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भारत सरकार केंद्रीय विद्युत प्राधिकरण **दक्षिण क्षेत्रीय विद्युत समिति** 29, रेसकोर्स क्रास रोड बेंगलूर- 560 009	सत्यमेव जयते	Government of India Central Electricity Authority **Southern Regional Power Committee** 29, Race Course Cross Road Bengaluru-560 009
Email: mssrpc-ka@nic.in	Web site: www.srpc.gov.in	Phone:080-22282516
सं/No. SRPC/SE(O)/FGMO/2026-27/ 5028	दिनांक / Date	**28th October 2026**

सेवा मे / To

संलग्न सूची के अनुसार/ As per the enclosed list

Sub: Minutes of the special meeting to deliberate on FGMO performance during FY 2025-26 in Southern Region -reg.

महोदय /महोदया/ Sir/ Madam,

संलग्नक में, कृपया दक्षिणी क्षेत्र में वित्तीय वर्ष 2025-26 के दौरान फ्री गवर्नर मोड ऑफ ऑपरेशन (एफजीएमओ) के प्रदर्शन पर विचार-विमर्श करने हेतु दिनांक **31 अगस्त 2026 (मंगलवार) 10:30** को वीडियो कॉन्फ्रेंस के माध्यम से आयोजित हुव वाली विशेष बैठक की कार्यवृत्त संलग्न है। यह दक्षेविस के वेबसाइट (www.srpc.gov.in) पर उपलब्ध है।

Enclosed, please find the minutes of the special meeting to deliberate on Free Governor Mode of Operation (FGMO) performance during FY 2025-26 in Southern Region held on **01st September 2026 (Tuesday) through VC.** The same is available on SRPC website (www.srpc.gov.in).

भवदीय /Yours faithfully,

Malini 28/10/2026

(एन एस मालिनी / N S Malini)

अधीक्षक अभियंता/Superintending Engineer (O,P&C)

प्रेषिती सूची / Mailing List (Operation Coordination Sub-Committee SRPC)

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5. Chief Engineer (ED), KPCL, Bengaluru
6. Chief Engineer (TSO), KSEBL, Kalamaserry
7. Chief Engineer (Opn.), TANTRANSCO, Chennai
8. Chief Engineer (Mech), TNPGCL, Chennai
9. Chief Engineer (GO),TGTRANSCO, Hyderabad
10. Chief Engineer (Generation), TGGENCO, Hyderabad
11. Chief General Manager (O&M), TGSPDCL, Hyderabad
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13. General Manager (O&M), SRTS–I, PGCIL, Secunderabad.
14. General Manager (O&M), SRTS- II, PGCIL, Bengaluru.
15. General Manager (OS), SRHQ, NTPC, Secunderabad
16. AGM (EEMG), RSTPS, NTPC, Ramagundam
17. AGM(EEMG), Talcher STPS Stg - II, NTPC, Talcher
18. AGM (EEMG), Simhadri STPS, NTPC, Simhadri
19. AGM (EEMG), Kudgi STPS, NTPC, Kudgi.
20. General Manager, Telangana STPS, NTPC
21. General Manager(O&M), NTECL-Vallur
22. Chief General Manager, Neyveli TPS-II, Neyveli
23. General Manager, NNTPS, Neyveli
24. General Manager, TPS-I Expansion, Neyveli
25. General Manager, TPS-II Expansion, Neyveli
26. Chief General Manager (Ele), NLC Tamil Nadu Power Limited(NTPL), Tuticorin
27. Operation Superintendent, MAPS, Kalpakkam
28. STE (E&I), Kaiga G.S. Stage - I, Kaiga
29. STE (E&I), Kaiga G.S. Stage - II, Kaiga
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42. Director, NPC Division, CEA, New Delhi
43. Executive Director, SRLDC, Grid-India, Bengaluru

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SOUTHERN REGIONAL POWER COMMITTEE (SRPC)

Minutes of the Special Meeting to deliberate on Free Governor Mode of Operation (FGMO) Performance during FY 2025-26 in Southern Region held on 01st September 2026

1. Introduction

A Special Meeting of the Southern Regional Power Committee (SRPC) to deliberate on **Free Governor Mode of Operation (FGMO) performance during FY 2025-26** was held on **01st September 2026 (Tuesday)** through **Video Conference (VC),** in continuation of the special meeting held on 31.07.2026. (List of Participants is attached as Annexure-1a)

Smt. N S Malini, Superintending Engineer (O,P & C), SRPC welcomed all the participants to the special meeting convened to deliberate on the FGMO performance during FY 2025–26. She stated that the meeting would review the implementation status and performance of FGMO in the State control areas as well as Central Generating Stations. The FRO obligations prescribed by NLDC for the year would also be reviewed. Before commencing the agenda items, she requested MS, SRPC and ED, SRLDC to deliver the opening remarks.

Shri Asit Singh, Member-Secretary, SRPC welcomed all the participants to the special meeting convened to review the performance of FGMO and the transition from RGMO to FGMO. He stated that the matter had been pending for a considerable period and that FGMO implementation was yet to be achieved in some generating units.

He informed that, in addition to reviewing the performance of individual generating units, the station-wise and control-area-wise performance with respect to FRO and FRP would also be reviewed. SLDCs had therefore been requested to prepare and present the station-wise performance, following which the concerned generating stations would explain the reasons for performance not meeting the desired level.

MS, SRPC highlighted that with the increasing penetration of inverter-based/IBR generation, system inertia is reducing significantly. He further noted that the increasing penetration of power-electronic-based loads also contributes to the reduction in effective rotating inertia. Consequently, even for relatively smaller generation-loss events, a comparatively higher rate of frequency decline may be observed, which is a matter of concern and is expected to become increasingly significant.

He emphasized that generating units should provide frequency support at the earliest possible instant. In the present and evolving grid scenario, both primary frequency response and fast frequency response are considered essential for maintaining grid security.

MS, SRPC stated that the special meeting was therefore significant and requested all generating stations to ensure that the generating units which are on bar provide the required FGMO response. He invited the participants to proceed with the agenda items for detailed discussion.

Shri T. Srinivas, ED, SRLDC welcomed all the constituents to the special FGMO meeting and stated that the meeting was convened to review the implementation and performance of FGMO, including the FRC performance of generating units. He appreciated the initiative of convening the meeting and stated that the observations made during the opening remarks were relevant in the present context.

He highlighted that, with the increasing penetration of renewable and IBR-based generation, the effective system inertia is reducing, making the frequency response of conventional generating stations

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increasingly important for reliable and secure operation of the grid. He emphasized that conventional generating stations are required to provide the necessary frequency support, particularly during frequency disturbances.

ED, SRLDC informed that, based on the status of thermal generating units during FY 2025–26, only about 60–70% of the generators appeared to have transitioned to FGMO, while around 30–40% of the generators were yet to shift from RGMO to FGMO. He expressed concern that, despite the matter being under discussion for the past two years and assurances from generating stations regarding the transition, a significant number of units were still pending.

He requested the forum to identify and resolve the issues preventing the remaining generating stations from transitioning to FGMO, so that all generating units could provide the required frequency support. He further emphasized that FGMO should be properly enabled in the generating units and that the associated parameters, settings and operational logic should be appropriately configured and verified.

He recalled that the FGMO meeting held on 31.07.2026 had highlighted the need for proper understanding and preparation with respect to FRC and related aspects. He further informed that SRLDC had conducted a workshop/awareness session on 19.08.2026 to create awareness among the constituents regarding FRO, FRC and the methodology for beta calculations. The workshop was intended to provide clarity to the constituents for preparation of FGMO operational logic and to facilitate effective implementation of FGMO by generating stations in the Southern Region.

ED, SRLDC stated that the present meeting would focus on the plant-wise performance of generating units based on the FRC events of the previous year. He emphasized the need to analyse the performance of individual generating units and assess whether the units were responding to the desired level of FGMO support whenever required by the grid. He further stated that the performance of generating units during actual frequency events should be assessed based on the prescribed guidelines and applicable calculations, and any deficiencies identified should be addressed appropriately.

He highlighted that grid security and its maintenance are a collective responsibility of all constituents and appreciated the efforts being made towards ensuring effective implementation of FGMO. He stated that, wherever any difficulty in FGMO implementation is identified, the concerned generating station should take up the matter with the OEM and resolve the issue. He further assured that SRLDC and SRPC would extend necessary support in resolving such issues.

ED, SRLDC requested all ISGS and State generating stations to review their FGMO performance and objectively assess whether the units were responding as required. He emphasized that any identified technical issues should not be left unresolved and that necessary corrective action should be taken in consultation with the concerned OEM.

He expressed the expectation that the deliberations would help identify the pending issues, facilitate their resolution and contribute to improved FGMO and FRC performance of generating units in the Southern Region.

2. FGMO implementation status

As per IEGC, 2023 Regulation 30 (10) (d) – "*The generating stations and units thereof shall have electronically controlled governing systems or frequency controllers in accordance with the CEA Technical Standards for Connectivity and are mandated to provide PRAS.* ***The generating stations and units thereof with governors shall be under Free Governor Mode of Operation.***"

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As intimated by the generators during the special meeting on 31.07.2026, most of the generating units have already shifted to **Free Governor Mode of Operation (FGMO)**. However, the following units are still operating under **Restricted Governor Mode of Operation (RGMO)**. The updates given in the meeting are as follows:

Generating Station	Capacity (MW)	FGMO/ RGMO status	Update
Nagarjunasagar RCPH	3 x 30	RGMO	**Spl Mtg 31.07.26:** Order placed to BHEL and will be implemented in one to two months. Expected by October 2026.
HNPCL	2 x 520	RGMO	Exploring vendors is under progress for the implementation of FGMO as we don't have OEM support **223rd OCC:** Vendor is explored and found. Scrutiny is under progress and FGMO will be implemented shortly **54th SRPC:** APSLDC needs to insist on HNPCL to adhere to the IEGC. **Spl Mtg 31.07.26:** APSLDC instructed HNPCL to implement FGMO. It is planned to be implemented during the next overhaul. Next overhaul is proposed in October 2026.
Raichur TPS	7 x 210 + 1 x 250	Partial	Unit 1: After unit restoration Unit 2, 3 & 8: Under FGMO **Spl Mtg 31.07.26** Unit 4: AOH is in progress. Would be implemented by October 2026. Unit 5: With technical support of BHEL, FGMO logic is being implemented in the existing control system. Expected by January 2027 Unit 6: expected by December 2026 Unit 7: Turbine vibration issue to be resolved
Yeramarus TPS	2 x 800	Partial	Unit 1: FGMO **Spl Mtg 31.07.26** Unit 2: During Over-hauling FGMO was implemented in April 2026
Kadra	3 x 50		Some issues are being faced in software and tuning of EHGC at both power houses. Presently, in consultation with BHEL. Budgetary provision is made and work order needs to be placed.
Kodasalli	3 x 40		
Sharavati	Unit 2: 103.5 MW	Unit 1, 3-10 are in FGMO Unit 2: RGMO	Unit 2 have issues with unit processor controller of governor system. The procurement process is under progress. Implementation timeline is dependent on supply of UPC from M/s GE.
Supa	2 x 50		During the R&M works of Supa power house in FY 2024-25. It is proposed to take up replacement of existing EHGC system with new Digital governor and auto sequencer system with RGMO/FGMO feature.
NCTPP Stage II	2 x 600	RGMO	Problems with control system. BHEL had not yet responded. In the meantime, NCTPP II stated that the in-house team is planning try and implement FGMO in consultation with other plants
Neyveli STCMS (TAQA)	1 x 250		TNSLDC had instructed to implement FGMO along with AOH
SEPC	1 x 525	RGMO	53rd TCC: TNSLDC informed that SEPC has yet to shift to FGMO mode

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Valuthur Gas Turbine Power Station (VGTPS)	Phase I: 59.9+35.1 Phase II: 58.5+33.7		TNSLDC stated that implementation of FGMO is not feasible in the current setup. SRLDC also sought technical clarifications regarding how the control system was designed without incorporating governor control.
Bhadadri TPS	270 x 4	RGMO	**Spl Mtg 31.07.26** Unit 1: 14.06.2025 Unit 2: 14.06.2025 Unit 3: 09.06.2025 Unit 4: 11.06.2025
Singareni Collieries TPS	2 x 600		**51st TCC/54th SRPC**: In the testing phase. Implementation will occur once testing is completed **Spl Mtg 31.07.26** Implemented in both Unit 1 and Unit 2
Nagarjunasagar	Unit 1: 110 MW	Unit 2-8: already under FGMO	**Spl Mtg 31.07.26** Unit 1: PO is placed to BHEL. Implementation in progress
Simhadri STPS Stage I	2 x 500	Unit 1-2: RGMO	**Spl Mtg 31.07.26** Unit 1: FGMO implemnted Unit 2: Implementation is planned during overhauling in November/December 2026
Neyveli TS II	7 x 210	Unit 4-7: RGMO	**Spl Mtg 31.07.26:** FGMO implemented in both Stage I & II
CEPL (TN)	2 x 600	RGMO	**54th TCC**: FGMO in service from Unit 1: 24.02.2026 Unit 2: 18.02.2026
IL & FS (TN)	2 x 600	RGMO	**Spl Mtg 31.07.26:** FGMO implemented in both units in November 2024

- ***Generators still under RGMO mode are requested to expedite change over to FGMO mode.***

3. Analysis of Frequency Response Performance (FRP) during FY 2025-26 in Southern Region

As per IEGC, 2023 Regulation 30 (10) (q) – "*NLDCs, RLDCs and SLDCs* ***shall grade the median Frequency Response Performance annually, considering at least 10 reportable events***. *In case the median Frequency Response Performance is less than 0.75 as calculated as per Annexure-2, NLDC, RLDCs, SLDCs, as the case may be, after analyzing the FRP shall direct the concerned entities to take corrective action. All such cases shall be reported to the concerned RPC for its review.*"

IEGC, 2023 Annexure – 2, Point 8 – Criteria for Reportable Event

"*The frequency response characteristic (FRC) calculation shall be carried out by each control area for* ***any load or generation loss incident involving net change of more than 1000 MW of load or generation or a frequency change involving 0.1 Hz or more***. *The event shall be notified by the NLDC*."

The following reportable events were notified by NLDC during FY 2025-26 (Annexure-3a):

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Sl.No.	Date and Time	Details	Generation (+ve) / Load (-ve) Loss (MW) Generation (+ve) / Load (-ve) Loss (MW)	Solar/Non-solar hours
1	11-05-2025 16:51 HRS	WR_APL_MUNDRA	2832	Solar hours
2	12-06-2025 13:34 HRS	RE_Complex NR	1633	Solar hours
3	16-06-2025 11:51 HRS	ALIPURDUAR_ER and BHU-TAN	1322	Solar hours
4	22-07-2025 19:46 HRS	KOTESHWAR and TERHI NR	1437	Non-Solar hours
5	29-07-2025 14:55 HRS	RE_Complex NR	1100	Solar hours
6	01-09-2025 14:57 HRS	DELHI_NR	-1240	Solar hours
7	24-09-2025 11:04 HRS	TAMILNADU_SR	2500	Solar hours
8	24-09-2025 11:32 HRS	TAMILNADU_SR	1400	Solar hours
9	15-10-2025 12:11 HRS	BHADLA Pooling Station NR	1855	Solar hours
10	16-12-2025 06:34 HRS	Obra_C TPS, NR	1252	Solar hours
11	14-01-2026 13:38 HRS	RE Generation Complex and RAPP-D, NR	2281	Solar hours
12	14-01-2026 14:05 HRS	RE Generation Complex, NR	3787	Solar hours
13	14-01-2026 14:09 HRS	RE Generation Complex, NR	925	Non-Solar hours
14	30-01-2026 11:08 HRS	SIMHADRI, SR	-1214	Solar hours
15	13-02-2026 12:14 HRS	RE Generation Complex, NR	740	Solar hours
16	22-02-2026 22:56 HRS	Sterlite Thermal Power Plant, ER	1470	Non-Solar hours
17	22-02-2026 23:00 HRS	Sterlite Thermal Power Plant, ER	-1353	Non-Solar hours
18	03-03-2026 11:42 HRS	RE Generation Complex, NR	1197	Solar hours

3.1 FRP of STU Connected Generators during FY 2025-26

SLDCs/GENCOs are requested to present the FGMO performance of STU connected generators with the following analysis:

1. **Frequency Response Obligation (FRO) assigned to each generating station in STU control area**
2. **FGMO performance of each generating unit, i.e., Actual v/s Expected Performance wrt Generation immediately before the disturbance.**

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The Expected Performance may be calculated as below:

Step I: Calculate **Expected Change in Generation** that the governor should produce for the observed frequency deviation.

$$\Delta P = \frac{PA \times (FB - FA) \times 100}{(Droop\ \%) \times 50}$$

ΔP may be limited to ±5% of MCR for coal/lignite/gas and limited to ±10% of MCR for Hydro.

Where:

PA – Generation immediately before the disturbance

PB - Generation immediately after the disturbance

FA – System frequency immediately before the disturbance

FB – System frequency immediately after the disturbance

Droop % = Governor droop setting (3–6% for thermal and 0-10% for hydro)

Step 2: Calculate the Actual Change in Generation

Actual Change= **PB−PA**, where PB is Generation immediately after the disturbance

Step 3: Calculate Performance

$$Performance\ (wrt\ PA) = \frac{(PB - PA)}{\Delta P}$$

3. **FGMO performance of each generating unit, i.e., Actual v/s Expected Performance wrt MCR.**

The Expected Performance may be calculated as below:

Step I: Calculate **Expected Change in Generation** that the governor should produce for the observed frequency deviation.

$$\Delta P = \frac{MCR \times (FB - FA) \times 100}{(Droop\ \%) \times 50}$$

ΔP may be limited to ±5% of MCR for coal/lignite/gas and limited to ±10% of MCR for Hydro.

Where:

MCR – Maximum Continuous Rating of the unit

PA – Generation immediately before the disturbance

PB - Generation immediately after the disturbance

FA – System frequency immediately before the disturbance

FB – System frequency immediately after the disturbance

Droop % = Governor droop setting (3–6% for thermal and 0-10% for hydro)

Step 2: Calculate the Actual Change in Generation

Actual Change= **PB−PA**, where PB is Generation immediately after the disturbance

Step 3: Calculate Performance

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$$Performance\ (wrt\ PA) = \frac{(PB - PA)}{\Delta P}$$

4. **FRP performance of generating stations wrt FRO allotted**
5. **FGMO performance of generating stations wrt Generation of the station immediately before the disturbance**
6. **FGMO performance of generating stations wrt MCR of the station**

- ***The Performance of STU connected generators to be reviewed in the meeting. SLDCs/GENCOs are requested to present.***

Deliberations

APL Udupi

The performance of the generators was presented by KAR SLDC as tabulated below (Droop setting was 5%):

Sl.No	Events (Date and Time)	Control Area Response wrt FRO	Unit-1 Response wrt ideal response corresponding to current generation	Unit-1 Response wrt ideal response corresponding to MCR	Unit-2 Response wrt ideal response corresponding to current generation	Unit-2 Response wrt ideal response corresponding to MCR
1	11-05-2025 16:51HRS	7.22	273%	242%	195%	173%
2	12-06-2025 13:34HRS	No Gen	No Gen	No Gen	No Gen	No Gen
3	16-06-2025 11:51HRS	-0.38	-38%	-22%	No Gen	No Gen
4	22-07-2025 19:46HRS	No Gen	No Gen	No Gen	No Gen	No Gen
5	29-07-2025 14:55HRS	No Gen	No Gen	No Gen	No Gen	No Gen
6	01-09-2025 14:57HRS	1.28	58%	32%	74%	41%
7	24-09-2025 11:04HRS	0.26	No Gen	No Gen	27%	15%
8	24-09-2025 11:32HRS	0.02	No Gen	No Gen	2%	1%
9	15-10-2025 12:11HRS	1.26	79%	46%	49%	26%
10	16-12-2025 06:34HRS	-0.36	No Gen	No Gen	-23%	-21%
11	14-01-2026 13:38HRS	1.15	12%	11%	64%	55%
12	14-01-2026 14:05HRS	0.61	9%	8%	45%	39%
13	14-01-2026 14:09HRS	-0.04	-3%	-3%	0%	0%
14	30-01-2026 11:08HRS	0.59	92%	51%	-29%	-17%

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15	13-02-2026 12:14HRS	-0.69	-50%	-27%	-22%	-13%
16	22-02-2026 22:56HRS	1.92	69%	62%	11%	10%
17	22-02-2026 23:00HRS	-0.04	-2%	-2%	0%	0%
18	03-03-2026 11:42HRS	-0.98	-82%	-58%	3%	2%

KAR SLDC observed that the control-area response varied across the events. The response was satisfactory during certain events, including 11.05.2025, 01.09.2025 and 15.10.2025, whereas negative or poor responses were observed during few other events. It was also noted that the units were not on bar during some of the events. APL–Udupi was requested to explain the instances of negative and inadequate responses and clarify the operational constraints affecting the performance.

APL–Udupi stated that, in certain instances, a second frequency event occurred within five minutes of the preceding event, while the response to the first event was still being maintained. The generator sought clarification on the response expected when the second event occurred within this period, particularly when the direction of the frequency deviation changed.

SRLDC clarified that, where the subsequent event required a response in the opposite direction, the generator was required to respond in accordance with the new frequency deviation. Where both events were in the same direction, the response already provided could be maintained; however, if additional generation margin was available, the balance response was also expected to be provided. SRPC/SRLDC reiterated that the response should be assessed with reference to the direction of the frequency deviation and the available response margin. The discussion specifically covered the events of 14.01.2026 and 22.02.2026, which occurred within five minutes of each other.

With reference to the negative response observed during the event on 03.03.2026, APL–Udupi explained that the frequency had returned to 50 Hz and subsequently deviated again. The generator stated that the correction had been normalized when the frequency returned to 50 Hz and sought clarification on whether the correction was required to be maintained for five minutes. SRPC/SRLDC clarified that the response was to be assessed with reference to 50 Hz and that, once the frequency crossed the deadband of ±0.03 Hz, the required correction should correspond to the deviation from 50 Hz.

Regarding the event on 13.02.2026, APL–Udupi stated that FGMO had been taken out of service due to an equipment outage and that KAR SLDC was intimated whenever FGMO was unavailable. The generator was also asked to explain the negative response during the event on 14.01.2026, when the correction initiated for the event at 14:05 hrs was still persisting when another event occurred at 14:09 hrs. APL–Udupi explained that the second event occurred within five minutes of the first, while the earlier response was still in progress.

KAR SLDC also highlighted the negative response recorded during the event on 16.12.2025. APL–Udupi explained that 400 kV UPCL - Hebbanahaali evacuation line had been taken under outage for LILO works of 400 kV Kadandale SS and that KPTCL SAR had instructed the generating station to restrict generation (ex-bus) to 500 MW during the period. The generation at the time was stated to be 539 MW. KAR SLDC acknowledged the restriction and agreed that the same could be considered while assessing the response for the event.

During the discussion on the frequent unavailability of FGMO, APL–Udupi stated that FGMO was taken out of service during ramp-up, ramp-down, 400 kV evacuation line outages or equipment-related outages. The generator explained that, during ramp-up, an existing boiler load demand could not be withdrawn

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immediately to provide a downward correction. MS, SRPC clarified that the control logic should be modified to accommodate such operating conditions instead of taking FGMO out of service. It was further reiterated that the upward response during a fall in frequency should be provided wherever feasible, including during ramping and operation at technical minimum. APL–Udupi clarified that, below its technical minimum of approximately 330 MW, downward correction was not acted upon, while upward response was provided.

SRPC and SRLDC further discussed the reference frequency to be adopted for response assessment during sudden frequency changes. SRLDC clarified that the response was to be calculated with reference to 50 Hz, including where the frequency was initially within the deadband and subsequently crossed the deadband. It was explained that the response calculation considered the relevant measurement points and generation at those points, so that the response corresponding to the frequency deviation from 50 Hz was appropriately assessed. MS, SRPC advised APL–Udupi to examine whether additional logic was required to address sudden frequency changes, while distinguishing such cases from normal FGMO response.

KAR SLDC thereafter presented the unit-wise performance of Units 1 and 2. The presentation indicated satisfactory responses during certain events but also highlighted instances of negative or inadequate response, including cases where one unit performed satisfactorily while the other unit showed poor or negative response. For the events on 24.09.2025, the response of Unit 2 was particularly low, with responses of 15% and 1% reported for the two events. For the event on 30.01.2026, Unit 1 showed satisfactory performance whereas Unit 2 exhibited negative response. KPTCL SLDC also highlighted the poor unit-wise performance during the events on 13.02.2026, 22.02.2026 and 03.03.2026 and sought explanations from APL–Udupi.

APL–Udupi stated that, during the event on 03.03.2026, ramping activity was in progress and that this affected the response. For the event on 22.02.2026, the generator stated that Unit 2 was out of. For the event on 13.02.2026, APL–Udupi stated that FGMO of both units was unavailable. MS, SRPC expressed concern over the repeated instances of FGMO being taken out of service and reiterated that this should be done only for valid technical reasons. APL–Udupi agreed to review the cases and provide the relevant inputs.

APL–Udupi sought further clarification with reference to the event on 24.09.2025 at 11:32 hrs, stating that the frequency had dropped from approximately 50.05 Hz to 49.91 Hz and subsequently recovered, including a transient recovery towards 50.04 Hz. MS, SRPC clarified that the response was to be assessed based on the NLDC notified points and the steady-state frequency reached after the event, rather than on an instantaneous transient swing. It was reiterated that the measurement methodology had been explained during the earlier workshop and that the response assessment considered the frequency settling between the NLDC notified points.

APL–Udupi acknowledged the observations and stated that the clarifications would help it review and improve the FGMO response.

