

**F. No. 23/23/2020-R&R/RCM**  
**Government of India**  
**Ministry of Power**

Shram Shakti Bhawan, Rafi Marg  
New Delhi, dated 15<sup>th</sup> November 2022

To,

1. Chairperson, CEA
2. ACS/Principal Secretary/Secretary (Energy/Power) of all States/UTs
3. Secretary, CERC
4. Secretaries of all SERCs/JERCs
5. CMD/MDs of all GENCOs

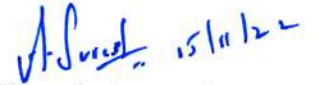
**Subject: Concept Note on Pooling of Tariff of 25 years Plus Thermal/ Gas Generating Stations.**

Sir/Madam,

I am directed to forward a Concept Note on Pooling of Tariff of 25 years Plus Thermal/ Gas Generating Stations, with request to provide your comments **within 21 days from the date of this letter, i.e., by Tuesday, 6<sup>th</sup> December 2022.** The comments may also be mailed to [rcmdivision-mop@gov.in](mailto:rcmdivision-mop@gov.in).

2. This issues with the approval of the competent authority.

Yours faithfully,



(Suresh Annepu)

Director

Tel: 011-2371 7737

**Copy for information to:**

1. PS to Hon'ble Minister of Power & NRE
2. APS to Hon'ble Minister of State for Power
3. Sr. PPS to Secretary, Ministry of power
4. PSO to CE (R&R)/ RCM Section, Ministry of Power

**Copy to:**

Technical Director, NIC for uploading on Ministry's website under 'New Notices' with the heading "**Inviting stakeholders' comments on Concept Note on Pooling of Tariff of 25 years Plus Thermal/ Gas Generating Stations**"

# **Concept note on Pooling of Tariff of 25 years Plus Thermal/ Gas Generating Stations**

## **1. Background**

The power situation in the country has changed from deficit to surplus over the years. There were times when States had been keen to enter into long term Power Purchase Agreement (PPA) with the objective of securing power. However, the situation has changed now. The emergence of cheaper renewable energy, especially Solar, has attracted attention of everyone. Today, the procurers are scouting for cheaper power and hesitant to enter long term PPAs, anticipating further reduction in power prices. Further, an often-ignored fact is that the volume of power transacted on the exchange is only about 12% of the total energy requirement in the country.

The availability of ample generation capacity, low cost of some recently signed renewable PPAs and low tariffs in the market, has led States, specifically those that are surplus in power to approach Ministry of Power for relinquishment of their share from Central Generating Stations (CGS). Ministry of Power considering the request of the States, allowed the States to exit from PPAs with Central Power Sector Utilities after a period of 25 years vide guidelines dated 22.03.2021. Thereafter, many States/ Distribution companies based on commercial considerations are making an exit from PPAs of costlier plants (non-pit head coal stations and Gas based thermal generating station) while retaining the PPAs of cheaper plants.

## **2. Creation of Genco-wise Common pool for 25 years plus Thermal/ Gas Generating Stations**

India is aiming to install 500 GW of non-fossil fuel capacity comprising primarily of RE by 2030. The increase of RE in the grid will reduce fossil fuel usage and carbon emissions, thus enhancing sustainability. Although, the higher penetration of RE in the grid enhances energy sustainability, it also impacts grid stability. RE intermittency, and supply-demand imbalances associated with it pose difficulties for the power network.

The successful integration of planned RE of 333 GW Solar and 133 GW Wind to be installed by 2031-32 will require greater amount of storage capacity in the electrical grid. Central Electricity Authority (CEA) in the draft National Electricity Plan 2022, has estimated a requirement of 51.5 GW of 5-hr duration (about 255 GWh) BESS and 18.8 GW of PSP projects by the end of 2031-32 for successfully integrating the planned RE into the grid. However, as of now, only 4,746 MW of PSP and 37 MWh of BESS is available in the grid. Although it is envisaged that the cost of Energy Storage Systems (ESS) will reduce in future, at present, the high cost of ESS is a deterrent to its deployment on a large scale. It may still be a few years before the electrical grid will have adequate storage capacity. Until the time adequate storage capacity develops in the grid, the generation load balancing must be carried out in the usual manner through the conventional load following generating stations such as coal and gas thermal plants. Thus, ensuring continued operation of the plants which have already completed 25 years of operation will be in the interest of the electrical grid, taking care of balancing needs until development of adequate storage capacity.

