UP Electricity Regulatory Commission Kisan Mandi Bhawan, 2nd Floor, Gomti Nagar, Lucknow

No. UPERC/Secy/VCA/2017/ Dated: 27th November, 2017

Public Notice

In the matter of:

For necessary amendment in the U.P. Grid Code 2007 in line with the Indian Electricity Grid code (fourth amendment) Regulation 2016 notified by the Central Electricity Commission on 6.4.2016 and in line with the detailed operating procedure prepared by the NLDC and mechanism for compensation for Station heat rate, auxiliary energy consumption etc. submitted by RPCs and approved by Hon'ble CERC vide order dated 5.5.2017 and came into force effect from 15.5.2017.

The Indian Electricity Grid code (fourth amendment) Regulation 2016 is placed on the UPERC website. (www.uperc.org)

UPSLDC has filed petition no 1217 of 2017 before the Commission on the above matter. The first hearing was held on 16.11.2017 and Commission vide its order dated 20.11.2017 decided to conduct Public Hearing on the above issue to invite the comments of all these stake holders.

Notice is hereby given to the stakeholders and interested parties to submit comments in the above matters in writing directly to the Commission at Kisan Mandi Bhawan, 2nd Floor, Gomti Nagar, Lucknow, personally or by post so as to reach before 5.12.17 with a copy to the Petitioners who shall file reply upto 11.12.2017.

The Public Hearing in the matter shall be held on 12.12.2017 at 11:30 hrs. in the office of the Commission.

Secretary

Ph: 2720426, 2720427
Fax: 2720423
E-mail: secretary@uperc.org

CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI

6th April, 2016

NOTIFICATION

No. L-1/18/2010-CERC: In exercise of powers conferred under clause (h) of subsection (1) of Section 79 read with clause (g) of sub-section (2) of Section 178 of the Electricity Act, 2003 (36 of 2003), and all other powers enabling it in this behalf, the Central Electricity Regulatory Commission hereby makes the following regulations to amend the Central Electricity Regulatory Commission (Indian Electricity Grid Code) Regulations, 2010 as amended from time to time (hereinafter referred to as "the Principal Regulations").

1**. Short title and commencement:**

7. These Regulations may be called the Central Electricity Regulatory Commission (Indian Electricity Grid Code) (Fourth Amendment) Regulations, 2016.

8. These Regulations shall come into force with effect from date of publication in Official Gazette except Sub-Regulation 6.3B which shall come into force on such date as the Commission may appoint by notification in the Official Gazette.

2. **Amendment in Regulation 2 of Principal Regulations**- Following new clauses shall be added after clause (iiii) of Sub-Regulation (1) of Regulation 2 of Principal Regulations as under, namely:

> "(jjjj) Date of Commercial Operation or 'COD' shall have the same meaning as provided in Sub-Regulation 6.3A.1, 6.3A.2 and 6.3A.4 of these Regulations.
>
> Trial Operation or Trial Run shall have the same meaning as provided in Sub-Regulation 6.3A.3 and 6.3A.5 of these Regulations.
>
> Technical Minimum Schedule in respect of Central Generating Stations and inter-State Generating Stations shall have the same meaning as provided in Sub-Regulation 6.3B of these Regulations."

1. **Amendment in Regulation 6.1 of the Principal Regulations**-
Following clause shall be added after clause (d) of Principal Regulations:

> "(e) Procedure for declaration of commercial operation of Central Generating Stations, inter-State Generating Stations and inter-State Transmission Systems, and technical minimum schedule for operation of the Central Generating Stations and inter-State Generating Stations"

2. **Amendment in Regulation 6.2 of the Principal Regulations** – Following shall be added at the end of first para of Regulation 6.2 of the Principal Regulations:

"This code also provides for the procedure and mechanism for declaration of commercial operation of Central Generating Stations, inter-State Generating Stations and inter-State Transmission System and technical minimum schedule for operation of Central Generating Stations and inter-State Generating Stations."

5**. Addition of new Regulations:**

The following Regulations shall be added after Regulation 6.3 of the Principal Regulations:

"6.3A Commercial operation of Central generating stations and inter-State Generating Stations

3. Date of commercial operation in case of a unit of thermal Central Generating Stations or inter-State Generating Station shall mean the date declared by the generating company after demonstrating the unit capacity corresponding to its Maximum Continuous Rating (MCR) or the Installed Capacity (IC) or Name Plate Rating on designated fuel through a successful trial run and after getting clearance from the respective RLDC or SLDC, as the case may be, and in case of the generating station as a whole, the date of commercial operation of the last unit of the generating station:

Provided that:

(vi) Where the beneficiaries / buyers have been tied up for purchasing power from the generating station, the trial run or each repeat of trial run shall commence after a notice of not less than seven days by the generating company to the beneficiaries/buyers and concerned RLDC or SLDC, as the case may be.

(vii) Where the beneficiaries / buyers have not been tied up for purchasing power from the generating station, the trial run or each repeat of trial run shall commence after a notice of not less than seven days by the generating company to the concerned RLDC or SLDC, as the case may be.

(viii) The generating company shall certify that:

The generating station meets the relevant requirements and provisions of the technical standards of Central Electricity Authority (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations, 2010 and Indian Electricity Grid Code, as applicable:

The main plant equipment and auxiliary systems including Balance of Plant, such as Fuel Oil System, Coal Handling Plant, DM plant, pre-treatment plant, fire-fighting system, Ash Disposal system and any other site specific system have been commissioned and are capable of full load operation of the units of the generating station on sustained basis.

Permanent electric supply system including emergency supplies and all necessary instrumentation, control and protection systems and auto loops for full load operation of unit have been put in service.

The certificates as required under clause (iii) above shall be signed by the CMD/CEO/MD of the generating company and a copy of the certificate shall be submitted to the Member Secretary of the concerned Regional Power Committee and the concerned RLDC / SLDC before declaration of COD. The generating company shall submit approval of Board of Directors to the certificates as required under clause (iii) within a period of 3 months of the COD.

Trial run shall be carried out in accordance with Regulation 6.3A.3 of these Regulations.

Partial loading may be allowed with the condition that average load during the duration of the trial run shall not be less than Maximum Continuous Rating or the Installed Capacity or the Name Plate Rating excluding period of interruption and partial loading but including the corresponding extended period.

Where on the basis of the trial run, a unit of the generating station fails to demonstrate the unit capacity corresponding to Maximum Continuous Rating or Installed Capacity or Name Plate Rating, the generating company has the option to de-rate the capacity or to go for repeat trial run. Where the generating company decides to de-rate the unit capacity, the demonstrated capacity in such cases shall be more or equal to 105% of de-rated capacity.

The concerned RLDC or SLDC, as the case may be, shall convey clearance to the generating company for declaration of COD within 7 days of receiving the generation data based on the trial run.

If the concerned RLDC or SLDC, as the case may be, notices any deficiencies in the trial run, it shall be communicated to the generating company within seven (7) days of receiving the generation data based on the trial run.

Scheduling of power from the generating station or unit thereof shall commence from 0000 hrs after declaration of COD.

i. Date of commercial operation (COD) in relation to a generating unit of hydro generating station including pumped storage hydro generating station shall mean the date declared by the generating company after demonstrating peaking capability corresponding to the Installed Capacity of the generating station through a successful trial run, and after getting clearance from the respective RLDC or SLDC, as the case may be, and in relation to the generating station as a whole, the date of commercial operation of the last generating unit of the generating station.

Provided that:

i. Where beneficiaries have been tied up for purchasing power from the generating station, trial run or each repeat of trial run shall commence after a notice of not less than seven days by the generating company to the beneficiaries and concerned RLDC or SLDC, as the case may be;

ii. Where the beneficiaries/buyers have not been tied up for purchasing power from the generating station, the trial run shall commence after a notice of not less than seven days by the generating company to concerned RLDC or SLDC, as the case may be.

iii. The generating company shall certify that:

The generating station or unit thereof meets the requirement and relevant provisions of the technical standards of Central Electricity Authority (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations, 2010 and Indian Electricity Grid Code, as applicable:

The main plant equipment and auxiliary systems including Drainage Dewatering system, Primary and Secondary cooling system, LP and HP air compressor, Firefighting system, etc. have been commissioned and are capable for full load operation of units on sustained basis.

