

**.BEFORE THE HARYANA ELECTRICITY REGULATORY COMMISSION
BAYS No. 33-36, SECTOR-4, PANCHKULA- 134112, HARYANA**

Case No. HERC/PETITION NO. – 30 of 2021

**Date of Hearing : 23.02.2022
Date of Order : 02.03.2022**

IN THE MATTER OF:

Detailed Operating Procedure for backing down of coal based unit (s) of the State Generating Stations having 100% installed capacity tied up HPPC/DISCOMs of Haryana and for IPPs as per provisions in PPA with HPPC/DISCOMs for taking such units under Reserve Shut Down (RSD) for scheduling below Technical Minimum Schedule.

Petitioner
SLDC/HVPL

Respondents

1. Haryana Power Generation Corporation Ltd. (HPGCL)
2. Haryana Power Purchase Centre, Panchkula (HPPC)

Present on behalf of the Petitioner, through Video Conferencing
Shri Raheel Kohli, Advocate

Present On behalf of the Respondents, through Video Conferencing
1. Shri Tabrez Malawat, Advocate, HPGCL

Quorum

**Shri R.K. Pachnanda
Shri Naresh Sardana**

**Chairman
Member**

ORDER

1. The present petition has been filed by SLDC/HVPL seeking approval to draft operating procedure for backing down of coal based unit (s) upto technical minimum or under Reserve Shut Down (RSD) including 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 SSGS/IPP's Units.
2. The procedure has been drafted by, in compliance of Regulations clause no. 34 (6) and 34 (7) of HERC MYT Regulations, 2019, reproduced here under:-

“Regulation no. 34 (6): SLDC shall prepare a Detailed Operating Procedure in consultation with the generators and beneficiaries 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.

Regulation no. 34 (7): The SLDC 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 including its sharing by the beneficiaries.”

3. The SLDC/HVPL has submitted that the procedure along with compensation mechanism has been drafted after having detailed consultation with HPGCL and HPPC. The Commission considered it appropriate to host the petition filed by HVPL containing the

procedure as well as compensation mechanism, on its website for inviting comments/suggestions/objections from the stakeholders by 15.11.2021, before giving it a final shape.

4. In response, written comments/suggestions/objections were received from the following stakeholders:-
- a) HPGCL
 - b) HPPC

The Comments filed by the interveners/stakeholders, response of SLDC/HVPL and Commission's views on the same, are as under:-

i. **Clause No. 2 Appendix 2 "Applicability":**

Comments filed by HPGCL

Mechanism for compensation ought to be made effective from 01.04.2020.

Comments filed by HPPC

The effective date of its implementation of this procedure shall be the date of approval of the Commission.

Response of SLDC/HVPL

HERC may decide the date of implementation of the compensation mechanism.

Commission's View

The Commission observes that Haryana Electricity Regulatory Commission (Terms and Conditions for Determination of Tariff for Generation, Transmission, Wheeling and Distribution & Retail Supply under Multi Year Tariff Framework) Regulations, 2019 ("HERC MYT Regulations, 2019"), were notified on 31.10.2019 and came into force with effect from 01.04.2020. Regulation 34 of HERC MYT Regulations, 2019, provides as under:-

"34. Technical Minimum Schedule

Technical Minimum Schedule for operation of Intra-State Coal based Generating Stations

1. *The technical minimum for operation in respect of a unit or units of an intra-State Generating Station, except HPGCL's power plants at Panipat, shall be 55% of MCR loading or installed capacity of the unit of at generating station.*

Provided that the above provision in the Regulation shall continue as an option available to the Commission and shall be implemented as and when considered feasible by the Commission except for the HPGCL's power plants of old vintage at Panipat.

....."

Further, the issued was discussion during the hearing held on 09.09.2019 prior to the framing of HERC MYT Regulations, 2019 and decision of the Commission was recorded in the order dated 29.10.2019. The same is reproduced as under:-

“During the public hearing held on 09.09.2019, the representative of HPGCL submitted before the Commission that since intra-state ABT is not yet notified in the State of Haryana, therefore, it would be tedious and impractical to implement the compensation mechanism in case the plant operates below technical minimum level. Further, the Commission observes that HPGCL have themselves submitted in the past in their generation tariff petitions regarding implementation of technical minimum criteria and compensation related thereto. Accordingly, the Commission decides to postpone the implementation of technical minimum criteria in the State of Haryana. However, the enabling provision in the Regulation shall continue for the Commission as an option and shall be implemented as and when considered feasible by the Commission except for the HPGCL’s power plants of old vintage at Panipat” (page 27)

Thus, although the MYT Regulations, 2019 came into effect since 01.04.2020, but the implementation of technical minimum criteria and compensation related thereto was postponed, at the behest of HPGCL only. Further, HPGCL’s power plants of old vintage at Panipat were not made part of this mechanism. The Commission is convinced with the settled position of law that a piece of delegated legislation cannot have a retrospective applicability unless the parent legislation under which it came into existence permits such retrospective applicability.

In view of the above, the Commission decides that the Detailed Operating Procedure and the Compensation Mechanism specified in this order shall come into force from the date of this order. Further, HPGCL’s power plants of old vintage at Panipat i.e. Unit 6,7 and 8 shall not form part of the present compensation mechanism.

ii. Clause No. 4.1 (vii) of the draft operating procedure “Technical Minimum”:

Comments filed by HPGCL

Proposed definition of Technical Minimum contained in Clause 4.1(vii) of the Draft Operating Procedure is contrary to the Regulation 34.1 of the HERC Tariff Regulations 2019.

Response of SLDC/HVPL

The proposed definition is in consonance with the CERC regulations.

Commission's View

The Commission observes that the definition of "Technical Minimum" in the draft operating procedure is as under:-

"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."

Whereas, Regulation 34 (1) of HERC MYT Regulations, 2019 provides as under:-

"The technical minimum for operation in respect of a unit or units of an intra-State Generating Station, except HPGCL's power plants at Panipat, shall be 55% of MCR loading or installed capacity of the unit of at generating station."

On perusal of the above, the Commission is of the considered view that the procedures discussed in this petition, form part of the main regulations, and as such can not deviate from the provisions of the principle regulations. Accordingly, the Commission decides that definition of technical minimum shall be kept as per regulation 34(1) of HERC MYT Regulations, 2019.

iii. Clause No. 4.2(v) Appendix 2 "Calculation of secondary Fuel Oil consumption":

Comments filed by HPGCL

Calculation of Secondary Fuel Oil Consumption (clause 4.2(v)) of the Draft Procedure should be revised to make it compliant with mandatory and binding stipulations of the Regulation 34(1) of the HERC Tariff Regulations, 2019.

Response of SLDC/HVPNL

Clause 4.2(v) of the RSD Procedure may be changed as under:-

"Each Start up due to reserve shutdown shall be attributed to the HPPC/ DISCOMs who had requisitioned below Technical Minimum schedule strictly in terms of the Regulation 34(1) of the HERC Tariff Regulations, 2019."

Commission's View

The Commission observes that the provision specified in the draft regulation is as under:-

"v) Each start-up due to reserve shutdown shall be attributed to the HPPC/ DISCOMs who had requisitioned below 55% of their entitlement."

The petitioner i.e. SLDC now proposes to change the words "below 55% of their entitlement" with the words *"below Technical Minimum schedule strictly in terms of the Regulation 34(1) of the HERC Tariff Regulations, 2019."*

Since, no objection to the proposed change in the draft compensation mechanism has been raised by HPPC, the Commission approves the change proposed by SLDC. Accordingly, clause 4.2 (v) of Appendix 2 shall be read as under:-

“Each Start up due to reserve shutdown shall be attributed to the HPPC/ DISCOMs who had requisitioned below Technical Minimum schedule strictly in terms of the Regulation 34(1) of the HERC Tariff Regulations, 2019.”

iv. Clause No. 3 of detailed operating procedure “Scope”:

“This Detailed Operating Procedure shall be applicable to SLDC, **HPPC, Distribution Licensee** in state and State Sector Generating Stations (SSGS)

Comments filed by HPPC

The same may be changed at par with the provision of CERC and replaced as under: -

“This Detailed Operating Procedure shall be applicable to SLDC and State Sector Generating Stations (SSGS), whose tariff is determined or adopted by the commission.....”

