MAHATRANSCO
Maharashtra State Electricity Transmission Co. Ltd.

MAHARASHTRA STATE ELECTRICITY TRANSMISSION CO.LTD.

CIN NO. U40109MH2005SGC153646

Office of The Superintending Engineer
Maharashtra State Load Dispatch Center
Thane-Belapur Road, P.O. Airoli, Navi Mumbai Pin – 400 708.
Tele: 91-22-27601765 / 1766; Fax: 91-22-27601769 Email: cesldc@mahasldc.in

Ref: MSLDC/TECH/OP/OCC/ No 0 1 8 7 6 **Date:** 0 2 SEP 2021

To,
As per mailing list.

Sub: MoM of the 2nd Operation Co-ordination Committee (OCC) meeting held on 13.08.2021 at 11:30 hrs through V.C.

Ref: 1. OCC constituted vide ED/MSLDC/641 date 25.03.2021.
2. T.O. Letter No. MSLDC/TECH/OP/1538, dated 13.07.2021 for agenda request.
3. T.O. Letter No. MSLDC/TECH/OP/1687, dated 06.08.2021

Dear Sir,

In reference to the above subject, the 2nd meeting of the Operational Co-ordination Committee (OCC) meeting was convened on 13.08.2021 at 11:30 hrs. through V.C.

The MoM of the said meeting duly approved by the Executive Director, MSLDC (Chairman of the Committee) are attached herewith for ready reference.

Submitted for information and further needful please.

Encl: As above.

Yours sincerely,

(Mahesh Bhagwat)
Superintending Engineer, MSLDC
(Member Convener of OCC)

Copy s.w.r.s. to:
1. The Director (Operations), MSETCL, Prakashganga, Mumbai.
2. The Executive Director, MSLDC, Airoli, Navi Mumbai.

To,
All OCC members as per list

Sr. No.	Name of Organisation	Name of Nominee	Designation	Committee constituent	Contact No.	E-mail ID
1	SLDC	Shri Shrikant Jaltare	ED, MSLDC	Chairperson	022-27301931	edmsebholding@gmail.com
2	SLDC	Shri Peeyush Sharma	SE(OP), MSLDC	Member-Convener	9769213865	seopr8000@mahatransco.in
3	SLDC	Mrs. Juelee Wagh	CE, MSLDC	Member	9819241773	cesldc.mahasldc.in
4	STU/MSETCL	STU Representative	CE, STU	Member		cestu@mahatransco.in
5	MSETCL	MSETCL Representative	CE, Tr O&M MSETCL	Member		ceoandmmsetcl@gmail.com
6	MSEDCL	Shri Sandip Patil	S.E, LM Cell, MSEDCL	Member	9833980238	selmkalwa@gmail.com
7	MSPGCL	Shri E.S.Moze	DyCE(Works) MSPGCL	Member	8879770737	cegw@mahagenco.in
8	TPCL	Shri Kiran Desale	Head Transmission, TPCL	Member	9223553342	desalekv@tatapower.com
		Shri Milind Gole	Head Grid Operations (PSCC), TPCL	Member	9820868264	pscc@tatapower.com
9	AEML	Shri Dilip Devasthale	Head O&M AEML Transmission	Member	9324180932	Dilip.Devasthale@adani.com
10	ATIL	Shri Abhishek Kukreja	Associate Manager - O&M	Member	6359956492	Abhishek.Kukreja@adani.com
11	MEGPTCL	Shri Rakesh Bhalerao	Associate Manager - Business Development	Member	7045953823	rakesh.bhalerao@adani.com
12	JPTL	Shri Vaibhav D Sansare	Assistant 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 Harhal 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	Akkshayv.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	bdg_operations@saiwardha.com
20	Ajanta Pvt. Ltd. Karad.	Ajanta Pvt. Ltd. Representative		Member		
21	Agrawal Minerals Pvt. Ltd. Goa.	Agrawal Minerals Pvt. Ltd. Representative		Member		
22	AA Energy, Nagpur.	Shri Chandramani Chahande		Member	9021347870	admin@aaenergyltd.com
23	Ambalika Sugar Pvt. Ltd. Karjat, Ahmednagar.	Shri V.M.Bhise	Chief Engineer	Member	7720054906 9960921767	ambalikaelectrical@gmail.com
24	Arti Hydro Power Pvt. Ltd. Gosikhurd, Bhandara.	Arti Hydro Power Pvt. Ltd. Representative		Member		

Minutes of the 2nd Operation Co-ordination Committee meeting convened on 13th August'2021 at 11:30 Hrs through V.C.

In accordance with the provisions of the MEGC, 2020, the Grid Co-ordination Committee (GCC) in its 1st meeting held on dated 08.01.2021 has constituted the Operational Co-ordination Committee (OCC). Accordingly, on 12.05.2021, the 1st meeting of the said OCC was convened at 11:00 Hrs through V.C. under the chairman ship of the Executive Director (MSLDC), the Chairman of the OCC.

The 2nd meeting of the committee, was convened on 13.08.2021 at 11:30 hrs through video conferencing. The Superintending Engineer (OP-MSLDC), Member Convener, welcomed all the members and participants.

The Executive Director (MSLDC), the Chairman of the OCC, welcomed all the members and in his introductory note opined that the various points such as Maharashtra System Grid Performance for last quarter, Status of various Transmission Schemes, System Disturbances in last quarter in the State Grid, etc are to be discussed in each meeting. However, discussions on these points takes more time resulting in to restricted time for discussions on the other important issues on which detail deliberations are required. Hence, it has been decided that the details on Maharashtra System Grid Performance for last quarter, Status of various Transmission Schemes, System Disturbances in last quarter in the State Grid, etc shall be circulated to all the members for their comments/observations (if any) so that more time can be spend on deliberations of important issues. All the members agreed to the same.

The list of participants is attached herewith as **ANNEXURE – A**.

The detailed Point-wise Discussions held during the meeting are as follows:

1. **Item No. 1: Confirmation of Minutes of Meeting of the 1st OCC Meeting convened on 12 May 2021:**
   - The Superintending Engineer (OP-MSLDC) informed that on dated 02.06.2021, the MoM of the 1st OCC Meeting was shared to all the members and requested to offer any comments on the same so to confirm the MoM. All the members confirmed the circulated MoM & hence, the MoM of the 1st OCC meeting was confirmed.

2. **Item No. 2: Maharashtra system Grid performance for the period from April 2021 to June 2021**

3. **Item no.3: System Disturbance in the Maharashtra Network for the period Jan 2021 to March 2021:**

4. **Item no: 4: Status of completion of ongoing schemes in Maharashtra:**

   - For Item no (2), (3), & (4) as confirmed by all the members during the welcome note of the Executive Director (MSLDC) & the Chairman of the Committee, members were requested to submit comments/observations on the performance parameters for updating in the MoM of the 2nd Meeting.
   - The MSLDC presentation consisting of detailed Grid performance parameters for the period of Apr'2021 to Jun'2021 is attached herewith as **ANNEXURE – 1**.
   - The revised status of Reactors is attached as **ANNEXURE – 2**.
   - The revised status of various Transmission Schemes is attached as **ANNEXURE – 3**.

5. **Item no 5: Submission of failure analysis of grid elements:**

- The Superintending Engineer (OP-MSLDC) informed that as per Regulation No. 27 of the CEA (Grid Standards) Regulations, 2010, the failure analysis of equipment failure and tower collapse is to be submitted to RPC and Authority. He requested members to submit the such reports to MSLDC as and when such incident take place.
- All the members noted and agreed to submit such report of '**Failure analysis of grid elements'** to MSLDC.

6. **ITEM NO 6: - Discussion on Reserve Shutdown (RSD) Procedure & finalization of procedure:**

- The Superintending Engineer (OP-MSLDC) informed that as per clause 36.9 of the Regulations, Maharashtra State Load Despatch Centre has prepared a Draft Procedure for Instructing Reserve Shut Down (RSD) of Generating Units of the generating stations in the state of Maharashtra.

  As directed in the GCC Core group meeting, the Draft RSD procedure was circulated to all the members & the stakeholders for submitting suggestions/comments. MSEDCL, MSPGCL, AEML, APML, TPCL, RIPL & DIL have submitted the comments on the draft procedure. MSLDC has revised the paras of the procedure on the basis of comments received from stakeholders. MSLDC has consolidated the comments received from the stakeholders and presented before the OCC. The proposed paras, comments of Stake holders & modifications/remarks of MSLDC were discussed in the meeting. In the meeting following comments/inputs were proposed & accordingly some paras has been revised as given below:

  - **RIPL commented that the unit may be withdrawn under RSD at the discretion of the generator where more than one unit in that station is available on bar.** Hence, Para 5(5) has been revised as,

    "SLDC shall apply RSD to unit(s) with higher Variable Charges as per the ***State MOD in FBSM regime & Decentralized MOD Stack of the utility in DSM regime.*** *In case of any grid constraints prevents the RSD of the Unit with highest Variable c*harges *in the MOD stack, the unit with next highest variable charge needs to be considered.*

    Provided that unit may be withdrawn under RSD at the discretion of the generator where more than one unit of ***same capacity & same variable charge*** *are existing at generating station with intimation to SLDC."*

  - **RIPL asked the committee that if the unit is under maintenance for few days & synchronized before instructions of RSD then how the DC would be considered in such case.**

    MSLDC pointed out that in such case provision is already made in the procedure as quoted below:

    "Declared Capacity (DC) of generating unit under RSD shall be considered as higher of Average Declared Capacity for immediate one week prior to RSD instructions or ***Maximum Declared Capacity (for minimum 3 hours period) for last 24 hours before commencement of RSD."***

- RIPL commented that After finalization of RSD procedure and based on system operation, the RSD procedure may be reviewed & modified at fixed interval (say 6/12 months) if felt necessary. Hence new para will be added as below:

  7. The RSD procedure may be reviewed & modified, if there are any changes in regulation. Further, any practical constraints are observed during the implementation of the procedure, the same shall be discussed & modified after due process.

- ***All the members agreed to the modifications proposed by MSLDC in the Paras (Scope), 5(2), 5(3), 5(4), 5(5), 5(9), 5(13), 5(14), 6(1) & 6(3); also agreed for deletion of the paras 5(8) & 5(12). It was decided that the modified RSD Procedure shall be put up in GCC for approval.***
- ***The agreed modified procedure by all members is enclosed herewith as* <u>ANNEXURE – 4</u>.**

7. ITEM NO 7: - Discussion on LTS/SPS Committee Report on source lines to MMR & Mumbai area.

- The Superintending Engineer (OP), MSLDC briefed the various details viz. Constitution of LTS/SPS Committee, ToR, meetings held, various contingencies considered, Approach considered for simulations in PSS/E Software along with Generation-Demand for State & Mumbai, Operational Maximum Capacity of 400 kV & 220 kV lines feeding MMR & Mumbai area, Approach for Load curtailment in the event of contingencies, Calculations of Mumbai Gross Exchange at various contingencies, Observations from the studies carried out and recommendations by the Committee. The copy of presentation is attached as **<u>ANNEXURE – 5</u>**.
- The Executive Director (O&M), MSETCL and the Executive Director (MSLDC), appreciated the extensive studies & work carried out by the Committee and opined that this report shall be beneficial for maintaining the Grid in MMR & Mumbai area.
- All the members requested to share the study results. The Superintending Engineer (OP), MSLDC informed that the study results shall be shared to all the members.
- ***All the member accepted the LTA/SPS Committee report for submission to GCC & PCM-WRPC for approval.***

8. ITEM NO 8: Identification of Strategic locations for installation of PMUs and DLR in TPC & AEML area.

- The Superintending Engineer (OP), MSLDC informed that the High-Level Committee (HLC) constituted by Hon'ble MERC to investigate the partial Grid failure commented that PMU is acting as a very effective tool for system operator to analyse different types of faults. It has reduced the time taken for complete analysis of any event in the grid. Different type of faults can be easily observed based on the PMU data. While collecting the data for a sequence of events of grid failure, the HLC observed that most of the data was based on numerical relays (as was made available by Mumbai utilities) and was not time stamped or time synchronised. Thus, for the analysis of any event post occurrence, accurate data with time synchronization is necessary for which strategic locations for installation of PMUs & DLR in TPC & AEML area are to be identified.
- The Advisor Shri P. Pentayya (MSLDC) briefed the strategy for selection of locations for installation of PMUs, MSLDC plan for integration of existing PMUs with the newly proposed PMUs and utilization of the various applications.