Permanent electric supply system including emergency supplies and all necessary Instrumentations Control and Protection Systems and auto loops for full load operation of the unit are put into service.

iv. The certificates as required under clause (iii) above shall be signed by the CMD/CEO/MD of the generating company and a copy of the certificate shall be submitted to the Member Secretary of the concerned Regional Power Committee and concerned RLDC or SLDC, as the case may be, before declaration of COD. The generating company shall submit approval of Board of Directors to the certificates as required under clause (iii) within a period of 3 months of COD.

v. Trial run shall be carried out in accordance with sub-Regulation 6.3A.3 of this Regulation.

vi. Where on the basis of the trial run, a unit of the generating station fails to demonstrate the unit capacity corresponding to Maximum Continuous Rating or Installed Capacity or Name Plate Rating, the generating company shall have the option to either de-rate the capacity or to go for repeat trial run. If the generating company decides to de-rate the unit capacity, the demonstrated capacity in such cases shall be more or equal to 110% of de-rated capacity.

In case a hydro generating station with pondage or storage is not able to demonstrate the peaking capability corresponding to the installed capacity for the reasons of insufficient reservoir or pond level, the date of commercial operation of the last unit of the generating station shall be considered as the date of commercial operation of the generating station as a whole, and it will be mandatory for such hydro generating station to demonstrate peaking capability equivalent to installed capacity of the generating station or unit thereof as the case may be, as and when such reservoir/pond level is achieved:

If a run-of-river hydro generating station or a unit thereof is declared under commercial operation during lean inflows period when the water inflow is insufficient for such demonstration of peaking capability, it shall be mandatory for such hydro generating station or unit thereof to demonstrate peaking capability equivalent to installed capacity as and when sufficient water inflow is available. In case of failure to demonstrate the peaking capacity, the unit capacity shall be de-rated to the capacity demonstrated with effect from the COD.

The concerned RLDC or SLDC as the case may be, shall accord clearance to the generating company within seven (7) days of receiving the generation data based on the trial run.

If the concerned RLDC or SLDC as the case may be, notices any deficiency in trial run, it shall be communicated to the generating company within seven (7) days of receiving the generation data based on trial run.

Scheduling shall commence from 0000 hrs after declaration of COD.

1. Trial Run or Trial Operation: Trial Run or Trial Operation in relation to a thermal Central Generating Station or inter-State Generating Station or a unit thereof shall mean successful running of the generating station or unit thereof on designated fuel at Maximum Continuous Rating or Installed Capacity or Name Plate Rating for a continuous period of 72 hours and in case of a hydro Central Generating Station or inter-state Generating Station or a unit thereof for a continuous period of 12 hours:

Provided that:

(i) The short interruptions, for a cumulative duration of 4 hours, shall be permissible, with corresponding increase in the duration of the test. Cumulative Interruptions of more than 4 hours shall call for repeat of trial operation or trial run.

(ii) The partial loading may be allowed with the condition that average load during the duration of the trial run shall not be less than Maximum Continuous Rating, or the Installed Capacity or the Name Plate Rating excluding period of interruption and partial loading but including the corresponding extended period.

Where the beneficiaries have been tied up for purchasing power from the generating station, the trial run or each repeat of trial run shall commence after a notice of not less than seven days by the generating company to the beneficiaries and concerned RLDC or SLDC, as the case may be.

Units of thermal and hydro Central Generating Stations and inter-State Generating Stations shall also demonstrate capability to raise load upto 105% or 110% of this Maximum Continues Rating or Installed Capacity or the Name Plate Rating as the case may be.

(ix) Date of commercial operation in relation to an inter-State Transmission System or an element thereof shall mean the date declared by the transmission licensee from 0000 hour of which an element of the transmission system is in regular service after successful trial operation for transmitting electricity and communication signal from the sending end to the receiving end:

Provided that:

(xii) In case of inter-State Transmission System executed through Tariff Based Competitive Bidding, the transmission licensee shall declare COD of the ISTS in accordance with the provisions of the Transmission Service Agreement.

(xiii) Where the transmission line or substation is dedicated for evacuation of power from a particular generating station and the dedicated transmission line is being implemented other than through tariff based competitive bidding, the concerned generating company and transmission licensee shall endeavour to commission the generating station and the transmission system simultaneously as far as practicable and shall ensure the same through appropriate Implementation Agreement in accordance with relevant provisions of Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2014 or any subsequent amendment or re-enactment thereof. In case the transmission line or sub-station dedicated to a generator is being implemented through tariff based competitive bidding, then matching of commissioning of the transmission line/sub-station and generating station shall be monitored by Central Electricity Authority.

(xiv) Where the transmission system executed by a transmission licensee is required to be connected to the transmission system executed by any other transmission licensee and both transmission systems are executed in a manner other than through tariff based competitive bidding, the transmission licensee shall endeavour to match the commissioning of its transmission system with the transmission system of the other licensee as far as practicable and shall ensure the same through an appropriate Implementation Agreement. Where either of the transmission systems or both are implemented through tariff based competitive bidding, the progress of implementation of the transmission systems in a matching time schedule shall be

monitored by the Central Electricity Authority.

4. In case a transmission system or an element thereof is prevented from regular service on or before the Scheduled COD for reasons not attributable to the transmission licensee or its supplier or its contractors but is on account of the delay in commissioning of the concerned generating station or in commissioning of the upstream or downstream transmission system of other transmission licensee, the transmission licensee shall approach the Commission through an appropriate application for approval of the date of commercial operation of such transmission system or an element thereof.

5. An element shall be declared to have achieved COD only after all the elements which are pre-required to achieve COD as per the Transmission Services Agreement are commissioned. In case any element is required to be commissioned prior to the commissioning of pre-required element, the same can be done if CEA confirms that such commissioning is in the interest of the power system.

6. The transmission licensee shall submit a certificate from the CMD/CEO/MD of the Company that the transmission line, sub-station and communication system conform to the relevant Grid Standard and Grid Code, and are capable of operation to their full capacity.

Note: Transmission Licensee referred to in this Sub-Regulation shall include "Deemed Transmission Licensee" as per the provision of the Act.

(vii) Trial run and Trial operation in relation to a transmission system or an element thereof shall mean successful charging of the transmission system or an element thereof for 24 hours at continuous flow of power, and communication signal from the sending end to the receiving end and with requisite metering system, telemetry and protection system in service enclosing certificate to that effect from concerned Regional Load Despatch Centre.

(viii) Date of commercial operation in relation to a communication system or an element thereof shall mean the date declared by the transmission licensee from 0000 hour of which a communication system or element thereof shall be put into service after completion of site acceptance test including transfer of voice and data to respective control centre as certified by the respective Regional Load Dispatch Centre.

(ix) In the event of inconsistency between the provisions relating to trial operation and commercial operation as specified in Sub-Regulation 6.3A.1 to 6.3A.6 of these regulations and the provisions of Central Electricity Regulatory Commissions (Terms and Conditions of Tariff) Regulations, 2014 or any subsequent enactment thereof, the provisions of these regulations shall prevail.

6.3B – Technical Minimum Schedule for operation of Central Generating Stations and Inter-State Generating Stations

(b) The technical minimum for operation in respect of a unit or units of a Central Generating Station of inter-State Generating Station shall be 55% of MCR loading or installed capacity of the unit of at generating station.

(c) The CGS or ISGS may be directed by concerned RLDC to operate its unit(s) at or above the technical minimum but below the normative plant availability factor on account of grid security or due to the fewer schedules given by the beneficiaries.

(d) Where the CGS or ISGS, whose tariff is either determined or adopted by the Commission, is directed by the concerned RLDC to operate below normative plant availability factor but at or above technical minimum, the CGS or ISGS may be compensated depending on the average unit loading duly taking into account the forced outages, planned outages, PLF, generation at generator terminal, energy sent out ex-bus, number of start-stop, secondary fuel oil consumption and auxiliary energy consumption, in due consideration of actual and normative operating parameters of station heat rate, auxiliary energy consumption and secondary fuel oil consumption etc. on monthly basis duly supported by relevant data verified by RLDC or SLDC, as the case may be.

