



**MAHARASHTRA STATE ELECTRICITY TRANSMISSION CO.LTD.**  
CIN NO. U40109MH2005SGC153646

**Office of The Chief Engineer**

**Maharashtra State Load Dispatch Center**

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Ref: MSLDC/TECH/OP/

No 00993

Date:

06 MAY 2021

To,

As per mailing list.

**Sub:** Agenda for the 1<sup>st</sup> Operation Co-ordination Committee (OCC) meeting scheduled on 12.05.2021 at 11:00 hrs through V.C.

**Ref:** 1. OCC constituted vide ED/MSLDC/641 date 25.03.2021  
2. T.O. Email dtd. 26.03.2021 for agenda request

Dear Sir,

In reference to the above subject, it is to inform that in the 1<sup>st</sup> GCC core group meeting, the core group has accorded approval to the functional committees along with its functions in accordance with the MEGC 2020. Accordingly, Operational Coordination Committee has been constituted vide letter under reference 1.

Vide T.O.email under reference no. 2, the undersigned; Member Convener of the OCC had requested all the members of the OCC to submit the agenda items for the 1st OCC meeting.

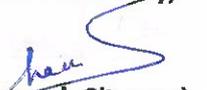
The agenda for the 1<sup>st</sup> OCC meeting has been finalized in consultation with the Chairman of the OCC i.e. the Executive Director (MSLDC) and enclosed herewith.

The 1<sup>st</sup> meeting of the OCC meeting has been scheduled on 12.05.2021 at 11:00 hrs through **Video Conferencing. The link shall be shared prior to the meeting.**

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

Encl: As above.

Yours sincerely,

  
(Peeyush Sharma)

Superintending Engineer, MSLDC  
(Member Convener of OCC)

Copy s.w.r.s. to:

1. Director (Operations), MSETCL, Prakashganga, Mumbai.
2. 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		

**Agenda for 1<sup>st</sup> Operation Co-ordination Committee meeting  
scheduled on 12<sup>th</sup> May'2021 at 11:00 Hrs through V.C.**

**Item No. 1: Maharashtra system Grid performance for the period from Jan 2021 to March 2021 (Presentation by MSLDC)**

- 1.1. Maharashtra system Demand Scenarios for the period Jan 2021 to March 2021 is enclosed in Annexure 1.1
- 1.2. Frequency profile for the period Jan 2021 to March 2021 is enclosed in Annexure 1.2
- 1.3 U/F Relay Operations is enclosed in Annexure 1.3
- 1.4 Voltage Profile of 765kV & 400kV Substations is enclosed in Annexure 1.4
  - a. High Voltage Substations
  - b. Low voltage Substations
- 1.5 Details of Generating Units under Forced outage is enclosed in Annexure 1.5
- 1.6 Details of Generating stations under Planned outages is enclosed in Annexure 1.6
- 1.7 List of Elements under Long outages is enclosed in Annexure 1.7
- 1.8 Details of Koyna water consumption for the year Water year 2020-21 is enclosed in Annexure 1.8
- 1.9 List of New grid elements added/List of Elements decommissioned is enclosed in Annexure 1.9

**Item no.2: System Disturbance in the Maharashtra Network for the period Jan 2021 to March 2021** is enclosed in Annexure 2

**Item no: 3: Status of completion of ongoing schemes in Maharashtra:**

- 3.1 Status of Reactors is enclosed in Annexure 3.1
- 3.2 Status of Transmission Schemes is enclosed in Annexure 3.2

**Item no 4: Submission of failure analysis of grid elements**

Under regulation 27 of CEA (Grid Standards) Regulations, 2010, failure analysis of equipment failure and tower collapse is to be submitted to RPC and Authority.

All the constituents are requested to report incidences of equipment failure and tower collapse to MSLDC so as to forward it to RPC and Authority as and when such incidences take place.

## **ITEM NO 5: - Miscellaneous operational Items**

5.1 Event on 24<sup>th</sup> March 2021 of 130 MW of load relief at Tata Power Dharvi Receiving Station due to SPS command received from MSETCL system.

**MSETCL may pl give the details**

5.2 Discussion on ATC/TTC for Mumbai Transmissions System for April – May 2021 for summer preparedness of Mumbai Power System Operation.

***Committee may discuss***

5.3 Instead of going for changeover from RGMO to FGMO, changing / tightening the RPM band of existing RGMO setting (i.e., increasing the correction sensitivity to change in HZ) shall be explored.

***Committee may discuss***

### **5.4. Market Suspension procedure**

Procedure to be defined for declaration of Market suspension

### **5.5. Billing of Additional Transmission charges as per MERC Order in case no. 52 of 2020**

Streamlining of billing of Additional Transmission charges w.r.t following

- Evaluation of charges at 15min interval
- Verification of data & calculation by DISCOMs before issuance of bills by STU

***Committee may discuss***

### **5.6 Review of Real time Visibility of Network Parameters (Analog & Digital Signal) Noncurrent data of Parli U-6, U-7, U-8 and RE Generation Pooling station**

There is no Real time Visibility of Parli U-6, U-7 & U-8 in the SCADA of SLDC. The generation figures are required to be inputted from SLDC shift Operator/Engineers in real time. Since Real time generation data figures are inputted manually, same is not reflected in State Generation in real time. Being MSEDCL demand is derived presently in SCADA from State Generation, Power drawn from Regional Periphery & Mumbai Exchange, the noncurrent data of Parli U-6,7 & 8 affect MSEDCL derived demand.