- All the members opined that for installation of PMUs and transfer of data to MSLDC, robust communication system would be required. As various stake holders are involved in the said activity viz. Identification of the locations, Preparation of Schemes, Approval from Hon'ble MERC, Communication infrastructure, Installation, Utilization, etc. Hence, to avoid any mis-communications, separate meeting would be required.
- Accordingly, all the members opined that this activity can be given to the 'Mumbai Islanding Group' constituted by MSLDC wherein all the stake holders likely to be involved are members.
- ***All members agreed to form a sub-group for handling this issue & submit the report regarding PMU locations & related activities to the Mumbai Islanding Group and OCC shall monitor the progress of the activities carried out by the said group.***

9. ITEM NO 9: Issues raised by MSEDCL

9.1. Compliance of Directives of Hon'ble Commission's order in Case no 114 of 2020 dated 29.11.2020.

- The Superintending Engineer (LM), MSEDCL informed that since presently SCADA is not installed at all MSEDCL <T-D>Drawl Points, the MSEDCL demand is derived based on SCADA values of generation and Mumbai system actual drawl. This is causing practical problem in demand Deviation monitoring & revision in real time by MSEDCL. This aspect was brought to notice of Hon'ble Commission in Case No 114 of 2020. The Commission vide its order in the matter dated 29.11.2020 has directed that
- *"For establishing connectivity and communication link at T<>D interface for drawl point of Distribution Licensee to ensure visibility to MSLDC is responsibility of STU. The STU should come up with a concrete and cost-effective and timely implementable plan within 3 months in consultation with the Grid Co-ordination Committee for implementation of SCADA to ensure required real time visibility at MSLDC."*
- Discussed the issue as at length, as this issue is related to ACI & P, Executive Director suggested to take this on MCC platform.

9.2. Practical Difficulties in Implementations of some timelines of State Grid Code (SGC) -2020.

A. Provision required for Cancellation of "Zero Schedule" given to Generator from DISCOM

- MSEDCL has raised the issue of cancellation of "Zero Schedule" due to reason not in control of DISCOM like Sudden Tripping of Units, sudden reduction in Wind Generation and if DISCOM needs to cancel "Zero schedule" request given to Generator or postpone same, then there is no provision in Existing Regulation for the same. Hence it is suggested that necessary provision for cancellation or postponement of "Zero schedule" shall be recommended by GCC committee to Commission.

B. Provision for submission of ISGS requisition

- MSEDCL stated that the timeline for submission of ISGS requisition in MEGC-2020 is not matching with the timelines given in IEGC.

C. No timeline for upload of Hydro schedule /requisition by DISCOM

- MSEDCL informed that as per Provision in SGC-2020, day wise schedule of Hydro station is to be intimated in advance by 27th of each month but there is no provision specifying the timeline for day ahead uploading of schedule or real time schedule revision of Hydro schedule. The Hydro generators; particularly Koyna & Ghatghar are being scheduled by DISCOM considering Economy of dispatch i.e., being schedule during peak demand period or when rate of Power from Market is high. Hence unless All generators availability available to DISCOM on day ahead basis & purchase/sale in Market are cleared, it is difficult to judge the schedule of such Hydro station before 10 Hrs. Hence it is proposed that revision in schedule of Hydro done after 10 Hrs. on day ahead basis shall not attract revision charge.

D. Time line for revision in ISGS requisition

- MSEDCL has made the submission that for deciding revision in requisition from ISGS, it is necessary that change in availability of all Intra State generators shall be available to DISCOM. If timeline for generators as well buyer kept same, then it will not possible for DISCOM to decide any change in ISGS requisition on day ahead basis. As per provision 6.5.8 in IEGC-2010, SLDC has to submit revise drawl schedule from ISGS by 22 Hrs. Time gap between DISCOM's communicating requisition from ISGS and SLDC (who just have to forward same to WRLDC) is 120 minutes. If DISCOM timeline for ISGS drawl schedule changed to 21:30 Hrs. remaining time, is sufficient for SLDC for LGB preparation through Software. Further as first RTM session start at 22:45 Hrs. It is requested that SLDC timeline for LGB display shall be change to 22:30 Instead of 23:00 Hrs.

Member Convenor stated that before finalization of the Scheduling & Despatch Code MSLDC had circulated the draft Scheduling & Despatch code to all the stakeholders and invited their comments. After considering the comments of the stakeholders MSLDC had prepared the Scheduling & Despatch code and submitted to Hon'ble Commission for approval.

For all points raised under agenda points 9.2 (A), (B), (C) & (D), the Executive Director, MSLDC stated that if any changes are required to be done in the regulation, the recommendation needs to be submitted to the Hon'ble Commission through the GCC. Further, Executive Director asked all the utilities to submit their say on these points based on these the Member Convenor to prepare a concept note on these issues & circulate to all the stakeholders for their comments. After receipt of their comments & consensus the matter will be put up in GCC for approval and further submission to Hon'ble Commission.

E. Different timelines given for same process in SGC-2020 and RE(F&S) Procedure

- MSEDCL stated that Different timelines given for same process in SGC-2020 and RE(F&S) Procedure.
- **MSLDC stated that this issue will be scrutinized in depth and then take up in the DSM Working Group meeting so as to resolve the issue of different time lines.**

9.3. Difficulty being faced by MSEDCL in Compliance of Clause 52.2.6 of State Grid Code regarding upload schedule of generators installed capacity < 25MW.

- MSEDCL stated that as per Provision in DSM Regulation-2019, the responsibility of uploading schedule of RE Generators (other than Wind & Solar) with installed capacity less than 25MW, has been given with DISCOM. In State, only MSEDCL have such Contracted Generators. Hence MSEDCL had made Web portal for Generators to upload daily Day ahead Generation schedule for these Generators, but in spite of follow up with these Generator

about 55% of Generators are not uploading schedule. Since Regulation is not mandating these RE Generators to upload or inform daily Generation schedule, Generators are not taking issue seriously. The Billing of Generators is also on Actual injection basis. In absence of RE Generation schedule availability, it became difficult for MSEDCL to assess its requirement of power (either surplus/shortfall) to be purchase/sell in Power Market or schedule other Generation. Hence it is proposed that Committee shall discuss issue and suggest to Commission to make Amendment in DSM Regulation on appropriate action to be taken in the matter which will mandate such Generators to upload Generation schedule daily; failure which some monetary penalty shall be proposed to be levied on RE Generators.

The Executive Director, MSLDC requested Chief Engineer, MSLDC to examine whether Directions can be issued at SLDC level and see that there will not be any commercial loss to utilities because of non-uploading of schedule by RE Generators (Excluding Wind & Solar) having capacity equal & less than 25 MW and connected to InSTS.

9.4. Non-Compliance of Clause 52.2.5 of State Grid Code, Regulation 2020 by RE Generators having Installed capacity more than 25MW.

- MSEDCL stated that 31 nos. of Bagasse based generating station having installed capacity more than 25MW however only 8 Generators have registered in DSM software till date for scheduling. The Hon'ble Commission in its order in Case No 110 of 2020 dated 9th Nov 2020 has given exemption of DSM regulation charges only for time blocks when exportable generation is less than 25MW. This does not mean that Generators with installed Capacity more than 25MW but exportable generation less than 25MW are exempted from Registration in DSM software.
- The MSEDCL has requested all these Generators for Registration in DSM software but same is not being done. Some of these Generators are approaching MSLDC for exemption from DSM registration. As per Clause 54.1.(iv) of SGC-2020, if State Entity fails to provide schedules continuously for 10 days or (i) Non-compliance of any of the terms/conditions/rules outlines under this Code, there are following provision in SGC-2020 which enable disconnection from Grid.
- 54.2.2. In case of default for acts covered under this Code without prejudice to other actions as may be taken by SLDC, the SLDC may issue a notice of period not less than 15 days for revocation of registration of State Entity and non- scheduling of State Entity and adequate opportunity shall be given to State Entity to present its case before SLDC.
- 54.2.3. In case State Entity fails to address/rectify the breach expressed by SLDC in the Notice within stipulated time, the SLDC shall approach the Commission with recommendation for revocation of registration of State Entity and disconnection from grid.
- The SLDC vide its letter dated 13.11.2020 had requested all RE Generators with installed capacity to completes its registration process. But there is no action observed from RE Generators. Hence SLDC shall take action under clause 54.2.2 and 54.2.3 urgently.
- Further to discourage these RE generators from Non-compliance of Regulation, Committee may recommend the amendment in Regulation to Commission like No Payment of Energy Injected into Grid, if Generators fails to submit its day ahead schedule. It is requested to take up matter with all these Generators at MSLDC end and initiate appropriate action under Regulation SGC-2020 on defaulter Generators for enabling the process of DSM Registration from them.

The Executive Director, MSLDC stated that in the new DSM regime the payment is to be made by the distribution licensee to the registered generator as per schedule & not

on actual generation. This provision is already there in the regulation. He further stated that MSLDC is also examining on this issue.

10. ITEM NO 10: Difficulties in DSM Software. (Rattan India Power Limited).

- The General Manager (RIPL) informed that Deviation is being observed in the schedule being recorded by DSM software and the schedule being implemented. This is mainly because of the frequent telephonic instructions received from SLDC control room for backing down or picking up the load. This may be because of real time demand requirement and the MODs (de-centralized / centralized). However, the concern is the difference in the quantity of schedule being shown by DSM software and that being implemented at our end as per the calls from SLDC. In this respect clarity need to be provided on:
  - Whether telephonic instructions from SLDC control room are to be followed particularly after implementation of DSM commercially.
  - If so, the quantity of schedule implemented needs to be changed/corrected on same day such that there shall not be any commercial issues in settlement.
- The Executive Director (MSLDC) informed that presently mock trial of DSM is being carried out. Hence, there is mismatch in the schedules observed. However, with the implementation of the DSM Regulations, no oral instructions for Schedule revisions shall be issued by MSLDC. All the revisions shall be made through software only.
- In this respect all the members opined that considering critical issue of software such as downtime, network connectivity, etc, alternate option will be required. However, the Executive Director (MSLDC) informed once the software is made Go-Live, all such issues utmost care shall be taken so as to avoid such issues.
- All the OCC members took a note of the same.

11. ITEM NO 11: Utilization of TBC or Auxiliary (TBC) bus outage at sub-station by informing to SLDC on real time basis (AEML-T)

12. ITEM NO 12: Condition of 48 Hrs. prior submission in the system may be reviewed. (AEML-T)

- The Head (Transmission O&M) informed that outage proposals on TBC or Auxiliary bus at various Sub-Stations is required to be submitted to MSLDC in advance. However, the TBC or Aux. Bus is normally used for transfer of network elements. Various activities such as testing of any breaker, relay, etc can be carried out by transferring the same on TBC. Hence, such outages should be in real time basis.
- The Superintending Engineer (Operation), MSLDC informed that it is a standard procedure for approval of outages on any transmission elements and it is the responsibility of all the stake holders to adhere the same. Also, any activities such as testing can be planned in advance and if required approval window for emergency outage is open to all the stake holders.
- All the members agreed to the same and took a note.

13. ITEM NO 13: Any other item with the permission of Chair

- No other issues were placed before the Chairman of the Committee.

14. ITEM NO 14: Requirement of detailed procedure for Zero Schedule of Mumbai embedded Generation.

15. ITEM NO 15: Operation of Trombay Unit-7 on RLNG.

16. ITEM NO 16: Pick-up of Trombay Unit-5 & 8 in real time from technical minimum due to transmission constraints & State Over drawal.

- The Head (PSCC), TPCL informed that the variable cost of the Trombay Unit-5 & Unit-8 has increased from Rs.3.70 to Rs.4.70 per unit. As these generators are Mumbai embedded generators, considering transmission constraints & N-1 contingencies over 400 kV network, MSLDC directs TPCL to keep these costly generators on bar. It is the responsibility of the Discom to optimize the power purchase cost by procuring low-cost power available in market. However, due to transmission constraints & reliability perspective, costly generation is kept on bar even if cheaper power is available in the market at low demand periods. Zero scheduling of these units is also not permitted.

  Trombay Unit-7 is gas-based Station having facility for firing both APM & RLNG gas. APM gas availability is normally low and is further reduced in case of problems at ONGC. Due to System constraints, the unit is asked to operate through RLNG which is high in cost. Such high cost of gas impacts the contracted Discom.

  Considering Demand-Generation balance in Day ahead basis, the Trombay Unit-5 & 8 gets technical minimum schedule in Day ahead. However, in real time due to transmission constraints, the Trombay generation is picked up. Also, it is observed that during lean demand season, other State Thermal generators are withdrawn under Zero Schedule whereas Trombay units are not permitted to withdraw under zero schedule considering transmission constraints. Under such conditions, cheaper State thermal generators are under zero schedule whereas costly Trombay generation is kept on bar thereby impacting TPC-D.

  Hence, as the generation is required for System emergency, mechanism for sharing of generation to be devised along with procedure for zero scheduling of Mumbai embedded generation.

  Further, there is need of socializing of RLNG generation and detailed commercial settlement procedure if the generation is kept on bar for system constraints & reliability.

  Also, the Day ahead schedules should be prepared considering technical constraints and accuracy of demand forecast to be improved.

