

MoP: Concept Note on Pooling of Tariff of 25 years Plus Thermal/Gas Generating Stations

Ministry of Power (MoP) on 15th November, 2022 notified the draft on Pooling of Tariff for Coal/Gas Generating stations which have completed 25 years. The key highlights of the draft are mentioned below:

Objective: The objective of this concept note is to create a Genco-wise common pool (CP) of the plants (excluding Hydro) which have completed or are going to complete 25 years of service, for maintaining grid stability until development of the appropriate storage capacity, to cater the need of increased RE integration.

This concept note covered the following important aspects:

- The GENCOs shall provide the information regarding CoD of all the stations to respective RLDC/SLDC.
- Coal/Gas plants crossed 25 years are considered for creation of CP.
- There is a provision as and when any Station completes 25 years of CoD, the same shall be automatically added to the CP.
- The DISCOMs have to submit a **letter of intent** for procuring the quantum of power from CP.
- The willing States/DISCOM(s) shall be made percentage allocations from the CP which will be same as their station-wise percentage allocation and are subjected to change with any addition or deletion of plants.
- The remaining power in the CP, not allocated to any beneficiary shall be sold by the GENCOs through Power Exchanges.
- The willing States/DISCOMs shall be subjected to sign station-wise PPA for a minimum of five years with the CP.
- The States/DISCOMs shall be billed uniform capacity charge based on allocated power and total capacity charge of power from the CP.
- The States/DISCOMs shall also be billed a uniform weighted average pooled energy charge, based on station-wise monthly **Energy Charge Rate (ECR)** and final implemented schedule.
- Scheduling and dispatch for the pool is based on Merit order Dispatch (MoD).
- The GENCOs shall endeavour to bundle RE power for Flexibility in Generation and Scheduling.
- The operational gains if any shall be shared between GENCOs and beneficiaries as per the provisions of extant CERC Tariff Regulations.
- Further, each GENCOs shall also set a **Dedicated Administrative Cell and Commercial Team** to ensure the capacity of the CP is utilized to maximum scale.

The document can be accessed [here](#).

EAL Opinion

1. **RA and Power Procurement Plan:** While undertaking a power procurement planning exercise¹, the DISCOMs would have already considered the expiration of PPAs (having completed 25 years) few years in advance.

¹An exercise for long-term electricity demand forecasting and power procurement planning for two states, namely Uttar Pradesh and more recently for Chhattisgarh, undertaken at Energy Analytics Lab (EAL) at IIT Kanpur followed similar principles.

The exercise of making investment in additional capacity by state GENCOs or signing of new PPAs would have already rolled in and financial obligations thereon would have been committed. This would be subject to approvals, by the respective SERC, considering economics of the available power procurement options over long-term. The DISCOMs, which have not taken a decision for signing additional PPAs/undertaking investment, can evaluate economic rationale of the available power procurement options based on capacity as well as variable charges. For some DISCOMs, this may assist in postponement of their decision to enter into a PPA contract and hence may be cost effective. However, an independent exercise to evaluate the same should be undertaken.

2. **Pooling as ST Measure:** Available and operational thermal generating capacity can provide needed resources in the ST. **This can partly address the RA concern of imminent nature as there is no gestation period.** However, this capacity would not provide the desired flexibility on the generation side due to increasing share of renewables. Since long-term economics of power procurement (discussed below) should be based on economics of alternate options and the flexibility they offer, **such a pooling should be treated as a one-time exercise with clear and limited applicability for the next few years only.** Long-term application of the pooling mechanism would perpetuate the inefficiencies identified herein. Further, this would also adversely influence the country's following commitment as per the Intended Nationally Determined Contributions (INDC) communicated to UNFCCC - (i) 40% share of non-fossil fuel electricity generating capacity; (ii) Reduction in emission intensity of GDP between 33-35% over the 2005 level. Given that only about 8 years are left to meet that target, **continued operation of high emission power generation plants, due to PPA extension of high SHR units would place challenge to achieve India's climate commitments.** It is suggested that extension of PPAs should be a limited period, and (hopefully) one time exercise only.
3. **Economics of Power Procurement by DISCOMs:** Post expiry of existing PPAs (on completion of 25 years), **the economic consideration for the PPA for the additional period of 5 years or so, would be based on capacity as well as energy charges.** This is important as the **power procurement optimization by DISCOM would treat these as new contracts.**
4. **'Pool Price' based MoD for Pooled Power by the Beneficiaries:** Since beneficiaries would be paying a **pooled price**, which would be calculated **ex-post (i.e., based on the implemented schedule from plants in the pool)**, lack of a priori price visibility would create uncertainty for the merit order dispatch (**MoD**) **based scheduling decision making by the beneficiaries.** This clearly compromises ability of the beneficiaries to plan and procure electricity in a cost effective manner and thus violate the fundamental ethos of the Electricity Act 2003, National Electricity Policy and the regulation of the respective SERCs.
5. **Price Signal for Participation in URS/Security Constrained Economic Dispatch (SCED):** **Decision on scheduling of power from the capacity not scheduled by the beneficiaries under the URS, and the SCED is based on an ex-ante price signal.** In contrast, pooled pooled tariff would only be known ex-post, as it is based on the final implemented schedule. **The gap in availability of the correct price signal would influence the participation of the plants under the pooled mechanism in the URS and**