Provided that:

(c) In case of coal / lignite based generating stations, following station heat rate degradation or actual heat rate, whichever is lower, shall be considered for the purpose of compensation:

S. No.	Unit loading as a % of Installed Capacity of the Unit	Increase in SHR (for supercritical units) (%)	Increase in SHR (for sub-critical units) (%)
1	85-100	Nil	Nil
2	75-84.99	1.25	2.25
3	65-74.99	2	4
4	55-64.99	3	6

(viii) In case of coal / lignite based generating stations, the following Auxiliary Energy Consumption degradation or actual, whichever is lower, shall be considered for the purpose of compensation:

Sl. No	Unit Loading (% of MCR)	% Degradation in AEC admissible
1.	85 – 100	NIL
2.	75 – 84.99	0.35
3.	65 – 74.99	0.65
4.	55 - 64.99	1.00

(a) Where the scheduled generation falls below the technical minimum schedule, the concerned CGS or ISGS shall have the option to go for reserve shut down and in such cases, start-up fuel cost over and above seven (7) start / stop in a year shall be considered as additional compensation based on following norms or actual, whichever is lower:

Unit Size (MW)	Oil Consumption per start up (Kl)		
	Hot	Warm	Cold
200/210/250 MW	20	30	50
500 MW	30	50	90
660 MW	40	60	110

% In case of gas based Central Generating Station or inter-State Generating Station, compensation shall be decided based on the characteristic curve provided by the manufacturer and after prudence check of the actual operating parameters of Station Heat Rate, Auxiliary Energy Consumption, etc.

% Compensation for the Station Heat Rate and Auxiliary Energy Consumption shall be worked out in terms of energy charges.

% The compensation so computed shall be borne by the entity who has caused the plant to be operated at schedule lower than corresponding to Normative Plant Availability Factor up to technical minimum based on the compensation mechanism finalized by the RPCs.

% No compensation for Heat Rate degradation and Auxiliary Energy Consumption shall be admissible if the actual Heat Rate and / or actual Auxiliary Energy Consumption are lower than the normative Station Heat Rate and / or normative Auxiliary Energy Consumption applicable to the unit or the generating station.

% There shall be reconciliation of the compensation at the end of the financial year in due consideration of actual weighted average operational parameters of station heat rate, auxiliary energy consumption and secondary oil consumption.

% No compensation for Heat Rate degradation and Auxiliary Energy Consumption shall be admissible if the actual Heat Rate and / or actual Auxiliary

Energy Consumption are lower than the normative station Heat Rate and / or normative Auxiliary Energy Consumption applicable to the unit or the generating station in a month or after annual reconciliation at the end of the year.

(ix) The change in schedule of power under the provisions of Central Electricity Regulatory Commission (Ancillary Services Operations) Regulations, 2015 shall not be considered for compensation.

(x) In case of a generating station whose tariff is neither determined nor adopted by the Commission, the concerned generating company shall have to factor the above provisions in the PPAs entered into by it for sale of power in order to claim compensations for operating at the technical minimum schedule.

(xi) The generating company shall keep the record of the emission levels from the plant due to part load operation and submit a report for each year to the Commission by 31st May of the year.

(xii) NLDC shall prepare a Detailed Operating Procedure in consultation with the generators and beneficiaries at RPC forums within 2 months' time and submit to the Commission for approval. The Detailed Operating Procedure shall contain the role of different agencies, data requirements, procedure for taking the units under reserve shut down and the methodology for identifying the generating stations or units thereof to be backed down upto the technical minimum in specific Grid conditions such as low system demand, Regulation of Power Supply and incidence of high renewables etc., based on merit order stacking.

(xiii) The RPCs shall work out a mechanism for compensation for station heat rate and auxiliary energy consumption for low unit loading on monthly basis in terms of energy charges and compensation for secondary fuel oil consumption over and above the norm of 0.5 ml/kWh for additional start-ups in excess of 7 start-ups, in consultation with generators and beneficiaries at RPC forum and its sharing by the beneficiaries.

Sd/-
(Shubha Sarma)
Secretary

Note: Principal Regulations were published in Gazette of India, Extraordinary, Part-III, Section 4 at Serial No. 115 on 28.4.2010, the first amendment to the Principal Regulations were published in the Gazette of India, Extraordinary, Part-III, Section 4 at Serial No.60 on 6th March, 2012; the second amendment to the Principal Regulations were published in the Gazette of India, Extraordinary, Part-III, Section 4 at Serial No. 08 on 6th January, 2014; and the third amendment to the Principal Regulations were published in the Gazette of India, Extraordinary, Part-III, Section 4 at Serial No. 271 on 10th August, 2015.

CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI

No. L-1/219/2017-CERC

Coram:

Shri Gireesh B. Pradhan, Chairperson
Shri A.K. Singhal, Member
Shri A.S. Bakshi, Member
Dr. M.K. Iyer, Member

Date of Order : 5th May 2017

In the matter of

Approval of the detailed procedure for taking unit(s) under Reserve Shut Down and Mechanism for Compensation for Degradation of Heat Rate, Aux Compensation and Secondary Fuel Consumption, due to Part Load Operation and Multiple Start/Stop of Units

ORDER

The Central Electricity Regulatory Commission notified the Central Electricity Regulatory Commission (Indian Electricity Grid Code) Regulations, 2010 (Grid Code). The Grid Code was amended vide notifications dated 6.3.2012, 6.1.2014, 10.8.2015 and 6.4.2016. Regulation 6.3B.6 and 6.3B.7 introduced vide amendment dated 6.4.2016 entrusted certain responsibilities to NLDC and RPCs as under:-

> "6. NLDC shall prepare a Detailed Operating Procedure in consultation with the generators and beneficiaries at RPC forums within 2 months' time and submit to the Commission for approval. The Detailed Operating Procedure shall contain the role of different agencies, data requirements, procedure for taking the units under reserve shut down and the methodology for identifying the generating stations or units thereof to be backed down upto the technical minimum in specific Grid conditions such as low system demand, Regulation of Power Supply and incidence of high renewables etc., based on merit order stacking
>
> 9. The RPCs shall work out a mechanism for compensation for station heat rate and auxiliary energy consumption for low unit loading on monthly basis in terms of energy charges and compensation for secondary fuel oil consumption over and above the norm of 0.5 ml/kWh for additional start-ups in excess of 7 start-ups, in consultation with generators and beneficiaries at RPC forum and its sharing by the beneficiaries."

3. POSOCO has submitted the “Detailed Operating Procedure for taking units under Reserve Shut Down” (Detailed Operating Procedure) vide its letter dated 12.8.2016 and 4.11.2016. RPCs have also finalised the “Mechanism for Compensation for Degradation of Heat Rate, Aux Energy Compensation and Secondary Fuel oil Consumption, due to Part Load Operation and Multiple Start/Stop of Unit” (Compensation Mechanism) after discussions with stakeholders.

4. The Detailed Operating Procedure submitted by POSOCO and the Compensation Mechanism submitted by RPCs have been examined. A meeting with all the RPCs, NLDC and CEA was held in the Commission on 27.10.2016 to further discuss and finalise the above said Detailed Operating Procedure and Compensation Mechanism. The Detailed Operating Procedure and the Compensation Mechanism have been finalized in consultation with NLDC, RLDCs, CEA and RPCs.

5. The Commission through this order approves the Detailed Operating Procedure and the Compensation Mechanism in terms of sub-clause 6 of the Regulation 6.3B of Grid Code. The approved Detailed Operating Procedure is annexed at Appendix I to this order. The approved Compensation Mechanism is annexed at Appendix II to this order.

6. The RPCs are directed to provide feedback, after consultation with the stakeholders, on the operation of the Compensation Mechanism within six months from the date of issue of this order for assessment of the efficacy of the Compensation Mechanism. It is clarified that review of the Compensation Mechanism will be undertaken only if it is considered necessary based on operational experience.

7. There is already a procedure for RSD for a station in WRPC in vogue based on principle of removal of costliest stations and also provide for adjustment of allocation of power to other generating stations in the consent of beneficiaries. NLDC is of the view that same needs deliberation. NLDC is advised to deliberate the WRPC procedure in the other RPC's and submit its feasibility in 6 months from the date of issue of the procedure.

