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10th Annual Conference on

# SOLAR POWER In India

## Trends and Tariffs; Opportunities and Outlook

June 28-29, 2017, Hyatt Regency, New Delhi

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# SOLAR POWER IN INDIA

## Mission

- India's solar power generation capacity has crossed 10 GW in 2017, a more than three-fold jump in less than three years, as the government pushes for a higher share of renewables in the country's energy mix.
- The sector is taking rapid strides with the tariff for solar power falling steeply year after year. In the latest round of auctions conducted for 750 MW of capacity for the Rewa Solar Park in Madhya Pradesh, the tariff has hit a new low of Rs 2.97 per kWh.
- The declining tariffs are the result of a number of factors - some pertaining to the increasing trend of solar park-led development, wherein the transmission risk, payment defaults and number of clearances required can be minimised; others stemming from favourable global PV market conditions and cheaper credit. Financiers' perception of the sector has also improved.
- Even as the utility-scale segment grows at a rapid pace, rooftop solar too is gaining traction. The industry is gearing up for the largest rooftop solar tender of 1 GW, released by the Solar Energy Corporation of India (SECI), and many more large-scale tenders announced by various state nodal agencies.
- Moreover, the MNRE has proposed financial support of up to Rs 3.75 million per MW for up to 1,350 MW of rooftop solar capacity, to be used largely towards the upgradation of the distribution network and IT infrastructure. All these developments augur well for meeting the 40 GW rooftop solar target by 2022.
- Other positive sector developments include the implementation of the solar cities programme, the canal-based solar PV project scheme, and the forecasting and scheduling norms; the issuance of new solar RPOs (renewable purchase obligations); the notification of lower solar REC (renewable energy certificate) prices; and the release of the solar-wind hybrid policy. The Green Energy Corridors project and the UDAY scheme have also been instrumental in reducing the risk perception for solar projects.
- Despite the positives however, the sector faces several challenges that need to be resolved at the earliest. These pertain to the lax enforcement of RPOs, slow implementation of net metering regulations, and lack of clarity regarding the forecasting, scheduling and deviation settlement mechanisms in a number of states.
- Further, the steep decline in prices poses a critical threat to the financial health of module suppliers. It is also a blow to domestic manufacturers and the government's aspirations to promote domestic manufacturing.
- Going forward, as the cost of solar power falls and capacity increases, the policy-making focus will shift towards energy storage solutions and the redesign of energy markets to address the intermittency risk. India has already taken a few steps for adopting energy storage including pilot project tenders released by SECI. The next step would be to use storage with solar projects in order to carry out peak shifting and match solar power's supply profile with the demand profile.
- The mission of this conference is to examine the key trends and developments in the sector, study the impact of recent policy and regulatory initiatives, highlight the opportunities in this space, discuss the risks and challenges, and showcase the latest innovations, most promising technologies and noteworthy projects. The conference will also provide a platform to project developers, EPC companies and technology providers to share their experiences and exchange ideas.

## Target Audience

- The conference is targeted at:
  - Power developers and operators
  - Certifying agencies
  - Regulatory agencies
  - Equipment manufacturers
  - Panel manufacturers
  - Energy storage experts
  - Distribution companies
  - Consultancy organisations
  - Captive power users
  - Technology providers
  - Solar power appliance manufacturers
  - Carbon fund investors and managers
  - Rooftop solar developers
  - HT power consumers
  - Financial institutions and investors
  - Utility representatives
  - Research agencies
  - Government agencies
  - Solar energy service providers
  - Etc.

# Trends and Tariffs; Opportunities and Outlook

## AGENDA/STRUCTURE

### KEY TRENDS AND OUTLOOK

- ❖ What have been the key trends in the solar power segment including solar parks, rooftop and captive?
- ❖ What are the key business drivers for solar power? What is the solar capacity pipeline?
- ❖ What are the key risks and challenges and how can they be mitigated? What is the future outlook?