This also affect the decision being taken based on previous day's Demand for forecasting demand & action thereof.

The new Intra DSM regulation is being commercial implemented soon. Such wrong computation of MSEDCL demand will affect MSEDCL financially as well as pose difficulty in forecasting real time demand. Hence it is requested to provide, real time SCADA visibility for these Units of Mahagenco. (MSEDCL)

***Committee may discuss. STU may inform the status.***

### **5.7 Intermittent Real time visibility of RE generation in SCADA**

It is observed during real time operation that RE generation data visibility from RE pooling station is not 100%. Sometimes even abnormal negative Wind Generation figures are seen which result in wrong Wind Generation as well as Solar generation. Several times, the issue has

been brought to notice of SLDC in past. But still visibility of RE generation through pooling station has not improved.

As mentioned earlier, Being MSEDCL demand is derived presently in SCADA from State Generation, Drawl of Power from Regional Periphery & Mumbai Exchange, the non-current data of RE Generation affects MSEDCL's derived demand. Hence it is requested to provide, real time SCADA visibility of all RE pooling station. The STU may please be requested to submit action taken in the matter.

***Committee may discuss. STU may provide the detail plan.***

### **5.8 Compliance of Directives of Hon'ble Commission's order in Case no 114 of 2020 dated 29.11.2020 for Real time Visibility of all <T-D>drawal Point of MSEDCL**

As per metering code, Power T/F LV is <T-D> interface point. In case of Hybrid substation (i.e. Generation connected on LV side of Power T/F), in addition to LV of Power T/F, Generation Feeder is also part of <T-D>drawl computation. Further in case EHV consumer, MSEDCL drawls point is at EHV consumer End. All these points come under preview of MSETCL. Hence providing SCADA data visibility of these points at SLDC is responsibility of MSETCL/STU.

Since presently SCADA is not installed at all MSEDCL <T-D>Drawl Points, the MSEDCL demand is derived based on SCADA values of generation. 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 it's 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 "

The MSEDCL is unaware of any progress in the matter from MSETCL/STU. The STU requested to provide detail on action taken in the matter so far for Compliance of Directive of Hon'ble Commission.

***Committee may discuss. STU may provide the detail plan.***

### **5.9 Review of Transmission constraint cases noticed by SLDC and suggest the Recommendation**

#### **A. Transmission Constraint observed due to plan outage of 400KV & prolong outage result in un-necessary usage of Koyna Hydro**

The planned outage of 400KV Lonikand-Talegaon PG line was taken from 31.12.2020 and the outage was to be completed on dt-15.01.2021. However, the outage is not completed within time and the same is extended upto 27<sup>th</sup> Jan 2021. Due to this prolong outage, line loading on 400kv Chakan- Talegaon PG is sometimes increasing above 550MW as against thermal capacity of 750MW. Whenever loading of this line increases above 550 MW, SLDC instructs to take Koyna Stage-IV M/Cs ON-Bar and sometimes these machines are taken ON-Bar with backing down of thermal generation and also sometimes resulting in high under drawal at High frequency. This has caused unnecessary financial loss to MSEDCL and also an important Koyna hydro source is being used even during off-peak periods.

Being Koyna is limited source (on virtue of its annual TMC limit) hence it is to be used very cautiously and judiciously so that it can be used during peak hours and peak demand season, particularly during March to May. We always plan usage of Koyna accordingly; however, such outages have resulted in unplanned usage of Koyna.

The MSEDCL has studied about 25 days data of line loading of 400 KV Chakan-Talegaon PG line and vis-a-vis Koyna hydro and its impact thereof on loading of 400 kV Chakan-Talegaon PG line by taking Koyna Stage-IV ON-Bar and it is observed that even after taking 3 M/Cs on generation loading of line hardly reduces by 100 MW to maximum extent around 20 to 30 MW by one machine of 250MW. Hence it is seen that impact of koyna is not much in reducing line loading of 400 KV Chakan-Talegaon PG line as compared to generation being pumped into the system.

It is also observed that to reduce line loading, Koyna machines are taken on generation at night hours that are on Off-Peak hours which is an unnecessary use of hydro generation when loading slightly increases above 600MW and it is not taken every day. This means, although Koyna is not required during such off-peak periods, Koyna pick up decisions are taken by shift in charge with its own perception of the system. About 2.3TMC Koyna water is used by Backing Down Thermal Generation for this Transmission constraint.

Hence to avoid usage of Koyna during such off-peak hours, it is necessary that there need to be thorough study of impact of Koyna hydro on relieving line loading. Further it is also necessary that STU shall take up study of system to find alternate actions like shifting 220 KV load, planning of additional 400 KV line network to tackle issue of line loading of 400 KV Chakan-Talegaon PG and SLDC shall take up the study of impact of Koyna generation on line loading either by stimulation or practical line loading so that unnecessary usage of Koyna (like those in off peak period of night hrs. from 22 to 5 hrs.) can be avoided.

