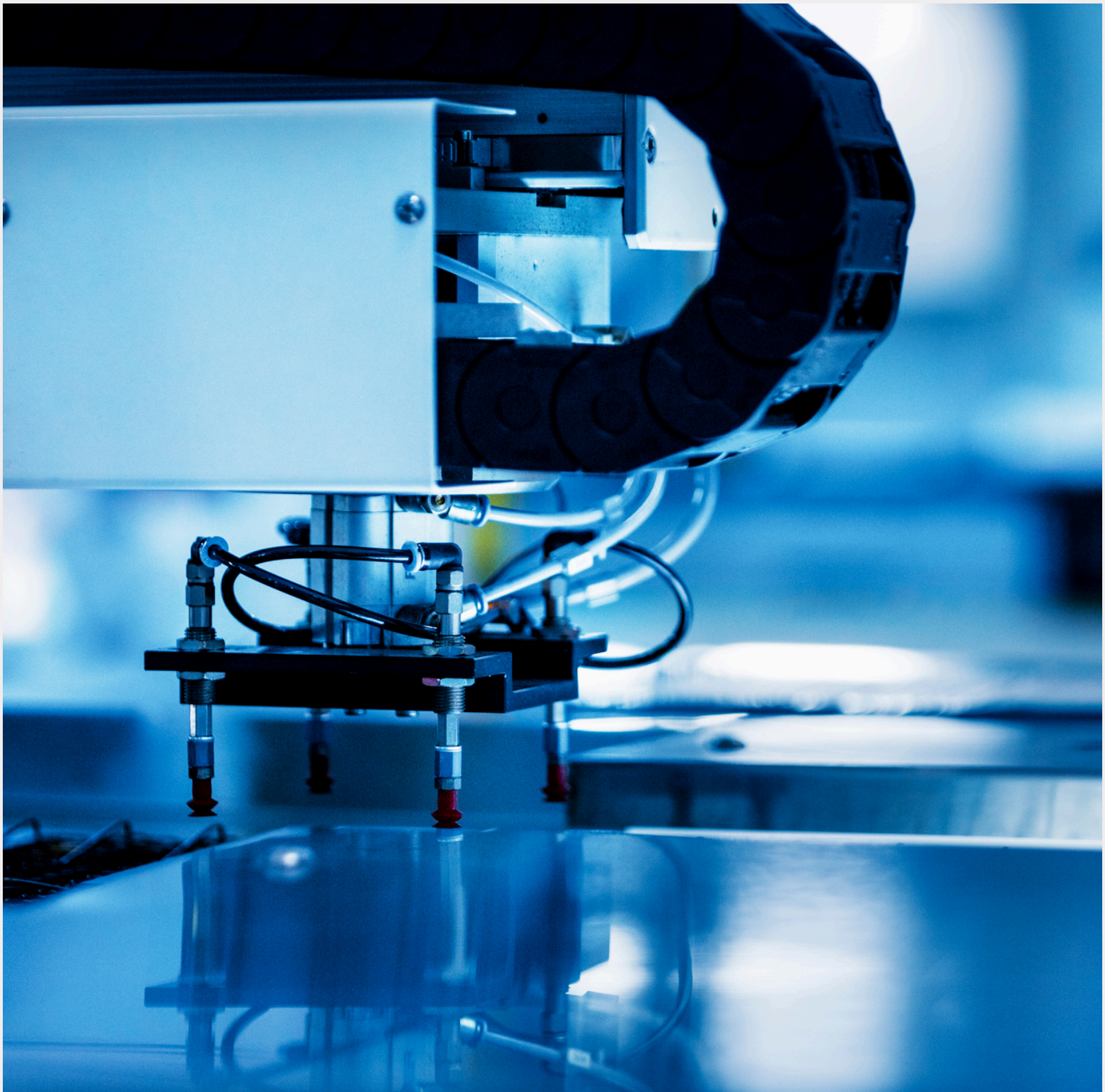


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EARTH C NNECT

The Newsletter brings out News , Views , Opinions, Trends , Policy Changes ,
Technology Advancements and other Developments in the Solar Industry





