

	 <p>MAHATRANSCO Maharashtra State Electricity Transmission Co. Ltd.</p> <p>MAHARASHTRA STATE ELECTRICITY TRANSMISSION CO.LTD.</p> <p>CIN NO. U40109MH2005SGC153646</p> <p>Maharashtra State Load Dispatch Center Office of The Chief Engineer</p> <p>Tele :91-022-27601762 (P)</p> <p>91-022-27601931 (O) Extn.1003</p> <p>Email : cesldc@mahasldc.in</p> <p>website : www.mahasldc.in</p>	 <p>RIGHT TO INFORMATION</p>  <p>सर्वोच्च ऊर्जा प्राधिकरण</p>
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Ref. No. CE/MSLDC/ Op./

Date:

To,

As per mailing list

Sub: Agenda for the 7th Operation Co-ordination Committee (OCC) meeting.

Ref.: 1. MOM Circulated vide CE/MSLDC/TECH/Op/OCC/2080 Dated. 29.11.2023
2. E-mail dtd. 04.01.2023 for agenda request.

Dear Sir,

In reference to the above subject, the 6th Operation Co-ordination Committee (OCC) meeting was convened on 18th August 2023. Minutes of the same are circulated vide letter under ref. 1.

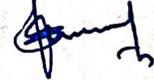
Vide letter under reference no. 2, the undersigned, Member Convener of the OCC had requested all the members of the OCC to submit agenda items for 7th OCC meeting.

Please find enclosed the agenda for the 7th OCC meeting finalized in consultation with Executive Director (MSLDC), Chairman of the OCC. The meeting is scheduled on 14.01.2024 at **11:30 hrs.** at SLDC, Kalwa through hybrid mode i.e., physical and video conferencing.

It is requested to kindly make it convenient to attend the meeting with relevant information.

Encl: As above.

Yours sincerely,



Superintending Engineer, MSLDC
(Member Convener of OCC)

Copy s.w.rs. to:

The Director (Operations), MSETCL, Prakashganga, Mumbai.
The Executive Director, MSLDC, Airoli, Navi Mumbai.

All OCC members as per list

Sr.No	Name of Organization	Name of Nominee	Designation	Committee constituent	Contact No.	E-mail ID
1	SLDC	Shri Shashank Jewalikar	ED, MSLDC (l/c)	Chairperson	022-27301931	edmseholding@gmail.com
2	MSETCL	Shri. Rohidas Mhaske	ED, Tr O&M MSETCL	Member	7447441000	edtrans@mahatransco.in
3	SLDC	Shri. Mahesh Bhagwat	CE, MSLDC	Member	9920499062	cesldc@mahasldc.in
4	STU/MSETCL	Shri. Peeyush Sharma	CE, STU	Member	9769213865	cestu@mahatransco.in
5	MSEDCL	Shri Pravin Annachatree	S.E (LM), MSEDCL	Member	9833980238	selmkalwa@gmail.com
6	MSPGCL	Shri E. S. Moze	Dy.CE (Works) MSPGCL	Member	8879770737	cegw@mahagenco.in
7	TPCL	Shri Kiran Desale	Head Transmission TPCL	Member	9223553342	desalekv@tatapower.com
		Shri Milind Gole	Head (PSCC), TPCL	Member	9820868264	pssc@tatapower.com
8	AEML	Shri Shrikant Yeole	Head O&M AEML Transmission	Member	9323552945	shrikant.yeole@adani.com
9	AEML	Shri Abaji Naralkar	AVP, AEML Distribution	Member	9324817526	abaji.naralkar@adani.com
10	ATIL	Shri Abhishek Kukreja	Associate Manager-O&M	Member	6359956492	Abjishek.Kukreja@adani.com
11	MEGPTCL	Shri Rakesh Bhalerao	Associate Manager-Business Development	Member	7045953823	rakesh.bhalerao@adani.com
12	JPTL	Shri Vaibhav D Sansare	Associate Manager-Transmission	Member	9552577122	Vaibhav.sansare@jsw.in
13	APTCL	Shri Rajiv Nimje	AGM, APTCL	Member	9422308883	Rajiv.nimje@rattanindia.com
14	VIPL	VIPL Representative		Member		
15	JSWEL	Shri Harshal Joshi	Manager (OSTS Dept,JSW)	Member	9552577131	harshal.joshi@jsw.in

16	ADTPS	Shri Vijay Dalli	VP-Operations ADTPS	Member	9325119741	Vijay.Dali@adani.com
17	RIPL	Shri Amit Panchalwar	DGM, RIPL	Member	9503229333	amit.panchalwar@rattanindia.com
18	APML, Tiroda	Shri Manoj Taunk	Associate VP- Protection & Metering	Member	9099005517	Manoj.Taunk@adani.com
		Shri Akshay Mathur		Member	9870663062	Akshayv.Mathur@adani.com
19	SWPGL Wardha.	Shri Dinesh B Mewade	DGM, SWPGL	Member	7387007010	Dinesh.m@saiwardha.com
		Shri Prabhjit Singh Samra	GM (BDG – Operations), SWPGL	Member	9177025554	Dbg_operatios@saiwardha.com
20	M/S. Lalpur wind Energy	Mr. Mahesh Sakure		Member (Wind)	9730300469	mahesh.sakure@ilfsindia.com srimay.pattnaik@windworld.com
21	JBM Solar Energy Maharashtra Pvt. Ltd.	Mr Sandeep Mittal		Member (Solar)	8826664545	sandeep.mittal@jbmgrouppvt.com
22	SLDC	Shri Girish Pantoji	SE(OP), MSLDC	Member- Convener	9822414154	seoperationmsldc@gmail.com

Agenda for 7th Operation Co-ordination Committee meeting scheduled on 14th February 2024 at 11:30 Hrs. through hybrid mode i.e. physical and video conferencing.

