महापारेषण

MAHARASHTRA STATE ELECTRICITY TRANSMISSION COMPANY LIMITED
(CIN NO U40109MH2005SGC153646)

Name of Office: State Transmission Utility (STU)	
Office Address: Prakashganga, 4th floor / 'A' Wing, Plot C -19, E - block, BKC, Bandra (E), Mumbai: - 400051.	
(022) 2659 5176 (O)	(022) 2659 5175 (P)
E-Mail Id: cestu@mahatransco.in	(022)2659 1222

NO/MSETCL/CO/STU/Sys/MEGC/ No 03350 **Date:** 15 JUN 2021

To,
As per mailing list

Sub: Minutes of the 1st meeting of the Maharashtra Transmission Committee (MTC) held on 8th June, 2021.

Please find enclosed herewith minutes of the 1st meeting of the Maharashtra Transmission Committee (MTC) held on 8th June, 2021 at 11:00 Hrs. through video Conferencing (VC).

Also, please note that the minutes of above meeting are available on our website www.mahatransco.in in STU section.

Thanking you.

Yours faithfully

Rajendra. 15/6/21.

Chairperson –MTC And
Executive Director (Trans/STU)

Copy s.w.r. to:

1) The Director (Operations), CO, MSETCL, Mumbai

Mailing list

Sr. No.	Name of Organization	Name of Nominee & Designation	Committee position	Email ID
1	State Transmission Utility (STU)	Chief Engineer-STU	Chairperson	CESTU@mahatransco.in
2	State Transmission Utility (STU)	Superintending Engineer – STU	Member Convener	sesys@mahatransco.in
3	SLDC	Chief Engineer-SLDC	Member	cesldc@mahatransco.in
4	MSETCL	S.G Bhole-Superintending Engineer (O&M)	Member	SE1OM@mahatransco.in
5	MSEDCL	Chief Engineer (Distribution), CO, Mumbai	Member	cedist@mahadiscom.in
6	MSPGCL	Rahul Sohani (Superintending Engineer)	Member	cegw@mahagenco.in, seest1@mahagenco.in
7	Maharashtra eastern grid Power Transmission co ltd	AtulSadaria	Member	atulj.sadaria@adani.com
8	Adani Electricity Mumbai Ltd. (Transmission Business)	Rakesh Raj (Head Planning – AEML Transmission)	Member	rakesh.raj2@adani.com
9	Tata Power Co. Ltd.- Mumbai- Transmission	PravinGaikwad	Member	pgaikwad@tatapower.com
10	Central Railway	S.S.Parihar (Chief Electrical Engineer/Electrical Energy Management/CR)	Member	dyceetrdcrly@gmail.com
11	M/s Tata Power Company Ltd. (Distribution)	V T Narayanan	Member	vtnarayanan@tatapower.com
12	Adani Electricity Mumbai Ltd. (Distribution Business)	AbajiNaralkar (Asst. Vice President)	Member	abaji.naralkar@adani.com
13	BEST Undertaking	Ajay RamchandraTalegaonkar. Divisional Engineer (Project)	Member	depro@bestundertaking.com

Minutes of the 1st Meeting of the Maharashtra Transmission Committee (MTC) held on 08th June, 2021 at 11:00 Hrs. through Video Conferencing

Maharashtra Transmission Committee (MTC) has been formed vide letter no. NO/MSETCL/CO/STU/Sys/MEGC/2392 dtd. 22/04/2021. The first meeting of the Maharashtra Transmission Committee (MTC) was held on 8th June, 2021 at 11:00 Hrs. through Video Conferencing. The list of members/participants is enclosed as **Annexure-I.**

Executive Director (Trans/STU) being Chairperson of MTC, Welcomed all the MTC members & other participants in the 1st MTC meeting. After introduction of the participants, MTC functions & its business rules were discussed & briefed to all the members.

Executive Director (Trans/STU) Chairperson of MTC stated that as per MEGC-2020, MTC shall be responsible for planning and monitoring timely execution of transmission projects in Maharashtra State including Mumbai area.