2nd Edition
Bharat Solar expo 2025

17, 18 & 19, January 2025 | Jaipur
Exhibition and Convention Centre
(JECC), Jaipur, Rajasthan



NEW >>>> APPOINTMENTS

INSIDE

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RSA Delegates Extend a Warm Welcome to RERC's Newly Appointed Chairman, Ushering in a New Era of Collaboration

The **Rajasthan Solar Association (RSA)** team recently visited **Rajasthan Renewable Energy Corporation Ltd. (RREC)** to welcome its new chairman. During the meeting, Mr. Nitin Agarwal (CEO, RSA), **Mr. Manoj Kumar Gupta (Sr. Vice President, RSA)**, **Prateek Agarwal (Vice President , RSA)** and other RSA members had a constructive discussion with the chairman regarding key amendments, including **Location-Specific Bids, CUF Compliance, Change in Law, PPA Signing, Tariff Adoption, Financial Security, PBG Utilization, Technical Standards, and Modification Approvals.**

The discussion focused on the impact of these changes on Rajasthan's renewable energy sector and strategies for effective implementation. These updates aim to enhance financial security and accelerate renewable energy projects.



RISING PPA TARIFFS PUSH SOLAR OPEN ACCESS COSTS HIGHER ACROSS 12 STATES

Jaipur, 2025—The solar open access market in India has been grappling with rising landed costs, driven largely by increasing power purchase agreement (PPA) tariffs, as revealed in Mercom's Q3 2024 India Solar Open Access Market Report. The report highlights that 12 of the 15 states analyzed experienced higher costs for third-party solar open access projects catering to high-tension (HT) industrial consumers.

In Q3 2024, the country added 1.1 GW of solar open access capacity, marking a 36% quarter-over-quarter (QoQ) decline and a 6.5% year-over-year (YoY) drop. Factors such as increased surcharges and challenges in grid connectivity contributed to the slowed installation rate.

Cost Analysis

Landed costs, comprising wheeling charges, cross-subsidy surcharges, additional surcharges, and PPA tariffs, ranged between ₹4.3 (\$0.087)/kWh in Maharashtra (the highest). Tamil Nadu and Telangana followed Maharashtra in terms of high costs, while Chhattisgarh, Odisha, and Uttar Pradesh offered the most competitive rates.

States like Punjab, Karnataka, Andhra Pradesh, Gujarat, and Uttarakhand also saw a QoQ increase in landed costs, driven entirely by rising PPA tariffs. For instance, Telangana's 5.3% increase in PPA tariffs and newly imposed surcharges led to significant cost hikes.

Challenges and Opportunities

Open access charges, including cross-subsidy surcharges, accounted for 27.4% of the landed costs in Chhattisgarh. However, these charges often erode the cost advantages of solar energy compared to traditional distribution company (DISCOM) tariffs. Captive and group captive models remain more cost-effective, as they avoid several of these charges.

The Ministry of New and Renewable Energy (MNRE) offered a reprieve by exempting projects that applied before October 1, 2022, from sourcing modules listed under the Approved List of Models and Manufacturers (ALMM). This exemption is expected to lower landed costs in upcoming quarters, encouraging fresh installations.

Way Forward

Industry experts have called for a reduction in open access charges, particularly surcharges, to enhance the competitiveness of third-party open access models. State commissions in Tamil Nadu, Telangana, and Uttarakhand have recently revised additional surcharges, signaling a move in the right direction.

Market Insights

As of September 2024, Uttar Pradesh led in cumulative solar open access capacity, contributing over 20% of the national total. Together, the 12 states that witnessed rising landed costs accounted for 52% of the country's installed capacity.

The Q3 2024 India Solar Open Access Market Report offers a comprehensive 59-page analysis, covering state-wise charges, policy updates, PPA trends, and market developments. With mounting landed costs, the industry now faces the dual challenge of balancing affordability and sustaining growth in India's solar open access segment.