Agenda Points: -

1. Confirmation of the minutes of the 6th OCC held on 18.08.2023 through hybrid mode.
2. System Disturbance in the Maharashtra Network for the period August 2023 to December 2023 is enclosed in **Annexure 1**.
3. List of ongoing schemes in Maharashtra & Mumbai: -
 - 3.1 Status of Reactors is enclosed in **Annexure 2**
 - 3.2 Status of State Transmission Schemes is enclosed in **Annexure 3**

4. MSLDC Agenda:

4.1 Preparation of contingency procedures under Demand Curtailment in accordance with the provisions of the MEGC 2020.

As per the clause 39.3.3 of MEGC 2020, each buyer including *distribution licensee or user, or STU shall formulate contingency procedures and make arrangements that will enable demand disconnection to take place, as instructed by the SLDC, under normal and/or contingent conditions:*

Provided that SLDC may direct to modify such procedures or arrangement, if required, in the interest of grid security and concerned Users shall abide by these directions."

As per Regulation No.39.3.3 of the MEGC-2020 & Clause No. 5.4 & 5.5 of "Load curtailment procedure", this office has issued a letter and requested all Distribution Licensees/Users to prepare and submit the Load Curtailment Plan to MSLDC at the earliest for implementation of said procedure.

Accordingly, all Distribution Licensees except Indian Railways, E-ON 1, E-ON-2 & Nidar Utilities have submitted Load curtailment Plan for implementation.

Further, MSLDC has formulated load curtailment procedure in accordance with the regulation 28.2 of MEGC 2020 which has been approved by GCC. Further as per 39.3.3 of MEGC 2020 the distribution licensees have formulated a contingency procedure for implementation of demand curtailment. The said procedure is the part of load curtailment procedure developed by MSLDC and load curtailment will be carried with accordance with the said procedure submitted by major discoms under contingent conditions.

The load curtailment plans submitted by DISCOMS are enclosed in **Annex- 4**

Members may like to discuss and ratify.

4.2 Draft Procedure for computation of monthly TTC /ATC and Interconnection studies

In accordance with the CERC GNA regulation the TTC/ATC and six months ahead interconnection studies are to be carried out by each state on monthly basis. Accordingly, Hon. CERC has issued a detailed procedure in the said subject which is to be followed by RLDC and states. Hence a draft procedure for computation of monthly TTC /ATC and Interconnection studies has been prepared by MSLDC under the provision of 28.2 of the MEGC in consultation with the stakeholders.

*The Draft Procedure as prepared by MSLDC is attached in **Annexure 5***

Members may like to discuss and ratify.

4.3 Updating of Recovery procedure for Maharashtra state

Implementation of IEGC 2023, effective from 1st October 2023, necessitates yearly updating the Restoration/Recovery Procedure of Regional Grid.

Clause 34 (3)

*“Detailed procedures for restoration post partial and total blackout of each user system within a region shall be prepared by the concerned user in coordination with the concerned SLDC, RLDC or NLDC. **The concerned user shall review the procedure every year and update the same.** The user shall carry out a mock trial run of the procedure for different sub-systems including black-start of generating units along with grid forming capability of inverter based generating station and VSC based HVDC black-start support at least once a year under intimation to the concerned SLDC and RLDC. Diesel generator sets and other standalone auxiliary supply source to be used for black start shall be tested on a weekly basis and the user shall send the test reports to the concerned SLDC, RLDC and NLDC on a quarterly basis”*

An email regarding data required for updating of recovery procedure of Maharashtra and WR region as per discussion in 573rd OCC was forwarded on 23rd November 2023.

In this regard data is received from TPCL, data from other stakeholders is awaited.

Data to be submitted: SLDCs:

- Grid forming capability of inverter based generating station [New Data]- **Generators**
- Generating stations with House load operation facility [New Data] - **Generators**
- Generating stations with Black-start facility [Update] - **Generators**
- Inter-state, Inter-regional ties [Update] - **Transmission Licensees**
- Synchronizing facilities at 132kV/220 kV/400 kV/765 kV substations [Update]- **Generators & Transmission Licensees**
- Description of implemented islanding schemes [Update]- **AEML & TPC**
- Details of essential loads and railway traction loads to be restored on priority [Update] **Transmission Licensees**
- Minimum survival and auxiliary power required for power stations [Update] - **Generators**
- List of power plants and captive power plants with auxiliary load requirements [Update]- **All Generators /CPP/IPPS**
- List of new transmission elements and generation units commissioned in 2023 [Update] – **All Utilities**
- Shunt Reactive resources (Line Reactors/ Bus Reactors) in STU & CTU system [Update] - **Transmission Licensees**
- Any other relevant information/feedback for further improving the ‘Grid Recovery Procedure’.

All utilities are requested to submit the data at the earliest.

Members may like to discuss.