Further it is requested that such long duration outages of important Transmission Elements shall be availed during low demand season like November and December.(MSEDCL)

***Committee may discuss***

### **B. Use of Ghatghar generation for various Transmission constraint including Mumbai Transmission Constraint**

It is noticed post 12<sup>th</sup> Oct 2020 event that sometimes Ghatghar Generation is taken on bar to control Line loading of 400KV Kalwa-Padgha Line. Being Ghatghar is Pumped storage Generation, MSEDCL energy is used to pump the water to upper Dam of Ghatghar PSP for subsequent Generation from Ghatghar PSP. In energy conversion about 35% energy is lost for taking Ghatghar for Generation. Hence MSEDCL normally plans the Ghatghar Generation; in such a way that Marginal cost of Generation of Ghatghar is above breakeven cost of generation i.e about 1.35 times Rate of Pumping energy.

However due to above such Transmission constraint, Ghatghar is un-necessary used in Real time. This result in financial loss to MSEDCL. Further there is no record of use of Ghatghar by SLDC for Transmission constraint maintained at SLDC (even if it is being maintained, same is not being published/informed to MSEDCL).

The Ghatghar Generation was also taken on bar in recent past in following case by SLDC

1. Due to tripping of 220 KV Boisar- Boisar PG line and outage on TPS U-5-16.202.2021
2. Loading 400 KV Kharghar- Talegaon line increased-21.02.2021

3. Due to outage of 220 KV Nashik- Babhaleshwar line -14.03.2021
4. 220 KV Nashik- Babhaleshwar line tripped also Padgha-temghar line tripped- 19.03.2021
5. 400 KV Kalwa- Talegaon line overload -21.03.2021

In view of above, it is requested that STU shall take up System study for above Transmission constraint cases & come up with solution. Further also requested to provide study report on impact of Ghatghar in relieving Transmission constraint.

***Committee may discuss***

**C. Use of Koyna Hydro Generation due to overloading of 400KV Talegaon-Chakan line.**

During last two months, MSEDCL peak demand crossing 22000MW on many days & States peak Demand is also crossing 25,000MW mark. This is resulting in overloading of 400KV Talegaon-Chakan line above 650MW & to relieve line loading Koyna Stage-4 machines are taken on bar even by Backing down of Thermal Generation at some occasions.

As pointed out earlier, being Koyna Generation is limited by its Annual TMC water allocation, Koyna Generation is planned to utilized mostly during March to May. By Taking Koyna Generation on bar by Backing down Thermal Generation caused financial loss to MSEDCL by virtue of important resource is being used for Transmission constraint by Back down of Thermal generation.

Moreover, from study of MSEDCL, it is observed that every 250MW generation of Koyna Stage-4 only give relief of about 25 to 30MW in relieving overloading of 400KV-Talegaon-Chakan Line i.e important resource is not fully utilized for purpose of overloading. STU shall take up system study of to find alternate actions like shifting 220 KV load, planning of additional 400 KV line network to tackle issue of line loading of 400 KV Chakan-Talegaon and SLDC shall take up the study of impact of Koyna generation on line loading either by stimulation or practical line loading so that unnecessary usage of Koyna can be avoided.

**D. Tripping of 400kV Kolhapur-Alkud and critical loading on Solapur- Kolhapur and Alkud ICT.**

400/220 kV Alkud S/s is connected to the Grid through LILO on 400 kV Solapur (PG) – Kolhapur one ckt. In case of tripping of any line, the other line is critically loaded. Also, only 1 x 500 MVA 400/220 kV ICT is available at Alkud S/s. Hence, it is necessary to provide additional source to the 400 kV Alkud S/s. along with ICT.

***Committee may discuss. STU may inform the plan.***

**ITEM NO 6: -Low voltages at Chakan, Jejuri, Lonikand, Solapur Lamboti/Jeur 220 KV (MSLDC)**

Every day in the morning, during demand ramp up hours, voltages have been reducing below 390 kV at in the western Maharashtra area at Chakan, Lonikand, Jejuri and Solapur (Lamboti). The Bus reactors at 765kV Pune, Padghe/Aurangabad and the Bus reactors at 400kV Kolhapur PG, Kolhapur MH, Pune PG, and Mapusa switched off on daily basis. Even the line reactors of 400 kV Pune PG-Pune GIS at Pune PG end switched off to improve the voltages. Despite of all such operations, voltages still remain below 395 kV at Chakan, Jejuri and Solapur Lamboti. The reactors at 765kv are required to be taken out for a very short time as voltages again starts rising from 17:00 hrs in the 765 kV network.

For improving the voltages in 220 kV Jeur area, 400 kV Karad-Solapur (PG) S/C line has been temporarily charged on 220 kV level. This arrangement has been approved by CEA & WRPC purely on temporary basis. However, till date this arrangement is not restored as the planned works are not completed. WRLDC & WRPC are continuously requesting MSLDC to take appropriate actions for restoration of the said line.

- MSETCL shall take up with DISCOM to ensure all switchable capacitors in service in the lower voltage levels to provide voltage relief.
- Reactive power generation as per the capability curve at Parli, Jaigad, Uran, Nasik and Ghatghar
- Augmentation of intrastate transmission and sub transmission network

***Committee may discuss. STU & MSETCL may give details.***

### **ITEM NO 7: -Status of Compliance to LVRT and HVRT by RE Generators Regulation**

#### **7.1. LVRT:**

The Central Electricity Authority (Technical Standards for Connectivity to the Grid) (Amendment) Regulations, 2019 was notified on 6 Feb 2019. This amendment has several provisions in respect of Renewable Energy (RE) generation. The amendments would be applicable to all new generating units commissioned after 6th Aug 2019.

