MINUTES OF THE 84TH MEETING OF FORUM OF REGULATORS

Venue: **Conference Hall, The Leela, Gandhinagar, Gujarat**
Date/ Day: **3rd February, 2023 (Friday)**
Timing: **10.00 A.M onwards**
List of Participants: Annexure – I

The meeting was presided over by Chairperson, Tripura Electricity Regulatory Commission in the absence of Chairperson, CERC and he being the senior most Chairperson amongst the SERC Chairpersons present during the meeting. In his welcome speech, he highlighted that Gujarat has taken a lead role in renewable power, and 24x7 supply. He also added that the contribution of the State in carrying out innovations in the power sector is noteworthy. He also welcomed Shri T. Jose who had taken charge as Chairperson of Kerala ERC and was attending the FOR meeting physically for the first time. He also placed on record appreciation of the Forum to Justice Shabihul Hasnain Shastri, who had demitted office as Chairperson, Delhi ERC on 9th January, 2023.

2. Delivering his welcome remarks, Chairperson, Gujarat ERC welcomed the presiding Chairperson and other members of the FOR to Gujarat and stated that it is a pride for Gujarat to host this meeting. He wished fruitful discussions during the meeting

AGENDA 1: CONFIRMATION OF MINUTES

A. MINUTES OF 83rd MEETING OF FOR HELD ON 18TH NOVEMBER, 2022

3. The Forum was apprised of the discussions of the 83rd FOR meeting and Action Taken Reports of the said minutes. The members noted that the activities of Forum of Regulators have increased manifold and there was an urgent need for strengthening of FOR Secretariat and Restructuring of the Membership fees. The members noted that the annual membership fees for FOR were reduced from the initial fee of Rs. 6 lacs to Rs. 3 lacs and then to Rs. 1 lac. After discussion the Forum decided to form a Working Group of FOR, for restructuring of membership fees, with the following composition: -

a. Chairperson, UPERC - Chairperson of the Working Group
b. Chairperson, Assam ERC – Member
c. Chairperson, Himachal Pradesh ERC – Member
d. Chairperson, Haryana ERC – Member
e. Chairperson, Karnataka ERC – Member

6. With the above, the minutes of the 83rd FOR meeting were confirmed.

B. MINUTES OF SPECIAL FOR MEETING HELD ON 5th DECEMBER, 2022

7. The Forum was also presented with the minutes of the special FOR meeting held on 5th December 2022 and informed of comments received from Punjab SERC with respect to provisions of Income Tax in the Model Tariff Regulations wherein PSERC sought to leave the respective SERCs to allow income tax or not. The Forum agreed to the suggestions of PSERC and informed that necessary changes may be made in the Model Tariff Regulations to that effect before circulating the revised Model Tariff Regulations.

8. Accordingly, the minutes of the Special FOR meeting was confirmed.

AGENDA 2: REFERENCES FROM MINISTRY OF POWER

A. BIOMASS UTILIZATION THROUGH CO-FIRING IN COALBASED THERMAL POWER PLANTS

9. The Forum was apprised about the reference received from Ministry of Power (MoP) on biomass utilization through co- firing in coal- based thermal power plants wherein they had requested for sensitizing State Commissions for implementation of the policy and also to send an ATR by 31.01.2023 on the action taken by the respective State Commissions.

10. Chief (RA), CERC informed the Forum that CERC had already made for the provision of blending biomass into thermal power plants and the manner of recovery of the cost in the CERC (Terms and Conditions of Tariff) Regulations, 2019. Further, CERC vide its Suo Moto order No. 12/SM/2019 dated 18.02.2020 delineated a detailed methodology for estimation of electricity generated from biomass in biomass co-fired coal based thermal power plants.

11. The members of the Forum noted the same for appropriate action by the respective SERCs/JERCs.

B. THE ELECTRICITY (AMENDMENT) RULES, 2022

12. The Forum was apprised about the Electricity (Amendment) Rules, 2022 notified by Ministry of Power on 29th December, 2022.

13. The members noted the Rules for appropriate action by the respective SERCs.

C. DRAFT ELECTRICITY (AMENDMENT) RULES, 2023

14. The Forum was apprised of the reference received from MOP, vide its letter dated 19.1.2023, on the Draft Electricity (Amendment) Rules, 2023 seeking comments on the proposed amendments.

15. It was decided that respective SERCs/JERCs may individually send their comments to MOP.

D. ELECTRICITY (PROMOTING RENEWABLE ENERGY THROUGH GREEN ENERGY OPEN ACCESS) AMENDMENT RULES, 2023

16. The Forum was apprised that Ministry of Power had issued 'Electricity (Promoting Renewable Energy through Green Energy Open Access) Rules, 2022' on 6th June 2022 wherein Rule 12 of the said notification stated that "*Forum of regulators shall prepare a model regulation on methodology for calculation of open access charges, as well as banking charges within a period of four months from the date of commencement of these rules*."

17. Accordingly, the FOR, in its 81st meeting held on 8th July 2022 constituted a Working Group to formulate the Model Regulations. Thereafter, post various meetings, the Working Group proposed Draft Model regulations on the methodology for calculating the charges for Green Energy Open Access which was discussed, endorsed and approved in the 82nd FOR meeting held on 16.9.2022. The Forum also approved the suggestions to be sent to Ministry of Power on the areas of contradiction in the said Rules.

18. Post sharing the Model Regulations and areas of conflict / suggestions to the Ministry of Power, MOP issued amendment to the said Rules on 27.1.2023 wherein most suggestions of FOR have been incorporated in addition to making new amendments to the said Rules. Some suggestions were not accepted and MOP has come up with revised rules which was circulated to FOR members. The Forum discussed pointwise, the suggestions made by Forum to MOP as also the new amendments made by MOP . After discussions, the following modifications were approved to be incorporated in the model regulations:

i. The following proviso is added to Regulation 8.c. (Cross Subsidy Surcharge):

"Provided also that additional surcharge shall not be applicable in case electricity produced from offshore wind projects, which are commissioned upto December, 2025 and supplied to the Open Access Consumer"

ii 'Monthly banking' is replaced with 'Banking cycle' in accordance with the amended Rules. Thus, Regulation 10.d. and 10.e. is updated as below:

"d) The Banking of energy shall be permitted ***at least on a*** *monthly basis:*

Provided that the credit for banked energy shall not be permitted to be carried forward to subsequent ***banking cycles*** *and the credit for energy banked shall be adjusted during*

*the same **banking cycle** as per the energy injected in the respective Time of Day ('TOD')slots determined by the Commission in its Orders determining the tariff of the Distribution Licensee;*

Provided further that ,the energy banked during peak TOD slots shall be permitted to draw during peak as well as off-peak TOD slot by paying the banking charges as specified in Regulation 10.c of this Regulation. However, the energy banked during off-peak TOD slots shall be permitted to draw during off-peak ToD slot only.