It is noteworthy to mention that many thermal units in India and the world are operating efficiently much beyond 25 years. Further, it is a known fact that due to better O&M

practices, the generating stations of CPSUs are operating at full capacity even after completion of 25 years of the useful life as per the norms specified by CERC. The selective approach adopted by the procurers, who are exiting from PPAs, may lead to the shutdown of significant thermal capacities especially the Gas based capacities.

CEA report on Optimal Energy Mix by 2030 has projected the requirement of 250 GW of coal-based generation capacity and 25.3 GW of gas-based generation capacities for meeting the peak requirement of 340 GW.

In view of long gestation period required for the construction of new thermal capacities and retirement of old inefficient thermal plants, it would be prudent to continue to operate the existing efficient thermal capacities which have completed 25 years of operation, deferring the capital expenditure required for creation of new capacities.

### 3. Principles and Operation Methodology for Genco-wise Pooling of Thermal Stations

A proposal has been formulated by MoP in consultation to conserve capex and utilise the capacity already available in the grid,

- a. **Creation of Common Pool:** A Genco-wise common pool of 25 years plus stations (Coal and gas-based plants) shall be created. As and when any Station of the Generating Company completes 25 years of COD, the same shall be automatically added to the pool.
- b. **Requisition of Power:** The willing State/DISCOM(s) shall approach the Generating Company through a letter of intent for requisition of power from the common pool. The letter of intent shall also include the quantum of power to be procured along with procurement period (no. of years). The minimum requisition period for power from the common pool shall be 5 years. The States/DISCOM shall have to enter a contract (PPA) for a minimum period of 5 years from the intended date of Start of drawl of power from the common pool.
- c. **Allocation of Power:** The willing States/DISCOM(s) shall be made percentage allocations from the common pool. The Station wise percentage allocation shall be same as the percentage allocation from the common pool. However, the station wise allocation of power may undergo a subsequent change due to addition or deletion of units to the common pool in future. A sample illustration of station wise allocation of power to a beneficiary 'A' from the common pool is given below:

| Name of Station           | Station IC (MW) | Present Allocation to Beneficiary 'A' as per Existing Mechanism |      | Allocation to Beneficiary 'A' as per Proposed Mechanism |      |
|---------------------------|-----------------|---|------|---|------|
|                           |                 | (%)   | (MW) | (%)   | (MW) |
| Korba STPS I              | 2,100           | 18  | 380  | 13.57   | 285  |
| Vindhyachal Stage I       | 1,260           | 20  | 247  | 13.57   | 171  |
| Kawas Gas                 | 656             | 29  | 187  | 13.57   | 89   |
| Gandhar Gas               | 657             | 36  | 237  | 13.57   | 89   |
| Farraka STPS Stage I & II | 1,600           | 16  | 256  | 13.57   | 217  |
| Khalgaon Stage 1          | 840             | 17  | 141  | 13.57   | 114  |
| Ramagundam                | 2,100           | 0   | 0    | 13.57   | 285  |

|                  |               |    |              |       |              |
|------------------|---------------|----|--------------|-------|--------------|
| STPS I & II      |               |    |              |       |              |
| Singrauli STPS   | 2,000         | 0  | 0            | 13.57 | 271          |
| Rihand Stage 1   | 1,000         | 0  | 0            | 13.57 | 136          |
| Unchahar Stage I | 420           | 15 | 63           | 13.57 | 57           |
| Dadri Stage I    | 840           | 69 | 577          | 13.57 | 114          |
| Anta Gas         | 419           | 0  | 0            | 13.57 | 57           |
| Auraiya Gas      | 663           | 0  | 0            | 13.57 | 90           |
| Dadri Gas        | 830           | 0  | 0            | 13.57 | 113          |
| <b>Total</b>     | <b>15,386</b> |    | <b>2,089</b> | 13.57 | <b>2,089</b> |

(\*Assumes percentage allocation from the common pool to beneficiary 'A' is 13.57%)