Response of SLDC/HVPL

HPPC/ DISCOMs are stakeholders therefore cannot be exempted from the scope. Therefore, no change is required.

Response of HPGCL

The comments of petitioner are in order.

Commission’s View

The Commission agrees with the views of the petitioner i.e. SLDC as well as HPGCL that DISCOMs/HPPC are essential part of the operating procedure for taking the generating units under RSD. Further, HPPC has itself commented that it should be made part of the decision of SLDC in revision of schedule as Discoms have more data and available resources to assist/guide the SLDC in taking such decisions. It needs to be noted that a generating station with long term power sale/purchase agreement, is scheduled and despatched on the basis of demand and supply position of the Distribution Licensee (s) subject to Merit Order Despatch. Hence, to complete the inter linkages, the Discoms ought to remain within the ambit of the operating procedure.

In view of the above, the Commission decides that no change in the draft procedure is required.

v. Clause No. 5.2 of detailed operating procedure “Day ahead scheduling”:

“SLDC shall compile the above information along-with ex-bus declared capacity of each of the SSGS/PPs thermal Generating Station and prepare entitlement for HPPC/ DISCOMs under day-ahead scheduling.”

Comments filed by HPPC

The same may be changed at par with the provision of CERC and replaced as under: -

“SLDC shall compile the above information along-with ex-bus declared capacity (DC) of each of the SSGS/IPPs thermal Generating Station and prepare entitlement by 8.00 hours for HPPC/ DISCOMs under day-ahead scheduling.”

Response of SLDC/HVPL

The timelines for scheduling shall be followed as per prevailing Regulations/ Procedure. However the suggestions of HPPC / DISCOMs may be incorporated in the procedure as under:-

“SLDC shall compile the above information along-with ex-bus declared capacity (DC) of each of the SSGS/IPPs thermal Generating Station and prepare entitlement **by 6.00 hours** for HPPC/ DISCOMs under day-ahead scheduling.”

Response of HPGCL

No comments.

Commission's View

Since, SLDC has consented to change in the draft clause and no objection on the same has been raised by HPGCL, the Commission approves the change proposed by SLDC. Accordingly, clause 5.2 of detailed operating procedure, shall be read as under:-

*“SLDC shall compile the above information along-with ex-bus declared capacity (DC) of each of the SSGS/IPPs thermal Generating Station and prepare entitlement **by 6.00 hours** for HPPC/ DISCOMs under day-ahead scheduling.”*

vi. Clause No. 5.3 of detailed operating procedure “Day ahead scheduling”:

“Each DISCOMs/HPPC shall furnish day-ahead forecasted demand to SLDC. Based on the forecasted demand of DISCOMs, SLDC shall furnishes requisition in each SSGS/IPPs as per Merit Order Dispatch (MOD).”

Comments filed by HPPC

The same may be replaced as under:-

“Each DISCOMs/HPPC shall furnish their requisition in each SSGS/IPPs for the next day (D-Day) to SLDC by 15:00 hours of the current day. Based on the entitlements of respective SSGS/IPPs, SLDC will schedule in accordance with the Grid Code as amended from time to time.”

Response of SLDC/HVPL

The timelines for scheduling shall be followed as per prevailing Regulations/ Procedure. However the suggestions of HPPC/ DISCOMs may be incorporated in the procedure as under:-

“Each DISCOMs/HPPC shall furnish their original requisition in each SSGS/IPPs for the next day (D-Day) to SLDC by 1500 hours of the current day based on the entitlements given by SLDC in accordance with the Grid Code, as amended from time to time.”

Response of HPGCL

The words ‘in each SSGS/IPPs’ is not required to be mentioned here as SLDC shall prepare and issue generation schedule for each SSGS/IPPS as per the total demand of Discoms/HPPC and merit order. Same is also not mentioned in the Hon’ble CERC procedure.

Commission’s View

The Commission has perused the provisions of Section 32 (2) of the Electricity Act, 2003, which provides as under:-

“The State Load Despatch Centre shall -

- (a) be responsible for optimum scheduling and despatch of electricity within a State, in accordance with the contracts entered into with the licensees or the generating companies operating in that State;*
- (b) monitor grid operations;*
- (c) keep accounts of the quantity of electricity transmitted through the State grid;*
- (d) exercise supervision and control over the intra-state transmission system; and*
- (e) be responsible for carrying out real time operations for grid control and despatch of electricity within the State through secure and economic operation of the State grid in accordance with the Grid Standards and the State Grid Code.”*

Thus, optimum scheduling and dispatch of electricity is the responsibility of SLDC. SLDC is to be provided with the day-ahead forecasted demand by DISCOMs. Based on the forecasted demand of DISCOMs, SLDC should schedule SSGS/IPPs as per Merit Order Dispatch (MOD). Therefore, DISCOMs/HPPC are not required to submit requisition for each SSGS/IPPs.

In view of the above, the Commission decides that no change in the draft procedure is required.

vii. Clause No. 5.6 of detailed operating procedure “Day ahead scheduling”:

“SLDC shall Suo-moto revise the schedule of any generating station 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:

- i) Extreme variation in Weather Condition
- ii) High Load Forecast
- iii) To maintain reserves on State level basis
- iv) Network Congestion
- v) Any other event which in the opinion of SLDC/RLDC shall affect the grid security.”

Comments filed by HPPC

The same may be replaced as under:

“SLDC shall take decisions based on the inputs of the Discoms (control room Panchkula) in such circumstances, since the Discoms have more data and available resources to assist/guide the SLDC in taking such exigencies”.

Response of SLDC/HVPNL

The Regulations/ Grid Code have provided certain powers to SLDC to take immediate necessary action to maintain the grid security. However, in normal situations inputs from DISCOMs have already being taken as same is covered in the Clause 7.2 of procedure. As such, no change is required in the procedure.

Response of HPGCL

The Regulations/ Grid Code have provided certain powers to SLDC to take immediate necessary action to maintain the grid security. However, clause no 7.2 is not related to this clause.

Commission's View

As discussed earlier, optimum scheduling and dispatch of electricity is the responsibility of SLDC. Ideally, as directed by the Commission in the past, SLDC should have been ring-fenced by now to take on the responsibilities of an independent System Operator. Further, as per Section 32 of the Electricity Act, 2003, SLDC is responsible for carrying out real time operations for grid control and despatch of electricity in accordance with the Grid Standards and the State Grid Code. The discussions with HPPC/Discoms for carrying out real time operations, may not be possible. However, where ever feasible, SLDC ought to consider the inputs of the Discoms.

In view of the above, the Commission decides that no change in the draft procedure is required.

viii. Clause No. 5.10 of detailed operating procedure “Day ahead scheduling”:

No maintenance activities on unit under Reserve Shut Down (RSD) shall be undertaken by the generating station so that the Reserve Shut Down (RSD) unit is always readily available for revival/synchronization. If a generating station requires maintenance on any machine

under Reserve Shut Down (RSD), then the same shall be done in due consultation with SLDC. The DC shall be reduced appropriately.

Comments filed by HPPC

The same shall be replaced as under:

“Maintenance during RSD needs to be done in consultation with the Discoms & SLDC as the scheduling is being taken care of by Discoms, (estimation of demand is done by the Discoms and also the merit order dispatch is prepared by them). However, declared capacity and fixed charges for the period of maintenance shall not be considered.”

Response of SLDC/HVPL

The Regulations/ Grid Code have provided certain powers to SLDC to take immediate necessary action to maintain the grid security. However, in normal situations inputs from DISCOMs have already being taken which is also covered in the Clause 7.2 of procedure. As such, no change is required in the procedure.