4.4 Submission of Demand Estimation data as per IEGC 2023 :

In accordance with MEGC 2020, regulation no. 38.1 SLDC has to estimate demand for operational purpose further as per IEGC 2023, clause 31.2 as below

(a) Each SLDC shall carry out demand estimation as part of operational planning after duly factoring in the demand estimation done by STU as part of resource adequacy planning referred to in Chapter 2 of these regulations. Demand estimation by SLDC shall be for both active power and reactive power incidents on the transmission system based on the details collected from distribution licensees, grid-connected distributed generation resources, captive power plants and other bulk consumers embedded within the State.

(b) Each SLDC shall develop methodology for daily, weekly, monthly, yearly demand estimation in MW and MWh for operational analysis as well as resource adequacy purposes. Each SLDC, while estimating demand may utilize state of the art tools, weather data, historical data and any other data. For this purpose, all distribution licensees shall maintain a historical database of demand.

In this regard, as per email received from WRLDC and discussion in 573rd OCC the formats for Day ahead, week ahead, month ahead and year ahead demand estimation along with resource adequacy is to be submitted by all Discoms as per timelines mentioned below.

TIMELINES FOR DEMAND ESTIMATION

Demand	AS per IEGC 2023	Timelines from MSLDC	Data submitting utilities
Daily demand estimation	10.00 hrs. of previous day.	9:30 hrs. of previous day.	All
Weekly demand estimation	1 st working day of previous week.	1 st working day of previous week.	BEST and Railways.
Monthly demand estimation	5 th day of previous month.	3 rd day of previous month.	BEST and Railways.
Yearly demand estimation	30 th September of the previous year.	20 th September of the previous year.	MSLDC has submitted demand estimation based on DSR historical data. Data received from BEST, Railways and MSEDCL.

The email communication requesting above requirement of data with formats was shared with the utilities on 24.11.2023 for day ahead forecast and on 06.12.2023 for monthly/weekly and yearly data forecast.

The required formats for *daily, weekly, monthly, yearly demand estimation in MW and MWh is attached herewith in Annexure- 6*

Hence, it is once again requested all the utilities to submit the data as per prescribed format and within the timelines as per above table.

TATA, AEML and MSEDCL may update the status of submission of Weekly/monthly/Yearly demand estimation data.

Members may like to discuss.

4.5 Summer preparedness and resource adequacy due to scarcity of Koyna Hydro:

Koyna Hydro is restricted by its Annual Water quota of 67.5TMC for electricity generation. Due to less rainfall in the Koyna dam catchment area and low dam level, the westward water quota is reduced by 8.644 TMC for the water year 2023-24. Balance water quota as on 03.02.2024 after curtailment of 8.644TMC is 24.855 TMC. State has already catered maximum demand of 28561 MW on 29.01.2024 and it is expected to rise to the tune of 31677MW as per the LGBR.

In such scenarios ensuring resource adequacy and use of Koyna hydro generation in optimum manner is more important during the summer season.

Letter regarding the same is attached in **Annexure-7**

Members may like to discuss.

4.6 PSS tuning status:

As per the provisions of IEGC regulations (2023), the Power System Stabilizers (PSSs), AVR's of generating units and reactive power controllers shall be properly tuned by the generating station as per the plan and the procedure prepared by the concerned RPC. The issue was discussed in 153rd PCM and 48th WRPC meeting & also the same taken for the discussion as agenda point item no.7 in 154th PCM meeting which was held on 27th Dec 2023. In the 48th WRPC meeting, it was decided that all the generators (CGS, IPPs, State generators) shall carry out PSS Tuning and step test on their units, as per the recommendation of PSS Tuning sub-committee report. As per recommendation of the report of NPC, frequency of PSS tuning and field testing are as below: -

A) PSS Tuning- Once in 5 years or large change in network.

B) PSS test- Every year during Annual Overhaul.

SLDC has forwarded letter regarding status of PSS Tuning on dtd. 08th Jan 2024 to all state generators and IPPs.

Hence, all the state generators & IPP's are requested to plan the PSS tuning/testing as per the recommendations of the report

Also submit the PSS Tuning Status as per format attached in **Annexure- 8**

Members may like to discuss.

4.7 Submission of Frequency response data for the FRC event status:

"As per clause (1) & (2) of IEGC 2023 Regulation 30, the NLDC, RLDC and SLDC shall endeavor that Indian grid frequency remains close to 50.00 Hz and in case frequency goes outside the allowable band, ensure that the frequency is restored within the allowable band of 49.90-50.50

Hz at the earliest. The frequency shall be maintained within the operational band through primary secondary and tertiary control. The National Reference Frequency shall be 50.00 Hz."

NLDC/RLDC prepared the document for the methodology for estimation of minimum All India target for frequency response characteristics, computation of Primary Frequency Response Obligation of each control area based on target FRC and assessment of Frequency Response Performance of each control area in line with the IEGC 2023.

the sub-clause (f) of clause (10) of IEGC Regulation 30, as quoted below:

"The minimum All India target frequency response characteristics (FRC) shall be estimated and based on such target FRC, the frequency response obligation of each control area shall be assessed by NLDC, giving due consideration to generation and load within each control area.

