



MAHARASHTRA STATE ELECTRICITY TRANSMISSION COMPANY LIMITED
(CIN NO U40109MH2005SGC153646)

Name of Office : Chief Engineer (State Transmission Utility)
Office Address : 4th floor / 'A' Wing, Prakashganga, MSETCL, Plot C -19, E - block, BKC, Bandra (E),
Mumbai: - 400051.
Contact No. : (022) 2659 5176 (O), (P) (022) 2659 5175, fax: 022-26591222
E-Mail Id : cestu@mahatransco.in
Website : www.mahatransco.in

MSETCL/CO/STU/Sys/

Date:

No - 1526

3 MAR 2022

To,
As per mailing list


Sub: Minutes of 2nd Maharashtra Transmission Committee (MTC) meeting held on 20th December, 2021.

Please find enclosed herewith minutes of the 2nd Maharashtra Transmission Committee (MTC) meeting held on 20th December, 2021 at 11:00 Hrs. through video Conferencing (VC).

It is to be noted that the minutes of above meeting is also available on website www.mahatransco.in in STU section.

Thanking you.

Yours faithfully


Chairperson -MTC And
Chief Engineer (STU)

Copy s.w.r. to:

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

List of MTC Members

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)	SE -STU	Member Convener	sesys@mahatransco.in
3	SLDC	Chief Engineer-SLDC	Member	cesldc@mahatransco.in
4*	MSETCL	Jagannath G. Chude-SE (Project Scheme-I)	Member	SE1prj@mahatransco.in
5	MSEDCL	Chief Engineer (Distribution), CO, Mumbai	Member	cedist@mahadiscom.in
6	MSPGCL	Rahul Sohani (SE)	Member	cegw@mahagenco.in , seest1@mahagenco.in
7	Maharashtra eastern grid Power Transmission co ltd	Atul Sadaria	Member	atuli.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	Sh. Kiran Desale	Member	desalekv@tatapower.com
10	Central Railway	S.S.Parihar (Chief Electrical Engineer/Electrical Energy Management/CR)	Member	dyceetrdcrlry@gmail.com
11	M/s Tata Power Company Ltd. (Distribution)	V T Narayanan	Member	vtnarayanan@tatapower.com
12	Adani Electricity Mumbai Ltd. (Distribution Business)	Abaji Naralkar (Asst. Vice President)	Member	abaji.naralkar@adani.com
13	BEST Undertaking	Ajay Ramchandra Talegaonkar. Divisional Engineer (Project)	Member	depro@bestundertaking.com

*Note: MSETCL has nominated Shi Jagannath G. Chude-SE (Project scheme-I) as committee member to represent MSETCL.

Minutes of the 2nd Maharashtra Transmission Committee (MTC) Meeting held on 20th December, 2021 at 11:00 Hrs. through Video Conferencing

The 2nd Maharashtra Transmission Committee (MTC) was held on 20th December, 2021 at 11:00 Hrs. through Video Conferencing. Chief Engineer (STU) presided over the meeting. The list of members/participants is enclosed as **annexure-I**.

SE (STU) Member Secretary of MTC, Welcomed all the MTC members & other participants in the 2nd MTC meeting. After brief introduction of the participants, he requested members to conform 1st MTC Meeting MOM.

1. Confirmation of the minutes of 1st Maharashtra Transmission Committee (MTC)

1.1 Member Secretary (MTC) stated that minutes of the 1st meeting of Maharashtra Transmission Committee (MTC) held on 8th June 2021 were circulated vide MSETCL/CO/STU/Sys/MEGC/No. 3350 dated. 15th June, 2021 & the same was also published on the website (www.mahatransco.in). No comments were received from constituents on the minutes.

1.2 Minutes of 1st meeting of MTC were confirmed by members.

2. Member Secretary (MTC) further appraised the guidelines of the empowered committee regarding threshold limit for TBCB. He briefed the details as below:

- i. STU vide letter dated 05/01/2021 has communicated to MERC the recommendations for projects to be taken under TBCB as discussed in 5th Empowered Committee Meeting held on 24/12/2020
- ii. All the projects in the STU plan costing 500 Cr or more will be referred to EC for considering execution under TBCB
- iii. If STU proposes that a project costing more than 500 Cr. is not to be taken under TBCB for reasons peculiar to the project and is to be executed under other mechanism, the same will be referred to the EC with necessary justification for such proposal.
- iv. If STU with the recommendation of the transmission planning committee proposes any proposal below 500 Cr. to be considered for execution under TBCB for reasons peculiar to the project, it will be referred to EC with reasons for such proposal.
- v. Further the committee also suggested that the threshold limit of 500 Cr. Will be reviewed every year in the month of December.
- vi. Once EC decides to recommend a project under TBCB or otherwise, STU shall petition MERC for final approval of granting a fresh transmission license or extending existing transmission license as case may be, by following due process of law.

Thereafter the agenda items were taken up for discussion

Agenda Point No. 1:

Providing additional 3x167 MVA, 400/220/33kV ICT along with HV & LV bays & rapid restoration scheme at 400kV Taptitanda S/s under Aurangabad Zone.

SE (Schemes), MSETCL placed before the MTC a proposal for providing additional 3x167 MVA, 400/220/33kV ICT along with HV & LV bays & rapid restoration scheme at 400kV Taptitanda S/s under Aurangabad Zone.