INDIA'S ENERGY STORAGE BOOM: 2025 SET TO REDEFINE RENEWABLE INTEGRATION

India's energy storage sector is witnessing an unprecedented surge, with the total Energy Storage System (ESS) pipeline reaching 118 GWh in January 2025. This rapid expansion is fueled by the addition of three standalone Battery Energy Storage System (BESS) tenders and a Solar + BESS tender.

Despite challenges such as the rejection of SECI's ESS tariff adoption petition and a lukewarm response to SECI's Firm and Dispatch able Renewable Energy (FDRE) tender, the industry is showing signs of resilience and innovation. Notably, NHPC's Solar + BESS (2-hour duration) achieved a record-low tariff of INR 3.09/kWh, while RVUNL's standalone BESS tender, with 30% viability gap funding (VGF), settled at INR 2.21 lakh/MW/month.

A significant breakthrough in January was the innovation in SECI's standalone BESS tender for Kerala, which introduced:

- ✓ Flexibility in daily cycle requirements
- ✓ Incentives for lower degradation
- ✓ Early commissioning benefits

The Road Ahead: A Record-Breaking Year for India's ESS Market

As we begin 2025, India has 30 GWh of ESS capacity under execution, with 28 GWh of pumped storage projects (PSP) and 2 GWh of

BESS. Of this, 2.3 GWh is expected to come online this year. The pipeline includes:

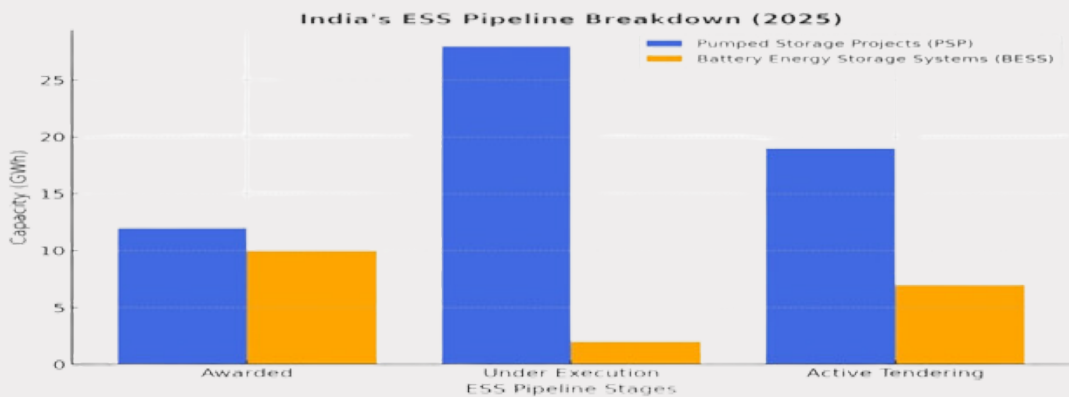
- ✓ 23 GWh awarded (12 GWh PSP, 10 GWh BESS)
- ✓ 26 GWh in active tendering (19 GWh PSP, 7 GWh BESS)
- ✓ 14 GW of renewables coupled with ESS

However, a major concern remains—the rising number of ESS projects awaiting power purchase agreements (PPAs). Currently, 8 GW of renewable energy with 3.4 GWh of BESS is at risk due to delays in securing buyers.

Market Outlook: India's Energy Storage Revolution Accelerates

With falling metal prices, technological advancements, and intensified competition among Chinese manufacturers, the cost of energy storage is expected to decline further in 2025. Meanwhile, states like Kerala, Maharashtra, Rajasthan, and Gujarat have initiated tenders under the VGF-backed standalone BESS scheme, with more action anticipated in the coming months.

As India pushes toward grid stability and round-the-clock renewable power, 2025 is set to be a watershed year for the energy storage sector. The key to unlocking its full potential lies in faster PPA signings, stronger policy support, and seamless collaboration between stakeholders.