In the first MTC meeting, following agenda items were discussed.

Agenda Point No. 1 & 2:

i. **Installation and Commissioning of 125MVAr, 400kV Bus Reactor at 400kV Chandrapur Switching S/s under Nagpur Zone.**
ii. **Installation and Commissioning of 125MVAr, 400kV Bus Reactor each at 400kV Jejuri S/s, 400kV Chakan S/s and 400kV Lonikand-I S/s under Pune Zone**

Superintending Engineer Trans. (O&M), MSETCL, C.O. placed before the MTC a proposal for Installation and Commissioning of 125MVAr, 400kV Bus Reactor at 400kV Chandrapur Switching S/s under Nagpur Zone.

Superintending Engineer Trans. (O&M), MSETCL explained in depth the need for Installation and commissioning of 125MVAr, 400kV Bus Reactor at these 400kV Substations. He said there is Persistent overvoltage problem at these substations. Following table depicts overvoltage scenario at these substations.

	400kV Jejuri s/s	400kV Chakan s/s	400kV Lonikand-I s/s
Overvoltage Scenario	>420kV for 66 days in 2019	>420kV for 65 days in 2019	>420kV for 68 days in 2019

125MVAr, 400kV Bus Reactor is required to control and limit 400kV Bus voltage at these substations, to avoid Hand Tripping/overvoltage tripping of 400kV Lines, to protect other equipments from voltage stress, to ensure Reliability of 400kV network. 125MVAr Bus Reactor is proposed as per system study by STU Department.

Scope of work includes Supply, Installation, Testing and Commissioning of 400kV, 125MVAr Bus Reactor with new 400kV Bay.

After detailed deliberation and discussion, the committee recommended the said proposals of Installation and Commissioning of 125MVAr, 400kV Bus Reactors at 400kV Chandrapur Switching S/s, 400kV Jejuri S/s, 400kV Chakan S/s. and 400kV Lonikand Substation for consideration by GCC for inclusion in upcoming 5 year STU transmission plan.

Agenda point no. 3:

Provision of Hybrid Switchgear as Bus-Sectionalizer for 220kV & 132kV Buses at 220kV Jalna, 220kV Chitegaon, and 220kV Waghala substations.

Superintending Engineer Tr. (O&M), MSETCL, C.O. explained the necessity for providing Hybrid Switchgear as Bus-Sectionalizer for 220kV & 132kV Buses at various substations mentioned above. Reliability & availability of system is affected due to non-availability of proper Bus-Sectionalizer arrangement. Further He explained the benefits of providing Hybrid Switchgear as Bus-Sectionalizer as below:

- Sectionalizing the EHV Bus at EHV substations will enhance the reliability & availability of supply during Bus fault condition. At least half of the bus section can remain in service even after bus fault. Thus, failure of total supply can be avoided.
- Outage on half section of the Bus for maintenance can be availed easily.
- Hybrid Switchgear greatly reduces the space requirement. It is estimated that there is about 40-50% space saving. This space saving aspect of the Hybrid switchgear can be utilized best for extension of EHV or HV bays at existing substations, which is not possible at present due to space constraints. This also includes sectionalizing of the EHV / HV bus at our EHV substations.
- Safe and smooth operation.
- Reduced maintenance.

Committee members asked whether possibility of provision of AIS bus sectionalizer has been explored. MSETCL clarified that considering the space constraints at these EHV s/s and required specified electrical clearances it is not possible to provide AIS bus sectionalizer in available space at these locations. Bus Sectionalizer with Hybrid Switchgear due to its compact nature can be accommodated in the available space.

Scope of work includes Supply, Installation, Testing and Commissioning of Hybrid Switchgear as Bus-Sectionalizer along with modification/replacement of Bus bar protection scheme and allied civil works at various substations under Aurangabad Zone.

After detailed deliberation and discussion by members, the committee recommended the above proposal of Provision of Hybrid Switchgear as Bus-Sectionalizer for 220kV & 132kV bus at 220kV Jalna, 220kV Chitegaon and 220kV Waghala substations for consideration by GCC for inclusion in upcoming 5 year STU transmission plan.