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The performance of the generators was presented by KAR SLDC as tabulated below (Droop setting was 5%):

Sl. No	Events (Date and Time)	Control Area Response wrt FRO	Unit-1 Response wrt ideal response corresponding	Unit-1 Response wrt ideal response	Unit-2 Response wrt ideal response corresponding	Unit-2 Response wrt ideal response	Unit-3 Response wrt ideal response corresponding	Unit-3 Response wrt ideal response	Unit-4 Response wrt ideal response corresponding	Unit-4 Response wrt ideal response

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			to current generation	corresponding to MCR	to current generation	corresponding to MCR	to current generation	corresponding to MCR	to current generation	corresponding to MCR
1	11-05-2025 16:51HRS	5.02	-46.47%	-45.30%	30.19%	29.30%	-4.59%	-3.22%	108.96%	113.29%
2	12-06-2025 13:34HRS	7.01	-13.36%	-11.10%	115.45%	71.03%	22.29%	8.41%	83.35%	67.28%
3	16-06-2025 11:51HRS	29.32	226.37%	131.84%	234.09%	120.95%	223.14%	156.97%	208.98%	150.06%
4	22-07-2025 19:46HRS	1.96	20.52%	19.19%	-17.26%	-15.19%	No Gen	No Gen	24.70%	22.74%
5	29-07-2025 14:55HRS	-0.62	-32.70%	-13.72%	-8.33%	-3.37%	10.21%	5.51%	-1.45%	-0.96%
6	01-09-2025 14:57HRS	1.71	No Gen	No Gen	-9.69%	-3.91%	44.60%	34.64%	-0.59%	-0.37%
7	24-09-2025 11:04HRS	6.52	0.00%	No Gen	75.42%	42.91%	57.65%	39.73%	44.45%	37.00%
8	24-09-2025 11:32HRS	2.65	No Gen	No Gen	13.49%	7.65%	72.05%	41.89%	-3.18%	-2.53%
9	15-10-2025 12:11HRS	7.47	37.90%	20.38%	-1.42%	-1.42%	85.94%	50.03%	94.16%	76.67%
10	16-12-2025 06:34HRS	4.58	71.65%	60.09%	26.74%	21.94%	-0.81%	-0.52%	No Gen	No Gen
11	14-01-2026 13:38HRS	2.72	72.79%	62.77%	-10.83%	-9.21%	0.98%	0.82%	No Gen	No Gen
12	14-01-2026 14:05HRS	0.78	-13.24%	-13.45%	23.01%	18.72%	24.82%	20.57%	No Gen	No Gen
13	14-01-2026 14:09HRS	-17.75	-210.22%	-202.22%	-10.24%	-8.32%	-153.99%	-125.58%	No Gen	No Gen
14	30-01-2026 11:08HRS	-0.39	-24.68%	-11.83%	-13.04%	-5.50%	13.70%	10.97%	No Gen	No Gen
15	13-02-2026 12:14HRS	5.35	287.60%	115.52%	421.86%	175.83%	-280.21%	-191.40%	No Gen	No Gen
16	22-02-2026 22:56HRS	14.23	87.33%	66.80%	81.43%	62.45%	61.04%	48.79%	No Gen	No Gen
17	22-02-2026 23:00HRS	4.21	20.44%	15.64%	22.58%	16.80%	32.50%	25.50%	No Gen	No Gen
18	03-03-2026 11:42HRS	2.52	30.27%	13.65%	33.16%	15.45%	29.18%	17.07%	1.57%	0.84%

KAR SLDC presented the control-area FRO performance of JSW for the notified frequency events. It was observed that the overall control-area response was satisfactory during most of the events, except for a few instances of negative or inadequate response. However, the unit-wise analysis revealed that satisfactory control-area performance in several instances was achieved due to the response from one unit compensating for the negative or inadequate response from other units.

KPTCL SLDC explained that, although the overall control-area response appeared satisfactory, the unit-wise assessment of Units 1 to 4 indicated negative or poor responses from individual units during several events. In certain cases, the negative response from Units 1 and 3 was offset by the response from Unit 4, resulting in an apparently satisfactory overall control-area response. Similar instances were observed during other events as well.

Poor or negative unit-wise responses were observed during other events, including the event on 29.07.2025, when all units exhibited poor performance. In the events during September 2025, the performance was mixed, with certain units responding satisfactorily while others exhibited poor or no response.

With respect to the subsequent events, KPTCL SLDC observed that Unit 3 exhibited negative response during December 2025, while the performance during January 2026 was also unsatisfactory in certain

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instances. In particular, during the second event on 14.01.2026, negative responses were observed from all three units. The performance during the event on 30.01.2026 was also not satisfactory.

KPTCL SLDC further stated that, during the event on 13.02.2026, Units 1 and 2 had performed satisfactorily, whereas Unit 3 exhibited negative response. During the event on 22.02.2026 at 22:56 hrs, the responses from all units were satisfactory. However, during the subsequent event on the same day at 23:00 hrs, the response from Unit 2 was limited. For the event on 03.03.2026, the performance was average with respect to current generation but poor with respect to MCR.

In view of the variations observed in unit-wise performance, KPTCL SLDC highlighted that the overall control-area response alone may not adequately reflect the performance of individual units, as the satisfactory response of one unit could compensate for the negative or inadequate response of another. The need to examine and improve the response of individual units was accordingly highlighted.

JSW representative was not present in the meeting to respond. KAR SLDC to communicate to JSWEL.

Raichur TPS

The performance of the generators was presented by KAR SLDC as tabulated below (Droop setting was 5%):

Sl.No	Events (Date and Time)	Control Area Response wrt FRO	Unit-1 Response wrt ideal response corresponding to current generation	Unit-1 Response wrt ideal response corresponding to MCR	Unit-2 Response wrt ideal response corresponding to current generation	Unit-2 Response wrt ideal response corresponding to MCR	Unit-3 Response wrt ideal response corresponding to current generation	Unit-3 Response wrt ideal response corresponding to MCR	Unit-4 Response wrt ideal response corresponding to current generation	Unit-4 Response wrt ideal response corresponding to MCR
1	11-05-2025 16:51HRS	37.89%	No Gen	No Gen	16.34%	14.39%	No Gen	No Gen	No Gen	No Gen
2	12-06-2025 13:34HRS	12.84%	No Gen	No Gen	23.35%	21.54%	No Gen	No Gen	No Gen	No Gen
3	16-06-2025 11:51HRS	27.54%	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
4	22-07-2025 19:46HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
5	29-07-2025 14:55HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
6	01-09-2025 14:57HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
7	24-09-2025 11:04HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
8	24-09-2025 11:32HRS	4.37%	No Gen	No Gen	31.66%	25.00%	No Gen	No Gen	No Gen	No Gen
9	15-10-2025 12:11HRS	34.13%	No Gen	No Gen	37.33%	28.95%	No Gen	No Gen	No Gen	No Gen
10	16-12-2025 06:34HRS	144.41%	No Gen	No Gen	101.99%	102.76%	No Gen	No Gen	171.59%	146.30%
11	14-01-2026 13:38HRS	26.87%	No Gen	No Gen	12.61%	9.91%	No Gen	No Gen	No Gen	No Gen
12	14-01-2026 14:05HRS	-2.19%	No Gen	No Gen	2.06%	1.85%	No Gen	No Gen	No Gen	No Gen
13	14-01-2026 14:09HRS	6.90%	No Gen	No Gen	-6.44%	-4.73%	No Gen	No Gen	No Gen	No Gen
14	30-01-2026 11:08HRS	55.44%	No Gen	No Gen	116.51%	91.20%	No Gen	No Gen	No Gen	No Gen

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15	13-02-2026 12:14HRS	159.59%	No Gen	No Gen	134.96%	106.23%	No Gen	No Gen	No Gen	No Gen
16	22-02-2026 22:56HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
17	22-02-2026 23:00HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
18	03-03-2026 11:42HRS	9.09%	No Gen	No Gen	-23.58%	-24.49%	3.30%	3.16%	17.58%	12.90%

Sl.No	**Events (Date and Time)**	**Control Area Response wrt FRO**	**Unit-5 Response wrt ideal response corresponding to current generation**	**Unit-5 Response wrt ideal response corresponding to MCR**	**Unit-6 Response wrt ideal response corresponding to current generation**	**Unit-6 Response wrt ideal response corresponding to MCR**	**Unit-7 Response wrt ideal response corresponding to current generation**	**Unit-7 Response wrt ideal response corresponding to MCR**	**Unit-8 Response wrt ideal response corresponding to current generation**	**Unit-8 Response wrt ideal response corresponding to MCR**
1	11-05-2025 16:51HRS	37.89%	-6.67%	-5.81%	-1.17%	-1.14%	No Gen	No Gen	11.53%	9.56%
2	12-06-2025 13:34HRS	12.84%	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	8.75%	7.79%
3	16-06-2025 11:51HRS	27.54%	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	88.08%	55.36%
4	22-07-2025 19:46HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
5	29-07-2025 14:55HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
6	01-09-2025 14:57HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
7	24-09-2025 11:04HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
8	24-09-2025 11:32HRS	4.37%	-22.39%	-16.43%	No Gen	No Gen	No Gen	No Gen	No Gen	0.00%
9	15-10-2025 12:11HRS	34.13%	15.70%	11.35%	No Gen	No Gen	No Gen	No Gen	53.25%	34.77%
10	16-12-2025 06:34HRS	144.41%	No Gen	No Gen	-63.16%	-46.68%	No Gen	No Gen	134.30%	120.21%
11	14-01-2026 13:38HRS	26.87%	9.78%	7.14%	9.78%	7.14%	No Gen	No Gen	37.54%	34.69%
12	14-01-2026 14:05HRS	-2.19%	-1.56%	-1.14%	-5.19%	-3.81%	No Gen	No Gen	-3.47%	-3.28%
13	14-01-2026 14:09HRS	6.90%	31.14%	22.84%	31.14%	22.84%	No Gen	No Gen	-21.69%	-20.49%
14	30-01-2026 11:08HRS	55.44%	-2.61%	-1.91%	0.87%	0.64%	2.72%	No Gen	53.54%	33.77%
15	13-02-2026 12:14HRS	159.59%	153.60%	111.72%	123.39%	89.74%	No Gen	No Gen	98.04%	62.51%
16	22-02-2026 22:56HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
17	22-02-2026 23:00HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
18	03-03-2026 11:42HRS	9.09%	N/A	-4.83%	No Gen	No Gen	No Gen	No Gen	31.29%	29.42%

KAR SLDC observed that RTPS had not furnished data for three to four events, while data for the remaining events had been submitted. Based on the available data, below-average performance was observed during the events of 11.05.2025 and 12.06.2025, while poor performance was observed during the event on 16.06.2025. For the event on 24.09.2025, the submitted data indicated very poor performance.

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KAR SLDC further observed that performance during the event in October 2025 was poor, whereas better performance was observed during the event on 16.12.2025. The performance during the events on 14.01.2026 was below average, with a negative response during the second event and very poor performance during the third event. Average performance was observed during the event on 30.01.2026, while excellent performance was reported during the event on 13.02.2026. Very poor performance was observed during the event in March 2026.

KAR SLDC observed that the station had failed to provide an adequate response in most of them. It was recalled that, as per the status furnished by RTPS in the previous meeting, Units 2, 3 and 8 were under FGMO, while Unit 1 was under prolonged outage. Units 4, 5 and 6 were expected to be brought under FGMO from October 2026. However, KAR SLDC noted that Units 2, 3 and 8 had also exhibited poor response during the events despite being under FGMO.

Ballary TPS

The performance of the generators was presented by KAR SLDC as tabulated below (Droop setting was 5%):

Sl.No	Events (Date and Time)	Control Area Response wrt FRO	Unit-1 Response wrt ideal response corresponding to current generation	Unit-1 Response wrt ideal response corresponding to MCR	Unit-2 Response wrt ideal response corresponding to current generation	Unit-2 Response wrt ideal response corresponding to MCR	Unit-3 Response wrt ideal response corresponding to current generation	Unit-3 Response wrt ideal response corresponding to MCR
1	11-05-2025 16:51HRS	3.55	272.13%	230.77%	216.42%	134.62%	No Gen	No Gen
2	12-06-2025 13:34HRS	0.26	No Gen	No Gen	-12.80%	-11.37%	37.41%	27.42%
3	16-06-2025 11:51HRS	-0.08	No Gen	No Gen	-17.50%	-9.90%	2.17%	1.28%
4	22-07-2025 19:46HRS	0.95	39.05%	35.35%	31.48%	27.87%	No Gen	No Gen
5	29-07-2025 14:55HRS	0.00	0.00%	0.00%	0.00%	0.00%	Data not available	Data not available
6	01-09-2025 14:57HRS	-0.10	-18.94%	-10.77%	No Gen	No Gen	No Gen	No Gen
7	24-09-2025 11:04HRS	0.49	0.00%	0.00%	73.53%	50.00%	Data not available	Data not available
8	24-09-2025 11:32HRS	0.71	53.00%	30.00%	52.26%	30.00%	No Gen	No Gen
9	15-10-2025 12:11HRS	0.51	74.44%	42.06%	18.38%	10.52%	No Gen	No Gen
10	16-12-2025 06:34HRS	1.92	193.50%	144.74%	70.74%	52.63%	Data not available	Data not available
11	14-01-2026 13:38HRS	-0.04	-46.08%	-34.72%	78.00%	59.15%	-21.39%	-20.60%
12	14-01-2026 14:05HRS	0.83	95.27%	78.80%	55.79%	45.28%	-7.60%	-6.80%
13	14-01-2026 14:09HRS	0.62	8.68%	7.35%	-20.57%	-16.84%	58.09%	52.70%
14	30-01-2026 11:08HRS	0.83	81.75%	48.30%	-8.21%	-4.91%	29.81%	30.17%
15	13-02-2026 12:14HRS	4.48	451.73%	269.23%	324.84%	192.31%	0.00%	0.00%
16	22-02-2026 22:56HRS	3.25	41.20%	40.54%	28.51%	27.03%	103.37%	106.18%

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17	22-02-2026 23:00HRS	0.55	15.95%	15.79%	11.08%	10.53%	7.21%	7.52%
18	03-03-2026 11:42HRS	2.18	99.72%	86.96%	83.19%	65.22%	71.75%	51.76%

KAR SLDC presented the event-wise FGMO performance of BTPS and observed that excellent performance was recorded during the event on 11.05.2025, while below-average performance was observed on 12.06.2025 and negative performance on 16.06.2025. Good performance was observed on 22.07.2025, whereas almost no response was observed on 29.07.2025. Negative performance was observed on 01.09.2025, average performance during the first event on 24.09.2025 and comparatively better performance during the second event on the same day. Average performance was observed on 15.10.2025, while excellent performance was recorded on 16.12.2025.

KAR SLDC further observed that negative performance was recorded during the first event on 14.01.2026, while good performance was observed during the second event and above-average performance during the third event. Good performance was observed on 30.01.2026, excellent performance on 13.02.2026 and during the first event on 22.02.2026, and average performance during the second event on 22.02.2026. Excellent performance was also observed during the event on 03.03.2026.

Regarding the negative performance during the first event on 14.01.2026, BTPS stated that coal flow had been increased and the control valves were fully open. It was further stated that Unit-1 generation had increased from 376 MW to 396 MW and Unit-2 generation from 379 MW to 399 MW, while Unit-3 was under MOH. However, KAR SLDC pointed out that, as per the data furnished by BTPS, Unit-1 generation had decreased from 376 MW to 369 MW during the event at 13:38 hrs. BTPS stated that the data would be verified and corrected, if required, and resubmitted.

Regarding the negative performance on 01.09.2025, BTPS stated that Units 1 and 2 were operating at technical minimum and, therefore, further reduction in generation could not be provided.

Regarding the event on 29.07.2025, ED, BTPS stated that no frequency variation had been observed at the station during the reported event period, with the frequency remaining at 50.090 Hz. It was further stated that Units 1 and 2 were operating at technical minimum, while Unit-3 was under MOH. Accordingly, no response was observed. KAR SLDC pointed out that the frequency variation had been recorded and the event had also been notified by NLDC. SRPC stated that a frequency variation of approximately 0.07 Hz had occurred during the event and that responses had been observed from several other generating units. SRLDC also confirmed that responses had been recorded from other units. BTPS agreed to re-examine the event data and rectify any discrepancies.

Regarding the event on 16.06.2025, BTPS stated that the frequency had remained low for approximately 12 minutes prior to the event and that the station had already increased generation above the reference load to the extent possible. Due to insufficient pumping pressure, further increase in generation could not be achieved. KAR SLDC pointed out that sufficient generation margin was available in the units during the event and requested BTPS to examine the unit-wise response. BTPS agreed to verify the performance and take corrective measures to avoid recurrence.

MS, SRPC referred to the logic provided by NTPC during the FGMO workshop regarding the distinction between gradual frequency variations and sudden frequency changes. It was advised that BTPS examine its control logic and explore necessary improvements to ensure appropriate response under both conditions. Each generating station was required to determine suitable criteria based on its operating characteristics, as response to both gradual and sudden frequency variations was mandatory under the Grid Code.

BTPS agreed to examine the existing control logic and carry out the necessary modifications to improve the FGMO response.

Yeramarus TPS

The performance of the generators was presented by KAR SLDC as tabulated below (Droop setting was 5%):

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Sl.No	Events (Date and Time)	Control Area Response wrt FRO	Unit-1 Response wrt ideal response corresponding to current generation	Unit-1 Response wrt ideal response corresponding to MCR	Unit-2 Response wrt ideal response corresponding to current generation	Unit-2 Response wrt ideal response corresponding to MCR
1	11-05-2025 16:51HRS	-2.82	-75.12	-60.10	-106.84	-70.43
2	12-06-2025 13:34HRS	-0.98	-41.85	-35.37	-14.31	-10.11
3	16-06-2025 11:51HRS	-0.31	-14.46	-7.27	-14.57	-7.27
4	22-07-2025 19:46HRS	0.00	No Gen	No Gen	0.38	0.33
5	29-07-2025 14:55HRS	Data not available	Data not available	Data not available	Data not available	Data not available
6	01-09-2025 14:57HRS	Data not available	Data not available	Data not available	Data not available	Data not available
7	24-09-2025 11:04HRS	Data not available	Data not available	Data not available	Data not available	Data not available
8	24-09-2025 11:32HRS	4.58	No Gen	No Gen	397.39	212.03
9	15-10-2025 12:11HRS	0.63	0.00	0.00	49.66	29.30
10	16-12-2025 06:34HRS	0.52	20.58	15.34	No Gen	No Gen
11	14-01-2026 13:38HRS	-0.05	126.71	89.52	No Gen	No Gen
12	14-01-2026 14:05HRS	0.05	4.23	3.05	No Gen	No Gen
13	14-01-2026 14:09HRS	-0.25	17.24	12.43	No Gen	No Gen
14	30-01-2026 11:08HRS	1.17	46.33	39.16	15.84	11.19
15	13-02-2026 12:14HRS	Data not available	Data not available	Data not available	Data not available	Data not available
16	22-02-2026 22:56HRS	Data not available	Data not available	Data not available	Data not available	Data not available
17	22-02-2026 23:00HRS	Data not available	Data not available	Data not available	Data not available	Data not available
18	03-03-2026 11:42HRS	No Gen	No Gen	No Gen	No Gen	No Gen

KAR SLDC presented the event-wise FGMO performance of YTPS and observed that data had been furnished for only 10 out of 18 events. Based on the available data, negative performance was observed during the event on 11.05.2025 and both events in June 2025. Almost no response was observed during the event on 22.07.2025, while data for 29.07.2025, 01.09.2025 and the first event on 24.09.2025 had not been furnished, whereas excellent performance was observed during the second event on the same day. Average performance was observed during the events on 15.10.2025 and 16.12.2025. No significant response was observed during all three events on 14.01.2026, while excellent performance was observed on 30.01.2026. Data for the February 2026 events had not been furnished, and no generation was available during the event on 03.03.2026.

Regarding the non-response during the three events on 14.01.2026, the representative of YTPS stated that the units were responding to frequency variations; however, due to poor coal quality, the required generation response could not be achieved. It was further informed that Unit-1 was operating under FGMO, while Unit-2 had been brought under FGMO on 14.03.2026 following rectification of control valve vibration issues and it is under observation.

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KAR SLDC pointed out that, during one of the events on 14.01.2026, the frequency had decreased from 49.991 Hz to 49.823 Hz, but the units had not responded despite having sufficient generation margin. The representative of YTPS agreed to examine the response.

MS, SRPC stated that, as per the Grid Code, generating units were not required to operate with control valves fully open and that sufficient generation margin needed to be maintained to provide the required frequency response. KAR SLDC reiterated that sufficient margin was available during the events, but the units had failed to respond in most cases.

KAR SLDC further expressed concern over the delay in furnishing event-wise data by YTPS despite repeated follow-ups with the generating station and its head office. It was stated that data had been furnished for only 10 out of 18 events and that the submitted data were incomplete in certain cases, including discrepancies in frequency values. KAR SLDC also stated that the prescribed formats had already been shared and repeated requests had been made through emails and telephone calls, but the required information had not been received. The representative of YTPS stated that the data had already been forwarded from the project and agreed to verify the matter with the ED (O&M) office and arrange submission of the pending information.

SRPC observed that the generating stations were being informed of the grid events shortly after their occurrence and that the required data could be compiled and furnished promptly. In this regard, SRLDC informed that event details were generally circulated by the following day. KAR SLDC stated that the event notifications received from SRLDC were immediately forwarded to the concerned generating stations and that KPCL was also directly marked in the emails circulated by SRLDC.

MS, SRPC advised that the event-wise information pertaining to FRO and FGMO performance, including the response with respect to the prevailing generation and MCR, be collected and furnished in the prescribed format in a timely manner.

Sharavathi GS

The performance of the generators was presented by KAR SLDC as tabulated below (Droop setting was 5%):

Sl.No	Events (Date and Time)	Control Area Response wrt FRO	Unit-1 Response wrt ideal response corresponding to current generation	Unit-1 Response wrt ideal response corresponding to MCR	Unit-2 Response wrt ideal response corresponding to current generation	Unit-2 Response wrt ideal response corresponding to MCR	Unit-3 Response wrt ideal response corresponding to current generation	Unit-3 Response wrt ideal response corresponding to MCR	Unit-4 Response wrt ideal response corresponding to current generation	Unit-4 Response wrt ideal response corresponding to MCR	Unit-5 Response wrt ideal response corresponding to current generation	Unit-5 Response wrt ideal response corresponding to MCR
1	11-05-2025 16:51HRS	0.38	62.88	14.48	-52.68	-12.29	471.49	110.38	-6.93	-4.69	-20.65	-4.80
2	12-06-2025 13:34HRS	1.82	187.50	72.17	328.26	77.98	No Gen	No Gen	371.22	87.00	340.57	80.72
3	16-06-2025 11:51HRS	-0.14	8.57	2.86	4.35	3.37	No Gen	No Gen	32.54	10.96	11.56	9.51
4	22-07-2025 19:46HRS	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available

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5	29-07-2025 14:55HRS	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble
6	01-09-2025 14:57HRS	1.11	70.61	47.72	26.18	15.08	No Gen	No Gen	30.46	24.64	76.55	62.30
7	24-09-2025 11:04HRS	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble
8	24-09-2025 11:32HRS	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble
9	15-10-2025 12:11HRS	-0.49	-34.06	-22.98	1.65	1.20	No Gen	No Gen	0.00	0.00	-15.88	-12.05
10	16-12-2025 06:34HRS	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble
11	14-01-2026 13:38HRS	1.03	50.14	41.07	5.64	4.14	No Gen	No Gen	58.73	42.92	52.71	38.62
12	14-01-2026 14:05HRS	0.73	45.04	37.00	50.11	36.71	No Gen	No Gen	33.58	24.78	23.66	17.38
13	14-01-2026 14:09HRS	-0.12	10.40	8.53	10.51	7.71	No Gen	No Gen	-7.26	-5.32	23.06	16.82
14	30-01-2026 11:08HRS	1.03	No Gen	No Gen	-2.56	-2.16	No Gen	No Gen	61.12	53.22	0.00	0.00
15	13-02-2026 12:14HRS	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble
16	22-02-2026 22:56HRS	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble
17	22-02-2026 23:00HRS	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble
18	03-03-2026 11:42HRS	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble

Sl.No	**Events (Date and Time)**	**Con-trol Area Re-sponse wrt FRO**	**Unit-6 Re-sponse wrt ideal re-sponse corre-spond-ing to current genera-tion**	**Unit-6 Re-sponse wrt ideal re-sponse corre-spond-ing to MCR**	**Unit-7 Re-sponse wrt ideal re-sponse corre-spond-ing to current genera-tion**	**Unit-7 Re-sponse wrt ideal re-sponse corre-spond-ing to MCR**	**Unit-8 Re-sponse wrt ideal re-sponse corre-spond-ing to current genera-tion**	**Unit-8 Re-sponse wrt ideal re-sponse corre-spond-ing to MCR**	**Unit-9 Re-sponse wrt ideal re-sponse corre-spond-ing to current genera-tion**	**Unit-9 Re-sponse wrt ideal re-sponse corre-spond-ing to MCR**	**Unit-10 Re-sponse wrt ideal re-sponse corre-spond-ing to current genera-tion**	**Unit-10 Re-sponse wrt ideal re-sponse corre-spond-ing to MCR**
1	11-05-2025 16:51HRS	0.38	-24.15	-5.64	-1.66	-0.38	77.01	17.85	-31.92	-23.26	114.29	33.41

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2	12-06-2025 13:34HRS	1.82	230.96	55.14	306.61	72.85	204.35	77.70	118.09	57.00	47.93	14.01
3	16-06-2025 11:51HRS	-0.14	36.20	29.90	-22.28	-18.48	-55.63	-46.11	-21.55	-17.80	-3.89	-1.12
4	22-07-2025 19:46HRS	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble
5	29-07-2025 14:55HRS	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble
6	01-09-2025 14:57HRS	1.11	0.00	0.00	71.03	57.68	63.44	51.46	71.39	57.86	57.03	46.22
7	24-09-2025 11:04HRS	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble
8	24-09-2025 11:32HRS	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble
9	15-10-2025 12:11HRS	-0.49	42.49	36.97	-95.82	-73.26	-21.32	-16.25	-39.62	-30.09	-58.24	-44.34
10	16-12-2025 06:34HRS	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble
11	14-01-2026 13:38HRS	1.03	112.28	64.47	45.22	33.11	39.75	32.62	56.36	41.26	58.24	42.62
12	14-01-2026 14:05HRS	0.73	58.99	34.23	63.16	46.18	38.29	31.57	12.98	9.54	2.43	1.79
13	14-01-2026 14:09HRS	-0.12	-84.72	-49.95	-48.04	-35.18	27.32	22.35	3.36	2.45	-20.25	-14.91
14	30-01-2026 11:08HRS	1.03	101.62	58.99	70.74	61.72	72.51	70.46	62.40	54.44	98.68	52.60
15	13-02-2026 12:14HRS	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble
16	22-02-2026 22:56HRS	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble
17	22-02-2026 23:00HRS	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble
18	03-03-2026 11:42HRS	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble	Data not availa-ble

KAR SLDC presented the event-wise FGMO performance of Sharavathi Generating Station (SGS) and observed that average performance was recorded during the event on 11.05.2025, while excellent performance was observed on 12.06.2025 and negative performance on 16.06.2025. It was further observed that data had not been furnished for several events. Good performance was observed on 01.09.2025, while data for both events on 24.09.2025 had not been furnished. Negative performance was observed on 15.10.2025, and data for the event on 16.12.2025 had not been furnished. Good performance was observed during the

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first two events on 14.01.2026, whereas negative performance was recorded during the third event. Excellent performance was observed on 30.01.2026, while data for the events in February and March 2026 had not been furnished.

Regarding the negative performance on 16.06.2025, the representative of SGS stated that the generating units had responded to the frequency variation, but the duration available for the response was insufficient. KAR SLDC pointed out that the event response was assessed between 11:51:43 hrs and 11:53:50 hrs, which provided sufficient time for the units to respond. It was further clarified that the performance presented was for the entire generating station and not for individual units. The representative of SGS agreed to re-examine the event data, make necessary corrections and resubmit the same.

MS, SRPC observed that SGS had previously demonstrated good frequency response and sought clarification regarding the deterioration in performance. KAR SLDC also stated that better performance was expected from SGS, considering that its generating units generally remained in operation throughout the year.

Regarding the negative performance on 15.10.2025, KAR SLDC informed that approximately eight units were on bar during the event. However, the unit-wise analysis indicated that none of the units had provided an adequate response, except Unit-6, which had recorded a response of approximately 40%.