RSA KNOWLEDGE ADDA

TRANSFORMERS IN SOLAR POWER PLANTS: THE BACKBONE OF ENERGY TRANSMISSION

Transformers are indispensable components in solar power plants, acting as critical intermediaries for energy transmission between solar panels, inverters, and the grid. These devices convert the variable voltage generated by photovoltaic (PV) systems into a standardized form suitable for grid integration or local consumption. Their design, efficiency, and reliability directly impact the overall performance and cost-effectiveness of solar installations.

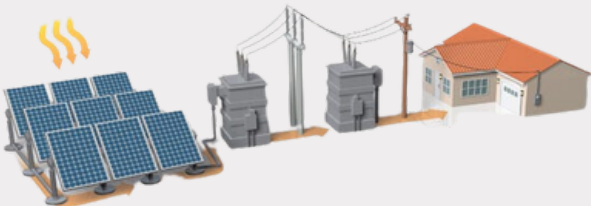
KEY ROLES OF TRANSFORMERS IN SOLAR POWER PLANTS:

- 1. Voltage Conversion:** Solar inverters produce electricity at medium voltages, typically 270–690V. Transformers step up this voltage to higher levels (11 kV, 33 kV, or more) for efficient transmission to the grid.
- 2. Isolation:** They ensure electrical isolation between the generation system and the grid, enhancing safety and protecting sensitive equipment from faults or surges.
- 3. Grid Compliance:** Transformers help meet grid codes and regulations by managing voltage harmonics and maintaining power quality.

Types of Transformers in Solar Power Applications

- 1. Step-Up Transformers:** Installed between the inverter and the grid to boost the voltage for long-distance transmission.
- 2. Distribution Transformers:** Manage power flow to end-users in localized systems, often used in microgrids or standalone setups.
- 3. Auto-Transformers:** Provide compact solutions for voltage conversion within specific ranges.

Technical Specifications of Solar Transformers:

