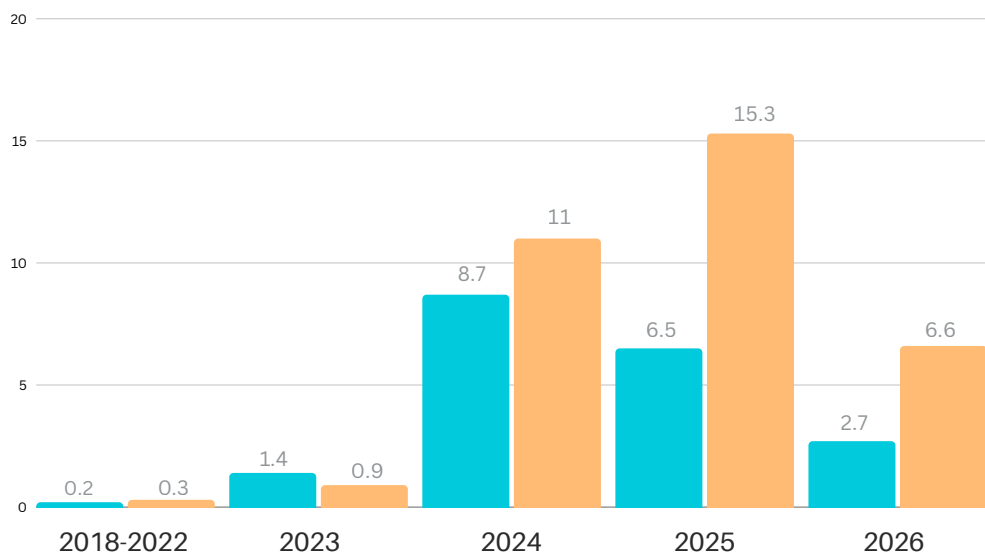
Yet, the direction is unmistakable. The clustering of large tenders within a short time frame suggests that storage is transitioning from policy aspiration to procurement reality. For India's renewable journey, this is a pivotal evolution. As solar and wind capacities surge, the grid's need for flexibility, peak shaving, frequency regulation, and firm power delivery will only intensify.

The recent tender pipeline indicates that India is preparing for that future—decisively and at scale. For developers, OEMs, financiers, and EPC players, the message is clear: the storage market is no longer emerging. It has arrived.

India's Solar And BESS Growth Trends

Solar With Storage Capacities

OPERATIONAL CAPACITY OF SOLAR WITH STORAGE IN INDIA

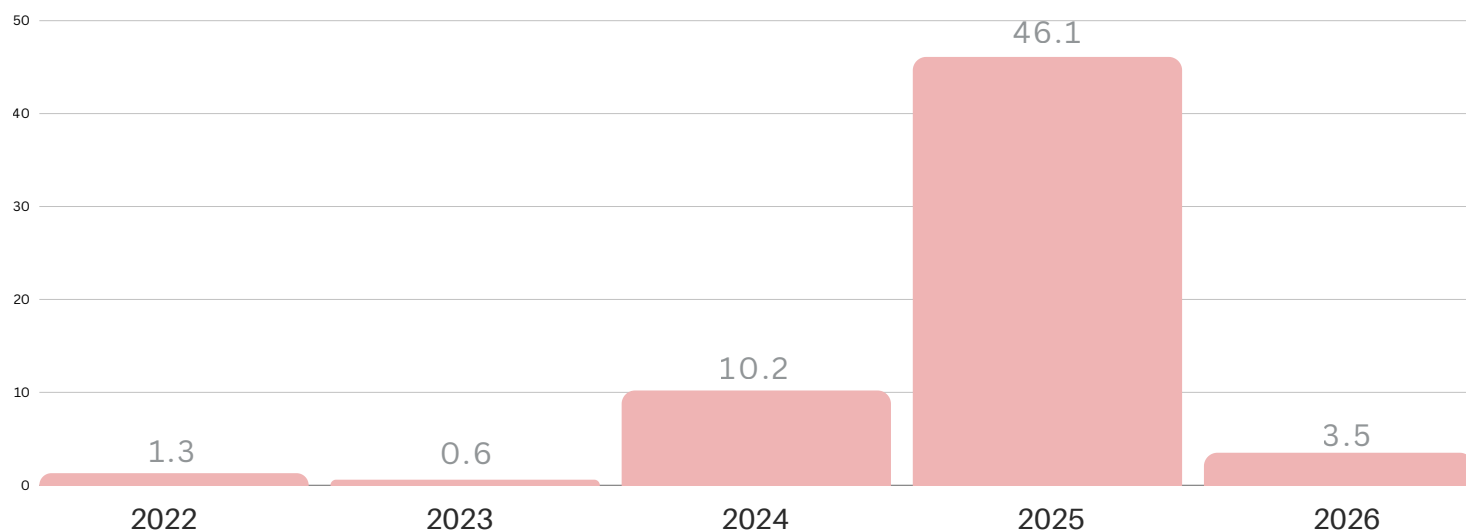


SOURCE: IESA

SOLARQUARTER RESEARCH

Solar projects integrated with battery energy storage systems (BESS) gained strong momentum in 2024, and the pace has continued steadily into 2025. The data shows a clear rise in both renewable energy (RE) capacity and storage deployment over the years. From a modest 0.2 GW of solar and 0.3 GWh of storage during 2018-2022, the market expanded to 1.4 GW solar and 0.9 GWh storage in 2023. The real jump came in 2024, with 8.7 GW of solar paired with 11 GWh of storage. In 2025, while solar capacity stands at 6.5 GW, storage increased further to 15.3 GWh, reflecting growing focus on dispatchable renewable power. Overall, 42 projects account for 19.4 GW of solar and 34 GWh of BESS capacity. A significant share is already awarded (6.5 GW solar, 14.4 GWh BESS) or under construction (5.7 GW solar, 7.9 GWh BESS). Tariffs have also declined steadily, making solar-plus-storage more competitive and attractive for utilities and developers.