SCED mechanisms. In case of use of a proxy for this price signal, the economic efficiency of decision-making for URS and SCED would be compromised. Furthermore, it needs to be clarified whether **a requisition under URS for an un-requisitioned capacity would be required to pay the proportional capacity charges applicable for the pool as a whole or the individual plants scheduled under the URS mechanism.** Similarly, **the applicability of ‘resultant’ pooled price or that of the individual plant for the URS/SCED needs to be clarified.**

6. **Genco-wise vs Beneficiary-wise Pooling:** It is not clear if the average ECR calculated would be worked out on the basis of the final implemented schedule of a beneficiary or, the final implemented scheduled for all the beneficiaries taken together. In case of the former, the final incidence of the ECR to the beneficiary would be same as if it has scheduled the individual plants in the pool. However, **in case of the latter, some of the beneficiaries would cross subsidize the other beneficiaries in the pool.** In contrast, **beneficiary-wise pooling would mimic the outcome as if the beneficiary scheduled the individual plants of the pool in their merit order.** The capacity charge of generating stations in a pool may also vary significantly (see figure below). From the data presented in the Figures 1 and 2, one can clearly infer that, given a choice, a beneficiary who would choose a set of PPAs that would minimize its cost of power procurement, would now be tied up with a combination of PPAs which would enhance the beneficiaries cost of power procurement. **Since beneficiary would be making a decision based on capacity as well as energy charges, pooling would thus result in inefficient economic outcome for the beneficiaries.**

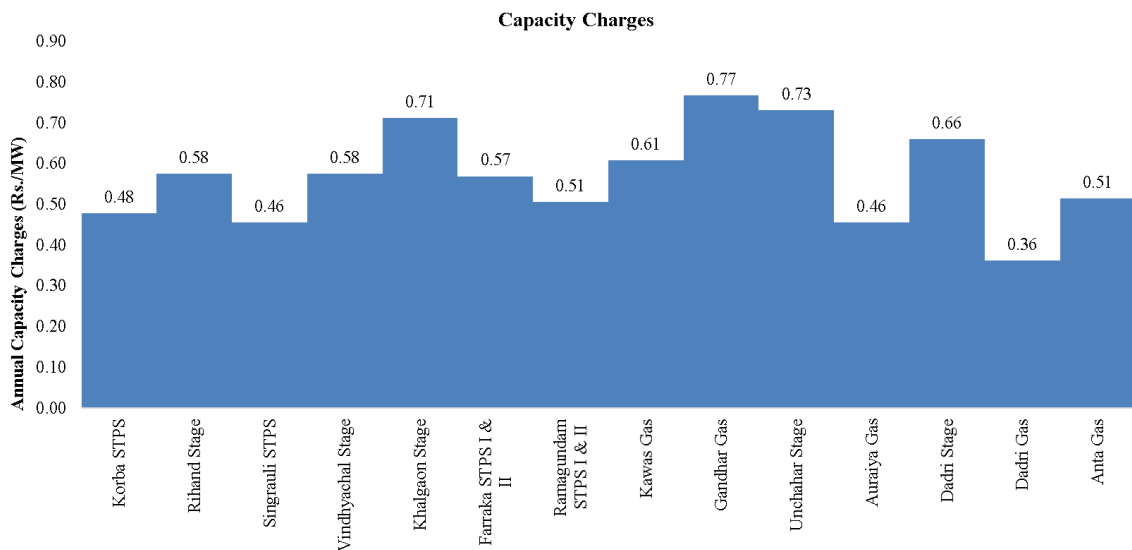


Figure 1: Capacity Charges of Generating Stations in a pool

7. **Equivalence of Amount Payable Based on Pooled Vs Un-pooled ECRs:** Based on the pooling mechanism described in the paper, the total amount payable (area MNOP in figure below) based on ex-post pool price calculated as weighted average of the implemented schedule (line PM) will be exactly equal to the sum of ECR multiplied by the implemented schedule of each plant (i.e., area OQRSTN).