Response of HPGCL

The provision incorporated by SLDC seems adequate and no change is required. However, clause no 7.2 is not related to this clause.

Commission's View

As discussed earlier in the present order, optimum scheduling and dispatch of electricity is the responsibility of SLDC. However, where ever feasible, SLDC shall consult Discoms before allowing maintenance activities on unit under RSD.

In view of the above, the Commission decides that no change in the draft procedure is required.

ix. Clause No. 7.1 of detailed operating procedure “Methodology for revival of generating station or unit(s) from RSD”:

Once a unit is taken out under Reserve Shut Down (RSD), the unit can be recalled any time after 8 hours. The Reserve Shut Down (RSD) period may vary depending upon instruction for revival receipt by the generator from SLDC. 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 in the Format F-1 annexed herewith this procedure.

Comments filed by HPPC

The same may be replaced as under:-

Discoms should be allowed to decide when and whether the generating units can be revived as they have a better understanding and tools available with them as compared to SLDC for revival of load.

Response of SLDC/HVPL

The Regulations/ Grid Code have provided certain powers to SLDC to take immediate necessary action to maintain the grid security. However, in normal situations inputs from DISCOMs have already been taken which is also covered in the Clause 7.2 of procedure. As such, no change is required in the procedure.

Response of HPGCL

The provision incorporated by SLDC seems adequate and no change is required. However, clause no 7.2 is not related to this clause.

Commission's View

As discussed earlier, optimum scheduling and dispatch of electricity is the responsibility of SLDC. Further, as per Section 32 of the Electricity Act, 2003, SLDC is responsible for carrying out real time operations for grid control and dispatch of electricity in accordance with the Grid Standards and the State Grid Code. The discussions with HPPC/Discoms for carrying out real time operations, may not be possible. However, where ever feasible, SLDC ought to consult the Discoms in deciding the revival of a generating units under RSD. In view of the above, the Commission decides that no change in the draft procedure is required.

x. **Clause No. 7.2 of detailed operating procedure "Methodology for revival of generating station or unit(s) from RSD":**

HPPC/ DISCOMs as well as the generating station may decide for revival of unit(s) under Reserve Shut Down (RSD) with commitment for technical minimum schedule with minimum run time of 8 hrs for Coal based generating stations post revival.

Comments filed by HPPC

It should be left to the Discoms to make the final decision. Generating stations should not be included in the decision making.

Response of SLDC/HVPL

The Regulations/ Grid Code have provided certain powers to SLDC to take immediate necessary action to maintain the grid security. However, in normal situations inputs from DISCOMs have already been taken which is also covered in the Clause 7.2 of procedure. As such, no change is required in the procedure.

Response of HPGCL

The minimum run time of 8 hrs is already on lower side. In order to ensure that norms of specific oil consumption is achieved, the units should be operated for atleast 14-15 days at

its rated capacity and about 30 days at about technical minimum limit. Apart from the existing provision, it is proposed to add following clause in 7.2

For the first 7 start stops after RSDs, the decision for revival of unit(s) under Reserve Shut Down (RSD) should be taken with commitment for technical minimum schedule with minimum run time of atleast 30 days for Coal based generating stations post revival.

Commission's View

The generating station has no role in the revival of the units. Generator has to provide its availability along with the requisite data and based upon the data provided by the generator HPPC/Discoms as well as SLDC may decide for revival of a unit under RSD.

Accordingly, clause 7.2 of detailed operating procedure, shall be read as under:-

"HPPC/ DISCOMs as well as SLDC may decide for revival of unit(s) under Reserve Shut Down (RSD) with commitment for technical minimum schedule with minimum run time of 8 hrs for Coal based generating stations post revival."

xi. **Clause No. 4 Appendix 2 "Mechanism for working out compensation":**

Comments filed by HPPC

It is requested to provide illustrations of the computations with various possible permutations and combinations for better clarity.

Response of SLDC/HVPNL

The illustration is attached as "**Format: F-2**". The same may be incorporated in the procedure.

Response of HPGCL

The concept of calculation is in line but sample calculation values seems erroneous, so an excel sheet may please be requested from SLDC.

Commission's View

HPGCL has submitted that the calculation values seem erroneous. However, no such error has been pin pointed by HPGCL. In absence of the same, the Commission is not commenting on the computations used for the purpose of illustrations.

xii. **Clause No. 5.3 (xi) and 6(iii) - Appendix 2 "Compensation Mechanism for IPPs having part capacity tied-up with HPPC/ DISCOMs":**

"Inter-State IPPs shall calculate the compensation as specified in these procedures and bill the same to HPPC/ DISCOMs along with its monthly bill which shall be subject to adjustment based on compensation statement issued by NRPC subsequently."

Comments filed by HPPC

Both these clauses need to be deleted, as the said operating procedure & compensation mechanism is applicable to Interstate IPP.

Response of SLDC/HVPL

The procedure has been prepared keeping in view Intra-state as well as Inter-state generators. As such, no change is required in the procedure.

Response of HPGCL

No comments.

Commission's View

In view of the submissions of HPPC above, the Commission decides that the clause, referring to inter-state IPPs ought to be deleted as the Haryana STU/SLDC has no jurisdiction over inter-state transactions of such nature and the same is the exclusive domain of Hon'ble Central Commission.

xiii. **Additional points raised by HPPC**

a) **Comments filed by HPPC**

SLDC shall prepare the report of such instances of mis declaration of DC and publish the report on its website as per format attached as **ANNEXURE-B**. SLDC shall send the report to concerned DISCOM having PPA with generating unit on monthly basis, by 5th of every month.

Response of SLDC/HVPL

Declared Capacity / Mis-declaration shall be covered in compensation calculations on monthly basis.

Response of HPGCL

No comments.

Commission's View

The Commission observes that the response of SLDC that Declared Capacity / Mis-declaration are covered in compensation calculations. However, SLDC is advised to publish the report of such instances of mis declaration of declared capacity, on its website as well as send the report of the same to Discoms/HPPC.

b) **Comments filed by HPPC**

Effective date referring the amendment in PPA may be deleted the same shall lead to litigation. Reopening of a concluded PPA at a later stage is not possible; therefore, to avoid

litigations in the matter, regulation shall come into effect from the date of its approval from HERC subject to the provision of PPA.

Response of SLDC/HVPL

Any change in law may be applicable to the existing PPA. HERC may decide.

Response of HPGCL

No comments.

Commission's View

The Commission has perused clause 1.3.b of the draft operating procedure, which provides as under:-

"For IPPs, the Detailed Operating Procedure shall come into force with effect from the date of its approval by the Haryana Electricity Regulatory Commission or subject to relevant provisions of PPA or the date of approval of amendment in Power Purchase Agreement (PPA) by the Commission, whichever is later."

The Commission observes that the present procedure should not be made applicable to the IPPs, not having the relevant provision in the PPA. Re-opening of the already executed PPA, shall open up pandora's box of litigations. Accordingly, the Commission decides that clause 1.3b of detailed operating procedure, shall be read as under:-

"For IPPs, the Detailed Operating Procedure shall come into force with effect from the date of its approval by the Haryana Electricity Regulatory Commission or subject to relevant provisions of PPA".

c) Comments filed by HPPC

As per letter dated CEA 22.06.2021 regarding flexibilization of power plants report, generating stations are being tested for technical minimum at 40%. HERC may similarly encourage operation of thermal power plants at 40% technical minimum considering high renewable penetration in the future.

Response of SLDC/HVPL

HERC may take decision regarding 40% technical minimum of generator after finalization of CEA report.

Response of HPGCL

There is no relation of suggestion with the present case/petition as the procedure/mechanism is being prepared as per the approved Hon'ble HERC regulations.

Commission's View

The Commission is of the considered view that the present procedure is restricted to the procedure subordinate to the main provision in Regulation 34 of HERC MYT Regulations,

2019, which has provided for the technical minimum at 55%. Accordingly, no change in the draft procedures on this account is required.

d) Comments filed by HPPC

Compensation for degradation of SHR & AUX power should only be permitted in the case of particular generator is backing down to the prescribed 55% MTP and when full DC is being provided.