Prior to this amendment, one amendment was notified by CEA on 15th Oct 2013 and effective for all units commissioned after 15th Apr 2014. The ability of RE generators to successfully ride through faults in transmission system commonly known as LVRT (Low Voltage Ride Through) was first introduced in 15th Oct 2013 amendment by CEA. This was applicable for all wind generators connected to 66Kv and above commissioned after 15th Apr 2014.

CERC order dated 05.01.16 in Petition No.420/MP/2014 mandates compliance of LVRT in all Wind Turbine Generators (except for Stall Type WTGs) having capacity more than 500 kW connected to voltage level of 66 kV and above. In CERC order dated 05.01.16, SLDCs are directed to prepare quarterly report on installation and performance of LVRT on existing WTGs and submit to RPCs.

The capacity of LVRT compliant wind turbines and status of compliance by wind turbine generators connected is discussed in 495th, 496th, 504th, 513th, 519th, 526th and 528th OCC meetings. The issue was also discussed in REIF meetings. LVRT is technical requirement from the point of view of the safety and security of the grid. CERC has already directed all WTGs of capacity equal to or more than 500 kW except Stall Type WTGs to comply with LVRT.

**The updated status of compliance details of LVRT status are requested to be submitted by the RE generators.**

#### **7.2. HVRT:**

As per Central Electricity Authority (Technical Standards for Connectivity to the Grid) (Amendment) Regulations, 2019, the generating station connected to the grid, shall remain connected to the grid when voltage at the interconnection point, on any or all phases (symmetrical or asymmetrical overvoltage conditions) rises above the specified values given below for specified time.

Over voltage (pu)	Minimum time to remain connected (Seconds)
$1.30 < V$	0 Sec (Instantaneous trip)
$1.30 \geq V > 1.20$	0.2 Sec
$1.20 \geq V > 1.10$	2 Sec
$V \leq 1.10$	Continuous

**The updated status of compliance details of HVRT status are requested to be submitted by the RE generators.**

**ITEM NO 8: The issue of Non compliance of timelines of FTC as per the FTC procedure.**

As per the Indian Electricity Grid code 2010, POSOCO has formulated and circulated letter 'Procedure for integration of new network element of a transmission licensee into grid and issuance of certificate by RLDC for successful trial operation of Transmission element'.

In this context, MSLDC has prepared and circulated to all Transmission Licensees a 'Procedure for inter-connection of new Transmission Elements belonging to any Transmission licensee in the State for First Time Charging (FTC)' along with the requisite formats vide CE MSLDC's letter CE MSLDC's Letter No. MSETCL/TECH/O/FTC/02533 Dated 27 th Nov 2018so as to comply with the guidelines circulated by POSOCO.

The procedure along with the formats is also uploaded on website of MSLDC ([www.mahasldc.in](http://www.mahasldc.in)).

As per the approved FTC procedure, a proposal for the elements seeking consent from WRLDC/MSLDC is to be intimated by submission of prescribed formats available on website before 15 days of the proposed charging date for document verification at WRLDC/MSLDC. Further undertakings and all other necessary approvals / documents are to be provided 3 days prior to the proposed charging.

After the receipt of the proposal (seeking consent of WRLDC) the following activities are to be performed at MSLDC end:

1. The detail information about the new element and the information received through the prescribed formats is incorporated in the FTC Portal developed by WRLDC.
2. After submission of the requisite information in the FTC portal, Annexure A1 to A5 and B1 to B5 generates from the portal and a system generated tentative charging date ie 7 days from the application is received.
3. These systems generated Annexure A1 to A5 and B1 to B5 are then sent to the concerned field officer for data validation.
4. After verification of the same field officer has to sign each document and send it back to MSLDC
5. The received signed copies are then uploaded back on the FTC Portal.

6. After the submission of above documents, the proposal is verified by the concerned Departments of WRLDC.

7. After the verification activity as above (which normally takes 3-4 days), if everything is clear, the NOC from each department is conveyed to FTC department of WRLDC and FTC certificate is issued by WRLDC to MSLDC.

8. In case of a query/issue has been raised by the concerned department, the same is further raised to MSLDC by FTC Department, WRLDC which in turn is conveyed to the field officers for compliance. After the fulfillment of the compliances, based on the NOC from the concerned department of WRLDC the FTC certificate is issued by WRLDC to MSLDC.

It has been seen in the recent past that many proposals are submitted without adhering to the time lines as per the FTC procedure. Proposals from site are received on the day or one day before of new element proposed charging date. Some proposals received are without a valid Electrical Inspector approval certificate and informing that an oral permission has been granted by EI which is difficult to validate, incomplete information formats and incomplete Scada visibility works.

it is expected that the FTC process should be initiated by the fieldofficer as per the timelines as a part of the project activity so that any shortfalls or incompleteness of work can be completed during the process so as to avoid last minute issues.

All the concerned field officers to adopt the FTC Procedure and submit the proposals in requisite formats adhering to the timelines as specified therein.

#### ***Committee may discuss***

**ITEM NO 9:** The GoM committee has recommended that for operational purposes, a new sub-desk within SLDC which has active participation from Tata Power and AEML could be considered to specifically look into daily generation scheduling and preventive control for Mumbai region.