Accordingly WRLDC has asked to submit Frequency response of Maharashtra Utilities for the FRC event on 17.12.2023 and 05.01.2024

Sr. No.	Date and time	FRC event descriptions	Timeline	Data received from utilities of the State for FRC computation.
1	17.12.2023 at 13:01 hrs.	400kV Bhadla-Bikaner ckt-1 tripped due to Y-B fault. Due to this tripping, solar generation loss of around 1600 MW was observed in Rajasthan RE complex.	In this regard on, dtd. 29.12.2023 MSLDC sent an email to all the generating stations of Maharashtra and requested to submit the data in the attached format on or before 3rd Jan, 2024.	M/s TPC, AEML, JPL Dhule, Rattan India, JSW Ratnagiri & Paras U#3,4 (Mahagenco)
2	05.01.2024 at 05:10 hrs.	Multiple trippings were reported at Kota TPS and RAPP nuclear units. According to SCADA data, the total generation loss during the event was approximately 1726 MW, with a concurrent demand loss of 410 MW. The net generation loss considered for Frequency Restoration Capability (FRC) computation is 1316 MW	In this regard on, on 11.01.2024 MSLDC sent an email to all the generating stations of Maharashtra and requested to submit the data in the attached format on or before 13 th Jan, 2024	M/s TPC, AEML, JPL Dhule, JSW Ratnagiri, ParasU#3,4(Mahagenco), Vaitarna hydro (Mahagenco).

A Methodology for computation of Primary Frequency Response obligation and performance is enclosed herewith and also a flow chart for FRC computation is attached as **Annexure-9**.

All generators are requested to nominate nodal officers with contact details for coordination of related data for FRC computation.

All state generators /IPPS are requested to submit the requested data within required time line for onward computation of FRC as per IEGC norms

Members may like to discuss.

4.8 Delay in submission of MOD rates by utilities: timeline for effective date of implementation of MOD rates:

As per the clause 33.4 of MEGC-2020 regarding Principles of Merit Order Despatch for operation of InSGS connected to InSTS:

"Buyer shall submit the scrutinised variable charge/energy charge to the SLDC for preparation of MoD stack by 13th day of every month (Nth month) with intimation to seller with whom it has PPA in the Format- 5B....."

After the submission of MOD rates by discoms, accordingly as per clause 33.8 below

"SLDC shall prepare the MoD Stack on the 15th day of every month (Nth month), which would be effective from the 16th day of the Nth month till the 15th day of the subsequent month [i.e. (N+1)th month] unless revised by SLDC. SLDC shall upload the monthly MoD Stack on its website by 15:00 hours on the 15th day of every month (Nth month) in the Format-5B and Format-6B enclosed as Annexure-8.1 and Annexure-8.2 respectively to these Regulations

However, it was observed that discoms are not submitting mod rates timely as per the above timelines specified in MEGC-2020 i.e.13th day of the month.

For example, the certain events of delayed submission are as below:

Month	Date on which MOD rates submitted to SLDC	Utility Name
Dec-23	15 Dec-23	CEPP, MSEDCL
Jun-23	15 Jun-23	CEPP, MSEDCL
May-23	15 May-23	CEPP, MSEDCL
Mar-23	15 Mar-23	CEPP, MSEDCL
Feb-23	14 Feb-23	CEPP, MSEDCL
Jan-23	14 Jan-23	CEPP, MSEDCL

Hence, such delayed submission should be avoided.

Further, as per clause 33.9 of MEGC-2020, there are circumstances specified to revise MOD rates:

"MoD Stack uploaded on the 15th of the month may be subsequently revised by SLDC in the following circumstances:

a) Commencement of supply of power by a generating unit under a new arrangement/bilateral

- agreement/Short term agreement in between period of MoD operation,*
b) Revision of variable charges for preparing the MOD Stack due to Tariff Order issued by the Commission for state generating stations or by the Central Commission for central generating stations,
c) Impact of change in law in the PPAs as approved by the Commission."

Thus, MOD rates revision shall be considered only when the above-mentioned conditions prevail.

Also, sometimes revised MOD rates were received to SLDC in the late evening. Some instances are given below:

Month	Date & Time on which revised MOD rates submitted to SLDC	Utility Name
Sept-23	22 Sept-23 (18:09 hrs)	CEPP, MSEDCL
Aug-23	12 Sept-23 (17:32 hrs)	CEPP, MSEDCL
Jun-23	03 Jun-23 (17:32 hrs)	CEPP, MSEDCL
May-23	13 Jun-23 (18:35 hrs)	CEPP, MSEDCL
Apr-23	24 Apr-23 (18:48 hrs)	CEPP, MSEDCL

Revised MOD rates received on (D) day after 14:00 hrs shall be updated by SLDC on the next working day and shall be effective from next day after updation.

DISCOMS are requested to adhere to the timeline mentioned in MEGC for monthly submission of MOD rates i.e. 13th of every month.

Further requested to submit the revised variable rates if any before 14:00 hrs. on current (D) day. In such case, SLDC shall revised MOD rate stack on the same day i.e. (D) day which will be effective from next working day i.e. (D+1). Otherwise, the revised MOD rate will be considered for processing by SLDC on the next working day.

(For example, if revised MOD rates submitted by discom on Saturday ("D" day) after 14:00 hrs, then MOD revision will be processed on Monday and the same will be effective from Tuesday .

Members may like to discuss.

4.9 Primary Frequency Response test of generating units of Maharashtra:

As per MEGC 2020, IEGC 5.2 (old) and IEGC 2023 Primary frequency response test to be conducted on all generating units of Maharashtra connected to STU.

As per Clause 30.6/30.7 of MEGC 2020:

"All coal/lignite based thermal generating units of 200 MW and above, Open Cycle Gas Turbine/Combined Cycle generating stations having gas turbines of more than 50 MW each and all hydro units of 25 MW and above operating at or up to 100% of their Maximum Continuous Rating (MCR) shall have the capability of (and shall not in any way be prevented from) instantaneously picking up to 105% (coal), 105 % (OGT/CCGT) and 110% (Hydro) of their MCR, respectively, when the frequency falls suddenly....."