Standalone BESS Tenders Growth Trend (GWh) | 2022 - 2026



SOURCE: IESA

SOLARQUARTER RESEARCH

The Viability Gap Funding (VGF) scheme has significantly transformed the standalone Battery Energy Storage System (BESS) market in India, accelerating both tender activity and overall capacity announcements. Under VGF Phase 1, which provided 30% financial support, 13.2 GWh capacity across 17 tenders has already been completed, setting a strong foundation for market confidence. Building on this momentum, VGF Phase 2 offers 16% support to enable 30 GWh of capacity, and it is already active with around 20 GWh across 11 tenders floated so far. The broader market trend also reflects rapid expansion. Total standalone BESS tenders from 2022 to 2026 have reached 61.7 GWh across 68 tenders. Capacity additions rose sharply from just 1.3 GWh in 2022 and 0.6 GWh in 2023 to 10.2 GWh in 2024, followed by a massive jump to 46.1 GWh in 2025, while 2026 has already recorded 3.5 GWh. In terms of project stage, 14.4 GWh is under construction, 19.5 GWh has been awarded, and 11.3 GWh remains in the tender open category, while 10.2 GWh has been cancelled. By tender type, BOO dominates with 44.2 GWh (41 tenders), followed by EPC at 14.4 GWh (20 tenders) and BOOT at 2.1 GWh (6 tenders). This data clearly shows that policy support through VGF has reshaped the standalone BESS market and positioned storage as a key pillar in India's evolving power system.



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PRICING THE FUTURE:

How the Central and State Commissions Are Defining India's Storage Economics.

“CERC’S DECISION SIGNALS THAT HYBRID RENEWABLES ARE MOVING FROM INNOVATION TO INSTITUTION ANCHORED BY REGULATORY CLARITY AND LONG-TERM MARKET CONFIDENCE.”

CERC ADOPTS TARIFFS FOR 2400 MW SOLAR-PLUS-STORAGE PROJECT LED BY NHPC

The decision by the **Central Electricity Regulatory Commission (CERC)** to adopt tariffs for a **2400 MW solar-plus-storage project led by NHPC** marks a defining moment for India's hybrid renewable market. Unlike standalone solar bids that are evaluated purely on energy price, hybrid projects combine generation with storage — requiring regulators to assess not just cost per unit, but system value.

By formalising tariffs for this large interstate project, CERC has provided critical clarity on how integrated solar-plus-battery assets will be priced and contracted. This move reduces uncertainty for developers and lenders, who have often viewed storage revenues as structurally ambiguous due to evolving market mechanisms for ancillary services and peak supply.

The decision also signals institutional confidence in dispatchable renewables. As India's renewable capacity rises, the grid increasingly requires firmed power — energy that can be delivered during evening peaks and periods of variability. CERC's tariff adoption effectively validates hybrid projects as mainstream capacity resources rather than niche solutions.

For the broader market, the message is clear: solar-plus-storage is no longer experimental. It is entering the regulated core of India's power procurement framework.



MERC APPROVES MSEDCL'S 2000 MW / 4000 MWH STORAGE PROCUREMENT PLAN IN MAHARASHTRA

In a major state-level policy development, the **Maharashtra Electricity Regulatory Commission (MERC)** has approved **MSEDCL's plan to procure 2000 MW / 4000 MWh of battery energy storage capacity**. This approval represents one of the largest structured storage procurement strategies undertaken by a state utility to date.

Maharashtra, with its high demand density and significant renewable integration, faces mounting challenges in managing peak load and balancing variability. By sanctioning large-scale BESS procurement, MERC has effectively positioned storage as a strategic grid asset rather than a supplemental renewable accessory.

The approved capacity — designed to provide multi-hour discharge support — is expected to play a critical role in evening peak management, curtailment reduction, and grid reliability enhancement. Importantly, the regulatory backing gives procurement visibility and contractual certainty, key factors in attracting investment into storage infrastructure.

For developers and financiers, this decision reduces demand-side ambiguity. It indicates that state distribution companies are beginning to incorporate storage into long-term planning frameworks, recognising its value in deferring network upgrades and stabilising supply.

Maharashtra's move could serve as a blueprint for other high-load states navigating the next phase of renewable integration.



RAJASTHAN APPROVES TARIFFS FOR 1000 MW / 2000 MWH BESS AFTER COMPETITIVE BIDDING

Rajasthan's power regulator has approved tariffs for a 1000 MW / 2000 MWh battery energy storage project following a competitive bidding process — a development that underscores the market's gradual shift toward price discovery in storage procurement.

As one of India's largest renewable energy hubs, Rajasthan experiences both high solar generation and corresponding variability challenges. The decision to procure storage through competitive bidding, and subsequently approve the discovered tariff, reflects growing institutional confidence in market-driven pricing mechanisms.

Tariff approval after competition is significant. It provides a benchmark for future storage tenders, enhances transparency, and offers clearer cost signals to utilities and investors alike. In a sector where revenue models are still evolving, regulatory endorsement of competitively determined tariffs reduces perception of risk.

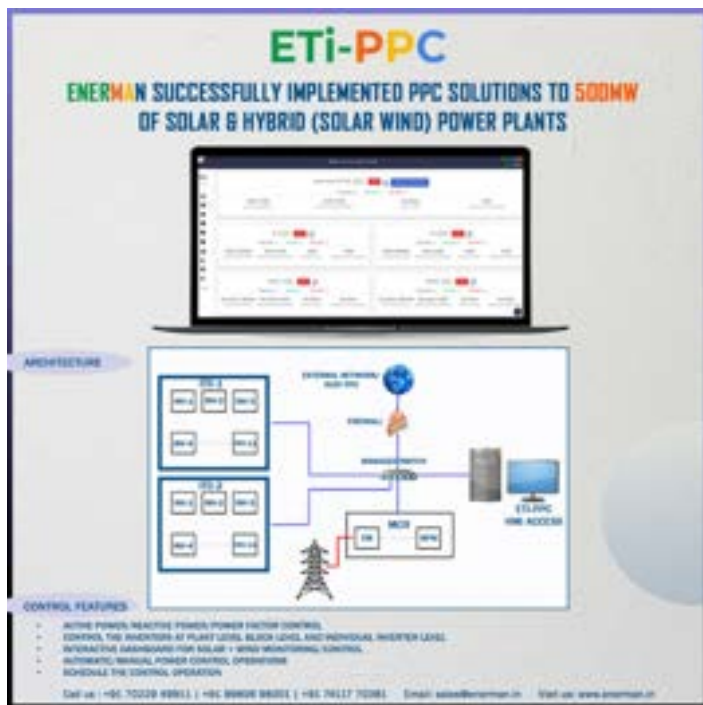
Beyond the immediate project, Rajasthan's decision suggests that storage is transitioning from policy ambition to commercially structured infrastructure. As more states adopt similar frameworks, tariff benchmarking will likely accelerate cost optimisation and scale deployment.

Together with national-level tariff adoption and large-state procurement strategies, Rajasthan's move reinforces the emergence of a more structured and predictable storage market across India.