*e) The un-utilised surplus banked energy shall be considered as lapsed at the end of each **banking cycle**:*

Provided that, the RE Generating Station would be entitled to Renewable Energy Certificates to that extent."

19. The updated Model Regulations, after incorporating the above said amendments (**(Annexure-II)** has been approved by the Forum .

AGENDA 3: REFERENCE FROM DERC - CERC REC REGULATIONS W.R.T. CERTIFICATION OF RE IN EXCESS OF RPO

20. DERC, vide letter dated 2.12.2022, referred to Clause 4(4) and 10(3) of CERC (Terms and condition for Renewable Energy Certificates for Renewable Energy Generation) Regulations, 2022 which was issued vide notification dated 24.5.2022 and became effective from 5.12.2022.

Clause 4 (4)

"(4) An obligated entity being a distribution licensee or an open access consumer, which purchases electricity from renewable energy sources in excess of the renewable purchase obligation as determined by the concerned State Commission shall be eligible for issuance of Certificates to the extent of purchase of such excess electricity from renewable energy sources."

Clause 10(3)

"(*3) Application for issuance of Certificates shall be made by an eligible entity being a distribution licensee or an open access consumer within three months from the end of a financial year, along with a copy of certification from the concerned State Commission about purchase of electricity from renewable energy sources in excess of the renewable purchase obligations as determined by the concerned State Commission: Provided that no Certificate shall be issued in case the application is made beyond the period of three months from the end of the financial year.*"

21. According to DERC, the process of Certification of Renewable Energy is an operational level activity and the Commission should not get into execution level.

22. After discussion, it was noted that RPO enforcement is the responsibility of SERC as per the Act. The CERC regulations are an enabling provision, and the SERCs may decide to have the certification done through any agency.

AGENDA 4: FUNGIBILITY OF RPO

23. Chief (RA), CERC apprised the Forum that the Renewable Energy Certificate (REC) mechanism which was implemented through the FOR, had two categories of RECs i.e. Solar RECs and Non-Solar RECs in line with the RPO Regulations specified by the State ERCs and earlier RPO trajectory issued by the Ministry of Power. Further, Central Electricity Regulatory Commission (Terms and Conditions for Renewable Energy Certificates for Renewable Energy Generation) Regulations, 2022 were notified on 9th May,2022 in which the distinction between Solar and Non-solar RECs was dispensed with and the concept of multiplier was brought in. Recent RPO trajectory issued by the Ministry of Power also allowed fungibility among different RE technologies to a great extent. However, State RPO framework still has separate RPO structure for different RE technologies. Hence, there is a dichotomy among the obligated entities like Discoms to buy RECs to fulfil technology specific RPO specified in the State RPO Regulations. Making REC fungible to meet RPO across different technologies would resolve this dilemma and hence it was requested the State ERCs may allow procurement of RECs to fulfil RPO across any RE technology source.

24. The Forum while appreciating the concept of multiplier introduced by the CERC under REC mechanism, highlighted that as per the new trajectory issued by the Ministry of Power, separate obligation has been stipulated for Storage technology. It was suggested that CERC may consider appropriate multiplier for Storage technology based on the RE sources under REC Mechanism.

25. Chairpersons of APERC and HERC informed that they had already dispensed with technology based RPOs and there is only one RPO target without any further categorization as solar or non-solar in their State.

26. After discussion, the Forum endorsed the idea and unanimously agreed to allow fungibility of RECs to fulfil any RPO specified by State ERCs. Accordingly, it was decided that the obligated entity can fulfil any category of RPO by procuring REC certificate as per the REC Regulations, 2022.

AGENDA 5: FOR MODEL REGULATIONS ON VERIFICATION OF STATUS OF GENERATING PLANTS AND CAPTIVE USERS - Clarification Regarding

27. Placing the updated Model Regulations on verification of status of generating plants and captive users **(Annexure –III)** for discussion , Chief (RA), CERC informed the Forum that post publication of the said Model Regulations, some suggestions were received from the stakeholders directly and also from MOP requesting to provide clarity as to which Commission will be responsible for carrying out verification of Captive user status in cases where the user and the CGP are located in different States. The FOR Secretariat suggested the following explanation to be added to Regulation 5.3 of the model Regulations, to address this issue :-

"Explanation: -
In cases where the captive user is located in a State other than the State in which the CGP is located, the State Commission in whose jurisdiction the captive user is located shall take assistance of the concerned RLDC, SLDC, Distribution Licensee in whose area the CGP is located for the verification of captive status of CGP and Captive user."

28. The Forum was also informed that minor changes have been also provided at Sub Regulation (c) of Regulation 5.4 and sub Regulation (a) of Regulation 5.5 of the Model Regulations with a view to provide greater clarity on these Regulations.

29. The Forum deliberated on the suggested changes and approved the updated Model Regulations.

AGENDA 6: RE INTEGRATION: CRITICAL ROLE OF FLEXIBLE THERMAL GENERATION

30. The Forum was apprised that flexibilization of thermal generation has become a necessity in the context of large scale RE integration and that CERC has also already provided a framework for inter-State generating Stations to provide for technical minimum of 55%. Central Electricity Authority (CEA) has also recently issued CEA (Flexible Operation of Coal Based Thermal Generating Units), Regulations, 2023 wherein it is stipulated that coal based thermal generating station should have flexible operation capability with minimum power level of 40%. Accordingly, corresponding Regulatory framework at State level is desirable.

31. Some Forum members expressed their apprehensions as to whether these technical minimum norms can be applied for State owned Generating Stations.

32. Member (Technical), CERC also emphasised the need of flexibility in the system in view of the large integration of intermittent sources like wind and solar. Over a period of time the plant load factors for thermal generating stations have reduced, however in order to provide required flexibility it is critical that these thermal generators remain on bar. Accordingly, he informed that CERC has provided for corresponding compensation mechanism for station heat rate, auxiliary consumption and oil support and that similar compensation mechanism can be suggested for State thermal generating stations.

33. Chairpersons of MPERC, MERC stated that they had already incorporated such mechanisms in their State grid Code.

34. The Forum, after deliberation suggested that a technical feasibility of providing such norms to State thermal generating stations may need to be studied along with the cost benefit analysis of any retrofitting or additional capital expenditure for the same and hence, it was decided that the FOR Standing Technical Committee may look into these discussed aspects in details and come up with their recommendation to FOR

AGENDA 7: ROADMAP TO INDIA'S 2030 DE-CARBONIZATION TARGET – REFERENCE FROM TERI

35. Chief RA, CERC introduced the team of TERI being led by Mr Ajay Shankar (Distinguished Fellow, TERI and former Secretary, Department of Industrial Policy and Promotion, Government of India) and Shri A.K.Saxena, Senior Director, Electricity & Fuels .

36. Delivering the presentation **(Annexure-IV)**, Shri Shankar highlighted the major findings of the study "Roadmap to India's 2030 Decarbonization Target", being the way forward for accelerating the RE integration in India by focussing on the KW scale decentralised projects through suitable Government subsidy and ensuring determination of feed in tariff by the respective SERCs for these projects.