#### ***Committee may discuss***

#### **ITEM NO 10: Constraints in the RE Power Evacuation:**

As per the provisions of the IEGC & MEGC, RE generation is having “Must Run” status. It is the responsibility of all the Stake holders to take all the possible efforts to accommodate RE generation in the Grid.

During real time operations, at some of the locations, RE generation is curtailed due to transmission evacuation constraints. At some of the locations, RE generation is tripped due to violation of Grid parameters. The details are as follows:

#### **➤ Evacuation of Wind Generation at 220 kV Nerle.**

- 220 kV Nerle S/s. has been connected to the grid by making LILLO on 220 kV Karad – Pophali and 220 kV Karad – Pedhambe lines.
- Wind Generation is connected at 220/33 kV Nerle S/s.
- During peak generation, it is observed that 220 kV Nerle – Pedhambe line is overloaded. To control the loading on this line, hydro generation at Pedhambe is to be taken on bar.

- During this condition, normally in monsoon period, State is normally under-drawing from ISTS and grid frequency is above 50 Hz. Under such conditions, peaking up of hydro generation is not desirable as such increased generation further increases under-drawl at State periphery which attracts additional penalties for the State.
- 220 kV Dasgaon S/s. wind generation is connected. This Sub-Station is proposed to be connected by making LILO on MSETCL's under construction 220 kV Karad – KDPH S/C line. However, as the work of this line is not yet completed, the said Sub-Station has been connected to the grid by making LILO on 220 kV Karad – Nerle line as an interim arrangement.
- If the 220 kV Dasgaon S/s. is connected as per the original scope of works, the loading on 220 kV Nerle – Pedhambe line will be reduced and operation of hydro generation will not be required.
- Hence, commissioning of 220 kV Karad – KDPH S/C line and establishment of LILO at 220 kV Dasgaon S/s. needs to be carried out on priority.

➤ **132kV Mograle:**

- Since past few months the QCA has reported that the Solar generation at 132kV Mograle PSS is curtailed due to overloading of the 132kV Phaltan-Mograle S/C line. In this respect, the QCA of 132 kV Mograle PSS has submitted a letter issued by the Executive Engineer, Testing Division, Karad, MSETCL.
- The PSS wise generation capacity being evacuated through 132kV Aundh – Dahiwadi – Mograle - Phaltan S/C line is tabulated below:

**Table-1**

Name of PSS	Solar (MW)	Wind (MW)	Total PSS wise Cap. (MW)
Aundh 132kV	10	99	109
Dahiwadi 132kV	0	22.1	22.1
Mograle 132kV	54	0	54
<b>Total Generation Capacity for link line (MW)</b>			<b>185.1</b>

- From the above, it is observed that total 185 MW RE Generation is evacuated through said line. Further, there is no any alternate evacuation arrangement in case of tripping or outage on any 132 kV line section. In STU Five year Plan, 132 kV Ambheri – Aundh S/C line has been proposed during the year 2022-23. Since, the curtailment of generation is carried out presently, it is necessary to commission the said line on priority.

➤ **220kV Shivajinagar:**

- The 132kV voltage variation at 220kV Shivajinagar is very high (116kV to 149kV - more than 10%). Due to this voltage variation, the solar generation plant (100 MW) connected at 132kV Level gets tripped frequently resulting in generation loss.
- The plant has tripped 13 times due to under voltage problem.

➤ **132kV Wagdari & Naldurg:**

- At 132 kV Wagdari & Naldurg S/s. total 149 MW & 59 MW Solar Generation respectively. Thus, total 208 MW Solar Generation is connected to these PSS.
- The said generation is evacuated through 132 kV Ujani-Naldurg S/C, 132 kV Bale – Naldurg S/C & 132 kV Wagdari – Akkalkot S/C line. 132 kV Naldurg & 132 kV Wagdari S/s are interconnected through S/C line.
- Out of these three evacuating lines, 132 kV Ujani-Naldurg S/C & 132 kV Bale – Naldurg S/C lines are old more than 30 years. In case of tripping of any line, the solar generation is backed down so as to avoid tripping of remaining lines on overload.
- Out of 208 MW generations 150 MW generation is contracted under Long Term through SECI and any curtailment is monitored by the MNROE.
- Hence, it is necessary to remove the transmission evacuation constraint by strengthening the network.

***Committee may discuss***

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## Annexure 1.1

## STATE Demand Details

Month	Peak Demand (MW)	Catered Demand (MW)	Load Shedding /Shortfall (MW)	Date	Time (Hrs)	Min. Demand (MW)	Date	Time(Hrs)
Jan-21	24058	24058	0	14.01.21	12:00 Hrs	14975	8.01.21	03:00 Hrs
Feb-21	24107	24107	0	25.02.21	12:00 Hrs	14177	19.02.21	05:00 Hrs
Mar-21	25513	25513	0	18.03.21	12:00 Hrs	17831	20.03.21	04:00 Hrs

## Annexure 1.2

## Frequency Profile

Range	Jan 2021 % time	Feb 2021 % time	Mar 2021 % time
IEGC band: 49.9-50.05 Hz	75.523	75.593	72.305
< 49.9 Hz	5.016	7.408	7.114
> 50.05 Hz	19.731	16.999	20.58

## Annexure 1.3

## UFR Operation

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

## Annexure 1.4

## Voltage Profile

Range	Voltage level	Jan-21		Feb-21		Mar-21	
Maximum	765kV	Akola	790	Akola	792	Akola	498
	400kV	Kalwa	440	Kalwa	443	Dhule	438
Minimum	765kV	Tirora	747	Ektuni	751	Koradi III	762
	400kV	Jejuri	383	Lamboti	381	Jejuri	381