ETi-PPC: Power Plant Controller for Stable, Compliant, and Unmanned Solar Plants

Power Plant Controller (PPC) refers to the coordinated monitoring and regulation of a plant's power generation and distribution systems to meet operational, safety, regulatory, and grid-compliance requirements. EnerMAN's ETi-PPC is engineered to achieve these objectives with high precision by maintaining stable voltage, frequency, and load distribution—parameters essential for secure, efficient, and compliant plant operation. Unlike conventional control systems, the ETi-PPC offers intelligent, automated, and scheduled control capabilities that extend far beyond basic power management. Through highly accurate active power, reactive power, and power factor regulation, the system ensures full compliance with utility and electricity board mandates while minimizing energy losses and maintaining superior power quality.



The ETi-PPC provides real-time grid-level voltage stabilization, preventing fluctuations that can otherwise lead to equipment stress, operational downtime, or regulatory penalties. Its autonomous and reliable performance particularly during unmanned operational hours ensures continuous compliance, operational assurance, and long-term system stability. For engineers managing solar power plants, EnerMAN's ETi-PPC serves as a critical operational backbone

by offering precise control inputs, live status feedback, and automated adjustments that simplify complex coordination tasks and enhance operational confidence. By optimizing power utilization, improving energy efficiency, and reducing operational costs, the ETi-PPC safeguards plant assets, protects the grid, and contributes to measurable long-term savings and sustainability across renewable-energy facilities.

Aligned with IEC 62443, the global cybersecurity standard for industrial control systems (ICS) and operational technology (OT), EnerMAN's ETi-PPC incorporates a secure Hybrid PPC architecture that manages solar output in coordination with other on-site renewable sources. It controls plant power using multiple methods, including the Ramp Power Method for smooth generation transitions, the Scheduled Power Method for predefined power delivery, and SLDC Write/Read functionality for direct interaction with the State Load Dispatch Centre, enabling precise, compliant, and grid-synchronized operation.

In advanced inverter-based solar plants, the ETi-PPC plays a pivotal role in maintaining high-quality grid interaction and ensuring compliance with statutory codes. Core functions such as Power Factor (PF) Control are executed with high responsiveness, allowing the system to regulate inverter outputs by adjusting the phase angle between voltage and current to sustain the required PF, reduce electrical losses, and maximize overall efficiency. Equally important is Reactive Power Compensation, where the inverters dynamically inject or absorb reactive power to correct voltage deviations, reduce transmission losses, and stabilize weak or fluctuating grids an essential requirement for modern renewable-energy systems. With sophisticated algorithms that regulate active and reactive power flows, the ETi-PPC ensures smooth grid integration and real-time compliance with grid codes. Features such as automated scheduling, remote operability, and intelligent fault-handling logic further enhance operational reliability, even in fully unmanned plant conditions.

AUTHORED BY:

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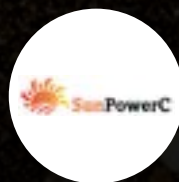
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राष्ट्र निर्माण में सूर्य घर मित्रों का सम्मान

RAVI RAO

MD & Founder, Future Solar



From Modules to Materials: Building a Fully Integrated Solar Ecosystem

KEY HIGHLIGHTS:

- Early mover in high-efficiency TOPCon glass-to-glass modules with a technology-first approach.
- 5 GW AI-enabled module facility, expanding into full backward integration (cells to polysilicon).
- Backed by tier-one sourcing, expert teams, and a sustainability-led vision building world-class manufacturing in India.

Q How has Future Solar evolved in technology, capacity, and market presence over the years?

Future Solar's vision and mission from day one has been the latest technology-driven model manufacturing company. So company has focused from day one on the latest technology which has been Topcon glass-to-glass modules. Higher efficiency, higher throughput, higher reliability. So it's been two years the company is into the manufacturing business, and from day one, it has focused on Topcon modules, and it's one of the few companies to introduce Topcon high-efficiency modules in this country.

Q Could you share the strategic intent behind this expansion and its significance for India's renewable energy landscape?

So the government's directive and government's intentions are very clear to develop the entire ecosystem from polysilicon to the modules, basically. And as part of that, we started with modules, reached at a scale of 5 gigawatt, which is a very decent scale.

Now, the next plans are further backward integration from modules to cell, then to wafer, then to ingot, and hopefully in coming years to polysilicon. So the company plans to have 5 gigawatt of manufacturing capability across the entire value chain.

Our 2 gigawatt cell plant construction has already started and is expected to be commissioned in 2026. Another 3 gigawatt cell plant construction will be starting soon. So 5 gigawatt of Topcon cell, G12R cell manufacturing will be operational by early 2027. Once that is done, then we will start work on wafer and ingot. The whole idea is to reduce dependency on other countries and have a self-reliant ecosystem.

Q How is Future Solar integrating technology to enhance precision, efficiency, and long-

So the company has built a world-class state-of-the-art plant at Karjan Vadodara. The plant has a manufacturing capability of 5 gigawatts per year. All the machines, all the utilities have been designed and established in a way that it has turned out to be one of the finest facilities in this country. Whatever the raw material that has been used to manufacture the modules are from the tier one suppliers.

The team that is monitoring the manufacturing process is highly experienced professionals who have been doing this for 20 to 25 years of their professional career. The machines that are making the modules are the finest state-of-the-art facilities. The technical, highly experienced skilled people and the raw material that is being used are from tier one suppliers. The ultimate finished product is always the tier one modules, basically.

Q How does Future Solar ensure consistency, compliance, and customer confidence as it continues to grow?

The organization is very clear to deliver world-class products locally manufactured.

For that, we have built a fantastic state-of-the-art, fully automated, AI-enabled 5 gigawatt manufacturing facility at Vadodara Karjan. To make sure the product is of the finest quality, we source our raw materials from tier one vendors.

To ensure that the entire manufacturing process is carried out very well, we have highly skilled technical professionals at the plant who make sure that each and every module manufactured at Future Solar comes with the best quality, high efficiency, and high throughput.

Q What key initiatives or practices has Future Solar implemented to minimize its environmental footprint?

Future Solar's creation is done to reduce the carbon footprint, basically, to contribute towards a sustainable tomorrow. The idea is doing this at gigawatt scale in a short span and going backward integrated. We are putting all efforts that contribute towards a sustainable tomorrow.

Q How does Future Solar differentiate itself through technology and client partnerships?

The company's main focus has been on research and development to deliver the latest technology and latest products to its customers.

That's why we started with Topcon and are focusing only on Topcon glass-to-glass modules. Customer is the key for any business. We are glad to have customers who are solar installers, EPC players, or IPP players who are aware about sustainability and the greener tomorrow.

We want maximum people to visit the plant, understand the facility, understand the raw materials being utilized, understand the process, understand the quality parameters, and meet and interact with our experienced technical professionals.