Response of SLDC/HVNL

It may be as per prevailing regulations. The procedure has been prepared for compensation in the cases where generators have been operated below 85% and above technical minimum due to low demand and for reserve shutdowns as per direction of SLDC.

Response of HPGCL

As per HERC regulations, the mechanism has been prepared for compensation in the cases where generators have been operated below 85% and above technical minimum due to low demand and for reserve shutdowns as per direction of SLDC. As such the comments of HPPC are not correct.

Commission's View

The Commission has perused that the procedure has been prepared for compensation in the cases where generators have been operated below 85% and above technical minimum due to low demand and for reserve shutdowns as per direction of SLDC. Accordingly, no change in the draft procedures on this account is required.

e) Comments filed by HPPC

In future when MBED on pan India basis will be implemented and suppose DISCOMs doesn't requisition state generating plants and the same will get scheduling under MBED, then compensation on account of degradation of SHR & AUX shall not be applicable to the original beneficiary.

Response of SLDC/HVNL

As on date none of the generator of the Haryana is covered under MBED, however, Hon'ble HERC may decide for future conditions.

Response of HPGCL

At present stage, it is not appropriate to consider the aspects. When MBED will come into force, Hon'ble HERC may take appropriate view.

Commission's View

The issue is not relevant at present. However, compensation provisions for cases of scheduling under MBED, (as and when implemented), will be governed as per MBED principles.

f) Comments filed by HPPC

Boxing up of generating plants on Annual overhaul and Special instructions given by Ministry of Power/Commission for Air Quality Management (CAQM) for boxing up of Thermal units, should not be accounted for any compensation.

Response of SLDC/HVPL

HERC may take decision.

Response of HPGCL

Hon'ble HERC may take decision, however, no such clause is available in CERC approved procedure.

Commission's View

HPPC/Discoms are liable for compensation only when the generating units are backed down on their instructions, due to low demand based on merit order despatch principles or grid security issues. Boxing up of generating plants on Annual overhaul and Special instructions given by Ministry of Power/Commission for Air Quality Management (CAQM), should not be accounted for any compensation.

5. Accordingly, the Commission through this order approves the Detailed Operating Procedure and the Compensation Mechanism in terms of the Regulation 34 (6) and 34 (7) of HERC MYT Regulations, 2019. 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 Detailed Operating Procedure shall be reviewed in Grid Coordination Committee of Haryana Power Utilities after one year of its approval. Recommendations of the Grid Coordination Committee, if any, shall be submitted to the Commission for approval by SLDC. It is clarified that review of the Compensation Mechanism will be undertaken only if it is considered necessary based on operational experience.
7. The Detailed Operating Procedure and the Compensation Mechanism specified in this order shall come into force from the date of this order.

In terms of the above order, the present petition is disposed of.

This order is signed, dated and issued by the Haryana Electricity Regulatory Commission on 02.03.2022.

Date: 02.03.2022
Place: Panchkula

(Naresh Sardana)
Member

(R.K. Pachnanda)
Chairman

HERC

Detailed Operating Procedure for Backing Down of Coal based unit(s) of the State Sector Generating Stations having 100% installed capacity tied up with HPPC/DISCOMs of Haryana and for IPPs as per provision in PPA with HPPC/DISCOMs and for taking such units under Reserve Shut Down on scheduling below Technical Minimum Schedule.

1. General

- 1.1 Haryana Electricity Regulatory Commission (HERC) has notified Haryana Electricity Regulatory Commission (Terms and Conditions for Determination of Tariff for Generation, Transmission, Wheeling and Distribution & Retail Supply under Multi Year Tariff Framework) Regulations, 2019 on 31.10.2019. As per the Regulation 34 (6) HERC MYT regulations 2019, State Load Despatch Centre (SLDC) shall prepare a Detailed Operating Procedure for taking such units under Reserve Shut Down (RSD) for scheduling below Technical Minimum Schedule in consultation with the generators and HPPC/DISCOMs.
- 1.2 SLDC has accordingly prepared the Detailed Operating Procedure in consultation with the generators and beneficiaries. The Detailed Operating Procedure has contained 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.
- 1.3 The Detailed Operating Procedure shall come into force with effect from:
 - a. For State sector generating stations (like HPGCL), the Detailed Operating Procedure shall come into force with effect from the date of its approval by the Haryana Electricity Regulatory Commission.
 - b. For IPPs, the Detailed Operating Procedure shall come into force with effect from the date of its approval by the Haryana Electricity Regulatory Commission or subject to relevant provisions of PPA. However, the same shall not be applicable to inter-state IPPs.

2. Objective

The objective of this Detailed Operating Procedure 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 Reserve Shutdown (RSD); (iii) the role of different agencies; and (iv) the data requirements, etc.

3. Scope

This Detailed Operating Procedure shall be applicable to SLDC, HPPC, Distribution Licensee in state and State Sector Generating Stations (SSGS) having 100% installed capacity tied up with HPPC/ DISCOMs of Haryana and for IPPs as per provisions in PPA with HPPC, whose tariff is determined/adopted by the HERC. In case of IPPs wherein 100% installed capacity is not tied up with HPPC/ DISCOMs of Haryana through a long term power purchase agreement and whose tariff for only partial/contracted capacity is determined/adopted by the Commission, such generating station/company shall have to appropriately factor in the provisions in the PPAs (in case of IPPs) entered into by it with HPPC/ DISCOMs for sale of power.

4. Definitions

4.1 In this Detailed Operating Procedure, 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 considering the availability of fuel, 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”** (on DC) 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 considering the availability of fuel 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.
- (vi) **“Hot Start”** in relation to steam turbine, means start up after a shutdown period of less than 10 hours (turbine metal temperatures above approximately 80% of their full load values).

- (vii) **“Technical Minimum”** for operation in respect of a unit(s) of a Thermal Generating Station, except HPGCL’s power plants at Panipat, shall be 55% of Maximum Continuous Rating or MCR loading or installed capacity of the units at the generating station.
- (viii) **“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).
- (ix) **“Pseudo Beneficiary”** means beneficiary role of IPPs, against the part capacity of its plant which is not allocated to any other beneficiary.

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

5. Methodology for taking generating station or unit(s) thereof under Reserve Shut Down (Day ahead scheduling)

The scheduling process with respect to State Generating Stations as per the Deviation Settlement Mechanism procedure are mentioned below;

- 5.1. The State Sector Generating Station/IPP’s shall submit the following information at the time of declaration of Declared Capacity (DC) (time block-wise) and subsequent revisions, if any, in accordance with Grid Code.
 - (i) On Bar Installed Capacity (MW) / Units on Bar.
 - (ii) On Bar Declared Capacity (MW) (with due consideration to ramp up/down capability).
 - (iii) Ramp UP/ Ramp DOWN rate (MW/min) for On Bar Installed Capacity.
- 5.2. SLDC shall compile the above information along-with ex-bus declared capacity (DC) of each of the SSGS/IPP’s thermal Generating Station and prepare entitlement by 6.00 hours for HPPC/ DISCOMs under day-ahead scheduling.
- 5.3. Each DISCOMs/HPPC shall furnish their requisition in each SSGS/IPP’s for the next day (D-Day) to SLDC by 15:00 hours of the current day. Based on the entitlements of respective SSGS/IPP’s, SLDC will furnish the schedule as amended from time to time, in accordance with the Grid Code.
- 5.4. Based on the ex-Power Plant (Ex-PP) requisition submitted by HPPC/ DISCOMs, SLDC prepares and issue Generation Schedule in 15-minute time-block for each of the SSGS/IPP’s.