SGS stated that no specific intervention had been noticed during the event and that the possibility of operator intervention would be examined. KAR SLDC pointed out that the generation had remained almost constant during the event, indicating that the required FGMO response had not been observed. SGS stated to verify the data pertaining to the events on 16.06.2025 and 15.10.2025 and resubmit the corrected information.

Nagjhari PH

The performance of the generators was presented by KAR SLDC as tabulated below (Droop setting was 4%):

Sl.No	Events (Date and Time)	Control Area Response wrt FRO	Unit-1 Response wrt ideal response corresponding to current generation	Unit-1 Response wrt ideal response corresponding to MCR	Unit-2 Response wrt ideal response corresponding to current generation	Unit-2 Response wrt ideal response corresponding to MCR	Unit-3 Response wrt ideal response corresponding to current generation	Unit-3 Response wrt ideal response corresponding to MCR	Unit-4 Response wrt ideal response corresponding to current generation	Unit-4 Response wrt ideal response corresponding to MCR
1	11-05-2025 16:51HRS	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available
2	12-06-2025 13:34HRS	1.27	124.69	88.72	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
3	16-06-2025 11:51HRS	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available
4	22-07-2025 19:46HRS	5.33	88.73	81.96	No Gen	No Gen	249.15	195.69	106.81	88.24
5	29-07-2025 14:55HRS	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available
6	01-09-2025 14:57HRS	0.64	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	96.64	90.10
7	24-09-2025 11:04HRS	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available
8	24-09-2025 11:32HRS	2.30	122.41	111.61	No Gen	No Gen	No Gen	No Gen	152.06	106.62

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9	15-10-2025 12:11HRS	1.96	118.07	85.93	No Gen	No Gen	No Gen	No Gen	124.57	90.90
10	16-12-2025 06:34HRS	3.34	98.96	92.39	No Gen	No Gen	No Gen	No Gen	305.57	200.83
11	14-01-2026 13:38HRS	1.77	79.63	71.90	No Gen	No Gen	125.37	94.05	91.45	82.38
12	14-01-2026 14:05HRS	0.80	63.76	59.21	No Gen	No Gen	57.90	50.40	2.15	2.14
13	14-01-2026 14:09HRS	2.53	93.63	91.43	No Gen	No Gen	223.17	188.84	74.82	73.47
14	30-01-2026 11:08HRS	3.25	100.77	95.47	No Gen	No Gen	199.67	178.49	No Gen	No Gen
15	13-02-2026 12:14HRS	3.06	133.21	90.15	No Gen	No Gen	261.41	173.46	No Gen	No Gen
16	22-02-2026 22:56HRS	4.82	121.08	82.48	No Gen	No Gen	123.93	82.76	135.09	92.17
17	22-02-2026 23:00HRS	4.88	119.23	83.61	No Gen	No Gen	149.48	104.72	115.36	81.50
18	03-03-2026 11:42HRS	2.50	127.31	90.43	No Gen	No Gen	114.00	82.32	No Gen	No Gen

Varahi PH

The performance of the generators was presented by KAR SLDC as tabulated below (Droop setting was 4%):

Sl.No	Events (Date and Time)	Control Area Response wrt FRO	Unit-1 Response wrt ideal response corresponding to current generation	Unit-1 Response wrt ideal response corresponding to MCR	Unit-2 Response wrt ideal response corresponding to current generation	Unit-2 Response wrt ideal response corresponding to MCR	Unit-3 Response wrt ideal response corresponding to current generation	Unit-3 Response wrt ideal response corresponding to MCR	Unit-4 Response wrt ideal response corresponding to current generation	Unit-4 Response wrt ideal response corresponding to MCR
1	11-05-2025 16:51HRS	4.09	416.31	56.07	473.08	63.71	298.59	40.01	454.12	60.77
2	12-06-2025 13:34HRS	0.56	73.31	9.62	57.19	7.21	No Gen	No Gen	101.55	13.26
3	16-06-2025 11:51HRS	0.79	-3.44	-3.47	3.84	3.85	No Gen	No Gen	41.76	41.99
4	22-07-2025 19:46HRS	15.54	227.83	129.11	261.64	146.41	224.08	127.25	242.63	137.51
5	29-07-2025 14:55HRS	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available
6	01-09-2025 14:57HRS	3.06	73.50	51.64	97.02	67.56	44.88	31.41	28.37	14.54
7	24-09-2025 11:04HRS	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available
8	24-09-2025 11:32HRS	-1.22	No Gen	No Gen	-382.95	-77.17	39.87	6.85	24.49	4.33
9	15-10-2025 12:11HRS	-1.58	-89.56	-11.91	-201.74	-27.44	-203.89	-28.38	-126.47	-17.38
10	16-12-2025 06:34HRS	8.57	1140.62	122.06	1051.01	113.34	1000.80	109.07	1071.98	117.52
11	14-01-2026 13:38HRS	3.25	67.79	31.65	111.09	51.17	406.38	46.00	396.41	46.21
12	14-01-2026 14:05HRS	5.03	114.03	56.30	156.35	75.92	487.75	68.02	492.20	70.82

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13	14-01-2026 14:09HRS	6.16	159.17	84.18	185.09	98.04	364.37	66.73	439.11	83.57
14	30-01-2026 11:08HRS	4.86	117.11	90.52	No Gen	No Gen	291.65	84.04	137.31	87.23
15	13-02-2026 12:14HRS	1.02	34.49	20.39	77.04	45.87	0.00	0.00	-71.01	-11.16
16	22-02-2026 22:56HRS	0.19	34.63	2.07	-85.70	-5.38	17.34	1.03	88.56	5.44
17	22-02-2026 23:00HRS	5.06	288.93	42.02	329.17	49.35	296.67	43.28	281.71	41.24
18	03-03-2026 11:42HRS	-1.00	-35.50	-20.41	-9.96	-5.76	-17.99	-9.33	-78.97	-18.22

KAR SLDC further presented the event-wise FGMO performance of Varahi Underground Power House (VUGPH) and observed that good performance was recorded during most of the events for which data had been furnished. However, negative performance was observed during the events on 24.09.2025 and 15.10.2025.

Regarding the negative performance on 24.09.2025, the representative of VUGPH stated that the units were operating at minimum load and that the generation variation was approximately 0.5 MW per unit, amounting to around 2 MW for all four units combined. KAR SLDC pointed out that the frequency had decreased during the event and that the generating units were expected to increase generation in response to the frequency fall. It was further clarified that operation at minimum load did not restrict the units from increasing generation.

KAR SLDC also pointed out that a similar situation had occurred during the event on 15.10.2025, wherein the frequency had decreased but the generating units had failed to provide the required response.

STRP, Kadra and Kodasalli PH

KAR SLDC informed that the required second-wise data from STRP, Kadra and Kodasalli Power Houses were not available in the existing system. The concerned generating stations had stated that the data could be furnished only after completion of R&M works.

Mettur TPS Stage-II

The performance of the generators was presented by TN SLDC as tabulated below (Droop setting was 5%):

Sl.No	Events (Date and Time)	Control Area Response wrt FRO	Unit-1 Response wrt ideal response corresponding to current generation	Unit-1 Response wrt ideal response corresponding to MCR
1	11-05-2025 16:51HRS	6.72	463.46%	274.49%
2	12-06-2025 13:34HRS	No Gen	No Gen	No Gen
3	16-06-2025 11:51HRS	2.59	176.79%	105.77%
4	22-07-2025 19:46HRS	2.38	105.05%	62.44%
5	29-07-2025 14:55HRS	1.36	93.00%	55.45%
6	01-09-2025 14:57HRS	3.06	207.97%	125.04%
7	24-09-2025 11:04HRS	1.53	104.47%	62.62%
8	24-09-2025 11:32HRS	1.93	130.91%	79.00%
9	15-10-2025 12:11HRS	No Gen	No Gen	No Gen
10	16-12-2025 06:34HRS	No Gen	No Gen	No Gen
11	14-01-2026 13:38HRS	1.86	126.63%	75.86%
12	14-01-2026 14:05HRS	0.70	62.32%	38.22%
13	14-01-2026 14:09HRS	-1.12	-74.13%	-45.64%
14	30-01-2026 11:08HRS	-0.22	-14.60%	-8.85%

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15	13-02-2026 12:14HRS	22.61	1542.23%	923.08%
16	22-02-2026 22:56HRS	6.09	268.50%	159.90%
17	22-02-2026 23:00HRS	-0.21	-9.06%	-5.40%
18	03-03-2026 11:42HRS	2.38	163.10%	97.22%

TN SLDC presented the event-wise FGMO performance of MTPS Stage-II and informed that, out of 18 events, the unit was in service during 15 events. Of these, good performance was observed during 11 events, below-average performance during one event and poor performance during three events. The unit was not in service during the remaining three events.

MS, SRPC enquired whether MTPS Stage-II was operating under FGMO or RGMO mode. TN SLDC confirmed that the unit was operating under FGMO mode and stated that poor performance was observed only during a few events.

MTPS Stage-II informed that, during load raising and mill changeover, the operators temporarily shifted the CCS to manual mode, resulting in FGMO being switched off. It was further stated that, during certain events, the frequency variations had occurred within short intervals, and FGMO had shifted to manual mode. The representative attributed the poor performance during three events to FGMO being in off condition.

SRLDC clarified that FGMO should remain in service at all times and should not be switched off during load variations or mill changeover. It was further stated that, as per IEGC, generating units were required to provide frequency response whenever frequency variations occurred, including during ramping up or ramping down of generation.

The representative of MTPS Stage-II explained that, as per the existing DCS logic, CCS had to be shifted to manual mode during mill changeover, without which the mill changeover could not be carried out. It was informed that each mill changeover generally required around 10–15 minutes, depending on the load variation.

SRLDC observed that switching off FGMO during mill changeover would result in the unit being unable to provide frequency response during such periods. It was clarified that IEGC did not provide any exemption from frequency response requirements during ramping up, ramping down or mill changeover. The only exceptions were that downward response was not expected when the unit was operating at technical minimum and upward response was not expected when the unit was operating at 105% of its rated capacity.

MTPS Stage-II agreed to examine the existing DCS control logic and take necessary corrective measures to ensure that FGMO remained in service as required under IEGC.

Mettur TPS Stage-I

The performance of the generators was presented by TN SLDC as tabulated below:

Sl.No	Events (Date and Time)	Control Area Response wrt FRO	Unit-1 Response wrt FRO	Unit-2 Response wrt FRO	Unit-3 Response wrt FRO	Unit-4 Response wrt FRO
1	11-05-2025 16:51HRS	Data not available	Data not available	Data not available	Data not available	Data not available
2	12-06-2025 13:34HRS	Data not available	Data not available	Data not available	Data not available	Data not available
3	16-06-2025 11:51HRS	Data not available	Data not available	Data not available	Data not available	Data not available
4	22-07-2025 19:46HRS	4.09	2.55	2.29	-0.10	11.32
5	29-07-2025 14:55HRS	1.03	No Gen	0.27	1.30	1.45
6	01-09-2025 14:57HRS	0.42	0.36	0.32	0.59	No Gen
7	24-09-2025 11:04HRS	1.02	1.12	0.57	No Gen	1.37

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8	24-09-2025 11:32HRS	2.47	5.11	0.36	No Gen	1.93
9	15-10-2025 12:11HRS	2.19	4.16	0.21	No Gen	No Gen
10	16-12-2025 06:34HRS	Data not available	Data not available	Data not available	Data not available	Data not available
11	14-01-2026 13:38HRS	Data not available	Data not available	Data not available	Data not available	Data not available
12	14-01-2026 14:05HRS	Data not available	Data not available	Data not available	Data not available	Data not available
13	14-01-2026 14:09HRS	Data not available	Data not available	Data not available	Data not available	Data not available
14	30-01-2026 11:08HRS	Data not available	Data not available	Data not available	Data not available	Data not available
15	13-02-2026 12:14HRS	4.77	0.95	1.51	1.32	15.30
16	22-02-2026 22:56HRS	4.67	10.13	-0.95	0.42	9.08
17	22-02-2026 23:00HRS	1.04	Data not available	Data not available	Data not available	Data not available
18	03-03-2026 11:42HRS	Data not available	Data not available	Data not available	Data not available	Data not available

TN SLDC presented the event-wise FGMO performance of MTPS Stage-I and informed that data had been furnished for only 9 out of 18 events. It was observed that the performance of the generating units was satisfactory during certain events, while poor responses were recorded during a few events. Further, some of the units were not in service during the events under consideration.

SRPC enquired about the non-submission of data for the remaining events. MTPS Stage-I stated that the details of the remaining events would be furnished.

TN SLDC further presented the unit-wise performance and observed that, during the event on 22.07.2025, Units 1, 2 and 4 had provided positive responses, while Unit 3 had recorded a negative response. During the event on 29.07.2025, Unit 1 was not in service, while the responses of Units 2, 3 and 4 were relatively low. During the event on 01.09.2025, the responses of Units 1, 2 and 3 were low, while Unit 4 was not in service.

Regarding the two events on 24.09.2025, TN SLDC observed that Unit 3 was not in service during both events. During the first event, Units 1 and 4 had provided comparatively better responses than Unit 2. During the second event, Unit 1 had provided a higher response, while the response of Unit 2 remained low.

During the event on 15.10.2025, only Units 1 and 2 were in service, of which Unit 1 had provided a good response, while Unit 2 had recorded a low response. During the event on 13.02.2026, Unit 4 had provided a significantly higher response compared to the other units. During the event on 22.02.2026 at 22:56 hrs, Units 1 and 4 had provided good responses, while Unit 2 had recorded a negative response and Unit 3 had provided a low response.

TN SLDC observed that the responses of the generating units were not consistent across the events and that the performance of certain units was affected by manual intervention and operation under Free Governor Mode. It was further stated that, based on the available data, Units 1 and 4 had generally provided better responses compared to the other units.

TN SLDC informed that the performance analysis would be updated upon receipt of the remaining event-wise data from MTPS Stage-I and shared through email.

SRPC enquired whether the performance analysis had also been carried out with respect to the ideal response corresponding to 5% of MCR and 5% of actual generation, apart from the response with respect to FRO. TN SLDC stated that the same would be consolidated and the details would be furnished.

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Tuticorin TPS

The performance of the generators was presented by TN SLDC as tabulated below:

Sl.No	Events (Date and Time)	Control Area Response wrt FRO	Unit-1 Response wrt FRO	Unit-2 Response wrt FRO	Unit-3 Response wrt FRO	Unit-4 Response wrt FRO	Unit-5 Response wrt FRO
1	11-05-2025 16:51HRS	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available
2	12-06-2025 13:34HRS	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available
3	16-06-2025 11:51HRS	-0.76	No Gen	No Gen	-2.48	-0.16	0.05
4	22-07-2025 19:46HRS	3.78	No Gen	No Gen	-0.89	-0.05	-0.63
5	29-07-2025 14:55HRS	0.49	No Gen	No Gen	1.43	0.03	0.00
6	01-09-2025 14:57HRS	-0.29	No Gen	No Gen	0.00	-0.31	-0.27
7	24-09-2025 11:04HRS	0.13	No Gen	No Gen	0.00	0.32	0.00
8	24-09-2025 11:32HRS	0.06	No Gen	No Gen	0.00	0.06	0.00
9	15-10-2025 12:11HRS	0.08	No Gen	No Gen	1.24	-0.60	-0.39
10	16-12-2025 06:34HRS	0.09	No Gen	No Gen	0.00	0.00	0.18
11	14-01-2026 13:38HRS	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available
12	14-01-2026 14:05HRS	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available
13	14-01-2026 14:09HRS	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available
14	30-01-2026 11:08HRS	-3.86	No Gen	No Gen	-11.49	-0.08	0.00
15	13-02-2026 12:14HRS	1.75	No Gen	No Gen	4.55	0.35	0.35
16	22-02-2026 22:56HRS	2.88	No Gen	No Gen	8.24	0.19	-0.48
17	22-02-2026 23:00HRS	0.34	No Gen	No Gen	0.93	0.04	0.04
18	03-03-2026 11:42HRS	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available

TN SLDC presented the event-wise FGMO performance of Tuticorin Thermal Power Station (TTPS) and informed that data had been furnished for 12 out of 18 events. It was observed that negative control area responses were recorded during the events on 16.06.2025 (-0.76), 01.09.2025 (-0.29) and 30.01.2026 (-3.86). During the remaining events, the responses were generally low, except for a few events where comparatively better responses were observed. It was further informed that Units 1 and 2 were not in service during the period under review.

MS, SRPC enquired whether the generating units were operating under FGMO or RGMO. TN SLDC confirmed that the units were operating under FGMO. MS, SRPC expressed concern over the poor frequency response performance of TTPS despite the units being under FGMO.

Regarding the negative response observed on 30.01.2026, MS, SRPC enquired whether the generating units had ramped in the direction opposite to the required frequency response. TN SLDC informed that the grid frequency had increased from 49.892 Hz to 49.948 Hz during the event and that Unit 3 generation had

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increased from approximately 169 MW to 197 MW, resulting in a response opposite to the frequency variation.

TTPS stated that the frequency variation during certain events was minimal and that the control system had not responded adequately. Further, certain control system and instrumentation issues, including controller hunting, had been identified, and corrective measures had reportedly been undertaken.

SRPC observed that minimal frequency variation could not be treated as a valid justification for the absence of frequency response, as the generating units were required to respond to frequency variations in accordance with the applicable regulations.

TN SLDC further stated that the frequency response performance of TTPS during the period under review was generally poor and required improvement. It was informed that the performance would be reviewed regularly in the monthly meetings to assess the effectiveness of the corrective measures undertaken. TN SLDC stated that letters would be issued to TTPS and MTPS Stage-I regarding their frequency response performance and the need for improvement.

Further, SRPC enquired about the action plan for implementation of FGMO at NCTPS Stage-II, which was presently operating under RGMO. The representative of NCTPS Stage-II informed that conversion from RGMO to FGMO was planned to be completed by December 2026 with the assistance of BHEL.

SRPC advised NCTPS Stage-II to complete the implementation of FGMO at the earliest to ensure compliance with the provisions of IEGC.

North Chennai TPS – Stage I

The performance of the generators was presented by TN SLDC as tabulated below:

Sl.No	Events (Date and Time)	Control Area Response wrt FRO	Unit-1 Response wrt FRO	Unit-2 Response wrt FRO	Unit-3 Response wrt FRO
1	11-05-2025 16:51HRS	-2.34	Trip	-2.34	-0.33
2	12-06-2025 13:34HRS	1.82	0.64	0.2	0.81
3	16-06-2025 11:51HRS	1.42	1.01	0.61	Trip
4	22-07-2025 19:46HRS	3.78	1.26	1.22	1.12
5	29-07-2025 14:55HRS	0	-0.12	Trip	0
6	01-09-2025 14:57HRS	0	Trip	0	Trip
7	24-09-2025 11:04HRS	0	Trip	0	Trip
8	24-09-2025 11:32HRS	0	Trip	0	Trip
9	15-10-2025 12:11HRS	1.22	0.72	0.67	-0.31
10	16-12-2025 06:34HRS	1.14	0.3	0.26	0.4
11	14-01-2026 13:38HRS	0.62	0.23	0.39	AOH
12	14-01-2026 14:05HRS	0.78	0.41	0.36	AOH
13	14-01-2026 14:09HRS	-0.18	-0.18	0	AOH
14	30-01-2026 11:08HRS	1.55	0.63	0.94	Trip
15	13-02-2026 12:14HRS	3.34	2.78	0.37	0.91
16	22-02-2026 22:56HRS	4.02	1.74	1.50	1.28
17	22-02-2026 23:00HRS	2.42	0.3	1.12	1.04
18	03-03-2026 11:42HRS	0.63	0.5	0.25	Trip

TN SLDC presented the event-wise FGMO performance of NCTPS Stage-I and informed that, out of 18 events, negative responses were observed during two events, while the generating units had tripped or were not in service during four events. During the remaining 12 events, the generating units had generally provided positive responses.

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SRPC pointed out that, during the event on 11.05.2025 recorded negative responses. The representative of NCTPS Stage-I informed that the control programme had subsequently been corrected and that improved responses were observed during the subsequent events.

SRLDC observed that the overall FRP performance of Tamil Nadu remained poor, with a median FRP of 0.45, despite the responses recorded by individual generating units. It was further stated that the Tamil Nadu State Grid Code had already been notified and contained provisions relating to primary frequency response, similar to those specified under IEGC. As per these provisions, the primary frequency response during grid events was required to be verified by TN SLDC, and the generating stations were required to furnish the relevant data to SLDC within two days. Further, newly commissioned generating units were required to demonstrate primary frequency response at different loading conditions for positive and negative frequency variations.

SRLDC also highlighted that, as per the Tamil Nadu State Grid Code, prior permission of SLDC was required for switching off or bypassing FGMO and that such operations were not permitted without the necessary approval.

SRPC concurred with the observations of SRLDC and advised TN SLDC to take necessary measures to improve the overall frequency response performance of the State.

TN SLDC agreed with the observations and informed that letters would be issued to all thermal generating stations regarding the deficiencies in frequency response performance. It was further stated that the matter would be brought to the notice of the higher management and that the performance of generating stations would be reviewed regularly in the monthly meetings.

Further, SRPC enquired about the frequency response performance of hydro generating stations and other State grid-connected generators. TN SLDC informed that hydro generating stations were generally operated during peak demand periods and that their generation was varied based on system demand requirements. Accordingly, some of these stations were not in service during the identified frequency events.

SRPC advised TN SLDC to include the event-wise frequency response performance of hydro generating stations, other State grid-connected generators and IPPs in future meetings. It was further advised that the status of generating units not in service during the respective events may be indicated as such. TN SLDC noted the same.

Idukki GU

The performance of the generators was presented by Kerala SLDC as tabulated below (Droop setting was 4%):

Sl. No	Events (Date and Time)	Control Area Response wrt FRO	Unit-1 Response wrt ideal response corresponding to current generation	Unit-1 Response wrt ideal response corresponding to MCR	Unit-2 Response wrt ideal response corresponding to current generation	Unit-2 Response wrt ideal response corresponding to MCR	Unit-3 Response wrt ideal response corresponding to current generation	Unit-3 Response wrt ideal response corresponding to MCR	Unit-4 Response wrt ideal response corresponding to current generation	Unit-4 Response wrt ideal response corresponding to MCR	Unit-5 Response wrt ideal response corresponding to current generation	Unit-5 Response wrt ideal response corresponding to MCR	Unit-6 Response wrt ideal response corresponding to current generation	Unit-6 Response wrt ideal response corresponding to MCR
1	11-05-2025 16:51HRS	2.76	50%	49%	5%	5%	No Gen	No Gen	326%	104%	160%	137%	158%	140%
2	12-06-2025 13:34HRS	0.95	19%	19%	17%	16%	41%	34%	46%	42%	20%	18%	21%	19%

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3	16-06-2025 11:51HRS	-1.03	-83%	-60%	-57%	-55%	-56%	-46%	-10%	-7%	9%	7%	1%	0%
4	22-07-2025 19:46HRS	1.00	16%	16%	15%	15%	No Gen	No Gen	24%	23%	28%	26%	20%	19%
5	29-07-2025 14:55HRS	0.57	82%	55%	44%	31%	No Gen	No Gen	12%	4%	No Gen	No Gen	3%	1%
6	01-09-2025 14:57HRS	1.19	69%	52%	88%	66%	No Gen	No Gen	23%	21%	No Gen	No Gen	39%	15%
7	24-09-2025 11:04HRS	1.05	345%	84%	341%	81%	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
8	24-09-2025 11:32HRS	1.09	204%	90%	185%	81%	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
9	15-10-2025 12:11HRS	0.14	30%	8%	No Gen	No Gen	53%	15%	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
10	16-12-2025 06:34HRS	8.52	305%	186%	356%	216%	316%	227%	202%	136%	No Gen	No Gen	126%	87%
11	14-01-2026 13:38HRS	0.06	-13%	-3%	No Gen	No Gen	2%	0%	44%	11%	No Gen	No Gen	No Gen	No Gen
12	14-01-2026 14:05HRS	0.15	3%	1%	No Gen	No Gen	-6%	-1%	87%	24%	No Gen	No Gen	No Gen	No Gen
13	14-01-2026 14:09HRS	0.30	-27%	-6%	No Gen	No Gen	3%	1%	170%	52%	No Gen	No Gen	No Gen	No Gen
14	30-01-2026 11:08HRS	-2.21	No Gen	No Gen	-274%	-163%	-294%	-175%	-26%	-8%	No Gen	No Gen	No Gen	No Gen
15	13-02-2026 12:14HRS	5.98	No Gen	No Gen	918%	427%	1034 %	489%	No Gen	No Gen	No Gen	No Gen	72%	23%
16	22-02-2026 22:56HRS	6.03	378%	214%	311%	176%	300%	175%	40%	29%	5%	3%	10%	7%
17	22-02-2026 23:00HRS	-1.18	53%	33%	62%	39%	59%	37%	7%	5%	5%	3%	2%	2%
18	03-03-2026 11:42HRS	0.05	4%	1%	No Gen	No Gen	16%	4%	No Gen	No Gen	No Gen	No Gen	12%	3%

Sabarigiri GU

The performance of the generators was presented by Kerala SLDC as tabulated below (Droop setting was 4%):

Sl. No	**Events (Date and Time)**	**Con-trol Area Re-spons**	**Unit-1 Re-sponse wrt ideal re-sponse**	**Unit-1 Re-sponse wrt ideal re-sponse**	**Unit-2 Re-sponse wrt ideal re-sponse**	**Unit-2 Re-sponse wrt ideal re-sponse**	**Unit-3 Re-sponse wrt ideal re-sponse**	**Unit-3 Re-sponse wrt ideal re-sponse**	**Unit-4 Re-sponse wrt ideal re-sponse**	**Unit-4 Re-sponse wrt ideal re-sponse**	**Unit-5 Re-sponse wrt ideal re-sponse**	**Unit-5 Re-sponse wrt ideal re-sponse**	**Unit-6 Re-sponse wrt ideal re-sponse**	**Unit-6 Re-sponse wrt ideal re-sponse**

