F. No. 23/23/2020-R&R/RCM
Government of India
Ministry of Power
(RCM Division)

Shram Shakti Bhawan, Rafi Marg
New Delhi, dated the 20th of April 2023

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: Scheme for Pooling of Tariff of those plants whose PPAs have expired - reg.

Sir,

At present, the annual electricity demand and the peak demand in the country is around 1400 BUs and 216 GW, respectively, and the peak demand is growing at an annual rate of around 6%. It is also a fact that the country is advancing along the path of energy transition from fossil fuel to non-fossil fuel. During April-May 2022 challenges were faced in meeting increasing demand. With the support of all stakeholders including all states, the challenges were handled successfully. However, the systems need to be restructured to meet future challenges.

2. As per National Electricity Plan, the projected electrical energy requirement and peak electricity demand on all-India basis is estimated as 1908 BU and 277 GW for year 2026-27 and 2474 BU and 366 GW for year 2031-32, respectively. This will require a total capacity addition of around 212 GW in the Power sector during 2022-27 and about 292 GW during 2027-32, against the present installed capacity of about 412 GW. The total fund requirement for investment during the period 2022-2027 is estimated to be around Rs. 14.5 Lakh Crores. The total fund requirement for investment during the period 2027-2032 has been estimated to be around Rs.19.06 Lakh Crores. Apart from this the successful integration of 365 GW Solar and 122 GW Wind planned by 2031-32 will require large quantum of storage capacity in the electrical grid. In such a scenario, it is essential that the generation capacity available in the country at present is utilized optimally. The available Gas based capacity is also required to be kept operational to meet the flexibility requirement and for peaking support at least during the crisis period.

3. With the objective to facilitate the States to optimize their electricity generation/availability portfolio, 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 expiry of the PPA period. Thereafter, many States/ Distribution companies exited from PPAs of costlier plants (non-pit head coal stations and Gas based thermal generating station), while retaining the PPAs of

cheaper plants. This trend may be detrimental to the resource adequacy in the power system.

4. The Government is committed to promote non-fossil fuel-based generation and the efforts to promote RE generation are being taken. However, in this stage of energy transition, it will not be wise to let go off the resources that are already available in hand and whose capex has been substantially recovered. Even with generation capacity two times of the demand, the demand - supply situation of electricity becomes tight for some periods in the crunch months. The development of balancing resources as ESS will take a while for full deployment and it is very expensive presently. While PSPs are limited by their gestation period of at least 5 to 7 years the Batteries are limited by their ability to be commercialized and availability of raw materials. Despite significant quantum of Renewables in the grid, it would be difficult to meet peak demand without conventional sources, in near future.

5. 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.

6. 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 PPAs have expired, but have remaining operational life, deferring 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.

7. 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, which would be detrimental to the power sector.

8. As the stations of 25 plus years have their capex recovered, fully depreciated, debt free, Fuel Supply Agreement (FSAs) in place, and well-maintained, power at competitive tariffs can be made available to the beneficiaries from these stations. Accordingly, to utilize these capacities, it has been decided to pool power from all Central Generating Station (CGSs) whose PPAs have expired, and such pooled power shall be made available to willing beneficiaries. The willing beneficiaries will have to enter PPA for a duration of a minimum of 5 years. Discoms not finding value in pooling will be able to opt out from the pool after 5 years.

9. The measure will ensure availability of adequate resources in the grid for peaking, balancing, and flexing and re-distributing benefits such as reliability, cost-effectiveness among the beneficiaries. A detailed mechanism in this regard finalized after consultation with States and other stakeholders (Draft scheme was circulated on 15th November, 2022, comments received have been examined and a meeting was also held with States on 20th February, 2023) is enclosed. All the concerned organizations shall take necessary action to implement the scheme w.e.f. 1st July, 2023.

10. This issues with the approval of **Hon'ble Minister of Power and New & Renewable Energy**.

A. Suresh 20/4/23

(Suresh Annepu)
Director (RCM)
Tel: 011-23717137

Copy for information to:

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

Copy To: Technical Director, NIC for uploading on Ministry's website under 'New Notices' with the heading "**Scheme for Pooling of Tariff of those plants whose PPAs have expired**"

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

implemented schedule. However, the station-wise monthly ECR shall continue to be computed as per the extant CERC Regulations. There will be no incentive on the energy charge. Further, there shall be a quarterly truing up of ECR billed to the DISCOMs.