### MNRE'S PERSPECTIVE - POLICY ROADMAP

- ❖ What are the MNRE's plans and perspective with regard to scaling up solar power to 100 GW?
- ❖ What is the update on rooftop, solar park and PSU-led projects, and other initiatives?
- ❖ What are the key issues? What are the upcoming policy moves and initiatives in this space?

### SECI'S PERSPECTIVE

- ❖ How has SECI's role evolved over the years? What have been the key learnings?
- ❖ What is the current status of initiatives like solar parks, rooftop solar and off-grid?
- ❖ What are the key challenges? What are the future allocation plans and new initiatives?

### DEVELOPERS' PERSPECTIVE

- ❖ What is the developers' outlook for the solar power market?
- ❖ What are their investment plans and strategies to meet future demand?
- ❖ What are developers' expectations from the government and other stakeholders?

### ROOFTOP SOLAR: MOVING BEYOND SUBSIDIES

- ❖ Is the rooftop solar industry mature enough to grow without subsidy support?
- ❖ Is the current policy impetus adequate to keep the momentum going or is an extra push required?
- ❖ What needs to be done to attract a larger customer base, especially from the residential sector?

### INNOVATIVE FINANCING STRUCTURES

- ❖ How has solar financing evolved over time? What is the financiers' perception of the sector?
- ❖ What are the new and innovative financing structures for rooftop and utility-scale projects?
- ❖ What are the future financing needs of the sector? How are they likely to be met?

### SPOTLIGHT ON MAKE IN INDIA: MANUFACTURERS' PERSPECTIVE

- ❖ How has the manufacturing model changed in the past few years? What are the new opportunities?
- ❖ What is the progress under the Make in India initiative? What are the issues faced by OEMs?
- ❖ What is the likely impact of the global demand-supply status on capacity addition in India?

### DISCOM FINANCES: UDAY STATUS

- ❖ What is the current state of discoms' finances across various states?
- ❖ How do the financial losses of discoms impact their credibility and capability to buy solar power?
- ❖ What has been the progress so far under the UDAY scheme?

### COST AND TARIFF TRENDS

- ❖ What are the current project economics of solar plants - solar parks, stand-alone and rooftop plants?
- ❖ What are the key material and equipment price trends (inverters, cells, batteries, etc.)?
- ❖ What are the likely future tariff trends in the solar space? What will be the key drivers?

### LEGAL AND INSTITUTIONAL CHALLENGES

- ❖ What are the legal issues and challenges involved at different stages of solar project development?
- ❖ What should be the key considerations of developers while signing solar EPC contracts?
- ❖ What are the risks for developers in this regard? What are the best practices?

### GREEN ENERGY CORRIDORS AND GRID INTEGRATION

- ❖ What is the status of the planned green energy corridors for power evacuation from renewable sources?
- ❖ What are the plans for evacuation of power from the proposed solar parks?
- ❖ What will be the impact of large-scale renewable integration on the grid?

### FOCUS ON BALANCE OF SYSTEM

- ❖ What have been the cost trends for key BoS components (inverters, mounting structures, trackers, cables, etc.)?
- ❖ What are the major issues and challenges pertaining to these components?
- ❖ What have been the key technology advancements in the BoS space?

### ROLE OF ENERGY STORAGE IN GRID INTEGRATION

- ❖ How has the economics of energy storage changed over time? What is the cost economics?
- ❖ Which technologies are most suited in the Indian scenario? What is the status of various pilot projects?
- ❖ What has been the global experience? What are the best practices for India?

### FORECASTING, SCHEDULING AND DEVIATION SETTLEMENT

- ❖ What is the status of implementation of the CERC's forecasting and scheduling norms across the states?
- ❖ What are the cost implications? What are the challenges in implementation?
- ❖ What is the way forward?

### STATE POLICIES AND PROGRAMMES

- ❖ What are the existing state policies and programmes?
- ❖ What has been the experience of ongoing programmes?
- ❖ Which are the upcoming tenders? What are the opportunities for private developers?