Agenda Point No. 4:

Establishment of 220/33 kV Mudhale s/s, Tal. Baramati, Dist. Pune – for inclusion in STU plan.

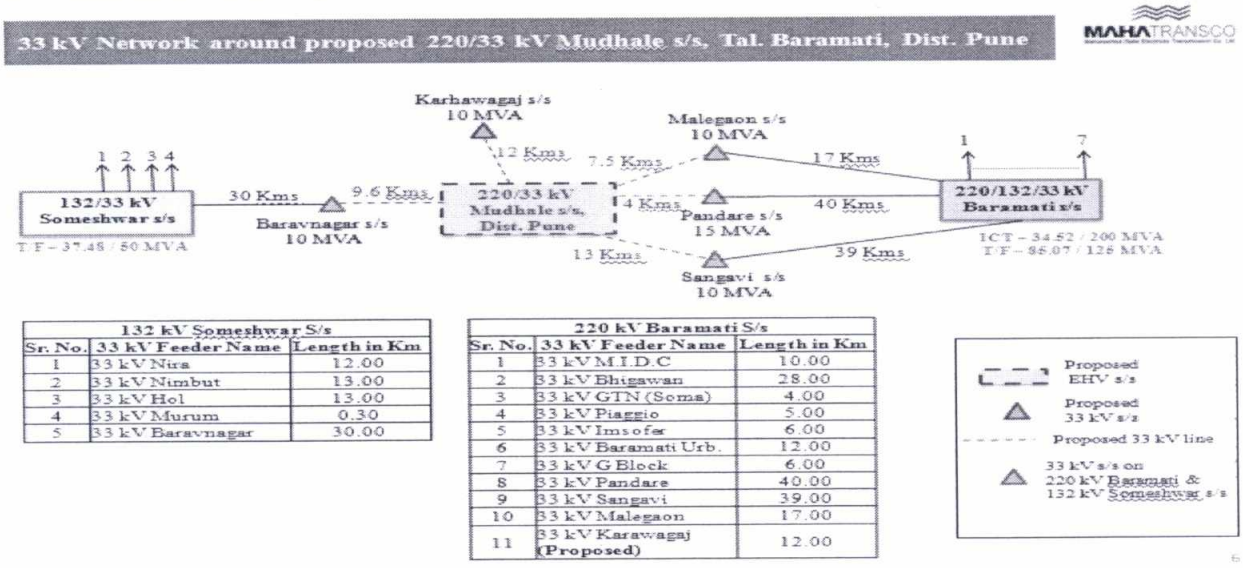
Superintending Engineer (O&M), MSETCL placed before the MTC a proposal for Establishment of 220/33 kV Mudhale s/s, Tal. Baramati, Dist. Pune.

Superintending Engineer Tr. (O&M), C.O., MSETCL explained the need for Establishment of 220/33 kV Mudhale s/s. He informed that presently Baramati Taluka is fed from 220 kV Baramati substation and 132 kV Someshwar substation. 220 kV Baramati substation has 10 nos. of 33 KV feeders with 15 nos. of 33/11 KV substations. Out of these 10 feeders, 3 nos. of existing 33 kV feeders namely Malegaon, Pandare & Sangavi are very lengthy and hence have low voltage problem. Also, 1 no. 33/11 kV substation is proposed at Karhawagaj having 10MVA capacity by MSEDCL. 132 kV Someshwar substation has 5 nos. of 33 kV feeders with 7 nos. of 33/11KV substations. Out of this 5 feeders, 1 feeder i.e. 33 kV Baravnagar is very lengthy and has low voltage problem. Hence, 220 kV Mudhale substation is proposed to address the low voltage issue at Discom end and provide reliable power supply to consumers.