SE (Schemes), MSETCL explained the present status & emphasized the necessity for providing additional 3x167 MVA 400/220/33kV ICT at this substation. At present there are two ICTs, ICT-I: 3X167MVA 400/220/33kV, ICT-II 3X167MVA 400/220/33 KV.

400/220 kV Thaptitanda substation is feeding urban and rural load of Aurangabad and Jalna districts. Both 3x167 MVA, 400/220/33kV ICTs are working in parallel and maximum load reached on ICT-I is 327.55MVA in the year 2019-20 and on ICT-II is 466 MVA in the year 2017-18. The construction work of 01 No of 220kV lines from 400/220kV Thaptitanda substation to 220kV Georai substation is completed in Feb-2021. The schedule date of completion of 220kV line from 400/220kV Thaptitanda substation to 220kV Amrapur (Ahmednagar) substation is Dec-2021 and progress of work is in advance stage of completion. As such, substantial load growth is expected in near future. Further, in case of backing down of Paras Generation or problem with 400 kV Akola ICT, the import from 220kV Chikhali substation to 220 kV Jalna substation gets affected. As such, the load of 220 kV Jalna substation gets diverted to 400 kV Thaptitanda substation. Providing additional 3x167 MVA, 400/220/33kV ICT will increase the substation capacity to 1500 MVA which will help in catering the present & future load demand.

After detailed deliberation and discussion, the committee recommended the said proposals of providing additional 3x167 MVA, 400/220/33kV ICT along with HV & LV bays & rapid restoration scheme at 400kV Taptitanda S/s for consideration by GCC for inclusion in upcoming 5 year STU transmission plan.

Agenda point no. 2:

Providing additional 50MVA, 132/33kV T/F along with HV & LV bays at 132kV Vaijapur S/s under Aurangabad Zone.

SE (Schemes), MSETCL Proposed & presented the proposal for Providing additional 50MVA, 132/33kV T/F along with HV & LV bays at 132kV Vaijapur S/s.

SE (Schemes), MSETCL explained that presently two T/Fs having capacity of 50 MVA 132/33KV are under operation. Maximum load reached on T/F-I is 40.8 MVA in the year 2019-20 and on T/F-II is 43.74 MVA in the year 2017-18. There is one 25 MVA, 132/11 kV transformer installed at 132 kV Vaijapur substation. 11kV Level is to be eliminated as 33kV level also exists at this S/s. Due to this about 10-12 MW of 11kV load will be shifted on 33 kV voltage level. The DISCOM has already sanctioned 1 No. of 33 kV substation under INFRA-II scheme and 01 No. of 33kV

sub-station under HVDS scheme. After commissioning of these two 33kV S/stns, approximate 10MW of load will be added at 132kV Vaijapur substation. The load cannot be managed at 132kV Vaijapur S/stn in case of tripping or outage on one transformer. MVAR drawal is within limit till date, but being agricultural dominated area, the same may exceed the limit. Installation of additional 50MVA, 132/33kV T/F will help in mitigating the current issues.

After detailed deliberation and discussion by members, the committee recommended the above proposal of providing additional 50MVA, 132/33kV T/F along with HV & LV bays at 132kV Vaijapur S/s for consideration by GCC for inclusion in upcoming 5 year STU transmission plan.

Agenda Point No. 3:

Replacement of 25MVA 132/33kV T/F by 50MVA 132/33kV T/F at 132kV Udgir S/s under Aurangabad Zone.

SE (Schemes), MSETCL elucidated the necessity for Replacement of existing 25MVA 132/33kV T/F by 50MVA 132/33kV T/F. Currently two T/Fs having capacity of 50MVA, 132/33KV & 25MVA, 132/33KV are under operation. Maximum load reached on 50 MVA T/F is 47.26 MVA in the year 2017-18 and on 25 MVA T/F is 22.10 MVA in the year 2017-18. The total load cannot be catered through one transformer in case of problem on another transformer or during the outage. MVAR drawl is within limit till now, but being agricultural area the same may exceed the limit.

He stated that replacement of existing 25MVA T/f by 50 MVA will provide reliability of supply, catering of load enhancement in future, redundancy & load management during outage or tripping of any one TF, as after replacement, capacity of substation will be 2x50MVA 132/33KV T/Fs.

TPC-Distribution representative asked that existing 25MVA T/F commissioned in 1998 & it is getting replaced by 50MVA T/F, then is another existing 16MVA T/F will also be replaced? Also is there any plan for usage of existing 25MVA T/F after replacement? MSETCL Representative elaborated & made it clear that 16MVA T/F is 132/11KV & 50MVA T/F is 132/33KV. 11KV level will be eliminated in phased manner. After commissioning of 50MVA T/F DISCOM has to shift the load of 11KV on 33KV level. Also replaced 25MVA T/F will be used in new project scheme instead of purchasing new T/F.

After detailed deliberation and discussion, the committee recommended the above proposal of Replacement of 25MVA 132/33kV T/F by 50MVA 132/33kV T/F at 132kV Udgir S/s for consideration by GCC for inclusion in upcoming 5 year STU transmission plan.

Agenda Point No. 4:

Providing additional 3x167 MVA, 400/220/33kV ICT along with HV & LV bays at 400kV Kumbhargaoon S/s under Aurangabad Zone.