### ROOFTOP SOLAR MARKET

- ❖ What is the potential of the rooftop solar market in India? What have been the key challenges?
- ❖ What is the status of ongoing rooftop programmes? What is the update on net metering?
- ❖ What are some of the innovative/successful project development and financing models?

### OFF-GRID SOLAR

- ❖ What is the current size and potential of the decentralised solar power market?
- ❖ What are the key government initiatives and subsidy programmes?
- ❖ What are the major issues and challenges in the uptake of solutions like solar pumps, mini-grids and lighting?

## Previous Participants

The participants in our previous conferences on "Solar Power in India" include: ABB India Limited, Aditya Birla Management Corporation Limited, Arctech Solar, Bridge To India, Canadian Solar, Clean Max Enviro Energy, Corning Technologies, Coslight India, Customized Energy Solutions, Damodar Valley Corporation, Energy And Environment Foundation, Eicher Engines, Enrich Energy, Exide Industries, First Solar, Fortum India, Gensol, GETCO, Greenko Group, GIZ, Global Village Foundation, HPGCL, IDBI Bank, IDFC Alternatives, India Energy Forum, India Infradebt, Indus Towers, ICFI, ICRA, Integrated Research and Action For Development, Infrastructure Development Corporation (Karnataka), IL&FS Energy Development Company, IREDA, ICICI Bank, International Advanced Research Centre for Powder Metallurgy and New Materials (ARCI), Jakson & Company, Kirloskar Electric Company, Khaitan & Co, KPMG, Luminous Power Technologies, Maharishi Solar, Madhav Corp., Mitsubishi Chemical, MNRE, MMRDA, Moser Baer Solar, Nextech Electronics, NTPC, One Indiabulls Centre, Portolan Solutions, POSOCO, Praxair India, PTC India Financial Services, Prudent Insurance Brokers, RAGA Integrated Technology, Ru-arch Power, Safire Capital Advisors, SBI Caps, Solar Energy Corporation of India, Siemens, Skyline Institute of Engineering & Technology, Solairedirect Energy, Swelect Energy, Suzlon Energy, Tata Power Solar, Tikona Digital, Yes Bank, Yes Securities, Znshine Pv-Tech, etc.

## Delegate Fee

- The delegate fee is Rs 23,175 for one participant, Rs 38,175 for two, Rs 53,175 for three and Rs 68,175 for four. **There is 20 per cent "early bird" discount for those registering before June 7, 2017.**
- There is a special low fee of Rs 5,000 per participant for the state utilities, regulatory authorities, academic institutions and government agencies (not public sector corporates).
- A service tax of 15 per cent is applicable on the registration fee.

## Organisers

The conference is being organised by **India Infrastructure Publishing**, a company dedicated to providing information on the infrastructure sectors through magazines, newsletters, reports and conferences. The company publishes **Power Line**, **Renewable Watch**, **tele.net**, **Indian Infrastructure** and **Smart Utilities** magazines. It also publishes **Power News** (a weekly newsletter), and a series of reports on the energy sector including **Solar Power in India**, **Solar Project Performance in India**, **Renewable Energy Finance in India**, **Wind Power in India**, **Indian Power Sector** and **Equipment Market Outlook**, **Power Distribution in India**, **Power Transmission in India** and **Biomass Power in India**. It also publishes the **Solar Power Directory and Yearbook** and the **Wind Power Directory and Yearbook**.