- d. Power not allocated:** The power in the common pool for which there are no willing beneficiaries (i.e., the station-wise percentage of power not allocated to the beneficiaries) shall remain at the disposal of the Generating Company and shall be sold by the Generating Company through alternate arrangements including through Power Exchanges. The existing coal linkages and supply of coal as per the present FSA provisions at notified rate shall be continued and allowed for the balance power available with the generating company.
- e. Power Purchase Agreement (PPA):** The allocation of power from the common pool to the willing States/DISCOMs shall be subjected to signing of Station wise PPA (if there is no pre-existing contract) and ensuring compliance with the financial terms of the PPA signed with the Generating Company.
- f. Uniform Capacity Charges:** The total capacity charge of the pool will be worked out by adding the capacity charges of each station in the pool as per the extant Tariff Regulations of CERC. The States/DISCOM(s) shall be billed a uniform capacity charge in Rs Cr/MW based on percentage allocation and total capacity charge of power from the common pool. A sample illustration for the calculation of uniform capacity charges as applicable to a single beneficiary 'A' is given below.

| Name of Station           | Station IC (MW) | Annual Fixed Cost (Rs Cr) | Beneficiary 'A' - 13.57% allocation of Power (MW) | Beneficiary 'A' Capacity charges (Rs Cr) |
|---------------------------|-----------------|---------------------------|---|--|
| Korba STPS I              | 2,100           | 1,003                     | 285   | 136.2                                    |
| Vindhyachal Stage I       | 1,260           | 725.7                     | 171   | 98.5                                     |
| Kawas Gas                 | 656             | 399.1                     | 89  | 54.2                                     |
| Gandhar Gas               | 657             | 504.6                     | 89  | 68.5                                     |
| Farraka STPS Stage I & II | 1,600           | 910.7                     | 217   | 123.6                                    |
| Khalgaon Stage 1          | 840             | 597.6                     | 114   | 81.1                                     |
| Ramagundam STPS I & II    | 2,100           | 1,061.1                   | 285   | 144.0                                    |
| Singrauli STPS            | 2,000           | 912.8                     | 271   | 123.9                                    |
| Rihand Stage 1            | 1,000           | 575.4                     | 136   | 78.1                                     |
| Unchahar Stage I          | 420             | 307.4                     | 57  | 41.7                                     |
| Dadri Stage I             | 840             | 555.1                     | 114   | 75.4                                     |
| Anta Gas                  | 419             | 215.6                     | 57  | 29.3                                     |
| Auraiya Gas               | 663             | 302.5                     | 90  | 41.1                                     |
| Dadri Gas                 | 830             | 300.4                     | 113   | 40.8                                     |

|  |               |              |              |              |
|--|---------------|--------------|--------------|--------------|
| <b>Total</b>                             | <b>15,386</b> | <b>8,371</b> | <b>2,089</b> | <b>1,136</b> |
| <b>Uniform Fixed Charges (Rs Cr /MW)</b> | <b>0.54</b>   |              | <b>0.54</b>  |              |

**g. Energy Charge Rate (ECR):** The States/DISCOM(s) shall be billed a uniform weighted average pooled energy charge computed based on station-wise monthly ECR and final implemented schedule. Station-wise monthly ECR shall be computed as per the extant CERC Regulations.

The total ECR billed to the beneficiary(ies) shall be the aggregate of total schedule of the beneficiary from each station of the pool times the uniform weighted average pooled ECR. A sample illustration for the calculation of weighted average ECR as applicable to the Pool is given below:

| Sr. No             | Station         | Capacity (MW) | Schedule Energy (MUs) | Actual ECR (Rs/kwh)                        | Total Energy Charges for normative generation (in million Rs) |
|--------------------|-----------------|---------------|-----------------------|--|---|
|                    |                 |               | <b>A</b>              | <b>B</b>                                   | <b>A*B</b>  |
| 1                  | Singrauli       | 2,000         | 13,490.20             | 1.40                                       | 18,886.28   |
| 2                  | Rihand-I        | 1,000         | 6,427.50              | 1.37                                       | 8,805.68  |
| 3                  | Unchahar-I      | 420           | 2,025.70              | 3.57                                       | 7,231.75  |
| 4                  | Dadri-I         | 840           | 2,422.50              | 4.13                                       | 10,004.93   |
| 5                  | Korba-I&II      | 2,100         | 14,857.30             | 1.36                                       | 20,205.93   |
| 6                  | Vindhyachal-I   | 1,260         | 7,966.40              | 1.77                                       | 14,100.53   |
| 7                  | Kahalgaon-I     | 840           | 5,203.00              | 2.20                                       | 11,446.60   |
| 8                  | Farakka-I&II    | 1,600         | 9,548.70              | 2.54                                       | 24,253.70   |
| 9                  | Ramagundam-I&II | 2,100         | 13,080.30             | 2.60                                       | 34,008.78   |
| 10                 | Auraiya         | 663           | 413.20                | 4.08                                       | 1,685.86  |
| 11                 | Dadri Gas       | 830           | 1,792.40              | 4.42                                       | 7,922.41  |
| 12                 | Anta            | 419           | 264.80                | 5.67                                       | 1,501.42  |
| 13                 | Gandhar         | 657           | 377.20                | 3.06                                       | 1,154.23  |
| 14                 | Kawas           | 656           | 1,378.40              | 2.84                                       | 3,914.66  |
| <b>Single Pool</b> |                 | <b>15,386</b> | <b>79,247.60</b>      | <b>Weighted Average Pooled Energy Cost</b> | <b>2.08</b>   |