- 5.5. If the net Ex-PP injection schedule for a generating station is less than technical minimum, HPPC/DISCOMs shall be required to review its requisition(s) and submit a revised requisition(s) to the SLDC.
- 5.6. SLDC shall Suo-moto revise the schedule of any generating station 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:
- i. Extreme variation in Weather Conditions
 - ii. High Load Forecast
 - iii. To maintain reserves on State level basis
 - iv. Network Congestion
 - v. Any other event which in the opinion of SLDC/RLDC shall affect the grid security.
- 5.7. If the grid conditions do not demand for providing technical minimum to a generating station, under such situation, the SSGS/PPs shall have the option to go for Reserve Shut Down (RSD) with intimation to SLDC.
- 5.8. Before taking unit(s) under Reserve Shut Down (RSD), the generating station shall revise the On-Bar DC (with due consideration to ramp up/down capability) and Off Bar DC. The generator shall ensure that the Off-Bar DC is not more than the Maximum Continuous Rating (MCR) less Normative Auxiliary Energy Consumption of the machines under Reserve Shut Down (RSD). The HPPC/DISCOMs shall continue to bear the capacity charge corresponding to total DC.
- 5.9. When the machine is going under Reserve Shut Down (RSD):
- i. 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.
 - ii. 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.
 - iii. In the special case of a generating station where the only running machine is going under Reserve Shut Down (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.
- 5.10. No maintenance activities on unit under Reserve Shut Down (RSD) shall be undertaken by the generating station so that the Reserve Shut Down (RSD) unit is always readily available for revival/synchronization. If a generating station requires maintenance on any machine under Reserve Shut Down (RSD), then the same shall be done in due consultation with SLDC. The DC shall be reduced appropriately.

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

- 6.1 HPPC/ DISCOMs can surrender its part or full entitlement during the day of operation in accordance with the relevant provisions of Haryana Grid Code.
- 6.2 In case, the schedule of a generating station goes below technical minimum, due to this surrender of power:
 - (i) SLDC may provide technical minimum schedule considering the system conditions in accordance with Haryana Grid Code.
 - (ii) In case the system condition does not require, the generating station may take any unit or the generating station, as the case may be, under Reserve Shut Down (RSD).

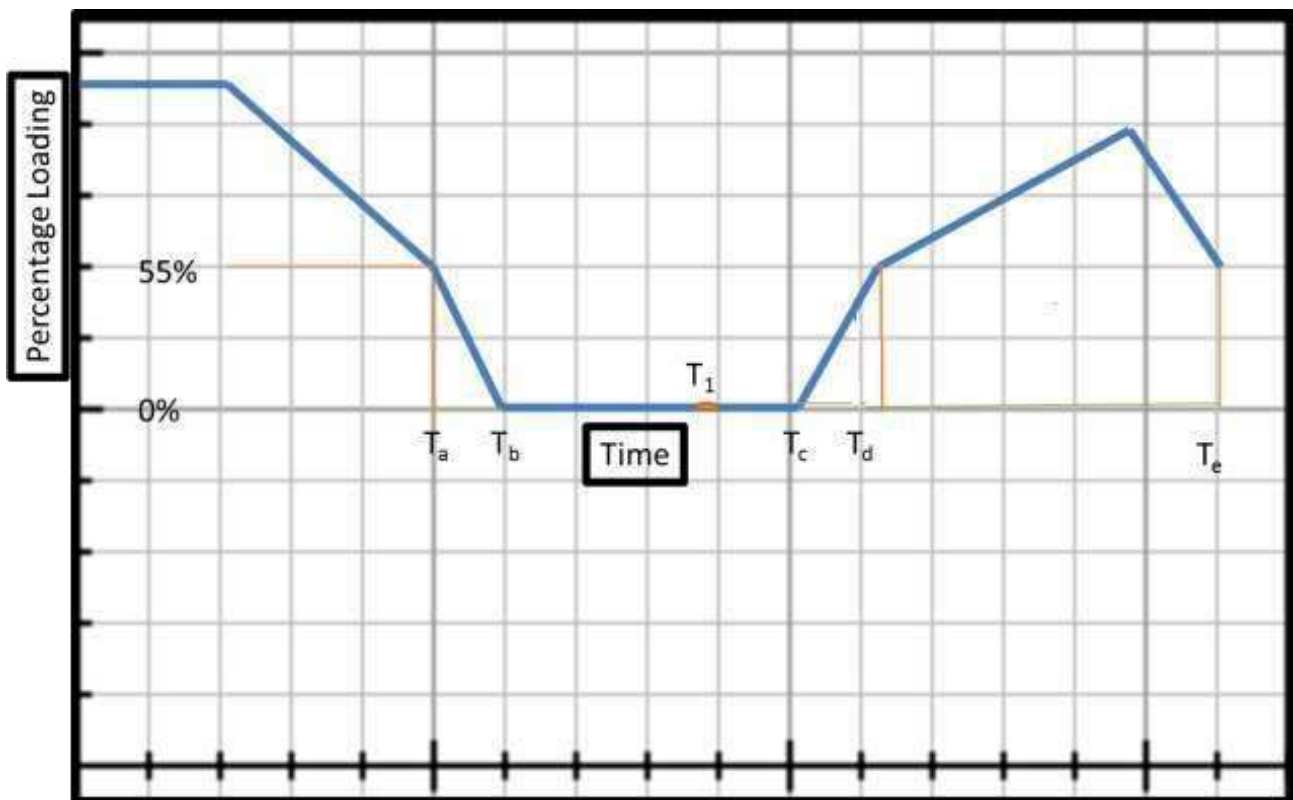
7. Methodology for revival of generating station or unit(s) from RSD

- 7.1 Once a unit is taken out under Reserve Shut Down (RSD), the unit can be recalled any time after 8 hours. The Reserve Shut Down (RSD) period may vary depending upon instruction for revival receipt by the generator from SLDC. 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 in the **Format F-1** annexed herewith this procedure.
- 7.2 HPPC/ DISCOMs as well as SLDC may decide for revival of unit (s) under Reserve Shut Down (RSD) with commitment for technical minimum schedule with minimum run time of 8 hrs for Coal based generating stations post revival.
- 7.3 SLDC may also advise the generating stations to revive unit(s) under Reserve Shut Down (RSD) for better system operation. In such cases, SLDC shall ensure technical minimum schedule by increasing schedule of HPPC/ DISCOMs.
- 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. SLDC 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 Reserve Shut Down (RSD) is given at Annexure-A and Annexure-B respectively of this Detailed Operating Procedure.

8. Review of the Procedure

The Detailed Operating Procedure shall be reviewed in Grid Coordination Committee of Haryana Power Utilities after one year of its approval. Recommendations of the Grid Coordination Committee, if any, shall be submitted to the Commission **for approval.**

...



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 F1 Form submitted.

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

$T_d - T_a$ = Based on the Condition of the unit(s) (Cold, Warm, Hot) and as specified by F1 Form submitted but more than 8 Hours.