".....The generating station shall not resort to Valve Wide Open (VWO) operation of units

whether running on full load or part load, and shall ensure that there is margin available for providing Governor action as primary response.....”

As per Clause 30.5 of MEGC 2020:

*“..... Provided that periodic check-ups by third party should be conducted at regular interval **once in two years** through independent agencies selected by SLDC. The cost of such tests shall be recovered from the Generators by the SLDC. If deemed necessary by SLDC, the test may be conducted more than once in two years.”*

As per the above regulation, it is responsibilities of generators to carry out primary frequency response test once in two years.

MSLDC, Airoli arranged a workshop on dated **11th Oct’2022** for all Generation Licensees in Maharashtra along with M/s Solvina India private limited for discussion regarding primary frequency response (PFR) test on all generating units connected to STU. All participants of Generation Licensees in Maharashtra were sensitized to conduct the primary frequency response test as per MEGC 2020.

Accordingly, M/s Solvina has completed Primary Response Test (PFR) on the following units of Maharashtra.

- Tata Power Trombay – 3 Units
- Tata Power Bhira – 6 Units
- Adani – Dahanu – 2 Units
- Adani Tiroda – 5 Units
- JSW Ratnagiri – 4 Units
- JPL Dhule – 1 Unit

It is requested MSPGCL and RIPL to update the status of frequency response test

Members may like to discuss

4.10 Non-appointment of QCA & its registration with MSLDC for Wind/Solar Generation connected to 33 kV PSS in accordance with the MERC F&S Regulations, 2018

In the 5th OCC meeting held on 21.03.2023, the representative of MSEDCL assured that PTC will be issued only after QCA registration by the RE Generators. During the meeting, it was assured that action of disconnection will be initiated against such non-registered RE capacity connected to 33 kV PSS.

For 33 kV Piliv PSS, this office vide e-mail dated 28.09.2022, 13.10.2022, 26.11.2022, 21.03.2023 has requested to take up the issue with the Generator for QCA registration. In spite of such repeated communication from MSLDC, QCA for 33 kV Pilliv PSS is still not registered. Also, it has been observed that for 33 kV Kini PSS, QCA is not registered from more than 3-4 months. Now, on dt.31-01-2024 MSEDCL has conveyed the issuance of open access to the generator connected to 33kV Malkhed PSS. While enquiring, it is observed that the installed capacity is 7.4MW and is not yet registered.

This indicates that the directives issued in the 5th OCC meeting are not being followed scrupulously.

MSEDCL may comment

5 TPC D & TPC T Agenda

1. Scheduled outages / taking equipment in service after outage / tripping
 - A. Line/Transformer charging code may be given immediately in case of tripping, for early normalization of network.
 - B. Scheduled outage of 220kV Trombay – Dharavi 9 was denied due to line outages in AEML System which was having no impact on AEML network.
 - C. While taking Line / Transformer in service, information about work carried out is demanded by SLDC on Email. This may be informed on phone to save downtime of equipment under outage.
In case of SLDC approved outage for the equipment, detailed mail about work to be carried out & maintaining parameters within limit is demanded by SLDC.
 - D. There was a delay of @ 30 Min for issuance of code for Bhira 25 MW Unit-4 synchronizing on 12th Jan 2024.

2. Non consideration of TPC D contracted wind generation embedded in MSEDCL for DSM Bills
 - A. Since May-23, TPC D contracted wind generation, embedded in MSEDCL is not being considered in DSM Bills.
This is impacting TPC-D Commercially. Also, this will lead to multiple revisions in DSM Bills.
TPC-D request to consider the same in DSM Bills.

3.0 - System Disturbance in the Maharashtra Network for the period Aug 23 to Dec 23.

Sr. no.	Month	SUB-STATION	LINE/EQPT/ BUS AFFECTED	DATE OF TRIPPING	TIME (hrs)	Sync Hrs.	EQUIP. FAILURE	LOAD/GEN. AFFECTED (approx.)	REASONS OF FAILURE
1	Aug-23	400KV Kharghar	1)220KV Khargahr Sonkhar line 2) 400/220KV 315MVA ICT-1 3) 220KV khargarh Nerul 4)220KV Kharghar Uran ckt 2, 5)220KV Kharghar Ulwe	08.08.2023	21:46	12:22:00 of 09.08.2023	Wave trap uncoil of 220KV sonkhar line	NIL	Wave trap uncoil of 220KV sonkhar line
		400KV Kalwa	220KV B bus along with all elements connected to B bus with ICT 1, ICT2, Mulund ckt 2, Borivali line, salshstte ckt 3, DCHI line,	16.08.2023	21:33	22:08	NIL	NIL	Tripped while charging newly formed 220KV Kalwa pawane line
2	Sep-23	220KV Bhambhori	132KV Bus along with 100MVA ICT -1, 132KV jalgaon Old, 132KV Dharngaon	10.09.2023	14:07	14:32	LA burst B ph LV side 100MVA ICT-1	39MW of Jalgaon Old midc	LA burst B ph LV side 100MVA ICT-1
		400KV Akola ss	400KV Akola - Aurangabad DC 1, 400KV Akola -Wardha PG DC, 315MVA ICT1 and 2	13.09.2023	15:12	14:53	NIL	NIL	During maint. of spare ICT Isolator the isoator rotates slightly and come in vicinity of main bus 2
		400KV Kolhapur	400kV Main Bus-2 : 400KV Kolhapur PG Ckt-I 400 kV Solapur 400 kV ICT 1 400 kV ICT 2 125 MVA Bus Reactor Spare ICT 400 kV Bus Coupler	18.09.2023	03:25	05:46	NIL	NIL	Busbar 96 Realy operated
		400KV Chandrapur	400/220/33kv 315 MVA ICT-1, 2 and 220KV Grace Ckt	21.09.2023	10:21	14:42	NIL	NIL	ICTs tripped along with 220 Kv Grace line

