



ANDHRA PRADESH ELECTRICITY REGULATORY COMMISSION

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APERC - Guidelines on the Reserve shutdown, and Revival from reserve shutdown of thermal generating units to be despatched by APSLDC-Reg.

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Procdds. No.APERC/Tariff/T-35/2023/05

Date:31-07-2023

Read the following:

Guidelines:

Clause 12 of APERC (Terms and conditions of short-term procurement/sale of power) Regulation, 2022 (Regulation 1 of 2022) envisages formulation of the guidelines on the Reserve shutdown and Revival from reserve shutdown of generating units to be despatched by APSLDC. Accordingly, the Commission by its letter dated 18.04.2023 directed APSLDC to prepare the draft guidelines on the same. In compliance with the directions of the Commission, the APSLDC by its letter dated 22.06.2023 submitted the draft guidelines along with the comments of APGENCO, and APPDCL. After examination of the draft guidelines, comments of APGENCO and APPDCL, IEGC, and CERC's orders on reserve shutdown of CGS, the Commission issues the following guidelines.

A. General:

- i. Demand Forecasting and Monitoring:
 - a. SLDC & DISCOMS shall implement an accurate and reliable demand forecasting systems to anticipate potential sudden falls in demand due to weather conditions or any other factors.
 - b. SLDC shall continuously monitor real-time demand data and grid conditions to quickly identify situations where reserve shutdown may be necessary.
- ii. Least Cost Dispatch Model:

- a. The SLDC should follow a least-cost dispatch model to determine which power-generating units should be kept in service and which ones can be reserved for shutdown.
 - b. The model should consider the operating costs, fuel costs, and environmental factors associated with each power-generating unit.
- iii. Generating unit(s) to be put under reserve shutdown/revived from reserve shutdown shall be strictly based on merit order, and grid constraints if any:

Provided that SLDC shall publish the details of such grid constraints, along with the period for which it is likely to persist on its website within 24 hours from such exigency.

- iv. The terms "Cold Start", "Declared Capacity or DC", "Hot Start", "Technical Minimum", and "Warm Start" shall have the same meaning as provided under Central Electricity Regulatory Commission (Indian Electricity Grid Code) Regulations, 2022 as amended from time to time and orders thereof.
 - v. The Ramp down rate of the unit(s) during withdrawal from the grid for RSD and the Ramp up rate for the revival of unit(s) from RSD shall be as per IEGC.
 - vi. The Scheduling and Despatch of all Generating units and scheduling and drawals by DISCOMS shall be as per the Scheduling and Despatch procedure stipulated in the Andhra Pradesh Code of Technical Interface approved by APERC or its updated version from time to time/IEGC.
 - vii. The SLDC shall place the information on RSDs on its website, and a monthly report shall be submitted to the Commission.

- viii. The GENCOs may file an appropriate petition with full details before the Commission at the end of the financial year for compensation for degradation of Heat Rate, Aux Consumption, and Secondary Fuel Oil Consumption due to multiple Start/Stop of Unit(s) because of Reserve shutdowns ordered by the SLDC.

B. RESERVE SHUTDOWN (RSD):

- i. Under normal operating conditions, if the demand is less than the available generation, the thermal generator unit(s) shall be backed down up to a technical minimum, and as per the Merit Order to maintain the load generation balance. In certain situations due to widespread rainfall, there could be a huge fall in Demand. If it is forecasted that such a situation may continue for a day or few days, and the situation does not permit the thermal generating units scheduled at least at a technical minimum, the SLDC shall declare Reserve Shut Down (RSD) of a certain generating unit(s). Then after, SLDC should obtain a demand forecast for the next 72 hours from all DISCOMS from the time of reserve shutdown effected. The SLDC should decide the duration of reserve shutdown based on the demand forecast of DISCOMS, and its assessment of demand and availability of generation. The DISCOMS shall also explore the possibility of disposing of the surplus power in the power exchanges or PUSHP portal during the lean periods of demand and accordingly, the SLDC shall decide the period of RSD.
- ii. The RSD of unit(s) can also be declared by SLDC in consultation with DISCOMS if there is an opportunity to save the power purchase costs. But, all such cases shall be brought to the notice of the Commission in the form of weekly reports explaining the savings in power purchase

costs with detailed reasoning and computations of savings. If the Commission is not satisfied with the savings projected in weekly reports, it may issue appropriate orders in this regard.

