

TELANGANA POWER GENERATION CORPORATION LIMITED

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From

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To

The Executive Director,

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Tel: 080-22250047/4525

Lr No. CE(HPC&HP)/121/ F. PCSC / D.No. 69/26, dt. 16.07.2026

Sir,

Sub: TGGENCO – Review and Compliance of Under-Frequency and Over-Frequency Protection Settings of Pumped Storage Plants in line with IEGC, CEA Connectivity Standards and AUFLS Scheme – Requested – Reg.

Ref: Lr.No: SRPC/SE(PC&SS)/143PCSC/2026/2646-2692, dated: 23.06.2026

With reference to the above cited letter, SRPC has communicated the Minutes of the 143rd PCSC Meeting held on **08th June, 2026**. In the Meeting, SRPC has deliberated on “Review and Compliance of Under-Frequency and Over-Frequency Protection Settings of Pumped Storage Plants in line with IEGC, CEA Connectivity Standards and AUFLS Scheme” and informed the following points.

- During a Grid Disturbance (GD) event in the Western Region, involving a sudden Generation loss of around 8600 MW, the system frequency declined to approximately 49.4 Hz at 14:09:53.800 Hrs, resulting in operation of the Automatic Under Frequency Relay (UFR) Schemes across multiple control areas.
- As per Regulation 29(12) of the Central Electricity Regulatory Commission (Indian Electricity Grid Code) Regulations, 2023, Pumped Storage Hydro Plants operating in Pumping Mode or ESS operating in charging mode are required to be automatically disconnected before the first stage of UFR operation.
- The recommendations of the Task Force on Implementation of Automatic Under Frequency Load Shedding (AUFLS) and df/dt Scheme, as deliberated in the 15th NPC meeting and recorded in the 52nd TCC and 55th SRPC meetings, stipulate that Pumped Storage Hydro Plants operating in Pumping Mode shall be automatically disconnected at 49.5 Hz and ESS in charging mode at 49.6 Hz, prior to UFR operation.
- As per the Task Force Recommendations, the operation should ideally be instantaneous. However, from a practical implementation perspective, a delay of around 3 to 5 cycles may be considered, and to avoid mal operation during transient disturbances, a small intentional delay of around 50 to 75 milliseconds could be adopted.

- As per the CEA Connectivity Standards, Generating Units are required to remain connected to the grid within the frequency range of **47.5 Hz to 52.0 Hz** and requested TGGENCO to review the existing Protection Settings with the OEM to ensure compliance.

In this regard, TGGENCO has reviewed the Under-Frequency and Over-Frequency Protection Settings of all the Hydel Generating Stations and decided to adopt the separate Settings (SLBHES & NSHES) for Generator Mode and Pump Mode of operations.

TGGENCO has decided to adopt the Settings as follows.

For Generators:

Over Frequency Setting of >52.0 HZ with 2 Seconds time delay

Under Frequency Setting of <47.5 HZ with 2 Seconds time delay

For Pumps:

Over Frequency Setting of >52.0 HZ with 2 Seconds time delay

Under Frequency Setting of <49.5 HZ with 75 milli Seconds time delay

In view of the above trip Settings, certain split Time Gradings are proposed to avoid tripping of complete Units in case there is chance of Improving/Reducing the Frequency on partial shutdown of Units. Hence, it is requested to whether, it can be adopted following way and also the Settings to be adopted for Condenser Mode of operation may be clarified.

- 1) Shall we adopt Time Grading for the Over Frequency Protection Settings of Generators with 2 seconds for some (50%) Units and 2.5 Seconds for other (50%) Units in each Station, so as to avoid tripping of at least 50% of Generators in case of chances of improvement in frequency reduction.
- 2) Shall we adopt Time Grading for the Under Frequency protection of Pump with 75 to 100 milli Seconds for 50% Units and 150 to 200 milli Seconds for remaining (50%) Units, so as to avoid complete de synchronization of Units in case of chances of improvement of Frequency on partial (50%) shutdown of Units.
- 3) Under Frequency Settings for Generator/Pump Condenser Mode of Operation at SLBHES & NSHES (during Condenser Mode operation Unit draws approximately 4 to 6 MW) whether, the trip of the Unit can be initiated at **47.5 Hz or 49.5 Hz** or any other flexible settings can be adopted.

Yours faithfully,



CHIEF ENGINEER
(HPC&HP)

Copy To:

1. The Superintending Engineer/Commercial, Protection, Communication & System Studies
SRPC, Central Electricity Authority, No. 29 Race Course Cross Road, Bengaluru – 560 009
2. The DE (Tech) to Director (Hydel)/TGGENCO/Vidyut Soudha/Hyderabad-82