Sr. no.	Month	SUB-STATION	LINE/EQPT/ BUS AFFECTED	DATE OF TRIPPING	TIME (hrs)	Sync Hrs.	EQUIP. FAILURE	LOAD/GEN. AFFECTED (approx.)	REASONS OF FAILURE
3	Oct-23	220 kV Boisar II	1) 220kV Boisar PG Line 1 2) 220kV Boisar PG Line 2 3) 220kV Versova Line 4) 220KV Bus-coupler	17.10.2023	12:45	1) 220kV Boisar PG Line 1-13:52 hrs 2) 220kV Boisar PG Line 2-15:35 hrs 3) 220kV Versova Line - 15:27 hrs 4) 220KV Bus-coupler - 13:55 hrs	NIL	Load affected under LTS: 102.93MW. Further as per LD kalwa instructions, additional DLS is carried out at 220kV Boisar2, 132kV Boisar1, 132kV Dahanu Stn. Load affected under DLS: 183.26MW. Total load affected in Boisar region: 286MW	Fault @400kV Boisar (PGCIL) Stsn- 220kV Bus1 tripped due to mechanical failure of 220kV Bus Coupler Isolator (Rph-89A on 204 bay)
		220 kV Boisar II	1) 220kV Boisar PG Line 1 2) 220kV Boisar PG Line 2 3) 220kV Ghodbunder Line	22.10.2023	14:28	1) 220kV Boisar PG Line 1: 14:47Hrs. 2) 220kV Boisar PG Line 2 : 14:47Hrs. 3) 220kV Ghodbunder Line: 15:52Hrs.	NIL	132kV Palghar S/s : 75.8MW (from 14:36Hrs till 14:55Hrs) 132kV MIDC S/s : 112.87MW (from 14:35Hrs till 15:02Hrs): Total : 188MW	Suspected Transient fault. During above tripping, 1) 220kV PGCIL Line 3 was under outage from 14:19Hrs & taken in service @14:48Hrs. 2) 220kV Tarapur-Boisar Line was under outage since 08:59Hrs & taken in service @16:47Hrs.

Sr. no.	Month	SUB-STATION	LINE/EQPT/ BUS AFFECTED	DATE OF TRIPPING	TIME (hrs)	Sync Hrs.	EQUIP. FAILURE	LOAD/GEN. AFFECTED (approx.)	REASONS OF FAILURE
4	Nov-23	220 kV Pedambe	1) 220kV Bus-section-II 2) 220kV Nerle 3) 220kV ONI 4) 220kV Pophali-II 5) 220kV Adlab 6) 50 MVA T/F1 & 2	12.11.2023	20:16	1) 220kV Bus-section-II : 22:55 Hrs 2) 220kV Nerle : 04:36 Hrs of 17.11.2023 3) 220kV ONI : 18:18 Hrs of 13.11.2023 4) 220kV Pophali-II : 01:10 Hrs of 13.11.2023 5) 220kV Adlab : 23:40 Hrs 6) 50 MVA T/F 1 & 2 : 23:00 Hrs	Nerle line Y Ph CT burst	Nil	Y Ph CT burst of Nerle line
5	Dec-23	220 kV Bappaon	1) 220kV Kalwa 2) 220kV Ghatghar tripped at Ghatghar end only. 3) 50 MVA T/F1 4) 50 MVA T/F2	29.12.2023	14:55	1) 220kV Kalwa: 01:29 hrs of 30.12.2023 2) 220kV Ghatghar:15:13 3) 50 MVA T/F1 : 15:16 hrs 4) 50 MVA T/F2 : 15:16 hrs	Nil	Nil	Wave Trap jumper snapped at 220 kV Kalwa s/s.

Status of New Reactors

Sr. No.	Particulars	Management Approval	MERC Approval	Tender and LOA, Supply	Drawing Approval	Equipment Supply	Work Completion	Remark
1.	Installation of 400KV 125MVAR Reactor at 400KV Thapatitanda & 400KV Girawali	Completed	Completed	Sept 2022	Nov 2022	Dec 2023	Sept 2024	<ol style="list-style-type: none"> 1) Administrative approval vide CMD/1152 dtd 29.12.2021 2) DPR submitted vide L.No. 802 dtd 03.02.2022 to MERC 3) MERC Approval received vide L No. 114 on 28.03.2022 4) Tender for supply of Reactors floated by CPA on 24.03.2022 & Techno-Commercial Bid opened on 25-04-2022 (Three bids received) 5) Price bid opened on 20.07.2022. L-1 bidder is 20.45% high. Negotiation carried out. 6) LOA for supply of 1 no. of each Reactor is placed on M/s. CGL (Thapatitanda) & M/s BHEL (Girawali) vide SP/T-0502/322/149 & 150 dtd 14.12.2022 respectively. Drawing Approval for CGL make Reactor is completed & Drawing is approved for BHEL make Reactor (Girawali). 7) LOI issued on 09.05.2023 to M/s. BNC Power Projects Ltd. for ETC work. 8) Civil work is completed at Thapatitanda & Civil work is not started at Girawali. 9) Existing Reactor is dismantled in Dec 23 & Civil work is yet not started at Girawali SS. 10) Reactor (CGL make) received at 400kv Thapatitanda SS along with accessories & oil on 13.01.2024. 400kV Isolators received at site, CT, LA & Panels are balance for supply.
2	Installation of 400KV 125MVAR Reactor at 400KV Waluj	Completed	Completed	May 2022	Aug 2022	Dec 2022	May 2023	<ol style="list-style-type: none"> 1) DPR submitted vide L.No. 4129 dtd 23.07.2021 2) Data gaps submitted vide L.No. 5431 dtd 15.09.2021 to MERC. 3) MERC Approval received vide L No. 118 on 28.03.2022 4) Technical bid open on 22.05.2023. Technical scrutiny under process. 5) Under Tenderization at C.O. Projects