SE (Schemes), MSETCL placed before the MTC a proposal for Providing additional 3x167 MVA, 400/220/33kV ICT along with HV & LV bays at 400kV Kumbhargaoon S/s.

He Stressed the need for Providing additional 3x167 MVA, 400/220/33kV ICT along with HV & LV bays at 400kV Kumbhargaoon S/s. Presently two ICTs both having capacity of 3x167 MVA, 400/220/33kV are under operation. Maximum load reached on ICT-I & ICT-II is 325 MVA in the year 2018-19.

400/220kV Kumbhargaoon (Nanded) S/s. is one of the important grid substation in Nanded District and it feeds power to 220kV Waghala S/s (Total load of Nanded district), Partly load of Parbhani & Hingoli districts and Partly load of Latur district via 220kV Jalkot S/s.

Apart from this 220/132kV Kurunda S/s is proposed in Hingoli District having D/C source line from 400kV Kumbhargaoon (Nanded) S/s. It will result in further loading of 400kV Kumbhargaoon ICTs. The S/s work is under progress. In case of tripping or outage or failure of any of the existing 3X167MVA, 400/220kV ICT at 400kV Kumbhargaoon (Nanded) S/s, the load cannot be catered, causing loss to consumers.

Also 132/33kV Barashiv S/s (LILO on 132kV Kurunda-Hingoli line) is proposed in Hingoli District in the year 2022-23 of STU Plan 2019-20 to 2024-25.

220kV Krushnoor circuit- I in future will serve supply load on 220kV Krushnoor Substation, situated in MIDC area will feed the quality & uninterrupted supply to MIDC area. The load availing process by MSEDCL is under progress & expected loading on 220kV Krushnoor circuit I & II will be about 50MW combined.

220 kV Jalkot circuit-I will serve load of 220 kV Jalkot Substation. The Jalkot Substation will feed load of Udgir Taluka & expected loading on 220kV Jalkot circuit I & II will be in the range of 80MW combined.

TPC-Distribution representative enquired that Since ICTs are 60% loaded only. If one of the ICT failure happens, is the load flow study shows that the ICT really required. MSETCL representative responded that Load flow study carried out. It is observed that at present if one ICT trips other gets marginally overloaded. Also after commissioning of krishnoor s/s, additional load of this s/s will be shifted on this ICTs. Also Barashiv s/s demanded by MSEDCL is proposed in STU plan. After commission of Barashiv, load on Barashiv will also be reflected on these ICTs.

After detailed deliberation and discussion, the committee recommended the above proposal of providing additional 3x167 MVA, 400/220/33kV ICT along with HV & LV bays at 400kV Kumbhargaoon S/s for consideration by GCC for inclusion in upcoming 5 year STU transmission plan.

Agenda Point No. 5:

Providing additional 1x100 MVA, 220/132kV ICT along with HV & LV bays at 220kV Tuljapur S/s under Aurangabad Zone.

SE (Schemes), MSETCL explained in detail the present scenario at this substation. At present two ICTs both 100 MVA are under operation. Maximum load reached on both ICT-I & ICT-II is 48 MVA in the year 2019-20.

He further stated that 220kV Tuljapur Substation feeds part of Osmanabad and Latur Districts of Marathwada region.

The details of Generation connected to 132kV Bus at 220kV Tuljapur Substation are:

- a) Wind generation of 100MW capacity through 132kV SGREPPL-Tuljapur line
- b) Co-generation of 15MW capacity through 132kV Kancheshwar Sugar- Tuljapur line.
- c) Solar Generation of 40 MW (During day hours) through 132kV Naldurg-Tuljapur line.
- d) Upcoming Solar generation of 100MW through upcoming 132kV Enrich-Tuljapur line.

The details of load connected to 132kV Bus at 220kV Tuljapur Substation.

- a) 132kV Ujani Substation through 132kV Ujani-Tuljapur line. (Max load reached: 75MW)
- b) 132kV Naldurg S/s through 132kV Naldurg-Tuljapur line (Max load reached: 45MW)
- c) 132kV Kancheshwar Sugar factory through 132kV Kancheshwar- Tuljapur line (Max load Reached: 9MW).

Presently connected RE generation at 220kV Tuljapur Substation at 132kV Bus is 155MW and upcoming generation of M/s Enrich is 100MW against the total installed capacity of 200MVA. Hence STU has recommended augmentation of 220kV Tuljapur substation by addition of ICT to avoid overloading of 132kV network and create margins for future RE projects.

TPC-Distribution representative asked that the loading on T/Fs are only 30-40%. Is the T/F really required at this juncture or whether it can be postponed. MSETCL representative replied that in this area grid connectivity is given to RE projects of capacity around 600-700MW. Also 2-3 applications for grid connectivity having 300-400MW capacity are pending with STU. Load flow studies shows that RE power from projects connected at 132KV level is wheeling through ICTs at 220KV level. In case of pending grid connectivity applications existing ICTs get overloaded hence additional ICT is essential.

AEML representative enquired regarding the govt. scheme for RE potential to which MSETCL representative replied that there is a scheme from central govt. for construction of GEC Corridor. This scheme is for the evacuation of power from RE projects.