- The Vice President (ABT), AEML and the Superintending Engineer (LM), MSEDCL, strongly objected on the said issue and opined that this is the commercial issue and OCC is not the right platform to discuss the same.

- In response to the same, the Head (PSCC), TPCL informed that operation of Generation under transmission constraints & reliability, non-permitting withdrawal of generation under zero schedule even through demand is low and cheaper power is available in the market, utilization of costly fuel like RLNG for overcoming transmission constraints, etc are operational issues. If these issues are addressed at operational level, there would not be any commercial impact. Hence, as per the TPCL, all these issues need to be deliberated in OCC.

- After hearing the deliberations by all the members, the Executive Director (MSLDC) & the Chairman directed to all the members to submit their submission in writing and

based on the written submission the decision on inclusion of these points in OCC agenda for discussion shall be taken.

The Executive Director (MSLDC) & the Chairman of the Committee informed that there are many issues placed before the OCC which are related to the Regulations. Hence, he directed the Member Convener to consolidate all such points where in changes/modifications in the Regulations are required and circulate the same to all the Stake holders for their comments/suggestions. Executive Director (MSLDC) being Member Convenor of the GCC, all these points may be submitted before the GCC with due deliberations for further consideration.

The meeting concluded with the vote of thanks to the chair.

……x……

ANNEXURE - A

List of Participants of the 1st OCC Meeting held on 12.05.2021 through V.C.

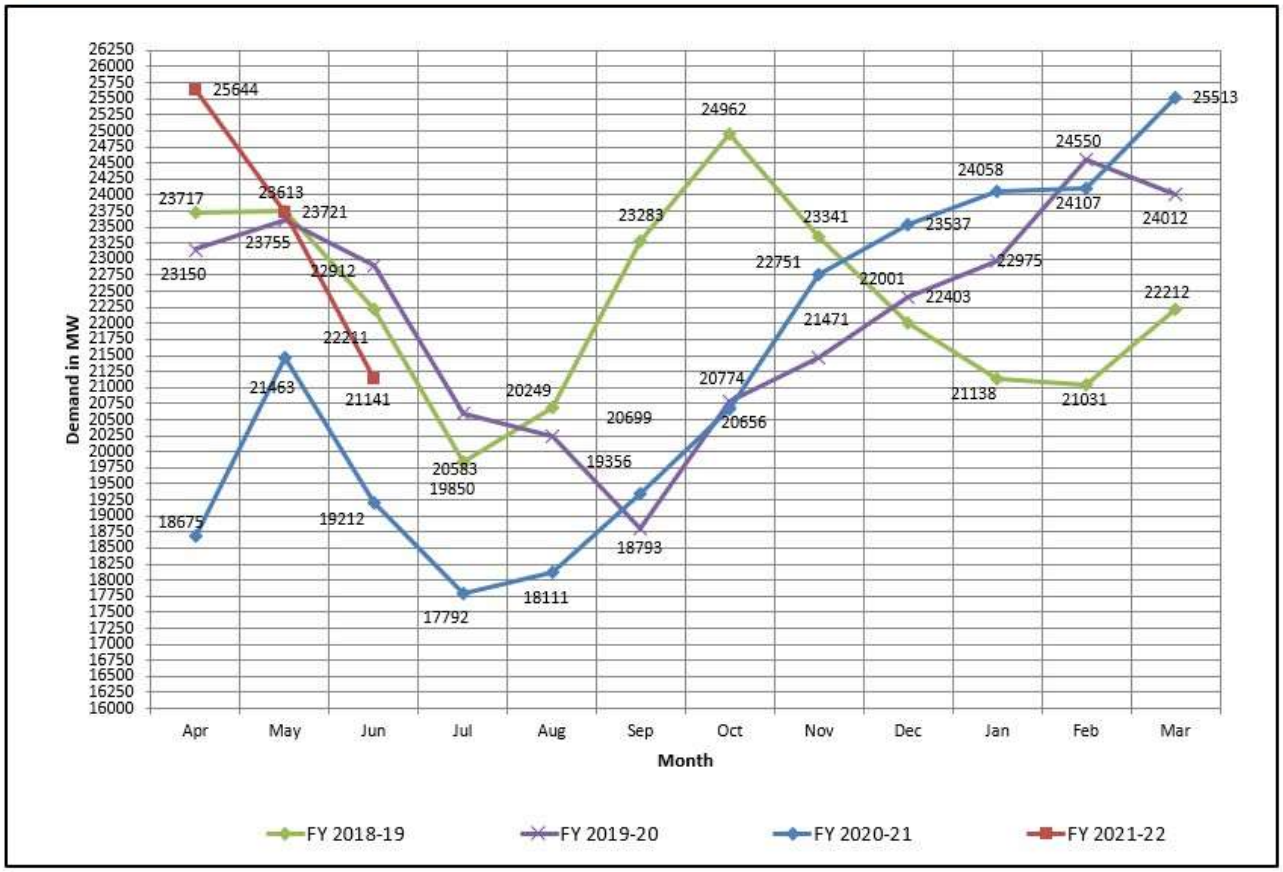
Sr. No.	Name	Designation	
MSLDC			
1	Shri. Shrikant Jaltare	ED	Chairman
2	Mrs. Juelee Wagh	C.E.	Member
3	Shri. Peeyush Sharma	S.E. (OP)	Member-Convener
4	Shri. Madhav Pande	E.E. (OP)	
STU			
5	Shri. Shrikant Rajurkar	C.E.	Member
6	Shri. Rokade	S.E. (Systems)	
MSETCL			
7	Shri. Shrikant Rajurkar	E.D. (Trans)	Member
8	Shri. Sanjeev Bhole	S.E. (O&M)	
MSEDCL			
9	Shri. Sandip Patil	S.E. (LM)	Member
10	Shri. Gopichand Ghodke	E.E.	
TPCL			
11	Shri. P. Devanand	Head, PSCC	
12	Shri. Milind Gole	Head, Grid Operations, PSCC	Member
AEML			
13	Shri. Dilip Devasthale	Head, O&M Transmission	Member
ATIL			
14	Shri. Abhishek Kukreja	Associate Manager O&M	Member
MEGPTCL			
15	Shri. Rakesh Bhalerao	Associate Manager BD	Member
JPTL			
16	Shri. Vaibhav Sansare	Assistant Manager-Transmission	Member
APTCL			
17	Shri. Rajie Nimje	AGM	Member
JSWEL			
18	Shri. Harshal Joshi	Manager (OSTS)	Member
ADTPS			
19	Shri. Vijay Dalli	VP-Operations	Member
RIPL			
20	Shri. Amit Panchalwar	DGM	Member
APML			
21	Shri. Manoj Taunk	Associate VP-Protection & Metering	Member

2.1 Maharashtra System Demand Scenario for the month from April - June 2021

A - STATE Demand Details									
Month	Peak Demand (MW)	Catered Demand (MW)	Load Shedding /Shortfall (MW)	Date	Time (Hrs)		Min. Demand (MW)	Date	Time(Hrs)
Apr-21	25644	25644	0	08.04.21	12:00 Hrs		18876	14.04.21	21:00 Hrs
May-21	23721	23721	0	06.05.21	15:00 Hrs		13572	17.05.21	14:00 Hrs
Jun-21	21141	21141	0	01.06.21	15:00 Hrs		15207	28.06.21	03:00 Hrs

B - Mumbai Demand Details (including open access)								
Months	**Peak Demand (MW)**	**Catered Demand (MW)**	**Load Shedding /Shortfall (MW)**	**Date**	**Time (Hrs)**	***Min. Demand (MW)***	***Date***	***Time(Hrs)***
Apr-21	2959	2959	0	01.04.2021	12:00 Hrs	1864	11.04.2021	08:00 Hrs
May-21	2873	2873	0	05.05.2021	16:00 Hrs	1695	18.05.2021	05:00 Hrs
Jun-21	2843	2843	0	30.06.2021	12:00 Hrs	1536	12.06.2021	05:00 Hrs

Monthly Maharashtra State Max Demand For the FY 18-19, FY 19-20, FY 20-21 and FY 21-22

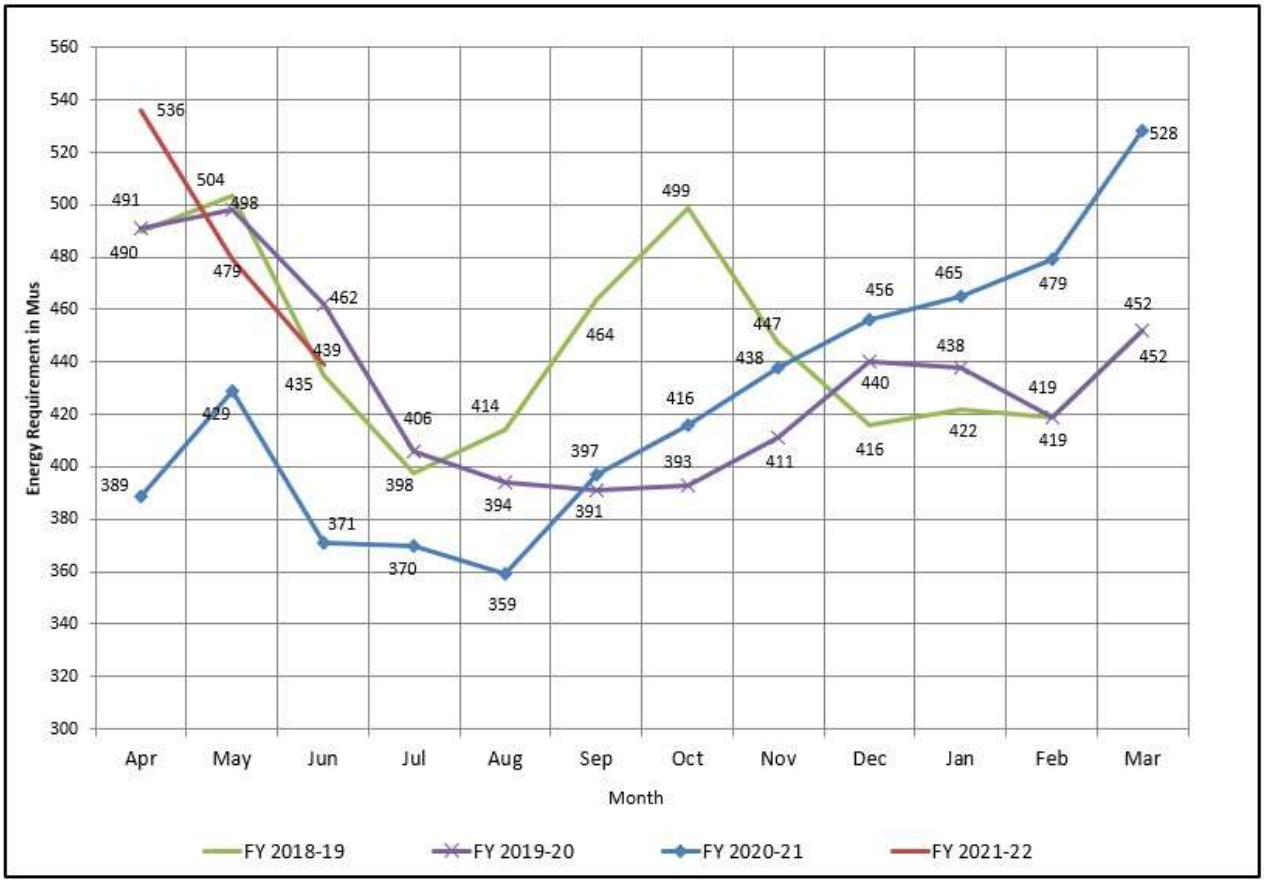


2.1C - Energy Catered in MUs

Particulars		April - 21	May - 21	June - 21
State	Monthly	16081	14856	13169
	Max.	566	523	467
	Avg. Per Day	536	479	439
Mumbai	Monthly	1698	1717	1587
	Max.	60.2	61	58
	Avg. Per Day	57	55	53

Maximum Energy catered till date - 566 MUs on 08th April 2021.

Monthly Maharashtra State Average Energy Req. For the FY 18-19, FY 19-20, FY 20-21 and FY 21-22



2.2 - Frequency profile for the months from April - June 2021

Range	Apr - 2021 % time	May - 2021 % time	Jun - 2021 % time
IEGC band: 49.9 - 50.05 Hz	75.178	74.496	74.701
< 49.9 Hz	8.106	7.213	6.276
> 50.05 Hz	16.715	18.291	19.002

2.3 - UFR Operation for the months from April - June 2021

As per SLDC records the system frequency did not reach 49.4 Hz and no UFR operation was reported.