8. Based on the feedback about the operation of the DOP on RSD and Compensation Mechanism shall be reviewed by the Commission after six months.

9. The Detailed Operating Procedure and the Compensation Mechanism specified in this order shall come into force from 15.5.2017.

sd/-	**sd/-**	**sd/-**	**sd/-**
(Dr. M.K. Iyer)	**(A.S. Bakshi)**	**(A.K. Singhal)**	**(Gireesh B. Pradhan)**
Member	**Member**	**Member**	**Chairperson**

Appendix-I

Detailed Operating Procedure for Backing Down of Coal/Lignite/Gas unit(s) of the Central Generating Stations, Inter-State Generating Stations and other Generating Stations and for taking such units under Reserve Shut Down on scheduling below Technical Minimum Schedule

2. General

1.1 Central Electricity Regulatory Commission notified the Central Electricity Regulatory Commission (Indian Electricity Grid Code) Regulations, 2010 (referred to as "Grid Code") on 28.4.2010 and came into force from 3.5.2010. The Grid Code was subsequently amended through first, second and third amendments which came into force from 2.4.2012, 17.2.2014 and 1.11.2015. The Commission further amended the Grid Code vide Central Electricity Regulatory Commission (Indian Electricity Grid Code)(Fourth Amendment) Regulations, 2016, which was notified on 6.4.2016 (hereinafter referred to as "Amendment Regulations"). The Amendment Regulations provide to the Central Generating Stations, Inter-State Generating Stations and other Generating Stations which are Regional Entities an option to go for Reserve Shut Down (RSD) when the scheduled generation falls below Technical Minimum Schedule (TMS). As per Regulation 6.3B.6 of the Amendment Regulations, National Load Despatch Centre (NLDC) shall prepare a Detailed Operating Procedure in consultation with the generators and beneficiaries.

1.2 NLDC has submitted a draft on The "Detailed Operating Procedure for Backing Down of Coal/Lignite/Gas unit(s) of the Central Generating Stations, Inter-State Generating Stations and other Generating Stations and for taking such units under Reserve Shut Down on scheduling below Technical Minimum Schedule" (hereinafter "Detailed Operating Procedure" or "DOP"). Central Electricity Authority (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations, 2010 (CEA Regulations) provide for regular load cycling and two shift operation by thermal power plants. Further, these power plants are also required to be designed for a minimum of 4000 hot starts, 1000 warm starts and 150 cold starts. After due consideration of the draft DOP in the light of the comments received from the stakeholders and the provisions of the CEA Regulations, the DOP has been approved as per the provisions delineated hereinafter.

1.3 The DOP shall come into force with effect from the date notified by the Commission in the Official Gazette.

3. Objective

The objective of this DOP is to lay down (i) the methodology for identifying the generating stations or units thereof to be backed down in specific grid conditions

such as low system demand, during Regulation of Power Supply, incidence of high renewables etc.; (ii) the procedure for taking generating units under RSD; (iii) the role of different agencies; and (iv) the data requirements, etc.

4. **Scope**

This DOP shall be applicable to RLDCs, SLDCs, CGS and ISGS whose tariff is either determined or adopted by the Central Commission and the generating stations which are regional entities but whose tariff is neither determined nor adopted by the Commission. For those generating stations whose tariff is determined or adopted by the Commission but are scheduled by SLDCs, similar mechanism of taking such machines under RSD shall be adopted by SLDCs. Regional entities whose tariff is neither determined nor adopted by the Central Commission shall also be subject to this procedure.

5. **Definitions**

4.1 In this DOP, unless the context otherwise requires:

(i) "**Cold Start"** in relation to steam turbine means start up after a shutdown period exceeding 72 hours (turbine metal temperatures below approximately 40% of their full load values).

(ii) **"Declared Capacity**" or 'DC' in relation to a generating station means, the capability to deliver ex-bus electricity in MW declared by such generating station in relation to any time-block of the day as defined in the Grid Code or whole of the day, duly taking into account the availability of fuel or water, and subject to further qualification in the relevant regulations.

(iii) "**Off Bar Declared Capability in MW"** shall be considered as the difference between DC and On DC.

(iv) "**On Bar Declared Capacity**" (OnDC) in relation to a generating station means, the capability to deliver ex-bus electricity in MW from the units on bar declared by such generating station in relation to any time block of the day as defined in the Grid Code or whole of the day, duly taking into account the availability of fuel and water, and subject to further qualification in the relevant regulations.

(v) **"On Bar Installed Capacity"** means the summation of name plate capacities or the capacities as approved by the Commission from time to time, of all units of the generating station in MW which are on bar. In case of a combined cycle

module of a gas/liquid fuel based stations, the installed capacity of steam turbine shall be in proportion to the on bar capacity of Gas turbines of the module.

(ix) **"Hot Start"** in relation to steam turbine, means start up after a shutdown period of less than 10 hours (turbine metal temperatures below approximately 80% of their full load values).

(x) **"Technical Minimum"** for operation in respect of a unit(s) of a Thermal Generating Station shall be 55% of Maximum Continuous Rating or MCR loading or installed capacity of the units on bar at the generating station after deducting the normative Auxiliary Energy Consumption plus Auxiliary Energy Consumption compensation as per the provisions of the Grid Code.

(xi) "**Warm Start"** in relation to steam turbine means start up after a shutdown period between 10 hours and 72 hours (turbine metal temperatures between approximately 40% to 80% of their full load values).

4.2 Terms and abbreviations used in this DOP but not defined herein shall have the meaning assigned to them in Electricity Act, 2003 or the Grid Code or other Regulations of the Commission as notified from time to time.

6. Methodology for taking generating station or unit(s) thereof under Reserve Shut Down (Day Ahead Scheduling)

5.1. The generating station shall submit the following information at the time of declaration of DC and subsequent revisions, if any, in accordance with Grid Code.

(ii) On Bar Installed Capacity (MW) / Units On Bar

(iii) On Bar Declared Capacity (MW) (with due consideration to ramp up/down capability)

(iv) Ramp UP/ Ramp DOWN rate (MW/min) for On Bar Installed Capacity

5.2. RLDCs shall compile the above information along with the entitlement for each State and advise the same to all beneficiaries by 0800 hours as per Grid Code and amendments thereafter. Entitlements shall be calculated based on the DC.

5.3. The beneficiaries shall furnish their original requisition for the next day (D-day) to their respective RLDC by 1500 hours of the current day (D-1) based on the

entitlements given by the concerned RLDC in accordance with the Grid Code, as amended from time to time.

5.4. Ex-Power Plant (Ex-PP) dispatch schedule of a generating station for each time block shall be computed by the respective RLDC by taking algebraic sum of requisitions of all beneficiaries of that generating station by 1800 hours and same shall be uploaded on website as revision R0 for next day (D) by 1900 hours of current day (D-1). The Ex-PP schedule shall be restricted to On Bar DC.

5.5. If the net EX-PP injection schedule for a generating station is less than technical minimum, the beneficiaries shall be required to review their requisition(s) and submit a revised requisition(s), by 2000 hours of current day (D-1) to the concerned RLDC.

5.6. Based on the revised requisitions received up to 2000 hours of current day (D-1), RLDC shall prepare revised injection schedule for the concerned generating station. If the scheduled injection is still less than technical minimum, RLDC shall review the anticipated demand pattern based on the demand forecast and grid conditions to decide on the requirement of providing technical minimum schedule to the generating station.

5.7. RLDC shall suo-moto revise the schedule of any generating station as per clauses 6.5.14 and 6.5.20 of the Grid Code to operate at or above technical minimum in the ratio of under-requisitioned quantum (with respect to technical minimum) in the interest of smooth system operation under the following conditions:

ii. Extreme variation in Weather Conditions
iii. High Load Forecast
iv. To maintain reserves on regional or all India basis
v. Network Congestion
vi. Any other event which in the opinion of RLDC/NLDC shall affect the grid security.

While doing so, it is possible that the requisition of some beneficiaries may go up to ensure technical minimum. In this case, SLDCs may surrender power from some other inter-State generating station(s) or intra-State generating station(s) based on merit order. The concerned RLDC shall issue R-1 schedule accordingly and this shall be intimated to the concerned generating station, through the scheduling process.