That has been the core idea—to spread awareness and deliver the latest technology products to maximum people in the country.

Q Looking ahead, what is the long-term vision for Future Solar?

The company is already into module manufacturing, and cell manufacturing is under construction. After that, we will go for wafer and ingot. So 5 gigawatt of entire value chain—from module to ingot—is what we are trying to achieve in the next 2-3 years.

Simultaneously, we would also like to contribute on the BESS, battery energy storage system front.

India has set an ambitious target of 1,800 gigawatt of non-fossil fuel energy by 2047. Future Solar plans to contribute as much as possible in the next 20 years by building the entire value chain from ingot to modules, and going forward into battery energy storage systems and other renewable energy verticals.

Looking forward to your visit at the plant. Thank you.



Manufacturing for Scale, Reliability, and the Next Phase of India's Solar Growth

Solar power in India has moved decisively from the margins to the mainstream of the country's energy planning. With capacity targets rising and decarbonisation timelines tightening, the discussion is no longer about whether solar will scale, but about how reliably it will perform once it does. For assets expected to operate for 25 years or more, the responsibility placed on manufacturing has increased, quietly but significantly.

For developers, IPPs, and lenders, the cost of underperformance compounds over time. Degradation behaviour, thermal response, and batch-level consistency shape generation forecasts and cash flows long after commissioning. This is why procurement decisions, particularly for utility-scale and institutional portfolios, are slowly shifting away from headline pricing towards performance-led evaluation. It places sharper focus on how modules are made, not just on what is printed on a datasheet.



This shift calls for a different execution philosophy. Capacity additions alone offer limited comfort if processes cannot hold steady at scale. What increasingly matters is process control, how automation is deployed, how quality data is acted upon, and how manufacturing systems adapt to changing cell technologies without introducing variability. Backward integration is also being reassessed, less as a cost lever and more as a way to improve supply assurance.

Within this broader context, Future Solar represents one execution-led manufacturing approach. Its module capacity has been built through incremental expansion, with attention paid to stabilising processes as scale increases. As of 2025, the company operates a 5 GW ALMM-listed module manufacturing facility, supported by automated production lines and in-line quality checks.



Technology choices are guided by operating realities rather than short-term optics. The company manufactures TOPCon glass-to-glass modules in the G12R category, with output ratings ranging from 620 Wp to 635 Wp. These modules are selected for efficiency characteristics, degradation behaviour, and thermal performance under Indian conditions where environmental stress can materially affect long-term generation.

Execution discipline also shapes the company's integration plans. A solar cell manufacturing line is under development at the same location, starting with 2 GW and planned for phased expansion. While this facility is still in progress, the intent is to allow closer alignment between cell characteristics and module assembly as volumes grow.

Quality, in this context, is treated as a continuous outcome rather than an end-stage inspection. Manufacturing controls, testing protocols, and process checks run across production. Certifications serve as reference points, helping align products with technical and compliance expectations relevant to large developers, PSUs, and financing institutions.

As India enters the next phase of solar expansion, manufacturers that prioritise disciplined execution, measured scaling, and long-term performance are likely to shape outcomes as much as project design itself. By combining manufacturing scale with process-led decision-making, Future Solar positions itself within this evolving framework.

For developers and partners assessing manufacturing depth beyond specifications, this approach is best understood firsthand. Stakeholders are invited to visit the Vadodara manufacturing facility to see how execution discipline, automation, and process control are being applied in practice.



BESS Storage Projects Awarded

Advait Energy Transitions, Equentia Natural Resources DMCC, and Sun Drop Energia Win GUVNL's 335 MW/670 MWh BESS Auction in Gujarat

Gujarat Urja Vikas Nigam Limited (GUVNL) awarded its 335 MW / 670 MWh Phase-VIII standalone BESS auction. **Advait Energy Transitions** emerged as the L1 bidder, securing 150 MW at ₹2.10 lakh/MW-month. **Equentia Natural Resources** and **Sun Drops Energia** followed, winning 65 MW and 120 MW respectively at tariffs up to ₹2.12 lakh.

This trend mirrors recent BESS awards seen in the industry:

- **SECI Tranche-XXI:** Awarded 1,200 MW solar with 3,600 MWh storage at ₹3.12–3.13/kWh.
- **NVVN (Kerala):** Awarded 500 MWh to Shreyas Sortex at ₹1.81 lakh/MW-month.
- **TNGECL (Tamil Nadu):** Concluded a 375 MW / 1,500 MWh auction with a discovered tariff of ₹3.15 lakh/MW-month.

These projects, typically featuring 12–15-year agreements and dual charge-discharge cycles, underscore the shift toward "on-demand" grid assets to support peak demand and renewable integration.

GUVNL 335 MW WITH 670 MWH BESS PHASE-VLLL AUCTION RESULTS

Bidder Name	Capacity (MW)	Tariff (₹/Lakh/MW/Month)
Advait Energy Transitions	150	2.10000
Equentia Natural Resources DMCC	65	2.11999
Sun Drop Energia	120	2.12000

SOLARQUARTER RESEARCH

SECI Awards 1.2 GW/4.8 GWh FDRE-VII Peak Power Tender To Serentica Renewables, Adyant Enerso, AMPIN Energy, And ACME Solar

SECI 1200 MW WITH 4800 MWH FDRE-VLL AUCTION RESULTS

Bidder Name	Capacity (MW)	Tariff (₹/kWh)
Adyant Enerso	100	6.27
Serentica Renewables	600	6.28
AMPIN Energy Utility Nine	199	6.28
ACME Solar Holdings	301	6.28

SOLARQUARTER RESEARCH

In a significant move for India's clean energy sector, the Solar Energy Corporation of India (SECI) recently concluded its **1.2 GW FDRE-VII Peak Power Tender**. Major winners included **Serentica Renewables (600 MW)**, **ACME Solar (301 MW)**, **AMPIN Energy (199 MW)**, and **Adyant Enerso (100 MW)**, with tariffs discovered between **₹6.27 and ₹6.28/kWh**.

This follows recent momentum shown in the provided reports, such as SECI Tranche-XXI, which awarded 1.2 GW solar with 3.6 GWh storage at tariffs of ₹3.12–3.15/kWh. Additionally, state-level initiatives like NVVN Kerala's 500 MWh BESS and TNGECL's 1,500 MWh BESS highlight the growing reliance on standalone and integrated battery storage to ensure grid stability and manage peak demand sustainably across India.