2.4 - Voltage Profile for the months from April - June 2021

Range	Voltage level	Apr - 21		May - 21		Jun - 21	
Maximum	765kV	AKOLA	790	EKTUNI	802	AKOLA	793
	400kV	DHULE	439	KALWA	439	KALWA	440
Minimum	765kV	TIRORA	752	TIRORA	749	TIRORA	747
	400kV	LAMBOTI	376	LAMBOTI	385	JEJURI	391

Annexure 2.5

Generating Units under Forced outage

Name of Unit	Date Trip	Time Trip	Date Sync	Time Sync	Outage Type	Reason
SWPGPL U-1	16-02-2016	17.09		Continued.	FORCED	No PPA.
PGPL U1	07-02-2017	17.3		Continued.	FORCED	No Schedule (NO PPA)
PGPL U2	07-02-2017	17.3		Continued.	FORCED	No Schedule. (NO PPA)
IEPL Unit 1	28-08-2018	21.26		Continued.	FORCED	No PPA
VIPL U-1	29-12-2018	0.3		Continued.	FORCED	Coal Shortage. (NO PPA From 20.05.2019)
VIPL U-2	17-01-2019	0.15		Continued.	FORCED	Coal shortage. (NO PPA From 20.05.2019)
Uran Unit 7	25-05-2020	12.51		Continued.	FORCED	Turbine Blade Failure
Nasik Unit 3	03-12-2020	6.45		Continued.	FORCED	PA Fan Problem (Under Case 4 Bidding From 11.00Hrs DT. 21-01-2021).
Koyna Unit 11	19-01-2021	10.05	29-05-2021	15.2	FORCED	Tripped on stator earth fault (will not be available till dt.24.05.21)
JSW (J) U1	01-02-2021	18	04-05-2021	14.52	FORCED	Due to turbine vibration high
Chandrapur Unit 7	20-02-2021	23.43	13-07-2021	15.44	FORCED	Generator Earth Fault.
Adani U-2	04-03-2021	0.1	08-04-2021	14.31	FORCED	Increase Hydrogen Consumption
Uran Unit B0	20-03-2021	0.03	02-04-2021	22.17	FORCED	Gas shortage
Uran Unit 8	20-03-2021	0.05	02-04-2021	16.19	FORCED	Gas shortage
Chandrapur Unit 5	25-03-2021	15.51	01-04-2021	10.46	FORCED	Boiler Tube Leakage
JSW (J) U2	26-03-2021	1.13	07-04-2021	20.53	FORCED	No Schedule
Chandrapur Unit 3	29-03-2021	11.15	02-04-2021	20.3	FORCED	Boiler Tube Leakage
Koradi Unit 10	31-03-2021	23.48	06-04-2021	11.58	FORCED	Boiler Tube Leakage
Chandrapur Unit 5	01-04-2021	12.27	01-04-2021	14.04	FORCED	Low drum level.
Uran Unit 6	01-04-2021	11.05	05-04-2021	4.36	FORCED	Gas shortage
Bhusawal Unit 3	02-04-2021	0.02	04-04-2021	7.45	FORCED	Outage for feedline leakage.
Uran Unit 8	02-04-2021	17.09	02-04-2021	17.58	FORCED	Damper discrepancy.
Koradi Unit 6	02-04-2021	12.19	11-04-2021	8.32	FORCED	Fire in boiler electric board.
Uran Unit 5	02-04-2021	23.19	25-04-2021	17.28	FORCED	Gas shortage
Uran Unit A0	02-04-2021	23.19	05-04-2021	10.58	FORCED	Gas shortage
Koradi Unit 7	03-04-2021	19.26	04-04-2021	3.23	FORCED	ID Fan Problem
Bhusawal Unit 3	04-04-2021	12.26	05-04-2021	1.2	FORCED	Cooling water level down.
Parli Unit 8	04-04-2021	10.25	04-04-2021	19.43	FORCED	Attending the CRH dummy line steam leakage.

Chandrapur Unit 3	05-04-2021	10.43	12-04-2021	17.47	FORCED	ID Fan Bearing Temperature High.
Nasik Unit 4	06-04-2021	16.41	08-04-2021	20.07	FORCED	Line Heavy Leakage
Koradi Unit 7	06-04-2021	10.57	08-04-2021	2.04	FORCED	Boiler Tube Leakage
Trombay 5	08-04-2021	17.48	09-04-2021	2.54	FORCED	Fire In cable trenches
Koyna STG-IV Unit-2	08-04-2021	21.54	09-04-2021	0.05	FORCED	D.C. Failure
Adani U-2	09-04-2021	1.3	12-04-2021	1.52	FORCED	APH-A guide Bearing abnormal sound
Bhusawal Unit 4	10-04-2021	0	12-04-2021	6.26	FORCED	Boiler Tube Leakage
Parli Unit 8	10-04-2021	13.12	10-04-2021	17.56	FORCED	ON PA Header Pressure Low.
Koradi Unit 7	10-04-2021	21.58	11-04-2021	8.22	FORCED	Station Transformer no.4 Tripped.
Bhusawal Unit 3	11-04-2021	4.08	13-04-2021	6.43	FORCED	Boiler Tube Leakage
JSW (J) U4	11-04-2021	3.02	24-05-2021	6.17	FORCED	NO SCHEDULE.
Koradi Unit 6	11-04-2021	8.58	11-04-2021	18.56	FORCED	Due To Station Transformer no.3 Tripped.
Koradi Unit 7	11-04-2021	8.58	11-04-2021	16.57	FORCED	Due To Station Transformer no.3 Tripped.
Paras Unit 4	11-04-2021	21.05	12-04-2021	2.2	FORCED	Furnace Pressure High
Nasik Unit 5	11-04-2021	23.1	13-04-2021	1.3	FORCED	Foreign Material Observed In Impeller Of ID A.
Koradi Unit 6	11-04-2021	22.15	12-04-2021	16.55	FORCED	AC Failure.
Koradi Unit 7	11-04-2021	22.14	12-04-2021	19.42	FORCED	AC Failure.
Bhusawal Unit 4	12-04-2021	6.39	12-04-2021	8.21	FORCED	Electrical Protection.
Koyna STG-IV Unit-1	12-04-2021	10.1	13-04-2021	3.4	FORCED	Outage For Turbine Guide Bearing Oil Temperature RTD Senser Work.
Parli Unit 7	12-04-2021	10.35	12-04-2021	13.25	FORCED	Due To Flash Over in Coal Mill.
Koyna STG-IV Unit-4	12-04-2021	15.39	13-04-2021	3.4	FORCED	Tripped due To Voltage Jerk.
Koradi Unit 6	12-04-2021	18.56	12-04-2021	22.35	FORCED	Due To Both Vacuum Dump Tripped.
Koyna STG-IV Unit-2	12-04-2021	15.39	12-04-2021	22.3	FORCED	Tripped due To Voltage Jerk.
Koyna STG-IV Unit-3	12-04-2021	15.39	12-04-2021	21.35	FORCED	Tripped due To Voltage Jerk.
Paras Unit 3	12-04-2021	15.4	13-04-2021	0.15	FORCED	Due To Clinker Formation.
SWPGPL U-2	13-04-2021	12.15	16-04-2021	16.47	FORCED	Conveyor Belt Problem.
Ghatghar Unit-2	14-04-2021	0	18-04-2021	12	FORCED	Maintenance work

Khaparkheda Unit 2	15-04-2021	16.54	27-05-2021	14.06	FORCED	Critical coal stock position
Uran Unit 8	16-04-2021	12.23	16-04-2021	15.4	FORCED	Joint Islanding trial conductor with mahatransco.
Uran Unit 6	16-04-2021	12.23	16-04-2021	20.13	FORCED	Joint Islanding trial conductor with mahatransco.
Uran Unit B0	16-04-2021	12.23	16-04-2021	21.57	FORCED	Joint Islanding trial conductor with mahatransco.
Uran Unit A0	16-04-2021	12.23	17-04-2021	7.27	FORCED	Joint Islanding trial conductor with mahatransco.
Adani U-1	16-04-2021	10.59	16-04-2021	19.44	FORCED	To attend hotspot in GT-Y-phase neutral bushing palm.
Chandrapur Unit 6	16-04-2021	23.58	21-04-2021	12.28	FORCED	Boiler validity expiry.
Bhusawal Unit 5	17-04-2021	7.56	17-04-2021	11.26	FORCED	Furnace Pressure High
Adani U-3	17-04-2021	20.55	21-04-2021	13.28	FORCED	APH-A Hot Bellow leakage
Ghatghar Unit-1	18-04-2021	18	25-04-2021	17.45	FORCED	Bypass Work.
RPL(AMT) U-1	20-04-2021	1	28-04-2021	23.58	FORCED	Bottom Ash System Problem.
Chandrapur Unit-8	20-04-2021	11	24-04-2021	6.05	FORCED	Boiler Tube Leakage
RPL(AMT) U-2	21-04-2021	1	29-04-2021	1.56	FORCED	Due to coal issue.
Koradi Unit 6	21-04-2021	4.12	23-04-2021	8.42	FORCED	Boiler Tube Leakage
Koradi Unit 10	23-04-2021	8.56	24-04-2021	12.37	FORCED	Feed water Flow Low
Bhusawal Unit 5	24-04-2021	10.03	26-04-2021	9.04	FORCED	Boiler Tube Leakage
Koradi Unit 9	24-04-2021	14.59	07-05-2021	6.01	FORCED	Boiler Tube Leakage
SWPGPL U-2	25-04-2021	23.51	01-05-2021	23.58	FORCED	ID Fan Vibrations
Khaparkheda Unit 3	27-04-2021	8.35	27-04-2021	11.55	FORCED	Flame Failure
Parli Unit 8	27-04-2021	18.42	27-04-2021	21.48	FORCED	Flame Failure
Koradi Unit 6	27-04-2021	19.59		Continued.	FORCED	Zero Schedule.
Koradi Unit 7	27-04-2021	20.03		Continued.	FORCED	Zero Schedule.
Chandrapur Unit 5	28-04-2021	13.01	03-05-2021	14.17	FORCED	Boiler Tube Leakage
Paras Unit 4	28-04-2021	14.17	28-04-2021	17.3	FORCED	High Drum Level
Paras Unit 3	29-04-2021	8.57	29-04-2021	22.01	FORCED	Clinker Formation
Chandrapur Unit-8	30-04-2021	14.47	30-04-2021	18.13	FORCED	Low furnace pressure
Chandrapur Unit 3	01-05-2021	0.4	02-05-2021	3	FORCED	Low Vacuum
Khaparkheda Unit 4	01-05-2021	6.02	04-05-2021	0.59	FORCED	Boiler Tube Leakage
Chandrapur Unit 5	03-05-2021	20.26	06-05-2021	14.12	FORCED	ID fan tripped
Uran Unit 5	03-05-2021	15.44	04-05-2021	10.58	FORCED	Bus Fault R-Phase string broken.
Uran Unit 6	03-05-2021	16.12	03-05-2021	19.53	FORCED	Bus Fault R-Phase string broken.
Uran Unit 8	03-05-2021	15.44	03-05-2021	18.34	FORCED	Bus Fault R-Phase

