

Annexure**Scheme for Pooling of Tariff of those plants whose PPAs have expired****1. Background**

The power situation in the country has been changing over the years. There had been times when States were 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 on the exchanges and otherwise; but are hesitant to enter long term PPAs anticipating further reduction in power prices. However, an often-ignored fact is that the volume of power transacted on the exchange is only about 7.4% of the total energy requirement in the country.

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

Paradoxically, there is a generation capacity crunch during the peak demand season despite the availability of generation capacity in the grid which have been isolated from the grid due to forfeit of PPAs by the buyers. As a result, there is a need to bring back these generation capacities in a manner that the tariff is maintained at reasonable levels, and the capacity is also available in the grid.

Ministry of Power has promulgated Electricity (Rights of Consumer) Rules 2020 which mandate standards of performance for DISCOMs. The Rules provide for penalization/compensation for non-supply of power to consumers as per the standards. This does away with the practice of load shedding by the States during peak demand times when electricity prices are high. Accordingly, it is imperative that each MW of available generation capacity in the grid is up and running on bar to match the rapid pace of demand growth in the country alongside the newer capacities to be added to the grid.

2. Creation of Genco-wise Common Pool for plants whose PPAs have expired

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 higher penetration of RE in the grid enhances energy sustainability, it also impacts grid stability and poses difficulties for the power network in the form of RE intermittency, and supply-demand imbalances.

The successful integration of RE planned and to be installed by 2031-32 viz. 365 GW Solar and 122 GW Wind will require greater amount of storage capacity in the electrical grid. Central Electricity Authority (CEA) in the National Electricity Plan 2022, has estimated a requirement of about 236 GWh BESS and about 27 GW of PSP projects by the end of 2031-32 for successfully integrating the planned RE into the grid. However, as of now, only 4,750 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. Presently, thermal generation which constitutes the mainstay of electricity generation along with gas generation provides a major support to grid balancing and RE integration. Therefore, 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 thermal/ gas 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. These constitute a well-balanced pool of thermal stations comprising of pithead coal stations for catering to the base load, non-pithead coal stations and gas stations to meet peak demand and provide much required cycling and balancing services required for smooth RE integration. Gas stations are important to grid operation as they are capable of fast ramping operations and best suited for flexing. CPSU gas stations are being frequently utilized in providing ancillary services for reliable grid operation. 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 and that would be detrimental to the power system.

CEA generation planning studies on Optimal Energy has projected the requirement of 260 GW of coal-based generation capacity and 24.8 GW of gas-based generation capacities by 2031-32 for meeting the peak requirement of 366 GW.

In case of shutdown of existing but without offtake arrangements thermal generation plants, following scenarios / options emerge:

- i. Additional investments for new thermal capacity addition for meeting the balancing and peaking requirements. Investment in such additional capacity would need to be serviced for further 25 years by payment of depreciation, interest on loan and other elements of tariff. Further there may be requirement to support their technical minimum during off-peak hours for their useful life. All these costs would have to be eventually borne by the end consumers.
- ii. Installation of larger capacities of BESS/PSP will be required to provide for balancing requirements. Deployment of BESS in large quantum is dependent on factors as high capital costs, availability of critical raw material, production batteries or on imports – all adding to uncertainty in balancing resources. Development of PSPs has its own challenges. Further, both the above options are much costlier as compared to continued operation of these well-maintained generation plants with almost all the investment cost paid.

In view of long gestation period required for the construction of new thermal capacities and impending retirement of old inefficient thermal plants, it would be prudent to continue to operate the existing efficient thermal capacities of CPSUs whose PPA duration have expired and defer the capital expenditure required for creation of new capacities. It is required to ensure continued operation of these gas-based power plants to provide peaking/balancing power for smoother and affordable energy transition towards RE & for Resource Adequacy.

Accordingly, with the objective of maintaining resource adequacy, conserving capex, and utilizing the capacity already available in the grid a proposal for Genco-wise Pooling of Thermal Stations of central sector has been formulated in consultation with the Stakeholders.

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

a) Creation of Common Pool

A Central sector Genco-wise Common Pool of thermal generating stations (Coal and gas-based) which have completed the terms of their earlier PPAs shall be created. As and when any Station of the Generating Company completes its PPA period, the same shall be automatically added to the pool. Further, the plants/capacity which have already completed their PPA period but have already signed fresh PPAs post the expiry of the original PPA shall be excluded from the pool. In future all Central Generating capacity which complete their PPA tenures would be added to the pool.

b) Requisition of Power

A single Window System shall be created through which the desiring State(s)/Discoms including the existing beneficiaries shall submit their willingness for power allocation (quantum as well as period) within 15 days from the formation of Common Pool. 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

All the PPA holders shall be made allocations from the Common Pool.

d) Power not allocated

The power in the Common Pool for which there are no PPAs 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. The gains from such sale in power markets shall be shared with DISCOMs having PPAs in pool as per Electricity (Late Payment Surcharge and Related Matters) Rules, 2022.

e) Power Purchase Agreement (PPA)

The allocation of power from the Common Pool to the willing States/DISCOMs shall be subject to signing of new PPA with the pool 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
Total	15,386	8,371	2,089	1,136
Uniform Fixed Charges (Rs Cr/MW)		0.54		0.54

g) Uniform 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