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

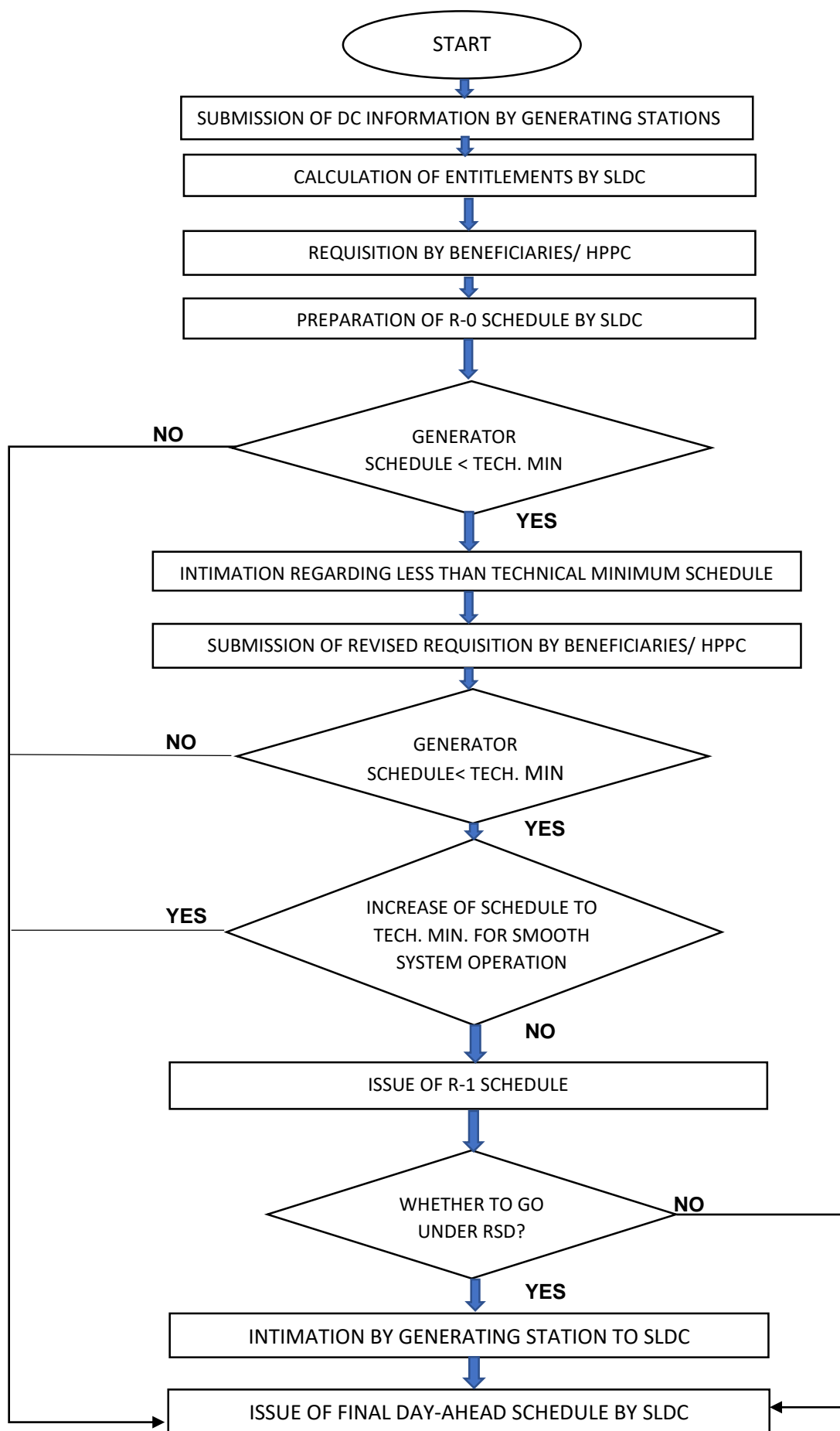
T_d = Time at which Generator unit(s) reaches schedule above 55% after RSD as per the instruction given to the generator by SLDC. The instruction is given before T_1

$T_d - T_c$ = Based on Ramp up rates as per F1 Form submitted.

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

$T_e - T_d > 8$ hours.

Flow Chart for taking machines under Reserve Shut Down



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 SSGS/PPs Units.

1. Introduction:

- 1.1 Haryana Electricity Regulatory Commission (the Commission or HERC) notified Haryana Electricity Regulatory Commission (Terms and Conditions for Determination of Tariff for Generation, Transmission, Wheeling and Distribution & Retail Supply under Multi Year Tariff Framework) Regulations, 2019 on 31.10.2019. As per the Regulation 34 (7) HERC MYT Regulations 2019, SLDC 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 including its sharing by the beneficiaries.
- 1.2 SLDC has prepared "The Mechanism for compensation for Station Heat Rate (SHR) and Auxiliary Energy Consumption (AUX) 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" (hereinafter called "Compensation Mechanism") in consultation with generators and beneficiaries including its sharing by the beneficiaries at Grid Coordination Committee of Haryana Power Utilities.

2. Applicability:

This Compensation Mechanism is applicable to Coal/Gas based State Generating Stations and Coal/Gas based IPPs (other than inter state IPPs) whose tariff is either determined or adopted by the State Commission (hereinafter "designated generating stations"). Further, HPGCL's power plants of old vintage at Panipat i.e. Unit 6,7 and 8 shall not form part of the present compensation mechanism.

3. Definitions and abbreviations:

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

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

Average Unit Loading (AUL) in %

$$= \frac{\text{Effective Generation of station (in MWhr)} \times 100}{\text{Effective Capacity (in MWhr)} \times (1 - \text{Normative Auxiliary Energy Consumption})}$$

- (ii) "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.
- (iii) "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 Station Heat Rate (SHR) and Auxiliary Energy Consumption (AUX) based on average unit loading.
- (iv) "Comp(P)" means compensation in rupees computed for the calculation period based on the normative parameters and actual degraded Station Heat Rate (SHR) and Auxiliary Energy Consumption (AUX) based on average unit loading.
- (v) "EC(A)" means total energy charges in rupees computed for a designated generating station during the calculation period on actual parameters of Station Heat Rate (SHR) and Auxiliary Energy Consumption (AUX).
- (vi) "EC(N)" means total energy charges in rupees computed for a designated generating station during the calculation period on normative parameters considering normative values of SHR and Aux Consumption..
- (vii) "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 Station Heat Rate (SHR) and Auxiliary Energy Consumption (AUX) based on average unit loading.
- (ix) "ECR(DC)" means Energy Charge Rate in Rs/kWh based on degraded Station Heat Rate (SHR) and Auxiliary Energy Consumption (AUX) considering average Declared Capacity (DC) as average unit loading during the calculation period.
- (x) "ECR(SE)" means Energy Charge Rate in rupees/kWh based on degraded Station Heat Rate (SHR) and Auxiliary Energy Consumption (AUX) considering average unit loading of generating station during the calculation period.

- (xi) “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 Intra State Essential Reliability Services Operations regulation (ERS) and bilateral sale/collective sale under open access during the calculation period whichever is higher.
- (xii) “ERS Regulation” means Intra State Essential Reliability Services Operations Regulation.
- (xiii) “Tariff Regulation” means Haryana Electricity Regulatory Commission (Terms and Conditions for Determination of Tariff for Generation, Transmission, Wheeling and Distribution & Retail Supply under Multi Year Tariff Framework) Regulations, 2019 on 31.10.2019, as applicable from time to time or any subsequent amendment thereof.
- (xiv) “SHR/GHR” means Station Heat Rate/Gross Station Heat Rate means the heat energy input in kCal required to generate one kWh of electrical energy at generator terminals of a thermal generating station.

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.

4. Mechanism for working out Compensation:

Compensation Mechanism for Generating Stations having 100% capacity tied-up with HPPC/ DISCOMs-

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

- (i) The mechanism is based on relevant provisions of Tariff Regulations of the Commission, 2019 as notified from time to time.
- (ii) The Compensation shall be worked out for a month on cumulative basis considering degradation in Station Heat Rate (SHR) and Auxiliary Energy Consumption (AUX) based on Average Unit Loading, subject to reconciliation at the end of the year.
- (iii) Energy scheduled under ERS Regulations shall be taken as +ve for up-regulation and –ve for down regulation, whenever regulation of ERS comes into force.
- (iv) The Normative Auxiliary Energy Consumption of competitively bid projects shall be considered based on the Normative AUX 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) Average Unit Loading shall be used for getting increase in Station Heat Rate (SHR) and Auxiliary Energy Consumption (AUX) in accordance with HERC MYT Regulations, as issued time to time.

Provided that no compensation for Station Heat Rate (SHR) degradation or increase in Auxiliary Energy Consumption (AUX) shall be payable if the Average Unit Loading for the generating station for the computation period works out to be more than or equal to Normative Annual Plant Availability Factor defined in Generation tariff regulation of HERC.