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)
			A	B	A*B
1	Singrauli	2000	13490.2	1.40	18886.28
2	Rihand-I	1000	6427.5	1.37	8805.68
3	Unchahar-I	420	2025.7	3.57	7231.75
4	Dadri-I	840	2422.5	4.13	10004.93
5	Korba-I&II	2100	14857.3	1.36	20205.93
6	Vindhyachal-I	1260	7966.4	1.77	14100.53
7	Kahalgaon-I	840	5203.0	2.20	11446.60
8	Farakka-I&II	1600	9548.7	2.54	24253.70
9	Ramagundam-I&II	2100	13080.3	2.60	34008.78
10	Auraiya	663	413.2	4.08	1685.86
11	Dadri Gas	829.78	1792.4	4.42	7922.41
12	Anta	419.33	264.8	5.67	1501.42
13	Gandhar	657.39	377.2	3.06	1154.23
14	Kawas	656.2	1378.4	2.84	3914.66
Single Pool		**15386**	**79247.6**	**Weighted Average Pooled Energy Cost (Rs/kWh)**	**2.08**

h) **Scheduling and Dispatch**

i. The Generating Company shall provide information of all stations which have completed their PPA period 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 from the Common Pool. RLDC shall convey ex-bus station-wise dispatch schedules for each station of the pool based on the drawl schedules advised by the beneficiaries.

iii. 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.

iv. The billing of beneficiaries shall be based on the aggregation of station-wise schedule provided by the beneficiary to each station at uniform weighted average pooled energy charge and the fixed charge determined as per entitlement.

i) **Implementation of Merit-order Dispatch**

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 the Common Pool into the 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. The generating company must fully utilise low-cost generation for supply to the beneficiary States/ Discoms and only the marginal power from the stations may be offered in the power exchanges in case of a surplus. If a generating company is found selling power in the market from a station whose tariff is less than the power stations suppling power to the States/ Discoms, then the generating company shall have to pay a penalty of twice the market clearing price (MCP) to the Discoms.

j) **Bundling of RE Power**

The Generating Company shall 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 benefits arising out of regulatory mechanisms and operational gains, if any with the beneficiaries as per the provisions of extant CERC 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 to continue to draw power even after expiry of PPA must be withdrawn. Accordingly, Regulation 17 of CERC Tariff Regulations 2019 is required to be modified for operationalization of the 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 contracted power to the 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. Also, the Merchant Plants shall not made be part of the Common Pool as their tariff is not determined by the Appropriate Commission under Section 62 of Electricity Act 2003.

4. Roles & Responsibilities of Stakeholders

a) **Generating Company**:

i. The Generating Company shall create a Common Pool of Thermal Generating station (Coal/Gas based plants) which have completed their PPA period.

ii. The Generating Company shall inform the existing beneficiaries one year in advance, the date from which Power shall get deallocated from the Generating station and get added to the Common Pool.

iii. The Generating Company shall be responsible for developing a Single Window System (SWS) for seeking the willingness of States/DISCOMs for signing of PPA for power from the Common Pool. The SWS shall contain the information related to the number of generating stations which shall constitute the Common Pool and the capacity to be offered from each generating station, the likely uniform capacity charges, and the Energy charges (fuel wise in case of gas station) etc. In addition to above, the SWS shall also include the information related to year wise addition of new capacities likely to get added in the Common Pool in next five (5) years along with the tentative change in uniform capacity charges and the likely revised weighted average pooled Energy Charge Rate.

iv. 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 of the Common Pool.

b) **States/DISCOMs:**

i. The States/DISCOMs may give their willingness to the SWS for allocation of power including period of requisition which shall be a minimum period of 5 years.

ii. The States/DISCOMs shall enter into Power Purchase Agreements (PPAs) with the Common Pool.

iii. The States/DISCOMs shall be responsible for taking due approval from the State Regulator in respect of the PPA and the quantum of power for which it signs PPA with the Common Pool.

c) **RLDC/NLDC:**

The Scheduling & Dispatch of power, Metering & Accounting etc. for each generating station of the Common Pool shall be done as per the CERC IEGC Regulation issued from time to time.

d) **Ministry of Power:**

The allocation of power shall be done by the Ministry of Power based on the requisition received from the willing States/DISCOMs though SWS. Preference shall be given to original beneficiaries of thermal generating stations constituting the pool. In case the total requisition of power is more than the capacity available in the Common Pool then the allocation power to the willing beneficiaries (excluding original beneficiaries, if any) shall be made on a pro-rata basis. Scheme of unallocated pool of Central power will continue as such.

e) **Regulatory Commissions:**

Required regulatory changes would be carried out for effective and timely implementation of the scheme.

f) **Central Electricity Authority:**

CEA will coordinate all the activities for implementing the scheme.

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