MSETCL representative opined that providing additional 1x100 MVA will results in redundancy and reliability of supply, create margins for future RE projects, provide adequate capacity for growing demand, Improvement in overall Availability, Reliability & Efficiency of transmission system

After detailed deliberation and discussion, the committee recommended the above proposal of Providing additional 1X100 MVA, 220/132 kV ICT along with HV & LV Bays and allied

civil works at 220kV Tuljapur substation for consideration by GCC for inclusion in upcoming 5 year STU transmission plan.

Agenda Point No. 6:

Providing additional 1X100MVA, 220/33kV T/F along with HV & LV bays and 3X33kV feeder bays at 220kV Tilawani S/s under Karad Zone.

SE (Schemes), MSETCL proposed a proposal for Providing additional 1X100MVA, 220/33kV T/F along with HV & LV bays and 3X33kV feeder bays at 220kV Tilawani S/s.

SE (Schemes), MSETCL further informed that at present two T/Fs both 100 MVA are under operation. Maximum load reached on T/F-I is 85.24 MVA in the year 2019-20 & T/F-II is 76.90 MVA in the year 2019-20.

220kV Tilwani substation is feeding the load of Industrial & rural load of Hatkanagle Taluka. MSEDCL had submitted requirement of 3 Nos. of 33kV bays at 220kV Tilawani substation. The proposed substation fulfills the P-I criteria (80% loading) of augmentation scheme. In case of outage / tripping of any of the transformer in peak load condition, the load cannot be managed on other T/Fs. i.e. not satisfying N-1 contingency criteria in peak load condition. Hence in order to cope up with increased load & fulfill N-1 criteria, additional 1X100MVA T/F is essential.

TPC-Distribution representative asked that T/Fs which has been commissioned in 2015-16, within 6 to 7 years if one more additional T/F is required, whether this load growth was not expected during that time. MSETCL representative replied that initially 2x100MVA T/Fs were enough but due to sudden change in industrial load growth in this region one more 100MVA T/F is required.

After detailed deliberation and discussion, the committee recommended the above proposal of providing additional 1X100MVA, 220/33kV T/F along with HV & LV bays and 3X33kV feeder bays at 220kV Tilawani S/s for consideration by GCC for inclusion in upcoming 5 year STU transmission plan.

Agenda Point No. 7:

Providing additional 1X50MVA, 220/33kV T/F along with HV & LV bays, 4X33kV feeder bays, 33kV Bus Sectionalizer bay & 33kV PT bay at 220kV Five Star MIDC Kagal S/s under Karad Zone.

SE (Schemes), MSETCL informed that at present three T/Fs each 50 MVA are under operation. Maximum load reached on T/F-I is 41.92 MVA in the year 2018-19, T/F-II is 44.62 MVA in the year 2019-20 & T/F-III is 41.41 MVA in the year 2019-20.

He emphasized the necessity for providing additional 1X50MVA, 220/33kV T/F along with HV & LV bays, 4X33kV feeder bays, 33kV Bus Sectionalizer bay & 33kV PT bay at 220kV Five Star

MIDC S/s. This substation is feeding mostly Industrial & Commercial load of Five Star MIDC Kagal area. In Five Star MIDC area, industrialization & civilization is increasing day by day. MSEDCL has submitted requirement of additional load demand of 33.9 MVA in near future. The proposed substation fulfills the P-I criteria (80% loading) of augmentation scheme considering the difficulty in management of load. In case of outage / tripping of any of the transformer in peak load condition, the load cannot be managed on other T/Fs. i.e. not satisfying N-1 criteria in peak load condition. Hence in order to cope up with increased load & fulfill N-1 criteria, additional 1X50MVA T/F is essential.

After detailed deliberation and discussion, the committee recommended the above proposal of providing additional 1X50MVA, 220/33kV T/F along with HV & LV bays, 4X33kV feeder bays, 33kV Bus Sectionaliser bay & 33kV PT bay at 220kV Five Star MIDC S/s for consideration by GCC for inclusion in upcoming 5 year STU transmission plan.

Agenda Point No. 8:

Replacement of existing 1X25MVA, 110/33kV T/F by 1X50MVA, 110/33kV T/F at 110kV Ratnagiri S/s under Karad Zone.

SE (Schemes), MSETCL proposed the proposal for Replacement of existing 1X25MVA, 110/33kV T/F by 1X50MVA, 110/33kV T/F at 110kV Ratnagiri S/s.

SE (Schemes), MSETCL informed that at present two T/Fs 50 MVA & 25 MVA are under operation. Maximum load reached on 50MVA T/F is 35.96 MVA in the year 2019-20 & 25MVA T/F is 20.75 MVA in the year 2018-19.

He further highlighted the need for Replacement of existing 1X25MVA, 110/33kV T/F by 1X50MVA, 110/33kV T/F at 110kV Ratnagiri substation. This S/s is feeding the industrial & urban load of Ratnagiri district. T/F- II (1X25 MVA, 110/33kV) has completed 35 years of service. Winding Tan-Delta values of the T/F- II are showing rising trend since 2017. Also, insulation paper of T/F-II found deteriorated after Furan test. Hence, at present T/F- II (1X25MVA, 110/33kV) is kept on humming since last 3 months & only T/F-I (1X 50 MVA, 110/33kV) is in service. Load of 25MVA, 110/33kV T/F has been diverted on 220kV Niwali & 220kV Pawas S/s. MSEDCL has submitted the requirement for upgradation of Power T/Fs capacity at 110kV Ratnagiri S/s from 25 MVA to 50MVA so as to maintain uninterrupted supply during outage/tripping on another 50 MVA T/F. Electrification of railway lines in this area is also in progress. The proposed substation fulfils the P-I criteria (80% loading) of augmentation considering the difficulty in management of loading. In case of outage / tripping of any of the transformer in peak load condition, the load cannot be managed on other T/F. i.e. not satisfying N-1 contingency criteria in peak load condition. Hence in order to cope up with increased load & to fulfill N-1 criteria, replacement of existing 1x25MVA by 1X50MVA T/F is essential.