37. The Forum deliberated on the suggestions and noted that decentralised RE projects would also help in reducing and gradual phase out of the waiver being provided in the Transmission charges for the Inter-State solar projects. The Forum also noted that the decentralised projects, including agriculture pumping projects, would help reduce the subsidies being provided to agriculture sector as the subsidy can be replaced with free power.

38. The Forum also noted that increase in decentralised storage would assist in improving Resource Adequacy in the entire grid and can help in enhancing stability w.r.t. frequency and other parameters.

39. The Forum appreciated the findings of the study and noted the recommendations made in the study.

AGENDA 8: ANY OTHER ITEM

40. Presiding Chairperson, FOR / Chairperson, TERC referred to the document on National Electricity Policy wherein MOP had sought for comments. He informed that as there were many action points for ERCs and FOR, the same may be discussed in a special FOR meeting to be organised at short notice.

41. The Forum was also apprised that, in view of the proposal received from HPERC, the 85th FOR meeting would be hold on 18thApril 2023 at Dharmshala, Himachal Pradesh

42. The meeting ended with Vote of Thanks from Secretary, FOR/CERC to Chairperson, GERC and its officials.

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ANNEXURE – I

LIST OF PARTICIPANTS OF THE 84thFOR MEETINGHELD ON FRIDAY, 03rdFEBRUARY, 2023 AT HOTEL LEELA, GANDHINAGAR (GUJARAT)

S. No.	NAME	ERC
01.	Shri D. Radhakrishna, Chairperson	TERC – in Chair.
02.	Justice (Shri) C.V. Nagarjuna Reddy, Chairperson	APERC
03.	Shri Kumar Sanjay Krishna, Chairperson	AERC
04.	Shri Shishir Sinha, Chairperson	BERC
05.	Shri Hemant Verma, Chairperson	CSERC
06.	Shri Anil Mukim, Chairperson	GERC
07.	Shri R.K. Pachnanda, Chairperson	HERC
08.	Shri D.K. Sharma, Chairperson	HPERC
09.	Justice (Shri) Amitav Kumar Gupta, Chairperson	JSERC
10.	Shri P. Ravi Kumar, Chairperson	KERC
11.	Shri T.K. Jose, Chairperson	KSERC
12.	Shri S.P.S. Parihar, Chairperson	MPERC
13.	Shri Sanjay Kumar, Chairperson	MERC
14.	Shri P. W. Ingty, Chairperson	MSERC
15.	Shri Viswajeet Khanna, Chairperson	PSERC
16.	Shri K.B. Kunwar, Chairperson	SSERC
17.	Shri M. Chandrasekar, Chairperson	TNERC
18.	Shri T. Sriranga Rao, Chairperson	TSERC
19.	Dr. M.V. Rao, Chairperson	WBERC
20.	Shri Gajendra Mohapatra, Member/Officiating Chairperson	OERC
21.	Dr. Akhilesh Kumar Ambasht, Member	DERC
22.	Ms. Jyoti Prasad, Member	JERC for State of Goa & UTs
23.	Shri Ajay Gupta, Member	JERC for UTs of J&K & Ladakh
24.	Shri Harpreet Singh Pruthi, Secretary	CERC/FOR
25.	Dr. Sushanta Kumar Chatterjee, Chief (Regulatory Affairs)	CERC
SPECIAL INVITEES		
ERC		
26.	Shri I.S. Jha, Member	CERC
27.	Shri Pravas Kumar Singh, Member	CERC
28.	Shri Mehul M. Gandhi, Member	GERC
29.	Shri Satyendra R. Pandey, Member	GERC
FOR SECRETARIAT		
30.	Ms. Rashmi S. Nair, Dy. Chief (RA)	CERC
31.	Shri Antony P. Mathew, Assistant Secretary	FOR
OTHER GUESTS		
32.	Shri Ajay Shankar, Distinguished Fellow	TERI
33.	Shri A.K. Saxena, Senior Director	TERI

ANNEXURE-II

STATE ELECTRICITY REGULATORY COMMISSION

Model Regulation on Methodology for calculation of Open Access charges and Banking charges for Green Energy Open Access Consumers –

No…….. Date: ……..

NOTIFICATION

In exercise of the powers conferred under section 181, of the Electricity Act, 2003 (36 of 2003), read with section 42, section 61 and section 86 thereof and all other powers enabling it in this behalf, and after previous publication, the …… State Electricity Regulatory Commission hereby makes the following Regulations, namely-

CHAPTER 1

PRELIMINARY

1. Short Title, Extent and Commencement

(1) These regulations is called the … State Electricity Regulatory Commission (Methodology for determination of Green Energy Open Access Charges) Regulations, 2022.

(2) These Regulations will come into force from the date of their notification in the Official Gazette.

(3) These Regulations shall extend to the whole of the State of ……..

2. Objective

The objective of these regulations is to provide a methodology for the determination of Open Access charges and Banking charges for Green Energy Open Access consumers.

3. Definitions

(1) In these regulations, unless the context otherwise requires,

(a) "Act" means the Electricity Act, 2003 (36 of 2003);

(b) "Banking" means the surplus green energy scheduled and injected into the grid and credited with the distribution licensee by the Green Energy Open Access consumers;

(c) 'Central Commission' means the Central Electricity Regulatory Commission referred to in sub-section (1) of Section 76 of the Act;

(d) "Central Nodal Agency" means a Central Nodal Agency as notified by the Central Government to set up and operate a single window green energy open access system for renewable energy;

(e) "Commission" means the ……(Name of State) Electricity Regulatory Commission constituted under the Act;

(f) "Day Ahead Market (DAM)" means a market where Day Ahead Contracts are transacted on the Power Exchange(s);

(g) "Forum of Regulators" means the Forum as referred to in sub-section (2) of section 166 of the Act;

(h) "Fossil Fuel" means fuels such as coal, lignite, gas, liquid fuel or combination of these as its primary source of energy, which are used in Thermal Generating Station for generating electricity;

(i) "Green Energy" means the electrical energy from renewable sources of energy including hydro and storage (if the storage uses renewable energy) or any other technology as may be notified by the Government of India from time to time and shall also include any mechanism that utilises green energy to replace fossil fuels including production of green hydrogen or green ammonia as per provision of clause G of sub-rule (2) of rule 4 of Green Energy Open Access Rules, 2022;

(j) "Green Open Access Consumer" means any person who has contracted demand or sanctioned load of 100kW or more or such other limit as may be specified by Commission from time to time, except for captive consumers, who are supplied with electricity from green energy sources for their own use by a licensee or the Government or by any other person engaged in the business of supplying

electricity to the public under this Act or any other law for the time being in force and includes any person whose premises are for the time being connected for the purpose of receiving green energy with the works of a licensee, the Government or such person, as the case may be.