Table showing feeder to be shifted from existing s/s to proposed s/s along with length & VR:

Sr. No.	Name of 33 kV Feeder	Installed Capacity (MVA)	Distance from Existing s/s (Km)	Distance from Proposed s/s (Km)	% VR	
					Before	After
1	33kV Baravnagar	10	30.00	9.60	19.46	9.27
2	33kV Malegaon	10	17.00	7.50	8.20	2.22
3	33kV Pandare	15	40.00	4.00	26.50	18.00
4	33kV Sangavi	10	39.00	13.00	33.38	18.76
5	33kV Karhawagaj **(Proposed)**	10	---------	12.00	-----	4.45
		55				

The schematic showing the network in the area is shown as below:



132 kV Someshwar S/s		
Sr. No.	33 kV Feeder Name	Length in Km
1	33 kV Nira	12.00
2	33 kV Nimbut	13.00
3	33 kV Hol	13.00
4	33 kV Murum	0.30
5	33 kV Baravnagar	30.00

220 kV Baramati S/s		
Sr. No.	33 kV Feeder Name	Length in Km
1	33 kV M.I.D.C	10.00
2	33 kV Bhigawan	28.00
3	33 kV GTN (Soma)	4.00
4	33 kV Piaggio	5.00
5	33 kV Imsofar	6.00
6	33 kV Baramati Urb.	12.00
7	33 kV G Block	6.00
8	33 kV Pandare	40.00
9	33 kV Sangavi	39.00
10	33 kV Malegaon	17.00
11	33 kV Karawagaj (Proposed)	12.00

After detailed deliberation and discussion, the committee recommended the above proposal of establishment of 220/33 kV Mudhale s/s, Tal. Baramati, Dist. Pune for consideration by GCC for inclusion in upcoming 5 year STU transmission plan.

Agenda Point No. 5:

220 kV AIS to GIS Conversion – Aarey

AEML Representative proposed & discussed 220 kV AIS to GIS Conversion scheme at Aarey. Scope of work includes:

- Procurement & erection of Cable, Cable Laying & associated accessories, 220kV GIS Bays.
- Civil work- GIS Plinth, cable trenches, Capacitor plinth etc
- Control & monitoring system, Protection system, Communication system.
- Commissioning of 220 kV GIS system
- Removal of existing 220kV AIS system

He further informed the Committee that DPR for 220 kV AIS to GIS Conversion is already submitted to STU. He further requested to expedite the approval process on account of urgency. AEML representative highlighted the necessity in details for 220 kV AIS to GIS Conversion scheme as below:

- 220kV Aarey s/s among 3 AIS EHV S/s (Aarey, Versova, Ghodbunder) was commissioned around 1995 & thus in operation for over 25 years.
- Transformation capacity 550 MVA, firm capacity of 425 MVA, recorded a peak load of 372 MW in recent past.
- 220kV Aarey EHV S/s plays a vital role in providing uninterrupted power supply to vital areas of Mumbai Suburbs in Goregaon, Andheri, Vile Parle, Santacruz and Bandra.

- Space optimization is required at Aarey for accommodating proposed scheme of 1000MW HVDC (VSC based) transmission link (Kudus Aarey).
  - MERC has granted Transmission License to AEMIL vide order in case no. 190 of 2020 dated 21.03.2021 and directed to commission the HVDC scheme in 48 months.
  - AIS to GIS work is to be undertaken in live 220 KV Switchyard, may take around 15 months to complete the scheme.
  - Expeditious approval of AIS / GIS conversion DPR is very crucial to meet timelines of HVDC scheme.
- 220kV Aarey EHV S/s was built using conventional Air Insulated Switchgear (AIS) technology and gantry structure; wherein various parts have been in service since long and need frequent maintenance.
- Old equipment & obsolete technology is a big challenge for O&M activities. So far, maintenance works are being managed through available spares, with in-house expertise and best preventive maintenance practices followed at AEML-T.
- Deployment of latest technology like GIS/ Cable system helps to enhance transmission System capacity by optimising existing space/ RoW, thereby creating space for enhancement of Transmission Infrastructure (i.e. Bulk Power Injection scheme, vertical GIS EHV Substation, etc.)
- Standing Committee Report (Dec 2011), *"As the development of power infrastructure in MMR is severely constrained due to availability of RoW, construction of transmission lines through National Park, Mangroves, Private land and due to difficulties in obtaining clearance due to CRZ regulations and resettlement of hutment dwellers there is a great need to develop a perspective plan so that the necessary infrastructure is put on ground within the requisite time frame. Towards this end, it* ***is necessary to explore establishment of GIS at all sub-stations****."*
- CEA Regulations, 2010 (Technical Standards for Construction of Electrical Plants & Electric Lines), Chapter IV, Clause 42, (3), (a) *"Gas Insulated sub-station (GIS) installations shall generally be preferred to conventional AIS as a techno-economic solution* ***for locations where space is a major constraint*** *... "*
- New technology equipments are also well compliant with Digitization features; provide better Connectivity for SCADA/ remote operations/ IOT etc.