Annexure 1.5  
Generating Units under Forced outage

Generating Company	Name of Generating Unit	Capacity	Tripped Date	Tripped Time	Sync.Date	Sync. Time	Reason of Outage
<b>FORCED OUTAGE</b>							
IPP	SWPGPL U-1	135	16-02-2016	17.09		Continued.	No PPA.
PGPL	PGPL U1	262	07-02-2017	17.30		Continued.	No Schedule (NO PPA)
PGPL	PGPL U2	126	07-02-2017	17.30		Continued.	No Schedule. (NO PPA)
IPP	IEPL Unit 1	270	28-08-2018	21.26		Continued.	No PPA
IPP	VIPL U-1	300	29-12-2018	00.30		Continued.	Coal Shortage. (NO PPA from 20.05.2019)
IPP	VIPL U-2	300	17-01-2019	00.15		Continued.	Coal shortage. (NO PPA from 20.05.2019)
MSPGCL	Nasik Unit 5	210	12-12-2019	10.25	02-03-2021	23.12	Economizer Tube Leakage. (Zero Schedule from 18:45hrs of 05.12.2020).
MSPGCL	Uran Unit 8	108	01-03-2020	20.57	14-03-2021	20.00	Gas shortage
MSPGCL	Uran Unit 7	108	25-05-2020	12.51		Continued.	Turbine Blade Failure
MSPGCL	Uran Unit B0	120	25-05-2020	12.51	16-03-2021	14.47	Turbine Blade Failure
MSPGCL	Nasik Unit 3	210	03-12-2020	06.45		Continued.	PA Fan Problem (Under Case 4 Bidding From 11.00Hrs DT. 21-01-2021).
MSPGCL	Koyna Unit 11	80	19-01-2021	10.05		Continued.	Tripped on stator earth fault (will not be available till dt.12.05.21)
MSPGCL	Koradi Unit 6	210	02-02-2021	20.30	04-03-2021	10.12	ZERO Schedule by MSEDCL
MSPGCL	Koradi Unit 7	210	02-02-2021	20.50	04-03-2021	14.18	ZERO Schedule by MSEDCL
IPP	JSW (J) U3	300	20-02-2021	11.09	11-03-2021	03.40	No Schedule.
MSPGCL	Chandrapur Unit 7	500	20-02-2021	23.43		Continued.	Generator Earth Fault.
MSPGCL	Paras Unit 4	250	25-02-2021	09.08	06-03-2021	04.10	CHP problem.
MSPGCL	Khaparkheda Unit 5	500	26-02-2021	09.15	01-03-2021	10.05	Boiler Tube Leakage
MSPGCL	Parli Unit 7	250	02-03-2021	03.43	06-03-2021	18.08	Furnace Pressure High
MSPGCL	Paras Unit 3	250	02-03-2021	10.15	02-03-2021	15.27	Furnace Pressure High
IPP	Adani U-2	660	04-03-2021	00.10	08-04-2021	14.31	Increase Hydrogen Consumption
IPP	SWPGPL U-4	135	04-03-2021	09.14	04-03-2021	10.05	Turbine side relay problem.

MSPGCL	Koradi Unit 7	210	05-03-2021	19.07	05-03-2021	23.21	Due to Tripping of Station Transformer 4.
MSPGCL	Koyna STG-IV Unit-1	250	06-03-2021	04.30	06-03-2021	20.35	Turbine side bearing temperature high & oil temperature high.
MSPGCL	Uran Unit 5	108	07-03-2021	00.07	07-03-2021	20.30	Filter Replacement Work.
IPP	Adani U-5	660	07-03-2021	12.59	10-03-2021	03.57	APH 5A Hot Air Duct Heavy Leakage.
MSPGCL	Paras Unit 4	250	10-03-2021	20.04	12-03-2021	10.50	Coal mill broblem
MSPGCL	Parli Unit 6	250	13-03-2021	23.43	15-03-2021	07.04	Boiler validity work
MSPGCL	Bhusawal Unit 4	500	14-03-2021	21.55	16-03-2021	10.18	Boiler Flame Failure.
MSPGCL	Uran Unit 8	108	15-03-2021	05.57	16-03-2021	00.22	Trail Run.
MSPGCL	Paras Unit 4	250	15-03-2021	22.29	17-03-2021	18.45	Boiler Tube Leakage
MSPGCL	Chandrapur Unit-8	500	16-03-2021	13.46	19-03-2021	08.57	Drum Level High
MSPGCL	Koradi Unit-8	660	17-03-2021	08.47	17-03-2021	13.28	Generator protection
MSPGCL	Koyna Unit 3	70	17-03-2021	11.05	17-03-2021	14.45	Minor governor failure pilot needle getting closed instantaneously
MSPGCL	Nasik Unit 4	210	18-03-2021	08.37	21-03-2021	00.47	Boiler Tube Leakage
MSPGCL	Uran Unit 5	108	18-03-2021	14.20	22-03-2021	07.05	Gas Shortage.
TPC-G	Bhira PSU	150	18-03-2021	15.40	18-03-2021	18.53	Butterfly valve problem.
MSPGCL	Koradi Unit 6	210	18-03-2021	15.49	18-03-2021	19.36	Main Bus-1 trip at Koradi end.
MSPGCL	Uran Unit B0	120	20-03-2021	00.03	02-04-2021	22.17	Gas shortage
MSPGCL	Uran Unit 8	108	20-03-2021	00.05	02-04-2021	16.19	Gas shortage
IPP	Adani U-5	660	20-03-2021	00.07	20-03-2021	04.55	ID Fan Problem
IPP	JSW (J) U2	300	20-03-2021	01.00	21-03-2021	19.52	CW DUCT Leakage.
MSPGCL	Bhusawal Unit 5	500	20-03-2021	18.43	21-03-2021	06.25	Class A protection OPTD.
MSPGCL	Nasik Unit 4	210	21-03-2021	01.14	21-03-2021	19.39	Low pressure Vacuum.
MSPGCL	Chandrapur Unit 3	210	21-03-2021	16.12	25-03-2021	03.28	Boiler Tube Leakage
MSPGCL	Khaparkheda Unit 1	210	22-03-2021	23.52	26-03-2021	09.43	Due to Low Vacuumed Pressure.
MSPGCL	Paras Unit 4	250	23-03-2021	05.18	23-03-2021	08.10	Drum level High.
MSPGCL	Koradi Unit 6	210	24-03-2021	10.50	24-03-2021	14.59	ID FAN PROBLEM
MSPGCL	Paras Unit 3	250	25-03-2021	07.20	25-03-2021	11.19	Furnace Pressure High
MSPGCL	Bhusawal Unit 4	500	25-03-2021	09.35	27-03-2021	01.47	Boiler Tube Leakage
MSPGCL	Chandrapur Unit 5	500	25-03-2021	15.51	01-04-2021	10.46	Boiler Tube Leakage
IPP	JSW (J) U2	300	26-03-2021	01.13	07-04-2021	20.53	No Schedule
MSPGCL	Khaparkheda Unit 1	210	26-03-2021	10.20	26-03-2021	11.25	Drum level low