- iii. Where transmission constraints or real-time islanding schemes do not permit the shutdown of certain unit(s) such unit(s) may not be considered for RSD. Such constraint shall be notified by the SLDC on its website within 24 hours whenever deviation from merit order in the reserve shutdown of units.
- iv. The reserve shutdown of thermal generation unit(s) can also be ordered to accommodate the must-run power generation from Renewable Sources of energy. All such RSDs shall be specifically mentioned in the monthly reports submitted to the Commission.
- v. The decision of SLDC shall be final in declaring RSD, and continuation or cancellation of the RSD.
- vi. No maintenance activities on unit(s) under RSD shall be undertaken by the Gencos so that the unit under RSD is always readily available for revival/synchronization. If a Genco requires maintenance on any unit(s) under RSD, then the same shall be done in due consultation with SLDC. The DC shall be reduced accordingly.
- vii. The SLDC shall ensure to maintain a dedicated emergency reserve capacity that can be quickly activated in case of unforeseen events or sudden spikes in demand. The SLDC may also develop contingency plans for extreme scenarios, such as prolonged periods of low demand, to ensure grid stability and reliability. All such contingency plans shall be submitted to the Commission from time to time for approval.

- viii. For the computation of the period of RSD, the RSD time shall commence from the next time block from the time block during which the unit(s) is/are withdrawn from the grid.
- ix. The Declared Capacity of the unit(s) under RSD shall not exceed the average DC for the last 72 hours before the commencement of RSD. The schedule approved by the SLDC during the reserve shutdown period shall be the deemed availability of the unit(s) under RSD.
- x. During the RSD period of certain unit(s), other generating unit(s) that was/were tripped and available for synchronization after a short duration shall be permitted for light up depending upon merit order and system conditions. However, if SLDC directs for the continuance of shutdown with due consideration of merit order, then such period as directed by SLDC, the unit outage shall be treated as RSD.
- xi. In the case of units with the exact variable cost per unit, the units shall be considered for RSD in rotation to avoid RSD of the same unit repeatedly, and it may be done as per the choice of GENCO.

C. REVIVAL OF UNIT(S) FROM RESERVE SHUTDOWN (RSD):

- i. Once a unit(s) is/are taken out from service for RSD, the unit(s) can be recalled any time after 8 hours. The RSD period may vary depending on the system conditions and demand assessment by SLDC. In case of system requirements, the generating unit(s) can be revived before 8 hrs.
- ii. The time to start a generating unit shall be based on different starting conditions such as Hot, Warm, and Cold. However, the time to start a machine under different conditions such as HOT, WARM, and COLD shall not be more than 4 hours, 8 hours, and 12 hours respectively.

- iii. The Generating unit(s) shall be revived from Reserve Shutdown strictly based on Merit Order. In the case of Units with the exact variable cost per unit, whose revival time is less should be revived first.
- iv. In case the generating unit(s) is/are not revived as per the revival time under different types of starting conditions such as cold, hot, and warm, the unit(s) shall be treated as under outage for the duration starting from the likely revival time to the actual revival time. However, a delay of a maximum of 4 hours shall be considered after assessing the report of the Genco for the delay. The decision of the SLDC is final in this regard.
- v. The SLDC shall issue the instructions for the revival of unit(s) from RSD to the Gencos sufficiently in advance keeping in view the unit's start-up time under cold, warm, and hot conditions.

D. POWER TO ALTER, RELAX, AND AMENDMENT

The Commission on its own initiative or on the application made by any stakeholder may alter, relax and amend these guidelines.

(By order of the Hon'ble Commission)



Commission Secretary_(i/c)

To
The CMD/APTRANSCO
The CMD/APCPDCL
The CMD/APSPDCL
The CMD/APEPDCL
The MD/APGENCO
The MD/APPDCL