Sr. No	Particular	UoM	Nos
1	Presently No. of 220 kV Bays in Aarey EHV Station	Nos.	17
1a	AIS Bays	Nos.	10
1b	GIS Bays	Nos.	7
2	No. of 220 kV AIS Bays to be decommissioned/ dismantled	Nos.	10
3	No. of total new 220 kV GIS Bays (conversion of AIS Bays)	Nos.	11
4	Existing 220 kV GIS Bays	Nos.	7
5	At Aarey total nos of bays after AIS to GIS bay conversion	Nos.	18

In view of above, to optimize existing space usage to enhance transmission capacity through HVDC Station at Aarey EHV S/s for HVDC Scheme and to maintain desired level of system availability/ reliability, 220kV AIS to GIS conversion scheme is being proposed.

The Committee noted as above and expressed that implementation of AIS to GIS conversion shall be done in phased manner by ensuring continuity and reliability of power supply to interconnected substations /network during project execution so that electrical supply to consumers shall not get affected.

After detailed deliberation and discussion, the committee recommended the above proposal of Conversion of AIS to GIS of Aarey EHV s/s for consideration by GCC for inclusion in upcoming 5 year STU transmission plan.

Agenda Point No. 6:

220 kV Chandivali EHV Scheme

AEML representative presented to consider the proposal of 220 kV Chandivali EHV Scheme. Scope of the scheme includes:

- Substation Scope:
  - Establishment of 220kV GIS EHV Station at Chandivali (2 x 125 MVA Capacity).
  - Extension of 220 kV GIS bays at existing 220kV Aarey EHV Station
- Connectivity Scope:
  - LILO of TPC 220 kV Salsette-Saki line & 220KV D/C connectivity from Aarey EHV Station.
- Associated Civil works

He further explained the need for implementation of this scheme as below:

- Power demand is rising in Mumbai in line with development of High-rise buildings, Shopping & Commercial complexes, redevelopment activities and upgradation of Transport infrastructure, thereby eroding capacity margins on the existing Power infrastructure.
- Timely strengthening of Transmission and Distribution infrastructure is very critical, to ensure reliable/quality power supply and development does not suffer for the lack of quality infrastructure in the region.
- Around Chandivali (Hiranandani, Powai, Saki) area major commercial/ IT /residential development are in process. As a result, load growth is expected in this region.
- Currently, major loads are fed from 220 kV Aarey, Saki, EHV Stations of AEML and expected to cross the loading above firm capacity.
- Long feeders make power supply network vulnerable to disturbances and high technical losses. Growing power demand further causes stress on existing 33kV distribution network affecting quality and reliability of power supply in the region,
- Upcoming load projected is 181MW by DISCOM, 15 nos of 33kV outlets in next few years as detailed below:

Load (MW)	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24
Registered Projects	46.70	77.80	15.60	-
Upcoming Projects	-	1.11	33.65	5.55
Total	46.70	78.91	49.55	5.55

- AEML 220kV Aarey EHV S/s is having 550 MVA Transformation capacity, recorded peak load ~372 MW, which is ~88 % of its firm capacity (425 MVA), located far away from load points, has been approaching towards its firm capacity. No further capacity addition is recommended at Aarey, referring regulations.