After detailed deliberation and discussion, the committee recommended the above proposal of Replacement of existing 1X25MVA, 110/33kV T/F by 1X50MVA, 110/33kV T/F at 110kV

Ratnagiri substation for consideration by GCC for inclusion in upcoming 5 year STU transmission plan.

Agenda Point No. 9:

Replacement of existing 2X25MVA, 132/33kV T/Fs by 2X50MVA, 132/33kV T/Fs at 132kV Phaltan S/s under Karad Zone.

SE (Schemes), MSETCL placed before the MTC a proposal for Replacement of existing 2X25MVA, 132/33kV T/Fs by 2X50MVA, 132/33kV T/Fs at 132kV Phaltan S/s.

He explained that at present two T/Fs both 25 MVA are under operation. Maximum load reached on T/F-I is 23.96 MVA in the year 2019-20 & T/F-II is 22.52 MVA in the year 2019-20.

He further stressed the need for Replacement of existing 2X25MVA, 132/33kV T/Fs by 2X50MVA, 132/33kV T/Fs at 132kV Phaltan S/s. This S/s is feeding power supply to Phaltan Taluka. In year 2020-21 average load on both the T/Fs has already reached 90% of their capacity and also, load demand is increasing day by day. The proposed substation fulfills the P-I criteria (80% loading) of augmentation. In case of outage / tripping of any of the transformer in peak load condition, the load cannot be managed on other T/Fs. i.e not satisfying N-1 contingency criteria in peak load condition.

TPC-Distribution representative asked that instead of replacing 2x25 MVA T/Fs by 2x50MVA, MSETCL may consider additional 50MVA T/F. also he asked if only one T/F replacement is sufficient or both are required. MSETCL representative answered that there is no space available at this s/s for accommodating 3rd T/F. Also replacement of one T/F will suffice the requirement but in case of failure of 50MVA, other T/F will not be able to cater the load. Hence in order to cope up with increased load & fulfill N-1 contingency criteria, replacement of existing 2x25MVA by 2X50MVA T/F is essential.

Further TPC-D representative has asked "whether removed 25MVA T/Fs are utilized for other scheme or otherwise". Upon which SE (Schemes) informed that removed 25MVA T/Fs are being utilized for upcoming schemes where 25MVA T/Fs are proposed

After detailed deliberation and discussion, the committee recommended the above proposal of Replacement of existing 2X25MVA, 132/33kV T/Fs by 2X50MVA, 132/33kV T/Fs at 132kV Phaltan S/s for consideration by GCC for inclusion in upcoming 5 year STU transmission plan.

Agenda Point No. 10:

Replacement of existing 1X25MVA, 132/33kV T/F by 1X50MVA, 132/33kV T/F at 132kV Shirwal S/s under Karad Zone.

SE (Schemes), MSETCL stated that at present two T/Fs 50 MVA & 25 MVA are under operation. Maximum load reached on 50MVA T/F is 21.22MVA in the year 2019-20 & 25MVA T/F is 16.24 MVA in the year 2019-20.

He stated that the 132kV Shirwal substation is feeding mostly Industrial area of Shirwal MIDC. In case of outage/tripping of 50 MVA, 132/33kV T/F, load cannot be managed on other 25 MVA, 132/33kV T/F. MSEDCL has submitted the urgent requirement for 2 Nos. of 33kV bays for their upcoming 33/22kV Kesurdi and Bhade substation of capacity 20MVA (2X10MVA). The proposed substation fulfills the P-I criteria (80% loading) of augmentation scheme.

He stated that Replacement of existing 1X25MVA, 132/33kV T/F by 1X50MVA, 132/33kV T/F at 132kV Shirwal S/s will results in Redundancy in case of outage / tripping of any one T/F, meeting increasing load demand forecasted by MSEDCL, reducing overloading of T/Fs, meeting future load growth, Improvement in overall availability, reliability and efficiency of transmission system.

After detailed deliberation and discussion, the committee recommended the above proposal of Replacement of existing 1X25MVA, 132/33kV T/F by 1X50MVA, 132/33kV T/F at 132kV Shirwal S/s for consideration by GCC for inclusion in upcoming 5 year STU transmission plan.

Agenda Point No. 11:

Providing additional 1X25MVA, 132/33kV T/F alongwith HV & LV bays, 1X33kV PT bay and 33kV bus extension by twin conductor at 132kV Khapri S/s under Nagpur Zone.

SE (Schemes), MSETCL placed before the MTC a proposal for Providing additional 1X25MVA, 132/33kV T/F alongwith HV & LV bays, 1X33kV PT bay and 33kV bus extension by twin conductor at 132kV Khapri S/s.