Sr. No.	Particulars	Management Approval	MERC Approval	Tender and LOA, Supply	Drawing Approval	Equipment Supply	Work Completion	Remark
3	Installation of 400KV 125MVAR Reactor at 400KV Chandrapur S/S	Completed	Completed	Dec 2023	Feb 2024	Aug 2024	Dec 2024	<ol style="list-style-type: none"> 1) DPR submitted vide MSETCL/CO/TR. (O&M)SE- I/EE-III/7174 dtd 01.12.2021 to MERC. 2) MERC Approval received vide L No. 117 on 28.03.2022. 3) Revised Scheme approved vide BR No. 154/27 dtd 19.05.2022 at total estimated cost of Rs. 1384 lakhs including IDC of Rs. 96 lakhs. 4) The target dates for completion of work has been revised as per revised approval of scheme. 5) Proposal submitted to NLDC for funding from PSDF on 15.07.2022. 6) The scheme was revised as per recommendation of TESSG(Techno Economic subgroup) of NLDC vide BR No. 157/41 dtd. 17.10.2022 at total estimated cost of Rs. 1564 lakhs including IDC of Rs. 108 lakhs. 7) The compliance was submitted to NLDC on 06.12.2022. 8) Additional Compliance called as per TESSG meeting 16.01.2023 is submitted to NLDC on 15.03.2023. 9) WRPC has conducted agenda meeting on 13.10.2023 to discuss the proposal, the recommendation is awaited. 10) Turnkey tender for supply and ETC works of Reactor and other allied equipment is floated at zone level. The due date of opening was 21.03.2023. Further seven days extension was given due to no response received. Two bids are received after seven days extension. 2nd call Tender floated from 14.04.2023 to 14.05.2023. Further seven days extension was given due to 2 bids received. Technical bid opened on 22.05.2023 & price bid opened on 31.07.2023. M/s. Kanohar quoted 44% above. During VC meeting on 22.08.2023, CMD directed to cancel the tender due to higher rates & directed that CO will procure the Reactors and field office will float tender for ETC works. So Tender cancelled by field office. Revised estimate preparation is under process at field office. Scheme revision in process at CO. However, LOA is to be issued after receipt of PSDF approval. 11) In view of above the revised proposal excluding 400kV Jejuuri Reactor for estimated cost of Rs.4485 Lakhs was put up on 07.12.2023.