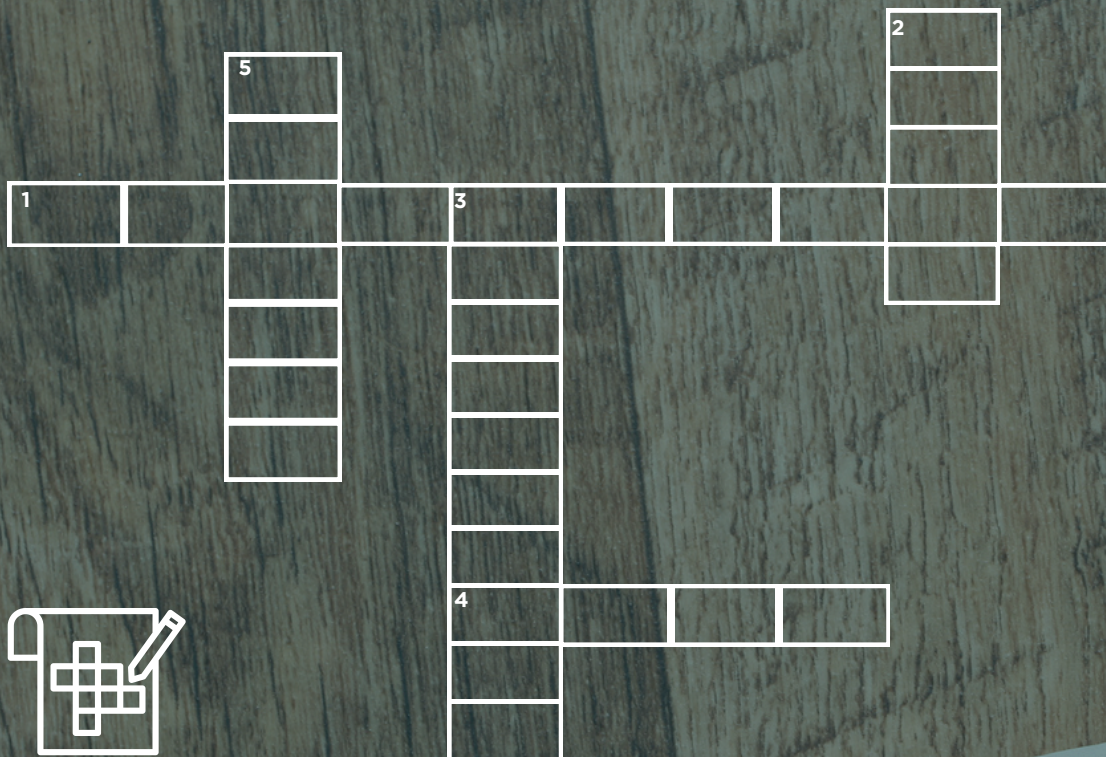


Parameter	Range/Details
Power Rating	0.5 MVA 100 MVA
Voltage Levels	Primary: 11 kV, 33 kV; Secondary: 270-690 V
Frequency	50 Hz or 60 Hz
Cooling System	ONAN (Oil Natural Air Efficiency Natural) , ONAF (Oil Natural Air Forced)
Efficiency	≥98%
Insulation Class	Class F or H
Winding Material	Copper or Aluminum
Losses	Designed for low iron and copper losses
Standards Compliance	IEC 60076, IEEE C57, BIS Standards

RENEWABLE ENERGY SOURCES CROSSWORD- DID YOU KNOW THE ELECTRICITY YOU USE IN YOUR HOME IS GENERATED USING A VARIETY OF FUEL SOURCES? SOME ENERGY SOURCES ARE NON-RENEWABLE (LIKE COAL AND NATURAL GAS) AND SOME ARE RENEWABLE (LIKE SOLAR AND WIND ENERGY). LEARN ABOUT RENEWABLE ENERGY SOURCES AND COMPLETE THE PUZZLE BELOW.



Mind Marathon



1. ACROSS: _____ energy uses heat from the earth. People can use the heat to warm buildings or to generate electricity.
2. DOWN: _____ energy is produced through panels that convert sunlight into electricity.
3. DOWN: _____ is energy produced from moving water. The power plant is typically located on or near a water source.
4. ACROSS: _____ energy uses tall turbines with blades to collect kinetic energy.
5. DOWN: _____ is organic material that comes from plants and animals; it contains stored energy from the sun and when burned, uses chemical energy that is released as heat.

ANSWER KEY: 1. ACROSS: GEOTHERMAL; 2. DOWN: SOLAR; 3. DOWN: WIND; 4. ACROSS: HYDROPOWER; 5. DOWN: BIOMASS.

MODULE PRICING CARTEL BY INDIAN MODULE AND CELL MANUFACTURERS

OBJECTIVE

To analyze and discuss the pricing trends of modules and cells by Indian manufacturers, focusing on their impact on domestic and global markets and identifying actionable solutions to balance affordability and domestic manufacturing growth.

COST CALCULATION TABLE FOR DCR PANEL PRICING

Category	International Price (₹/Wp)	Price after 25%-40% BCD (₹/Wp)	Indian Market Price (₹/Wp)	Price Gap (₹/Wp)
DCR- Mono PERC Cell	3.00	3.75	13.75	10.00

COST CALCULATION TABLE FOR NON-DCR PANEL PRICING

Category	International Price (₹/Wp)	Price after 25%-40% BCD (₹/Wp)	Indian Market Price (₹/Wp)	Price Gap (₹/Wp)
Non-DCR Mono Module	5.00	7.00	14.00	7.00

KEY OBSERVATIONS

- Price Multiplication: DCR cell prices (₹13.75/Wp) are 4.5x higher than the international market (₹3.00/Wp).
- Customs Duty Impact: The 25% Basic Customs Duty (BCD) raises the cost to ₹3.75/Wp, but domestic costs remain unjustifiably high.
- Price Gap: A significant ₹7.00/Wp gap exists between international prices (₹7.00/Wp with BCD) and Indian manufacturer prices (₹14.00/Wp), affecting competitiveness and project feasibility.

IMPACT OF PRICING DYNAMICS

1. PROJECT DELAYS:

- High module costs lead to unviable project economics, resulting in significant delays.
- Developers find it challenging to meet deadlines due to inflated costs.