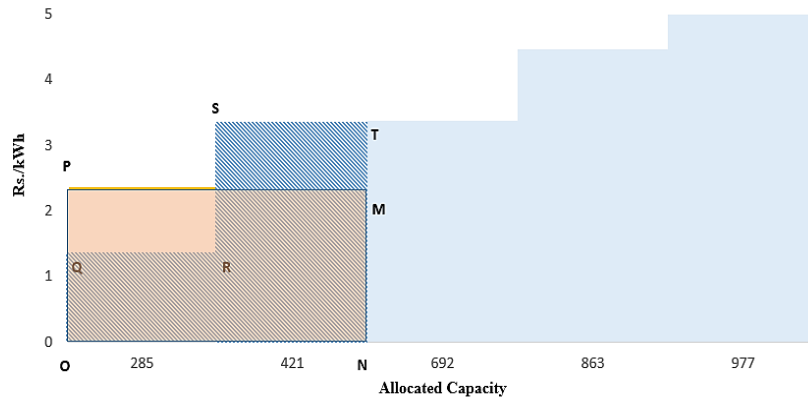


Figure 2: Equivalence of Amount payable under pooled ECR and that based on ECR of plants scheduled individually

The effective result of pooling would thus be only ‘locking’ in to the pooled PPA instead of individual plants as financial outgo for the energy charge would remain the same (as explained above).

8. **Non-Congruent Pool Beneficiaries and Regulatory Process:** Genco-wise pooling, resulting in a common nation-wide pool for the respective GENCO, would bunch plants with varied set of beneficiaries. Post pooling, a ‘beneficiary’ would be able to or would be supplied power from generation plants with which it did not have a PPA (e.g., Karnataka DISCOMs being supplied power from, say, Singrauli). While the URS and SCED mechanism explicitly provide for this, the same needs to be provided for in the regulatory framework across states. **Would the ‘effective’ PPA with such plants need approval of the respective SERCs?**

9. **Cluster Based Pooling:** Pooling of plants based on different fuels (coal, natural gas, etc.) bundles expensive/inefficient plants with diverse technologies, reducing competition between the technologies, and incentives for the plants to operate efficiently. Using the data shared in the example provided in the concept paper, a ‘merit order’ of the plants in the pool is as shown in Figure 3 below.

A cluster may be formed as explained in the following illustration:

Cluster A – Coal/ Lignite based plant with $ECR \leq Rs. 2.25/kWh$

Cluster B – Coal/ Lignite based plant with $ECR > Rs. 2.25 \leq Rs. 3.0/kWh$

Cluster C – Gas based plants with ECR above Rs. 3.0/kWh

*Note: The clusters have been made on the basis of the information shared in the concept paper for the ECR of the plants.

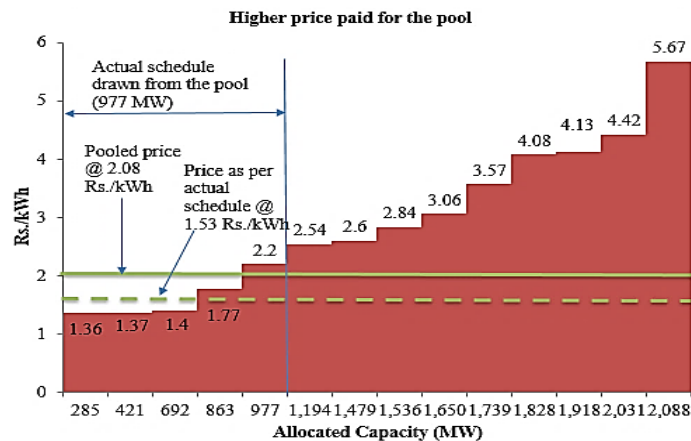


Figure 3: Higher price to be paid for the schedule of lower VC plants due to pooling

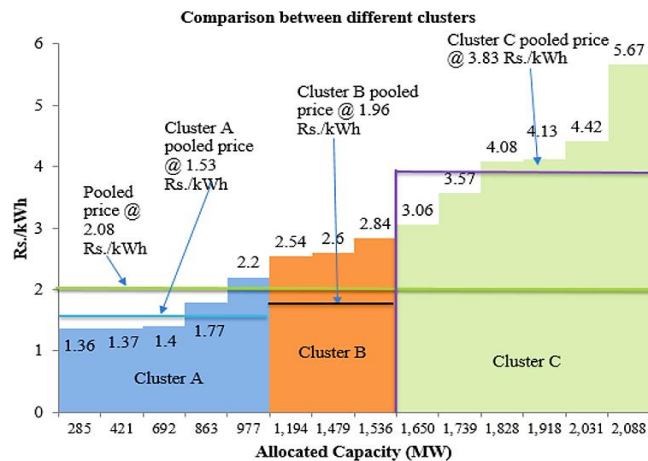


Figure 4: Cluster based pooling

Those beneficiaries who would have extended the PPA for Cluster A would be able to optimize their power procurement portfolio in a relatively more effective manner as compared to the case wherein the beneficiary would have signed for extension of the PPAs comprising a single pool for all such power plants. A beneficiary in need of greater resources to meet upcoming demand for electricity would sign for the next cluster (Cluster B), and so on.