Kerala, Tamil Nadu BESS Projects Hit ₹1.81–₹3.15 Lakh Tariffs

India's energy storage landscape reached a turning point in early 2026 as Kerala and Tamil Nadu discovered groundbreaking tariffs for standalone Battery Energy Storage Systems (BESS). In Kerala, NVVN awarded a 500 MWh project at a record-low ₹1.81 lakh/MW-month to Shreyas Sortex Industries, despite global supply chain volatility.

Tamil Nadu's TNGECL auction also set a milestone, discovering a tariff of ₹3.15 lakh/MW-month. This higher rate reflects the more rigorous 1.5-cycle-per-day requirement—a first for Indian tenders. These results, alongside SECI's competitive solar-plus-storage bids (~₹3.12/kWh), signal that utility-scale storage is becoming the backbone of India's grid stability.



HESCOM Auction Awards 423.7 MW For Decentralized Solar Projects In Karnataka

Karnataka continues its renewable leadership as Hubballi Electricity Supply Company (HESCOM) awarded 423.7 MW for decentralized solar projects. Thirty developers, including Sri Srinivasa Constructions and Solar91 Cleantech, secured 80 projects with competitive tariffs ranging from ₹2.70 to ₹2.99/kWh. These RESCO-model projects aim to solarize feeders, reducing technical losses while improving local supply quality.

This decentralized push complements broader grid-scale advancements. Recent auctions in Kerala and Tamil Nadu established new standalone BESS benchmarks at ₹1.81 lakh and ₹3.15 lakh/MW-month, respectively. Additionally, SECI's Tranche-XXI awarded 1.2 GW of solar with 3.6 GWh of storage at approximately ₹3.13/kWh, reinforcing the shift toward reliable, round-the-clock clean energy.





SECI Awards 1.2 GW ISTS-Connected Solar-Plus-Storage Projects To Engie, NLC, RPIL, Oriana At ₹3.12–₹3.13/kWh

India's renewable energy landscape is advancing rapidly with SECI's Tranche-XXI auction, awarding 1.2 GW of solar paired with 3.6 GWh of BESS. The tender discovered competitive tariffs of ₹3.12–₹3.13/kWh, with NLC India Renewables and ENGIE Energy India securing 600 MW and 200 MW, respectively.

Simultaneously, standalone BESS benchmarks were set in Kerala and Tamil Nadu. NVVN (Kerala) awarded a 500 MWh project to Shreyas Sortex at a record ₹1.81 lakh/MW-month. TNGECL's auction for a 1,500 MWh system concluded at ₹3.15 lakh/MW-month, awarded to Eagle Construction. These projects highlight the increasing viability of utility-scale storage for grid reliability.

“INDIA'S SOLAR-PLUS-STORAGE MOMENTUM IS NO LONGER EXPERIMENTAL—IT IS COMMERCIALY COMPETITIVE, GRID-RELIABLE, AND SCALING AT RECORD SPEED”

SECI 1200 MW WITH 600 MW/3600 MWH ESS (TRANCHE XXL) AUCTION RESULTS

Bidder Name	Capacity (MW)	Tariff (₹/kWh)
Engie Energy India	200	3.12
NLC India Renewables	600	3.12
RPIL Power Three	300	3.12
Oriana Power	100	3.13

SOLARQUARTER RESEARCH



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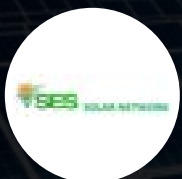
Distributor of the Year - Rising Star

Celestial Renewexperts LLP



Solar EPC Company of the Year - Utility

Infisol Energy Limited



Solar EPC Company of the Year - Commercial

SES SOLAR NETWORK



Solar EPC Company of the Year - Industrial

Alligator Energies Private Limited



Solar EPC Company of the Year - Solar Parks & KUSUM Projects

SunInfra Energies Ltd



Solar System Integrator of the Year - C&I (Platinum)

Reinitiatives Energy & Infra Pvt. Ltd.



Solar System Integrator of the Year - C&I (Diamond)

SunMitra Solar Private Limited



Best Project Excellence for Commercial Solar with Best ROI

SWAYAMURJA RENEWABLE ENERGY PVT LTD



Best Project Excellence for Large-Scale Hybrid & Grid-Integrated Renewable Project

Yanara



Best Project Excellence for Energy Storage & Smart Energy Systems

Kalpa Power Private Limited



Emerging Leader in Solar Electrical Infrastructure Innovation

DCLINK TECHNOLOGIES PRIVATE LIMITED



Emerging Leader in Renewable Energy Solutions

Nutans Renewable Energies Pvt. Ltd.



Company of the Year:
Sustainable EPC

Oorjan Cleantech Pvt Ltd



Excellence in Solar Training
& Skill Development

LGPS HYBRID ENERGY PVT LTD



Best Quality & Engineering
Team of the Year

Novasys Greenergy Ltd.



Best Engineering Team of
the Year

**Reinitiatives Energy & Infra
Pvt. Ltd.**



Best Marketing Team of
the Year

Waaree Energies Ltd.



Legacy of Sales Excellence Award

Ashok Kumar Singh

President - Solar Business
Novasys Greenergy Ltd.

Business Development Leader of the Year

Mushtaq Patel

Business Development Head
Solaire - A Lagnuvo Initiative

Leader in Renewable Energy and Energy
Transition

Surya Sekhar Panda

Senior Manager - Sustainability and
Environment
Mahindra & Mahindra Limited

Renewable Energy Entrepreneur of the Year

Ajay Gidwani

Director
Fairdeal Power and Electric Pvt. Ltd.

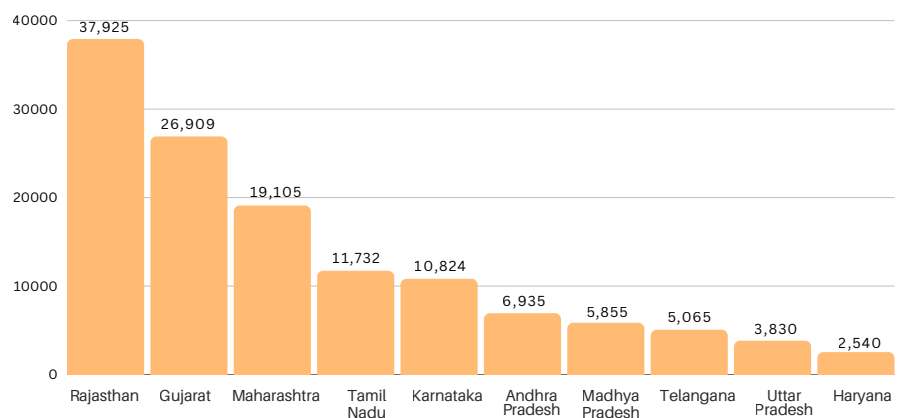
FirstVIEW
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PRESENTS

Congratulations to all the winners!!!