SE (Schemes), MSETCL informed that at present two T/Fs both 25 MVA are under operation. Maximum load reached on T/F-I is 22MVA in the year 2018-19 & 25MVA T/F-II is 23 MVA in the year 2018-19.

He stated that 132kV Khapri substation is fed by 132kV lines from 132kV Hingna-II & 220kV Butibori substation. This S/s is feeding the load of Nagpur Urban & Rural area and MIHAN. Nagpur area is experiencing high and speedy load growth due to rapid urbanization. There is requirement of 02 nos. of 33kV feeders at 132kV Khapri substation from MSEDCL namely 33kV Pipla (10MVA) and 33kV AIMS (13MVA). The proposed scheme fulfills the P-I criteria (80% loading) of augmentation that is difficulty in management of load in case of outage/tripping of in-service transformer. Hence, to satisfy (N-1) contingency criteria & also to meet the future load demand additional T/F is required.

After detailed deliberation and discussion, the committee recommended the above proposal of Providing additional 1X25MVA, 132/33kV T/F alongwith HV & LV bays, 1X33kV PT bay

and 33kV bus extension by twin conductor at 132kV Khapri S/s for consideration by GCC for inclusion in upcoming 5 year STU transmission plan.

Agenda Point No. 12:

Providing additional 1X25MVA, 132/33kV T/F alongwith HV & LV Bays, 1X33kV PT bay, 33kV Bus sectionalizer Bay & 33kV bus extension by twin conductor at 132kV Gosekhurd S/s under Nagpur Zone.

SE (Schemes), MSETCL proposed & presented the proposal for Providing additional 1X25MVA, 132/33kV T/F alongwith HV & LV Bays, 1X33kV PT bay, 33kV Bus sectionalizer Bay & 33kV bus extension by twin conductor at 132kV Gosekhurd S/s.

SE (Schemes), MSETCL explained that at present there is only one T/F of 25 MVA. Maximum load reached on T/F is 13.20MVA in the year 2018-19.

He further highlighted that 132kV Gosekhurd substation is fed by the 132kV lines from 132kV Kardha S/s & Mahati CPP. This S/s is feeding the power to the Rural & Agriculture load of Pauni Taluka. 01 no. of 33kV Bay has been sanctioned under ORC Scheme for the HT Consumer M/s. EE, VIDC, Bhandara (2.5 MW load) & 01 no. Bay is kept reserved for DISCOM feeder for their incoming 33kV Panjara S/s (05MVA load). Being a single T/F S/s in case of tripping/ outage the load of Pauni taluka will be affected or otherwise the load needs to be reoriented through other MSEDCL network. Hence to ensure redundancy one more T/F is required.

He stated that Providing additional 1X25MVA, 132/33kV T/F alongwith HV & LV Bays, 1X33kV PT bay, 33kV Bus sectionalizer Bay & 33kV bus extension by twin conductor at 132kV Gosekhurd S/s will results in Proper load management in the event of tripping/ outage on one transformer i.e. for redundancy of the supply, reduction in overloading of the transformer, meeting increasing load demand forecasted by MSEDCL, Improvement in overall availability, reliability and efficiency of transmission system.

TPC-Distribution representative asked the process for providing the redundant T/F in MSETCL. In same case MSETCL provide redundant T/F & in some cases MSETCL will have single T/F. MSETCL representative replied that initially this s/s was constructed by Mahathi hydro for evacuation purpose only. But as per the requirement from MSEDCL One T/F was added to cater the load in that area. Subsequently load increased. Hence in order to cope up with increased load & fulfill N-1 contingency criteria one more T/F is required.

After detailed deliberation and discussion, the committee recommended the above proposal of Providing additional 1X25MVA, 132/33kV T/F alongwith HV & LV Bays, 1X33kV PT bay, 33kV Bus sectionalizer Bay & 33kV bus extension by twin conductor at 132kV Gosekhurd S/s for consideration by GCC for inclusion in upcoming 5 year STU transmission plan.

Agenda Point No. 13:

Providing additional 1X25MVA, 132/33kV T/F alongwith HV & LV Bays at 132KV Morgaon-Arjuni S/s under Nagpur Zone.

SE (Schemes), MSETCL explained that at present there is only one T/F of 25 MVA. Maximum load reached on T/F is 13.20MVA in the year 2018-19.

The 132kV Morgaon-Arjuni substation is fed by 132kV lines from 132kV Lakhandur substation. This S/s is feeding the load of Morgaon Arjuni Urban & Rural area. Total 03 nos. of new MSEDCL Substation are proposed from 132kV Morgaon-Arjuni S/s and which are namely 33/11 kV Ildha (5MVA), 33/11 kV Gournagar (5MVA) and 33/11 kV Barabhathi (5MVA) and also 5MVA, 33/11 kV distribution T/F is proposed at 33kV Navegaon Substaion. Hence, total 20MVA additional capacity is expected to be added at this S/s. Being a single transformer S/s, it is very difficult to manage the load in case of outage/ tripping. The proposed scheme fulfills the P-I criteria (80% loading) of augmentation. Hence to ensure redundancy one more T/F is required.

TPC-D Representative suggested that the removed 25MVA T/Fs in another schemes shall be invariably to be utilized for such schemes. MSETCL to ensure for utilization of removed 25MVA T/Fs. SE (Schemes), MSETCL agreed and informed that the removed transformers are already identified in MSETCL and these removed T/Fs are being utilized for new schemes.