5.8. If the grid conditions do not demand for providing technical minimum to a generating station, the concerned RLDC shall issue R-1 schedule based on the requisitions received. Under such situation, the generating station shall have the option to go for RSD with intimation to RLDC latest by 2100 hrs.

5.9. Before taking unit(s) under RSD, the generating station shall revise the On Bar DC (with due consideration to ramp up/down capability), Off Bar DC, DC and Ramp UP/RAMP Down rate. The generator shall ensure that the Off Bar DC is not more than the MCR less Normative Auxiliary Consumption of the machines under RSD. The beneficiaries shall continue to bear the capacity charge corresponding to Total DC.

5.10. When the machine is going under RSD :

vii. In case the total requisitioned power can be supplied through other units in the same generating station on bar, the generator shall be scheduled according to the requisitions received.

viii. In case total requisitioned power cannot be supplied through other units in the same generating station on bar, the requisition from the beneficiaries shall be reduced in the ratio of requisitioned power.

ix. In the special case of a generating station where the only running machine is going under RSD, the beneficiaries who have requisitioned power will not get any power from that generating station. In such cases, the beneficiaries may make arrangement from alternative sources.

5.11. No maintenance activities on unit under RSD shall be undertaken by the generating station so that the RSD unit is always readily available for revival/synchronization. If a generating station requires maintenance on any machine under RSD, then the same shall be done in due consultation with RLDC. The DC shall be reduced appropriately.

5.12. Regulation of Power Supply: When injection schedule of a CGS/ISGS falls below technical minimum due to imposition of regulation of power supply by the generating company or transmission licensee under the Central Electricity Regulatory Commission (Regulation of Power Supply) Regulations, 2010 and/or as per directions under the Commission order dated 2.9.2015 in Petition No. 142/MP/2012, the generator may endeavour to sell the surplus power through STOA or Power Exchange(s) before opting for RSD.

7. Methodology for taking generating station or unit(s) thereof under Reserve Shut down (Real Time Schedule Revision)

6.1 A beneficiary can surrender its part or full entitlement during the day of operation in accordance with the relevant provisions of Grid Code.

6.2 In case, the schedule of a generating station goes below technical minimum, due to this surrender of power:

6.2.1 RLDC may provide technical minimum schedule considering the system conditions in accordance with Regulations 6.5.14 and 6.5.20 of the Grid Code.

6.2.2 In case the system condition does not require, RLDC shall direct the generating station to take any unit or the generating station under RSD. In such a scenario, RLDC shall display the station likely to go under RSD on its website. In case, the schedule is still less than the technical minimum and generating station decides to take a unit(s) under RSD, it shall inform the same to concerned RLDC.

6.2.3 In order to meet peak load and to maintain reserves, the generating station should endeavour to plan as far as possible the RSD in such a manner that maximum number of units are kept on bar keeping in view economy and efficiency of the units of the generating station.

7. Methodology for revival of generating station or unit(s) from RSD

7.1 Once a unit is taken out under RSD, the generating station shall notify the period for which the unit will remain under RSD and the unit can be recalled anytime after 8 hours. In case of system requirements, the generating unit can be revived before 8 hrs as well. The time to start a machine under different conditions such as HOT, WARM and COLD shall be as per the declaration given by the generating station under the Detailed Procedure for Ancillary Services Operations (Format AS-1 and AS-3 of the said Procedure).

7.2 One or more beneficiaries of the generating station as well as the generating station may decide for revival of unit(s) under RSD with commitment for technical minimum schedule with minimum run time of 8 hrs for Coal based generating stations and 3 hrs for Gas based generating stations post revival. In such situations, the generating station shall revise the On Bar and Off Bar DC (with due consideration to ramp up/down capability).

7.3 RLDC may also advise the generating stations to revive unit(s) under RSD for better system operation (IEGC 6.5.20). In such cases, RLDC shall ensure technical minimum schedule by increasing schedule of all the beneficiaries in the ratio of under-requisition.

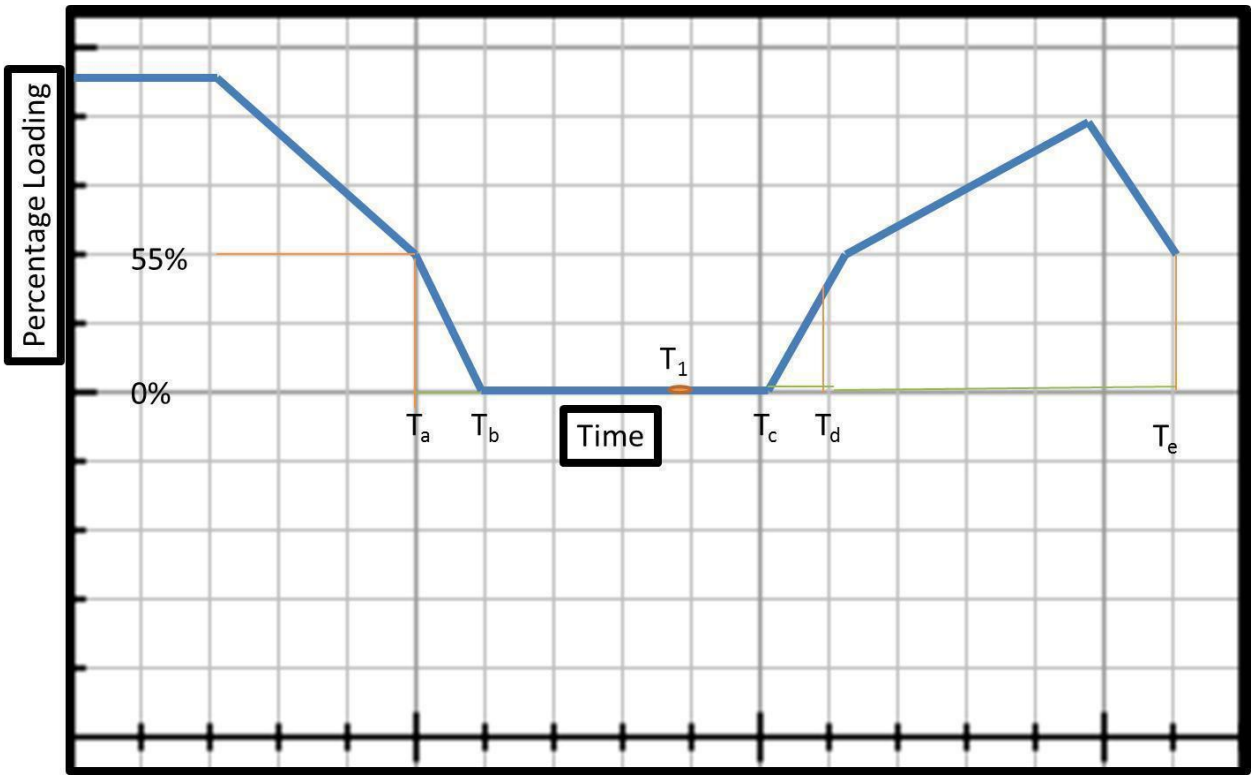
7.4 In case the machine is not revived as per the revival time declared by the generating station under different types of start, the machine shall be treated under outage for the duration starting from the likely revival time and the actual revival time. RLDC shall ensure that intimation is sent to the generating station sufficiently in advance keeping in view its start-up time.

7.5. Illustrative diagram showing minimum run time and a flow chart for taking machines under RSD is given at Annexure-I and Annexure-II respectively of this DOP.

8. Review of the Procedure

The Procedure shall be reviewed after six months of its notification based on feedback received from NLDC and RLDCs.

Annexure–I



T_a= Time at Which Generator unit(s) ramps down for Reserve Shut down.

T_b= Time at which Generator unit(s) reaches Reserve Shut down.

T_b - T_a = Based on Ramp down rates as per AS1 Form submitted under RRAS.

T_1 = Time at which Generator should start its activity to synchronize its unit(s) at T_c to achieve 55% loading for Td.

T_d-T_a = Based on the Condition of the unit(s) (Cold, Warm, Hot) and as specified by AS1 Form submitted under RRAS but less than 8 Hours.