2. LACK OF FINANCING:

- Banks and financial institutions are reluctant to finance projects with unsustainable cost structures, leading to cash flow issues.

3. DEVELOPER CONCERNS:

- Small-scale developers are disproportionately affected, as increased costs render projects unfeasible.
- Developers increasingly demand pricing transparency and policy intervention.

4. TRANSPARENCY IN PRICING:

- Mandate cost-disclosure mechanisms for Indian manufacturers.
- Regular audits and monitoring to prevent price manipulation.

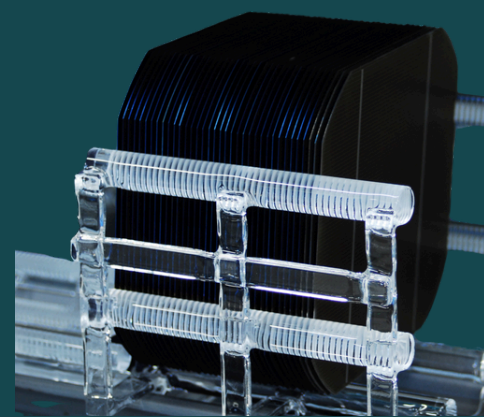
5. FINANCIAL SUPPORT FOR DEVELOPERS:

- Introduce low-interest financing schemes for projects impacted by high module costs.
- Create a government-backed loan guarantee program for delayed projects.



CONCLUSION

A balanced approach involving pricing regulation, international collaboration, and financial support is essential to address the monopolistic trends in the Indian solar module market. Immediate action is critical to prevent delays, ensure project viability, and support the nation's renewable energy goals.



BHARAT SOLAR EXPO 2025: A GRAND SUCCESS IN JAIPUR, PAVING THE WAY FOR INDIA'S SOLAR FUTURE

Jaipur, 2025 – The Bharat Solar Expo 2025, held at Jaipur Exhibition and Convention Centre (JECC) from January 17 to 19, concluded as a historic milestone in India's renewable energy journey. The event witnessed an unprecedented footfall of over 20,000 visitors, including 50+ international delegates and 300+ leading exhibitors, making it one of the most successful solar expos in India.

A POWER-PACKED INAUGURATION BY DIGNITARIES

The grand inauguration was led by Hon'ble Lok Sabha Speaker, Shri Om Birla Ji, alongside Energy Minister Shri Heeralal Nagar, and State Cooperative & Civil Aviation Minister Shri Gautam Dak. Their presence underscored the government's commitment to accelerating India's transition to clean and sustainable energy.

Also gracing the stage were Shri Sunil Bansal, President of Rajasthan Solar Association, and Shri Nitin Agarwal, CEO of Rajasthan Solar Association, who highlighted Rajasthan's leadership in solar power, with over 18 GW of installed capacity and ambitious plans to reach 50 GW by 2030.

KEY HIGHLIGHTS OF THE EXPO

- ✓ ₹20,000+ Crore Business Deals: The expo witnessed record-breaking transactions and investments, solidifying India's position as a global solar powerhouse.
- ✓ 300+ Exhibitors: Showcased cutting-edge solar panels, AI-driven energy solutions, battery storage, and green hydrogen technologies.
- ✓ International Collaboration: Over 50 international delegates participated, fostering global partnerships in renewable energy.
- ✓ Business & Investment Hub: The expo provided a crucial networking platform, resulting in major deals and collaborations for India's solar industry.
- ✓ Policy & Innovation Sessions: Experts discussed PM-KUSUM, rooftop solar, and emerging trends in open-access solar projects.

GRAND CLOSING CEREMONY & HONORING INDUSTRY LEADERS

The event concluded on a high note with Shri K.P. Verma, MD of AVVNL, presenting mementos to all exhibitors, recognizing their invaluable contributions to the industry. His closing remarks emphasized the importance of continued innovation and investment in solar energy for India's energy security.



