Implementation of GoI's Schemes for RE Procurement

A presentation by

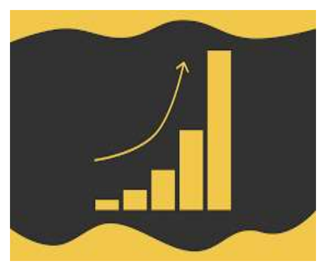
Solar Energy Corporation of India Ltd.

RE sector in India

- Globally, India ranks **4th** in Wind Power capacity and **5th** in Solar Power capacity installation
- Solar PV installation increased by **31 times** since 2014
- Wind capacity installation **doubled** since 2014
- Installed RE capacity (including large hydro) increased **128%** since 2014
- RE's share (including large hydro) is **42.26%** of total installed capacity

India ranks **4th** globally for total renewable power capacity additions

India has **already achieved** its target of **40%** installed electric capacity from non-fossil fuels on Nov 2021 itself (COP 21 commitment: targeted by 2030)



India ranks **3rd** in EY's Renewable Energy Country Attractiveness Index (2021), in terms of capacity and investment in RE

India's Panchamrit Goals (COP 26)

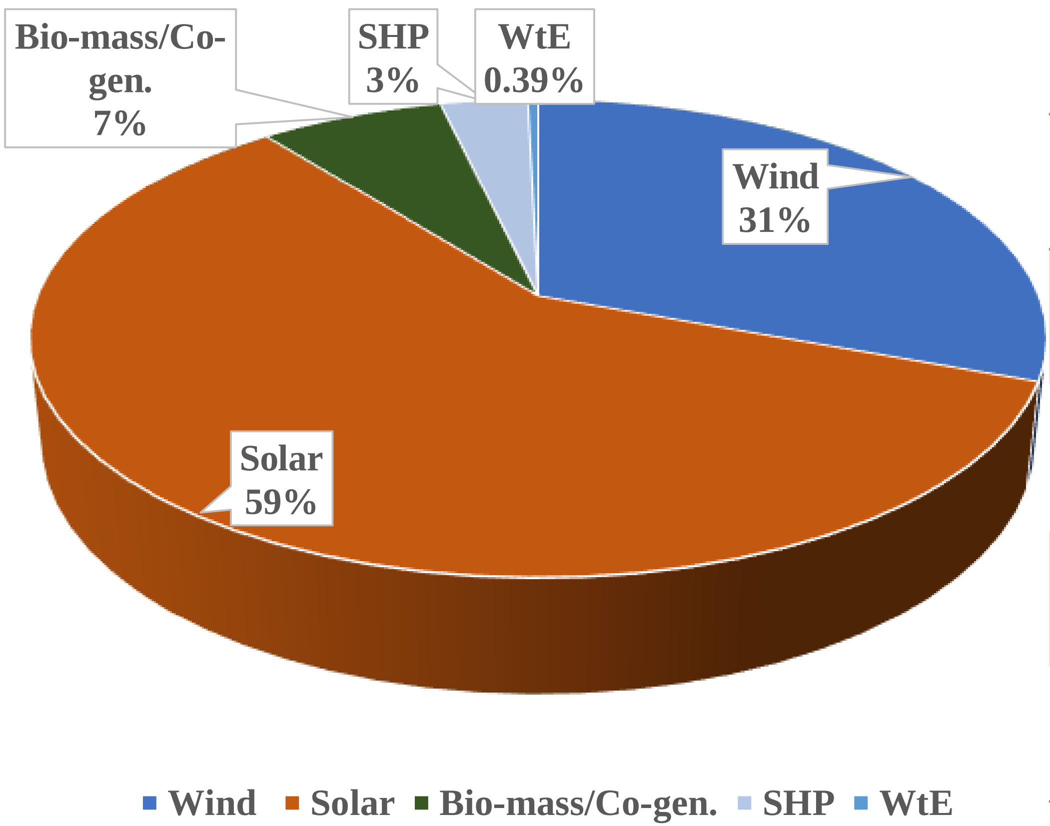
- Installing non-fossil fuel energy capacity of 500 GW by 2030
- Meeting 50% of energy requirements through RE
- Achieving net-zero by 2070
- Reducing CO2 emissions by 1 billion tons & carbon intensity below 45 percent by 2030

Current Status of RE installation in India

- Total RE Capacity installed as on 31.02.2025: **1,65,202.21 MW** (**35%** of total installed capacity)

(Figures exclude large hydro)

RE Capacity Break-up:

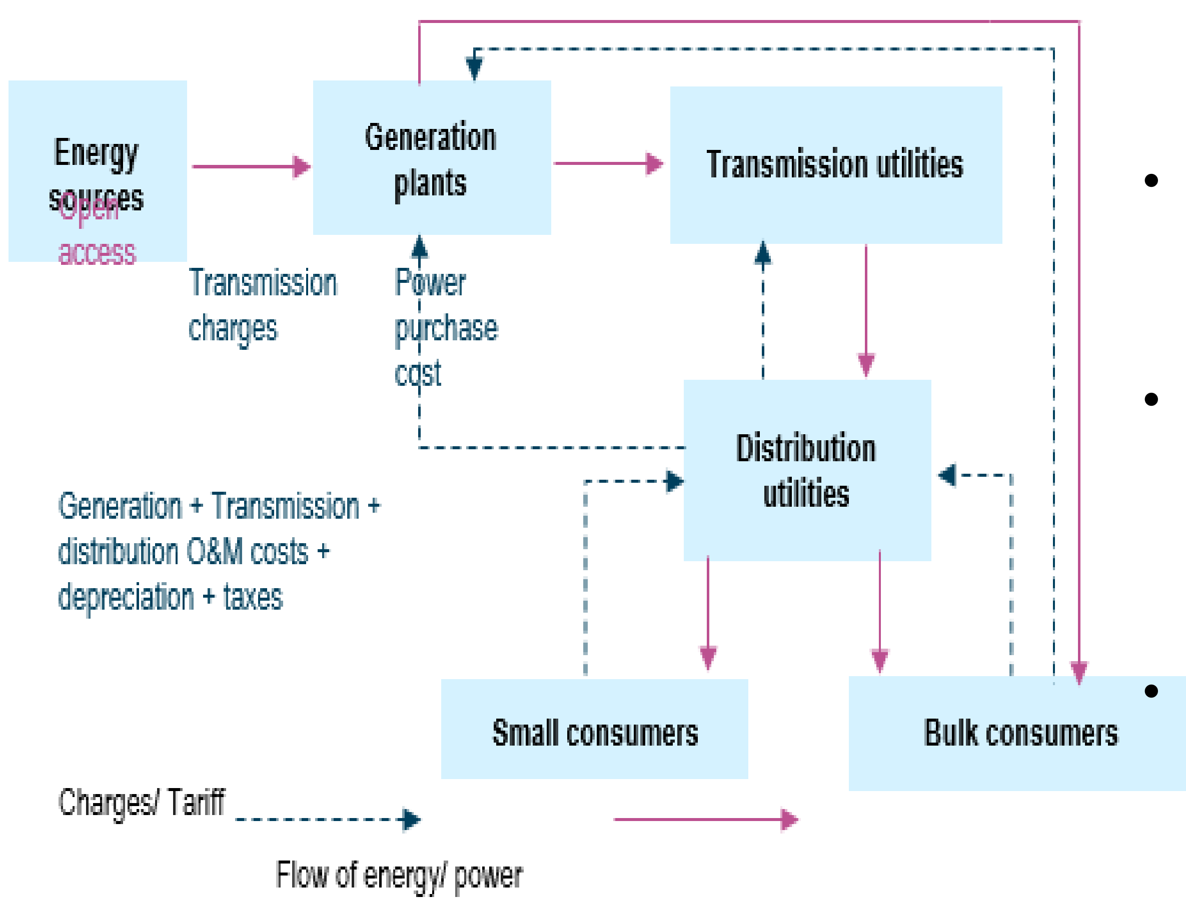


Solar:	**90762.12 MW**
Wind:	**47362.92 MW**
Bio-Mass/ Co-gen:	**10,724.46 MW**
Small Hydro:	**5,075.75 MW**
Waste-to-Energy: 604.49 MW	

Source: MNRE, CEA

Indian Electricity Market Structure

Figure 1: Structure of the power sector



Key features ***(Before 2003)***

- Electricity sector business primarily confined to Govt. generation companies & SEBs.
- 1948 Act amended in 1991 to allow Pvt. Cos.to set up generating plants.
- Power largely procured from State-owned generating plants or Central Generating Stations (NTPC, NHPC).
- Procurement tariff determined by State Govts., later by SERCs (Regulatory Commissions Act, 1998).

Electricity Act, 2003: ushered in an era of liberalization, privatization, transparency and competition

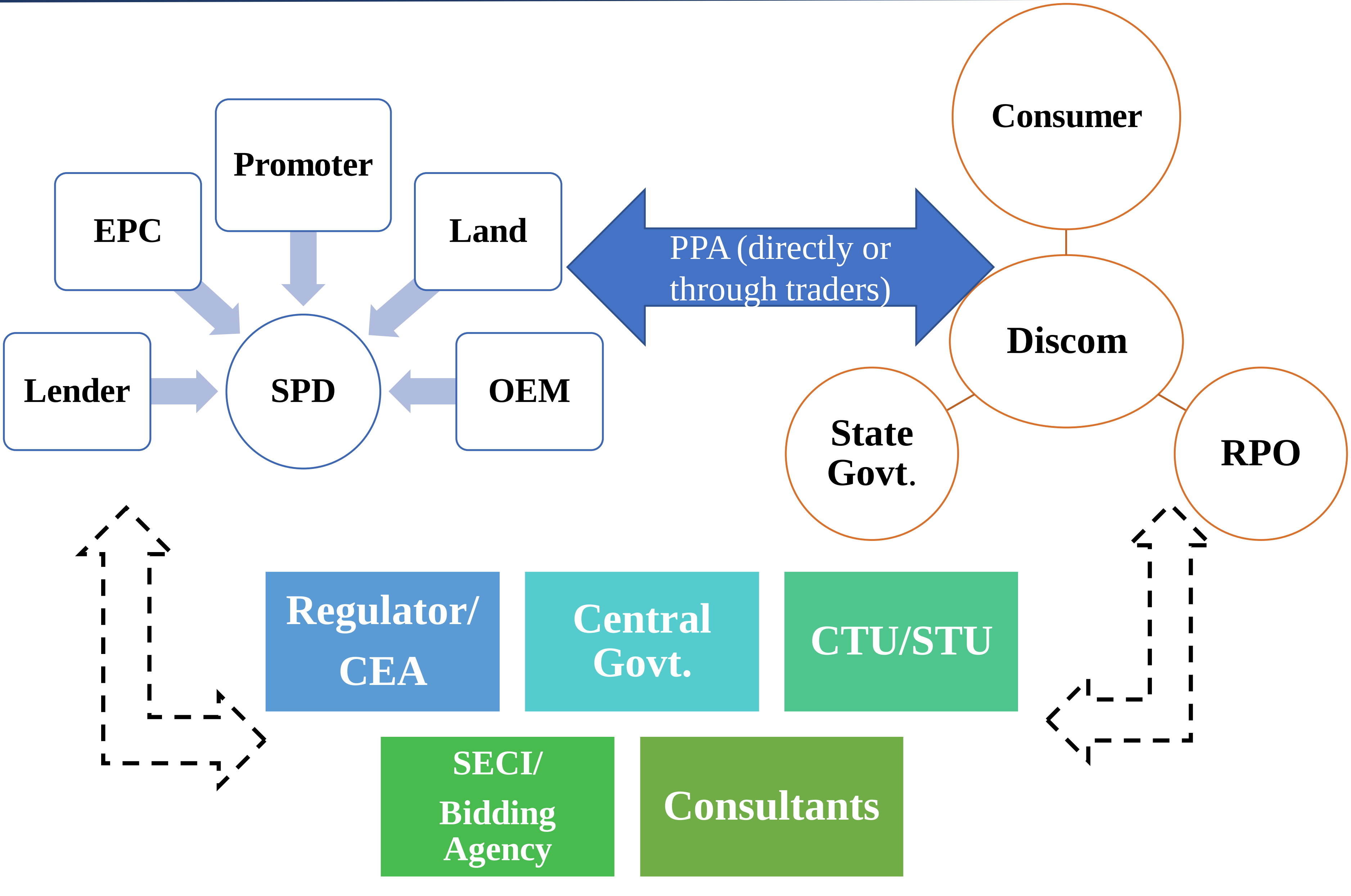
Electricity procurement-current mechanism

