



Procedure for Instructing Reserve Shut Down (RSD) of Generating Unit in the State of Maharashtra

In accordance with
The Maharashtra Electricity Regulatory
Commission
(State Grid Code) Regulations, 2020

Prepared by

Maharashtra State Load Despatch Centre

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Procedure for Reserve Shut Down (RSD) of Generating Unit in The STATE OF MAHARASHTRA

1. GENERAL:

As per Electricity Act 2003, the State Load Despatch Centre shall 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 the State and shall 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.

Maharashtra Electricity Regulatory Commission notified the MERC (State Grid Code) Regulations, 2020 (referred to as “MEGC, 2020”) on 02.09.2020 and shall come into force from the date of its publication in the Official Gazette and remain in force unless amended, varied, altered, or modified by the Commission. These Regulations shall extend to the whole of the State of Maharashtra. As per clause 36.9 of the Regulations, the State Load Despatch Centre (SLDC) shall prepare a Detailed Procedure for Instructing RSD of Generating Unit(s) of the generating stations in the state of Maharashtra.

As per Maharashtra Electricity Grid Code (MEGC) 2020, SLDC shall supervise the overall operation of the InSTS. All licensees, generating company and any other Users connected to the InSTS shall comply with the directions issued by the SLDC to ensure integrated grid operation and for achieving the maximum economy and efficiency in the operation of the InSTS. SLDC is responsible for coordinating the scheduling of buyers and sellers within its control area.

2. OBJECTIVES:

The objective is to lay down the procedure for taking the generating unit(s) of the generating station under RSD in the state of Maharashtra in specific grid conditions as per the **clause 36** of MEGC, 2020.

3. SCOPE:

This procedure shall be applicable to MSLDC and the intra-state generating stations whose tariff is either determined or adopted by the Maharashtra State Regulatory Commission and the generating stations/units which are state entities but whose tariff is neither determined nor adopted by the Commission including the generators who are the part of MOD stack and selling power to the state entities.

4. DEFINITIONS:

4.1 In this procedure, unless the context otherwise requires:

- 1) **“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).
- 2) **“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.
- 3) **“Demand”** means the demand of Power in MVA, Active Power in MW and Reactive Power in MVAR of electricity unless otherwise stated;
- 4) **“Event”** means an unscheduled or unplanned occurrence on a Grid including faults, incidents, and breakdowns;
- 5) **“Force Majeure”** means any event which is beyond the control of the persons involved which they could not foresee or with a reasonable amount of diligence which could not be foreseen or which could not be prevented, and which substantially affect the performance by STU, SLDC, Generator, User, licensee or any person and includes but not limited to:-
 - i) Acts of God, natural phenomena, including but not limited to floods, droughts, earthquakes, and epidemics;
 - ii) Acts of any Government domestic or foreign, including but not limited to the war declared or undeclared, hostilities, priorities, quarantines, embargoes;

- iii) Riot or Civil Commotion;
- iv) Grid's failure not attributable to persons involved;
- 6) **“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);
- 7) **“Intra State Generating Station (InSGS)”** means a generating station connected to intra-State Transmission System whose scheduling is to be coordinated by SLDC;
- 8) **“Maharashtra State Load Despatch Centre (MSLDC or SLDC)”** means the Centre established under sub-section (1) of Section 31 of the Act;
- 9) **“MoD Principles”** means the principles for the operation of Merit Order Despatch (MoD) and amendments thereof, as specified by the Commission in these Regulations and Deviation Settlement Mechanism Regulations and as amended from time to time;
- 10) **“Scheduled Generation”** at any time or for a time block or any period means schedule of generation in MW or MWh ex-bus given by the concerned Load Despatch Centre;
- 11) **“State Entity”** means such person who is in the SLDC control area and whose metering and energy accounting is done at the state level;
- 12) **“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 procedure but not defined herein shall have the meaning assigned to them in Electricity Act, 2003 or the IEGC or other Regulations of the Commission as notified from time to time.

5. Guidelines for taking generating unit(s) under Reserve Shut Down

1. If the anticipated generation availability is more than the anticipated demand, the distribution licensee in consultation with SLDC may consider giving Zero Schedule (ZS) to some of its contracted sources

for the period during which the demand is expected to be lower than the total contracted sources availability put together. SLDC provide its concurrence to the proposed “Zero Schedule” by distribution licensee after taking into consideration demand-supply position and possible transmission constraints.