#### **h. Scheduling and Dispatch**

- i. The Generating Company shall provide information of all stations which have completed 25 years of CoD to respective RLDC/SLDC along with requisite details such as station capacity and allocated/contracted shares of different beneficiaries from each station.
- ii. Each generating station of the common pool shall give their Declared Capability (DC). Based on the DC given by each generating station of the pool, the beneficiaries will get their share of power as per their entitlement which is same as percentage allocation from the common pool. RLDC conveys ex-bus station wise dispatch schedules for each station of the pool based on the drawl schedules advised by the beneficiaries.

- iii. Notwithstanding above, the process of scheduling and dispatch of power from each generating station of the common pool shall be governed as per the Central Electricity Regulatory Commission (Indian Electricity Grid Code) Regulations 2010, as amended from time to time.
- iv. The Stations in the common pool will participate in all regulatory mechanisms operated and coordinated by NLDC/ RLDC such as SCED (Security Constrained Economic Dispatch), RRAS (Reserve Regulatory Ancillary Services), AGC (Automatic Generation Control) etc., based on their individual Energy Charge Rate and Fixed charges as determined by CERC. The stations shall operate their net schedules after accounting schedules of SCED, RRAS, AGC etc.
- v. The billing of beneficiaries shall be based on the aggregated schedule provided to each station at uniform weighted average pooled energy charge, and the Fixed charge determined as per entitlement.

**i. Implementation of Merit-order Dispatch for such pooled power**

The Generating Company shall declare the station-wise monthly Energy Charge Rate (ECR). The States/DISCOM(s) shall stack power requisitioned from each individual station in 25 years plus common pool into the State merit order list. The System Operator shall provide the schedules for operation of SCED, RRAS and AGC as per the existing methodology based on ECR of each station in the common pool.

**j. Bundling of RE Power**

The Generating Company shall endeavour to bundle RE power as per the “Scheme for Flexibility in Generation and Scheduling of Thermal/ Hydro Power Stations through bundling with Renewable Energy and Storage Power” issued by Ministry of Power vide Order dated 12.04.2022 for the coal based thermal generating stations of the common pool. The RE power (with or without energy storage system) shall be supplied to the beneficiaries at a tariff which shall be less than the station-wise Energy Charge Rate (ECR) of the common pool.

- k. Sharing of benefits with beneficiaries:** The generating units shall be required to share operational gains, if any with the beneficiaries as per the provisions of extant CERC Tariff Regulations.

**l. Modification in Regulation 17 of CERC Tariff Regulation 2019**

As per the prevailing CERC Tariff Regulations 2019, under Regulation 17, States/ DISCOMs have an option to either retain or exit from PPAs of stations that have completed 25 years of COD. Considering the above Regulation and MOP guidelines dated 22.03.2021, many States/Distribution companies are exiting from PPAs of costlier plants while retaining the cheaper plants. For the implementation of proposed pooled tariff mechanism, the unilateral right to States/DISCOMs must be withdrawn. Accordingly, Regulation 17 of CERC Tariff Regulations 2019 is required to be modified for operationalization of Common pool.

**m. Common Pool- Administrative Cell**

Each such generating company shall set-up a dedicated administrative cell and commercial team to ensure that the capacity of the common pool is utilized to a maximum through sale

of power to the contracted beneficiaries and the sale of unallocated power through alternate arrangements including Power Exchanges.

- n. Exclusion of Power Station for Common Pool:** The Hydro generating plants have zero marginal cost of generation with useful life of 40 years and beyond. Moreover, the tariff of hydro stations reduces drastically with time. In view of the above reasons, hydro station shall not be made part of common pool. Further, the Merchant Plants shall not be part of the common pool as their tariff is not determined by the Appropriate Commission under Section 62 of Electricity Act 2003.

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