(k) "Rules" means the Electricity (Promoting Renewable Energy Through Green Energy Open Access) Rules, 2022 and subsequent amendments;

(l) "SERC" means the State Electricity Regulatory Commission;

(m) "Standby charges" means the charges applicable to green energy open access consumers against the standby arrangement provided by the distribution licensee, in case such green energy open access consumer is unable to procure/schedule power from the generating sources with whom they have the agreements to procure power due to outages of generator, transmission systems and the like;

(2) Words and expressions used and not defined in these regulations but defined in the Act or IEGC or any other regulation of the Appropriate Commission shall have the meaning assigned to them under the Act or the IEGC or the State Grid Code or any other regulation of the Commission as the case may be.

4. Scope

These regulations shall be applicable for allowing Open Access to electricity generated from green energy sources as defined under clause (1) (i) of Regulation 3 of these Regulations, including the energy from non-fossil fuel-based Waste-to-Energy plant for use of Intra-State Transmission System (InSTS) or distribution system or both, which are incidental to Inter-State Transmission of electricity.

CHAPTER 2

GREEN ENERGY OPEN ACCESS CHARGES

5. Charges for Green Energy Open Access

The charges on Green Energy Open Access consumers shall be as follows: -

(1) Transmission charges;

(2) Wheeling charges;

(3) Cross subsidy Surcharge;

(4) Standby charges wherever applicable;

(5) Banking Charge and

(6) Other fees and charges such as SLDC fees and scheduling charges, deviation settlement (DSM) charges as per the relevant regulations of the Commission.

6. Transmission Charges

a) For use of inter-State transmission system: As specified by the Central Commission from time to time.

b) For use of intra-State transmission system:

i. Transmission Charges for Long-Term/Medium-Term Green Energy Open Access, shall be as below:

$$\text{Transmission Charge} = \frac{\text{Total Transmission System Charges (TTSC)}}{\text{Peak load served } (\mathbf{PLS})}$$

Where, Total Transmission system Cost for InSTS shall be sum of Annual Revenue Requirement (ARR) or annual transmission service charge of Transmission Licensee(s) in the State approved or adopted by the Commission.

PLS is the Peak load served by the State transmission system during the year:

Provided that, in case of multiple transmission licensees in the States, the ARR for all the Transmission licensees shall be pooled together for computation of TTSC.

Transmission Charges will be calculated as Rs/kW/month or Rs/MW/day.

ii. Transmission Charges for Short-Term Green Energy Open access, shall be computed as:

$$\text{Transmission Charge (STOA)} = \frac{\text{Total Transmission System Charges (TTSC)}}{\text{Energy transmitted by transmission licensee during the year}}$$

Transmission Charge for Short-Term Green Energy Open Access shall be computed in Rs/kWh and it shall be charged on the actual energy transmitted:

Provided that the existing waivers or concessions in the Transmission Charges applicable for green energy open access transactions under ___(State) SERC open Access Regulations shall continue as specified by the ___(State) SERC.

iii. While determining transmission charges for the ensuing year, Transmission ARR will be trued up by the Commission as per provisions of the MYT Regulations and on considering the Transmission revenue recovered from the Short-term green energy Open Access Consumers for the previous year.

iv. In case, where a dedicated transmission system used for open access has been constructed for exclusive use of an open access consumer, the transmission charges for such dedicated system shall be worked out by transmission licensee for their respective systems and get the same approved by the Commission. The charges shall be borne entirely by such open access consumer till such time the surplus capacity is allotted and used for by other persons or purposes.

v. In addition to Transmission Charge, Intra-State Transmission loss shall be applicable to consumers seeking Green Energy Open Access. It shall be determined as average of 52-week Intra-State Transmission loss for the previous financial year as approved by the Commission.

7. Wheeling Charges

a) Wheeling Charges for Long-Term/Medium-Term/Short-Term Green Energy Open Access, shall be computed as:

$$\text{Wheeling Charge} = \frac{\text{Wheeling ARR}}{\text{Energy wheeled during the year}}$$

(i) Wheeling ARR of Distribution Licensee will be as approved by the Commission under MYT Tariff Regulations or Order as the case may be.

(ii) Distribution Licensees need to maintain separate accounting records for the Wires Business and Retail Supply Business and prepare an allocation statement based on the allocation ratio specified by the Commission in the MYT Regulations or any other Regulation or Order as the case may be, for determination of Wheeling ARR for wire business and for determination of wheeling charges thereof.

[1] (iii)In case, voltage-wise segregation (HT/LT) of assets (Gross Fixed Assets) and data of energy wheeled / loss levels over (HT/LT) network is available, separate wheeling charges (HT/LT) shall be determined as under:

i. $$\text{Wheeling Charge (HT)} = \frac{\text{Estimated/Allocated Wheeling ARR (HT)}}{\text{[Est. Energy wheeled (HT) + Est. Energy Wheeled (LT) / (1- loss at LT)]}}$$

ii. $$\text{Wheeling Charge (LT)} = \frac{\text{Estimated/Allocated Wheeling ARR (LT)}}{\text{Energy wheeled (LT)}}$$

Where,

Estimated Wheeling ARR = Wheeling ARR (HT) + Wheeling ARR (LT)

HT (Loss) = Average of 52-week Loss at HT distribution system based on sample feeder level Energy Audit (viz. technical loss assessment)

LT (Loss) = Average of 52-week Loss at LT distribution system based on sample feeder level Energy Audit (viz. Technical loss assessment)]

[1] This provision may be adopted by States where voltage-wise wheeling charges are being determined.

(iii) Wheeling Charge for Green Energy Open Access shall be computed in Rs/kWh and it shall be charged on the actual energy wheeled:

Provided that the existing waivers or concessions in the Wheeling Charges applicable for renewable energy open access transactions under (State) SERC open Access Regulations shall continue as specified by the (State) SERC.

b) While determining Wheeling Charges for the ensuring year, Wheeling ARR shall be trued up by the Commission as per the provisions of the MYT Regulations and upon considering the shortfall (excess) revenue recovered from Wheeling Charges for the previous year.

c) In case, where a dedicated distribution system used for open access has been constructed for exclusive use of an open access consumer, the wheeling charges for such dedicated system shall be worked out by distribution licensee for their respective systems and get the same approved by the Commission. Such charges shall be borne entirely by such open access consumer till such time the surplus capacity is allotted and used for by other persons:

Provided also that an open access consumer connected to the Intra State Transmission system shall be liable to pay the wheeling charges determined under this regulation, if such consumer was paying wheeling charges directly or indirectly before availing the green energy open access.

d) In addition to Wheeling Charge, Wheeling loss shall be applicable to consumers seeking Green Energy Open Access and it shall be determined as average of 52-week Wheeling loss for the previous year as approved by the Commission:

Provided that, the Wheeling loss shall include only technical loss and not Aggregate Technical and Commercial loss of that Distribution Licensee. The Commission shall consider the Average 52-week loss for HT/LT network, as applicable;

Provided that if feeder-wise data of losses is not available, the Commission shall consider the voltage-wise sample feeder for determining the wheeling losses.