						string broken.
Uran Unit A0	03-05-2021	16.12	03-05-2021	23.33	FORCED	Bus Fault R-Phase string broken.
Uran Unit B0	03-05-2021	15.44	03-05-2021	22.42	FORCED	Bus Fault R-Phase string broken.
Dhariwal	04-05-2021	14.21	04-05-2021	16.45	FORCED	PA Fan issue trip.
Bhusawal Unit 3	04-05-2021	20	05-06-2021	0.05	FORCED	Zero Schedule.
Parli Unit 6	04-05-2021	20		Continued.	FORCED	Zero Schedule By MSEDCL
Paras Unit 3	05-05-2021	14.14	05-05-2021	22.2	FORCED	Due To Clinker Formation.
Parli Unit 7	05-05-2021	19		Continued.	FORCED	Zero Schedule.
Chandrapur Unit 3	06-05-2021	14	09-05-2021	12.3	FORCED	Boiler Tube Leakage
Parli Unit 8	06-05-2021	19.45	05-06-2021	9.28	FORCED	Zero Schedule
Koradi Unit-8	07-05-2021	14.28	07-05-2021	17.57	FORCED	Turbine Trip
Paras Unit 3	08-05-2021	13.18	08-05-2021	19.28	FORCED	Loss of fuel
Khaparkheda Unit 5	08-05-2021	0.11	11-05-2021	1.1	FORCED	Boiler Tube Leakage
Khaparkheda Unit 4	09-05-2021	11.46	11-05-2021	4.04	FORCED	Boiler Tube Leakage
Khaparkheda Unit 5	10-05-2021	23.27	11-05-2021	1.1	FORCED	Drum level high.
SWPGPL U-3	11-05-2021	18	15-05-2021	20.35	FORCED	Zero schedule
Khaparkheda Unit 1	11-05-2021	14.52	12-05-2021	16.57	FORCED	Boiler Tube Leakage
Uran Unit 8	11-05-2021	0.14	11-05-2021	2.52	FORCED	Drum pressure high.
Uran Unit B0	11-05-2021	0.04	11-05-2021	6.53	FORCED	Bearing vibration high.
SWPGPL U-4	11-05-2021	18.3	15-05-2021	23.55	FORCED	Zero schedule
Adani U-2	12-05-2021	22.35	16-05-2021	4.35	FORCED	Air Preheater Bellow Leakage.
Bhusawal Unit 4	12-05-2021	2	12-05-2021	8.19	FORCED	Loss of fuel
Bhusawal Unit 4	13-05-2021	17.11	16-05-2021	1.34	FORCED	Boiler Tube Leakage
Khaparkheda Unit 3	13-05-2021	0.04	14-05-2021	0.03	FORCED	Boiler Tube Leakage
Adani U-3	14-05-2021	17.29	18-05-2021	0.41	FORCED	Low furnace pressure
Paras Unit 4	15-05-2021	12.36	19-05-2021	1.55	FORCED	Coal mill problem.
Adani U-1	16-05-2021	17.57	16-06-2021	5.48	FORCED	Zero Schedule By MSEDCL.
Paras Unit 3	16-05-2021	16.18	16-05-2021	19.15	FORCED	Furnace Pressure High
Adani U-4	16-05-2021	10.01	16-06-2021	0.48	FORCED	Zero Schedule.
Uran Unit 5	17-05-2021	11.52	30-05-2021	17.34	FORCED	Due to jerk
Adani U-5	17-05-2021	12.05	16-06-2021	7.45	FORCED	Zero schedule.
Nasik Unit 5	17-05-2021	12.5	05-07-2021	15.3	FORCED	Zero schedule.
Uran Unit A0	17-05-2021	22.59	31-05-2021	7.12	FORCED	Gas shortage
Uran Unit B0	17-05-2021	20.15	24-05-2021	16.01	FORCED	Gas shortage
Trombay 7B	17-05-2021	23.29	30-05-2021	19.01	FORCED	Gas shortage
Trombay 7A	17-05-2021	23.5	30-05-2021	13.36	FORCED	Gas shortage
SWPGPL U-3	17-05-2021	12.13	20-05-2021	19.36	FORCED	Scrapper conveyer problem.
Uran Unit 6	17-05-2021	22.59	07-06-2021	8.36	FORCED	Gas shortage.

Uran Unit 8	17-05-2021	20.15	24-05-2021	7.04	FORCED	Gas shortage
SWPGPL U-4	18-05-2021	4.4	18-05-2021	8.23	FORCED	Boiler Flame Loss
Khaparkheda Unit 4	19-05-2021	1.36	20-05-2021	14.52	FORCED	Boiler Tube Leakage
AEML Unit 1	19-05-2021	9.52	10-07-2021	19.56	FORCED	flame Failure.
Paras Unit 4	22-05-2021	23.49	24-05-2021	23.38	FORCED	High Drum Level
Koyna Unit 1	24-05-2021	9.5	25-05-2021	11.45	FORCED	Needle Problem
Koradi Unit-8	25-05-2021	3.52	07-06-2021	22.03	FORCED	Boiler Tube Leakage
JSW (J) U1	25-05-2021	9.41	30-05-2021	7.4	FORCED	CW DUCT Water Leakage.
Chandrapur Unit 4	27-05-2021	13.05	27-05-2021	15.58	FORCED	Generation Earth Fault.
Chandrapur Unit 4	27-05-2021	1.58	28-05-2021	6.46	FORCED	Condenser Vacuum Low.
Chandrapur Unit 4	28-05-2021	19.33	31-05-2021	15.27	FORCED	PA Fan problem
JSW (J) U4	29-05-2021	8.06	31-05-2021	10.27	FORCED	CW DUCT Water Leakage.
SWPGPL U-3	29-05-2021	14.58	29-05-2021	15.56	FORCED	Due To Tripping Of Turbine DEH Oil Pump.
Koradi Unit 9	31-05-2021	21.59	08-06-2021	11.22	FORCED	Boiler Tube Leakage
Bhusawal Unit 5	01-06-2021	5.21	03-06-2021	13.42	FORCED	Boiler Tube Leakage
Chandrapur Unit 9	01-06-2021	23.57	05-06-2021	0.58	FORCED	Boiler Validity Renovation
RPL(AMT) U-5	02-06-2021	14.29	05-06-2021	9.13	FORCED	Bottom ash problem
Chandrapur Unit 4	03-06-2021	23.2	05-06-2021	13.37	FORCED	Air heater problem
Paras Unit 3	07-06-2021	16.21	08-06-2021	8	FORCED	GT-1 CT Replacement Work.
Parli Unit 8	07-06-2021	11.56	07-06-2021	14.44	FORCED	Due To Loss Of Oil Fuel.
Parli Unit 8	08-06-2021	0.3	07-07-2021	23.11	FORCED	Zero Schedule.
Bhusawal Unit 3	08-06-2021	0.34		Continued.	FORCED	Zero Schedule.
SWPGPL U-3	08-06-2021	0.24	05-07-2021	23.22	FORCED	Zero Schedule.
SWPGPL U-4	08-06-2021	0.04	24-06-2021	19.49	FORCED	Zero Schedule.
Koradi Unit-8	08-06-2021	13.15	21-06-2021	0.16	FORCED	Boiler Tube Leakage
Chandrapur Unit-8	08-06-2021	20.14	11-06-2021	19.03	FORCED	Boiler Tube Leakage
Chandrapur Unit 3	08-06-2021	10.59	15-06-2021	16.52	FORCED	Boiler Tube Leakage
JSW (J) U4	09-06-2021	0.01	18-06-2021	11.32	FORCED	CW Duct leakage
Paras Unit 3	10-06-2021	16	23-06-2021	12.52	FORCED	Zero scheduled given by MSEDCL
Paras Unit 4	10-06-2021	17	05-07-2021	2.49	FORCED	zero scheduled given by MSEDCL
Dhariwal	11-06-2021	5	12-06-2021	4.02	FORCED	Zero Schedule Given By MSEDCL.
Bhusawal Unit 4	11-06-2021	16.11	02-07-2021	17.12	FORCED	Zero Schedule By MSEDCL
Bhusawal Unit 5	11-06-2021	16.35	02-07-2021	16.25	FORCED	Zero Schedule By MSEDCL
Uran Unit 8	12-06-2021	11.17	13-06-2021	17.38	FORCED	Bus 1 Tripped on LBB

Uran Unit 80	12-06-2021	11.17	13-06-2021	22.33	FORCED	Bus 1 Tripped on LBB
Dhariwal	15-06-2021	18.22	16-06-2021	1.08	FORCED	Due To BUS Fault.
Khaparkheda Unit 3	17-06-2021	2.54	23-06-2021	0.34	FORCED	Zero Schedule.
Khaparkheda Unit 2	17-06-2021	0.27	22-06-2021	23.15	FORCED	Zero Schedule.
Uran Unit 5	17-06-2021	2.42	24-06-2021	8.52	FORCED	Stator earth fault.
Khaparkheda Unit 4	17-06-2021	15.54	23-06-2021	1.4	FORCED	Zero Schedule.
Chandrapur Unit 5	19-06-2021	20.35	20-06-2021	22.49	FORCED	Heater spray problem.
JSW (J) U2	20-06-2021	4.3	08-07-2021	11.14	FORCED	Generator maintenance work.
Chandrapur Unit 5	22-06-2021	4.38	22-06-2021	11.58	FORCED	Unit Board supply failure.
Paras Unit 3	23-06-2021	13.07	23-06-2021	14.52	FORCED	Loss of AC Supply.
Uran Unit 6	23-06-2021	16.1	29-06-2021	12.4	FORCED	Gas shortage
Uran Unit A0	23-06-2021	16.1	24-06-2021	13.38	FORCED	Gas shortage
Trombay 8	23-06-2021	20.2	23-06-2021	23.58	FORCED	PA Fan problem
RPL(AMT) U-2	24-06-2021	10	24-06-2021	17.36	FORCED	Hotspot On Isolator.
SWPGPL U-2	25-06-2021	1.22	05-07-2021	22.53	FORCED	ID Fan High Vibration. (Unit under zero schedule from 04.00 hrs on dt. 25.06.2021.)
Nasik Unit 4	28-06-2021	16.45	28-06-2021	22.43	FORCED	Rotor Earth fault.
Nasik Unit 4	28-06-2021	23.45	29-06-2021	16.52	FORCED	HP heaters level high.
Trombay 8	29-06-2021	9.12	07-07-2021	8.57	FORCED	Boiler Tube Leakage
Khaparkheda Unit 4	29-06-2021	19.58	30-06-2021	9.15	FORCED	Generator Protection operated
Uran Unit 6	29-06-2021	22.18		Continued.	FORCED	Gas shortage
Koyna STG-IV Unit-4	30-06-2021	21.5	30-06-2021	22.3	FORCED	Turbine oil Leakage

2.6 - Generating stations under Planned outage

Generating Company	Name of Unit	Date Trip	Time Trip	Date Sync	Time Sync	Outage Type	Reason
MSPGCL	Koyna STG-IV Unit-4	15-04-2021	12:00	18-04-2021	11:45	PLANNED	Spiral case air drain valve replacement work
MSPGCL	Koyna Unit 6	22-04-2021	12:00	25-06-2021	18:10	PLANNED	UGC Oil Cooler Leakage. (Converted to Capital Overhaul from 08.00Hrs DT.23-4-2021)
MSPGCL	Chandrapur Unit 4	16-03-2021	8:08	27-05-2021	9:01	PLANNED	Boiler Tube Leakage (converted to Capital overhaul)
MSPGCL	Khaparkheda Unit 1	11-06-2021	23:58	12-07-2021	22:54	PLANNED	Annual Overhaul

2.7 - Elements under long outage

Sr. No.	Voltage rating	Name of the Line Reactors	MVAR	Date of failure	STATUS
1	400kV	400kV Chandrapur 1-Parli 3 (Chandrapur 1 end)	50	21.09.2016	The Reactors were under repairs/overhauling at the works of M/s Aditya Vidyut Appliances Ltd, Bhiwandi(AVAL) and the work is held up due to internal problems at the end of M/s AVAL. As such, necessary legal action has already been initiated against M/s. AVAL.& matter is in NCLT. However, considering the importance & urgency of requirement, the scheme for installation of new 50MVAR Reactor is approved vide BR No 143/15 dated 09.10.2020. MERC approval is received, and tenderization is in process for procurement of 50MVAr Reactors.
2	400kV	400kV Chandrapur 2-Nanded 1 (Chandrapur 2 end)	50	29.01.2018	
3	400kV	400kV Chandrapur 2-Nanded 2	50	09.08.2018	
4	400kV	400kV Dhule S/S-SSP-1 (CSR)	50	23.12.2016	M/s BHEL has attended oil leakage problem of Reactors. Oil filtration work and testing work of both Reactors completed. BHEL has been requested for expediting the commissioning works but held up due to prevailing Covid-19 pandemic situation.
5	400kV	400kV Dhule S/S-SSP-2 (CSR)	50	27.05.2017	
6	400kV	400kV Karad – Lonikand (CSR)	80	14.09.2017	On 01.04.2020, the 80MVAR CSR tripped due to Monkey fault resulting in some damages . M/s BHEL has been requested to attend the hot spots on top priority. The same held up due to prevailing Covid-19 pandemic situation.
7	400kV	400KV 50MVAR Bus Rector at Khadka S/S	50	10.11.2018	The issue of repairs of failed Reactor was taken up with M/s. CGL being OEM. However, M/s. CGL have denied the repairs of said Reactor. The scheme for augmentation of said Reactor by 125MVAR is approved vide BR 145/19 dated 22.01.2021. MERC In-principle approval is awaited.
8	400kV	400kV Babhaleshwar	80	26.06.2019	The scheme for Installation of new 125 MVAR Bus Reactor is approved vide BR No. 139/25 Dt. 12.12.2019 and tenderization is in process.
9	400KV	400kV Kharghar Bus Reactor	80	04.06.2020	80MVAR, 400kV BHEL Make Bus Reactor failed on 04.06.2020 during charging at 400kV Kharghar S/s. The scheme for procurement of new 80MVAR Reactor is in process.
10	400KV	315MVA ICT – 1	315	10.08.2020	Argumentation work i.e., 315MVA ICT into 500MVA ICT

2.8 - Koyna Lake Level in Ft.

Month	April - 21	May - 21	Jun - 21
At the end of the month	2101	2074.6	2097.9
Corresponding Figure of the month Last Year	2105.7	2083.8	2080

2.9 - New Network Addition during April - June 2021

Month	Name of substation	Particulars	Date
Apr - 21	400kV Dhule	125 MVAr reactor	07.04.2021
May - 21	220kV Tuljapur	220kV Tuljapur Lamboti Ckt - I at 19:13 hrs and 220kV Tuljapur Lamboti Ckt - II at 19:46 hrs.	14.05.2021
June - 2021	***** NIL	*********	

3.0 - System Disturbance in the Maharashtra Network for the period April 21 to June 21.