T_C = Time at which Generator unit(s) synchronize.

T_d= Time at which Generator unit(s) reaches schedule above 55% after RSD as per the instruction given to the generator by RLDC. The instruction is given before T_1

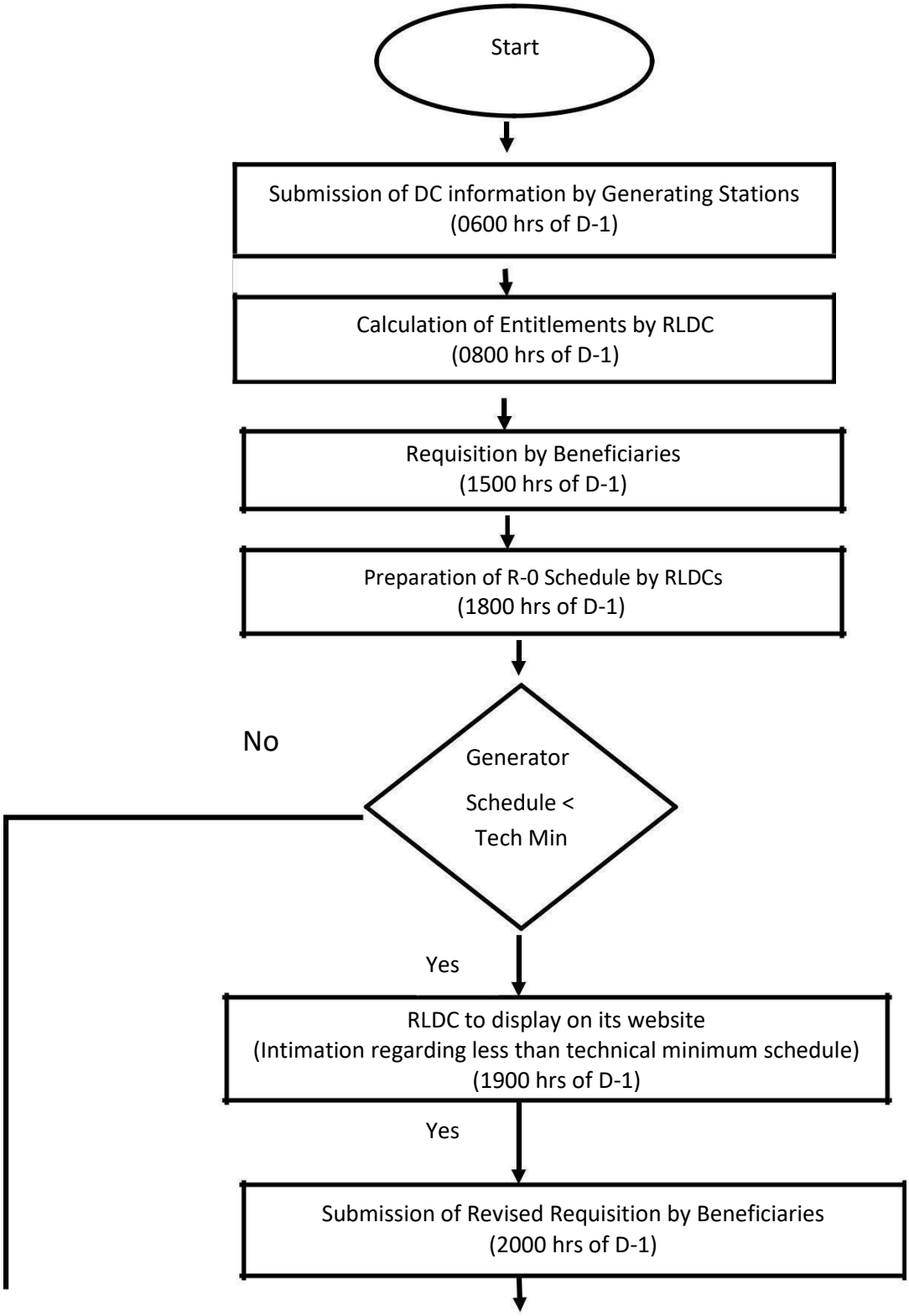
T_d – T_c = Based on Ramp up rates as per AS1 Form submitted under RRAS.

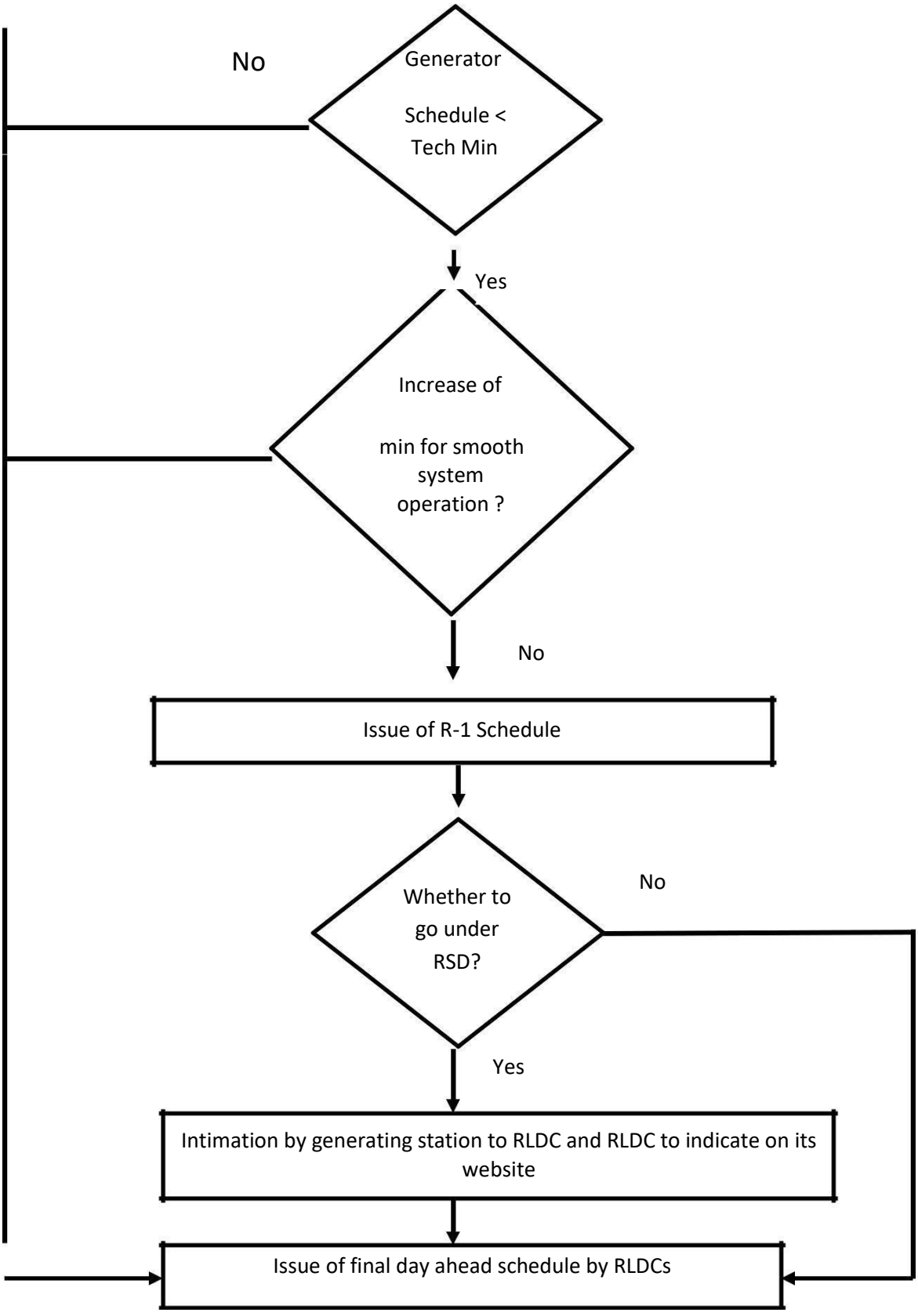
T_e = Time at which Generator unit(s) can be given schedule below 55%. Te-