Under such a scenario, Cluster C may witness limited interest. This cluster comprising of the gas-based generators can effectively provide the ancillary services (to be launched shortly) for the grid and also participate in a **market for flexible resources**, which would assist greater RE penetration.

10. **Locking-in High Cost and Inefficient Plants:** The Electricity Act 2003 as well as the National Electricity Policy as well as National Electricity Plan emphasise the need for cost effectiveness, efficiency and optimum use of resources. The plants having low ECR would find acceptability for extending the PPA by the beneficiaries (DISCOMs) based on economics of power procurement. Whereas, the mandate for **pooling low cost plants with expensive ones will lock-in the contracts associated with high VC plants for the beneficiaries, allowing limited room for optimization.** While there is a clear push for the DISCOMs to reduce cost of power procurement, long-term application of the proposed mechanism of pooling would work otherwise. The proposal for pooling may find merit only in the context of short-term RA, and hence could be adopted for ST and a one-time measure only for the plants completing 25 years of PPA, say over a period of 3-4 years.
11. **Further Tariff Implications as per CERC's T&C for Tariff and Ministry of Environment, Forest and Climate Change (MoEFCC) Notification regarding FGD:** Till 25 years of PPA, CERC approves additional capitalization (ADCAP) required to ensure normal operation of the power plant. Extension of PPA may also (and likely) be accompanied with renovation and modernization adding to tariff determined under section 62 of the Electricity Act 2003. Post completion of 25 years of PPA, the generating plants, would be allowed **special allowance as per the CERC Regulations, which would add further to the tariff.** Furthermore, such coal-based plants would be required to make investment in FGD to meet the MoEFCC standards that were notified in December 2015. This would add further to the tariff of such generating plants and thus would further alter the economics of their consideration in the power procurement portfolio of the DISCOMs.

Thus, **the expected approved tariff, taking into account the likely impact of the above-mentioned factors, should be the basis for decision making by a beneficiary (DISCOM).**

- 12. Retaining Cheaper Power Plants:** As per the Clause No. 1 “...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...”

Over the period of time, the DISCOMs have been encouraged to purchase electricity in a cost effective manner. Thus, the decision of the DISCOMs to exit from the plants with costlier PPA is a good sign. However, different DISCOMs may have varying level of gap in their RA. Thus, **flexibility in choosing the PPAs is important for furthering the philosophy of ‘commercial operation’ enshrined in the Electricity Act 2003 as well as National Electricity Policy.**

- 13. ‘Necessity’ of Pool for Grid Security:** As per the Clause No. 2 “...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...”

The availability of flexible generation is key to ensure grid security with increasing share of renewables. It is important to highlight that the extension of expiring PPAs would not add to the flexibility/balancing need (except gas based generation) as these plants do not have additional flexibility.

- 14. Rebalancing Portfolio Post Changes in Pool Price due to Entry/Exit of a Plant:** Once a pool price has been arrived at, considering the available capacity of the generator having completed their 25 years of PPA, the beneficiaries would evaluate such pool price and take a decision on requesting the capacity as per their requirement to a RA plan.

The addition of a new plants into the pool or exit of an existing plant from the pool having completed its technical life may lead to change (say, increase) in the pool price. Under such circumstances, the pool price will be re-evaluated. **It needs to be clarified whether the beneficiary would be allowed to re-balance their portfolio for the procurement of the pooled power based on the revised pooled power price.**

- 15. Time/Season Based PPA:** Shortage, if any, with the DISCOMs is largely during the peak hours/seasons. Post expiry of current PPAs, the beneficiary would find greater value in the available capacity if peak-hours/season-based PPA can be designed with appropriate design of tariff, with relatively higher capacity charge for such hours/months, to compensate the generators for the risk on account of lower recovery during off-peak hours/season. This may require development of a framework allowing the generators to hedge their risk while also providing value proposition to the beneficiaries².

² EAL comments on Ministry of Power’s proposal on ‘Relinquishment of PPA beyond tenure’, Power Chronicle, Volume 3, Issue 3, 2021, https://eal.iitk.ac.in/assets/docs/power_chronicle_vol_3_issue_3.pdf