## PREVIOUS SPEAKERS



**Piyush Goyal**,  
Hon'ble Minister of State (Independent Charge), Ministry of Power, Coal and New & Renewable Energy



**Upendra Tripathy**,  
then Secretary,  
MNRE



**Ashvini Kumar**,  
Managing Director,  
SECI



**A.K. Jha**,  
Director, Technical,  
NTPC



**Dr Amarpal Singh**,  
Chief Executive Officer,  
Punjab Energy Development Agency



**S.K. Shukla**,  
then CEO, Chhattisgarh Renewable  
Energy Development Agency



**Sujoy Ghosh**,  
Country Head-India,  
First Solar



**Sanjay Agrawal**,  
Managing Director,  
Fortum India



**Rohit Modi**,  
CEO-Solar Business,  
Suzlon Energy



**Ashish Khanna**,  
CEO and ED,  
Tata Power Solar



**K.N. Subramaniam**,  
CEO,  
Moser Baer Solar



**Sunil Wadhwa**,  
Managing Director,  
IL&FS Energy Development Company



**Gaurav Sood**,  
Managing Director,  
Solairedirect Energy India



**Amit Khurana**,  
Managing Director,  
Madhav Corporation



# SNAPSHOTS FROM PREVIOUS YEARS



“ I compliment *Power Line* and *Renewable Watch* magazines, which your organisation comes out with and which you publish very regularly, for continuing to bring back the focus on the renewable sector. Your organisation, Your magazine, I believe is doing very good work in bringing together all stakeholders on one platform to discuss innovation, the latest technologies, the availability of finance, the availability of suppliers and developers. In that sense, it also helps policymakers to hear from you through your magazines. ”

*Mr Piyush Goyal, Hon'ble Minister of State (Independent Charge), Ministry of Power, Coal and New & Renewable Energy*

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# SOLAR POWER IN INDIA

## Trends and Tariffs; Opportunities and Outlook

June 28-29, 2017, Hyatt Regency, New Delhi

### Registration Form

I would like to register for the conference. I am enclosing Rs \_\_\_\_\_ vide cheque/demand draft no. \_\_\_\_\_ drawn on \_\_\_\_\_ dated \_\_\_\_\_ in favour of **India Infrastructure Publishing Pvt. Ltd** payable at New Delhi.

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|--|---------------------|---------------------|---------------------|
| Date   | : June 28, 2017     | Date                | : June 29, 2017     |
| Registration starts                                  | : 8.30 AM           | Registration starts | : 8.30 AM           |
| Conference Time                                      | : 9.15 AM - 5.15 PM | Conference Time     | : 9.15 AM - 5.15 PM |
| Venue : Hyatt Regency, Bhikaji Cama Place, New Delhi |                     |                     |                     |

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### Registration Fee

| Delegate       | Discounted fee (before June 7, 2017) |                   |           |           | Fee without discount (after June 7, 2017) |                   |           |           |
|----------------|--------------------------------------|-------------------|-----------|-----------|---|-------------------|-----------|-----------|
|                | INR                                  | Service tax @ 15% | Total INR | Total USD | INR                                       | Service tax @ 15% | Total INR | Total USD |
| One Delegate   | 18,540                               | 2,781             | 21,321    | 355       | 23,175                                    | 3,476             | 26,651    | 444       |
| Two Delegate   | 30,540                               | 4,581             | 35,121    | 585       | 38,175                                    | 5,726             | 43,901    | 732       |
| Three Delegate | 42,540                               | 6,381             | 48,921    | 815       | 53,175                                    | 7,976             | 61,151    | 1,019     |
| Four Delegate  | 54,540                               | 8,181             | 62,721    | 1,045     | 68,175                                    | 10,226            | 78,401    | 1,307     |

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- There is a special low fee of Rs 5,000 per participant for the state utilities, regulatory authorities, academic institutions and government agencies (not public sector corporates).
- Registration will be confirmed on receipt of the payment. To register online, please log on to <http://indiainfrastructure.com/conf.html>

#### Payment Policy:

- Full payment must be received prior to the conference
- Conference fee includes lunch, tea/coffee and conference material
- Payments for "early bird" registrations should come in before the last date of discount
- Conference fees can not be substituted for any other product or service being extended by India Infrastructure Publishing Private Limited
- Discount offers cannot be combined with any other offer

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