

No. 23/21/2018-R&R  
Government of India  
Ministry of Power

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Shram Shakti Bhawan, Rafi Marg,  
New Delhi, 30<sup>th</sup> August, 2018

To

1. Chairperson, Central Electricity Authority, New Delhi.
2. Secretary, CERC, New Delhi.
3. Pr. Secretary/Secretary (Energy/Power), State Governments.
4. Secretary, All SERCs/JERCs.
5. Chairman/CMDs for all PSUs under administrative control of Ministry of Power.
6. DG, Association of Power Producers, New Delhi.


Subject: Scheme on 'Flexibility in Generation and Scheduling of Thermal Power Stations to reduce the cost of power to the consumer' – regarding.

Sir,

I am directed to enclosed herewith a copy of the Scheme on 'Flexibility in Generation and Scheduling of Thermal Power Stations to reduce the cost of power to the consumer' for information and necessary action.

2. This issues with the approval of MoS(IC) for Power and NRE.

Yours faithfully,

  
(Sandeep Naik) 30/8/18

Director

Tel: 2371 5250

Encl: As above

Copy for information to:

- i) All Joint Secretaries/Economic Adviser, Ministry of Power.
- ii) PS to MoS(IC) for Power and NRE, PPS to Secretary (Power), PPS to AS(R&R), PS to CE(R&R), PS to Dir(R&R).
- iii) Incharge, NIC, Ministry of Power with the request to upload on the website of Ministry of Power under 'Current Notices'.

## **Flexibility in Generation and Scheduling of Thermal Power Stations to reduce the cost of power to the consumer**

### **A. Background**

The Government of India has taken various policy initiatives in order to reduce the cost of generation. In the year 2016, Government had allowed “flexibility in utilization of domestic coal by States”. Earlier, each power plant owned by a company signed Fuel Supply Agreements (FSA) for supply of coal from a specified coal mine. The policy for flexible utilization of coal allowed a company to use coal within its basket in the most optimal manner such that unnecessary coal transportation is avoided and the benefits of lower costs of power generation could be passed on to the beneficiary states.

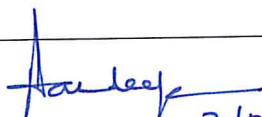
Thereafter, on 05.04.2018, Government had issued scheme for “Flexibility in Generation and Scheduling of Thermal Power Stations to reduce emission” wherein flexibility has been given to generating company to supply Renewable power against schedule received for thermal power. The Scheme envisages sharing of benefits, if any arising out of the scheme, between the generators and beneficiaries in 50:50 ratio.

In a similar manner, in order to reduce the overall cost of generation of a generating company, flexibility needs to be given to generating company to supply power from any of its generating station against schedule received for its stations and gains realized in the process could be shared with beneficiaries.

### **B. Need for Allowing Flexibility in Generation for cost optimization**

#### **(i) Optimization in scheduling of generation to reduce overall cost of power at national level**

The objective of One Nation, One Grid, One Frequency has been achieved and on most of days there is One Price in the electricity Exchange. The Electricity Grid has evolved from local grid to State level grid and then to Regional Grid and finally National

  
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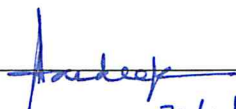
synchronous electricity Grid. The Indian Electricity Grid is also connected to other countries (Bhutan, Nepal and Bangladesh) to gain international character. Accordingly, with the constraint free robust transmission grid in place, time has come to move ahead from regional level scheduling to National level optimization in scheduling of generation.

At present the Discoms/ States tie-up for supply of power from various power stations/ generating companies. States generally requisition power from a station on day ahead basis considering its merit order among all the stations from which it has power tie-up. However, on a national level, it is seen that many stations having low Energy Charge Rate (ECR) are not fully scheduled whereas the costlier stations are scheduled at the same time. The needy beneficiaries are not able to schedule power from stations having lower ECR as they do not have power allocation/ Power Purchase Agreement (PPA) in these stations. They have no other option but to schedule the costlier power available in their basket. Therefore, cheaper power of a station in a region remains unutilized whereas at the same time costlier power of a station in another region is dispatched which results in increased average cost of power for the country.

In order to maximize utilization of cheaper power, flexibility needs to be given to the generating company to supply the power requisitioned by beneficiaries / States through Merit Order operation of its stations on national level, that is, cheaper station of the generating company shall be dispatched up to its maximum capability before scheduling costlier stations till the total power requisitioned by all its beneficiaries is met.

**(ii) Optimum utilization of the railway infrastructure for transportation of coal to power station**

Generally, the cheaper power is available at the pit head power stations or power stations located nearer to the mines. In both cases, the coal transportation cost is less resulting in the cheaper power. The turnaround of railway rakes is faster and reliability of coal supply to such power stations is also better. As per CEA, normative requirement of coal stock in the pithead power stations or the stations located nearer to the mines are less thus requiring less inventory cost. Government has already decided that coal

  
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transportation for the plants located within 20 km from the mines has to be done by closed conveyor belt (except the existing plants which has MGR) and plants located between 20 to 40 km from mines through MGR.


Thus, if national level optimization in scheduling of generation is done, there would be more generation from pit head stations resulting in less requirement of coal movement to far off power plants. Railways infrastructure which is constrained at the moment particularly for up country movement and at other locations, can be better utilized.