Td>8 hours

Annexure-II

Flow Chart for taking machines under Reserve Shut Down




No
Generator
Schedule <
Tech Min
Yes
Increase of
min for smooth
system
operation ?
No
Issue of R-1 Schedule
Whether to
go under
RSD?
No
Yes
Intimation by generating station to RLDC and RLDC to indicate on its website
Issue of final day ahead schedule by RLDCs

Appendix-II

Mechanism for Compensation for Degradation of Heat Rate, Aux Consumption and Secondary Fuel Oil Consumption, due to Part Load Operation and Multiple Start/Stop of Units

2. Introduction

Central Electricity Regulatory Commission (Indian Electricity Grid Code) (Fourth Amendment) Regulations, 2016, (hereinafter "Amendment Regulations") was notified on 6th April 2016. The Amendment Regulations inter-alia contained provisions relating to Technical Minimum Schedule for operation of Central Generating Stations (CGS) and Inter-State Generating Stations (ISGS), whose tariff is either determined or adopted by the Central Commission. The Amendment Regulations further provided for compensation to Generating Stations for degradation of Heat Rate, Auxiliary Consumption and Secondary Fuel Oil consumption due to part load operation and multiple start-ups of units. Sub-regulation 7 of Regulation 6.3B of the Amendment Regulations mandates RPCs to work out a mechanism for compensation for station heat rate and auxiliary energy consumption for low unit loading and for secondary fuel oil consumption for additional start-ups in excess of 7 start-ups (hereinafter referred to as "Compensation Mechanism"). The Compensation Mechanism has been framed hereunder to fulfil aforesaid requirement.

3. Applicability

This Compensation Mechanism is applicable to Coal/Gas based Central Generating Stations and Coal/Gas based Inter-State Generating Stations, whose tariff is either determined or adopted by the Central Commission (hereinafter "designated generating stations"). In case of generating stations whose tariff is neither determined nor adopted by the Commission but which is a regional entity, they shall be required to make appropriate provisions in their PPAs or any other supplementary agreement in the light of the Compensation Mechanism.

4. Definitions and abbreviations:

3.1 In this Compensation Mechanism, unless the context otherwise requires:

(iii) "Average Unit Loading (AUL) of the station" (in %) means loading of the station during the Calculation Period determined as follows:

(iii) “Calculation Period” means the period for which compensation calculation shall be carried out. Generally, there shall be twelve calculations during a financial year. The first calculation shall be done for one month (i.e. month of April) at the beginning of the financial year. The second calculation shall be done by considering cumulative of two months (i.e. months of April and May) and so on. After coming into effect of this procedure, the first Calculation period will cover from 15.5.2017 to 31.5.2017.

(iv) “Comp (F)”means reconciled compensation in rupees to be received by a generator during the calculation period based on actual and normative parameters including degraded SHR and AEC based on average unit loading.

(v) “Comp (P)” means compensation in rupees computed for the calculation period based on the normative parameters and actual degraded SHR and AEC based on average unit loading.

(vi) “EC (A)” means total energy charges in rupees computed for a designated generating station during the calculation period on actual parameters of SHR and AEC.

(vii) “EC (N)” means total energy charges in rupees computed for a designated generating station during the calculation period on normative parameters considering degraded SHR and AEC based on average unit loading.

(viii) “Effective Capacity” in MWhr means maximum possible generation from a station during calculation period and shall be calculated as :

Total Installed Capacity of the designated generating station (in MWhr) minus Installed Capacity (MW) of the Unit(s) of the said station under outage (planned or forced outage) and under reserve shut down during the calculation period X outage time .

(viii) “ECR (Comp)” means increase in normative Energy Charge Rate in rupees/kWh for the calculation period considering degraded SHR and AEC based on average unit loading.

(x) “ECR (DC)” means Energy Charge Rate in `/kWh based on degraded SHR and AEC considering average Declared Capacity (DC) as average unit loading during the calculation period.

(xi) “ECR (SE)” means Energy Charge Rate in rupees/kWh based on degraded SHR and AEC considering average unit loading of generating station during the calculation period.

(xii) “Effective Generation of the Station” in MWhr means the actual generation ex-bus of the designated station or the Schedule generation excluding the schedule

under RRAS and bilateral sale/collective sale under open access during the calculation period whichever is higher.

(xv) "RRAS Regulation" means Central Electricity Regulatory Commission (Ancillary Services Operations) Regulations, 2015.

(xvi) "Tariff Regulation" means Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2014 as amended from time to time or any subsequent enactment thereof.

3.2 Terms and abbreviations used in this Compensation Mechanism but not defined herein shall have the meaning as assigned to them in Electricity Act, 2003 or the Grid Code or other Regulations of the Commission as notified from time to time.

7. Mechanism for working out Compensation

4.1 Compensation for degradation of Heat Rate (SHR) and Auxiliary Energy Consumption (AEC)

(i) The mechanism is based on relevant provisions of Grid Code and Tariff Regulations of the Commission, as notified from time to time.

(ii) The Compensation shall be worked out for a month on cumulative basis considering degradation in SHR and AEC based on Average Unit Loading, subject to reconciliation at the end of the year.

(iii) Energy scheduled under RRAS Regulations shall be taken as +ve for up-regulation and –ve for down regulation.

(iv) The Normative Auxiliary Consumption of competitively bid projects shall be considered based on the normative AEC of similar units as per Tariff Regulation of the Commission or the difference between the Installed Capacity and the ex-bus Contracted Capacity as a percentage of Installed capacity of the generating station, whichever is less.

(v) For Gas based generating stations, degraded SHR and AEC shall be decided based on the characteristic curve provided by manufacturer. If the characteristic curve is not provided for the entire range of the operating range i.e. up to 55% of module rating, then the extrapolation of the curve provided by the manufacturer shall be done to extend the curve up to 55% of module loading.

(vi) Average Unit loading shall be used for getting increase in SHR and AEC in accordance with the Regulations and for gas based generating station as per step (v) above

Provided that no compensation for SHR degradation or increase in AEC shall be payable if the Average unit loading for the generating station for the computation period works out more than or equal to 85%.

(x) Based on the values of increased SHR and AEC arrived at step (vi), Energy Charge Rate (ECR) for Average Unit Loading i.e. ECR (SE) for the station shall be calculated using the formula specified in Tariff Regulations of the Commission:

Provided that for generating stations whose tariff has been adopted by Commission under Section 63 of the Act, the ECR(SE) shall be worked out as per the following formula:

(a) Where ECR is quoted without specifying SHR and AEC:

ECR(SE)= quoted ECR or quoted Variable Charge x (1+ % degradation in heat rate based on unit loading corresponding to Effective Generation/100) / (1- % degradation in Aux Consumption based on unit loading corresponding to Scheduled Energy /100)

(e) Where ECR is computed based on normative net Heat Rate and PPA already provides for energy charge payment corresponding to degradation in net station heat rate:

ECR(SE) = ECR worked out based on net station heat rate (without % degradation in heat rate based on unit loading) corresponding to Effective generation) / (1- % degradation in Aux Consumption based on unit loading corresponding to Effective generation/100)

Note: Model PPA notified by GoI provides for energy charge payment corresponding to degradation in net station heat rate and hence as such no separate compensation is allowed under this procedure.

(d) Where ECR is computed based on normative net Heat Rate andPPA does not provide for energy charge payment corresponding to degradation in net station heat rate:

ECR(SE)= ECR worked out based on net station heat rate x (1+ % degradation in heat rate based on unit loading corresponding to Effective generation /100) / (1- % degradation in Aux Consumption based on unit loading corresponding to Effective generation /100)

(ix) ECR corresponding to average Declared Capacity (DC) i.e. ECR (DC) for the calculation period shall also be calculated using the formula specified in Tariff Regulations of the Commission and used as reference for calculating compensation. This is because, the effect of less declaration

(with respect to normative ex-bus Installed capacity), if any, on the SHR and AEC should be to the account of CGS/ISGS:

Provided that for generating stations whose tariff has been adopted by Commission under Section 63 of the Act, the ECR(DC) shall be worked out as per following formula:

(b) Where ECR is quoted without specifying Heat Rate or Aux Consumption:

ECR (DC)= ECR quoted or variable Charge quoted x (1+ % degradation in heat rate based on unit loading corresponding to DC/100) / (1- % degradation in Aux Consumption based on unit loading corresponding to DC /100)

(b) Where ECR is computed based on net Heat Rate andPPA already provides for energy charge payment corresponding to degradation in net station heat rate:

ECR (DC)= ECR worked out based on net station heat rate (without % degradation in heat rate based on unit loading) corresponding to DC / (1- % degradation in Aux Consumption based on unit loading corresponding to DC /100)

Note: Model PPA already provides for energy charge payment corresponding to degradation in net station heat rate as such no separate compensation under this procedure.