- (vi) Based on the values of increased Station Heat Rate (SHR) and Auxiliary Energy Consumption (AUX), 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. The same is reproduced below:

For Coal based Units, Energy Charge Rate (ECR) in Rupees per kWh on ex-power plant basis shall be determined to three decimal places in accordance with the following formulae:

$$ECR = \frac{\{(GHR - SFC \times CVSF) \times LPPF / CVPF + SFC \times LPSFi\} \times 100}{(100 - AUX)}$$

Where,

AUX = Normative auxiliary energy consumption in percentage.

CVPF = (a) Weighted Average Gross calorific value of coal as received, in kCal per kg for coal-based stations

(b) In case of blending of fuel from different sources, the weighted average Gross calorific value of primary fuel shall be arrived in proportion to blending ratio.

CVSF = Calorific value of secondary fuel, in kCal per ml.

ECR = Energy charge rate, in Rupees per kWh sent out.

GHR = Gross station heat rate, in kCal per kWh.

LPPF = Weighted average landed price of primary fuel, in Rupees per kg, during the month. (In case of blending of fuel from different sources, the weighted average landed price of primary fuel shall be arrived in proportion to blending ratio)

SFC = Normative Specific fuel oil consumption, in ml per kWh.

LPSFi = Weighted Average Landed Price of Secondary Fuel in Rs. /ml during the month

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 Station Heat Rate (SHR) and Auxiliary Energy AUX:

$ECR(SE) = \text{quoted ECR or quoted Variable Charge} \times (1 + \% \text{ degradation in heat rate based on unit loading corresponding to Effective Generation}/100) / (1 - \% \text{ degradation in Aux Consumption based on unit loading corresponding to Scheduled Energy}/100).$

(b) 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:

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

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.

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

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

- (vii) 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 AUX should be to the account of SSGS:

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

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

$ECR(DC) = \text{ECR quoted or variable Charge quoted} \times (1 + \% \text{ degradation in heat rate based on unit loading corresponding to DC}/100) / (1 - \% \text{ degradation in Aux Consumption based on unit loading corresponding to DC} / 100).$

(b) Where ECR is computed based on net Heat Rate and PPA 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 and PPA 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)

(viii) The compensation to be paid to SSGS 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:

$$ECR_n(\text{Comp}) = ECR_n(\text{SE}) - ECR_n(\text{DC})$$

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

(ix) The compensation $Comp_n(P)$ payable to SSGS for the calculation period ending n^{th} month shall be calculated as below:

$$Comp_n(P) = \left(\text{Total Generation Schedule (Energy) to its original beneficiaries/ HPPC excluding ERS and bilateral/Collective sale under Open Access} \right) * ECR_n(\text{Comp})$$

(x) $ECR_n(A)$ for the calculation period shall be calculated using actual values of SHR and AUX Consumption furnished by SSGS at the end of the calculation period and normative secondary fuel oil consumption as per HERC Tariff Regulation for which the requisite information shall be submitted by the generating station to the SLDC.

Similarly, $ECR_n(N)$ shall be calculated using normative values of SHR and AUX Consumption and normative secondary fuel oil consumption as per HERC Tariff Regulation furnished by SSGS.

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

(xi) Now, following values shall be calculated:

(a) Total Energy Charges payable to SSGS based on actual parameters

$EC_n(A) = ECR_n(A) \times (\text{Total Generation Schedule (Energy) to HPPC/ DISCOMs during the calculation period ending } n^{\text{th}} \text{ month})$

(b) Total Energy Charges payable to SSGS based on Normative parameters

$EC_n(N) = ECR_n(N) \times (\text{Total Generation Schedule (Energy) to HPPC/ DISCOMs during the calculation period ending } n^{\text{th}} \text{ month})$

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

(a) If $EC_n(A)$ is less than or equal to $EC_n(N)$:

No compensation shall be payable to SSGS

(b) If $EC_n(A)$ is more than $EC_n(N)$:

(b.1) If $Comp_n(P)$ is less than or equal to $EC_n(A)$ minus $EC_n(N)$ then final compensation amount payable to SSGS for the calculation period ending n^{th} month:

$$Comp_n(F) = Comp_n(P)$$

(b.2) If $Comp_n(P)$ is more than $EC_n(A)$ minus $EC_n(N)$, then final compensation amount payable to SSGS for the calculation period ending n^{th} month

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

(xiv) Final Compensation payable by k^{th} beneficiary for the calculation period ending n^{th} month. No compensation shall be payable by a beneficiaries if it has requisitioned at least 85% of its entitlement during the calculation period.

In case of more than one beneficiary, the compensation shall be shared in the ratio of un-requisitioned energy below Normative PAF of their entitlement i.e. compensation payable by k^{th} beneficiary for the calculation period ending n^{th} month.

$$FCB_{kn} = Comp_n(F) \times \frac{UE_{kn}}{\sum_k UE_{kn}}$$

Where UE_{kn} is un-requisitioned energy of K^{th} beneficiary below Normative PAF 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 $(n-1)^{\text{th}}$ month:-

Net compensation payable/receivable by k^{th} beneficiary for the n^{th} month

$$NCB_{kn} = FCB_{kn} - FCB_{k(n-1)}$$

If NCB_{kn} is negative, this is amount payable by SSGS to the HPPC/ DISCOMs 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 if total number of start-ups (against RSD) 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.

Provided that where unit wise tariff is determined on the basis of unit wise ECR of the generating station. No compensation for degradation of Secondary Fuel oil consumption for the respective generating unit is payable for the year if total number of start-ups (against RSD) of generating Unit is equal to or less than 7 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 SSGS 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 shutdowns with the appropriate value of additional secondary oil consumption.
- (iii) Compensation payable to SSGS shall be restricted such that Oil Consumption based on Norms plus Compensation calculated in step (ii) 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 (ii) and average landed price of Secondary fuel oil for the year.
- (v) Each start-up due to reserve shutdown shall be attributed to the HPPC/ DISCOMs who had requisitioned below Technical Minimum Schedule strictly in terms of the Regulation 34(1) of the HERC Tariff Regulations, 2019.
- (vi) Compensation (in terms of Rupees) shall be shared amongst the beneficiaries in the following manner: -

Compensation payable by beneficiary:

$$= (N_i \times \frac{A_i}{\sum (N_i \times A_i)}) \times \text{Compensation payable to Generators}$$

Where

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

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

- (vii) The SSGS 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 SLDC shall review the

secondary oil consumptions of plants on quarterly basis along with SSGS 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. Compensation Mechanism for IPPs having part capacity tied-up with HPPC/ DISCOMs-

5.1 The Independent Power Producers generating station having 100% capacity tied up with HPPC/ DISCOMs, the compensation mechanism for Degradation of Heat Rate, AUX Consumption and Secondary Fuel Oil Consumption, due to Part Load Operation and Multiple Start/ Stop of Units, shall be same as methodology defined earlier for SSGS having 100% installed capacity tied up with HPPC/ DISCOMs.

5.2 Some of the IPPs having part capacity tied up with HPPC/DISCOMS are Inter State entities and compensation of Inter State IPPs shall be computed as per provisions factored in PPA between HPPC / DISCOMs and IPPs.

5.3 The Independent Power Producers generating station having part capacity tied up with HPPC/ DISCOMs, the compensation mechanism for Degradation of Heat Rate, Aux Consumption and Secondary Fuel Oil Consumption, due to Part Load Operation and Multiple Start/ Stop of Units, shall be computed with same methodology as defined for SSGS having 100% installed capacity tied up with HPPC/ DISCOMs, subject to following: -

- (i) In case of IPPs, wherein the 100% installed capacity is not tied up with HPPC/ DISCOMs of Haryana through a long term power purchase agreement or whose tariff for only partial/ contracted capacity is determined by the Commission, such generating station/company shall have to appropriately factor in the above provisions in the PPAs entered into by it with HPPC/ DISCOMs for sale of power, in order to claim compensations for degraded values of SHR and AUX and for RSD over and above 7 start-ups solely attributable to reserve shut-downs caused due to less requisition by HPPC/ DISCOMs.
- (ii) Power tied up by IPP(s) with beneficiary (ies) through PPA under Medium Term Open Access shall also be considered as a beneficiary for computing compensation for part load operation.
- (iii) The compensation mechanism for IPPs having part capacity tied up with HPPC/DISCOMs shall come into force from the date of approval of amendment in PPA by the Commission wherein appropriate provision for compensation for

degraded station heat rate (SHR), auxiliary energy consumption (AUX) and Reserve Shutdown (RSD) have been made or the date of approval of Detailed Operating Procedure and mechanism for compensation by Commission, whichever is later.