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		e wrt FRO	corre-spond-ing to current genera-tion	corre-spond-ing to MCR	corre-spond-ing to current genera-tion	corre-spond-ing to MCR	corre-spond-ing to current genera-tion	corre-spond-ing to MCR	corre-spond-ing to current genera-tion	corre-spond-ing to MCR	corre-spond-ing to current genera-tion	corre-spond-ing to MCR	corre-spond-ing to current genera-tion	corre-spond-ing to MCR
1	11-05-2025 16:51HRS	-3.34	-45%	-45%	-86%	-72%	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	-603%	-337%
2	12-06-2025 13:34HRS	0.12	7%	8%	12%	10%	-6%	-6%	2%	2%	0%	0%	2%	3%
3	16-06-2025 11:51HRS	-0.13	-4%	-4%	-3%	-3%	4%	4%	No Gen	No Gen	9%	9%	-22%	-23%
4	22-07-2025 19:46HRS	-0.02	1%	1%	-12%	-10%	-13%	-13%	No Gen	No Gen	10%	10%	10%	10%
5	29-07-2025 14:55HRS	1.63	80%	79%	-28%	-24%	116%	111%	20%	9%	87%	84%	-21%	-21%
6	01-09-2025 14:57HRS	0.27	6%	6%	No Gen	No Gen	18%	18%	4%	1%	-6%	-6%	18%	18%
7	24-09-2025 11:04HRS	-8.31	-126%	-128%	No Gen	No Gen	-288%	-289%	No Gen	No Gen	-989%	-993%	183%	201%
8	24-09-2025 11:32HRS	5.96	581%	474%	No Gen	No Gen	354%	311%	No Gen	No Gen	44%	44%	35%	38%
9	15-10-2025 12:11HRS	0.49	1%	1%	No Gen	No Gen	No Gen	No Gen	-5%	-2%	29%	29%	39%	43%
10	16-12-2025 06:34HRS	2.89	160%	72%	No Gen	No Gen	110%	108%	-28%	-9%	No Gen	No Gen	96%	103%
11	14-01-2026 13:38HRS	1.11	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	6%	2%	185%	81%	145%	78%
12	14-01-2026 14:05HRS	1.48	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	-10%	-3%	225%	104%	206%	115%
13	14-01-2026 14:09HRS	2.76	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	-16%	-5%	377%	196%	343%	193%
14	30-01-2026 11:08HRS	-1.06	-325%	-166%	No Gen	No Gen	1%	1%	31%	10%	No Gen	No Gen	No Gen	No Gen
15	13-02-2026 12:14HRS	-0.51	33%	34%	No Gen	No Gen	-71%	-73%	-132%	-42%	10%	11%	No Gen	No Gen
16	22-02-2026 22:56HRS	0.15	-3%	-3%	No Gen	No Gen	16%	16%	13%	4%	-1%	-1%	No Gen	No Gen
17	22-02-2026 23:00HRS	0.00	0%	0%	No Gen	No Gen	0%	0%	0%	0%	0%	0%	No Gen	No Gen
18	03-03-2026 11:42HRS	-0.18	No Gen	No Gen	No Gen	No Gen	-40%	-19%	No Gen	No Gen	No Gen	No Gen	-13%	-7%

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Kuttiyadi GU

The performance of the generators was presented by Kerala SLDC as tabulated below (Droop setting was 4%):

Sl.No	Events (Date and Time)	Control Area Response wrt FRO	Unit-1 Response wrt ideal response corresponding to current generation	Unit-1 Response wrt ideal response corresponding to MCR	Unit-2 Response wrt ideal response corresponding to current generation	Unit-2 Response wrt ideal response corresponding to MCR	Unit-3 Response wrt ideal response corresponding to current generation	Unit-3 Response wrt ideal response corresponding to MCR
1	11-05-2025 16:51HRS	2.47	No Gen	No Gen	No Gen	No Gen	883%	473%
2	12-06-2025 13:34HRS	-0.05	-	-	-	-	-	-
3	16-06-2025 11:51HRS	-0.01	-	-	-	-	-	-
4	22-07-2025 19:46HRS	-0.07	-	-	-	-	-	-
5	29-07-2025 14:55HRS	-0.04	-	-	-	-	-	-
6	01-09-2025 14:57HRS	0.14	-	-	-	-	-	-
7	24-09-2025 11:04HRS	0.01	-	-	-	-	-	-
8	24-09-2025 11:32HRS	0.02	-	-	-	-	-	-
9	15-10-2025 12:11HRS	0.00	-	-	-	-	-	-
10	16-12-2025 06:34HRS	2.29	-	-	-	-	-	-
11	14-01-2026 13:38HRS	0.00	-	-	-	-	-	-
12	14-01-2026 14:05HRS	0.00	-	-	-	-	-	-
13	14-01-2026 14:09HRS	0.00	-	-	-	-	-	-
14	30-01-2026 11:08HRS	0.00	-	-	-	-	-	-
15	13-02-2026 12:14HRS	0.00	-	-	-	-	-	-
16	22-02-2026 22:56HRS	3.32	-	-	-	-	-	-
17	22-02-2026 23:00HRS	-0.10	-	-	-	-	-	-
18	03-03-2026 11:42HRS	0.00	-	-	-	-	-	-

Idamalyar GU

The performance of the generators was presented by Kerala SLDC as tabulated below (Droop setting was 4%):

Sl.No	Events (Date and Time)	Control Area Response wrt FRO	Unit-1 Response wrt ideal response corresponding to current generation	Unit-1 Response wrt ideal response corresponding to MCR	Unit-2 Response wrt ideal response corresponding to current generation	Unit-2 Response wrt ideal response corresponding to MCR
1	11-05-2025 16:51HRS	-0.34	No Gen	No Gen	-21%	-16%
2	12-06-2025 13:34HRS	0.21	12%	10%	No Gen	No Gen

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3	16-06-2025 11:51HRS	0.01	-9%	-7%	0%	0%
4	22-07-2025 19:46HRS	0.26	3%	3%	5%	5%
5	29-07-2025 14:55HRS	0.05	9%	9%	-6%	-6%
6	01-09-2025 14:57HRS	-0.07	-3%	-3%	No Gen	No Gen
7	24-09-2025 11:04HRS	0.00	0%	0%	0%	0%
8	24-09-2025 11:32HRS	0.00	0%	0%	0%	0%
9	15-10-2025 12:11HRS	0.00	No Gen	No Gen	0%	0%
10	16-12-2025 06:34HRS	-0.64	-7%	-4%	-30%	-17%
11	14-01-2026 13:38HRS	-0.08	-7%	-4%	No Gen	No Gen
12	14-01-2026 14:05HRS	0.05	No Gen	No Gen	5%	3%
13	14-01-2026 14:09HRS	-0.10	-9%	-5%	No Gen	No Gen
14	30-01-2026 11:08HRS	0.05	No Gen	No Gen	2%	2%
15	13-02-2026 12:14HRS	0.01	1%	1%	No Gen	No Gen
16	22-02-2026 22:56HRS	1.16	No Gen	No Gen	68%	37%
17	22-02-2026 23:00HRS	-0.16	No Gen	No Gen	9%	5%
18	03-03-2026 11:42HRS	-0.22	No Gen	No Gen	-19%	-11%

Kakkayam GU

The performance of the generators was presented by Kerala SLDC as tabulated below (Droop setting was 4%):

Sl.No	Events (Date and Time)	Control Area Response wrt FRO	Unit-1 Response wrt ideal response corresponding to current generation	Unit-1 Response wrt ideal response corresponding to MCR	Unit-2 Response wrt ideal response corresponding to current generation	Unit-2 Response wrt ideal response corresponding to MCR	Unit-3 Response wrt ideal response corresponding to current generation	Unit-3 Response wrt ideal response corresponding to MCR
1	11-05-2025 16:51HRS	2.47	-	-	-	-	-	-
2	12-06-2025 13:34HRS	-0.05	-9%	-9%	No Gen	No Gen	No Gen	No Gen
3	16-06-2025 11:51HRS	-0.01	-3%	-3%	No Gen	No Gen	No Gen	No Gen
4	22-07-2025 19:46HRS	-0.07	0%	0%	0%	0%	-8%	-8%
5	29-07-2025 14:55HRS	-0.04	-4%	-4%	4%	5%	-9%	-9%
6	01-09-2025 14:57HRS	0.14	13%	13%	7%	7%	7%	7%
7	24-09-2025 11:04HRS	0.01	No Gen	No Gen	No Gen	No Gen	2%	2%
8	24-09-2025 11:32HRS	0.02	No Gen	No Gen	No Gen	No Gen	5%	5%
9	15-10-2025 12:11HRS	0.00	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
10	16-12-2025 06:34HRS	2.29	118%	111%	No Gen	No Gen	185%	174%
11	14-01-2026 13:38HRS	0.00	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
12	14-01-2026 14:05HRS	0.00	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
13	14-01-2026 14:09HRS	0.00	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen

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14	30-01-2026 11:08HRS	0.00	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
15	13-02-2026 12:14HRS	0.00	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
16	22-02-2026 22:56HRS	3.32	58%	55%	166%	153%	222%	204%
17	22-02-2026 23:00HRS	-0.10	10%	10%	7%	7%	-5%	-4%
18	03-03-2026 11:42HRS	0.00	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen

Lower Periyar GU

The performance of the generators was presented by Kerala SLDC as tabulated below (Droop setting was 4%):

Sl.No	Events (Date and Time)	Control Area Response wrt FRO	Unit-1 Response wrt ideal response corresponding to current generation	Unit-1 Response wrt ideal response corresponding to MCR	Unit-2 Response wrt ideal response corresponding to current generation	Unit-2 Response wrt ideal response corresponding to MCR	Unit-3 Response wrt ideal response corresponding to current generation	Unit-3 Response wrt ideal response corresponding to MCR
1	11-05-2025 16:51HRS	0.00	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
2	12-06-2025 13:34HRS	0.05	-2%	-2%	9%	9%	No Gen	No Gen
3	16-06-2025 11:51HRS	0.02	1%	1%	2%	2%	No Gen	No Gen
4	22-07-2025 19:46HRS	0.03	-2%	-2%	4%	4%	No Gen	No Gen
5	29-07-2025 14:55HRS	0.00	-5%	-5%	5%	5%	No Gen	No Gen
6	01-09-2025 14:57HRS	-0.05	-6%	-5%	-3%	-2%	0%	0%
7	24-09-2025 11:04HRS	0.00	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
8	24-09-2025 11:32HRS	0.00	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
9	15-10-2025 12:11HRS	0.00	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
10	16-12-2025 06:34HRS	0.00	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
11	14-01-2026 13:38HRS	0.00	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
12	14-01-2026 14:05HRS	0.00	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
13	14-01-2026 14:09HRS	0.00	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
14	30-01-2026 11:08HRS	0.00	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
15	13-02-2026 12:14HRS	0.00	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
16	22-02-2026 22:56HRS	0.00	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
17	22-02-2026 23:00HRS	0.00	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
18	03-03-2026 11:42HRS	0.00	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen

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Neriyamangalam GU

The performance of the generators was presented by Kerala SLDC as tabulated below (Droop setting was 4%):

Sl.No	Events (Date and Time)	Control Area Response wrt FRO	Unit-1 Response wrt ideal response corresponding to current generation	Unit-1 Response wrt ideal response corresponding to MCR
1	11-05-2025 16:51HRS	0.00	Data not available	Data not available
2	12-06-2025 13:34HRS	0.35	8%	8%
3	16-06-2025 11:51HRS	0.82	47%	46%
4	22-07-2025 19:46HRS	0.11	4%	4%
5	29-07-2025 14:55HRS	0.21	12%	12%
6	01-09-2025 14:57HRS	-0.24	-14%	-14%
7	24-09-2025 11:04HRS	0.07	4%	4%
8	24-09-2025 11:32HRS	0.27	15%	15%
9	15-10-2025 12:11HRS	0.34	19%	19%
10	16-12-2025 06:34HRS	0.00	No Gen	No Gen
11	14-01-2026 13:38HRS	0.00	No Gen	No Gen
12	14-01-2026 14:05HRS	0.00	No Gen	No Gen
13	14-01-2026 14:09HRS	0.00	No Gen	No Gen
14	30-01-2026 11:08HRS	0.00	No Gen	No Gen
15	13-02-2026 12:14HRS	0.00	No Gen	No Gen
16	22-02-2026 22:56HRS	0.00	No Gen	No Gen
17	22-02-2026 23:00HRS	0.00	No Gen	No Gen
18	03-03-2026 11:42HRS	0.00	No Gen	No Gen

Discussion on performance of KSEBL generating units

SRPC/SRLDC observed that the frequency response performance of the KSEBL generating stations was inconsistent, with considerable variations among different generating stations as well as among individual units within the same station for each of the events. It was further observed that, although the responses calculated as per the FRP methodology were low, the internal analysis presented by Kerala SLDC indicated comparatively better responses at certain instants following the frequency events. Accordingly, Kerala SLDC was advised to review the governor control logic and examine the reasons for the variations in responses.

SRPC/SRLDC further highlighted that, as per the FRP requirements, the frequency response was required to be sustained for approximately five minutes. It was observed that, in certain instances, the hydro generating units had initially responded to frequency variations but had subsequently returned to their earlier generation levels within a short duration. MS, SRPC enquired about the difficulties in sustaining the response of hydro generating units and observed that the units should be capable of maintaining the required generation change for five minutes before returning to their previous operating levels. Accordingly, Kerala SLDC was advised to review the existing control logic and explore the incorporation of suitable provisions to sustain the response during significant frequency deviations. Kerala SLDC agreed to reanalyse the performance and examine the control logic.

SRPC further observed that, although the overall control area response of Kerala was comparatively high and exceeded the expected response during several events, the individual generating units had exhibited relatively low or inconsistent responses. Kerala SLDC explained that the favourable control area response

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could partly be attributed to variations in State demand and changes in solar generation, which affected the net interchange during the frequency events. It was clarified that the improved control area response might not necessarily have resulted from the primary frequency response of the generating units. Kerala SLDC also indicated that certain smaller generating units were not included in the detailed station-wise analysis which might have helped the overall state FRP.

Kothagudem TPS (KTPS)

The performance of the generators was presented by TG SLDC as tabulated below (Droop setting was 5%):

Stage V (Unit 9 and Unit 10)

Sl. No	Events (Date and Time)	Control Area Response wrt FRO	Control Area Response wrt ideal response corresponding to current generation	Control Area Response wrt ideal response corresponding to MCR	Unit-9 Response wrt ideal response corresponding to current generation	Unit-9 Response wrt ideal response corresponding to MCR	Unit-10 Response wrt ideal response corresponding to current generation	Unit-10 Response wrt ideal response corresponding to MCR
1	11-05-2025 16:51HRS	9.64	445.62%	308.46%	384.40%	270.77%	509.05%	346.15%
2	12-06-2025 13:34HRS	5.28	221.40%	169.08%	No Gen	No Gen	221.40%	169.08%
3	16-06-2025 11:51HRS	2.6	247.21%	83.26%	No Gen	0.00%	247.21%	166.51%
4	22-07-2025 19:46HRS	0.96	21.63%	19.71%	31.23%	28.38%	12.07%	11.03%
5	29-07-2025 14:55HRS	0.63	28.76%	20.17%	28.76%	20.17%	No Gen	No Gen
6	01-09-2025 14:57HRS	3.19	139.21%	102.12%	139.21%	102.12%	No Gen	No Gen
7	24-09-2025 11:04HRS	1.88	86.56%	60.05%	72.07%	50.28%	101.22%	69.82%
8	24-09-2025 11:32HRS	1.55	72.19%	49.74%	66.68%	45.99%	77.72%	53.50%
9	15-10-2025 12:11HRS	4.48	206.14%	143.22%	206.14%	143.22%	No Gen	No Gen
10	16-12-2025 06:34HRS	3.55	128.26%	113.46%	80.28%	65.18%	168.97%	161.74%
11	14-01-2026 13:38HRS	1.38	63.98%	44.07%	47.85%	33.12%	80.26%	55.02%
12	14-01-2026 14:05HRS	2.23	101.91%	95.83%	94.08%	89.37%	109.91%	102.30%
13	14-01-2026 14:09HRS	1.38	59.58%	44.12%	59.05%	43.86%	60.12%	44.39%
14	30-01-2026 11:08HRS	1.15	52.23%	36.64%	32.23%	22.45%	71.94%	50.84%
15	13-02-2026 12:14HRS	20.48	940.88%	655.23%	871.21%	606.54%	1010.51%	703.92%
16	22-02-2026 22:56HRS	5.33	125.83%	109.35%	90.75%	77.97%	160.13%	140.73%
17	22-02-2026 23:00HRS	5.39	134.22%	110.48%	155.02%	123.67%	114.67%	97.28%
18	03-03-2026 11:42HRS	2.12	96.78%	67.77%	58.48%	41.00%	135.17%	94.54%

Stage-VI (Unit 11)

Sl. No	Events (Date and Time)	Control Area Response wrt FRO	Control Area Response wrt ideal response corresponding to current generation	Control Area Response wrt ideal response corresponding to MCR	Unit-11 Response wrt ideal response corresponding to current generation	Unit-11 Response wrt ideal response corresponding to MCR
1	11-05-2025 16:51HRS	11.59	747.49%	423.08%	747.49%	423.08%
2	12-06-2025 13:34HRS	No Gen	No Gen	No Gen	No Gen	No Gen
3	16-06-2025 11:51HRS	3.82	248.28%	139.53%	248.28%	139.53%
4	22-07-2025 19:46HRS	No Gen	No Gen	No Gen	No Gen	No Gen
5	29-07-2025 14:55HRS	No Gen	No Gen	No Gen	No Gen	No Gen

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6	01-09-2025 14:57HRS	No Gen	No Gen	No Gen	No Gen	No Gen
7	24-09-2025 11:04HRS	4.95	157.23%	90.33%	157.23%	90.33%
8	24-09-2025 11:32HRS	1.99	124.40%	72.79%	124.40%	72.79%
9	15-10-2025 12:11HRS	No Gen	No Gen	No Gen	No Gen	No Gen
10	16-12-2025 06:34HRS	No Gen	No Gen	No Gen	No Gen	No Gen
11	14-01-2026 13:38HRS	3.29	215.77%	119.98%	215.77%	119.98%
12	14-01-2026 14:05HRS	1.93	123.69%	94.59%	123.69%	94.59%
13	14-01-2026 14:09HRS	7.72	505.83%	281.82%	505.83%	281.82%
14	30-01-2026 11:08HRS	2.33	142.26%	85.21%	142.26%	85.21%
15	13-02-2026 12:14HRS	10.74	699.70%	391.85%	699.70%	391.85%
16	22-02-2026 22:56HRS	12.28	507.93%	288.65%	507.93%	288.65%
17	22-02-2026 23:00HRS	0.09	3.87%	2.16%	3.87%	2.16%
18	03-03-2026 11:42HRS	4.99	325.11%	182.17%	325.11%	182.17%

Stage-VII (Unit 12)

Sl. No	Events (Date and Time)	Control Area Response wrt FRO	Control Area Response wrt ideal response corresponding to current generation	Control Area Response wrt ideal response corresponding to MCR	Unit-12 Response wrt ideal response corresponding to current generation	Unit-12 Response wrt ideal response corresponding to MCR
1	11-05-2025 16:51HRS	6.27	339.00%	264.42%	339.00%	264.42%
2	12-06-2025 13:34HRS	2.07	153.61%	87.15%	153.61%	87.15%
3	16-06-2025 11:51HRS	1.1	83.56%	46.55%	83.56%	46.55%
4	22-07-2025 19:46HRS	No Gen	No Gen	No Gen	No Gen	No Gen
5	29-07-2025 14:55HRS	1.82	140.43%	76.59%	140.43%	76.59%
6	01-09-2025 14:57HRS	1.66	123.79%	69.94%	123.79%	69.94%
7	24-09-2025 11:04HRS	1.5	113.95%	63.24%	113.95%	63.24%
8	24-09-2025 11:32HRS	1.25	92.77%	52.89%	92.77%	52.89%
9	15-10-2025 12:11HRS	2.17	160.84%	91.72%	160.84%	91.72%
10	16-12-2025 06:34HRS	4.73	291.21%	199.63%	291.21%	199.63%
11	14-01-2026 13:38HRS	1.7	112.42%	71.78%	112.42%	71.78%
12	14-01-2026 14:05HRS	0.98	75.02%	55.39%	75.02%	55.39%
13	14-01-2026 14:09HRS	1.08	83.06%	45.72%	83.06%	45.72%
14	30-01-2026 11:08HRS	3.77	157.76%	159.25%	157.76%	159.25%
15	13-02-2026 12:14HRS	0.63	26.96%	26.68%	26.96%	26.68%
16	22-02-2026 22:56HRS	1.4	38.15%	38.09%	38.15%	38.09%
17	22-02-2026 23:00HRS	-0.04	-1.13%	-1.12%	-1.13%	-1.12%
18	03-03-2026 11:42HRS	1.35	37.47%	36.68%	37.47%	36.68%

TG SLDC presented the performance of KTPS Units 9 and 10, KTPS-VI (Unit 11) and KTPS-VII (Unit 12) and informed that the units had generally exhibited good frequency response performance during the reported events.

Kakatiya TPP Stage-I (KTPP)

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The performance of the generators was presented by TG SLDC as tabulated below (Droop setting was 5%):

Sl. No	Events (Date and Time)	Control Area Response wrt FRO	Control Area Response wrt ideal response corresponding to current generation	Control Area Response wrt ideal response corresponding to MCR	Unit-1 Response wrt ideal response corresponding to current generation	Unit-1 Response wrt ideal response corresponding to MCR
1	11-05-2025 16:51HRS	1.08	72.30%	38.46%	72.30%	38.46%
2	12-06-2025 13:34HRS	No Gen	No Gen	No Gen	No Gen	No Gen
3	16-06-2025 11:51HRS	0.2	13.12%	7.23%	13.12%	7.23%
4	22-07-2025 19:46HRS	0.11	2.66%	2.56%	2.66%	2.56%
5	29-07-2025 14:55HRS	0.01	0.56%	0.31%	0.56%	0.31%
6	01-09-2025 14:57HRS	0.03	1.80%	1.04%	1.80%	1.04%
7	24-09-2025 11:04HRS	0.23	14.48%	8.12%	14.48%	8.12%
8	24-09-2025 11:32HRS	-0.01	-0.44%	-0.25%	-0.44%	-0.25%
9	15-10-2025 12:11HRS	0.13	7.70%	4.52%	7.70%	4.52%
10	16-12-2025 06:34HRS	0	0.00%	0.00%	0.00%	0.00%
11	14-01-2026 13:38HRS	0.22	9.40%	7.67%	9.40%	7.67%
12	14-01-2026 14:05HRS	-0.18	-9.64%	-8.42%	-9.64%	-8.42%
13	14-01-2026 14:09HRS	-0.03	-1.87%	-1.13%	-1.87%	-1.13%
14	30-01-2026 11:08HRS	-0.2	-7.75%	-7.23%	-7.75%	-7.23%
15	13-02-2026 12:14HRS	-1.97	-81.53%	-70.00%	-81.53%	-70.00%
16	22-02-2026 22:56HRS	-0.65	-14.85%	-14.86%	-14.85%	-14.86%
17	22-02-2026 23:00HRS	0.01	0.14%	0.13%	0.14%	0.13%
18	03-03-2026 11:42HRS	No Gen	No Gen	No Gen	No Gen	No Gen

Kakatiya TPP Stage-II (KTPP)

The performance of the generators was presented by TG SLDC as tabulated below (Droop setting was 5%):

Sl. No	Events (Date and Time)	Control Area Response wrt FRO	Control Area Response wrt ideal response corresponding to current generation	Control Area Response wrt ideal response corresponding to MCR	Unit-2 Response wrt ideal response corresponding to current generation	Unit-2 Response wrt ideal response corresponding to MCR
1	11-05-2025 16:51HRS	0.9	35.16%	32.05%	35.16%	32.05%
2	12-06-2025 13:34HRS	1.12	69.85%	39.65%	69.85%	39.65%
3	16-06-2025 11:51HRS	0.52	33.56%	18.53%	33.56%	18.53%
4	22-07-2025 19:46HRS	0.78	17.91%	17.77%	17.91%	17.77%
5	29-07-2025 14:55HRS	0.17	10.53%	6.08%	10.53%	6.08%
6	01-09-2025 14:57HRS	0.47	27.86%	16.70%	27.86%	16.70%
7	24-09-2025 11:04HRS	1.65	97.77%	58.33%	97.77%	58.33%
8	24-09-2025 11:32HRS	0.24	14.92%	8.54%	14.92%	8.54%
9	15-10-2025 12:11HRS	1.47	94.98%	52.08%	94.98%	52.08%
10	16-12-2025 06:34HRS	0.69	25.18%	24.56%	25.18%	24.56%
11	14-01-2026 13:38HRS	0.97	34.90%	34.23%	34.90%	34.23%

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12	14-01-2026 14:05HRS	1.72	82.00%	82.00%	82.00%	82.00%
13	14-01-2026 14:09HRS	-0.12	-4.32%	-4.25%	-4.32%	-4.25%
14	30-01-2026 11:08HRS	1.68	59.52%	59.52%	59.52%	59.52%
15	13-02-2026 12:14HRS	-0.17	-6.06%	-6.09%	-6.06%	-6.09%
16	22-02-2026 22:56HRS	-1.26	-28.58%	-28.99%	-28.58%	-28.99%
17	22-02-2026 23:00HRS	0.62	14.38%	14.17%	14.38%	14.17%
18	03-03-2026 11:42HRS	-0.38	-8.96%	-8.76%	-8.96%	-8.76%

SRPC observed that Unit-I had exhibited poor response during several events, while Unit-II had recorded negative responses during certain events, and sought clarification regarding the reasons for the same.

KTPP informed that the generating units were frequently operating at their technical minimum load of approximately 50%. During sudden frequency events requiring an increase in generation, restrictions were encountered due to a reduction in steam pressure and the economizer approaching saturation conditions. Further, disturbances in the feedwater system were also observed at technical minimum load, restricting the frequency response capability of the units.

SRPC enquired whether adequate steam reserve was available for providing the required frequency response. KTPP clarified that steam reserve was generally available; however, the economizer saturation and feedwater-related constraints were limiting the response. It was informed that the issues were being taken up with the OEM (BHEL) for suitable modifications, including improvements in the feedwater circulation system.

SRPC advised KTPP to pursue the matter with the OEM and rectify the identified deficiencies at the earliest to improve the frequency response performance of both units.