Sr. no.	SUB-STATION	LINE/EQPT/ BUS AFFECTED	DATE OF TRIPPING	TIME (hrs)	Sync Hrs.	EQUIP. FAILURE	LOAD/GEN. AFFECTED (approx.)	REASONS OF FAILURE
1	400KV Koyna Stg. 4	400KV Loniknad-Stage 4 and unit 2 and 3	12.04.2021	15:39	22:30	NIL	NIL	Due to heavy rain & lighting 11 Kv Station supply was not available. Lonikand II line tripped at 15:39 hrs & due to jerk U1, U2, U3 & U4 400Kv breaker tripped. Due to this complete Ac supply of station failed. Due to this failure of AC supply & tripping of UPS on its internal fault complete PLC
2	400kV Akola	1.400 kV Akola Bus 1 2.400 kV Akola-Bhusawal 3.400 kV Akola-Nandgaonpeth 4.400 kV Akola-Akoal(2) D/C	29.04.2021	19:48	20:33	NIL	NIL	At 19:48 Hrs on 29-04-21, 400 kV Akola Bus 1 tripped on BB protection operation due to sparking in 410 89A Bphase (Main Bay) isolator of 400 kV Akola Bhusawal line. 400 kV Akola-Akola (2) 1&2 should have been remained in service through tie bays but tie bays tripped during the event and resulted in tripping of these lines. 400 kV Akola-Nandgaonpeth & 400 kV Akola-Bhusawal also tripped as the tie bays were already in open condition due to the outage of 400 kV Akola-Wardha 1&2 for diversion works.
3	220kV Nashik	B phase LA of 220 kV Padghe line blasted at Nashik substation	01.05.2021	08:51	09:25	NIL	-	B phase LA of 220 kV Padghe line blasted at Nashik substation and resulted in tripping of all the elements connected to 220 kV Bus. Tripping of: 1) 220 kV Nashik-Navsari 1&2. 2) 220 kV Nashik-Padghe. 3) 220 kV Nashik- Raymond. 4) 220/132 kV Nashik ICTs 3, 4 & 5.
4	220KV Uran	Bus section 1 and 2	03.05.2021	15:45	16:45	NIL	16MW Uran	On 03.05.2021 @ 15:45 hrs. at 220/2 kV Uran Sub-Station, 220 kV Apta-4 feeder Y-phase Bus insulator string above CT and line isolator broken and fell on Y-ph breaker pole structure and then Y-ph line isolator structure and Bus bar protection operation correctly on Zone-A.
5	220KV Osmanabad	220KV Bus bar operated	01.06.2021	20:15	20:57	NIL	131MW	LBB initiation to 220kV Busbar relay remain high because, during Aux Trials only 86-4 was reset and 86-8 remain operated which leads operation of 220 kV Bus-Bar.
6	400KV Warora	All lines tripped in Z2 at remote end	15.06.2021	18:22	22:45	NIL	NIL	400kV C'pur2 Ckt 2 Y-ph line CVT jumper found disconnected and came in induction zone of R-ph.
7	220KV Kalwa	100KV Creek side Bus	21.06.2021	15:15	15:36	NIL	26MW	Y ph line fault occurred on 100KV Kalwa-Nocil 2line, LBB operated.

4.1 - Status of Reactors

Sr. No.	Name of Sub-Station	Capacity (MVAr)	Status
1	400 kV Nanded	1 x 125	LOA issued 21.11.19.Site handed over 13.12.19 Work completed – civil 80% Electrical 0%
2	400 kV Koradi – II	1 x 125	Ready for charging. Bus connection work is pending.
3	400 kV Akola	1 x 125	LOA issued 06.12.19 . Site handed over 18.01.2021 Work completed- civil 63% Electrical 40%
4	400 kV Khaperkheda	1 x 125	Ready for charging. Bus connection work is pending.
Commissioned			
1	400 kV Karad	1 x 125	26.10.2017
2	400 kV Kolhapur	1 x 125	07.02.2018
3	400 kV Solapur (Lamboti)	1 x 125	20.03.2018
4	400 kV Chandrapur II	1 x 125	31.03.2021
5	400 kV Dhule	1 x 125	07.04.2021
6	400 kV – Bhusawal II	1 x 125	03.08.2021
7	400 kV – Lonikand II	1 x 125	10.08.2021

4.2 - Status of State Transmission Schemes

Sr. No.	Name of the Scheme	CoD	Status
1	400 kV Bableshwar -Kudus D/C (Quad)	Jun-21	Forest clearance awaited, severe ROW problem.
2	400 kV D/C Jejuri-Hinjewadi Line (Jejuri Wainihar) Package-1.	Dec-21	50% work done approx. and for balance work tender is floated by C.O.
3	400 kV D/C Jejuri-Hinjewadi Line (Jejuri Wainihar) Package-2.	Dec-21	50% work done approx. and for balance work tender is floated by C.O.
4	LILO on another Ckt. Of 400kV Bhusawal 2 - Aurangabad 1 for Thaptitanda.	Mar-21	50% work done approx. and for balance work LOA issued to new agency by C.O.

4.3 - Status of MMR and Mumbai Transmission Schemes

Sr. No	Name of the Scheme	CoD	Status
1	220 kV Kalwa Trombay HTLS conversion	Dec.-20	WIP Extra Item proposal for rusted tower replacement work at location No.: 72 in BRC area is pending at CO.
2	220 kV Mulund Trombay HTLS conversion	Dec.-20	WIP Extra Item proposal for rusted tower replacement work at location No.: 72 in BRC area is pending at CO.
3	220 kV Boisar PG - Boisar (M) D/C HTLS conversion (Tr. O&M)	Mar-22	Tender work completed and LoA given to the agency. LoA No: 520, dated 10.03.2021, given to M/s Rahul Agency.
4	LILO of 220 kV Boisar – Ghodbunder & Tarapur – Borivali at Kudus. (Twin AAAC) - 10 km	Mar-21	Foundations: - 85/124 Erection: - 50/124 Stringing: - 0 / 27 KM. WIP, Expected COD Dec- 21.
5	100-120 MVAR Reactor at 220 kV Gorai EHV S/s (New)	Aug-22	MERC approved Scheme 'WIP.
6	Installation at 220 kV, 40 MVAR reactor at Karanjade	Mar-22	Order Placement for major packages are completed. Manufacturing clearance for 40MVA reactor has been issued.
7	Installation at 110 kV, 10 MVAR reactor at Karanjade	Mar-22	Order placement for major packages is in process.
8	Installation of 220 kV, 125 MVAR reactor at Salsette	Mar-22	Order placement for major packages to be initiated.

STATUS OF FAILED REACTORS

Sr. No.	Voltage rating	Name of the Line Reactors	MVAR	Date of failure	IN / OUT	Present status as on May 2021
1	400kV	400kV Chandrapur 1-Parli 3 (Chandrapur 1 end)	50	21.09.2016	OUT OF SERVICE (faulty)	The Reactors were under repairs/overhauling at the works of M/s Aditya Vidyut Appliances Ltd, Bhiwandi (AVAL) and the work is held up due to internal problems at the end of M/s AVAL. As such, necessary legal action has already been initiated against M/s. AVAL & matter is in NCLT. However, considering the importance & urgency of requirement, the scheme for installation of new 50MVAR Reactor is approved vide BR No 143/15 dtd 09.10.2020. MERC approval is received and tender under finalization at CO.
2	400kV	400kV Chandrapur 2-Nanded ckt 1 (Chandrapur 2 end)	50	29.01.2018	OUT OF SERVICE (faulty)	
3	400kV	400kV Chandrapur 2-Nanded ckt 2	50	09.08.2018	OUT OF SERVICE (faulty)	
4	400kV	400kV Dhule S/S-SSP-1 (CSR)	50	23.12.2016	OUT OF SERVICE (faulty)	M/s BHEL has attended oil leakage problem of Reactors. Oil filtration work and testing work of both Reactors completed. BHEL has been requested for expediting the commissioning works but held up due to prevailing Covid-19 pandemic situation.
5	400kV	400kV Dhule S/S-SSP-2 (CSR)	50	27.05.2017	OUT OF SERVICE (faulty)	
6	400kV	400kV Karad – Lonikand (CSR)	80	14.09.2017	OUT OF SERVICE (faulty)	On 01.04.2020, the 80MVAR CSR tripped due to Monkey fault resulting in some damages. M/s BHEL has been requested to attend the hot spots on top priority. The same held up due to prevailing Covid-19 pandemic situation.
7	400kV	400kV Babhleshwar Bus Reactor	80	26.06.2019	OUT OF SERVICE (faulty)	The issue of repairs of failed Reactor was taken up with M/s. CGL being OEM. However, M/s. CGL have denied the repairs of said Reactor. The scheme for augmentation of said Reactor by 125MVAR is approved vide BR 145/19 dtd 22.01.2021. MERC In-principal approval is awaited.
8	400kV	400kV Khadka Bus Reactor	50	10.11.2018	OUT OF SERVICE (faulty)	The scheme for Installation of new 125 MVAR Bus Reactor is approved vide BR No. 139/25 Dt. 12.12.2019 and tenderization is in process.
9	400kV	400kV Kharghar Bus Reactor	80	04.06.2020	OUT OF SERVICE (faulty)	80MVAR, 400kV BHEL Make Bus Reactor failed on 04.06.2020 during charging at 400kV Kharghar S/s. The scheme for procurement of new 80MVAR Reactor is under approval.

ANNEXURE – 3

Status of Ongoing Transmission Schemes

Sr. No.	Project Name	Progress	Statutory	Remark
1	400KV Babhaleshwar-Kudus line. (Construction of 400kv Babhaleshwar from Naneghat to Padgha-II DCQ Line	F: 199/227; E: 171/227; Ckm : 5.18/150.5	**ROW**: Major ROW problems due to nonpayment of compensation as per SDO order. Matter apprised to Collector Thane by Hon'ble Director sir on 23.10.2020. Collector Thane called meeting on 5-11-20. **Railway Crossing**: 1) Span 146-147 - Approval received on 25.07.2019 2) 100kV Rly Power line crossing (Span 145-146 & 147-148)	1)Major ROW is non payment of compensation after SDO order, Competent Authority decision required. 2) After forest officials visit tree cutting started but Ex.Sarpanch Mr.Tungare created ROW.Matter refered to FOREST officials they asked him to submit land documents.
2	400 KV D/C Jejuri-Hinjewadi Line	F: 0/73; E: 0/90; Ckm : 0/126.3		Tenderization in process Total progress: (BNC+EMC) F : 204/277 E : 187/277; Ckm : 69.54/195.84
3	Balance work of LILO on another Ckt of 400KV Bhusawal II - Aurangabad-I for Thaptitanda	F: 22/32; E: 5/45; Ckm : 0/50	**ROW**: Forest: Not involved Railway Crossing: Loc: 187,188 Submitted on 07.07.2015 to DRM Nanded.	WIP. [BNC progress: F: 241/241, E-228/228, Ckm: 126/126] Total: F- 254/273; E- 228/273; Ckm-126/176

Detailed Procedure for Instructing Reserve Shut Down (RSD) of Generating Unit(s)

1. General

As per Electricity Act 2003, the State Load Despatch Centre shall be responsible for optimum scheduling and despatch of electricity within a State, in accordance with the contracts entered into with the licensees or the generating companies operating in the State and shall be responsible for carrying out real time operations for grid control and despatch of electricity within the State through secure and economic operation of the State grid in accordance with the Grid Standards and the State Grid Code.

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

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

2. Objective

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

3. Scope

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

4. Definitions

4.1 In this procedure, unless the context otherwise requires:

1) "**Cold Start"** in relation to steam turbine means start up after a shutdown period exceeding 72 hours (turbine metal temperatures below approximately 40% of their full load values).

2) **"Declared Capacity**" or 'DC' in relation to a generating station means, the capability to deliver ex-bus electricity in MW declared by such generating station in relation to any time-block of the day as defined in the Grid Code or whole of the day, duly taking into account the availability of fuel or water, and subject to further qualification in the relevant regulations.