MSPGCL	Parli Unit 6	250	27-03-2021	02.25	30-03-2021	01.53	Coal mill problem.
MSPGCL	Koyna STG-IV Unit-2	250	27-03-2021	14.10	27-03-2021	16.10	Butterfly valve trouble.
MSPGCL	Paras Unit 3	250	27-03-2021	22.40	28-03-2021	07.00	Furnace Pressure High
MSPGCL	Chandrapur Unit 3	210	29-03-2021	11.15	02-04-2021	20.30	Boiler Tube Leakage
MSPGCL	Koradi Unit 10	660	29-03-2021	11.35	31-03-2021	09.53	Heavy leakage in gland steam cooler.
MSPGCL	Paras Unit 3	250	29-03-2021	18.00	31-03-2021	01.12	Clinker information.
MSPGCL	Khaparkheda Unit 4	210	30-03-2021	12.01	30-03-2021	20.50	Generator Earth fault Protection
MSPGCL	Parli Unit 8	250	30-03-2021	17.46	31-03-2021	00.00	Furnace Pressure High
MSPGCL	Khaparkheda Unit 1	210	30-03-2021	18.09	30-03-2021	20.20	Flame Failure
MSPGCL	Koradi Unit 10	660	31-03-2021	05.31	31-03-2021	09.53	Boiler Feed pump problem
MSPGCL	Koradi Unit 10	660	31-03-2021	23.48	06-04-2021	11.58	Boiler Tube Leakage

Annexure 1.6  
Generating Units under planned outages

Generating Company	Name of Generating Unit	Capacity	Tripped Date	Tripped Time	Sync. Date	Sync. Time	Reason of Outage
<b>PLANNED OUTAGE</b>							
MSPGCL	Chandrapur Unit-8	500	20-12-2020	00.00	23-01-2021	01.53	Annual Overhaul
MSPGCL	Koyna STG-IV Unit-2	250	23-11-2020	08.00	06-02-2021	11.51	Capital Overhaul
MSPGCL	Khaparkhedda Unit 5	500	01-01-2021	23.13	06-02-2021	21.44	Annual Overhaul
IPP	JSW (J) U4	300	28-01-2021	01.34	17-02-2021	21.45	Annual Overhaul
TPC-G	Trombay 5	500	08-02-2021	00.10	15-03-2021	03.49	Annual Overhaul
MSPGCL	Chandrapur Unit 4	210	16-03-2021	08.08		Continued.	Boiler Tube Leakage (converted to Capital overhaul)

Annexure 1.7  
Elements under Long outages

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.
2	400kV	400kV Chandrapur 2-Nanded 1 (Chandrapur 2 end)	50	29.01.2018	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 tenderization is in process for procurement of 50MVAR Reactors.
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 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.
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 will be attended by M/s BHEL
7	400kV	400KV 50MVAR Bus Rector at Khadka ss	50	10.11.2018	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.
8	400kV	400kV Babhaleshwar	80	26.06.2019	The Reactor was inspected on site by M/s CGL Ltd on 02.07.2019. M/s. CGL was requested for submission of offer for repairs of said Reactor. 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. DPR for MERC In-principal approval 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.