- Competition resulted in procurement & tariff determination through market principles
- Sections 61 & 62 of the Act provide for tariff determination by CERC/SERC
- Section 63-public procurement through competitive bidding.
- National Tariff Policy, 2016 mandates procurement through competitive bidding
- Other imp. Features of EA 2003: delicensing of Generation, introduction of open access, unbundling of SEBs

"Section 63.
Determination of tariff by bidding process
Notwithstanding anything contained in section 62, the Appropriate Commission shall adopt the tariff if such tariff has been determined through transparent process of bidding in accordance with the guidelines issued by the Central Government."

2005: Competitive bidding introduced in power sector through **Case 1** & **Case 2** bidding

Indian RE sector-key stakeholders



About SECI

A **Navratna Company**-One of the youngest PSEs in this category

1st Central PSU incorporated **solely to work in RE sector**

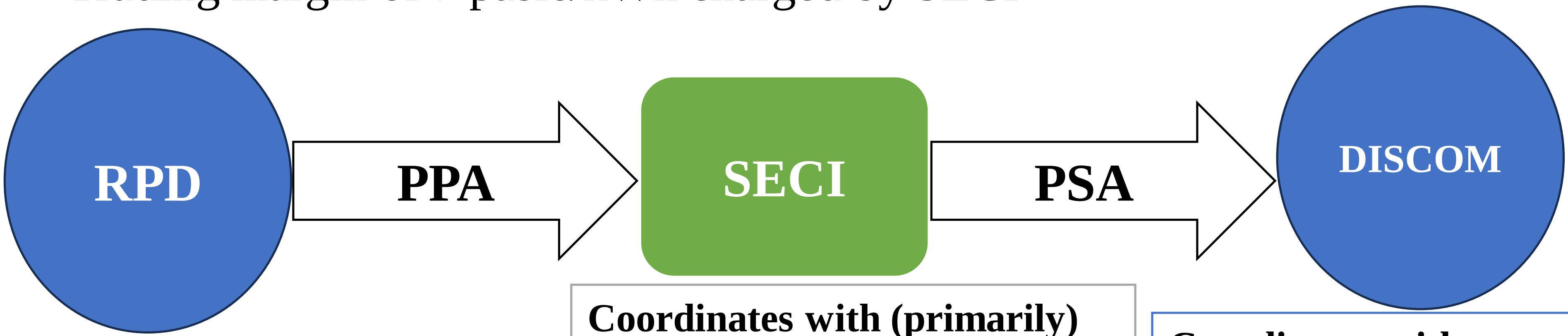
Initially working in Solar, **scope expanded to all aspects of RE** except large hydro

Category I (highest) Power Trading Licensee with **AAA Credit rating**

A lean and agile organization: **PAT: Rs.2.75/employee**, **Revenue: Rs.97/employee**

SECI-an RE Implementing Agency

- Selection of RE Power Developer (RPD) by SECI through tenders issued under Bidding Guidelines issued by MoP
- Tariff-based bidding process-selection on “bucket-filling mechanism”, in ascending order of tariffs
- Trading margin of 7 pasie/kWh charged by SECI



Coordinates with (primarily)
- Central/State Transmission Utilities (CTU/STU)-connectivity to the grid
- Central Elec. Authority (CEA)-grid safety regulations
- State Nodal Agencies (SNAs)-land and other Govt. permissions

Coordinates with (primarily)
- MNRE/MoP-Implementation of Bidding Guidelines
- CTU/CEA-transmission planning for seamless capacity addition
- CERC/SERC-tariff adoption and approvals

Coordinates with (primarily)
- MNRE/MoP-Implementation of Bidding Guidelines
- CTU-General Network Access
- CERC/SERC-tariff adoption and approvals

SECI and Indian RE: An intertwined journey

Nodal Agency on behalf of GoI:

- National Solar Mission
- National Green Hydrogen Mission
- Greening of Islands
- Solarisation of Ladakh

2011
Incorporated as Not for Profit Company

2013
Issued 1st solar tender under NSM Phase II

2015
Turned into a commercial company

Scope widened to include all RE

2016
Introduced competitive bidding in Wind

2017
Achieved grid parity-end of VGF support (Record low tariff of Rs. 2.44/ unit)

2018
Introduced Hybrid RE model

2022
Introduced Standalone Energy Storage Systems tender

2023
Mini-ratna status

Introduced "Demand-following" RE Supply model

2024
India's largest solar-battery project commissioned- 100 MW Solar + BESS, Chhattisgarh

As on 31.03.2024

- **Auth. Share Capital**: Rs. 2000 Cr.
- **Net Worth**: Rs. 2811.76 Cr.
- **Paid Up share Capital:** Rs. 1354 Cr.
- **Capital Employed:** Rs. 3060.01 Cr.