After detailed deliberation and discussion, the committee recommended the above proposal of providing additional 1X25MVA, 132/33kV T/F alongwith HV & LV Bays at 132KV Morgaon-Arjuni S/s for consideration by GCC for inclusion in upcoming 5 year STU transmission plan.

Agenda Point No. 14:

Supply, Erection, Testing & Commissioning of 2 Nos. of 3X167MVA, 400/220/33kV ICTs and 1X167MVA, 400/220/33kV Spare ICT unit at 400kV Warora S/s under Nagpur Zone on replenishment basis at 400kV Warora S/s under Nagpur Zone.

SE (Schemes), MSETCL placed before the MTC a proposal for Supply, Erection, Testing & Commissioning of 2 Nos. of 3X167MVA, 400/220/33kV ICTs and 1X167MVA, 400/220/33kV Spare ICT unit at 400kV Warora S/s under Nagpur Zone on replenishment basis at 400kV Warora S/s.

SE (Schemes), MSETCL informed present status at this substation as below.

400kV Warora S/s was commissioned on 19.05.2012 through 400kV Warora - Wardha (PGCIL) Ckt-I. 3X167MVA, 400/220/33kV ICT-I & ICT-II were commissioned on 07.02.2013 & 23.03.2013 respectively.

Also, 400kV Warora - Wardha (PGCIL) Ckt-2 and 400kV Warora - Chandrapur -II D/C lines were commissioned on 08.01.2013 and 29.05.2013 respectively.

After commissioning, both the ICTs were kept charged on no-load due to non-availability of the downstream 220kV lines at 400kV Warora S/s on account of major ROW issues. Thus, 400kV ICTs were Idle.

In the meantime the scheme of augmentation of S/s by replacement of 3X105 MVA, 400/220/33kV ICT by 3X167 MVA ICT, 400/220/33kV at 400kV Padghe S/s was approved.

Similarly, the scheme of augmentation of S/s by addition of 3X167 MVA, 400/220/33kV ICT at 400kV Babhaleshwar substation was approved.

There was an urgent requirement of ICTs at 400kV Babhaleshwar S/s and 400kV Padghe substation for above approved schemes.

Therefore, 1 No. of 3X167MVA, 400/220/33kV ICT available at 400kV Warora substation under Nagpur zone was shifted to 400kV Babhaleshwar substation under Nashik Zone and 1 No. of 3X167MVA, 400/220/33kV ICT was shifted to 400kV Padghe substation under Vashi zone on replenishment basis.

Further, due to failure of the R-Ph ICT unit at 400kV Padghe, 1X167MVA, 400/220/33kV spare ICT unit available at 400kV Warora S/s was also shifted to 400kV Padghe substation on replenishment basis. All ICTs at 400kV Warora substation were shifted as per requirement.

Now, downstream 220KV Bhugaon-Warora-I DC line has been made LILO at 400KV warora-II substation. Hence both the 3x167MVA 400/220/33KV ICTs need to be installed so that power from 400KV level can be transmitted to 220KV load side.

He stated that this scheme will help in Strengthening of 220kV network in Chandrapur/Nagpur region, 400kV Warora S/s will share the load of 400kV Chandrapur-I S/s and 400kV Chandrapur-II S/s, In case of tripping in 400kV network, 220kV network will withstand the load of complete Chandrapur, Gadchiroli, and Wardha District, Improvement in overall availability, reliability and efficiency of transmission system.

AEML-Distribution representative asked whether addition of these ICTs will results in increase in ATC/TTC. MSETCL representative replied that additional ICTs will help in maintaining TTC/ATC.

After detailed deliberation and discussion, the committee recommended the above proposal of Supply, Erection, Testing & Commissioning of 2 Nos. of 3X167MVA, 400/220/33kV ICTs and 1X167MVA, 400/220/33kV Spare ICT unit at 400kV Warora S/s for consideration by GCC for inclusion in upcoming 5 year STU transmission plan.

Agenda Point No. 15:

Establishment of 33kV level at 220/132kV Pimpalgaon S/s by providing additional 2X50MVA, 220/33kV T/Fs alongwith HV & LV bays, 6X33kV feeder bays, 2X33kV PT bays, 2X200KVA, 33/0.4kV Station T/F bays, and 1X33kV Bus Sectionalizer bay at 220kV Pimpalgaon S/s under Nashik Zone.

MSEDCL representative informed that there is no confirmation of requirement for 33KV level at Pimpalgaon S/s. MSEDCL will convey the requirement after feedback from their field office.

TPC-Distribution representative asked the reason for transferring the 33KV feeders from Ranwad s/s to Pimpalgaon s/s. MSEDCL Representative told that compliance is awaited from field office. As soon the compliance is received we will confirm whether this is required or not.

After detailed deliberation and discussion, the committee opined that the proposal of Establishment of 33kV level at 220/132kV Pimpalgaon S/s by providing additional 2X50MVA, 220/33kV T/Fs alongwith HV & LV bays, 6X33kV feeder bays, 2X33kV PT bays, 2X200KVA, 33/0.4kV Station T/F bays, and 1X33kV Bus Sectionalizer bay at 220kV Pimpalgaon S/s shall be presented to MTC after confirmation of MSEDCL about requirement. Committee deferred the proposal.