### **C. Benefits Envisaged**


- a) Optimal utilization of the available resources by running the generating stations supplying power at lesser tariff and reducing the overall average cost of generation.
- b) Optimum utilization of the railway network due to optimum utilization of pit head stations and reduced generation from more expensive generating stations requiring transportation of coal over long distances.
- c) Flexibility will enable higher loading of cheaper generating stations and at the same time reducing the loading of costlier stations resulting in improvement of overall operational efficiency as against the present efficiency level.
- d) The energy accounting and billing shall remain the same as per extant regulations. The surplus generated shall be shared with the beneficiaries, thus the average cost of power to the beneficiaries shall reduce.

### **D. Proposed Mechanism for allowing Flexibility in Generation for cost optimization**

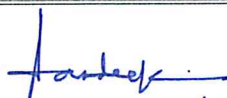
- a) Station-wise allocation to different beneficiaries as per the present system shall continue.

  
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- b) Individual power station shall declare its Availability to Regional Load Despatch Centre (RLDC) as per existing practice. A replica to be maintained at the National Load Dispatch Centre (NLDC) for Inter-regional Scheduling (or National level scheduling).
- c) RLDC/NLDC shall seek total requisition from all the beneficiaries against their total entitlement from different Stations of a Generating Company as per present system.
- d) Based on the requisition received from the beneficiaries, RLDC/NLDC shall issue the Initial Schedule (**R-0**) for Generating Stations as is being done presently as per extant regulations. This Schedule or implemented Schedule, if revised subsequently shall be used for raising bills by the generating company.
- e) Based on the total power requisitioned by various beneficiaries of the generating company, RLDC/NLDC shall schedule the stations of the generating company, subject to transmission constraints, as per Merit Order of the generating company such that the station of that generating company having least ECR shall be first utilized fully (i.e. up to its Declared Capacity) followed by the next station with next higher ECR which shall be dispatched to the maximum and so on till the entire schedule of all beneficiaries is met by the generating company.
- f) RLDC/NLDC shall complete such Merit Order operation based Generation Bucket Filling (**GBF**) scheduling subject to any constraint arising due to transmission / other Grid security.
- g) Thereafter, RLDC/NLDC shall issue the actual dispatch schedule (**GBF-0**) for the generating stations. It is possible that the schedule of some Stations may be lowered to technical minimum level and few others may be put in Reserve Shut Down. In case the last generating station's schedule is less than the technical minimum level, the schedule of last but one generating station in the merit order may be reduced to an extent so that the last station gets scheduled to the technical minimum.

  
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- h) Stations of a Generating Company shall be required to generate as per such finalized **GBF-0** Schedule, or its subsequent revisions.
- i) The generating stations and beneficiaries will be free to revise their availability and requisition respectively in real time as per present practice. The revision made by the generating stations or the beneficiary shall be reflected in the revision of GBF, for which suitable provision for gate closure may be provided by the Appropriate Commission.
- j) The surplus realized, if any, from supply of power from station having lower ECR in place of costlier thermal power not scheduled and billed due to national merit order operation of its stations by a generating company shall be shared with the beneficiaries in the ratio of 50 (beneficiaries) : 50 (generating company) on monthly basis with quarterly reconciliation. This ratio may be reviewed based on experience gained. The share of surplus which is to be passed on to the beneficiaries , if any, during the month shall be shared in proportion to the total drawl by the beneficiaries from the generating company. Accordingly, the monthly billing will be done by the generating company after taking into account of it and passed on to the beneficiaries. The Appropriate Commission shall ensure through a suitable mechanism that the share of surplus which is to be passed on to the beneficiaries has been appropriately passed on to the beneficiaries.
- k) **Deviation Settlement Mechanism (DSM):** Stations shall be subjected to charges for deviations from Actual Dispatch schedule (**GBF-0, or its subsequent revision**) under DSM Regulations as per existing practice.
- l) **Part-Load Compensation:** The Part-load compensation shall be billed based on the Actual Dispatch schedule (**GBF-0 or subsequent revisions**).

  
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m) **Incentive:** As incentive is payable by the beneficiaries of a station as per the energy scheduled by them, incentive would continue to be based on the **R-0** or **subsequent revisions** Schedule and as per extant Regulations.

#### **E. Implementation of the Scheme**

- a) Changes, if any, required in the Regulations for the implementation of the above scheme shall be made by the Appropriate Electricity Regulatory Commission, including regulatory provisions for maintaining adequate spinning reserve and payment mechanism thereof.
- b) National Merit Order Despatch shall bring out benefits as envisaged above, however there may be Operational and Commercial issues that may arise during implementation of scheme at national level for all Generating Companies i.e. Central, State and Private Generating Companies. This scheme shall be applicable to the Generating Companies having multiple Generating assets, whose tariff is being determined under Section 62 of the Electricity Act 2003.
- c) Central Electricity Authority shall monitor the implementation of this scheme and resolve and review any issues arising during its implementation, in consultation with CERC. The status of implementation of the scheme and issues arising shall be sent by CEA to Ministry of Power on quarterly basis.
- d) The scheme, if required, may be modified by Ministry of Power based on the operational feedback by the stakeholders and CEA.

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