8. Cross subsidy surcharge

a) If Green energy open access facility is availed by a cross-subsidising consumer of a distribution licensee of the State, then such consumer, in addition to transmission and wheeling charges, shall pay cross subsidy surcharge determined by the Commission. Cross subsidy surcharge determined on Per Unit basis shall be payable, monthly by the green

energy open access consumers based on the actual energy drawn during the month through open access. The amount of surcharge shall be paid to the distribution licensee of the area of supply from whom the consumer was availing supply before seeking open access.

b) The Cross-Subsidy Surcharge (CSS) shall be determined in accordance with the following formula specified in Tariff Policy,2016 as amended time to time:

CSS (S) = T – [C/ (1-L/100) + D+ R]

Wherein:

S – surcharge

T – Tariff payable by the relevant category of consumers, including reflecting the Renewable Purchase Obligation

C – Per unit weighted average cost of power purchase by Licensee, including meeting Renewable Purchase Obligation

L – Aggregate of transmission, distribution and commercial losses, expressed as a percentage applicable to the relevant voltage level

D - Aggregate of transmission, distribution and wheeling charge applicable to the relevant voltage level

R – Per unit cost of carrying regulatory assets.

Provided that in case the above formula gives negative value of surcharge, the same shall be zero;

c) The Cross-Subsidy Surcharge shall not exceed 20% of the tariff or Average Billing Rate (ABR) applicable to the category of the consumers seeking Green Energy Open Access:

Provided that the Commission may fix a lower surcharge in the situation of shortages and load shedding by the distribution licensee;

Provided further that such cross-subsidy surcharge shall not be levied in case distribution access is provided to a person who has been availing green power from the plant established as captive generation plant for his own use;

Provided also that cross subsidy surcharge and additional surcharge shall not be applicable in case power produced from a non-fossil fuel-based Waste-to-Energy plant is supplied to the Open Access Consumer;

Provided also that additional surcharge shall not be applicable in case electricity produced from offshore wind projects, which are commissioned upto December, 2025 and supplied to the Open Access Consumer";

d) Cross-Subsidy Surcharge for Green Energy Open Access shall be computed in Rs/kWh and shall be charged on the actual energy consumed by the consumer under Green Energy Open Access.

9. Standby Facility and Charges

a) In case the green energy open access consumer is unable to procure/schedule power from the generating sources with whom they have the agreements to procure power due to outages of generator, transmission systems and the like, standby arrangement shall be provided to Green Energy Open Access consumer by the distribution licensee of the area of its supply.

b) The Standby Charges for Green Energy Open Access for such standby arrangement ~~shall be 125% of normal tariff of~~ shall not be more than 25% of the energy charges applicable tothe consumer category:

Provided that such Standby Charges shall not be applicable if the Green Energy Open Access Consumers have given notice, atleast a day in advance before gate closure in DAM on 'D-1' day, 'D' being the day of delivery of power, for standby arrangement to the distribution licensee.

c) The Standby Charges for Green Energy Open Access shall be computed in Rs/kWh and it shall be charged on the actual energy drawn by the consumer from distribution licensee during the period of standby availed by Green Energy Open Access consumer in case of outage of RE generator under Green Energy Open Access.

10. Banking Facility and Charges

a) Banking facility shall be provided to the consumers availing Green Energy Open Access. The surplus energy from a 'Green Energy' Generating Station after setoff shall be banked with the Distribution Licensee.

b) The banking facility including injection of surplus energy and drawal of banked energy

shall be subject to scheduling.

c) The Banking Charges shall be adjusted in kind @ 8% of the energy banked.

d) The Banking of energy shall be permitted ~~only on~~ at least on a monthly basis as per Calendar month:

Provided that the credit for banked energy shall not be permitted to be carried forward to subsequent ~~months~~ banking cycles and the credit for energy banked during the month shall be adjusted during the same banking cycle as per the energy injected in the respective Time of Day ('TOD') slots determined by the Commission in its Orders determining the tariff of the DistributionLicensee;

Provided further that, the energy banked during peak TOD slots shall be permitted to draw during peak as well as off-peak TOD slot by paying the banking charges as specified in Regulation 10.c of this Regulation. However, the energy banked during off-peak TOD slots shall be permitted to draw during off-peak ToD slot only .

d) The un-utilised surplus banked energy at the end of the month, shall be considered as lapsed at the end of each ~~month~~ banking cycle:

Provided that, the RE Generating Station would be entitled to Renewable Energy Certificates to that extent.

11. Other Charges

In addition to above charges, the consumer availing Green Energy Open Access shall also pay the following charges determined by the Commission as per the provisions of the relevant regulations of the Commission:

a) Applicable SLDC fees and charges

b) Scheduling charges

c) RE Deviation Settlement Charges (RE-DSM)

CHAPTER 3

MISCELLANEOUS

12. Power to give directions

The Commission may from time to time issue such directions and orders as considered appropriate for implementation of these Regulations.

13. Power to relax

The Commission may by general or special order, for reasons to be recorded in writing, and after giving an opportunity of hearing to the parties likely to be affected, may relax any of the provisions of these Regulations on its own motion or on an application made before it by an interested person.

14. Power to amend

The Commission may from time to time add, vary, alter, suspend, modify, amend, or repeal any provisions of these Regulations.

15. Power to remove difficulties

If any difficulty arises in giving effect to the provisions of these Regulations, the Commission may, by an order, make such provisions, not inconsistent to the provision of the Act and these Regulations, as may appear to be necessary for removing the difficulty.

(Secretary)

SERC

ANNEXURE-III

MODEL REGULATIONS ON VERIFICATION OF STATUS OF GENERATING PLANTS AND CAPTIVE USERS

NOTIFICATION

In exercise of powers conferred by sub section (1) of section 181, read with section 9 of the Electricity Act 2003 (36 of 2003) and all other powers enabling it in that behalf, the "State" Electricity Regulatory Commission hereby makes the following Regulations.

1. Short Title and Commencement

1.1 These regulations shall be called the "State" Electricity Regulatory Commission (Verification of Captive Generating Plants and Captive Consumers) Regulations, "Notification Year".

1.2 These regulations shall come into force from the date of their notification in the Official Gazette.

2. Objective

The objective of these regulations is to specify the methodology for verification of status of captive generating plants and captive users when consumers import power from their captive generator(s) located either within the State or outside the State.

3. Scope and Extent of Application

3.1 These regulations shall apply to all the captive generating plants (CGP) and captive users

3.2 These regulations shall extend to the whole of the State of [Name of the State].

4. Definitions

4.1 In these regulations, unless the context otherwise requires; -

a) "Act" means the Electricity Act, 2003;

b) "Captive generating plant" or CGP means a captive generating plant as defined in the Act read with Rule 3 of the Electricity Rules, 2005;

c) “Captive User” shall mean the end user of the electricity generated fromits own Captive Generating Plant and the term “Captive Use” shall be construed accordingly;

d) “Electricity Rules, 2005 “means the Rules notified by the Central Government vide G.S.R. 379 (E) dated 8th June 2005 and as amended from time to time;

e) 'Year' means a financial year from 1st April to 31st March.