- (iv) Energy Charge Rate (ECR) of IPPs for a particular month shall be computed with the formula given in the applicable Regulation of the Commission.
- (v) In order to compute Average Unit Loading (AUL) for IPPs having part contracted capacity tied up with HPPC/ DISCOMs under Long Term Agreements, merchant power shall be considered as pseudo beneficiary and power tied up with other beneficiary(ies) through long term agreements shall be treated at par with that of HPPC/ DISCOMs. For computation of AUL, pseudo beneficiary shall be treated as Long Term Beneficiary.
- (vi) All the beneficiaries including pseudo beneficiary of IPP shall be responsible for maintaining technical minimum generation of the generating unit(s). All the beneficiaries are required to give technical minimum requisition of their share in the IPP's unit(s), in case unit(s) is required to be kept on bar for smooth operation of the Grid. If the unit(s) of IPP is able to operate on technical minimum with the requisition of other beneficiary(ies), then HPPC/ DISCOMs is not bound to give requisition for maintaining technical minimum operation of the unit(s). In this case, HPPC/ DISCOMs shall pay compensation for degraded SHR and Auxiliary Energy Consumption for operation of units below normative PAF as per formula mentioned in compensation mechanism for SSGS.
- (vii) If HPPC/ DISCOMs requisitions technical minimum of its share, other Long-Term Beneficiary(ies) also requisitions technical minimum of its share but pseudo beneficiary does not sell at least technical minimum of power available with IPP and if IPP stops the unit due to less scheduling, the unit(s) shall not be treated under Reserve Shut Down (RSD).
- (viii) If IPP maintains Technical Minimum Generation on unit(s) with the merchant capacity available with the generator plus technical minimum schedule from other beneficiary(ies), HPPC/ DISCOMs do not have any obligation for Technical Minimum Operation of the unit(s). However, HPPC/ DISCOMs shall pay compensation of degraded SHR and Auxiliary Energy Consumption for the operation between normative Plant Availability Factor (PAF) and technical minimum, applicable to its contracted capacity only.
- (viii) SLDC, Panipat shall compute the compensation of IPP for degraded Station Heat Rate (SHR) and Auxiliary Energy Consumption for operating unit below normative PAF.

- (ix) Intra-State IPPs shall calculate the compensation as specified in these procedures and bill the same to HPPC/ DISCOMs along with its monthly bill which shall be subject to adjustment based on compensation statement issued by SLDC subsequently.
- (x) SSGS/IPP's shall submit the requisite data along with compensation calculation to SLDC and beneficiary as prescribed in Format F-2 for a month by 15th day of the following month along with invoice
- (xi) The computation of Compensation (in terms of KL of Secondary Oil) payable to IPPs for the year due to degradation of Secondary Fuel Oil Consumption on Reserve shutdown, shall be calculated by multiplying no. of start-ups exceeding 7 per unit and solely attributable to reserve shut-downs caused due to less requisition by HPPC. In case of generators having installed capacity below 200MW, the oil consumption shall be considered as that of 200MW capacity generators.
- (xii) HPPC/ DISCOMs shall be responsible to pay the compensation for secondary oil fuel consumption, only for RSD attributed due less requisition by HPPC/ DISCOMs.

6. 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 HPPC/ DISCOMS along with its monthly bill which shall be subject to adjustment based on compensation statement issued by SLDC subsequently.
- (ii) Generating station shall submit the requisite data along with compensation calculation to SLDC as prescribed in Format F-2 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.

7. Issuance of compensation statement:

- (i) SLDC will issue the compensation statement for the month on 21st of next month.
- (ii) In case any anomaly or discrepancy is noticed by any Utility, the same may be brought to the notice of SLDC within 15 days of issuance of Compensation Statement.

- 8. A sample computation of compensation for a typical IPP of 200 MW capacity having part load capacity tied up with beneficiaries A, B, C and D, where Beneficiary D is pseudo beneficiary i.e. merchant power available with the IPP, is given in **Annexure-C**.

9. Review of the Procedure:

The Procedure shall be reviewed in Grid Coordination Committee of Haryana after one year of its approval. Recommendations of the Grid Coordination Committee of Haryana Power Utilities, if any, shall be submitted to the Commission for needful.

Format F1- Generator Details**From:** (Name of Generating Station) / (Name of Owner Organization)**To:** SLDC, Sewah, Panipat**Validity of the Information** **From:** 16/mm/yyyy **To:**15/mm/yyyy**Date:** dd/mm/yyyy

Sr.No.	Title/Parameters	Values/Data
a)	Number of Generating Units (e.g. 1 x 210 MW + 2 x 500 MW)	
b)	Total Installed Capacity (MW)	
c)	Capacity(ies) tied up with other beneficiary(ies) (please add more rows if required)	
d)	Maximum possible Ex-bus injection (MW) (including overload if any)	
e)	Technical Minimum (MW)	
f)	Type of Fuel	
g)	Fixed Cost (paise / kWh upto one decimal place)	
h)	Variable Cost (paise / kWh upto one decimal place)	
i)	Ramp-Up Rate (MW/Min) for each unit	
j)	Ramp-Down Rate (MW/Min) for each unit	
k)	Start-up Time of each unit from (in hh:mm) i) Cold Start ii) Warm Start and iii) Hot start	
l)	Any Other Information	

Signature of Authorized Signatory (with Stamp)
Name:

Designation:

Format-F2

**Information to be submitted by SSGS /IPPs to the SLDC and beneficiary for a month by
15th of next month**

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					
5	Normative SFC					
6	CVSF					
7	LPPF					
8	LPSFi					
9	Normative Aux. Cons					
10	Actual GHR/SHR					
11	Actual SFC					
12	Actual Aux. Cons					
13	RSD start /stop in the month					
14	RSD start/stop cumulative					
15	Total no. of Start /stop during year					
16	CVPF					

Signature of Authorized Signatory (with Stamp)
Name:

Designation:

SAMPLE CALCULATION:

Compensation for Degradation of Heat Rate and Aux Consumption due to Part Load Operation Units					
Plant Details	No of Units	Unit Size MCR	Plant Capacity MW		
	1	200	200		
Beneficiary Details					
Name of Beneficiary	A	B	C	D	Total
Contracted Capacity in %	30	20	25	25	100
in MW	60	40	50	50	200
TMM in MW	33	22	27.5	27.5	110
Monthly Energy to meet 100% of their entitlement (MWhr)	43200	28800	36000	36000	144000
Monthly Energy to meet 85% of their entitlement (MWhr)	36720	24480	30600	30600	122400
Requisitioned Energy in a Month (MWh)	25000	26000	28000	21000	100000
Un-requisitioned Energy below 85% of their entitlement (MWhr)	11720	-1520	2600	9600	
Monthly Effective Generation in MWh	100000				
Monthly Effective Capacity in MWh	144000				
Average Unit Loading	69%				
Compensation Amount Say Rs.	100000				
Distribution Among Beneficiary Rs.	48997	0	10870	40134	
Compensation for Secondary Fuel Oil Consumption, due to Multiple Start/Stop of Units					
TOTAL NUMBER of RSD in one year	20				
NUMBER of RSD Qualified for Compensation in one year	13				
Total Compensation for Secondary Fuel Oil for RSD Say Rs.	50000				
No. of RSD attributed to beneficiary	4	0	3	6	
Secondary Fuel Oil Compensation Payable by Beneficiary Rs.	17391	0	10870	21739	