SECI-the Keystone of Indian RE sector

Largest RE portfolio in India: over 69 GW capacity awarded

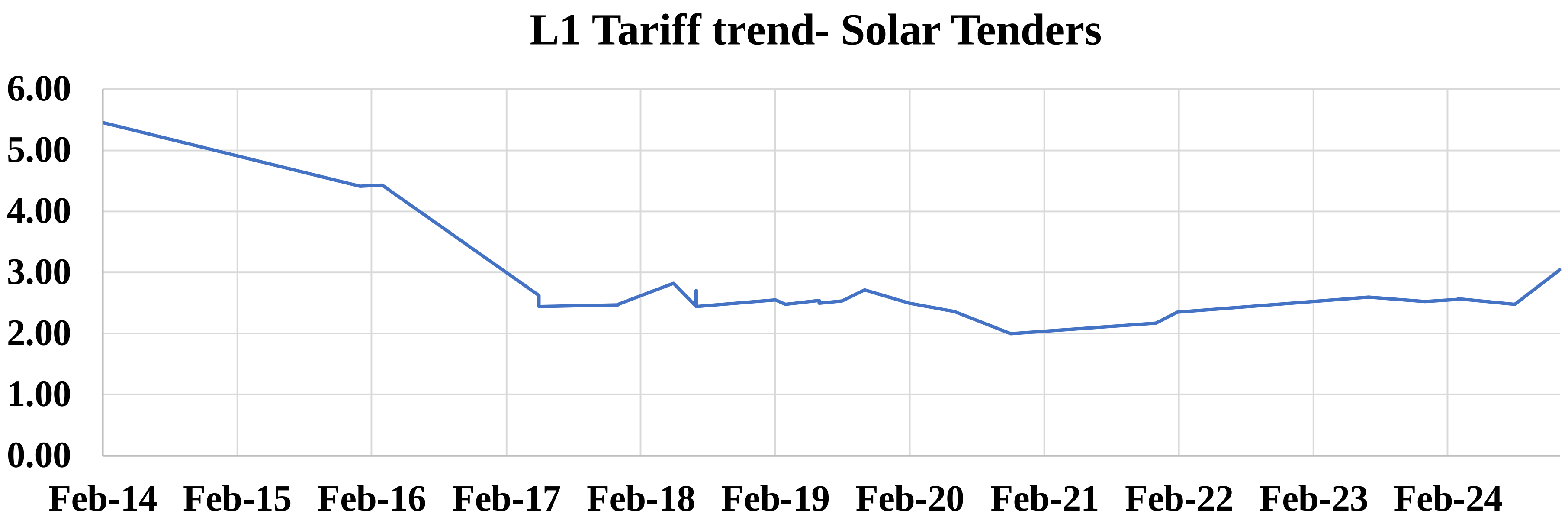
India's largest RE power trader

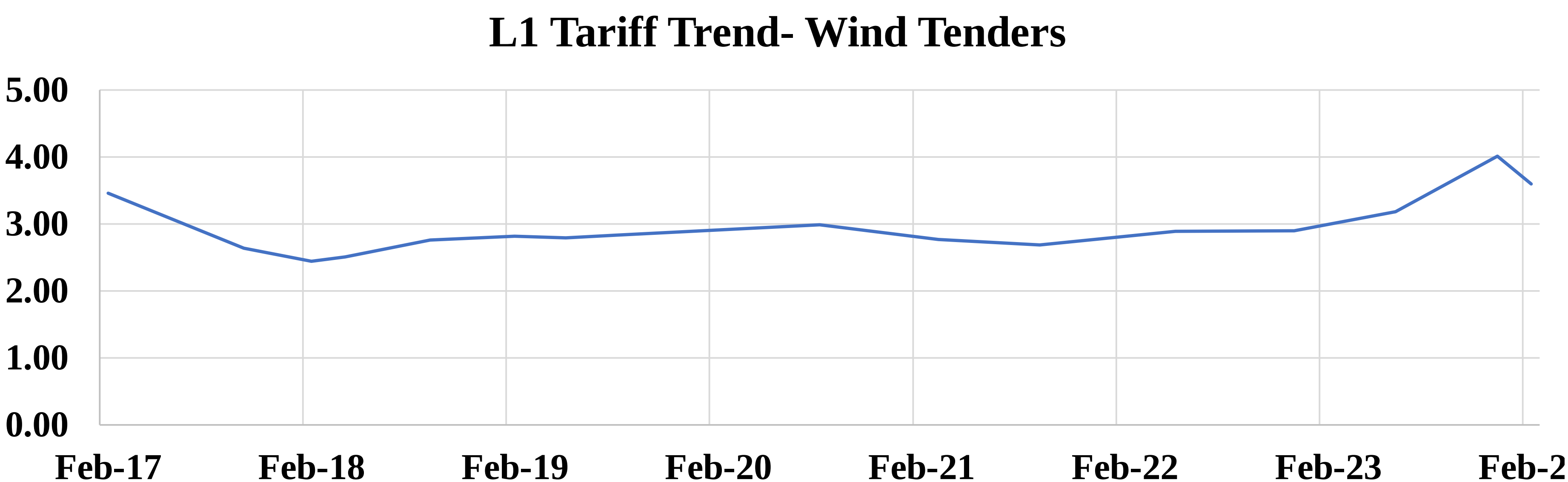
>21 GW commissioned: Every 6th Solar Plant in India commissioned under SECI