4.2 Words and expressions used in these regulations and not defined herein but defined in the Act or the Electricity Rules, 2005 or any other regulations specified by the State Commission shall, unless the context otherwise requires, have the meanings assigned to them under the Act or the Electricity Rules, 2005 or any other regulations specified by the State Commission, as the case may be.

5. Verification of Status of CGP

5.1 Verification of status of CGP and captive users with respect to the criteria of consumption and equity share holding, as prescribed under the Electricity Rules, 2005 shall be done annually by the State Commission after the end of financial year based on the information submitted by the CGP and Captive User.

5.2 The CGP and the Captive User shall file affidavit in specified format(s) before the State Commission giving details regarding their electricity generation, entity-wise consumption and equity share holding during the previous year before 30th April each year.

5.3 The State Commission shall take assistance of the concerned RLDC, SLDC, Distribution Licensee (in whose area the CGP or Captive User is located) for the verification of captive status of CGP or Captive Users based on the affidavit submitted by such CGP and captive users.

Explanation:-

In cases where the captive user is located in a state other than the state in which the CGP is located, the State Commission in whose jurisdiction the captive user is located shall take assistance of the concerned RLDC, SLDC, Distribution Licensee in whose area the CGP is located for the verification of captive status of CGP and Captive user.

5.4 ***Verification of consumption criteria***

a) Verification of criteria of consumption shall be based on the net electricity generated from the generating unit(s) in a generating station, i.e gross electricity generated less auxiliary consumption, identified for captive use.

b) The electricity shall be determined on annual basis at the end of the year.

c) Verification criteria for various types of captive users shall be as follows:

Sl No	***Type of captive user***	***Criteria***
i	Single captive user	The self-consumption shall not be less than 51% of the net electricity generated on an annual basis.
ii	Partnership firm/Limited Liability Partnership (LLP)	The self-consumption shall not be less than 51% of the net electricity generated on an annual basis
iii	Association of Persons (AoP)	The captive users shall consume not less than 51% of the net electricity generated on annual basis for captive use in proportion to their share in the power plant within the variation not exceeding 10%.
iv	Cooperative Society	Members of Society shall collectively consume not less than 51% of the net electricity generated on annual basis
v	Captive use in respect of Special Purpose Vehicle (SPV)	The captive user(s) shall consume not less than 51% of the net electricity generated on annual basis

d) Manner of assessment of data related to generation from CGP and consumption by captive user :

Sl No	***Location***	***Method of assessment***
i	CGP and its captive user(s) are co-located	Based onnet generation from the CGP and consumption by the captive user shall be based on the reading of the meter installed for recording the generation at the generation side (“generation meter”) and

		the electricity sourced at the consumption side (“consumption meter”).
ii	CGP and its captive users are located within the State (but not co-located),	Based on actual generation from the CGP as per the data provided by the respective SLDC and the corresponding consumption or the actual consumption whichever is lower, based on the meter reading at the user interface with the grid as provided by the concerned SLDC and the distribution licensee in whose area the user(s) are located.
iii	The CGP and its captive user(s) is/are located in different States	Based on actual generation from the CGP as per the data provided by the respective RLDC and the corresponding consumption or the actual consumption whichever is lower, based on the meter reading at the user interface with the grid as provided by the concerned SLDC and the distribution licensee in whose area the user(s) are located.

5.5 ***Verification of equity share holding criteria***

a) Verification criteria for various types of CGP shall be as follows:

Sl No	***Type of CGP***	***Criteria***	***Support Document***
i	Single captive user	The user shall hold not less than 26% of the equity share capital having voting rights throughout the year	A certificate from the Company Secretary.
ii	Partnership firm/LLP	Ownership in the captive plant shall be with respect to	A certificate from the Company Secretary.

		not less than 26% proprietary interest and control over the generating station or power plant on annual basis.	
iii	AoP	The captive users shall hold in aggregate not less than 26% of the ownership/paid up equity share capital with voting rights throughout the year	A certificate from a registered Chartered Accountant.
iv	Cooperative Society	Members of society shall collectively satisfy not less than 26% of the ownership on annual basis.	A certificate from District Registrar of Cooperative Society.
v	SPV/ Company	The captive user(s) shall hold in aggregate not less than 26% of the proportionate paid up equity share capital with voting rights of the units identified for captive use (i.e. the proportionate of the Equity of the company related to the generating unit or units identified as the CGP) throughout the year	A certificate from a registered Chartered Accountant.

6. Consequence of failure to meet Captive user status

6.1 The Captive user shall deposit by 30th April of every year, the security deposit in the form of unconditional and irrevocable Bank Guarantee equivalent to 51% captive consumption, to the concerned distribution licensee as payment security against estimated cross subsidy surcharge and additional surcharge as may be decided by

the State Commission;

Provided that there shall be no exemption from Cross Subsidy Surcharge and Additional Surcharge on the electricity consumed by non-Captive consumers.

6.2 If the CGP or Captive User fails to meet the criteria of ownership and consumption, specified in Rule 3 of Electricity Rule 2005, as amended from time to time, by the end of the year, such CGP or Captive User shall lose its Captive status for that year leading to imposition of Cross Subsidy Surcharge and Additional Surcharge and such other charges as applicable on open access consumers.

7. Detailed Procedure

7.1 The State Commission shall publish the detailed procedure for verification of status of CGP and captive users in pursuance to the provision of the Electricity Rules, 2005 and these regulations.

8. Power to remove difficulties

8.1 If any difficulty arises in giving effect to the provisions of these Regulations, the State Commission may, by general or specific Order, make such provisions not inconsistent with the provisions of the Act, as may appear to be necessary for removing the difficulty.

(Secretary)

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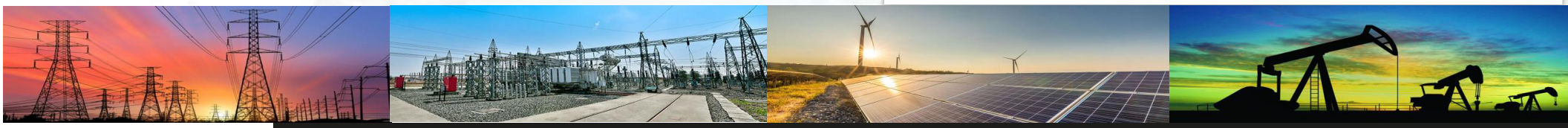
Achieving

India's 2030 Decarbonization Targets

Presentation in 84th Meeting of Forum of Regulators
Gandhinagar

3 February 2023



The Context

PM's announcement at COP 26, Glasgow

Key 2030 Goals

1. **Achieving non-fossil energy capacity by 2030 : 500 GW**
2. **Meeting 50 percent of its energy requirement from renewable energy**