## Annexure 1.8

**Koyna Lake Level in Ft.**

Month	Jan-21	Feb-21	Mar-21
At the end of the month	2144.8	2136.30	2121.50
Corresponding Figure of the month Last Year	2143.50	2136.30	2125.90

## Annexure 1.9

**New Network Addition during January 2021 to March 2021**

Month	Name of substation	Particulars	Date
Jan-21		Nil	
Feb-21	220kV Georai	Existing 220kV Taptitanda- Waluj I made LILO at newly constructed 220kV Georai s/s. 220kV Taptitanda-Georai charged at 20.42 hrs. 220kV Waluj-Georai charged at 21.20 hrs.	01.02.2021
Mar-21	400kV Chndrapur II	125 MVAr Bus reactor charged at 22:50 hrs.	31.03.2021
	400kV Chakan	400/220kV, 315 MVA, ICT charged at 23:57 hrs.	31.03.2021
	220kV Chembur	LILO of 220kV NERUL- Trombay line at Chembur (ADANI) 220kV Trombay - Chembur line charged on 27.03.21 @ 22:16 hrs. 220kV Nerul - Chembur on 28.03.21 @ 01:26 hrs.	27.03.2021 28.03.2021
	400kV Dhule	400/220kV, 500 MVA, ICT 2 charged at 00:04 hrs. (315MVA ICT 2 is replaced by 500 MVA ICT)	11.03.2021

## Annexure 2.0

## Annexure 2: System Disturbance in the Maharashtra Network for the period Jan 2021 to March 2021.

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 Dhule	315MVA ICT 1 AND 3 ( LTS operated only)	4.01.21	10.58	11.25	NIL	910MW	LTS operated due to overloading.
2	400kv Khadka	315MVA ICT 3 ( LTS operated only)	4.01.21	11.05	11.30	NIL	70MW of 132KV Yawal, Nimbhora	LTS operated due to overloading as Dhule ICT LTS operated.
3	400kv Karad	220KV Bus 1 and 2 operated and All ICT tripped	1.02.21	12.37	13.03	NIL	NIL	LBB Operated while testing work on Karad-Oglewadi ckt-1-
4	Miraj and Ichhalkarnji	Kohhapur - Ichhalkarnji ckt -2 tripped on DP	14.02.21	14.05	14.25	NIL	NIL	220KV Kolhapur-Ichhalkarnji 2 tripped on DP and same time 220KV Kolhapur-Ichhalkarnji, Ichhalkarnji-Miraj , Miraj-alkud, and Alkud Vita line tripped
5	400KV Koradi 1	Bus-1 tripped ,koradi - khaperkheda ckt1, koradi-satpura,koradi-Bhilai, koradi-Bhusawal, 300MVA ICT-1	18.03.21	15.49	16.25	NIL	NIL	Bus-1 tripped.
6	400kv Dhule	3 Nos ICTs tripped	20.03.21	16.59	17.38	NIL	208MW	500MVA ICT-2 tripped on NDR and 315MVA ICT-1 and 500MVA ICT-3 tripped on overcurrent.

Annexure 3.1  
Status of Reactors

Sr. No.	Name of Sub-Station	Capacity (MVA)	Status
1	400 kV Nanded	1 x 125	LOA issued 21.11.19.Site handed over 13.12.19 Work completed – civil 80%
2	400 kV Lonikand – II	1 x 125	LOA issued 21.11.19 . Site handed over 20.01.2021. Work completed – civil 80% Electrical 40%
3	400 kV Bhusawal – II	1 x 125	LOA issued 06.12.19. Site handed over 22.01.2021. Work completed – civil 60% Electrical 21%
4	400 kV Chandrapur II	1 x 125	Commissioned on 31.03.2021
5	400 kV Koradi – II	1 x 125	LOA issued 21.11.19.Reactor recd. 22.03.19 BHEL. Work completed – civil 78% Electrical 20%
6	400 kV Dhule	1 x 125	In the commissioning stage.
7	400 kV Akola	1 x 125	LOA issued 06.12.19 . Site handed over 18.01.2021 Work completed- civil 63% Electrical 27%
8	400 kV Khaperkheda	1 x 125	LOA issued 21.11.19. Work completed- civil 77% Electrical 25%
<b>Commissioned</b>			
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

Annexure 3.2  
Status of Transmission Schemes

Maharashtra(STU)					
1	400kV <u>Bableshtar-Kudus</u> D/C(Quad)	150	March19	June 2021	Forest clearance awaited, severe ROW problem
2	New <u>Parli(PG)-Solapur</u> ckt-I&II Solapur (PG) to <u>Narangwadi</u> (proposed substation)	118			Package A-80% work done and package B- 20% work done.
3	400KV D/C <u>Jejuri-Hinjewadi</u> Line ( <u>Jejuri-</u> <u>Wainjhar</u> ) Package-I.	101	March19	Dec 2021	50% work done approx. and for balance work tender is floated by C.O.
4	400KV D/C <u>Jejuri-Hinjewadi</u> Line ( <u>Wainjhar-Hinjewadi</u> ) Package-II.	92.67	Mar19	Dec 2021	
5	LILO on another Ckt. of 400KV <u>Bhusawal II-</u> <u>Aurangabad-I</u> for <u>Thaptitanda</u>	177.37	Dec 19	March 21	50% work done approx. and for balance work LOA issued to new agency by C.O.
6	220kV M/C line, LILO on 220 kV <u>Boisar(M)-Borivali</u> express feed-II at <u>Boisar(PG)</u> s/s		Jun19	Jun19	Commissioned on 16.07.2020