Pan-India presence: Diversified clientele including 37 Discoms

Over 210 projects successfully commissioned, approx. 130 projects under implementation

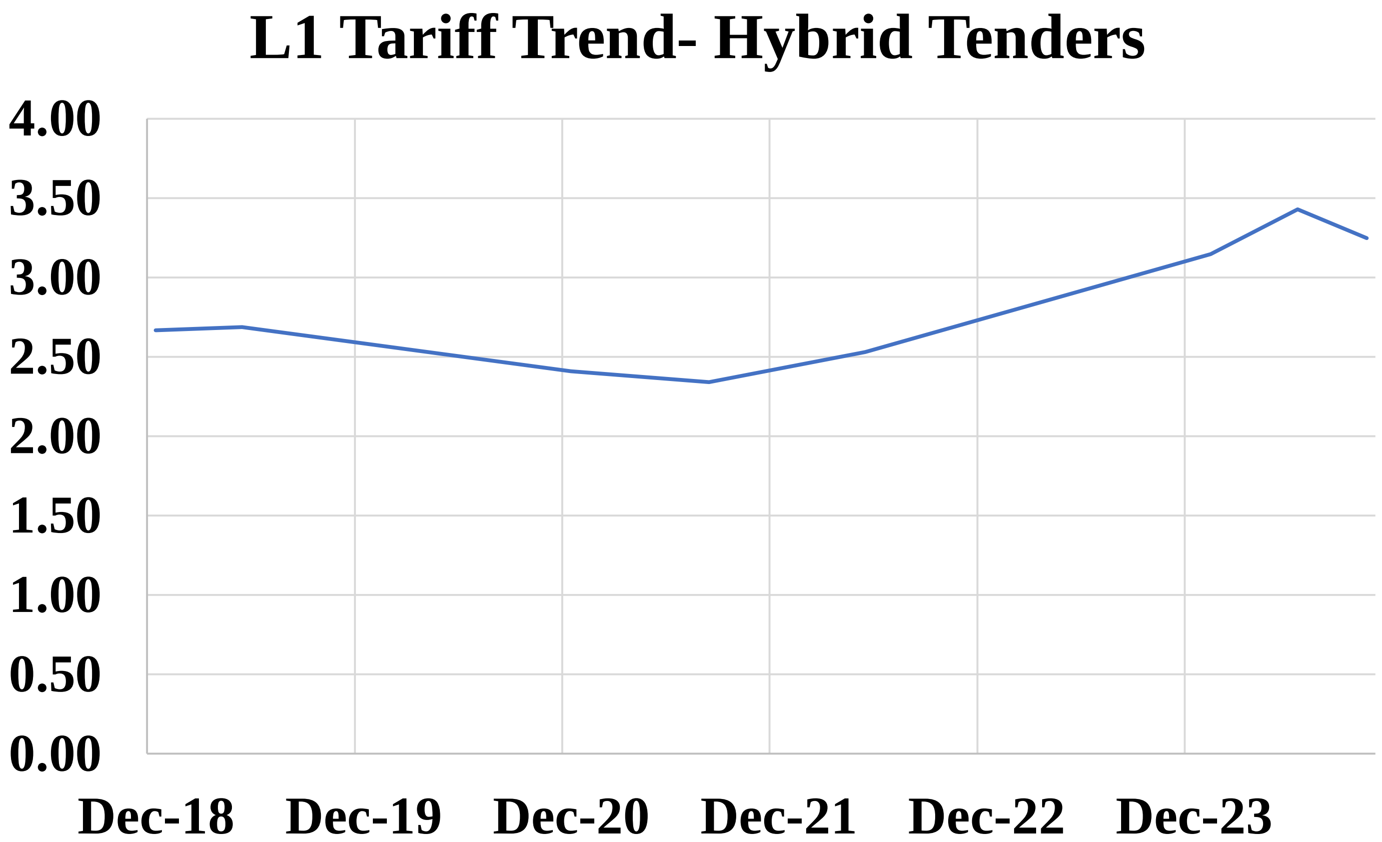
SECI's RE Tariff trends





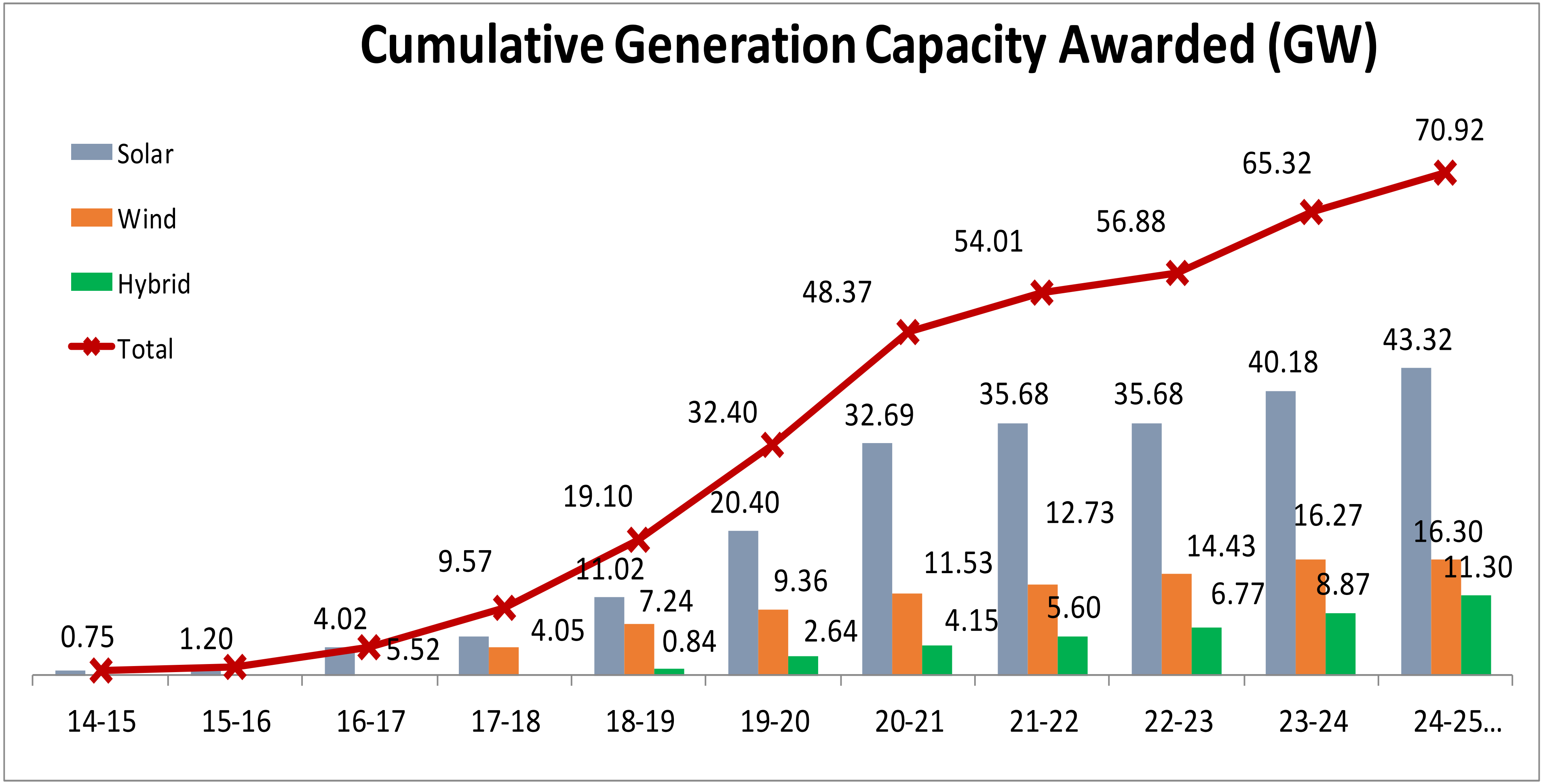
SECI's RE Tariff trends

- Combination of Solar, wind and Storage to supply "Firm and Dispatchable RE power"
- Includes Round-the-clock, Assured Peak supply, "demand-following" supply from 100% RE



- Recently awarded India's 1st "demand-following" supply tariff at a record low tariff of Rs. 4.98/kWh
- Rapidly declining Battery Storage prices make RE + Storage a viable alternative to coal based thermal power

Awarded Capacities under SECI tenders



- As on 30.09.2024, over 21 GW has been commissioned.
- Other awarded tenders: Standalone BESS, PLI-II for High Efficiency Solar PV Modules, Green H2, Electrolyser Manufacturing

Types of Projects

- Solar PV Power Projects
- Wind Power Projects
- Off-shore Wind Power Projects
- Wind-Solar Hybrid Power Projects
- Hybrid Projects with assured Peak supply
- Round-the-Clock Supply from RE sources
- FDRE- based on demand profile of Buying Entity
- Battery Energy Storage Systems Project
- Green Ammonia Production and Supply

RE Procurement in India

- Competitive bidding of RE power commenced with launch of National Solar Mission (2010)
- Bidding Guidelines issued by MNRE/MoP for each type of procurement mechanism
- Started with Solar, gradually enhanced to cover Wind, Hybrid, Standalone Storage and Firm and Dispatchable RE Power

Major components of Bidding Guidelines

Bidding Process & Award of Projects

- Scope of Guidelines
- Preparation of bid documents-scope of developer and procurer