3) **"Demand"** means the demand of Power in MVA, Active Power in MW and Reactive Power in MVAr of electricity unless otherwise stated;

4) **"Event"** means an unscheduled or unplanned occurrence on a Grid including faults, incidents, and breakdowns;

5) **"Force Majeure"** means any event which is beyond the control of the persons involved which they could not foresee or with a reasonable amount of diligence which could not be foreseen or which could not be prevented, and which substantially affect the performance by STU, SLDC, Generator, User, licensee or any person and includes but not limited to:-

   i) Acts of God, natural phenomena, including but not limited to floods, droughts, earthquakes, and epidemics;

   ii) Acts of any Government domestic or foreign, including but not limited to the war declared or undeclared, hostilities, priorities, quarantines, embargoes;

   iii) Riot or Civil Commotion;

   iv) Grid's failure not attributable to persons involved;

6) **"Hot Start"** in relation to steam turbine, means start up after a shutdown period of less than 10 hours (turbine metal temperatures below approximately 80% of their full load values);

7) **"Intra State Generating Station (InSGS)"** means a generating station connected to intra-State Transmission System whose scheduling is to be coordinated by SLDC;
8) **"Maharashtra State Load Despatch Centre (MSLDC or SLDC)"** means the Centre established under sub-section (1) of Section 31 of the Act;
9) **"MoD Principles"** means the principles for the operation of Merit Order Despatch (MoD) and amendments thereof, as specified by the Commission in these Regulations and Deviation Settlement Mechanism Regulations and as amended from time to time;

10) **"Scheduled Generation"** at any time or for a time block or any period means schedule of generation in MW or MWh ex-bus given by the concerned Load Despatch Centre;

11) **"State Entity"** means such person who is in the SLDC control area and whose metering and energy accounting is done at the state level;

12) "**Warm Start"** in relation to steam turbine means start up after a shutdown period between 10 hours and 72 hours (turbine metal temperatures between approximately 40% to 80% of their full load values);

4.2 Terms and abbreviations used in this procedure but not defined herein shall have the meaning assigned to them in Electricity Act, 2003 or the IEGC or other Regulations of the Commission as notified from time to time.

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

1. If the anticipated generation availability is more than the anticipated demand, the distribution licensee in consultation with SLDC may consider giving Zero Schedule (ZS) to some of its contracted sources for the period during which the demand is expected to be lower than the total contracted sources availability put together. SLDC give provide its concurrence to the proposed "Zero Schedule" by distribution licensee after taking into consideration demand-supply position and possible transmission constraints.

2. Another scenario may arise in the system that the generation in the state is in excess equivalent to largest unit capacity (at present it is 660 MW of APML, Tiroda) of contracted generators of the Distribution Licensee due to sudden unanticipated demand crash arise due to cyclone, heavy rainfall, high renewable injection etc.

3. If this scenario persists for more than 24 hours, SLDC may withdraw the unit(s) under Reserve Shut Down (RSD). However, in case of severe weather condition (like cyclone) which resulted into heavy underdrawal coupled with persistent High Frequency scenario, SLDC can issue RSD instructions to Generating unit/s immediately looking into Grid security aspect as per the guidelines prescribed in Regulation 36.

4. RSD should be implemented for the capacity available in excess of the largest Unit contracted by the Distribution Licensee in the state.
   Provided that the aggregate capacity for which RSD implemented shall be limited to maximum possible expected under-drawal of power from regional grid after considering spinning reserve.
5. SLDC shall apply RSD to unit(s) with higher Variable Charges as per the State MOD in FBSM regime & Decentralised MOD Stack of the utility in DSM regime. In case of any grid constraints prevents the RSD of the Unit with highest Variable charges in the MOD stack, the unit with next highest variable charge needs to be considered.

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

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

7. The proposed RSD shall be minimum for the period of **72 hours** and may be extended as per the system conditions/requirement.

8. The generating unit where transmission or system security constraints do not permit the RSD of unit, such unit will not be taken for RSD. SLDC may instruct the next generator to withdraw its unit for RSD as per MoD stack.

9. The decision of SLDC will be final in respect to further continuation or cancellation of the RSD.

10. The Declared Capacity (DC) for unit(s) under RSD period shall be preserved and the contracted distribution licensee shall have to pay for this DC.

11. During the RSD period if other unit tripped and available after short duration the same shall be permitted for lit up depending upon system conditions. However, SLDC can decide not to light up a particular unit as per system conditions, then this unit shall be considered under RSD as per MoD stack & DC shall be preserved for such period as instructed by SLDC.

12. In order to avoid frequent start-stop of the unit it would be appropriate to put the unit under RSD for longer durations and the same unit shall not be put under RSD repeatedly i.e. units shall be put under RSD on rotational basis at the respective power station of same variable charge.

13. For accounting simplicity RSD shall commence from next time block. SLDC will issue schedule to generating unit considering the Ramp down / up rate.

14. During RSD period, if any unforeseen situation arises shall be dealt within the frame work of scheduling and dispatch code.

15. Declared Capacity (DC) of generating unit under RSD shall be considered as higher of Average Declared Capacity for immediate one week prior to RSD instructions or Maximum Declared Capacity (for minimum 3 hours period) for last 24 hours before commencement of RSD.

16. The generating unit(s) under RSD will not be permitted for carrying out of any maintenance work.

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

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

1. While taking the unit on bar, notice will be issued by SLDC to the respective generating station with the instruction to bring the unit on bar depending on the status of unit under Cold/Warm/Hot start. Each generating station shall submit the information of time required to bring the unit on bar from Cold/Warm/Hot start to MSLDC on yearly basis which shall be published on website.

2. The ramping up and ramping down at the specified rates should be allowed for bringing back the unit on bar. However, generator would make all efforts to minimize the lit-up time.

3. Unit under RSD can be recalled for revival any time after 72 hours. In case of system constraints, the generating unit can be revived before 72 hours as well.

4. In case the machine is not revived as per the revival time as instructed by SLDC, the generating unit(s) shall be treated under outage for the duration starting from the likely revival time and the actual revival time. SLDC shall ensure that intimation is sent to the generating station sufficiently in advance keeping in view its start-up time.

7. **The RSD procedure may be reviewed & modified, if there are any changes in regulation. Further, any practical constraints are observed during the implementation of the procedure, the same shall be discussed & modified after due process.**

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

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

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

Constitution of Committee:

- The Committee constituted by CEA to investigate the partial Grid failure that occurred in MMR on 12.10.2020, in its report vide **Clause No. 7.4 (a)** has recommended that *MSLDC may frame LTS/SPS to handle contingencies of power diversion on Padghe, Kalwa & Kharghar gates, as well as any other power flow constraints in Mumbai System.*
- The High-Level Committee (HLC) constituted by Hon'ble MERC to investigate the partial Grid failure that occurred in MMR on 12.10.2020, in its report vide Clause No. **8.21 (A-2) (3)** has also recommended that *STU to review of design of LTS schemes for MMR in consultation with GCC, PCC, MSLDC, and Discoms within 6 months.*
- The Director (Operations), MSETCL, in the meeting dated 18.12.2020 directed to constitute a Committee to review the existing LTS/SPS and to obtain load relief in MMR & Mumbai area.
- The Executive Director (MSLDC), vide letter No. ED/MSLDC/02408 dated 24.12.2020 constituted a Committee for review of existing LTS/SPS on Mumbai source lines with adequate load relief in MMR & Mumbai area.

Members of the Committee:

The members of the Committee are as follows:

- Chief Engineer (MSLDC) : Chairman
- Chief Engineer (STU), MSETCL : Member
- Chief Engineer, EHV PC O&M Zone, Vashi, MSETCL : Member
- Chief Engineer (Protection), MSETCL : Member
- Head (PSCC), TPCL : Member
- Head (O&M, Transmission), AEML : Member
- Superintending Engineer, TCC, Vashi, MSETCL : Member
- Superintending Engineer, Operation, MSLDC : Member – Convener

ToR of the Committee:

- The Committee shall carry out a detailed study and design Load Trimming schemes (LTS) / Special Protection Schemes (SPS) in the Kharghar, Padghe, Kalwa & Boisar Gate & submit the recommendations by 25.01.2021.
- The Committee shall identify the load in MMR & Mumbai region and verify the sensitivity of the load in order to provide adequate load relief on operation of the above Load Trimming schemes (LTS) / Special Protection Schemes (SPS).
- Review the existing Load Trimming schemes (LTS) / Special Protection Schemes (SPS) in the region and suggest modifications in the same.
- Finalise the optimal load carrying capacity of the Mumbai source lines considering the technical & ageing factors and ensure the loading on the same remains within the safe limits with the operation of the proposed Load Trimming schemes (LTS) / Special Protection Schemes (SPS) in case of contingencies.
- Monitor the implementation of the Load Trimming schemes (LTS) / Special Protection Schemes (SPS).

Meetings of the Committee:

Sr. No.	Meeting No	Date	Time (Hrs)
1	1	05.01.2021	15:00
2	2	25.01.2021	15:00
3	3	23.03.2021	15:00
4	4	15.06.2021	11:30

Due to non-availability of some of the members due to COVID-19 pandemic, the 3rd meeting was delayed by around 2 months. However, the joint studies were carried out by the Sub-group during the said period.

- In the 1st Meeting, approach for review of existing LTS/SPS schemes on Mumbai Source lines was discussed and finalized.
- A Study-Group comprising of members from MSLDC, STU, TPC & AEML was constituted to carry out Load Flow simulations at various contingencies and Mumbai demand scenarios.
- As per the CEA's manual on Transmission Planning Criteria, the thermal current carrying capacity of 597 Sq.mm ACSR Moose conductor is 728 Amp at 40^0 ambient & 75^0 Conductor temperature. As per the said parameters, the thermal current carrying capacity of 400 kV twin moose line comes to 958 MW. However, considering aging of the line, jumpering & conductor joints, etc the continuous Thermal loading limit of 400 kV lines is considered as 800 MW.

Contingencies Considered:

Type of Contingency	
N	All elements in Service
N-1	400kV Talegaon - Kalwa S/c Out
N-1	400kV Talegaon - Kharghar S/c Out
N-1	400kV Padghe - Kalwa One Ckt Out
N-2	400kV Padghe - Kalwa D/C Out
N-1-1	400kV Padghe - Kalwa S/c + 400kV Talegaon - Kalwa S/c Out
N-1-1	400kV Padghe - Kalwa S/c + 400kV Talegaon - Kharghar S/c Out
N-1-1-1	400kV Padghe - Kalwa D/c + 400kV Talegaon - Kalwa S/c Out
N-1-1-1	400kV Padghe - Kalwa D/c + 400kV Talegaon - Kharghar S/c Out
N-1-1	Trombay Unit-5 (500 MW) + 400kV Talegaon - Kharghar S/c Out
N-1-1-1	Trombay Unit-5 (500 MW) + + 400kV Padghe - Kalwa S/c + 400kV Talegaon - Kharghar S/c Out
N-1-1	Trombay Unit-8 (250 MW) + 400kV Talegaon - Kharghar S/c Out

Type of Contingency	
N-1-1-1	Trombay Unit-8 (250 MW) + 400kV Padghe - Kalwa S/c + 400kV Talegaon - Kharghar S/c Out
N-1-1	Dahanu 1 x 250 MW + 400kV Talegaon - Kharghar S/c Out
N-1-1-1	Dahanu 1 x 250 MW + 220 kV Boisar (PG)-Boisar S/C (HTLS) + 400kV Talegaon - Kharghar S/c Out
N-1-1-1	Dahanu 1 x 250 MW + 400kV Padghe - Kalwa S/c + 400kV Talegaon - Kharghar S/c Out
N-2-1	Dahanu 1 x 250 MW Out + 220 kV Boisar (PG)-Boisar D/C
N-2-1	Dahanu 2 x 250 MW + 220 kV Boisar (PG)-Boisar S/C (HTLS) Out
N-1-1	400 kV Talegaon-Kalwa + 400 kV Talegaon-Kharghar Out
N-1-1-1	400 kV Talegaon-Kalwa & 400 kV Talegaon-Kharghar + 400 kV Padghe-Kalwa S/C Out

Approach for Simulations:

- The Load Generation details are as follows:
  - State Demand : 23427 MW (Including Mumbai)
  - Mumbai Demand : 3812 MW
  - Mumbai Generation : 1782 MW
- Sensitivity of loads in each Sub-Station in Mumbai & MMR on the 400 kV & 220 kV lines under each contingency was calculated through simulations.
- Priority criteria for Loads:
  - **Super Critical (P-1)**: Highest Priority Loads and all attempts to be made to keep in service (Hospitals, Airport, Traction, Refineries, Metro, Ports, Important Govt. establishments viz. Mantralaya, Raj Bhavan, etc)
  - **Critical (P-2)**: Sheddable Loads under extreme Contingencies (Govt. Offices, Data Centers, Important Organizations having Essential Services, Telephone Exchanges & Hospitals having Generator back-up, Water pumping Stations, etc)
  - **Non-Critical (P-3)**: Sheddable Loads (All Residential, Commercial consumers including malls, shops, theatres, etc)
- The formula used for calculation of Sensitivity is as follows:

$$\textit{Sensitivity} = \frac{\textit{(New Loading) – (Earlier Loading)}}{\textit{(Incremental Load added)}} \times 100$$

- Based on the Sensitivity, 'P-3' loads are considered for shedding under each contingency.