2. Another scenario may arise in the system that the generation in the state is in excess equivalent to largest unit capacity (at present it is 660 MW of APML, Tiroda) of contracted generators of the Distribution Licensee due to sudden unanticipated demand crash arise due to cyclone, heavy rainfall, high renewable injection etc.
3. If this scenario persists for more than 24 hours, SLDC may withdraw the unit(s) under Reserve Shut Down (RSD). . However in case of severe weather condition (like cyclone) which resulted into heavy underdrawal coupled with persistent High Frequency scenario, SLDC can issue RSD instructions to Generating unit/s immediately looking into Grid security aspect as per the guidelines prescribed in Regulation No. 36.
4. RSD should be implemented for the capacity available in excess of the largest Unit contracted by the Distribution Licensee in the state.

Provided that the aggregate capacity for which RSD implemented shall be limited to maximum possible expected under-drawal of power from Regional grid after considering spinning reserve.

5. SLDC shall apply RSD to unit(s) with higher Variable Charges as per the Decentralised MOD Stack of the utility in DSM regime. In case of any grid constraints prevents the RSD of the Unit with highest Variable charges in the MOD stack, the unit with next highest variable charge needs to be considered.

Provided that unit may be withdrawn under RSD at the discretion of the generator where more than one unit of same price are existing at generating station with intimation to SLDC.

6. SLDC shall give **8 hours** prior notice of RSD to the generator for withdrawing its unit on bar to enable it to take steps for smooth removal of the Unit from the Grid, with intimation to contracted distribution licensee.

7. The proposed RSD shall be minimum for the period of **72 hours** and may be extended as per the system conditions/requirement.
8. The generating unit where transmission or system security constraints do not permit the RSD of unit, such unit will not be taken for RSD. SLDC may instruct the next generator to withdraw its unit for RSD as per MoD stack.
9. The decision of SLDC will be final in respect to further continuation or cancellation of the RSD.
10. The Declared Capacity (DC) for unit(s) under RSD period shall be preserved and the contracted distribution licensee shall have to pay for this DC.
11. During the RSD period if other unit tripped and available after short duration the same shall be permitted for lit up depending upon system conditions. However, SLDC can decide not to light up a particular unit as per system conditions; then this unit shall be considered under RSD as per MoD stack & DC shall be preserved for such period as instructed by SLDC.
12. In order to avoid frequent start-stop of the unit it would be appropriate to put the unit under RSD for longer durations and the same unit shall not be put under RSD repeatedly i.e. units shall be put under RSD on rotational basis at the respective power station of same variable price.
13. For accounting simplicity RSD shall commence from next time block. SLDC will issue schedule to generating unit considering the Ramp down / up rate.
14. During RSD period, if any unforeseen situation arises shall be dealt within the frame work of scheduling and dispatch code.
15. Declared Capacity (DC) of generating unit under RSD shall be considered as higher of Average Declared Capacity for immediate one week prior to RSD instructions or Maximum Declared Capacity (for minimum 3 hours period) for last 24 hours before commencement of RSD.
16. The generating unit(s) under RSD will not be permitted for carrying out of any maintenance work.

17. If a generating station requires to carry out any maintenance work of the unit under RSD, same shall be done in due consultation with SLDC. The DC of such generating unit(s) shall be reduced appropriately for such maintenance period.

6. **Revival of generating unit(s) from RSD**

1. While taking the unit on bar, notice will be issued by SLDC to the respective generating station with the instruction to bring the unit on bar depending on the status of unit under Cold/Warm/Hot start. Each generating station shall submit the information of time required to bring the unit on bar from Cold/Warm/Hot start to MSLDC on yearly basis which shall be published on website.
2. The ramping up and ramping down at the specified rates should be allowed for bringing back the unit on bar. However, generator would make all efforts to minimize the lit-up time.
3. Unit under RSD can be recalled for revival any time after 72 hours. In case of system constraints, the generating unit can be revived before 72 hours as well.
4. In case the machine is not revived as per the revival time as instructed by SLDC, the generating unit(s) 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. The RSD procedure may be reviewed & modified, if there are any changes in regulation. Further, any practical constraints are observed during the implementation of the procedure, the same shall be discussed & modified after due process.

SLDC shall upload the details of RSD of the previous month on its website by the **3rd** day of every month in the format provided as **Annexure-5** of MEGC 2020. (Enclosed here with)

Annexure-5: Report on Reserve Shut Down for the Month of _____

Sr. No.	Generating station	No. of Units	Unit Size (MW)	Total Capacity under Reserve Shut Down (Unit No and Capacity)	RSD Period (Date)	Reasons for RSD	Rank in MOD	Generating Station(S) with higher Variable Charge than the Station /Unit which was given MOD	Reasons for not selecting the Generating Station with higher variable Charge for RSD
1									
2									
3									
4									
5									
6									
7									