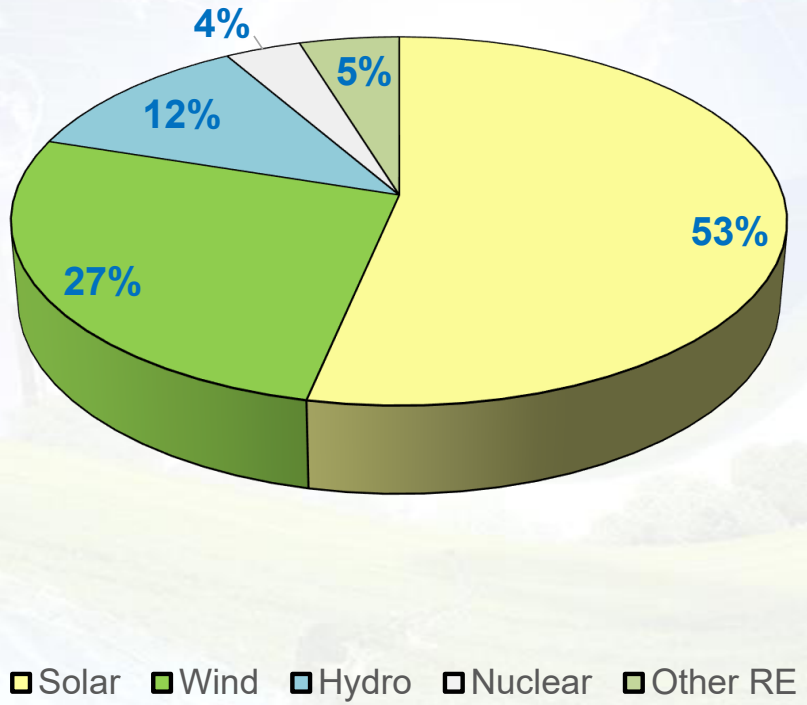
Net-zero by 2070

Feasibility

CEA's 2030 Projections of Non-fossil fuel Capacity

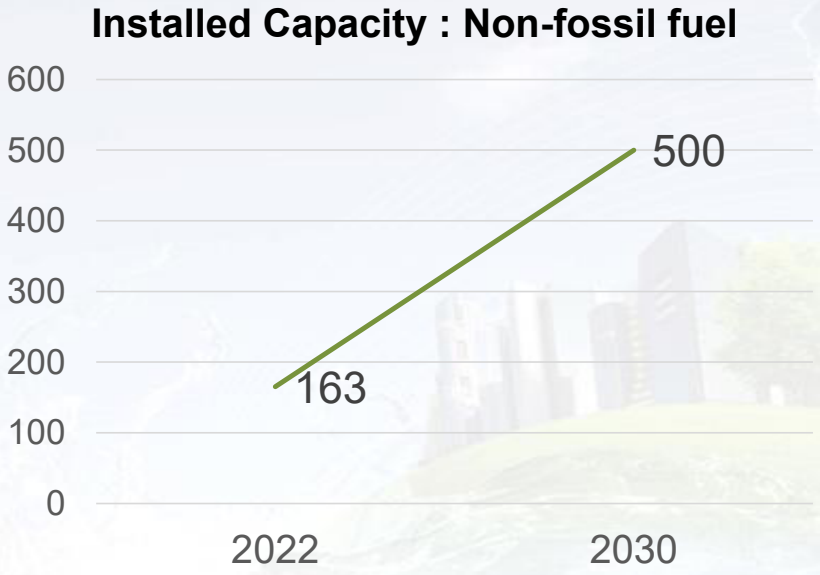
	Type	Installed Capacity
1	Solar	280 GW
2	Wind	140 GW
3	Hydro	61 GW
4	Nuclear	19 GW
5	Other RE	25 GW
	Total	525 GW

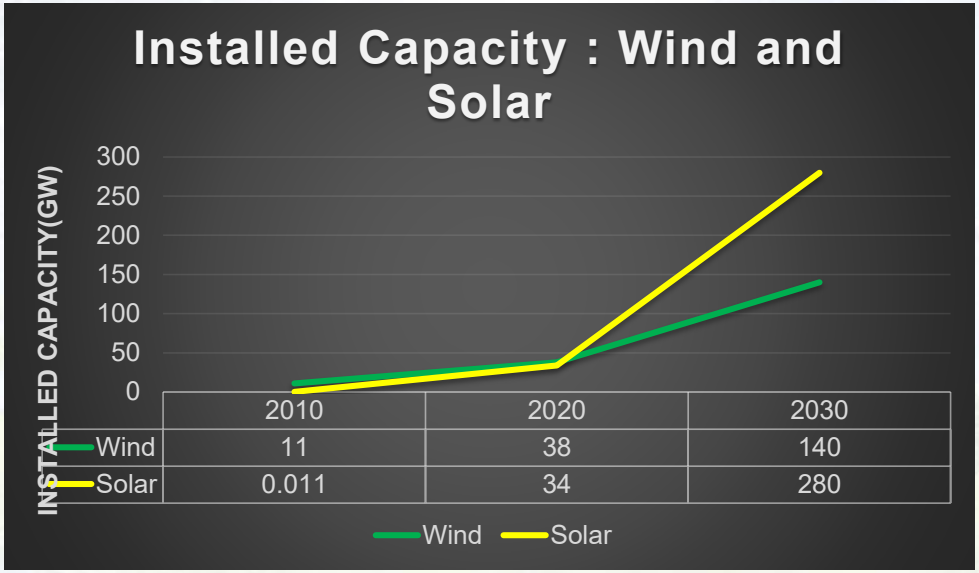
Grid scale storage requirement : 27,000 MW/108,000 MWh



Source: Optimal Generation Capacity Mix for 2029-30, CEA, 2020

The Challenge





Source: Optimal Generation Capacity Mix for 2029-30, CEA, 2020

2022 : Wind 40 GW, Solar : 54 GW

Way Forward to 2030

- Increase momentum of bids for solar and wind power projects
- Increase share of decentralized kW range solar power by introducing feed-in-tariff
- Implement storage projects
- Introduce Time-of-use (TOU) tariffs
- Give choice to consumers to buy green carbon free electricity
- Become Aatma-nirbhar : Become a globally competitive renewable energy (RE) manufacturing hub.

Roadmap to India's 2030 De-carbonisation Target, TERI, 2022

Way Forward- Solar

Feed-in-tariff (FIT) for decentralized Solar in kW range

- Feed-in tariff of Rs. 3 to 4 per kWh - lower than cost of delivery in rural areas.
- FIT needs to be above the tariffs for large solar power projects:
  - Higher unit costs in dispersed small installations
  - Greater risks
- No need for transmission investment.
- Financial saving for DISCOMs.
- Triggers large-scale private investment.
- Increases incomes in rural areas.

Assuming a potential of 1 MW per village, 600 GW potential in 6 lakh villages.