A BRIGHT FUTURE FOR INDIA'S SOLAR INDUSTRY

The resounding success of Bharat Solar Expo 2025 solidifies Jaipur's position as India's solar capital, driving new opportunities in green energy, investment, and job creation. With Rajasthan leading the nation's solar revolution, the expo has set the stage for a brighter, more sustainable future for India.

RAJASTHAN SOLAR ASSOCIATION DEMANDS SEPARATE RENEWABLE ENERGY DEPARTMENT

Budget Review Meeting Highlights Industry Concerns Over Solar Policies



Jaipur | The Rajasthan Solar Association (RSA) has urged the government to establish a dedicated Renewable Energy Department in the state to accelerate the growth of the solar sector. In the budget review and pre-state budget consultation meeting held on Monday, RSA President Sunil Bansal expressed concerns over the central budget's inadequate allocation for solar infrastructure, stating that the ₹1,500 crore provision for the solar grid is insufficient.

One of the major concerns raised was the Basic Customs Duty (BCD) on solar cells. Contrary to expectations, the government did not reduce the duty but instead shifted it from one section to another, leading to further confusion among industry stakeholders.

Highlighting the need for local manufacturing, Bansal emphasized that Jaipur and its surrounding areas should be developed as a solar manufacturing hub with at least 100 solar component manufacturing units. The government must introduce investor-friendly policies and incentives to attract investments in the sector.

RSA CEO Nitin Agarwal welcomed the increased allocation of ₹20,000 crore under the PM Surya Ghar Yojana, which will facilitate rooftop solar installations for 10 lakh households. However, he reiterated that a separate Renewable Energy Department at the state level is crucial for streamlining policies, promoting domestic manufacturing, and ensuring Rajasthan's leadership in solar energy.

Senior Vice President Manoj Gupta, Vice President Prateek Agarwal, Vice President Ramakant Jangid & RSA Executive Member Vikas Jain, Abhay Mahajan, Arun Mahla, Apoorv Patni, Vibhu Gupta, Vijay Agarwal, Vibhor Kulshreshtha, and Rajneesh Singh actively participated in the discussions, advocating for more robust state policies to strengthen Rajasthan's renewable energy ecosystem.

As Rajasthan continues to be a frontrunner in India's solar revolution, industry experts stress that proactive government intervention and strategic planning are essential to maximize the state's solar potential and drive economic growth through green energy.

प्रदेश में अलग से रिन्यूएबल एनर्जी विभाग की मांग

जयपुर। राजस्थान सोलर एसोसिएशन ने प्रदेश में रिन्यूएबल एनर्जी के लिए अलग से विभाग की मांग की है। सोलर सेल पर बेसिक कस्टम ड्यूटी को लेकर प्रम को दू करने हुए आएसए की ओर से कहा गया है कि बजट में सरकार ने बीसीडी को कम नहीं किया है, बल्कि एक सेक्शन की जगह दूसरे सेक्शन में रखा है।



नवीकरणीय ऊर्जा क्षेत्र को मिला 15,000 करोड़ का बजट, उद्योगों ने किया स्वागत

आम में सौरज्योती तुरा की आयोजना

नवीकरणीय ऊर्जा क्षेत्र को मिला 15,000 करोड़ का बजट, उद्योगों ने किया स्वागत। आम में सौरज्योती तुरा की आयोजना।

जयपुर 04-02-2025

राजस्थान सोलर एसोसिएशन की बजट समीक्षा बैठक सरकार ने सोलर सेल पर बेसिक कस्टम ड्यूटी कम नहीं की, एक सेक्शन हटा दूसरा जोड़ा

जयपुर। सोलर एसोसिएशन की बजट समीक्षा बैठक में राज्य सरकार के बजट में रिन्यूएबल एनर्जी के लिए अलग से विभाग की मांग की है। सोलर सेल पर बेसिक कस्टम ड्यूटी को लेकर प्रम को दू करने हुए आएसए की ओर से कहा गया है कि बजट में सरकार ने बीसीडी को कम नहीं किया है, बल्कि एक सेक्शन की जगह दूसरे सेक्शन में रखा है।

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