Solar Installations by State

TOTAL SOLAR PV INSTALLATIONS AS OF JANUARY 2026 (MW)



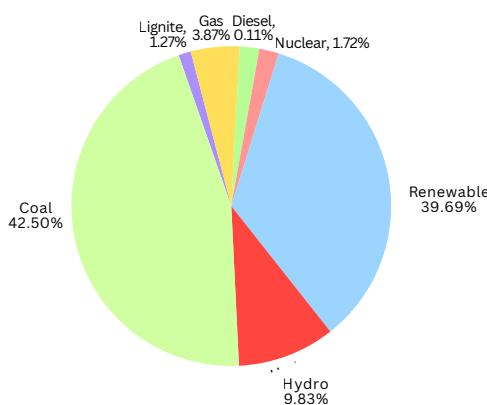
SOURCE: MNRE

SOLARQUARTER RESEARCH

India achieved a remarkable milestone by installing an unprecedented 37,945.22 MW of Solar PV capacity in the calendar year 2025. By the end of January 2026, the country's total Solar PV installations surpassed 140 GW. During this period, rooftop Solar PV installations reached approximately 24.30 GW. Rajasthan led the way, with 37,925 MW installed, accounting for 26.97% of the nation's total Solar PV capacity. The county also added around 4.8 GW in the first month of the calendar year 2026. Rajasthan, Gujarat, Maharashtra, Tamil Nadu, and Karnataka together contributed over 75.74% of the total installed Solar PV capacities across the country. While Rajasthan and Gujarat maintained their leading positions, Maharashtra stepped up two spots to its position, pushing Tamil Nadu and Karnataka down to fourth and fifth place, respectively, compared to the installed solar PV capacity by January 2025. The overall Solar PV installations saw a growth of over 40.1% compared to the 100 GW recorded by the end of January 2025.

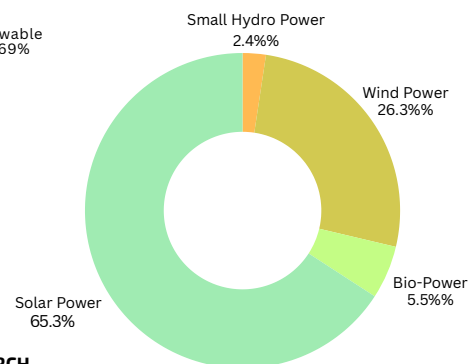
In the pie chart, Renewable capacity additions continue to increase at a rapid pace in India, accounting for approximately 40.7% of India's total power capacity at the end of January 2026. India's total installed power capacity stood at over 520.5 GW at the end of January 2026 from all the sources, with renewables accounting for 212 GW, making up 28.34%, compared to cumulative renewable energy installations of 165 GW at the end of January 2025, which represented a growth of over 28.34% year-over-year. Solar power accounted for approximately 140.6 GW of installations, which represents 27% of the total installed power capacity. Among the renewable, Wind and Solar constitute over 92.1% of the total renewable (excluding large hydro), Wind Power installed capacity at the end of January 2026 was over 54.65 GW, which represents 10.5% of the total power capacity installed.

INDIA POWER MIX

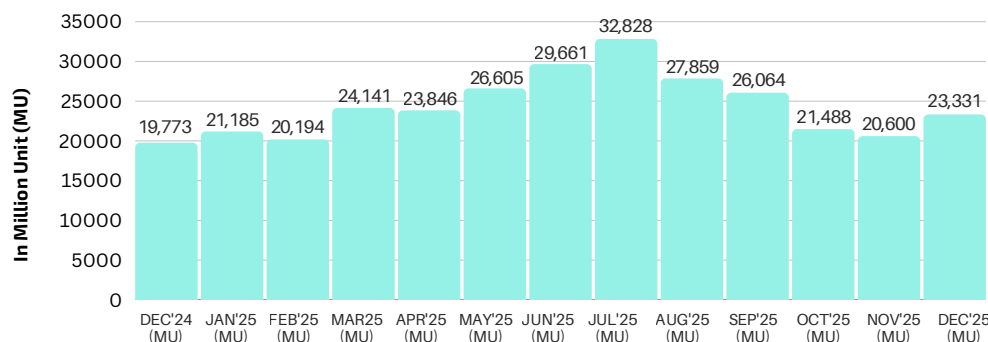


SOURCE: CEA JAN 2026 | SOLARQUARTER RESEARCH

INDIA RENEWABLE MIX



Monthly RE Generation in India

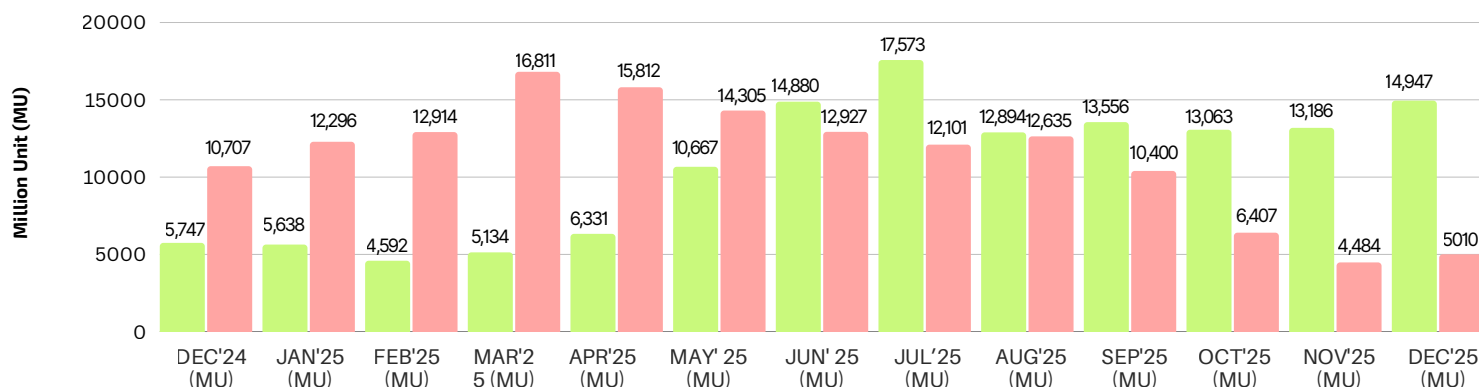


SOURCE: CEA

SOLARQUARTER RESEARCH

Total renewable energy generation in December 2025 reached 23331.39 million units, which is an increase of RE generation by around 18% year-over-year from December 2024, when the RE generations were 21,184.71 million units. Solar Power generation has also increased by around 39.60% year-over-year from December 2024 (10,707.21 million units) to December 2025 (14,946.83 million units). Wind Power generation has decreased by almost 12.85% in the same period and reached 5009.06 million units in December 2025.