Sr. No.	Particulars	Management Approval	MERC Approval	Tender and LOA, Supply	Drawing Approval	Equipment Supply	Work Completion	Remark
4	Installation of 400KV 125MVAR Reactors (2 Nos at 400KV Babhaleshwar	Completed	Completed	Purchase proposal approved	Mar 2022 (Approved on 16.02.2022)	Oct 2023	Dec 2023	<ol style="list-style-type: none"> 1) LOA for supply of Reactor is placed on M/s BHEL vide SP/T-0507/831 dtd 17.12.2021. Drawing Approval completed on 16.02.2022. 2) Stage inspection of 125MVAR Reactor (main tank) is completed and core & coil assembly inspection is in process. 3) Final inspection completed during 07.09.23 to 19.09.23 of both units, ETC tender floated. Deviation bid opened on 02.03.2022. 4) Three (3) bids received. After technical scrutiny only single bid qualified hence the tender is floated on 12-04-2022. 5) LOA issued to M/s. R. K. Electricals for ETC work on 15.07.2022. 6) Dismantling work of failed (01No) Reactor & associated equipment are completed & Civil plinth work of Reactor is completed. The fire wall civil work is in progress. 7) 01 No of Reactor is supplied at site on 16.10.2023 and second Reactor received at site on 13.12.2023. Accessories also received at site except cooling fans and pumps. 01 No of Reactor is placed on plinth, M/s. BHEL representative will reach at site tentatively in first week of Jan 2024 for further ETC work. M/s. BHEL representative visited at site and ETC work is started.
5	Installation of 400KV 125MVAR Reactors Lonikand-I, 400KV Jejuri & 400KV Chakan	Completed	Completed	Dec 2023	Feb 2024	Aug 2024	Dec 2024	<ol style="list-style-type: none"> 1) DPR is submitted on 24.12.2021 to MERC 2) MERC Approval received vide L No. 116 on 28.03.2022 3) Revised Scheme approved vide BR No. 154/27 dtd.19.05.2022 at total estimated cost of Rs.4109 lakhs including IDC of Rs.284 lakhs. 4) The target dates for completion of work has been revised as per revised approval of scheme. 5) Proposal submitted to NLDC for funding from PSDF on 15.07.2022. 6) The scheme was revised as per recommendation of TESS (Techno Economic subgroup) of NLDC vide BR No. 157/41 dtd.17.10.2022 at total estimated cost of Rs.4600 lakhs including IDC of Rs.318 lakhs. 7) The compliance was submitted to NLDC on 06.12.2022. 8) Additional Compliance called as per TESS meeting 16.01.2023 is submitted to NLDC on 15.03.2023. However LOA is to be issued after receipt of PSDF approval. 9) WRPC has conducted agenda meeting on 13.10.2023 to discuss the proposal, the recommendation is awaited. 10) Turnkey tender for supply and ETC works of Reactor and other allied equipment is floated at zone level. The due date of opening was 21.03.2023. Further seven days extension was given due to no response received. Two bids are received after seven days extension. 2nd call Tender floated from 14.04.2023 to 14.05.2023. Further seven days extension was given due to 2 bids received. Technical bid opened on 22.05.2023 & price bid opened on 31.07.2023. M/s. Kanohar quoted 44% above. During VC meeting on 22.08.2023, CMD directed to cancel the tender due to higher rates & directed that CO will procure the Reactors and filed office will float tender for ETC works. So Tender cancelled by field office. Revised estimate preparation is under process at field office. Scheme revision in process at CO. However, LOA is to be issued after receipt of PSDF approval. 11) In view of above the revised proposal excluding 400KV Jejuri Reactor for estimated cost of Rs.4485 Lakhs was put up on 07.12.2023.
6	Installation of 400KV 125MVAR Reactors at 400 KV Kalwa	Completed	Completed	Purchase proposal approved. E-tender for ETC work is approved	Mar 2022 (Approved on 16.02.2022)	Aug 2023	Nov 2023	<ol style="list-style-type: none"> 1) LOA for supply of Reactor is placed on M/s BHEL vide SP/T-0507/831 dtd 17.12.2021. Drawing Approval completed on 16.02.2022. 2) Stage inspection of 125MVAR Reactor (main tank) is completed on 27.12.2022 and core & coil assembly inspection is in process. 3) E-tender for ETC work is approved and conveyed to field on 08.12.2021. LOA is placed on M/s BNC for ETC work. Site handed over to agency. Layout approved on 27.01.2022. All equipment drawings are approved. Civil foundations of equipment & Reactor plinth work is completed. All allied equipments are supplied at site. Erection of Circuit Breaker, Isolator, CT & LA is completed. Gantry & Bus extension stringing work completed. <p>Fire protection wall civil work is completed and Earthing work is completed C&R panel received at site. IPS tube erection work completed. Cable laying completed. Reactor received at site on 17.08.2023. Reactor is placed on plinth. Erection work of Reactor is completed and testing work is balance. 400KV Bus extension i.e. conductor jumpering work is balance.</p>

List of Ongoing Transmission Schemes

Sr No	Scheme Name	Zone	Year Proposed by Field/O&M Section	Status
1.	400kV Alkud S/s- Addition of 1X500 MVA, 400/220 kV ICT	Karad	2024-25 (Short Term)	1.Scheme Sanctioned vide MBR no.52/10 dtd.23.04.2010 2.Tenderisation is in process at C.O. 3.Loading of existing ICT is crossed above 90% hence necessary to commission the said ICT at the earliest.
2	400 kV Khadka (3X105)MVA ICT, 400/220 kV With HV LV Bays (2022-23)	Nashik	2023-24	
3	400 kV Babhaleshwar (3X167) MVA , 400/220 kV (2024-25)	Nashik	2023-24	
4	220 kV Chalisgaon (1X200) MVA, 220/132 kV (2022-23)	Nashik	2023-24	
5	1x (125-80) MVAr, Babhalweshwar Augmentation of 80 MVAr reactor with 125 MVAr (2023-24)	Nashik	2023-24	
6	400 kV D/C Babhaleshwar Kudus line-200km (2022-23)	Vashi	2023-24	
7	LILO on both ckts of 400 kV Tarapur- Padghe Line at Kudus-15 km	Vashi	2025-26	
8	LILO on 220 kV Tarapur- Borivali & Boisar- Ghodbunder line at Kudus-10 Kms (2022-23)	Vashi	2023-24	
9	LILO on 220 kV Padghe- Wada & 220 kV Kolshet- Wada at 400 kV Kudus-10 Km (2022-23)	Vashi	2024-25	
10	1 X 125 MVAr Reactor at 400 kV Kalwa (2022-23)	Vashi	2023-24	

Annexure-4 The load curtailment plans submitted by DISCOMS- Attached Separately

Annexure-5 Draft Procedure for computation of monthly TTC /ATC and Interconnection studies - Attached Separately

Annexure-6 Demand estimation formats- Attached Separately

Annexure- 7 TMC reduction letter /documents- Attached Separately

PSS Tuning Status

Generating Station	Unit Capacity (MW)	PSS Tuning Done/ Not Done	Last PSS Tuning done	Step test response submitted	Action Required by utility
APML, Tirora	Stage 1: 3x660 Stage 2: 2x660	Yes	29.03.2022	Yes	-
RattanIndia, Amravati					
JSW, Ratnagiri					
SWPGPL					
IEPL					
JPL, Dhule					
Tata Power, Trombay					
Dahanu, AEML					
Bhusawal					
Chandrapur					
Koradi					
Khaperkheda					
Nasik					
Parali					
Paras					

Annexure-9