- Bidding parameters
- Bid/Performance Securities & Technical Specifications
- Eligibility criteria
- Bid evaluation and award methodology

Project Implementation

- Power procurement parameters
- Financial Closure
- Project commissioning
- Offtake constraints
- Payment Security Mechanism
- Force Majeure
- Event of Default
- Change in Law
- Deviation from the Guidelines

Bidding Process & Award of Projects

Scope & Objectives of the Guidelines

- Issued under Section 63 of the Act, for procurement of power by Distribution licensees, through tariff based competitive bidding.
- To facilitate renewable capacity addition and fulfilment of RPO/SPO requirements of DISCOMs
- To provide a transparent, fair, standardized procurement framework based on open competitive bidding with appropriate risk-sharing between stakeholders
- To enable procurement of power at competitive prices in consumer interest, improve bankability of projects and ensure reasonable returns to investors

Preparation of bid documents

- Tender issued by Procurer/Intermediary Procurer.
- Documents based on Standard Bidding Documents (allowing suitable elaborations)

Scope of the respective parties

Developer

- Land identification and possession (except for RE Parks)
- Plant ownership (B-O-O model)
- Meeting performance criteria
- O&M of the plant for entire PPA Term
- Complying with applicable regulations and laws

Procurer

- Procuring power under Guidelines
- Honoring payment commitments-adequate payment security
- Complying with applicable regulations and laws

Bidding Parameters

Tariff or VGF (with pre-determined tariff) as the bidding parameter. Fixed tariff for the complete term of the PPA (25 years).