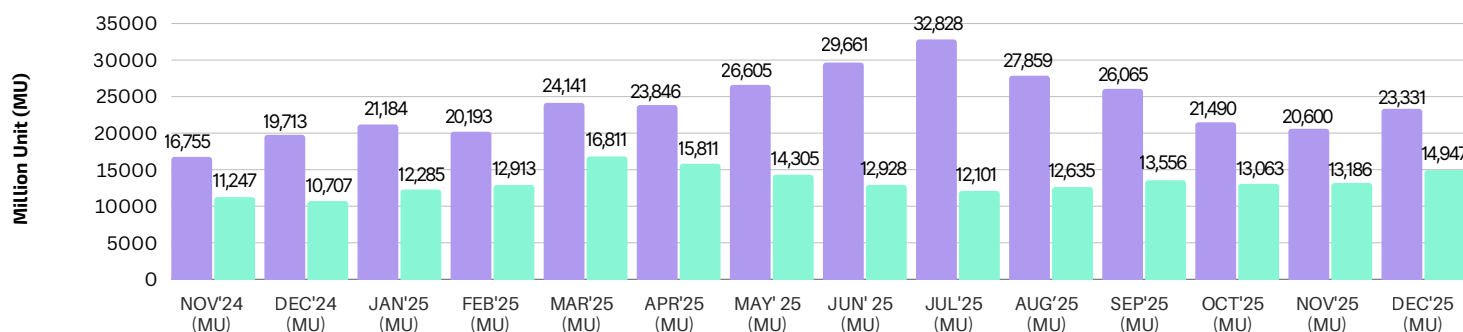
Solar Vs Wind Generation In India In 2024-25 (WIND SOLAR)



SOURCE: CEA

SOLARQUARTER RESEARCH

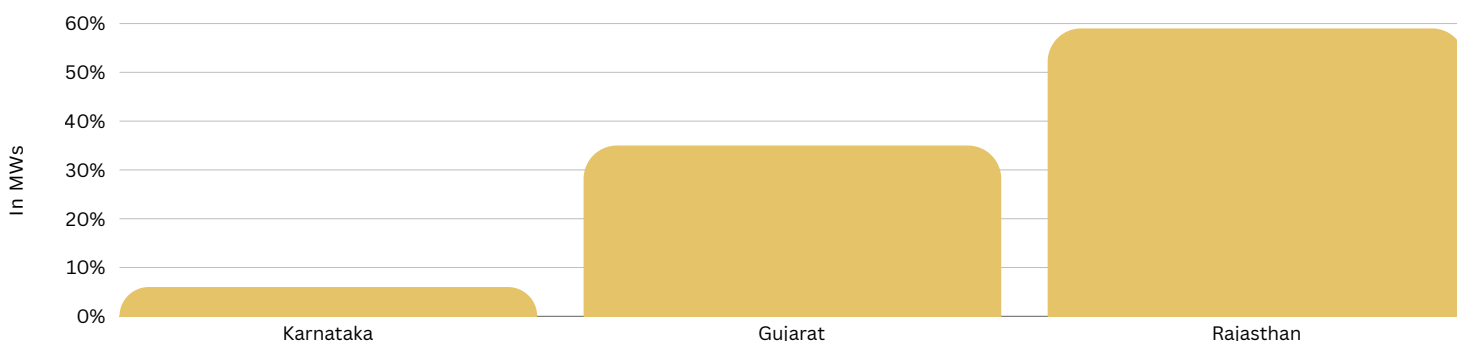
Renewable Energy Vs Solar Generation (RENEWABLE ENERGY SOLAR)



SOURCE: CEA

SOLARQUARTER RESEARCH

Hybrid Projects (Solar Component)



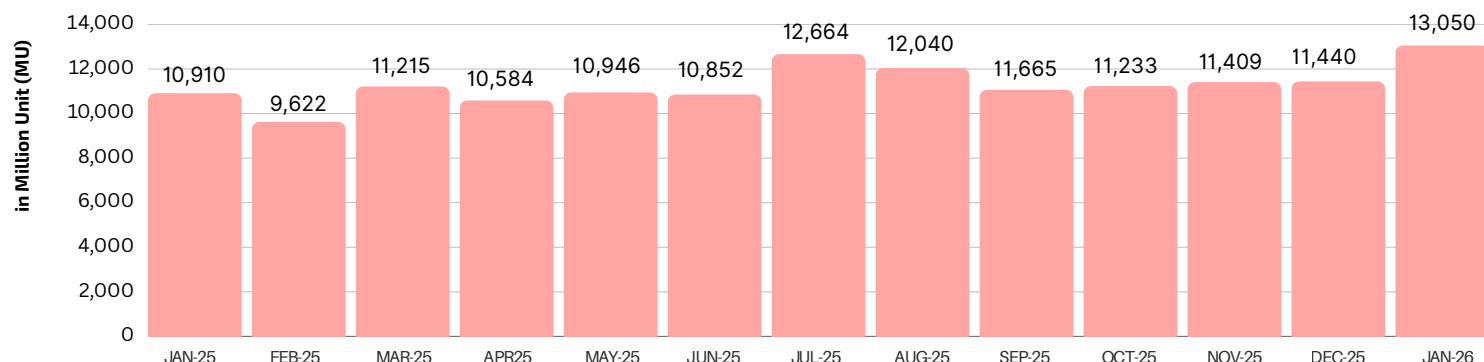
SOURCE: MNRE (JANUARY 2026)

SOLARQUARTER RESEARCH

As of January 2025, India's installed hybrid projects capacity reached 3,364.63 MW, contributing around 2.39% to the country's total solar PV capacity. This is part of the overall renewable energy capacity of 212 GW, excluding large hydro. Hybrid projects, which combine solar and wind power, are currently limited to just three states: Rajasthan, Gujarat, and Karnataka. Among these, Rajasthan leads with the highest installed capacity of 1,980 MW. This is mainly because the state has strong potential for both solar and wind energy. Rajasthan receives high solar irradiation and also experiences strong wind speeds, making it ideal for hybrid energy generation. The installed capacity of hybrid projects has shown a year-on-year growth of about 18.03% compared to January 2025, when it stood at 2850.7 MW. This steady growth highlights the increasing focus on hybrid projects as a solution to improve grid stability and renewable energy utilization.