- AEML Saki EHV s/s, having 375MVA Transformation capacity, recorded peak of 228MW, which is ~ 91% of its firm capacity(250MVA). Further, there is no space for further capacity augmentation at Saki EHV Station.
- Load at 220kV Aarey & Saki EHV Station is estimated to cross its firm capacity limit in next 3-4 years considering the estimated load growth around Chandivali area.

TPC representative informed MTC committee that adequate transformation capacity is available in nearby TPC-T substations. TPC substations in the vicinity of the said project can cater Existing as well as upcoming Loads for 10-15 years. TPC representative requested AEML that 220 kV Chandivali substation may be proposed after consumption of available spare capacities nearby. TPC representative shared Various nearby TPC substations loading as below:

Station Name	Transformation Capacity (MVA)		Maximum Load (MVA)	Maximum Load (MVA) Considering allocated bays gone in service	Available Transformation Capacity (MVA)
	Total	Firm Capacity N-1			
Saki RS (33 kV)	150	75	25	30	45
Saki RS (22 kV)	330	240	135	135	105
Sahar RS (33 kV)	250	125	10	35	90
Powai RS (33 kV)	180	90	40	50	40
Kurla RS (33 kV)	250	125	5	35	90

TPC representative emphasized that Non-utilization of this spare capacity as mentioned above and addition of capacity at proposed 220 kV Chandivali will create unnecessary burden on consumers in terms of additional Tariff. He further stressed that the total projected load of about 180 MW (may be spread over next 8-10 years) through 15 Nos. of 33 kV outlets can be met with spare capacities at TPC-T as mentioned above.

TPC-T representative suggested that M/s. AEML may approach STU for outlet requirement. STU in turn will ascertain feasibility of the same through Tata Power-T. The requirement can be addressed through allocation of available bays or by installation of additional bays (within transformation capacity) or also by installation of additional Transformer, as suitable/feasible and economical.

After deliberations, the Committee suggested that AEML shall prepare a detailed report incorporating the cost implications and the benefits to be accrued to the beneficiaries and circulate among all the members for further taking up issue in the next meeting.

The Committee noted as above.

Agenda Point No. 7:

M/s TATA presented an urgent issue before Committee with the permission of Chairman of the Committee as below-

110 kV Backbay to Nariman Point oil filled cables replacement

TPC-T representative placed before the MTC a proposal for replacement of old aged 110KV cable by XLPE cable from Backbay to Nariman Point. He requested the committee to consider the proposal for replacement of old aged 110KV cable to XLPE cable. He further emphasized the necessity for replacement of old aged cable as below:

- The replacement of cables is necessary to avoid load shedding to South Mumbai in case of failure of these aged cables.
- The manufacturing of oil filled cables has been stopped. OEM support for cable and associated accessories are not readily available. These spares, if available, are to be imported and hence are costlier.
- Replacement of existing 110 kV Oil filled cables with single core 110 kV 1000 sq mm XLPE cable for assurance of reliable and uninterrupted power supply to consumers in Nariman point and Vidhan Bhavan.

Existing oil filled cable details

Name of the line	Cable length (in Kms)	Make of Cable	Cable details	Age (Yrs)
110 kV BEST Backbay-BEST Nariman Point	1.2	Siemens, AEG	1C, 400 mm^2, CU, Oil filled cable	35
Tata Backbay - BEST Nariman Point	1.2	Siemens, AEG	1C, 400 mm^2, CU, Oil filled cable	35

After detailed deliberation and discussion, the committee recommended the above proposal of Replacement of existing old aged (oil filled) 110kV cable by XLPE cable from Backbay to Nariman Point for consideration by GCC for inclusion in upcoming 5 year STU transmission plan.

Superintending Engineer (STU), Member Convener offered the vote of thanks to all the MTC members and other participants.

Chairperson –MTC And
Executive Director (Trans/STU)