All charges and losses until the Delivery Point to be borne by the Developer

For bids issued by Intermediary Procurer under power trading mechanism- levy of trading margin (Rs. 0.07/kWh)

Min. Project size- 50 MW for ISTS-connected Projects, 10 MW for STU-connected Projects.

Max. Project size- 50% of the tendered capacity.

Qualification Requirements (General & Technical)

- The Bidder should be a body incorporated in India under the Companies Act, 2013
- Foreign companies may participate on standalone basis or through Consortium.
- LLPs, Proprietorships, Partnerships, NGOs, Charitable Trusts, Educational Societies are <u>not allowed</u>. MSEs are allowed
- Participation Individually or as Consortium is <u>allowed</u>.
- Technical eligibility criteria as per RfS

Financial QR and Financial Instruments

Net-worth: @20% of Estimated Project Cost

Liquidity criteria (any one of the three):

- Annual Turnover: equivalent to one year’s revenue
- PBDIT: @20% of Annual Turnover
- Line of Credit: @25% of Annual Turnover

EMD: @ min. 2% of Estimated Project cost (BG/POI)

PBG: @min. 5% of Estimated Project cost (BG/POI)

Bid Evaluation & Award methodology

Bids invited in single stage, two-envelope format, followed by e-Reverse Auction. Complete bidding process conducted in electronic mode.

RfS, PPA, PSA and other necessary documents are issued as part of tender documents.

The bidders are required to submit separate techno-commercial and price bids.

Evaluation of bids by a 3-member committee: Techno-commercial followed by financial bid evaluation (of Techno-commercially shortlisted bidders).

Comparison of bids in ascending order, based on the bidding parameter (tariff or VGF). After e-RA, Project capacity awarded under ‘Bucket-filling’ mechanism.

Tendering process-an outline

Target as per Bidding Trajectory/Requirement from DISCOM(s)

Tender drafting by REIA, based on SBG and SPP of REIA

Issuance of tender (containing RfS, PPA and PSA documents)

Pre-bid meeting

Amendments /clarifications /bid extension issued by REIA

Bid opening & Evaluation: Committee nominated as per SBG (3 members)

Clarifications sought from bidders during bid evaluation

Shortlisting for next stage and price bid opening

Shortlisting for e-RA (wherever applicable)

e-RA of shortlisted bidders

Issuance of LoAs

Signing of PSAs and subsequently, the PPAs

E-bidding platform used by SECI

Platform outsourced to: M/s **Electronic Tender.com (India) Pvt. Ltd.**
Gurugram

Sample e-RA snapshot (Bucket-filling)

Details of Bids

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Acceptable percentage difference between Rank-1 Bidder's Bid Value and other Bidder(s) Bid Value for being eligible for Award 2.00%

S#	Bidder's Pseudo-Identity	Quoted Value	Loaded Value	Currency	Date/Time of Bidding	Bidder's Quantity	Difference in % (Bid-Value Vs Start-Price)
1	1.41098e+015	3.52	3.52	Indian Rupee	09-Dec-2024 19:06:49 RTZ	500.00	7.37%
2	2.49754e+015	3.52	3.52	Indian Rupee	09-Dec-2024 19:06:52 RTZ	150.00	7.37%
3	8.23417e+015	3.52	3.52	Indian Rupee	09-Dec-2024 19:07:29 RTZ	150.00	7.37%
4	9.46776e+015	3.52	3.52	Indian Rupee	09-Dec-2024 19:07:32 RTZ	270.00	7.37%
5	4.91003e+015	3.53	3.53	Indian Rupee	09-Dec-2024 19:05:30 RTZ	1000.00	7.11%
6	8.98795e+015	3.53	3.53	Indian Rupee	09-Dec-2024 19:05:50 RTZ	300.00	7.11%
7	9.45183e+015	3.55	3.55	Indian Rupee	09-Dec-2024 18:34:19 RTZ	600.00	6.58%
8	5.24312e+014	3.57	3.57	Indian Rupee	09-Dec-2024 18:23:21 RTZ	350.00	6.05%
9	6.21281e+015	3.59	3.59	Indian Rupee	09-Dec-2024 18:00:42 RTZ	150.00	5.53%
10	6.72262e+015	3.79	3.79	Indian Rupee	09-Dec-2024 16:05:46 RTZ	400.00	0.26%
11	6.32642e+015	3.80	3.80	Indian Rupee	09-Dec-2024 18:19:47 RTZ	250.00	0%
12	9.2242e+015	4.39	4.39	Indian Rupee	09-Dec-2024 12:53:15 RTZ	300.00	-15.53%
13	7.139e+015	4.50	4.50	Indian Rupee	09-Dec-2024 12:53:15 RTZ	100.00	-18.42%

- Bidders allowed to reduce their prices on "real-time" basis, accounting for others' tariffs

- Closed process: Pseudo identities displayed during e-RA, names revealed after conclusion of e-RA

- Green: Award of quoted capacity
- Orange: Award of part-capacity
- Red: No capacity awarded

Sample e-RA snapshot (Bucket-filling)

'Single Entity' with 'Variable Quantity Option' for bidders

Entity	Solar PV Power Projects with ESS
Description	
e-RA for 2000 MW ISTS-Connected Solar PV Power Projects with 1000 MW/4000 MWh ESS in India (SECI-ISTS-XVII)	
Quantity	2000.00 MW
Starting-Price	3.80 Indian Rupee
Reserve-Price	3.80 Indian Rupee
Acceptable percentage difference between Rank-1 Bidder's Bid Value and other Bidder(s) Bid Value for being eligible for Award	2.00%