Bhadadri TPS (BTPS)

The performance of the generators was presented by TG SLDC as tabulated below (Droop setting was 5%):

Sl. No	Events (Date and Time)	Control Area Response wrt FRO	Control Area Response wrt ideal response corresponding to current generation	Control Area Response wrt ideal response corresponding to MCR	Unit-1 Response wrt ideal response corresponding to current generation	Unit-1 Response wrt ideal response corresponding to MCR	Unit-2 Response wrt ideal response corresponding to current generation	Unit-2 Response wrt ideal response corresponding to MCR
1	11-05-2025 16:51HRS	3.7	200.32%	115.74%	123.27%	71.23%	184.91%	106.84%
2	12-06-2025 13:34HRS	1.34	72.80%	41.98%	123.42%	70.68%	120.86%	70.04%
3	16-06-2025 11:51HRS	2.41	129.36%	75.20%	15.29%	8.83%	5.55%	3.23%
4	22-07-2025 19:46HRS	0.01	0.17%	0.14%	-1.77%	-1.36%	No Gen	No Gen
5	29-07-2025 14:55HRS	0.18	9.64%	5.54%	-23.89%	-13.97%	No Gen	No Gen
6	01-09-2025 14:57HRS	1.56	84.11%	49.23%	91.11%	53.38%	26.97%	15.74%
7	24-09-2025 11:04HRS	1.69	91.90%	53.18%	150.50%	86.37%	-20.41%	-12.08%
8	24-09-2025 11:32HRS	0.94	51.72%	29.71%	20.49%	12.00%	3.63%	2.09%
9	15-10-2025 12:11HRS	3.11	156.33%	97.95%	No Gen	No Gen	No Gen	No Gen
10	16-12-2025 06:34HRS	0.31	11.93%	9.62%	-22.35%	-19.74%	-27.52%	-24.37%
11	14-01-2026 13:38HRS	0.88	47.94%	27.66%	2.83%	1.65%	9.39%	5.39%
12	14-01-2026 14:05HRS	0.89	47.93%	37.62%	41.17%	32.30%	21.02%	16.33%

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13	14-01-2026 14:09HRS	0.44	22.90%	13.92%	71.89%	43.08%	15.58%	9.18%
14	30-01-2026 11:08HRS	-0.21	-7.80%	-6.75%	No Gen	No Gen	-19.25%	-15.64%
15	13-02-2026 12:14HRS	4.97	260.98%	156.52%	-202.41%	-129.63%	-26.10%	-14.96%
16	22-02-2026 22:56HRS	-2.83	-62.36%	-57.06%	-78.85%	-72.07%	-97.06%	-88.34%
17	22-02-2026 23:00HRS	1.4	32.59%	28.29%	40.23%	34.23%	30.37%	25.73%
18	03-03-2026 11:42HRS	2.43	85.10%	49.03%	13.05%	7.56%	13.78%	7.93%

Sl. No	Events (Date and Time)	Unit-3 Response wrt ideal response corresponding to current generation	Unit-3 Response wrt ideal response corresponding to MCR	Unit-4 Response wrt ideal response corresponding to current generation	Unit-4 Response wrt ideal response corresponding to MCR
1	11-05-2025 16:51HRS	124.07%	71.23%	367.47%	213.68%
2	12-06-2025 13:34HRS	23.62%	13.74%	23.47%	13.44%
3	16-06-2025 11:51HRS	184.26%	108.53%	312.10%	180.23%
4	22-07-2025 19:46HRS	0.96%	0.82%	1.17%	0.95%
5	29-07-2025 14:55HRS	44.35%	25.05%	No Gen	No Gen
6	01-09-2025 14:57HRS	132.56%	77.52%	85.65%	50.27%
7	24-09-2025 11:04HRS	119.96%	68.70%	121.07%	69.72%
8	24-09-2025 11:32HRS	51.03%	28.95%	133.31%	75.79%
9	15-10-2025 12:11HRS	156.33%	97.95%	No Gen	No Gen
10	16-12-2025 06:34HRS	No Gen	No Gen	112.18%	72.95%
11	14-01-2026 13:38HRS	92.35%	52.25%	87.82%	51.34%
12	14-01-2026 14:05HRS	58.48%	46.44%	70.68%	55.41%
13	14-01-2026 14:09HRS	3.34%	2.08%	2.14%	1.32%
14	30-01-2026 11:08HRS	2.34%	2.15%	No Gen	No Gen
15	13-02-2026 12:14HRS	629.95%	373.93%	670.48%	396.72%
16	22-02-2026 22:56HRS	-38.10%	-35.54%	-35.76%	-32.28%
17	22-02-2026 23:00HRS	30.11%	27.19%	29.87%	26.02%
18	03-03-2026 11:42HRS	150.99%	86.69%	163.15%	93.93%

TG SLDC presented the unit-wise frequency response performance of BTPS and observed that Units 3 and 4 had exhibited comparatively better responses than Units 1 and 2.

BTPS informed that the frequency response logic had been implemented in Units 1 and 2; however, the provision for sustaining the response for 300 seconds was yet to be incorporated. It was stated that the corresponding logic was already available in Units 3 and 4 and that efforts were being made to incorporate similar provisions in Units 1 and 2. Further, tuning of the load control parameters was also being undertaken to improve the response.

BTPS presented the frequency response recorded during a recent event and explained that the units had responded to the frequency deviation by increasing generation. However, as the frequency recovered, the frequency correction signal and corresponding generation response had reduced. It was stated that such responses were being observed during normal operation, although the calculated FRP during the identified frequency events remained low.

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SRPC/SRLDC observed that the frequency response should be captured in the event-wise FRP analysis even when the generation correction varied with the recovery of frequency. It was further noted that the recent response demonstrated by BTPS was not reflected in the performance calculated for the identified events. BTPS clarified that the historical event-wise records were not available for a similar detailed demonstration and that the response during certain events might have been lower due to the magnitude and duration of frequency deviations.

SRPC advised BTPS to review the event-wise response, incorporate the necessary logic for sustaining the response for 300 seconds and improve the performance of Units 1 and 2.

Singareni Collieries TPP (STPP)

The performance of the generators was presented by TG SLDC as tabulated below (Droop setting was 5%):

Sl. No	Events (Date and Time)	Control Area Response wrt FRO	Control Area Response wrt ideal response corresponding to current generation	Control Area Response wrt ideal response corresponding to MCR	Unit-1 Response wrt ideal response corresponding to current generation	Unit-1 Response wrt ideal response corresponding to MCR	Unit-2 Response wrt ideal response corresponding to current generation	Unit-2 Response wrt ideal response corresponding to MCR
1	11-05-2025 16:51HRS	0.7	28.79%	27.24%	-15.92%	-16.19%	80.69%	70.67%
2	12-06-2025 13:34HRS	0.27	17.15%	10.40%	No Gen	No Gen	17.15%	10.40%
3	16-06-2025 11:51HRS	0.91	122.26%	35.56%	No Gen	No Gen	122.26%	71.12%
4	22-07-2025 19:46HRS	1.05	26.65%	26.57%	23.68%	23.66%	29.63%	29.48%
5	29-07-2025 14:55HRS	1.24	81.51%	48.55%	12.70%	7.68%	152.48%	89.43%
6	01-09-2025 14:57HRS	0.13	8.99%	4.97%	14.49%	8.01%	3.49%	1.92%
7	24-09-2025 11:04HRS	1.19	81.68%	46.55%	55.58%	32.54%	109.23%	60.57%
8	24-09-2025 11:32HRS	0.84	58.82%	32.91%	5.50%	3.07%	111.72%	62.76%
9	15-10-2025 12:11HRS	1.99	137.67%	78.12%	147.62%	84.64%	127.50%	71.61%
10	16-12-2025 06:34HRS	0.41	17.03%	16.08%	-66.77%	-63.72%	102.67%	95.87%
11	14-01-2026 13:38HRS	1.01	39.51%	39.56%	41.99%	42.07%	37.03%	37.05%
12	14-01-2026 14:05HRS	0.85	44.56%	44.56%	47.06%	47.06%	42.07%	42.07%
13	14-01-2026 14:09HRS	-0.74	-29.59%	-29.02%	-17.54%	-17.41%	-41.93%	-40.63%
14	30-01-2026 11:08HRS	0.16	8.64%	6.11%	-5.78%	-3.98%	22.33%	16.20%
15	13-02-2026 12:14HRS	3.17	222.91%	124.17%	535.54%	299.13%	-91.41%	-50.78%
16	22-02-2026 22:56HRS	1.81	65.15%	45.72%	22.41%	9.01%	82.31%	82.43%
17	22-02-2026 23:00HRS	0.22	7.72%	5.44%	-5.90%	-2.41%	13.29%	13.29%
18	03-03-2026 11:42HRS	1.8	144.93%	45.29%	No Gen	0.00%	144.93%	90.58%

TG SLDC presented the frequency response performance of STPP-SCCL, wherein inadequate responses were observed during certain events.

STPP informed that the frequency response performance of Unit-I had been affected by turbine vibration and axial shift issues during FY 2025-26. It was stated that corrective measures, including trim balancing, had been undertaken during the outages. The unit had also been operated in valve wide-open condition with the permission of SLDC during the period when the issues were being addressed.

Further, it was informed that the turbine-related issues had subsequently been rectified and the unit was being operated in throttling mode. Software and hardware modifications had also been undertaken in the

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frequency sensing arrangement. Earlier, the frequency response logic was based on individual turbine speed sensors, resulting in inconsistent responses between the two units during the same frequency event. The frequency sensing arrangement had subsequently been modified to derive the frequency signal from a common electrical busbar for both units.

The representative stated that the frequency response performance had improved following the modifications. TG SLDC also confirmed that improved responses had been observed during recent events.

SRPC advised TG SLDC to continue monitoring the frequency response performance of STPP-SCCL regularly to verify the effectiveness of the corrective measures.

Nagarjuna Sagar HES (NSHES)

The performance of the generators was presented by TG SLDC as tabulated below (Droop setting was 5%):

Sl. No	Events (Date and Time)	Control Area Response wrt FRO	Control Area Response wrt ideal response corresponding to current generation	Control Area Response wrt ideal response corresponding to MCR	Unit-1 Response wrt ideal response corresponding to current generation	Unit-1 Response wrt ideal response corresponding to MCR	Unit-2 Response wrt ideal response corresponding to current generation	Unit-2 Response wrt ideal response corresponding to MCR
1	11-05-2025 16:51HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
2	12-06-2025 13:34HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
3	16-06-2025 11:51HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
4	22-07-2025 19:46HRS	-2.2	-20.49%	-20.42%	No Gen	No Gen	-143.24%	-142.24%
5	29-07-2025 14:55HRS	1.2	11.42%	11.14%	No Gen	No Gen	7.23%	7.09%
6	01-09-2025 14:57HRS	1.36	23.81%	24.04%	4.46%	4.46%	23.91%	24.32%
7	24-09-2025 11:04HRS	0.83	14.64%	14.71%	20.31%	20.45%	10.02%	9.92%
8	24-09-2025 11:32HRS	0.66	11.56%	11.59%	-5.50%	-5.54%	12.10%	12.10%
9	15-10-2025 12:11HRS	2.6	46.28%	45.98%	54.59%	56.82%	44.25%	42.63%
10	16-12-2025 06:34HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
11	14-01-2026 13:38HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
12	14-01-2026 14:05HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
13	14-01-2026 14:09HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
14	30-01-2026 11:08HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
15	13-02-2026 12:14HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
16	22-02-2026 22:56HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
17	22-02-2026 23:00HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
18	03-03-2026 11:42HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen

Sl. No	Events (Date and Time)	Unit-3 Response wrt ideal response corresponding to current generation	Unit-3 Response wrt ideal response corresponding to MCR	Unit-4 Response wrt ideal response corresponding to current generation	Unit-4 Response wrt ideal response corresponding to MCR	Unit-5 Response wrt ideal response corresponding to current generation	Unit-5 Response wrt ideal response corresponding to MCR
1	11-05-2025 16:51HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
2	12-06-2025 13:34HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen

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3	16-06-2025 11:51HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
4	22-07-2025 19:46HRS	No Gen	No Gen	No Gen	No Gen	-7.32%	-7.29%
5	29-07-2025 14:55HRS	7.19%	7.09%	21.20%	21.26%	7.37%	7.09%
6	01-09-2025 14:57HRS	24.03%	24.32%	19.17%	19.45%	19.39%	19.45%
7	24-09-2025 11:04HRS	17.17%	17.36%	2.41%	2.48%	7.40%	7.44%
8	24-09-2025 11:32HRS	15.08%	15.12%	29.72%	30.25%	9.03%	9.07%
9	15-10-2025 12:11HRS	31.41%	31.00%	23.21%	23.25%	35.09%	34.88%
10	16-12-2025 06:34HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
11	14-01-2026 13:38HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
12	14-01-2026 14:05HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
13	14-01-2026 14:09HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
14	30-01-2026 11:08HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
15	13-02-2026 12:14HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
16	22-02-2026 22:56HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
17	22-02-2026 23:00HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
18	03-03-2026 11:42HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen

Sl. No	**Events (Date and Time)**	**Unit-6 Response wrt ideal response corresponding to current generation**	**Unit-6 Response wrt ideal response corresponding to MCR**	**Unit-7 Response wrt ideal response corresponding to current generation**	**Unit-7 Response wrt ideal response corresponding to MCR**	**Unit-8 Response wrt ideal response corresponding to current generation**	**Unit-8 Response wrt ideal response corresponding to MCR**
1	11-05-2025 16:51HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
2	12-06-2025 13:34HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
3	16-06-2025 11:51HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
4	22-07-2025 19:46HRS	22.28%	21.88%	32.86%	32.83%	-7.19%	-7.29%
5	29-07-2025 14:55HRS	14.79%	14.17%	22.23%	21.26%	0.00%	0.00%
6	01-09-2025 14:57HRS	23.96%	24.32%	38.26%	38.90%	38.79%	38.90%
7	24-09-2025 11:04HRS	17.31%	17.36%	24.85%	24.80%	17.45%	17.36%
8	24-09-2025 11:32HRS	0.00%	0.00%	18.27%	18.15%	15.24%	15.12%
9	15-10-2025 12:11HRS	59.61%	58.13%	91.40%	89.13%	30.82%	31.00%
10	16-12-2025 06:34HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
11	14-01-2026 13:38HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
12	14-01-2026 14:05HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
13	14-01-2026 14:09HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
14	30-01-2026 11:08HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
15	13-02-2026 12:14HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
16	22-02-2026 22:56HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
17	22-02-2026 23:00HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
18	03-03-2026 11:42HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen

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TG SLDC presented the frequency response performance of NSHES and informed that the generating units were generally operated during morning and evening peak demand periods. Accordingly, several units were not in generating mode during the identified frequency events.

NSHES clarified that the units were operated in generating mode during peak demand periods and in pumping mode or shutdown condition during the remaining periods. Consequently, several events did not have corresponding generation response data.

Regarding implementation of FGMO, it was informed that Unit-I was operating under RGMO and that a purchase order had already been placed with BHEL for conversion to FGMO. The work was expected to be undertaken upon the availability of the BHEL service engineer. It was further informed that Units 2 to 8 were already operating under FGMO.

During the review of the unit-wise responses, SRPC observed that, although certain units had exhibited comparatively better responses with respect to FRO, their responses with respect to the ideal response corresponding to the droop characteristics were not sufficient and required improvement.

NSHES explained that the reservoir levels had been low during certain periods, restricting generation at rated load. Further, frequent switching between pumping and generating modes had resulted in instances where the guide vanes were maintained in fully open condition, limiting the scope for providing additional frequency response.

NSHES was advised to review its operating practices and sensitize the shift engineers, ensure compliance with the applicable Grid Code provisions and improve the frequency response performance of the units operating under FGMO.

Srisailam Left Bank HES (SLBHES)

The performance of the generators was presented by TG SLDC as tabulated below (Droop setting was 5%):

Sl. No	Events (Date and Time)	Control Area Response wrt FRO	Control Area Response wrt ideal response corresponding to current generation	Control Area Response wrt ideal response corresponding to MCR	Unit-1 Response wrt ideal response corresponding to current generation	Unit-1 Response wrt ideal response corresponding to MCR	Unit-2 Response wrt ideal response corresponding to current generation	Unit-2 Response wrt ideal response corresponding to MCR
1	11-05-2025 16:51HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
2	12-06-2025 13:34HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
3	16-06-2025 11:51HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
4	22-07-2025 19:46HRS	11.59	102.40%	102.94%	121.74%	122.55%	169.31%	171.57%
5	29-07-2025 14:55HRS	4.29	40.76%	38.10%	0.00%	0.00%	24.46%	23.81%
6	01-09-2025 14:57HRS	-0.46	-6.95%	-6.54%	0.00%	0.00%	0.00%	0.00%
7	24-09-2025 11:04HRS	0.24	3.61%	3.33%	0.00%	0.00%	0.00%	0.00%
8	24-09-2025 11:32HRS	2.58	39.94%	36.59%	111.27%	101.63%	87.73%	81.30%
9	15-10-2025 12:11HRS	0	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
10	16-12-2025 06:34HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
11	14-01-2026 13:38HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
12	14-01-2026 14:05HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
13	14-01-2026 14:09HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
14	30-01-2026 11:08HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen

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15	13-02-2026 12:14HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
16	22-02-2026 22:56HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
17	22-02-2026 23:00HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
18	03-03-2026 11:42HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen

Sl. No	Events (Date and Time)	Unit-3 Response wrt ideal response corresponding to current generation	Unit-3 Response wrt ideal response corresponding to MCR	Unit-4 Response wrt ideal response corresponding to current generation	Unit-4 Response wrt ideal response corresponding to MCR	Unit-5 Response wrt ideal response corresponding to current generation	Unit-5 Response wrt ideal response corresponding to MCR	Unit-6 Response wrt ideal response corresponding to current generation	Unit-6 Response wrt ideal response corresponding to MCR
1	11-05-2025 16:51HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
2	12-06-2025 13:34HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
3	16-06-2025 11:51HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
4	22-07-2025 19:46HRS	0.00%	0.00%	No Gen	No Gen	120.94%	122.55%	98.70%	98.04%
5	29-07-2025 14:55HRS	107.41%	95.24%	No Gen	No Gen	78.78%	71.43%	0.00%	0.00%
6	01-09-2025 14:57HRS	0.00%	0.00%	No Gen	No Gen	-34.28%	-32.68%	0.00%	0.00%
7	24-09-2025 11:04HRS	18.94%	16.67%	No Gen	No Gen	0.00%	0.00%	0.00%	0.00%
8	24-09-2025 11:32HRS	0.00%	0.00%	No Gen	No Gen	0.00%	0.00%	0.00%	0.00%
9	15-10-2025 12:11HRS	0.00%	0.00%	No Gen	No Gen	0.00%	0.00%	0.00%	0.00%
10	16-12-2025 06:34HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
11	14-01-2026 13:38HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
12	14-01-2026 14:05HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
13	14-01-2026 14:09HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
14	30-01-2026 11:08HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
15	13-02-2026 12:14HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
16	22-02-2026 22:56HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
17	22-02-2026 23:00HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
18	03-03-2026 11:42HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen

TG SLDC presented the frequency response performance of SLBHES and informed that most of the units were under shutdown conditions during several identified events.

SLBHES informed that the generating units were in operation during a limited number of the 18 events, mainly during July, September and October 2025. During certain events, the guide vanes were already approximately 95% open due to prevailing high inflow and generation conditions, leaving limited scope for further opening and increasing generation in response to frequency deviations.

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Regarding the event on 01.09.2025, it was informed that the response during the frequency rise event was not as expected. The matter had been taken up with the OEM (Hitachi) for examining the guide vane control logic and undertaking necessary modifications. It was stated that the OEM's assistance was expected during the subsequent maintenance period.

SRPC advised SLBHES to pursue the matter with the OEM and undertake the necessary corrective measures to improve the frequency response performance.

Srisailam RB

AP SLDC presented the consolidated frequency response performance of the thermal and hydro generating stations in Andhra Pradesh for the 18 identified frequency events during FY 2025-26. It was informed that the performance varied considerably among generating stations and individual units. While certain units had responded in accordance with the expected droop characteristics, several units had exhibited insufficient or negative responses during the frequency events.

AP SLDC highlighted that the overall frequency response performance of several thermal generating stations, particularly VTPS, RTPP and HNPCL, required improvement. It was also observed that certain generating units had reduced generation during frequency fall events, contrary to the expected response. Further, SRLDC pointed out discrepancies in the classification of solar and non-solar hour events and advised AP SLDC to rectify the same in the presentation.

The performance of the generators was presented by AP SLDC as tabulated below:

Sl. No	Events (Date and Time)	Control Area Response wrt FRO	Unit-1 Response wrt FRO	Unit-2 Response wrt FRO	Unit-3 Response wrt FRO	Unit-4 Response wrt FRO	Unit-5 Response wrt FRO	Unit-6 Response wrt FRO	Unit-7 Response wrt FRO
1	11-05-2025 16:51HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
2	12-06-2025 13:34HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
3	16-06-2025 11:51HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
4	22-07-2025 19:46HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
5	29-07-2025 14:55HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
6	01-09-2025 14:57HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
7	24-09-2025 11:04HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
8	24-09-2025 11:32HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
9	15-10-2025 12:11HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
10	16-12-2025 06:34HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
11	14-01-2026 13:38HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
12	14-01-2026 14:05HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
13	14-01-2026 14:09HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
14	30-01-2026 11:08HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
15	13-02-2026 12:14HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen

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16	22-02-2026 22:56HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
17	22-02-2026 23:00HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
18	03-03-2026 11:42HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen

Vijayawada TPS (Dr. NTTPS)

The performance of the generators was presented by AP SLDC as tabulated below:

Sl. No	Events (Date and Time)	Control Area Response wrt FRO	Unit-1 Response wrt FRO	Unit-2 Response wrt FRO	Unit-3 Response wrt FRO	Unit-4 Response wrt FRO	Unit-5 Response wrt FRO	Unit-6 Response wrt FRO	Unit-7 Response wrt FRO	Unit-8 Response wrt FRO
1	11-05-2025 16:51HRS	3.70	0.00	0.00	8.65	11.20	15.40	9.80	0.00	No Gen
2	12-06-2025 13:34HRS	0.06	0.00	0.00	0.70	-0.70	0.70	0.00	0.00	0.00
3	16-06-2025 11:51HRS	-0.75	-1.05	-3.15	0.00	-1.05	-2.10	0.00	0.00	-0.45
4	22-07-2025 19:46HRS	0.39	1.88	0.00	-0.94	No Gen	0.94	0.00	No Gen	0.75
5	29-07-2025 14:55HRS	1.28	4.80	0.00	0.00	3.00	3.60	4.20	No Gen	0.00
6	01-09-2025 14:57HRS	0.69	1.68	0.00	0.00	0.84	6.72	0.84	0.00	-0.44
7	24-09-2025 11:04HRS	0.15	0.84	0.42	0.00	0.00	-0.42	0.42	0.00	0.16
8	24-09-2025 11:32HRS	0.20	1.58	0.53	0.53	0.53	0.00	0.00	0.00	-0.18
9	15-10-2025 12:11HRS	-0.02	2.40	0.00	0.00	-0.60	-0.60	-0.60	0.00	-0.23
10	16-12-2025 06:34HRS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	14-01-2026 13:38HRS	0.63	0.75	0.00	3.75	3.75	No Gen	0.00	0.00	-0.15
12	14-01-2026 14:05HRS	0.34	0.75	0.25	1.00	2.00	No Gen	0.00	0.00	-0.03
13	14-01-2026 14:09HRS	0.16	0.86	0.00	0.00	-0.86	No Gen	0.86	0.00	0.28
14	30-01-2026 11:08HRS	0.36	1.50	-0.75	4.50	No Gen	0.75	0.00	0.00	-0.44
15	13-02-2026 12:14HRS	-0.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-1.25
16	22-02-2026 22:56HRS	3.31	0.00	0.00	0.00	14.20	0.00	21.30	0.00	1.30
17	22-02-2026 23:00HRS	1.24	4.15	0.00	-0.69	5.53	0.00	6.22	0.00	-0.01
18	03-03-2026 11:42HRS	-0.22	0.00	-0.61	-1.22	0.00	No Gen	-0.61	0.00	-0.07

AP SLDC highlighted that the frequency response performance of certain VTPS units, particularly Units 2, 7 and 8, was inadequate during several events. It was observed that Unit-8 had frequently failed to provide the required response.

APGENCO informed that certain older VTPS units were experiencing governor-related problems. It was stated that the governors had been commissioned during the 1980s and had become outdated, resulting in operational constraints. Consequently, certain units were being operated with their control valves in wide-

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open condition, restricting their frequency response capability. It was specifically informed that Unit-2 continued to face such constraints.

Regarding Unit-7, VTPS informed that the unit had experienced bearing vibration issues during the previous year. The issues had been attended to during annual maintenance, and improvement in frequency response performance was expected from November 2026 onwards.

It was further informed that FGMO had been commissioned in Unit-8 during August 2025. Initially, the droop setting had been maintained at approximately 1.3%, which was subsequently increased to 3% from February 2026. The representative explained that the settings had been adjusted gradually due to load fluctuations and technical constraints associated with ID fans, coal handling and other equipment, which had restricted the unit to lower operating loads during the previous year.

MS, SRPC observed that a droop setting of 3% would result in a higher frequency response than a droop setting of 5% for the same frequency deviation. Accordingly, the explanation regarding the lower response at a 3% droop setting was required to be reviewed. It was emphasized that, irrespective of the droop setting, the unit was required to provide the corresponding frequency response.

AP SLDC further observed that the response was being evaluated with reference to the actual generation before the event and not merely against MCR. It was highlighted that Unit-8 had not provide the required response during certain events even when operating at relatively high generation levels, including an event where the generation was approximately 688 MW.

AP SLDC advised Dr. NTTPS to furnish event-wise explanations for the insufficient responses rather than attributing the performance to common technical constraints. The representative agreed to submit the event-wise details and examine the performance of the concerned units.

SRLDC emphasized that FGMO should remain in service and that any technical issues affecting frequency response should be taken up with the OEM and rectified at the earliest.

Krishnapatanam TPS (SDSTPS)

The performance of the generators was presented by AP SLDC as tabulated below:

Sl. No	Events (Date and Time)	Control Area Response wrt FRO	Unit-1 Response wrt FRO	Unit-2 Response wrt FRO	Unit-3 Response wrt FRO
1	11-05-2025 16:51HRS	2.01	2.36	2.98	0.68
2	12-06-2025 13:34HRS	-0.22	-0.73	0.08	No Gen
3	16-06-2025 11:51HRS	0.01	-1.31	1.34	No Gen
4	22-07-2025 19:46HRS	-0.51	-0.29	-0.77	-0.46
5	29-07-2025 14:55HRS	0.03	-0.05	-0.58	0.72
6	01-09-2025 14:57HRS	0.55	0.91	0.65	0.09
7	24-09-2025 11:04HRS	0.14	1.04	-0.02	-0.61
8	24-09-2025 11:32HRS	0.64	1.18	0.49	0.24
9	15-10-2025 12:11HRS	0.43	0.15	0.76	0.39
10	16-12-2025 06:34HRS	0.00	0.00	0.00	0.00
11	14-01-2026 13:38HRS	0.12	0.42	0.03	-0.09
12	14-01-2026 14:05HRS	-0.38	-0.75	-0.49	0.10
13	14-01-2026 14:09HRS	-0.13	-0.24	-0.08	-0.07
14	30-01-2026 11:08HRS	0.96	-0.74	0.69	2.92
15	13-02-2026 12:14HRS	-0.74	-2.36	0.67	-0.53
16	22-02-2026 22:56HRS	2.74	2.16	5.32	0.72

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17	22-02-2026 23:00HRS	0.03	0.13	0.07	-0.10
18	03-03-2026 11:42HRS	0.11	0.66	No Gen	-0.33

AP SLDC observed that the frequency response performance of SDSTPS Units 1 and 2 was inconsistent, with Unit-I exhibiting negative responses during several events.

SDSTPS informed that the station comprised three units and that Units 1 and 2 had provided the required response during certain events. However, FGMO had been kept out of service during some periods due to operational constraints, including boiler-related issues and sudden tripping of mills.

Regarding Unit-3, it was informed that FGMO had been made available from 15.12.2025. Subsequently, vibration-related issues had necessitated keeping FGMO out of service from 26.04.2026. It was indicated that the issue was expected to be attended to during the subsequent maintenance period, tentatively around November–December 2026.

AP SLDC observed that the units were required to provide the prescribed frequency response whenever they were in operation, particularly when sufficient generation margin was available. It was emphasized that the existence of operational constraints could not be treated as a general justification for inadequate response during all events.

SDSTPS presented its internal event-wise analysis and highlighted differences between its calculated responses and those presented by AP SLDC. For the event on 12.06.2025, SDSTPS stated that its calculated response for Unit-I was approximately 1.10, whereas the corresponding value presented by AP SLDC was lower.