Way Forward- Wind
Increase momentum of wind power growth

- **Promote Banking** — Banking of wind power would accelerate investments by C&I sector
- **Repower old sites** — Potential : 4.5 GW
- **Commence Off-shore wind power development** — Potential: 302 GW at 100 meters; Start with development at attractive sites; Provide transmission and power evacuation from these sites

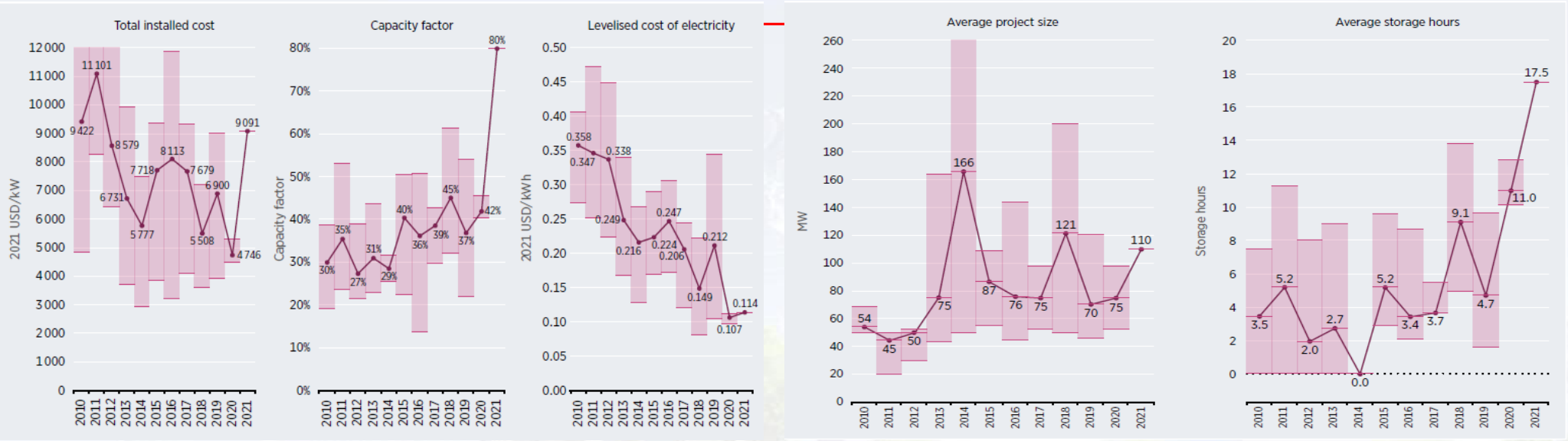
Way Forward - Grid storage - Pumped Storage Plant (PSP)

- PSP potential : 96 GW; developed : 3.3 GW
- PSP ideal for flexibility in generation.
- Essential for grid stability for inherently variable and inflexible RE generation.
- Helps in meeting peaking demand.
- Increases PLF of thermal plants.
- Ensures full absorption of RE power.
- No need to create new thermal capacity; RE + Storage is cheaper.

Way Forward - Grid storage - Pumped Storage Plant (PSP)

- Initiate immediate development of PSPs – a mature and proven technology,
- Regulatory Commissions to mandate creation of PSPs on priority
- SPV to do project preparation and bidding for multi-state projects (UMPP template).
- Consider awarding projects on a hybrid annuity or a pure annuity contract.
- Essential to de-risk investment.
- Other option is to invite bids for round the clock supply as SECI has done.
- Round-the-clock supply bids with PSP site – more competition and lower tariffs.
- Provision of long-term finance from development financial institutions essential; long-term debt lowers cost of servicing capital and capacity charges/tariff.
- Become Atma Nirbhar with creation of reversible turbine manufacturing capacity.

Concentrated Solar Thermal Plant (CSP) - Feasible Storage



- 68% decline in cost between 2010 and 2021.
- Recent 110 MW CSP in Chile : Increase in capital cost for long duration (17.5 hrs.) storage and 80% CF
- Dubai CSP project PPA at $ 0.073 /kWh
- US DoE funding research to reduce cost to 5 cents per kWh

IRENA 2021

Grid storage : Battery and Hydrogen

- Batteries come lower in priority as compared to PSP and CSP.
- Early stage for deployment of grid scale battery globally.
- Encouraging response in stand-alone BESS tenders of SECI and NTPC
- Li-Ion batteries needed for EVs
- Seasonal peak demand solutions :
  - Thermal power plants
  - Hydrogen

Way Forward- Time-of-Use Pricing

1. Time-of-Use tariffs
   - Strong price signal for change in consumer behavior.
   - Consumer tariff to match time-of-day DISCOM power procurement cost.
   - Reduces DISCOM costs for meeting peak demand.
   - Optimizes capacity utilization.
   - Minimizes need for additional investment for peaking power demand.

2. Introduce round the year time-of-use tariffs initially to reflect marginal power procurement cost, moving on to flexible time-of-use seasonal tariff after a few years

Way Forward- Introduce Consumer Choice for Energy Transition

1. Extend the spirit behind green energy Open Access rules

2. Mandate DISCOMs to give choice to all consumers only green carbon-free electricity

- First on net basis
- Subsequently on real-time basis (say in 2-3 years)

3. Separate tariff determination by SERCs for such green electricity consumers

Become a competitive RE manufacturing hub
Achieve Energy Security

Need to go beyond production linked incentive (PLI)

Use government procurement bids for solar panel manufacturing in India

- Invite successive government procurement bids

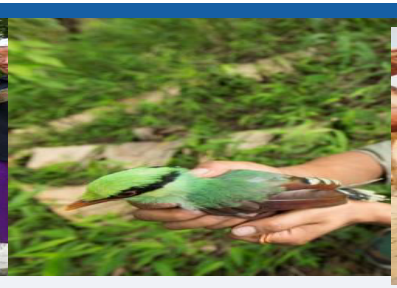
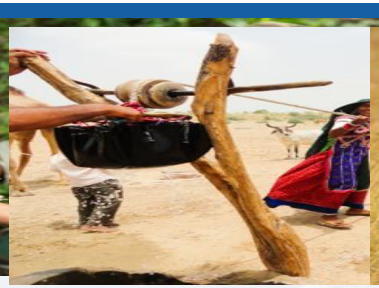
  for supply of 1 GW annually for five year from a prospective date when a new plant would begin production

- The tender to offer:
  - Land in the manufacturing hub
  - Cheap electricity, quality infrastructure
  - Duty-free imports of machinery and spares

Repeat government procurement approach for
- CSP
- Battery Energy Storage Systems
- Hydrogen Mission

Key Requisites for Success

- RE capacity has grown with private investment – credibility of long-term contracts with DISCOMs
- Demand Projection by DISCOMs and PPAs to meet full demand to continue to drive investment
- Essential to have quick turn-around in financial health of DISCOMs to maintain confidence of financial markets
- Competitive procurement, especially that of storage to incentivize movement down the cost curve


Thank You

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