Approach for Simulations:

- The 'P-3' load quantum connected to the Sub-station is curtailed till the line loading is reduced to its operational thermal loading limit. (800 MW in case of 400 kV lines & 300 MW in case of 220 kV Boisar (PG)-Boisar(M) lines).
- Considering large Load shedding quantum, in the 2nd meeting it was decided to carry out simulations by opening of EHV network as an alternate option.
- Simulations for each contingency were carried out 'With' and 'Without' opening of:
  - 1 x 500 MVA, 400/220 kV ICT at Kalwa & Kharghar S/s during contingencies at Kalwa & Kharghar Gates
  - 1 x 500 MVA, 400/220 kV ICT at Boisar (PG) S/s during contingencies at Boisar Gate
- Simulations were carried out for various contingencies at five Mumbai Demand scenarios viz. 2700 MW, 3000 MW, 3300 MW, 3500 MW & 3812 MW.

Observations from Load Flow Simulations:

General Observations:

- Sensitivity of each Sub-station varies with the type of contingency.
- During contingencies, to restrict the line loading within permissible operational limits, Load shedding in the range of around 900 MW to 1400 MW is required in MMR & Mumbai area.
- The load shedding quantum between two cases viz. 'Without opening of ICT' and 'With Opening of ICT' is large and is substantially lower in case of opening of ICTs.
- After opening of one ICT each at 400 kV Kalwa & 400 kV Kharghar & 400 kV Boisar (PG) the remaining ICTs are 'N-1' compliant. In case of a further contingency on remaining ICTs, the LTS on ICT shall be operated.
- In most of the contingencies, the 220 kV Padghe – Temghar & 220 kV Nagothane – ACCIL S/C lines are critically overloaded above thermal limit.

Considering line length option of 400 kV Padghe – Kalwa D/C:

- The non-availability of 400 kV Talegaon-Kalwa S/C, 400 kV Talegaon – Kharghar S/C & one Ckt of 400 kV Padghe Kalwa D/C, is the most severe contingency in Kalwa & Kharghar Gates.
- For reducing the loading of line to 800 MW, the quantum of Load shedding is high. Even after opening of one 400/220 kV ICT each at Kalwa & Kharghar S/s, the load shedding quantum is substantial.
- As the line being short in length of 53 kms, the maximum line loading limit needs to be finalized considering short length along capacity to overload the line for smaller durations.

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Observations from Load Flow Simulations:

Opening of 220 kV lines in Boisar Gate:

- In Case of non-availability of 1 x 250 MW Dahanu Unit and 220 kV Boisar (PG)-Boisar D/C line, the loading on remaining 220 kV Boisar (PG) – Boisar (M) S/C (HTLS) line is increased beyond permissible limits.
- The average Sensitivity of loads on 220 kV Boisar (PG) - Boisar (M) HTLS line is around 11 %.
- After opening of 1 x 500 MVA, 400/220 kV ICT at Boisar (PG) with the Mumbai demand of 2700 MW, the quantum of Load shedding is very high. At peak Mumbai demand of 3812 MW, the load shedding to the tune of 1755 MW (Mumbai: 1056 MW, MMR: 699 MW) is required and with this quantum, the loading on remaining 220 kV Boisar lines is not reduced within permissible limit of 300 MW.
- It is a present practice to open 220 kV Boisar-II – Versova S/C, 220 kV Boisar-II-Ghodbunder S/C & 220 kV Boisar-II – Borivali (M) S/C lines. Hence, simulations were carried out by opening of these lines. With opening of these lines the load shedding quantum is substantially reduced.
- In the 4th meeting of the Committee, it is decided that the committee may flag this issue in the report as a special case so as to continue the discussion in this regard in OCC/GCC/WRPC meetings.

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Gross Mumbai Exchange:

- MMR area is wide spread.
- Total demand of MMR is not dependent on Kalwa Gate, Kharghar Gate & Boisar Gate, some of the loads are catered through Padghe Gate.
- Hence, a Sub-MMR area having impact on Kalwa & Kharghar Gates comprising the loads of Navi Mumbai, Mumbai Suburbs like Mulund, Bhandup, Urban area of Thane has been considered.
- The Gross Transmission Exchange of Sub-MMR including Mumbai for various contingencies over 400 kV lines including internal Mumbai Generation is calculated at peak Mumbai demand of 3812 MW.
- During simulations, for each contingency, Priority-3 loads at Sub-Stations are shed according to its sensitivity on the overloaded line till the loading is reduced to permissible limits (400 kV: 800 MW; 220 kV: 300 MW)
- The Mumbai Gross Exchanges in in the range 2605 MW to 977 MW (under extreme contingency)

Contingency-wise Mumbai Gross Exchange

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Observations of the Committee:

- The non-availability of both the 400 kV lines emanating from Talegaon (PG) connecting to Kalwa & Kharghar resp. along with non-availability of one circuit of 400 kV Padghe-Kalwa D/C is the most severe contingency as a huge quantum of load shedding is required to restrict the loading on remaining circuit of 400 kV Padghe-Kalwa D/C within permissible limit of 800 MW.
- Tripping of 220 kV Boisar (PG) – Boisar-II D/C line along with tripping of 1 x 250 MW unit at Dahanu TPS, is most severe contingency at Boisar corridor. As in this case, to restrict loading on the remaining 220 kV Boisar (PG) – Boisar-II S/C (HTLS) line to permissible limit of 300 MW is very large even after opening of 1 x 500 MVA, 400/220 kV ICT at Boisar (PG).
- In most of the contingencies, the 220 kV Padghe – Temghar & 220 kV Nagothane – ACCIL S/C lines are critically overloaded above thermal limit. Hence, strengthening of this line is required along with separate Load trimming Scheme.
- The 220 kV Kalwa-I-Kalwa-II Inter-connector shall be kept 'OFF' in normal conditions as is being kept currently. The present scheme of auto-closing of the Inter-connector CB shall remain unchanged.
- The difference in load shedding quantum between two cases viz. 'Without opening of ICT' and 'With Opening of ICT' is large and is substantially lower in case of opening of ICTs under contingencies.

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Recommendations of the Committee:

Consideration of 'With' & 'Without' ICT Opening Scenario:

- The CEA Committee report opening of EHV line has proved to be counterproductive as this results in reduction of the interconnection lines and thus created a system constrain during contingency. As such CEA committee in it's report has been highly critical to this fact & has recommended an action to shed the loads directly instead of opening of any EHV lines on operation of LTS.
- All the members opined that the opening of 220kV Bus & EHV Lines would give the system operator sufficient breathing space to take further action and therefore a study for impact of opening of EHV elements without sacrificing the system reliability to be carried out. Based on the study results, the Committee may deliberate the Pros & Cons of both the studies in the report and put forth the best methodology.
- The study results clearly indicates that the difference in load shedding quantum between two cases viz. 'Without opening of ICT' and 'With Opening of ICT' is large and is substantially lower in case of opening of ICTs under contingencies.
- After opening of one ICT each at 400 kV Kalwa,400 kV Kharghar & 400 kV Boisar (PG) the remaining ICTs are 'N-1' compliant. In case of a further contingency on remaining ICTs, the LTS on ICT shall be operated.
- This automated action of opening the ICT and obtaining a lower load shedding quantum would give the system operator sufficient breathing space to take further action and therefore the option 'With Opening of ICT' is optimal.

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Recommendations of the Committee:

Opening of 220 kV lines during contingencies in Boisar Gate:

- The average Sensitivity of loads on 220 kV Boisar (PG) - Boisar (M) HTLS line is around 11 %.
- Even after opening of 1 x 500 MVA, 400/220 kV ICT at Boisar (PG) with the Mumbai demand of 2700 MW, the quantum of Load shedding is very high.
- After opening of one ICT at peak Mumbai demand of 3812 MW, the load shedding to the tune of 1755 MW is required and with this quantum, the loading on remaining 220 kV Boisar lines is not reduced within Operational permissible limit of 300 MW.
- With opening of 220 kV Boisar-II – Versova S/C, 220 kV Boisar-II-Ghodbunder S/C & 220 kV Boisar-II – Borivali (M) S/C, the load shedding quantum is significantly reduced, however, in the CEA Committee report on Grid disturbance, opening of any 220 kV network is not recommended.
- As discussed in the 4th meeting, it is discussed that the opening of above 220 kV EHV lines till uprating of 220 kV Boisar gate lines may be considered as an option to reduce quantum of load shedding in Mumbai.

Strengthening of following lines to be carried out as in most of the contingencies, these lines are getting critically loaded:

- 220 kV Padghe – Temghar ckt I & II (HTLS Proposed)
- 220 kV Nagothane – ACCIL - Apta S/C (LILO of 220 kV Pedhambe-Adlab at Nagothane)
- 220 kV Apta – Kalwa S/C (Uprating required)
- 220 kV Apta – Taloja – Kalwa S/C (Uprating required)
- Uprating of 220 kV Boisar (PG) – Boisar-II 3 ckts along with end equipments on priority by Dec' 2021.

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Recommendations of the Committee:

Initial Design of LTS:

- The Sensitivity of a Sub-Station varies with the type of contingency. Hence, while designing the Load Trimming Schemes, two concepts have been explored viz. Static Scheme & Dynamic Scheme.
- **Static Load Trimming Scheme:**
  - The Static Load Trimming Scheme consists of measurements at triggering locations.
  - On the basis of the settings incorporated in the measurement relay, signals shall be initiated.
  - The signals shall be signalled through the communication channels (Optical fibre, PLCC, Hybrid, etc) to TPC PSCC control Centre, AEML BCC Transmission Control Centre. The intended stage-wise load relief shall be obtained by extending the signals to the predefined Sub-Stations of TPCL & AEML trough their respective control centres.
  - For MSETCL Sub-Stations, the signals shall be extended directly to the identified Sub-Station to obtain the expected load relief.

Sr. No.	Triggering Points	Stage No.	Setting (Amp)	Time delay (Sec)
1	At 400 kV Kalwa S/s on 400 kV Talegaon-Kalwa S/C and 400 kV Padghe-Kalwa D/C.	1	1200	1.0
2		2	1200	1.5
3	At 400 kV Kharghar S/s. On 400 kV Talegaon-Kharghar S/C	3	1200	2.0
4		4	1200	3.0
5	At 220 kV Boisar-II S/s on 220 kV Boisar (PG) – Boisar-II triple circuit lines	1	900	1.0
6		2	900	1.5
7		3	900	2.0
8		4	900	3.0
9	At 220 kV Temghar on 220 kV Padghe-Temghar ckt-1 & 2 lines	1	600	1.3

Schematic Diagram (Contingencies at Kalwa/Kharghar Gate-WO ICT Open)

Schematic Diagram (Contingencies at Kalwa/Kharghar Gate-With ICT Open)

Schematic Diagram (Contingencies at Boisar Gate)

Recommendations of the Committee:

- **Dynamic Load Trimming Scheme:**
  - Dynamic Load Trimming Scheme shall consist of getting input triggering signals viz. Current, Breaker status, etc, to identify the type of contingency coupled with the loading on the lines.
  - The system shall process the input signals logically thereby identifying the contingency.
  - Based on the identified contingency, predefined Sub-stations based on sensitivities shall be selected and appropriate output signals shall be generated.
  - The signals shall be signalled through the communication channels (Optical fibre, PLCC, Hybrid, etc) to TPC PSCC control Centre, AEML BCC Transmission Control Centre. The intended stage-wise load relief shall be obtained by extending the signals to the predefined Sub-Stations of TPCL & AEML trough their respective control centres.
  - For MSETCL Sub-Stations, the signals shall be extended directly to the identified Sub-Station to obtain the expected load relief.

Schematic Diagram (Contingencies on 400 kV lines-WO ICT Open)

Schematic Diagram (Contingencies on 400 kV lines & Trombay Generation-WO ICT Open)

Schematic Diagram (Contingencies on 400 kV lines-With ICT Open)

Schematic Diagram (Contingencies on 400 kV lines & Trombay Generation-With ICT Open)

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Recommendations of the Committee:

- Adequate & reliable communication network is required between various Sub-Stations so as to ensure successful operation of the Scheme.
- The detailed design & implementation of LTS schemes would require a separate joint executing team comprising of members (Protection, Telecom, SCADA, Operations) from all the Stake holders in MMR. The joint team would study the technical requirements based on the schema provided above. The LTS/SPS Committee shall monitor the timely implementation of the LTS.
- As discussed in the 4th meeting of the Committee, the possibility of utilization of Generations viz. Ghatghar, Uran, Nashik, Tarapur around the boundary of MMR may be explored through discussions in OCC for further improvement in the proposed scheme at a later stage.
- The existing LTS in Mumbai area for internal 220 kV & below lines are to be kept in service.
- Any other Load trimming Schemes for 220 kV & below elements in MSETCL network may be designed and implemented after the approval of the Competent Authority at local level.

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