(c)Where ECR is computed based on normative net Heat Rate andPPA does not provide for energy charge payment corresponding to degradation in net station heat rate:

ECR(DC)= ECR worked out based on net station heat rate x (1+ % degradation in heat rate based on unit loading corresponding to DC /100) / (1- % degradation in Aux Consumption based on unit loading corresponding to DC/100)

(x) The compensation to be paid to CGS/ISGS for the calculation period ending n^{th} month shall be difference in the ECR (SE) and ECR (DC) for that period.

ECR (Comp) for the calculation period ending n^{th} month shall be calculated as:

Provided that the ECR (Comp) shall be worked out separately for each PPA of the station but annual reconciliation shall be on over all considerations of all PPAs after due prudence by RPC Secretariat.

(xiv) The compensation *Compn (P)* payable to CGS/ISGS for the calculation period ending n^{th} month shall be calculated as below:

*Compn (P) = (Total Generation Schedule (Energy) to its original beneficiaries excluding RRAS& bilateral sale/collective sale under open access) * ECRn (Comp)*

(xi) ECRn (A) for the calculation period shall be calculated using actual values of SHR and Aux Consumption furnished by CGS/ISGS at the end of the calculation period and normative secondary fuel oil consumption as per CERC Tariff Regulation for which the requisite information shall be submitted by the generating station to the concerned RPCs Secretariat.

Similarly, ECRn(N) shall be calculated using normative values of SHR and Aux Consumption and normative secondary fuel oil consumption as per CERC Tariff Regulation furnished by CGS/ISGS.

Provided that in case of generating stations whose tariff has been adopted by Commission under Section 63 of the Act, ECRn(N) shall be calculated using normative net SHR or the ECR quoted for the relevant month as the case may be.

(xii) Now, following values shall be calculated:

(a) Total Energy Charges payable to CGS/ISGS based on actual parameters

ECn (A) = ECRn (A) x (Total Generation Schedule (Energy) to its beneficiary excluding RRAS& bilateral sale/collective sale under open accessduring the calculation period ending n^{th} month)

(b) Total Energy Charges payable to CGS/ISGS based on Normative parameters

ECn (N) = ECRn (N) x (*Total Generation Schedule (Energy) to its beneficiary excluding RRAS, bilateral sale/collective sale under open access*during the calculation period ending n^{th} month)

(xiii) Compensation payable for the calculation period ending n^{th} month to CGS/ISGS would be decided based on following criteria:

(a) <u>If ECn (A) is less than or equal to ECn (N)</u>:

No compensation shall be payable to

CGS/ISG<u>S (b) If ECn (A) is more t</u>han ECn (N):

(b1) If $Comp_n$ (P) is less than or equal to EC_n (A) minus EC_n (N) then final compensation amount payable to CGS/ISGS for the calculation period ending n^{th} month:

(b2) If $Comp_n$ (P) is more than EC_n (A) minus EC_n (N), then final compensation amount payable to CGS/ISGS for the calculation period ending n^{th} month

$Comp_n$ (F) = ECR_n (A) - ECR_n (N)

(xiv) Final Compensation payable by k^{th} beneficiary for the calculation period ending n^{th} month

(a) No compensation shall be payable by a beneficiaries if it has requisitioned at least 85% of its entitlement during the calculation period.

(b) The compensation amongst other beneficiaries shall be shared in the ratio of un-requisitioned energy below 85% of their entitlement i.e. compensation payable by k^{th} beneficiary for the calculation period ending n^{th} month

()Σ

Where is un-requisitioned energy of k^{th} beneficiary below 85% of its entitlement during the calculation period ending n^{th} month.

(xv) However, adjustments shall be carried out for compensation already paid for calculation period ending $(n-1)^{th}$ month

Net compensation payable/receivable by kth beneficiary for the n^{th} month $NCB_{kn}=FCB_{kn} – FCB_{k(n-1)}$

If NCB_{kn} is negative, this is amount payable by CGS/ISGS to the beneficiary and vice versa. This way reconciliation would automatically take place at the end of the Financial Year.

4.2 Calculation for Secondary Fuel Oil consumption:

(i) No compensation for degradation of Secondary Fuel oil consumption is payable for the year iftotal number of start-ups is equal to or less than 7 x no. of units in the generating station or the Actual Secondary Fuel Oil consumption is less than Normative Fuel Oil Consumption.

(ii) Compensation (in terms of KL of Secondary Oil) shall be payable to

CGS/ISGS for the year due to degradation of Secondary Fuel Oil Consumption shall be calculated by multiplying no. of start-ups exceeding 7 per unit and solely attributable to reserve shut-downs with the appropriate value of additional secondary oil consumption specified in Regulation.

(iii) Compensation payable to CGS/ISGS shall be restricted such that Oil Consumption based on Norms plus Compensation calculated in step (b) above does not exceed actual Secondary Fuel oil consumption for the year.

(iv) Compensation in terms of Rupees shall be calculated by multiplying compensation in terms of KL as calculated in step (b) and average landed price of Secondary fuel oil for the year.

(v) Each start-up due to reserve shutdown shall be attributed to the beneficiaries, who had requisitioned below 55% of their entitlement.

(vi) Compensation (in terms of Rupees) shall be shared amongst the beneficiaries in the following manner:

Where

= Number of start-ups attributable to the beneficiary i.

= Weightage Average Percentage share of the beneficiary in the generating station

(vii) The CGS/ISGS is to take all due care to keep a check on secondary oil use during part operations and during start-ups to the extent possible. The respective RPC Secretariat shall review the secondary oil consumptions of plants on quarterly basis along with concerned RLDC and CGS/ISGS to find out high consuming plants and reasons for high consumption and for suggesting measures to mitigate excess use of secondary oil to the extent possible.

4.3 In case generating station runs below technical minimum schedule it shall be entitled for compensation corresponding to technical minimum schedule.

5. Calculation of Compensation, Billing and Submission of Data by the Generator

(i) Generating station shall calculate the compensation as specified in these procedures and bill the same to beneficiaries alongwith its monthly bill which shall be subject to adjustment based on compensation statement issued by RPC Secretariate subsequently.

(ii) Generating station shall submit the requisite data alongwith compensation calculation to RPC secretariat as prescribed in Annexure-I to Appendix II for a month by 15th day of the following month. The data to be submitted is for the month and reconciled up to the month.

6. Issuance of compensation statement

(i) RPC secretariat will issue the compensation statement along with final REA for the month.

(ii) In case any anomaly or discrepancy is noticed by any Utility, the same may be brought to the notice of Member Secretary of the concerned RPC within 15 days of issuance of Compensation Statement.

7. Review of the Procedure:

The Procedure shall be reviewed after six months of its notification based on feedback of RPCs.

Annexure-I

Information to be submitted by CGS and ISGS to the RPC Secretariat by 15th of each month (say in May) for the previous month (say of April)

Sr. No (a)	(b)	Unit No 1 (c)	Unit No 2 (d)	Unit No 3 (e)	Unit No 4 (f)	Total (g)
1	Installed capacity/MCR					
2	Planned outage/Tripped (Hrs)					
3	On bar hrs					
4	Normative SHR or Net SHR as the case may be					
5	Normative SFC					
6	CVSF					
7	LPPF					
8	LPSFi					
9	Normative LC					
10	LPL					
11	Normative Aux. Cons					
12	Actual GHR/SHR					
13	Actual SFC					
14	Actual LC					
15	Actual Aux. Cons					
16	RSD start /stop in the month					
17	RSD start/stop cumulative					
18	Total no. of Start /stop during year					
19	CVPF					