S#	Bidder's Name	Quoted Value	Loaded Value	Currency	Date/Time of Bidding	Bidder's Quantity	% Difference greater than Rank-1 Bid Value
1	NTPC Renewable Energy Limited	3.52	3.52	Indian Rupee	09-Dec-2024 19:06:49 RTZ	500.00	0%
2	SEMBCORP GREEN INFRA PRIVATE LIMITED	3.52	3.52	Indian Rupee	09-Dec-2024 19:06:52 RTZ	150.00	0%
3	Solarcraft Power India 8 Pvt Ltd	3.52	3.52	Indian Rupee	09-Dec-2024 19:07:29 RTZ	150.00	0%
4	Hero Solar Energy Private Limited	3.52	3.52	Indian Rupee	09-Dec-2024 19:07:32 RTZ	270.00	0%
5	RELIANCE POWER LIMITED	3.53	3.53	Indian Rupee	09-Dec-2024 19:05:30 RTZ	1000.00	0.28%
6	ReNew Solar Power Private Limited	3.53	3.53	Indian Rupee	09-Dec-2024 19:05:50 RTZ	300.00	0.28%
7	Avaada Energy Private Limited	3.55	3.55	Indian Rupee	09-Dec-2024 18:34:19 RTZ	600.00	0.85%
8	JSW Neo Energy Limited	3.57	3.57	Indian Rupee	09-Dec-2024 18:23:21 RTZ	350.00	1.42%
9	AMPIN ENERGY UTILITY PRIVATE LIMITED	3.59	3.59	Indian Rupee	09-Dec-2024 18:00:42 RTZ	150.00	1.99%
10	ACME Solar Holdings Limited	3.79	3.79	Indian Rupee	09-Dec-2024 16:05:46 RTZ	400.00	7.67%
11	Juniper Green Energy Private Limited	3.80	3.80	Indian Rupee	09-Dec-2024 18:19:47 RTZ	250.00	7.95%
12	Hexa Climate Solutions Private Limited	4.39	4.39	Indian Rupee	09-Dec-2024 12:53:15 RTZ	300.00	24.72%
13	PACE DIGITEK PRIVATE LIMITED	4.50	4.50	Indian Rupee	09-Dec-2024 12:53:15 RTZ	100.00	27.84%

Project Implementation

Procurement requirement

Procurement in terms of MW (Contracted Capacity as per PPA)

Solar modules to be sourced from ALMM List and Wind turbines from RLMM List, published by MNRE.

Projects to be connected to ISTS network (220 kV or above). STU connection allowed for intra-state procurement

Land to be demonstrated prior to commencement of power supply, Flexibility in changing Delivery Point as per RfS

Performance Criteria

Annual CUF requirements as per PPA

- Solar Projects- min. 17%
- Wind Projects- min. 22%
- Hybrid Projects- min. 30%

FDRE Tenders-customized as per PPA (time-block / hourly / monthly/ annual requirement)

- Assured Peak supply
- RTC Supply
- Demand-following supply

Penalty for shortfall in meeting performance requirement

- Solar, Hybrid, RTC, and FDRE Projects- 1.5 x PPA Tariff
- Wind Projects- 50% of PPA Tariff

Excess generation @ PPA Tariff, if consented to by Buying Entity/SECI

Financial Closure & Commissioning

Financial Closure-as per RfS (6 months prior to SCSD)

Scheduled Commencement of Supply Date (SCSD)

- Project size ≤ 1000 MW, 24 months from PPA + 6 months (with penalty)
- Project size > 1000 MW, 30 months from PPA + 6 months (with penalty)

Commissioning as per Grid Code; Already commissioned Projects allowed to participate.

Early commencement @ PPA Tariff, with first right of refusal with Buying Entity/SECI.

Offtake Constraints & Payment Security

Offtake constraints: Grid unavailability & Reduced offtake

- Generation Compensation: ((Tariff X RE power (MW) offered but not scheduled by Procurer)) X 1000 X No. of hours of grid unavailability.

Payment Security by SECI to the Developer

- Letter of Credit: 110% of average monthly billing
- May create a Payment Security Fund, through Rs. 0.02/kWh discount in the monthly billing (optional for Developers).

Payment Security by DISCOM to SECI

- Letter of Credit: 110% of average monthly billing
- State Govt. Guarantee (TPA between RBI, Central Govt. and State Govt.)

PSM governed by Late Payment Surcharge (LPS) Rules, 2022

Force Majeure, Change in Law & Event of Default

FORCE MAJEURE

- FM to be defined as per PPA, only time extension provided. Either party may terminate in case of FM extending beyond 9 months.

CHANGE IN LAW

- To be dealt as per Change in Law Rules, 2021
- Formula for relief for all change in law events, calculations to be trued up by Appropriate Commission.

EVENTS OF DEFAULT

- As defined in the PPA
- In case of default by either Party (& not cured), the PPA shall be terminated.
- Defaulting party liable to pay damages equal to 24 months'/balance PPA period's billing amount
- Lenders entitled to substitute the Generator, in case of Generator EoD.

Other major provisions

Shareholding by Promoter

- Successful Bidder to maintain min.51% shareholding in SPV upto 1 year from SCSD (also applicable in case of same entity signing the PPA)

Transmission Connectivity

- Generator responsible for getting connectivity in line with GNA Regulations
- ISTS charges and losses beyond the Delivery Point to be borne by Procurer
- SCSD extension in case of delay in connectivity operationalization
- To be dealt as per Change in Law Rules, 2021
- Formula for relief for all change in law events, calculations to be trued up by Appropriate Commission.

Deviations and Dispute Resolution

- Deviations to be approved by Appropriate Commission prior to bidding
- Dispute Resolution by CERC/SERC for tariff-related matters
- All other Disputes to be resolved by DRC, and Arbitration

THANK YOU