During the discussion on the implemented FGMO logic, SDSTPS explained that the units were configured with a deadband of 49.97 Hz to 50.03 Hz and a droop setting of 5%. It was stated that frequency correction was initiated when the frequency moved outside the specified band. The correction was sustained for five minutes, after which the unit was returned to its previous operating level at a ramp rate of approximately 1% of rated load per minute.

SDSTPS further explained that, during the ramp-back period, the implemented logic did not continuously reassess the prevailing frequency. Consequently, if another frequency deviation occurred during this period, the unit might not provide the corresponding response. It was stated that the logic had been designed to avoid repeated disturbances in boiler operation arising from continuous frequency corrections.

SRPC/SRLDC clarified that the frequency response was required to be calculated with reference to the nominal frequency of 50 Hz and that the permissible deadband was intended to avoid unnecessary hunting. It was emphasized that the deadband should not be interpreted as permitting the unit to disregard the required response within the specified operating range.

Further, SRPC observed that the explanation regarding the ramp-back logic might account for inadequate responses during successive frequency events. However, inadequate response during the initial event also required examination, as the unit was expected to provide the required primary frequency response independently of subsequent events.

SDSTPS agreed to review the implemented FGMO logic, particularly the frequency reference, deadband treatment and ramp-back arrangement, and undertake suitable modifications to improve the response.

APGENCO HQ also agreed to examine the control logic in consultation with the station personnel and furnish clarification to AP SLDC and SRPC. It was indicated that the matter could be reviewed further in the OCC.

Lower Sileru PH

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The performance of the generators was presented by AP SLDC as tabulated below:

Sl. No	Events (Date and Time)	Control Area Response wrt FRO	Unit-1 Response wrt FRO	Unit-2 Response wrt FRO	Unit-3 Response wrt FRO	Unit-4 Response wrt FRO
1	11-05-2025 16:51HRS	-0.69	0.00	-2.77	0.00	0.00
2	12-06-2025 13:34HRS	1.04	2.77	0.00	0.00	1.39
3	16-06-2025 11:51HRS	0.00	No Gen	0.00	0.00	0.00
4	22-07-2025 19:46HRS	-0.46	No Gen	0.00	0.00	-1.85
5	29-07-2025 14:55HRS	-0.30	-1.19	0.00	0.00	No Gen
6	01-09-2025 14:57HRS	0.00	4.99	0.00	0.00	0.00
7	24-09-2025 11:04HRS	0.00	No Gen	0.00	0.00	0.00
8	24-09-2025 11:32HRS	0.00	No Gen	0.00	0.00	0.00
9	15-10-2025 12:11HRS	0.00	0.00	0.00	0.00	0.00
10	16-12-2025 06:34HRS	0.00	No Gen	No Gen	No Gen	No Gen
11	14-01-2026 13:38HRS	0.00	0.00	0.00	0.00	0.00
12	14-01-2026 14:05HRS	0.00	0.00	0.00	0.00	0.00
13	14-01-2026 14:09HRS	0.00	No Gen	No Gen	No Gen	No Gen
14	30-01-2026 11:08HRS	0.00	-1.24	0.00	-1.48	0.00
15	13-02-2026 12:14HRS	0.00	0.00	0.00	6.39	0.00
16	22-02-2026 22:56HRS	0.00	0.00	0.00	0.00	0.00
17	22-02-2026 23:00HRS	0.00	1.14	-1.36	0.00	0.00
18	03-03-2026 11:42HRS	0.00	0.00	0.00	0.00	0.00

AP SLDC informed that the generating units had generally exhibited positive responses during the identified frequency events.

It was highlighted that Units 3 and 4 had provided comparatively better responses, while Unit-2 had also responded during several events. However, Unit-2 had not provided the required response during two events.

AP SLDC observed that the Lower Sileru units had generally provided the required frequency response whenever they were in generating condition.

Rayalaseema TPS

The performance of the generators was presented by AP SLDC as tabulated below:

Sl. No	Events (Date and Time)	Control Area Response wrt FRO	Unit-1 Response wrt FRO	Unit-2 Response wrt FRO	Unit-3 Response wrt FRO	Unit-4 Response wrt FRO	Unit-5 Response wrt FRO	Unit-6 Response wrt FRO
1	11-05-2025 16:51HRS	1.51	0.00	-3.31	-1.29	11.15	5.31	No Gen
2	12-06-2025 13:34HRS	0.04	-2.45	0.00	3.86	No Gen	-1.06	0.00
3	16-06-2025 11:51HRS	-0.15	0.00	0.00	0.00	-2.39	1.19	0.00
4	22-07-2025 19:46HRS	2.96	1.09	No Gen	2.58	3.90	9.57	2.13
5	29-07-2025 14:55HRS	-0.47	0.00	No Gen	2.20	No Gen	No Gen	0.00
6	01-09-2025 14:57HRS	-0.11	0.00	-0.85	0.00	0.00	0.00	0.00
7	24-09-2025 11:04HRS	0.52	0.49	-2.12	-0.77	1.59	0.64	1.49
8	24-09-2025 11:32HRS	1.43	0.00	0.00	0.48	3.78	4.98	0.69
9	15-10-2025 12:11HRS	1.42	0.00	0.00	0.00	0.00	No Gen	5.96
10	16-12-2025 06:34HRS	0.00	0.00	0.00	0.00	No Gen	0.00	0.00
11	14-01-2026 13:38HRS	0.59	0.00	0.00	3.47	0.00	No Gen	0.41
12	14-01-2026 14:05HRS	0.42	0.00	0.00	1.39	-0.38	No Gen	-0.07
13	14-01-2026 14:09HRS	-1.78	0.00	0.00	-1.98	0.00	No Gen	-1.25
14	30-01-2026 11:08HRS	0.97	0.00	-0.35	5.21	0.00	0.00	0.98

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15	13-02-2026 12:14HRS	2.81	0.00	0.00	No Gen	No Gen	-39.21	21.45
16	22-02-2026 22:56HRS	2.21	0.00	No Gen	No Gen	14.73	2.68	0.00
17	22-02-2026 23:00HRS	1.07	0.00	No Gen	No Gen	6.05	2.35	0.00
18	03-03-2026 11:42HRS	0.27	0.00	No Gen	2.82	1.41	-0.23	-0.64

AP SLDC observed that Units 1, 2 and 5 had exhibited inadequate or negative responses during several events. It was also highlighted that certain units had reduced generation during frequency fall events instead of increasing generation.

RTPP informed that Units 1 and 2 were relatively old units and had been facing technical constraints. Unit-II had experienced boiler tube leakage, due to which its generation had been maintained at a constant level. It was stated that several boiler tubes had subsequently been replaced and that the unit's performance had improved from August 2026 onwards. Regarding Unit-I, it was informed that vacuum-related issues were still persisting, although certain improvements had been undertaken during overhauling. Further corrective measures were expected during the subsequent overhaul.

Regarding the event on 11.05.2025, RTPP informed that Unit-III had been operating near its maximum generation of approximately 214 MW, with the control valves fully open, leaving no margin for additional generation. It was further stated that Units 4 and 5 had responded to the event, while Units 1, 2 and 3 had not provided the required response.

Regarding Unit-VI, RTPP informed that the unit had earlier been operating under RGMO and had been converted to FGMO on 03.02.2026. Accordingly, improvement in its frequency response was expected for subsequent events.

Further, a discrepancy was observed between the response data presented by AP SLDC and the data available with RTPP for the event on 13.02.2026. RTPP stated that its records indicated an increase in generation from approximately 139 MW to 147.8 MW. APGENCO acknowledged the possibility of discrepancies in data and agreed to examine the matter in coordination with RTPP and AP SLDC. AP SLDC also advised that the performance of Units 1 and 2 be reviewed for events occurring after the corrective measures undertaken in August 2026.

Upper Sileru PH

The performance of the generators was presented by AP SLDC as tabulated below:

Sl. No	Events (Date and Time)	Control Area Response wrt FRO	Unit-1 Response wrt FRO	Unit-2 Response wrt FRO	Unit-3 Response wrt FRO	Unit-4 Response wrt FRO
1	11-05-2025 16:51HRS	0.00	0.00	0.00	No Gen	No Gen
2	12-06-2025 13:34HRS	5.46	21.85	0.00	0.00	No Gen
3	16-06-2025 11:51HRS	28.68	0.00	0.00	114.74	No Gen
4	22-07-2025 19:46HRS	0.00	0.00	0.00	No Gen	0.00
5	29-07-2025 14:55HRS	-1.76	0.00	-3.51	-2.34	-1.17
6	01-09-2025 14:57HRS	0.00	0.00	0.00	0.00	No Gen
7	24-09-2025 11:04HRS	0.20	0.00	0.00	No Gen	No Gen
8	24-09-2025 11:32HRS	0.00	0.00	0.00	0.00	No Gen
9	15-10-2025 12:11HRS	-0.29	0.00	0.00	-1.17	No Gen
10	16-12-2025 06:34HRS	0.00	0.00	0.00	No Gen	No Gen
11	14-01-2026 13:38HRS	0.00	0.00	0.00	0.00	0.00
12	14-01-2026 14:05HRS	0.00	0.00	0.00	No Gen	No Gen
13	14-01-2026 14:09HRS	0.00	0.00	0.00	No Gen	No Gen
14	30-01-2026 11:08HRS	1.10	0.00	0.00	1.46	2.93
15	13-02-2026 12:14HRS	0.00	0.00	0.00	6.30	6.30

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16	22-02-2026 22:56HRS	37.02	0.00	0.00	No Gen	148.09
17	22-02-2026 23:00HRS	0.34	1.34	0.00	No Gen	0.00
18	03-03-2026 11:42HRS	0.00	0.00	0.00	No Gen	-1.19

AP SLDC informed that the frequency response performance of Upper Sileru was generally satisfactory during the events when the units were in operation.

It was further stated that Unit-2 was generally maintained in standby condition and was operated mainly during peak demand periods. Consequently, the unit was not generating during several identified events.

AP SLDC observed that the hydro generating units had generally exhibited the expected frequency response during the applicable events.

HNPCL

The performance of the generators was presented by AP SLDC as tabulated below:

Sl. No	Events (Date and Time)	Control Area Response wrt FRO	Unit-1 Response wrt FRO	Unit-2 Response wrt FRO
1	11-05-2025 16:51HRS	-1.28	-2.57	No Gen
2	12-06-2025 13:34HRS	0.00	0.00	0.00
3	16-06-2025 11:51HRS	1.68	1.72	1.65
4	22-07-2025 19:46HRS	1.60	1.66	1.53
5	29-07-2025 14:55HRS	0.00	0.00	0.00
6	01-09-2025 14:57HRS	0.00	0.00	0.00
7	24-09-2025 11:04HRS	1.40	1.09	1.71
8	24-09-2025 11:32HRS	1.58	1.38	1.78
9	15-10-2025 12:11HRS	0.00	No Gen	3.57
10	16-12-2025 06:34HRS	0.00	0.00	0.00
11	14-01-2026 13:38HRS	0.00	0.77	0.32
12	14-01-2026 14:05HRS	0.94	0.81	1.07
13	14-01-2026 14:09HRS	1.47	1.14	1.80
14	30-01-2026 11:08HRS	0.02	0.57	-0.52
15	13-02-2026 12:14HRS	0.00	15.58	-4.90
16	22-02-2026 22:56HRS	1.54	0.08	3.01
17	22-02-2026 23:00HRS	-0.53	-1.06	0.00
18	03-03-2026 11:42HRS	0.38	0.76	0.00

AP SLDC highlighted that the frequency response performance of HNPCL was insufficient during several events and informed that FGMO had not yet been implemented at the generating station.

It was stated that HNPCL had indicated that discussions were underway with the OEM regarding the implementation of FGMO, which might be undertaken during a suitable shutdown, subject to the availability of OEM support.

SRPC advised AP SLDC to pursue the matter with HNPCL for implementation of FGMO.

SEIL Phase-2 Unit-2

The performance of the generators was presented by AP SLDC as tabulated below:

Sl. No	Events (Date and Time)	Control Area Response wrt FRO	Unit-2 Response wrt FRO
1	11-05-2025 16:51HRS	1.45	1.45
2	12-06-2025 13:34HRS	0.21	0.21
3	16-06-2025 11:51HRS	1.49	1.49
4	22-07-2025 19:46HRS	No Gen	No Gen

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5	29-07-2025 14:55HRS	No Gen	No Gen
6	01-09-2025 14:57HRS	No Gen	No Gen
7	24-09-2025 11:04HRS	0.85	0.85
8	24-09-2025 11:32HRS	1.29	1.29
9	15-10-2025 12:11HRS	1.71	1.71
10	16-12-2025 06:34HRS	0.00	0.00
11	14-01-2026 13:38HRS	0.99	0.99
12	14-01-2026 14:05HRS	0.06	0.06
13	14-01-2026 14:09HRS	-0.14	-0.14
14	30-01-2026 11:08HRS	0.23	0.23
15	13-02-2026 12:14HRS	3.26	3.26
16	22-02-2026 22:56HRS	2.92	2.92
17	22-02-2026 23:00HRS	0.35	0.35
18	03-03-2026 11:42HRS	0.05	0.05

AP SLDC presented the frequency response performance of SEIL Phase-II Unit-II and informed that the unit had generally exhibited a satisfactory response during the identified frequency events.

3.2 FRP of State Control Areas during FY 2025-26

The median Frequency Response performance (% wrt ideal response) of **Southern Regional states** considering the 18 reportable events during FY 2025-26 is as tabulated below :

Sl.No	Events (Date and Time)	ANDHRA PRADESH	KARNATAKA	KERALA	TAMILNADU	TELANGANA	SR FRP
1	11-05-2025 16:51HRS	5.98	3.53	2.30	-0.05	2.37	4.80
2	12-06-2025 13:34HRS	1.65	0.38	0.96	-0.06	0.48	1.42
3	16-06-2025 11:51HRS	1.65	0.35	1.54	-0.16	0.08	1.05
4	22-07-2025 19:46HRS	1.29	1.00	2.32	1.60	0.42	1.51
5	29-07-2025 14:55HRS	1.02	0.27	1.32	0.45	0.16	0.64
6	01-09-2025 14:57HRS	0.74	1.08	1.45	1.35	1.21	1.48
7	24-09-2025 11:04HRS	0.74	-0.93	20.85	0.24	1.01	1.35
8	24-09-2025 11:32HRS	0.49	0.40	-3.12	1.13	0.31	0.33
9	15-10-2025 12:11HRS	0.87	0.49	1.79	0.47	1.32	1.47
10	16-12-2025 06:34HRS	-1.15	-0.28	1.64	-0.29	-0.47	0.60
11	14-01-2026 13:38HRS	1.51	0.34	0.47	0.83	0.17	1.23
12	14-01-2026 14:05HRS	0.93	1.01	0.51	0.20	0.32	1.17
13	14-01-2026 14:09HRS	1.40	0.71	-0.15	0.65	1.75	1.54
14	30-01-2026 11:08HRS	0.03	2.85	0.69	0.25	0.97	0.87
15	13-02-2026 12:14HRS	-0.15	3.82	0.36	-4.57	-0.59	4.24

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16	22-02-2026 22:56HRS	2.38	4.65	0.75	1.65	0.30	3.83
17	22-02-2026 23:00HRS	0.35	1.59	1.62	0.62	0.39	1.06
18	03-03-2026 11:42HRS	-11.13	0.92	-0.09	0.45	1.33	0.66
	MEDIAN FRP	**0.90**	**0.82**	**1.14**	**0.45**	**0.40**	**1.29**
	Grading	**Good**	**Average**	**Excellent**	**Poor**	**Poor**	**Excellent**

Deliberations

Karnataka

MS, SRPC observed that the overall FRP performance of Karnataka was average, with a median FRP of 0.82. It was noted that negative responses were recorded during the events on 24.09.2025 at 11:04 hrs (-0.93) and 16.12.2025 at 06:34 hrs (-0.28). Further, although high responses were observed during certain events, the performance during several other events was below 1.0, indicating that the overall performance required improvement.

KAR SLDC stated that negative responses were observed from most of the generating stations during the events on 24.09.2025 and 16.12.2025, with several generating units failing to provide the required response.

MS, SRPC stated that the performance was being assessed with respect to the Frequency Response Obligation (FRO) allocated to the State and not with respect to the much higher requirements of FRP specified under IEGC. MS, SRPC advised that the FRP performance of Karnataka needed to be improved.

Tamil Nadu

MS, SRPC observed that the overall FRP performance of Tamil Nadu was poor, with a median FRP of 0.45, and expressed serious concern over the performance.

TN SLDC informed that, out of five generating stations, four stations were operating under FGMO, while FGMO implementation at NCTPS Stage-II was pending and was planned during the next annual overhauling. It was further stated that NCTPS Stage-I and MTPS were providing comparatively better frequency response.

SRLDC observed that the overall FRP performance of Tamil Nadu was poor and stated that TN SLDC needed to identify the generating stations contributing to the State's frequency response and present their performance.

Telangana

TG SLDC presented the overall frequency response performance of the Telangana control area, calculated with respect to FRO, current generation and MCR, along with the corresponding FRP values published by SRPC.

SRLDC clarified that the State control area FRP was required to be calculated based on the net interchange through the interstate transmission lines rather than the summation of generation changes at individual generating stations. It was explained that the change in net interstate interchange between the identified measurement points, Point A and Point B, was to be considered for calculating the State control area response.

TG SLDC informed that its calculations had been based on the summation of generation changes measured at the generating station terminals. It was further stated that a difference of approximately 50 MW had been observed between the generation-based calculations and the interchange-based data for certain events.

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SRLDC clarified that such differences were expected, as the State control area response also reflected variations in demand and other system conditions. It was reiterated that the generation-based calculations could be used for evaluating the frequency response of individual generating units, whereas the State control area FRP was required to be calculated using the net interstate interchange data.

TG SLDC agreed to adopt the methodology clarified by SRLDC for calculating the Telangana control area FRP.

SRPC and SRLDC observed that the overall frequency response performance of Telangana, as well as the performance of several individual generating units, required improvement. It was noted that the generating stations had identified various technical and operational constraints and had indicated corrective measures being undertaken in consultation with their respective OEMs.

The generating stations were advised to pursue the identified corrective measures and improve their unit-wise frequency response performance.

- **Further, station-wise and unit-wise analysis was continued in Agenda 3.1**

3.3 FRP of ISTS Connected Generators during FY 2025-26

SRLDC is requested to present the FGMO performance of ISTS connected generators with the following analysis:

1. FGMO performance of each generating unit, i.e., Actual v/s Expected Performance wrt Generation immediately before the disturbance.
2. FGMO performance of each generating unit, i.e., Actual v/s Expected Performance wrt MCR.
3. FRP performance of generating stations wrt FRO allotted
4. FGMO performance of generating stations wrt Generation of the station immediately before the disturbance
5. FGMO performance of generating stations wrt MCR of the station

- ***The performance of ISTS connected generators to be reviewed. GENCOs may respond***

NLC TPS I Expansion

The performance of the generators was presented by SRLDC as tabulated below (Droop setting was 5%):

Sl.No	Events (Date and Time)	Control Area Response wrt FRO	Control Area Response wrt ideal response corresponding to current generation	Control Area Response wrt ideal response corresponding to MCR	Unit-1 Response wrt ideal response corresponding to current generation	Unit-1 Response wrt ideal response corresponding to MCR	Unit-2 Response wrt ideal response corresponding to current generation	Unit-2 Response wrt ideal response corresponding to MCR
1	11-05-2025 16:51HRS	-2.51	-34.15%	-31.41%	-47.87%	-44.68%	-20.02%	-18.14%
2	12-06-2025 13:34HRS	-3.37	-54.92%	-42.12%				
3	16-06-2025 11:51HRS	0.54	11.54%	6.75%				
4	22-07-2025 19:46HRS	0.00	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

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5	29-07-2025 14:55HRS	0.00	0.00%	0.00%				
6	01-09-2025 14:57HRS	0.06	2.35%	1.54%				
7	24-09-2025 11:04HRS	-0.27	-9.85%	-6.69%	No Gen	No Gen	-9.85%	-6.69%
8	24-09-2025 11:32HRS	-0.17	-6.43%	-4.37%				
9	15-10-2025 12:11HRS	0.94	36.56%	23.59%	No Gen	No Gen	36.56%	23.59%
10	16-12-2025 06:34HRS	-1.08	-20.16%	-13.47%				
11	14-01-2026 13:38HRS	-0.13	-2.41%	-1.63%	-6.34%	-4.28%	1.48%	1.01%
12	14-01-2026 14:05HRS	-0.03	-0.66%	-0.45%	-1.32%	-0.89%	-0.01%	-0.01%
13	14-01-2026 14:09HRS	-0.03	-0.52%	-0.35%	-5.07%	-3.42%	3.93%	2.71%
14	30-01-2026 11:08HRS	-0.38	-13.72%	-9.57%	-13.72%	-9.57%	No Gen	No Gen
15	13-02-2026 12:14HRS	0.07	1.23%	0.92%				
16	22-02-2026 22:56HRS	0.70	8.82%	5.82%	56.26%	34.27%	-31.89%	-22.64%
17	22-02-2026 23:00HRS	-0.12	-1.56%	-1.03%	-3.24%	-2.00%	-0.09%	-0.06%
18	03-03-2026 11:42HRS	0.09	1.57%	1.06%				

NLC TPS II Stage-I

The performance of the generators was presented by SRLDC as tabulated below (Droop setting was 5%):

Sl.No	Events (Date and Time)	Control Area Response wrt FRO	Control Area Response wrt ideal response corresponding to current generation	Control Area Response wrt ideal response corresponding to MCR	Unit-1 Response wrt ideal response corresponding to current generation	Unit-1 Response wrt ideal response corresponding to MCR	Unit-2 Response wrt ideal response corresponding to current generation	Unit-2 Response wrt ideal response corresponding to MCR	Unit-3 Response wrt ideal response corresponding to current generation	Unit-3 Response wrt ideal response corresponding to MCR
1	11-05-2025 16:51HRS	0.35	10.94%	7.46%	10.94%	7.46%	No Gen	No Gen	No Gen	No Gen
2	12-06-2025 13:34HRS	-0.47	-5.49%	-3.33%						
3	16-06-2025 11:51HRS	-2.63	-44.57%	-28.20%						
4	22-07-2025 19:46HRS	0.20	3.52%	2.85%	No Gen	No Gen	3.52%	2.85%	No Gen	No Gen
5	29-07-2025 14:55HRS	-0.38	-6.41%	-4.08%						
6	01-09-2025 14:57HRS	0.69	12.87%	7.38%						
7	24-09-2025 11:04HRS	-17.52	-274.47%	-187.75%	-156.06%	-98.42%	No Gen	No Gen	-375.73%	-277.08%
8	24-09-2025 11:32HRS	-15.38	-246.30%	-164.74%						
9	15-10-2025 12:11HRS	-3.88	-65.38%	-41.54%	-91.82%	-57.85%	No Gen	No Gen	-39.38%	-25.22%

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10	16-12-2025 06:34HRS	0.37	3.70%	2.63%						
11	14-01-2026 13:38HRS	0.06	0.70%	0.41%	7.53%	4.42%	-7.67%	-4.42%	2.03%	1.24%
12	14-01-2026 14:05HRS	-0.29	-4.60%	-2.76%	-0.29%	-0.17%	-3.35%	-1.98%	-9.80%	-6.11%
13	14-01-2026 14:09HRS	-3.07	-36.49%	-21.90%	-54.62%	-32.29%	-43.31%	-25.49%	-12.76%	-7.92%
14	30-01-2026 11:08HRS	-0.42	-4.64%	-3.01%	0.24%	0.19%	0.00%	0.00%	-14.92%	-9.23%
15	13-02-2026 12:14HRS	-0.34	-6.33%	-3.66%						
16	22-02-2026 22:56HRS	-3.50	-27.80%	-16.68%	-52.73%	-32.30%	38.47%	24.16%	-74.91%	-41.89%
17	22-02-2026 23:00HRS	0.75	5.96%	3.59%	13.33%	8.16%	12.08%	7.71%	-9.15%	-5.10%
18	03-03-2026 11:42HRS	2.94	37.05%	21.01%						

NLC TPS II Stage-II

The performance of the generators was presented by SRLDC as tabulated below (Droop setting was 5%):

Sl. No	Events (Date and Time)	Control Area Response wrt FRO	Control Area Response wrt ideal response corresponding to current generation	Control Area Response wrt ideal response corresponding to MCR	Unit-4 Response wrt ideal response corresponding to current generation	Unit-4 Response wrt ideal response corresponding to MCR	Unit-5 Response wrt ideal response corresponding to current generation	Unit-5 Response wrt ideal response corresponding to MCR	Unit-6 Response wrt ideal response corresponding to current generation	Unit-6 Response wrt ideal response corresponding to MCR	Unit-7 Response wrt ideal response corresponding to current generation	Unit-7 Response wrt ideal response corresponding to MCR
1	11-05-2025 16:51HRS	-0.68	-12.91%	-6.49%	43.55%	28.48%	-161.20%	-63.05%	32.71%	15.11%	No Gen	No Gen
2	12-06-2025 13:34HRS	-0.15	-7.22%	-4.34%								
3	16-06-2025 11:51HRS	-4.90	-120.67%	-69.97%								
4	22-07-2025 19:46HRS	-1.35	-14.26%	-8.04%	No Gen	No Gen	-1.57%	-0.93%	-10.82%	-5.85%	-30.93%	-17.33%
5	29-07-2025 14:55HRS	0.78	20.75%	11.14%								
6	01-09-2025 14:57HRS	1.01	18.35%	9.58%								
7	24-09-2025 11:04HRS	0.49	6.23%	3.53%	59.75%	35.52%	-12.07%	-6.74%	5.72%	3.40%	-34.81%	-18.07%
8	24-09-2025 11:32HRS	-0.77	-9.75%	-5.53%								
9	15-10-2025 12:11HRS	-1.43	-14.72%	-10.20%	-68.38%	-52.59%	33.08%	18.95%	10.41%	8.20%	-23.99%	-15.36%
10	16-12-2025 06:34HRS	-5.26	-75.08%	-50.08%								
11	14-01-2026 13:38HRS	0.15	2.48%	1.44%	17.33%	10.28%	-5.26%	-2.78%	-5.09%	-3.17%	No Gen	No Gen
12	14-01-2026 14:05HRS	0.39	8.21%	5.02%	19.34%	11.77%	4.18%	2.50%	1.26%	0.79%	No Gen	No Gen

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13	14-01-2026 14:09HRS	-0.20	-3.06%	-1.88%	-58.28%	-35.62%	72.17%	44.17%	-22.99%	-14.19%	No Gen	No Gen
14	30-01-2026 11:08HRS	-2.81	-37.08%	-26.76%	-146.94%	-87.88%	12.28%	8.61%	-1.15%	-1.00%	No Gen	No Gen
15	13-02-2026 12:14HRS	5.90	89.20%	56.20%								
16	22-02-2026 22:56HRS	-0.69	-4.92%	-3.07%	18.81%	11.68%	5.28%	3.44%	32.75%	18.79%	-70.98%	-46.20%
17	22-02-2026 23:00HRS	0.77	5.50%	3.44%	12.87%	8.03%	16.60%	10.76%	8.08%	4.77%	-15.44%	-9.82%
18	03-03-2026 11:42HRS	1.51	24.76%	14.42%								

SRLDC observed that the FGMO performance of TPS-I Expansion and TPS-II remained insufficient in several events. NLCIL informed that units were frequently operating at or below technical minimum during solar peak hours. Under such conditions, FGMO was being switched off due to boiler operating constraints and the risk of unit tripping.