Electricity Market

IEX ELECTRICITY MONTHLY TRADED VOLUME IN 2025-2026

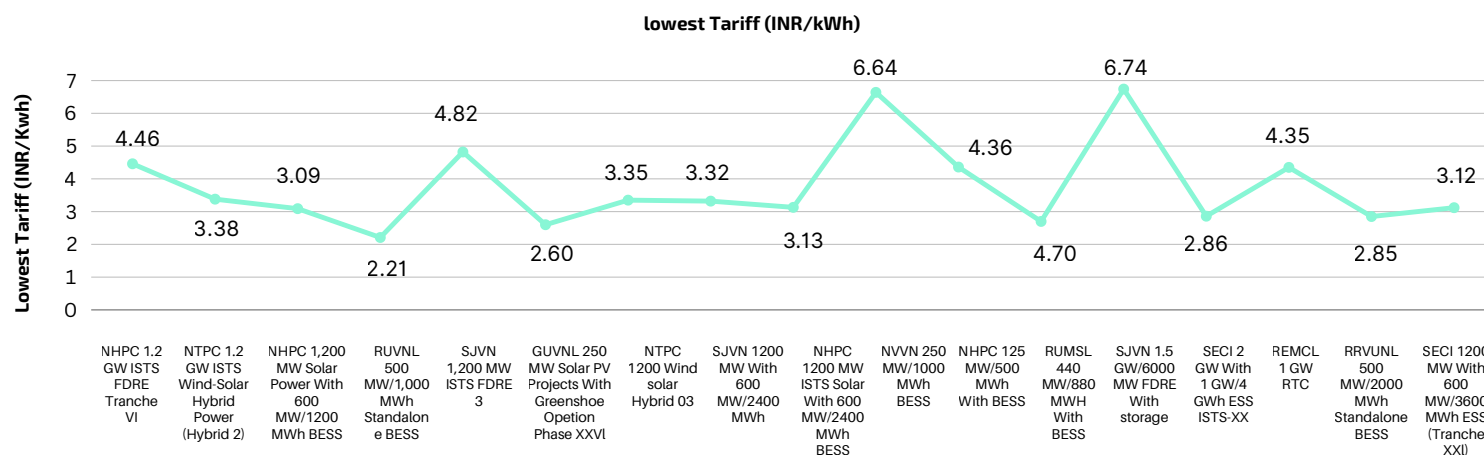


SOURCE: IEX

SOLARQUARTER RESEARCH

In January 2025, the Indian Energy Exchange (IEX) reached a total volume of 13,050 million units (MU), a 19.6% year-over-year increase. According to government data released in January 2026, the country's energy consumption reached 142.74 billion units (BUs), marking a 3.8% year-on-year increase. Higher generation from hydro, wind, solar, and sustained coal-based supply improved liquidity on power exchanges, resulting in a sharp decline in prices. The Day Ahead Market clearing price fell 12.9% YoY to ₹3.86 per unit, while the Real Time Market price dropped 15.9% to ₹3.72 per unit, benefiting discoms and C&I consumers.

Lowest Tariff (₹/kWh) in 2025 - 2026



SOURCE: SOLARQUARTER RESEARCH

The rollout of the Approved List of Models and Manufacturers (ALMM) List-I for solar PV modules, along with the forthcoming ALMM List-II for PV cells set to take effect in June 2026, has introduced new compliance challenges for developers participating in India's solar auctions. These regulatory changes, coupled with ongoing global supply chain disruptions caused by geopolitical tensions—such as the Russia-Ukraine conflict, U.S. trade tariffs, and volatile currency exchange rates—have contributed to noticeable fluctuations in solar tariffs.

While the government has extended project commissioning timelines to provide relief, developers continue to face rising cost pressures. Initiatives like the GST relief on solar PV modules and components, effective from September 2025, and India achieving over 122 GW of solar PV module manufacturing capacity, offer some support. At the same time, U.S. tariff hikes on solar imports have tightened global module supply, pushing prices higher and indirectly affecting the Indian market.

Amid these challenges, the growing availability of domestically manufactured solar PV inverters provides a significant boost, instilling confidence among developers to bid more competitively. As a result, solar tariffs in India through 2024 have remained volatile, influenced by material costs, project scale, grid connectivity, and now, increased reliance on domestic technology.



State Market Leader Award
(Inverter)

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Technology Co. Ltd.**



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Module Manufacturing –
Utility & Commercial Scale

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Emerging Solar Contractor
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**DC Engineering & Consultancy
Services**



Innovation in Project Execution

Motive8 Group



Best Rooftop Solar Installer –
Commercial & Industrial

HCK Solar Energy Limited



Best Rooftop Solar Installer
of the Year

Preeti Engineering



Fast-Growing Solar Contractor
of the Year (PM Surya Ghar
Initiative)

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Congratulations to all the winners!!!



राष्ट्र निर्माण में सूर्य घर मित्रों का सम्मान



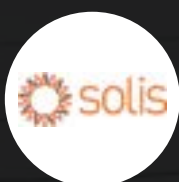
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Mierae Solar Energy Pvt. Ltd.



Excellence in Next Gen
(ENPHASE) Solar Technology
Implementation

Neusol Energy



Excellence in Integrated
Renewable Project
Development

Ecoren Energy India Pvt. Ltd.



Fast-Growing Solar Company of the Year

Aadhi Vishwa Energy LLP



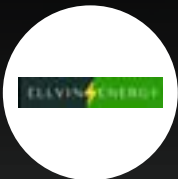
EPC Leadership Award – Rural Electrification

SM Renergy Private Limited



Solar EPC Company of the Year - PM SURYA GHAR Projects

SRI BALAJI SOLAR ENERGIES



Solar EPC Company of the Year - Residential

Ellvin Energy Private Limited



Best Solar Contractor of the Year

Suhana Natural Power Systems



Top Solar Distributor of the Year

Anuki Technologies Private Limited



Emerging EPC Company of the Year – C&I

Prasha Energy Consulting



Emerging Solar System Integrator of the Year

Environ Energy Tech



Emerging Leader in Renewable Energy Solutions

Alpha Solar Energies



Emerging Solar Contractor of the Year

Attada Power and Energy Services Private Limited



Best Quality & Engineering Team of the Year

SunWorks Energy Pvt. Ltd.



Outstanding Leadership in Energy Development

Varun Pandya

**AGM - Engineering & SCM
TATA Projects**

Visionary Leader of the Year

Sreedhara Babu Korukonda

**Managing Director
BE-CIS**

Entrepreneur of the Year

Sandeep Reddy Chillakuri

**Co-Founder and Director
Sunworks Energy Private Limited**



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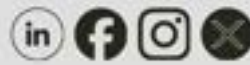
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