In respect of TPS-II, it was informed that mill availability, lignite quality, ageing equipment and frequent load fluctuations had affected stable boiler operation and the availability of CMC mode.

SRPC observed that, even when units were operating at technical minimum, the possibility of providing increase of generation during falling-frequency events need to be explored. It was suggested that suitable modifications to the control logic could be examined to permit upward frequency response while restricting downward response during operation at technical minimum.

It was reiterated that FGMO should not be switched off unilaterally and that prior permission from SRLDC was required. NLCIL agreed to examine the suggested modifications and take up the matter with its management.

NLC TPS II Expansion

The performance of the generators was presented by SRLDC as tabulated below (Droop setting was 5%):

Sl.No	Events (Date and Time)	Control Area Response wrt FRO	Control Area Response wrt ideal response corresponding to current generation	Control Area Response wrt ideal response corresponding to MCR	Unit-1 Response wrt ideal response corresponding to current generation	Unit-1 Response wrt ideal response corresponding to MCR	Unit-2 Response wrt ideal response corresponding to current generation	Unit-2 Response wrt ideal response corresponding to MCR
1	11-05-2025 16:51HRS	6.85	135.61%	82.24%	No Gen	No Gen	135.61%	82.24%
2	12-06-2025 13:34HRS	-2.37	-43.28%	-28.39%				
3	16-06-2025 11:51HRS	1.38	28.82%	16.59%				
4	22-07-2025 19:46HRS	11.37	53.15%	39.79%	-2.39%	-2.09%	130.64%	81.68%
5	29-07-2025 14:55HRS	6.87	174.30%	82.40%				
6	01-09-2025 14:57HRS	6.01	73.98%	36.08%				
7	24-09-2025 11:04HRS	-9.34	-92.28%	-56.06%	-165.57%	-121.34%	19.14%	9.22%
8	24-09-2025 11:32HRS	0.16	1.86%	0.93%				
9	15-10-2025 12:11HRS	0.99	10.36%	5.95%	14.65%	9.76%	4.44%	2.15%

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10	16-12-2025 06:34HRS	6.94	49.00%	41.64%				
11	14-01-2026 13:38HRS	6.62	61.20%	39.72%	112.10%	79.44%	0.00%	0.00%
12	14-01-2026 14:05HRS	9.97	124.32%	80.37%	150.33%	106.84%	92.57%	53.89%
13	14-01-2026 14:09HRS	-1.05	-9.23%	-6.33%	4.20%	3.18%	-25.78%	-15.83%
14	30-01-2026 11:08HRS	19.73	168.31%	118.40%	115.89%	91.74%	235.77%	145.05%
15	13-02-2026 12:14HRS	38.88	366.82%	233.26%				
16	22-02-2026 22:56HRS	19.05	96.16%	66.68%	75.38%	48.33%	114.02%	85.02%
17	22-02-2026 23:00HRS	5.34	26.42%	18.70%	3.00%	1.94%	46.18%	35.46%
18	03-03-2026 11:42HRS	0.93	21.30%	11.11%				

NTECL Vallur

The performance of the generators was presented by SRLDC as tabulated below (Droop setting was 5%):

Sl.No	Events (Date and Time)	Control Area Response wrt FRO	Control Area Response wrt ideal response corresponding to current generation	Control Area Response wrt ideal response corresponding to MCR	Unit-1 Response wrt ideal response corresponding to current generation	Unit-1 Response wrt ideal response corresponding to MCR	Unit-2 Response wrt ideal response corresponding to current generation	Unit-2 Response wrt ideal response corresponding to MCR	Unit-3 Response wrt ideal response corresponding to current generation	Unit-3 Response wrt ideal response corresponding to MCR
1	11-05-2025 16:51HRS	61.52	894.91%	492.15%	874.74%	479.65%	903.99%	497.08%	905.90%	499.72%
2	12-06-2025 13:34HRS	7.12	104.91%	56.97%						
3	16-06-2025 11:51HRS	9.32	135.70%	74.53%						
4	22-07-2025 19:46HRS	8.64	88.60%	66.95%	276.57%	141.38%	-7.47%	-7.47%	No Gen	No Gen
5	29-07-2025 14:55HRS	-0.33	-7.28%	-3.98%						
6	01-09-2025 14:57HRS	1.54	22.79%	12.34%						
7	24-09-2025 11:04HRS	-0.67	-10.78%	-8.04%	-30.88%	-23.49%	10.16%	7.41%	No Gen	No Gen
8	24-09-2025 11:32HRS	-4.60	-72.57%	-55.24%						
9	15-10-2025 12:11HRS	7.08	102.79%	56.65%	57.14%	31.12%	1.88%	1.07%	256.84%	137.77%
10	16-12-2025 06:34HRS	-3.69	-45.28%	-29.53%						
11	14-01-2026 13:38HRS	3.01	40.86%	24.08%	55.17%	34.09%	-24.25%	-14.10%	91.98%	52.24%
12	14-01-2026 14:05HRS	1.57	27.67%	16.92%	27.17%	17.36%	35.70%	21.65%	19.95%	11.76%
13	14-01-2026 14:09HRS	10.46	130.84%	83.71%	7.91%	5.05%	161.32%	108.19%	225.72%	137.90%
14	30-01-2026 11:08HRS	3.14	38.52%	25.10%	4.02%	2.45%	16.69%	11.04%	90.47%	61.81%

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15	13-02-2026 12:14HRS	113.88	1436.89 %	911.03%						
16	22-02-2026 22:56HRS	42.03	358.74%	217.16%	379.79%	231.62%	379.78%	226.49%	317.12%	193.38%
17	22-02-2026 23:00HRS	9.03	75.90%	46.65%	105.40%	64.95%	70.51%	43.95%	51.38%	31.05%
18	03-03-2026 11:42HRS	3.65	49.26%	29.23%						

MPGL (CEPL)

The performance of the generators was presented by SRLDC as tabulated below (Droop setting was 5%):

Sl.No	Events (Date and Time)	Control Area Response wrt FRO	Control Area Response wrt ideal response corresponding to current generation	Control Area Response wrt ideal response corresponding to MCR	Unit-1 Response wrt ideal response corresponding to current generation	Unit-1 Response wrt ideal response corresponding to MCR	Unit-2 Response wrt ideal response corresponding to current generation	Unit-2 Response wrt ideal response corresponding to MCR
1	11-05-2025 16:51HRS							
2	12-06-2025 13:34HRS							
3	16-06-2025 11:51HRS							
4	22-07-2025 19:46HRS							
5	29-07-2025 14:55HRS							
6	01-09-2025 14:57HRS							
7	24-09-2025 11:04HRS							
8	24-09-2025 11:32HRS							
9	15-10-2025 12:11HRS							
10	16-12-2025 06:34HRS							
11	14-01-2026 13:38HRS							
12	14-01-2026 14:05HRS							
13	14-01-2026 14:09HRS							
14	30-01-2026 11:08HRS							
15	13-02-2026 12:14HRS							
16	22-02-2026 22:56HRS	3.64	64.51%	36.37%	No Gen	No Gen	64.51%	36.37%
17	22-02-2026 23:00HRS	2.07	36.55%	20.65%	No Gen	No Gen	36.55%	20.65%
18	03-03-2026 11:42HRS	0.49	7.10%	3.88%				

MPGL informed that FGMO had been implemented in February 2026 and that improvements had been observed in subsequent events.

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SRLDC, however, pointed out that although the station had demonstrated sufficient response with respect to FRO in certain events, the response with respect to ideal response corresponding to current generation and MCR remained considerably lower. For the events on 22.02.2026, responses of approximately 64% and 36%, and around 36% and 21%, respectively, were highlighted.

MPGL informed that internal technical reviews were being conducted across its generating stations and that modifications to FGMO logic had already been undertaken. Further tuning would be carried out based on subsequent performance.

NTPL

The performance of the generators was presented by SRLDC as tabulated below (Droop setting was 5%):

Sl.No	Events (Date and Time)	Control Area Response wrt FRO	Control Area Response wrt ideal response corresponding to current generation	Control Area Response wrt ideal response corresponding to MCR	Unit-1 Response wrt ideal response corresponding to current generation	Unit-1 Response wrt ideal response corresponding to MCR	Unit-2 Response wrt ideal response corresponding to current generation	Unit-2 Response wrt ideal response corresponding to MCR
1	11-05-2025 16:51HRS	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen	No Gen
2	12-06-2025 13:34HRS	0.97	16.01%	8.99%				
3	16-06-2025 11:51HRS	-0.74	-16.19%	-6.88%				
4	22-07-2025 19:46HRS	4.26	28.26%	25.57%	65.51%	58.60%	-8.17%	-7.47%
5	29-07-2025 14:55HRS	3.13	52.20%	28.99%				
6	01-09-2025 14:57HRS	8.80	127.66%	81.37%				
7	24-09-2025 11:04HRS	3.51	58.84%	32.49%	57.97%	32.85%	59.77%	32.14%
8	24-09-2025 11:32HRS	2.52	41.67%	23.30%				
9	15-10-2025 12:11HRS	6.07	190.84%	112.30%	190.84%	112.30%	No Gen	No Gen
10	16-12-2025 06:34HRS	17.84	207.34%	165.01%				
11	14-01-2026 13:38HRS	3.91	64.96%	36.13%	59.94%	33.51%	70.03%	38.75%
12	14-01-2026 14:05HRS	2.55	54.87%	31.76%	49.84%	28.79%	59.88%	34.72%
13	14-01-2026 14:09HRS	0.02	0.36%	0.21%	-49.10%	-29.01%	49.31%	29.43%
14	30-01-2026 11:08HRS	3.02	42.91%	27.90%	80.71%	52.61%	4.92%	3.19%
15	13-02-2026 12:14HRS	30.84	503.47%	285.31%				
16	22-02-2026 22:56HRS	16.43	170.52%	98.57%	150.99%	86.90%	189.89%	110.25%
17	22-02-2026 23:00HRS	-0.89	-9.12%	-5.33%	-5.13%	-2.99%	-13.09%	-7.66%
18	03-03-2026 11:42HRS	5.09	81.21%	47.04%				

SEIL Phase-I

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The performance of the generators was presented by SRLDC as tabulated below (Droop setting was 5%):

Sl.No	Events (Date and Time)	Control Area Response wrt FRO	Control Area Response wrt ideal response corresponding to current generation	Control Area Response wrt ideal response corresponding to MCR	Unit-1 Response wrt ideal response corresponding to current generation	Unit-1 Response wrt ideal response corresponding to MCR	Unit-2 Response wrt ideal response corresponding to current generation	Unit-2 Response wrt ideal response corresponding to MCR
1	11-05-2025 16:51HRS	10.67	145.35%	121.30%	143.23%	133.92%	148.06%	108.67%
2	12-06-2025 13:34HRS	0.25	4.29%	2.78%				
3	16-06-2025 11:51HRS	-0.61	-14.01%	-6.98%				
4	22-07-2025 19:46HRS	-0.25	-1.84%	-1.85%	-2.13%	-2.15%	-1.55%	-1.55%
5	29-07-2025 14:55HRS	3.21	62.48%	36.49%				
6	01-09-2025 14:57HRS	2.35	62.13%	26.73%				
7	24-09-2025 11:04HRS	0.44	11.66%	4.95%	9.18%	3.92%	14.17%	5.97%
8	24-09-2025 11:32HRS	0.18	4.80%	2.04%				
9	15-10-2025 12:11HRS	1.02	28.24%	11.64%	27.88%	11.42%	28.59%	11.86%
10	16-12-2025 06:34HRS	2.73	67.21%	62.14%				
11	14-01-2026 13:38HRS	0.19	4.86%	4.21%	4.86%	4.21%	No Gen	No Gen
12	14-01-2026 14:05HRS	0.28	11.34%	8.56%	11.34%	8.56%	No Gen	No Gen
13	14-01-2026 14:09HRS	1.03	31.38%	23.33%	31.38%	23.33%	No Gen	No Gen
14	30-01-2026 11:08HRS	0.20	2.90%	2.28%	13.48%	7.83%	-3.29%	-3.26%
15	13-02-2026 12:14HRS	6.74	104.60%	76.60%				
16	22-02-2026 22:56HRS	4.46	33.44%	32.92%	65.88%	63.76%	2.09%	2.09%
17	22-02-2026 23:00HRS	3.52	26.38%	26.02%	46.99%	45.61%	6.42%	6.44%
18	03-03-2026 11:42HRS	-0.11	-1.71%	-1.20%				

SEIL Phase-II

The performance of the generators was presented by SRLDC as tabulated below (Droop setting was 5%):

Sl.No	Events (Date and Time)	Control Area Response wrt FRO	Control Area Response wrt ideal response corresponding to current generation	Control Area Response wrt ideal response corresponding to MCR	Unit-1 Response wrt ideal response corresponding to current generation	Unit-1 Response wrt ideal response corresponding to MCR
1	11-05-2025 16:51HRS	3.20	49.32%	46.10%	49.32%	46.10%
2	12-06-2025 13:34HRS	-0.15	-2.40%	-2.09%		
3	16-06-2025 11:51HRS	-0.11	-1.89%	-1.65%		
4	22-07-2025 19:46HRS	13.39	121.13%	121.71%	121.13%	121.71%

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5	29-07-2025 14:55HRS	0.97	23.90%	13.97%		
6	01-09-2025 14:57HRS	0.40	10.56%	5.80%		
7	24-09-2025 11:04HRS	0.54	15.71%	7.79%	15.71%	7.79%
8	24-09-2025 11:32HRS	0.39	11.14%	5.59%		
9	15-10-2025 12:11HRS	1.28	37.20%	18.41%	37.20%	18.41%
10	16-12-2025 06:34HRS	-0.69	-17.43%	-9.99%		
11	14-01-2026 13:38HRS	0.28	7.59%	4.04%	7.59%	4.04%
12	14-01-2026 14:05HRS	0.29	10.57%	5.59%	10.57%	5.59%
13	14-01-2026 14:09HRS	3.50	92.08%	50.41%	92.08%	50.41%
14	30-01-2026 11:08HRS	0.30	6.39%	4.28%	6.39%	4.28%
15	13-02-2026 12:14HRS	0.25	7.79%	3.59%		
16	22-02-2026 22:56HRS	-0.73	-11.80%	-6.66%	-11.80%	-6.66%
17	22-02-2026 23:00HRS	0.33	5.40%	3.01%	5.40%	3.01%
18	03-03-2026 11:42HRS	-1.09	-25.49%	-15.63%		

SRLDC observed considerable variation in the responses of SEIL units across different events. It was highlighted that, despite satisfactory response with respect to FRO in certain events, the responses with respect to current generation and MCR were considerably lower.

SEIL informed that several events had occurred when the units were operating below technical minimum, with insufficient steam pressure due to coal quality and mill-related constraints. It was further informed that pressure correction logic had affected the actual response.

SEIL stated that the matter had been taken up with the OEM and tuning of the pressure correction curve and FGMO logic had been undertaken. A holding-time provision had also been introduced to improve the sustainability of the response.

SRLDC highlighted that the same units had demonstrated satisfactory responses during certain events, indicating that the required response was technically achievable. SEIL was advised to review the event-wise variations, particularly the differences between units operating at comparable generation levels, and undertake further tuning of the control logic.

ITPCL (IL&FS)

The performance of the generators was presented by SRLDC as tabulated below (Droop setting was 5%):

Sl.No	Events (Date and Time)	Control Area Response wrt FRO	Control Area Response wrt ideal response corresponding to current generation	Control Area Response wrt ideal response corresponding to MCR	Unit-1 Response wrt ideal response corresponding to current generation	Unit-1 Response wrt ideal response corresponding to MCR	Unit-2 Response wrt ideal response corresponding to current generation	Unit-2 Response wrt ideal response corresponding to MCR
1	11-05-2025 16:51HRS	27.36	360.90%	307.85%	326.72%	280.45%	395.51%	335.26%
2	12-06-2025 13:34HRS	8.36	119.59%	93.99%				
3	16-06-2025 11:51HRS	6.97	100.55%	78.39%				
4	22-07-2025 19:46HRS	11.41	97.31%	83.18%	91.91%	83.95%	103.51%	82.41%
5	29-07-2025 14:55HRS	2.45	48.62%	27.55%				
6	01-09-2025 14:57HRS	0.55	21.38%	12.30%				
7	24-09-2025 11:04HRS	1.74	70.80%	39.04%	70.80%	39.04%	No Gen	No Gen

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8	24-09-2025 11:32HRS	1.75	70.69%	39.33%				
9	15-10-2025 12:11HRS	3.45	133.10%	77.73%	133.10%	77.73%	No Gen	No Gen
10	16-12-2025 06:34HRS	6.98	285.17%	156.99%				
11	14-01-2026 13:38HRS	2.30	94.09%	51.75%	No Gen	No Gen	94.09%	51.75%
12	14-01-2026 14:05HRS	0.70	38.34%	21.20%	No Gen	No Gen	38.34%	21.20%
13	14-01-2026 14:09HRS	1.92	78.20%	43.20%	No Gen	No Gen	78.20%	43.20%
14	30-01-2026 11:08HRS	0.00	0.00%	0.00%	No Gen	No Gen	0.00%	0.00%
15	13-02-2026 12:14HRS	39.37	935.73%	442.93%				
16	22-02-2026 22:56HRS	18.24	275.38%	133.00%	267.13%	128.94%	283.62%	137.05%
17	22-02-2026 23:00HRS	11.34	164.63%	82.72%	165.40%	83.77%	163.85%	81.67%
18	03-03-2026 11:42HRS	3.60	148.15%	81.10%				

SRLDC observed that IL&FS had generally demonstrated satisfactory responses across several events, including responses exceeding the ideal response corresponding to current generation and MCR.

However, relatively lower responses were observed during certain consecutive events. SRLDC sought clarification regarding these variations.

There was no representative of IL&FS during the meeting.

NTPC Kudgi

The performance of the generators was presented by SRLDC as tabulated below (Droop setting was 5%):

Sl.No	Events (Date and Time)	Control Area Response wrt FRO	Control Area Response wrt ideal response corresponding to current generation	Control Area Response wrt ideal response corresponding to MCR	Unit-1 Response wrt ideal response corresponding to current generation	Unit-1 Response wrt ideal response corresponding to MCR	Unit-2 Response wrt ideal response corresponding to current generation	Unit-2 Response wrt ideal response corresponding to MCR	Unit-3 Response wrt ideal response corresponding to current generation	Unit-3 Response wrt ideal response corresponding to MCR
1	11-05-2025 16:51HRS	32.82	526.45%	290.55%	543.67%	297.58%	466.36%	259.78%	570.07%	314.30%
2	12-06-2025 13:34HRS	6.63	158.87%	88.08%						
3	16-06-2025 11:51HRS	0.66	15.63%	8.75%						
4	22-07-2025 19:46HRS	4.95	48.85%	41.75%	52.52%	44.09%	No Gen	No Gen	45.31%	39.40%
5	29-07-2025 14:55HRS	0.30	14.12%	7.85%						
6	01-09-2025 14:57HRS	No Gen	No Gen	No Gen						
7	24-09-2025 11:04HRS	-2.24	-35.35%	-19.85%	29.20%	16.20%	91.87%	49.74%	-213.34%	-125.48%
8	24-09-2025 11:32HRS	0.05	0.79%	0.44%						
9	15-10-2025 12:11HRS	8.95	144.10%	79.21%	152.14%	81.69%	151.05%	84.40%	129.29%	71.54%

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10	16-12-2025 06:34HRS	1.24	18.33%	10.96%						
11	14-01-2026 13:38HRS	2.31	36.96%	20.48%	39.18%	21.31%	53.81%	29.90%	18.18%	10.23%
12	14-01-2026 14:05HRS	6.37	136.40%	75.78%	125.58%	69.52%	138.24%	76.50%	145.28%	81.31%
13	14-01-2026 14:09HRS	12.30	189.35%	108.94%	242.12%	140.74%	201.02%	114.26%	124.63%	71.83%
14	30-01-2026 11:08HRS	4.15	59.18%	36.71%	48.07%	29.11%	56.61%	34.61%	72.06%	46.41%
15	13-02-2026 12:14HRS	46.50	674.60%	411.71%						
16	22-02-2026 22:56HRS	28.69	286.58%	161.37%	270.61%	156.26%	298.73%	163.57%	291.13%	164.28%
17	22-02-2026 23:00HRS	4.60	44.97%	25.85%	41.36%	24.20%	36.52%	20.39%	56.72%	32.96%
18	03-03-2026 11:42HRS	-0.83	-19.77%	-11.09%						

NNTPP

The performance of the generators was presented by SRLDC as tabulated below (Droop setting was 5%):

Sl.No	Events (Date and Time)	Control Area Response wrt FRO	Control Area Response wrt ideal response corresponding to current generation	Control Area Response wrt ideal response corresponding to MCR	Unit-1 Response wrt ideal response corresponding to current generation	Unit-1 Response wrt ideal response corresponding to MCR	Unit-2 Response wrt ideal response corresponding to current generation	Unit-2 Response wrt ideal response corresponding to MCR
1	11-05-2025 16:51HRS	2.46	28.28%	28.25%	-22.90%	-22.98%	79.95%	79.48%
2	12-06-2025 13:34HRS	-1.24	-20.64%	-14.27%				
3	16-06-2025 11:51HRS	-0.12	-2.46%	-1.38%				
4	22-07-2025 19:46HRS	1.14	17.11%	17.08%	17.11%	17.08%	No Gen	No Gen
5	29-07-2025 14:55HRS	-0.13	-4.37%	-2.95%				
6	01-09-2025 14:57HRS	0.82	15.31%	9.46%				
7	24-09-2025 11:04HRS	-1.89	-34.84%	-21.78%	-65.48%	-40.27%	-5.18%	-3.29%
8	24-09-2025 11:32HRS	-0.54	-10.06%	-6.18%				
9	15-10-2025 12:11HRS	-1.28	-23.89%	-14.77%	-3.01%	-1.84%	-44.24%	-27.71%
10	16-12-2025 06:34HRS	5.99	103.33%	68.83%				
11	14-01-2026 13:38HRS	-0.36	-7.27%	-4.17%	-13.16%	-7.71%	-1.11%	-0.62%
12	14-01-2026 14:05HRS	-0.09	-2.30%	-1.39%	-1.60%	-1.01%	-3.06%	-1.77%
13	14-01-2026 14:09HRS	-2.28	-43.88%	-26.21%	-60.77%	-37.73%	-25.61%	-14.69%
14	30-01-2026 11:08HRS	0.44	8.16%	5.01%	22.93%	15.04%	-8.80%	-5.03%
15	13-02-2026 12:14HRS	0.75	14.30%	8.60%				

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16	22-02-2026 22:56HRS	-1.78	-20.66%	-13.38%	-23.87%	-15.54%	-17.42%	-11.22%
17	22-02-2026 23:00HRS	0.43	5.01%	3.23%	5.77%	3.75%	4.25%	2.72%
18	03-03-2026 11:42HRS	0.72	15.99%	8.30%				

SRLDC observed that NNTPP had exhibited inadequate or negative responses during several frequency events. NNTPP informed that the plant had experienced mill-related problems and deterioration in coal quality, resulting in partial generation losses and operation at reduced loads. It was stated that the ash content had increased to around 11%, and modifications to mill accessories were being undertaken with technical assistance.

Further, it was informed that the TDBFP recirculation system had certain design limitations during low-load operation. When generation reduced below approximately 330 MW, FGMO was being kept out of service to avoid the risk of unit tripping due to inadequate feedwater flow. The matter had been taken up with the OEM for replacement of the existing manual valve arrangement with a motorised control valve.

SRLDC and SRPC emphasised that FGMO could not be kept out of service without obtaining the requisite permission from SRLDC. NNTPP was advised to expedite rectification of the technical issues in consultation with the OEM and ensure compliance with the applicable Grid Code provisions.

NTPC Telangana

The performance of the generators was presented by SRLDC as tabulated below (Droop setting was 5%):

Sl.No	Events (Date and Time)	Control Area Response wrt FRO	Control Area Response wrt ideal response corresponding to current generation	Control Area Response wrt ideal response corresponding to MCR	Unit-1 Response wrt ideal response corresponding to current generation	Unit-1 Response wrt ideal response corresponding to MCR	Unit-2 Response wrt ideal response corresponding to current generation	Unit-2 Response wrt ideal response corresponding to MCR
1	11-05-2025 16:51HRS	32.74	731.28%	404.08%	622.07%	343.34%	840.24%	464.82%
2	12-06-2025 13:34HRS	4.88	109.28%	60.23%				
3	16-06-2025 11:51HRS	7.54	168.71%	93.10%				
4	22-07-2025 19:46HRS	2.13	34.47%	34.01%	No Gen	No Gen	34.47%	34.01%
5	29-07-2025 14:55HRS	No Gen	No Gen	No Gen				
6	01-09-2025 14:57HRS	0.69	28.51%	16.94%				
7	24-09-2025 11:04HRS	-0.01	-0.57%	-0.34%	No Gen	No Gen	-0.57%	-0.34%
8	24-09-2025 11:32HRS	1.01	42.10%	25.05%				
9	15-10-2025 12:11HRS	0.60	24.19%	14.82%	No Gen	No Gen	24.19%	14.82%
10	16-12-2025 06:34HRS	17.71	235.63%	218.64%				
11	14-01-2026 13:38HRS	4.75	107.63%	58.66%	123.02%	66.63%	92.43%	50.68%
12	14-01-2026 14:05HRS	5.02	149.39%	83.35%	136.77%	76.39%	162.04%	90.30%
13	14-01-2026 14:09HRS	-0.01	-0.27%	-0.16%	3.67%	2.21%	-4.15%	-2.53%

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14	30-01-2026 11:08HRS	2.93	57.43%	36.18%	57.00%	36.15%	57.86%	36.22%
15	13-02-2026 12:14HRS	52.85	1140.53%	652.35%				
16	22-02-2026 22:56HRS	4.11	32.88%	32.71%	6.33%	6.26%	59.19%	59.16%
17	22-02-2026 23:00HRS	-0.34	-2.70%	-2.71%	-3.58%	-3.58%	-1.83%	-1.84%
18	03-03-2026 11:42HRS	1.37	57.75%	33.84%				

NTPC Ramagundam Stage I&II

The performance of the generators was presented by SRLDC as tabulated below (Droop setting was 5%):

Sl.No	Events (Date and Time)	Control Area Response wrt FRO	Control Area Response wrt ideal response corresponding to current generation	Control Area Response wrt ideal response corresponding to MCR	Unit-1 Response wrt ideal response corresponding to current generation	Unit-1 Response wrt ideal response corresponding to MCR	Unit-2 Response wrt ideal response corresponding to current generation	Unit-2 Response wrt ideal response corresponding to MCR	Unit-3 Response wrt ideal response corresponding to current generation	Unit-3 Response wrt ideal response corresponding to MCR
1	11-05-2025 16:51HRS	13.16	242.47%	134.76%	1.54%	0.89%	-46.43%	-26.59%	19.66%	11.03%
2	12-06-2025 13:34HRS	1.83	33.63%	18.75%						
3	16-06-2025 11:51HRS	1.88	34.09%	19.25%						
4	22-07-2025 19:46HRS	9.87	73.47%	72.70%	-37.09%	-36.58%	No Gen	No Gen	8.44%	8.09%
5	29-07-2025 14:55HRS	2.10	38.97%	21.52%						
6	01-09-2025 14:57HRS	1.09	55.95%	33.61%						
7	24-09-2025 11:04HRS	0.67	22.89%	13.11%	-24.18%	-14.62%	95.98%	58.50%	47.45%	27.25%
8	24-09-2025 11:32HRS	-0.30	-10.20%	-5.95%						
9	15-10-2025 12:11HRS	-1.30	-53.67%	-31.07%	-50.10%	-31.29%	22.33%	12.79%	No Gen	No Gen
10	16-12-2025 06:34HRS	11.32	165.07%	152.12%						
11	14-01-2026 13:38HRS	2.48	44.17%	25.36%	0.00%	0.00%	11.93%	7.14%	-0.37%	-0.22%
12	14-01-2026 14:05HRS	1.73	40.94%	23.80%	-20.80%	-12.80%	10.73%	6.50%	-1.17%	-0.70%
13	14-01-2026 14:09HRS	6.72	110.26%	68.76%	53.62%	32.14%	-72.45%	-43.88%	13.75%	8.16%
14	30-01-2026 11:08HRS	0.00	-0.07%	-0.04%	0.00%	0.00%	-6.38%	-3.79%	10.05%	6.03%
15	13-02-2026 12:14HRS	29.82	512.37%	305.31%						
16	22-02-2026 22:56HRS	20.46	238.03%	136.42%	69.46%	43.24%	9.48%	5.74%	-5.07%	-3.04%
17	22-02-2026 23:00HRS	2.26	25.37%	15.09%	25.94%	16.32%	0.00%	0.00%	1.32%	0.79%
18	03-03-2026 11:42HRS	1.32	23.51%	13.53%						

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Sl.No	Events (Date and Time)	Unit-4 Response wrt ideal response corresponding to current generation	Unit-4 Response wrt ideal response corresponding to MCR	Unit-5 Response wrt ideal response corresponding to current generation	Unit-5 Response wrt ideal response corresponding to MCR	Unit-6 Response wrt ideal response corresponding to current generation	Unit-6 Response wrt ideal response corresponding to MCR
1	11-05-2025 16:51HRS	461.93%	253.34%	425.94%	237.51%	149.03%	80.99%
2	12-06-2025 13:34HRS						
3	16-06-2025 11:51HRS						
4	22-07-2025 19:46HRS	149.54%	148.97%	78.43%	78.68%	61.07%	60.00%
5	29-07-2025 14:55HRS						
6	01-09-2025 14:57HRS						
7	24-09-2025 11:04HRS	0.73%	0.40%	No Gen	No Gen	No Gen	No Gen
8	24-09-2025 11:32HRS						
9	15-10-2025 12:11HRS	No Gen	No Gen	-86.19%	-48.52%	No Gen	No Gen
10	16-12-2025 06:34HRS						
11	14-01-2026 13:38HRS	94.19%	52.10%	6.83%	3.97%	86.61%	47.68%
12	14-01-2026 14:05HRS	143.94%	79.04%	-87.05%	-52.48%	135.83%	76.20%
13	14-01-2026 14:09HRS	59.95%	35.41%	242.43%	162.86%	144.29%	91.94%
14	30-01-2026 11:08HRS	16.65%	9.82%	-16.79%	-9.91%	-1.66%	-0.98%
15	13-02-2026 12:14HRS						
16	22-02-2026 22:56HRS	358.57%	201.49%	356.95%	199.33%	276.72%	153.78%
17	22-02-2026 23:00HRS	-4.74%	-2.79%	73.19%	42.66%	28.15%	16.68%
18	03-03-2026 11:42HRS						

SRLDC observed that although the overall station response was satisfactory in certain events, Units 1, 2 and 3 had consistently exhibited insufficient responses compared with the other units.

NTPC Ramagundam informed that the Stage-I units were experiencing mill availability and stability issues, resulting in operation at part load and limitations in CMC operation.

SRLDC pointed out that other units operating near technical minimum had provided satisfactory upward responses during falling-frequency events. Accordingly, the reasons for the insufficient responses of Units 1, 2 and 3 were required to be examined.

MS, SRPC observed that AGC operation and associated commercial benefits should not be considered a substitute for the mandatory FGMO response. NTPC Ramagundam was advised to ensure proper activation and tuning of FGMO logic and improve the performance of the identified units.

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NTPC Ramagundam Stage-III

The performance of the generators was presented by SRLDC as tabulated below (Droop setting was 5%):

Sl.No	Events (Date and Time)	Control Area Response wrt FRO	Control Area Response wrt ideal response corresponding to current generation	Control Area Response wrt ideal response corresponding to MCR	Unit-7 Response wrt ideal response corresponding to current generation	Unit-7 Response wrt ideal response corresponding to MCR
1	11-05-2025 16:51HRS	21.80	455.27%	250.72%	455.27%	250.72%
2	12-06-2025 13:34HRS	5.97	125.14%	68.64%		
3	16-06-2025 11:51HRS	4.11	81.37%	47.22%		
4	22-07-2025 19:46HRS	6.74	51.57%	50.51%	51.57%	50.51%
5	29-07-2025 14:55HRS	1.16	23.25%	13.31%		
6	01-09-2025 14:57HRS	4.28	82.20%	49.22%		
7	24-09-2025 11:04HRS	1.73	36.27%	19.95%	36.27%	19.95%
8	24-09-2025 11:32HRS	-1.50	-30.81%	-17.30%		
9	15-10-2025 12:11HRS	-4.36	-90.28%	-50.17%	-90.28%	-50.17%
10	16-12-2025 06:34HRS	1.16	13.74%	13.38%		
11	14-01-2026 13:38HRS	6.64	135.76%	76.40%	135.76%	76.40%
12	14-01-2026 14:05HRS	6.46	172.50%	99.88%	172.50%	99.88%
13	14-01-2026 14:09HRS	8.56	157.34%	98.38%	157.34%	98.38%
14	30-01-2026 11:08HRS	1.79	32.41%	20.60%	32.41%	20.60%
15	13-02-2026 12:14HRS	72.48	1317.10%	833.57%		
16	22-02-2026 22:56HRS	28.71	358.94%	215.29%	358.94%	215.29%
17	22-02-2026 23:00HRS	5.96	71.02%	44.67%	71.02%	44.67%
18	03-03-2026 11:42HRS	-3.74	-75.02%	-42.99%		

NTPC Simhadri Stage-I

The performance of the generators was presented by SRLDC as tabulated below (Droop setting was 5%):

Sl.No	Events (Date and Time)	Control Area Response wrt FRO	Control Area Response wrt ideal response corresponding to current generation	Control Area Response wrt ideal response corresponding to MCR	Unit-1 Response wrt ideal response corresponding to current generation	Unit-1 Response wrt ideal response corresponding to MCR	Unit-2 Response wrt ideal response corresponding to current generation	Unit-2 Response wrt ideal response corresponding to MCR
1	11-05-2025 16:51HRS	37.65	705.20%	385.93%	715.71%	388.75%	694.84%	383.11%
2	12-06-2025 13:34HRS	8.87	165.59%	90.91%				
3	16-06-2025 11:51HRS	5.94	106.82%	60.93%				
4	22-07-2025 19:46HRS	15.32	113.74%	103.40%	111.78%	99.09%	115.61%	107.71%
5	29-07-2025 14:55HRS	0	0%	0%				
6	01-09-2025 14:57HRS	4.00	150.59%	81.97%				
7	24-09-2025 11:04HRS	2.43	45.07%	24.90%	89.57%	49.80%	0.00%	0.00%
8	24-09-2025 11:32HRS	-1.24	-23.04%	-12.67%				

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9	15-10-2025 12:11HRS	0.45	8.40%	4.58%	16.71%	9.16%	0.00%	0.00%
10	16-12-2025 06:34HRS	3.76	80.23%	77.10%				
11	14-01-2026 13:38HRS	1.98	69.61%	40.54%	No Gen	No Gen	69.61%	40.54%
12	14-01-2026 14:05HRS	1.49	68.56%	41.02%	No Gen	No Gen	68.56%	41.02%
13	14-01-2026 14:09HRS	-8.02	-265.48%	-164.42%	No Gen	No Gen	-265.48%	-164.42%
14	30-01-2026 11:08HRS	6.24	102.92%	64.00%	43.58%	25.98%	157.56%	102.02%
15	13-02-2026 12:14HRS	78.71	1346.78%	806.75%				
16	22-02-2026 22:56HRS	23.40	171.12%	157.96%	185.04%	185.27%	154.63%	130.65%
17	22-02-2026 23:00HRS	14.16	102.18%	95.60%	102.07%	103.32%	102.32%	87.89%
18	03-03-2026 11:42HRS	1.32	24.42%	13.56%				

NTPC Simhadri Stage-II

The performance of the generators was presented by SRLDC as tabulated below (Droop setting was 5%):

Sl.No	Events (Date and Time)	Control Area Response wrt FRO	Control Area Response wrt ideal response corresponding to current generation	Control Area Response wrt ideal response corresponding to MCR	Unit-3 Response wrt ideal response corresponding to current generation	Unit-3 Response wrt ideal response corresponding to MCR	Unit-4 Response wrt ideal response corresponding to current generation	Unit-4 Response wrt ideal response corresponding to MCR
1	11-05-2025 16:51HRS	44.90	874.02%	493.85%	963.64%	545.77%	783.97%	441.92%
2	12-06-2025 13:34HRS	-5.02	-98.86%	-55.19%				
3	16-06-2025 11:51HRS	2.13	82.64%	46.88%				
4	22-07-2025 19:46HRS	9.31	153.19%	130.29%	No Gen	No Gen	153.19%	130.29%
5	29-07-2025 14:55HRS	1.32	26.15%	14.47%				
6	01-09-2025 14:57HRS	1.44	56.91%	31.71%				
7	24-09-2025 11:04HRS	-0.80	-15.74%	-8.83%	-11.70%	-6.65%	-19.90%	-11.00%
8	24-09-2025 11:32HRS	1.09	21.30%	12.02%				
9	15-10-2025 12:11HRS	1.01	39.04%	22.19%	No Gen	No Gen	39.04%	22.19%
10	16-12-2025 06:34HRS	4.25	47.94%	46.71%				
11	14-01-2026 13:38HRS	2.88	56.92%	31.67%	-21.02%	-11.83%	136.62%	75.18%
12	14-01-2026 14:05HRS	2.55	66.15%	37.70%	-5.10%	-2.96%	140.05%	78.36%
13	14-01-2026 14:09HRS	14.52	263.28%	159.74%	409.86%	241.02%	125.47%	78.47%
14	30-01-2026 11:08HRS	-0.46	-8.05%	-5.09%	31.58%	20.45%	-49.66%	-30.63%

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15	13-02-2026 12:14HRS	51.87	946.54%	570.58%				
16	22-02-2026 22:56HRS	19.40	136.54%	135.81%	133.23%	133.65%	139.90%	137.97%
17	22-02-2026 23:00HRS	1.67	11.48%	11.66%	16.01%	16.37%	6.89%	6.95%
18	03-03-2026 11:42HRS	4.87	94.83%	53.59%				

SRLDC observed inconsistent unit-wise responses at NTPC Simhadri. It was highlighted that certain units had provided satisfactory responses during some events but exhibited insufficient or negative responses during other events.

Particular reference was made to the events on 14.01.2026 and 24.09.2025, during which differences in the responses of individual units were observed.

NTPC Simhadri referred to variations in coal quality, operating conditions and the interaction of pressure correction and control logic as possible contributing factors.

SRLDC observed that no consistent pattern could be established regarding the non-responsive units and advised NTPC Simhadri to examine the event-wise performance and identify the underlying causes of the variations.

NTPC Talcher Stage-II

The performance of the generators was presented by SRLDC as tabulated below (Droop setting was 5%):

Sl. No	Events (Date and Time)	Control Area Response wrt FRO	Control Area Response wrt ideal response corresponding to current generation	Control Area Response wrt ideal response corresponding to MCR	Unit-3 Response wrt ideal response corresponding to current generation	Unit-3 Response wrt ideal response corresponding to MCR	Unit-4 Response wrt ideal response corresponding to current generation	Unit-4 Response wrt ideal response corresponding to MCR	Unit-5 Response wrt ideal response corresponding to current generation	Unit-5 Response wrt ideal response corresponding to MCR	Unit-6 Response wrt ideal response corresponding to current generation	Unit-6 Response wrt ideal response corresponding to MCR
1	11-05-2025 16:51HRS	7.98	110.14%	105.68%	156.23%	149.13%	156.23%	145.00%	71.75%	70.33%	59.75%	58.27%
2	12-06-2025 13:34HRS	1.33	18.18%	17.61%	-15.39%	-15.08%	45.96%	43.67%	12.01%	11.48%	30.74%	30.34%
3	16-06-2025 11:51HRS	1.06	20.27%	18.66%	No Gen	No Gen	53.43%	51.62%	-57.14%	-50.74%	60.69%	55.11%
4	22-07-2025 19:46HRS	0.91	10.55%	10.28%	No Gen	No Gen	3.46%	3.32%	9.29%	9.13%	18.74%	18.40%
5	29-07-2025 14:55HRS	1.37	40.23%	24.28%	No Gen	No Gen	8.51%	4.83%	67.20%	40.00%	43.21%	28.00%
6	01-09-2025 14:57HRS	1.03	45.03%	27.27%	32.36%	19.50%	No Gen	No Gen	No Gen	No Gen	57.59%	35.04%
7	24-09-2025 11:04HRS	1.02	29.87%	17.96%	28.86%	17.31%	No Gen	No Gen	21.61%	12.93%	39.02%	23.65%
8	24-09-2025 11:32HRS	1.01	29.00%	17.84%	33.27%	20.31%	No Gen	No Gen	19.64%	12.19%	34.22%	21.01%
9	15-10-2025 12:11HRS	1.14	26.75%	15.13%	27.83%	15.56%	-29.79%	-16.86%	88.49%	49.80%	20.94%	12.03%
10	16-12-2025 06:34HRS	1.51	21.32%	20.00%	51.49%	48.00%	0.00%	0.00%	-62.93%	-56.01%	89.82%	88.00%
11	14-01-2026 13:38HRS	2.26	55.62%	40.01%	47.08%	30.68%	No Gen	No Gen	55.79%	40.01%	62.52%	49.35%

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12	14-01-2026 14:05HRS	1.26	41.62%	30.08%	57.85%	41.02%	No Gen	No Gen	56.66%	39.84%	12.40%	9.38%
13	14-01-2026 14:09HRS	5.9	145.09%	104.31%	200.75%	143.16%	No Gen	No Gen	161.39%	113.19%	76.24%	56.60%
14	30-01-2026 11:08HRS	0.94	12.60%	12.46%	52.72%	51.50%	-17.44%	-17.14%	4.05%	4.04%	11.46%	11.43%
15	13-02-2026 12:14HRS	3.21	61.34%	42.57%	163.90%	109.86%	358.33%	240.18%	-96.94%	-69.92%	-153.94%	-109.86%
16	22-02-2026 22:56HRS	3.78	32.85%	32.11%	-142.78%	-144.48%	203.23%	188.62%	-4.07%	-4.01%	89.75%	88.29%
17	22-02-2026 23:00HRS	0.7	6.00%	5.95%	3.07%	3.07%	-2.81%	-2.70%	12.20%	12.03%	11.22%	11.39%
18	03-03-2026 11:42HRS	2.77	64.58%	36.71%	47.62%	26.70%	107.93%	60.08%	10.91%	6.68%	98.00%	53.40%

SRLDC observed that, despite satisfactory station-level FRP in certain events, the unit-wise responses with respect to current generation and MCR were inconsistent.

NTPC Talcher Stage-II informed that pressure correction logic, load hunting, variations in coal quality and operating conditions had affected the responses of individual units.

SRLDC highlighted that satisfactory FRP with respect to FRO did not necessarily indicate compliance with the ideal response corresponding to current generation and MCR. NTPC was advised to examine the variations between units operating under comparable conditions and undertake suitable corrective measures.

Greenko Pinnapuram PSP

SRLDC informed that Greenko PSP had demonstrated satisfactory primary frequency response during the events in which its units were operating in generation mode. The PMU plots indicated that the units had responded promptly to frequency deviations and sustained the response.

It was further observed that, during pumping operation, a reduction in power absorption had been noticed following a fall in frequency, thereby providing some support to the grid.

MS, SRPC appreciated the response observed in both generation and pumping modes and requested Greenko to examine the technical mechanism responsible for the reduction in pumping load during frequency disturbances.

Greenko agreed to examine the matter and furnish the technical details in a subsequent meeting.

Meenakshi Energy Ltd. (Vendanta)

SRLDC informed that Units 1 and 2 of Meenakshi Energy, each of 150 MW capacity, were not covered under the applicable FGMO requirement. Units 3 and 4 had been commissioned during FY 2025-26, and FRO had not been allocated to these units for the relevant period.

It was informed that Meenakshi Energy had furnished data for only a limited number of events, while SRLDC data had been used for the remaining events. The analysis indicated insufficient or negative responses during several events. For the event on 03.03.2026, the response with respect to current generation was observed to be only around 2%.

SRLDC advised that the performance required improvement.

4. Frequency Response Obligation (FRO) of Control Area in Southern Region for FY 2026-27

NLDC vide communication dated 13.04.2026 to all the stakeholders communicated the following (placed as Annexure-3a)

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a) NLDC, in consultation with RLDCs, has assessed the Frequency Response Obligation (FRO) of each control area under RLDC jurisdiction for the fiscal year 2026-27, in compliance with Regulation 30 (10) (f) and as outlined in Annexure-2 of the CERC (Indian Electricity Grid Code) Regulations, 2023.

b) The FRO has been assessed based on the minimum All India target frequency response characteristics (FRC), taking into account the generation and load within each control area during the Calendar Year (CY) 2025, as detailed in Table 4 under Regulation 30 (10) (g) of the CERC (IEGC), 2023.

c) The **FRO** for each control area under SR jurisdiction for **FY 2026-27** is and follows:

Sl. No.	States	Avg. Generation (MW)	Avg. Demand (MW)	FRO (MW/Hz)	
				Solar Hours	Non-Solar Hours
1	Andhra Pradesh (AP)	5396	9107	931	598
2	Karnataka (KAR)	5243	10992	1042	670
3	Kerala (KER)	1132	3554	301	193
4	Puducherry*	0	402	0	0
5	Tamil Nadu (TN)	3921	15003	1214	781
6	Telangana (TG)	4599	10117	944	607

SI. No.	Entity Name (Registered User in SRLDC)	Capacity (MW)	Avg. Generation (MW)	FRO (MW/Hz)	
				Solar Hours	Non-Solar Hours
1	Coastal Energen Pvt. Ltd	1200	700	45	29
2	Greenko AP01 IREP Pvt. Limited	1200	846	54	35
3	IL & FS Tamil Nadu Power Company Limited	1200	687	44	28
4	LANCO Kondappalli Power Pvt. Ltd Stage II	366	183	12	8
5	Meenakshi Energy Limited	700	220	14	9
6	NEW NEYVELI THERMAL POWER PLANT	1000	596	38	25
7	NLC Tamil Nadu Power Limited	1000	557	36	23
8	NLC TPS I Expansion	420	249	16	10
9	NLC TPS II Expansion	500	185	12	8
10	NLC TPS II Stage I	630	208	13	9
11	NLC TPS II Stage II	840	300	19	12
12	NTPC Kudgi Super Thermal Power Plant	2400	1175	75	48
13	NTPC Simhadri Stage I	1000	609	39	25
14	NTPC Simhadri Stage II	1000	631	40	26
15	NTPC Talcher Stage II	2000	1464	94	60
16	NTPC Tamil Nadu Energy Company Ltd, Chennai	1500	874	56	36

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17	NTPC Telangana	1600	1023	66	42
18	Ramagundam Stage I & II	2100	1134	73	47
19	Ramagundam Stage III	500	344	22	14
20	SEIL Energy India Limited	1320	874	56	36
21	SEIL Energy India Limited Project -2	660	524	34	22

- ***All concerned may note the same for compliance.***
- ***State SLDCs are requested to present distribution of Frequency Response Obligation (FRO) within STU connected generators for FY 2026-27***

Deliberations

Kerala SLDC presented the FRO distribution within the STU connected generators FY 2026-27 as follows:

STATE FRO ALLOCATION								
Generating tation	Average Generaion in MW	Month	Sate Consumption in MU	**FRO Target Solar Hours**				301
Idukki	382	24-Jan		**FRO Target Non Solar Hours**				193
Edamalayar	35	24-Feb		Sl. No	Entity	Av. Gen. in mW	FRO (MW/Hz) Solar Hrs.	FRO (MW/Hz) Non Solar Hrs.
Lower Periyar	170	24-Mar		1	**Idukki**	382	**102**	**65**
Kuttiyadi	180	24-Apr		2	**Edamalayar**	35	**9**	**6**
Sabarigiri	150	24-May		3	**Lower Periyar**	170	**45**	**29**
NES	25	24-Jun		4	**Kuttiyadi**	180	**48**	**31**
Sholayar	30	24-Jul		5	**Sabarigiri**	150	**40**	**26**
Pallivasal	30	24-Aug		6	**NES**	25	**7**	**4**
Panniar	16	Sep-24			Sholayar	30	**8**	**5**
Sengulam	24	Oct-24			Pallivasal	30	**8**	**5**
Kakkad	30	Nov-24			Panniar	16	**5**	**4**
Small Hydro	7	Dec-24			Sengulam	24	**7**	**4**
Poringal	53				Kakkad	30	**8**	**5**
		Average Demand in MW	3554					
Total	1132				Poringal	53	14	9
							301	**193**

Telangana SLDC presented the FRO distribution within the STU connected generators FY 2026-27 as follows:

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Sl.	Generating station	Unit	Fuel type	MCR (MW)	Share of total MCR	FRO allotted — solar hours (MW/Hz)	FRO allotted — non-solar hours (MW/Hz)	Droop % assumed	Response available at ±5% / ±10% of MCR (MW)
1	KTPS-V	KTPS-V U-9	Thermal	250.0	3.63%	**34.22**	**22.01**	5.0	12.50
2	KTPS-V	KTPS-V U-10	Thermal	250.0	3.63%	**34.22**	**22.01**	5.0	12.50
3	KTPS-VI	KTPS-VI	Thermal	500.0	7.25%	**68.45**	**44.01**	5.0	25.00
4	KTPS-VII	KTPS-VII	Thermal	800.0	11.60%	**109.52**	**70.42**	5.0	40.00
5	KTPP Stg-I	KTPP Stg-I	Thermal	500.0	7.25%	**68.45**	**44.01**	5.0	25.00
6	KTPP Stg-II	KTPP Stg-II	Thermal	600.0	8.70%	**82.14**	**52.82**	5.0	30.00
7	BTPS	BTPS U-1	Thermal	270.0	3.92%	**36.96**	**23.77**	5.0	13.50
8	BTPS	BTPS U-2	Thermal	270.0	3.92%	**36.96**	**23.77**	5.0	13.50
9	BTPS	BTPS U-3	Thermal	270.0	3.92%	**36.96**	**23.77**	5.0	13.50
10	BTPS	BTPS U-4	Thermal	270.0	3.92%	**36.96**	**23.77**	5.0	13.50
11	STPP (Singareni)	STPP U-1	Thermal	600.0	8.70%	**82.14**	**52.82**	5.0	30.00
12	STPP (Singareni)	STPP U-2	Thermal	600.0	8.70%	**82.14**	**52.82**	5.0	30.00
13	NSHES	NSHES U-1	Hydro	110.0	1.60%	**15.06**	**9.68**	5.0	11.00
14	NSHES	NSHES U-2	Hydro	100.8	1.46%	**13.80**	**8.87**	5.0	10.08
15	NSHES	NSHES U-3	Hydro	100.8	1.46%	**13.80**	**8.87**	5.0	10.08
16	NSHES	NSHES U-4	Hydro	100.8	1.46%	**13.80**	**8.87**	5.0	10.08
17	NSHES	NSHES U-5	Hydro	100.8	1.46%	**13.80**	**8.87**	5.0	10.08
18	NSHES	NSHES U-6	Hydro	100.8	1.46%	**13.80**	**8.87**	5.0	10.08
19	NSHES	NSHES U-7	Hydro	100.8	1.46%	**13.80**	**8.87**	5.0	10.08
20	NSHES	NSHES U-8	Hydro	100.8	1.46%	**13.80**	**8.87**	5.0	10.08
21	SLBHES	SLBHES U-1	Hydro	150.0	2.18%	**20.53**	**13.20**	5.0	15.00
22	SLBHES	SLBHES U-2	Hydro	150.0	2.18%	**20.53**	**13.20**	5.0	15.00
23	SLBHES	SLBHES U-3	Hydro	150.0	2.18%	**20.53**	**13.20**	5.0	15.00
24	SLBHES	SLBHES U-4	Hydro	150.0	2.18%	**20.53**	**13.20**	5.0	15.00
25	SLBHES	SLBHES U-5	Hydro	150.0	2.18%	**20.53**	**13.20**	5.0	15.00
26	SLBHES	SLBHES U-6	Hydro	150.0	2.18%	**20.53**	**13.20**	5.0	15.00
	TOTAL — TGGENCO STU-connected units			**6895.60**	**100.00%**	**944.00**	**607.00**		**430.56**

- ***Remaining State SLDCs are requested to distribute Frequency Response Obligation (FRO) within STU connected generators for FY 2026-27 under intimation to SRPC and SRLDC***

5. Conclusion

MS, SRPC thanked all the participants and informed that the exercise of reviewing FGMO/FRP performance would be continued in the subsequent meetings. All generating stations were requested to collect complete information pertaining to frequency events as and when notified by Grid-India.

He emphasised that the objective of the exercise was to improve the frequency response of generating stations in accordance with the Grid Code requirements. It was clarified that FRO was prescribed for commercial incentives to obtain a minimum response from generators and did not represent the mandatory response requirement under the Grid Code, which is considerably higher. Accordingly, generating stations were requested to undertake necessary modifications to improve their frequency response. It was further informed that any specific technical queries could be communicated to SRPC for examination and resolution. He also appreciated the workshop conducted by SRLDC, during which several technical issues and queries had been discussed, and expressed hope that the frequency response performance would improve in future.

ED, SRLDC stated that the workshop and comprehensive event-wise and unit-wise analysis had provided useful insights into FGMO performance under different loading conditions, including responses corresponding to actual generation and MCR. SRLDC requested the concerned generating stations to examine the identified gaps and deviations and undertake suitable corrective measures wherever required.

SE(O), SRPC thanked all the SLDCs, Generating Stations and SRLDC for their participation and presentations.

The meeting concluded with thanks to all the participants.

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