Agenda Point No. 16:

Establishment of 33kV level by providing additional 1 no. of 25MVA, 220/33kV Power transformer along with HV/LV bay & 4 Nos. of 33kV outgoing bays at 220kV Amalner S/s under Nashik Zone

Deferred by MSETCL

Agenda Point No. 17:

Providing additional 1X50 MVA, 220/33kV T/F along with HV & LV bays at 220kV ONGC S/stn under Vashi Zone.

SE (Schemes), MSETCL explained that at present three T/Fs each having capacity of 50 MVA are under operation. Maximum load reached on T/F-I is 23.82 MVA in the year 2019-20, T/F-II is 24.20 MVA in the year 2018-19 & T/F-III is 24.41MVA in the year 2018-19

He informed that the 220kV ONGC Substation is critical substation as it caters load of entire Panvel city, Railway and Rural areas of Panvel. The work of Govt. Projects like Navi Mumbai Airport (NAINA), residential & commercial projects are progressing faster near Panvel area.

220kV ONGC S/s is critically loaded. In the event of any untoward incidents it becomes very difficult to manage the load. This may result in public outcry as well as unrest amongst EHV consumers.

33kV & 22kV bays are very congested and there is no space available for further addition of feeders though there is increasing demand of load in Panvel.

Scheme for establishment of 8 Nos. of 33kV GIS Bays at this substation was sanctioned in January 2019 and all 33kV bays have been already commissioned recently.

Also, MSEDCL has proposed 2 Nos. of new switching Substation namely 33/22/11kV Kalpataru & 33/22kV Tapalnaka. Total load of 70MVA is expected in near future on 33kV side of 220kV ONGC substation. To provide reliable supply to customers to cater upcoming load demand it is essential to install additional 50MVA T/F.

After detailed deliberation and discussion, the committee recommended the above proposal of providing additional 1X50 MVA, 220/33kV T/F along with HV & LV bays at 220kV ONGC S/stn for consideration by GCC for inclusion in upcoming 5 year STU transmission plan.

Agenda Point No. 18:

Providing additional 1X50 MVA, 220/22kV T/F along with HV & LV bays & 1X22kV PT bay at 220kV Anandnagar S/stn under Vashi Zone.

SE (Schemes), MSETCL placed before the MTC a proposal for Providing additional 1X50 MVA, 220/22kV T/F along with HV & LV bays & 1X22kV PT bay at 220kV Anandnagar S/stn under Vashi Zone.

SE (Schemes), MSETCL explained that at present three T/Fs each having 50 MVA are under operation. Maximum load reached on T/F-I is 41.11 MVA in the year 2019-20, T/F-II is 42.12 MVA in the year 2019-20 & T/F-III is 41.01MVA in the year 2019-20

220kV Anandnagar S/s is an important S/s catering load of residential, commercial & Industrial consumers of Badlapur, Ulhasnagar & Ambernath area.

This S/s is supplying power to continuously growing load of Mumbai sub-urban with Industrial individuals and Residential hub along with Industries shifting in Anandnagar MIDC.

Also new phase of MIDC is being developed for which MSEDCL has established 22kV switching station for proper alignment of load on 22kV MIDC feeders to cope up with increasing load demand.

MSEDCL has submitted requirement of 1 No. 22kV bay of 22/22kV Potdar Switching Station. Also, additional load requirement from Nisarg Nirman developer is recently received & feasibility is given to them. The proposed scheme fulfills P-I criteria (80% loading) of Augmentation scheme.

TPC-Distribution representative informed that TPC is having power system in that area, weather the load is fed from there or from other source. MSETCL Representative told that the load is fed from MSETCL s/s only & additional capacity will serve the existing users only.

TPC-D representative informed that TATA is also EHV substation in that area. It is requested by TPC-D representative to check the new load whether coming in TATA area so that TATA can easily provide the supply.

The Chairman, Committee suggested that MSETCL, MSEDCL & TATA jointly shall explore the possibility of feeding this new load from TPC substation as it is in the vicinity of MSETCL area. Accordingly the decision will be taken.

After detailed deliberation and discussion, the committee recommended the above proposal of providing additional 1X50 MVA, 220/22kV T/F along with HV & LV bays & 1X22kV PT bay at 220kV Anandnagar S/stn for consideration by GCC for inclusion in upcoming 5 year STU transmission plan.

Agenda Point No. 19:

Providing additional 1X50 MVA, 100/22kV T/F along with HV & LV bays at 100kV Ambernath S/s under under Vashi Zone.

SE (Schemes), MSETCL proposed the proposal for Providing additional 1X50 MVA, 100/22kV T/F along with HV & LV bays at 100kV Ambernath S/s under under Vashi Zone.

SE (Schemes), MSETCL stated that at present three T/Fs each having 50 MVA capacity are under operation. Maximum load reached on T/F-I is 40.77 MVA in the year 2019-20, T/F-II is 49.49 MVA in the year 2019-20 & T/F-III is 36.53MVA in the year 2020-21.

This substation is feeding the MIDC, Urban and rural area of Ambernath, Badlapur and Dombivali. 50 MVA, 100/22kV T/F-1 is having poor diagnostic test results & due to which reliability of this transformer is questionable and will be required to be replaced in future. Further, MSEDCL has proposed new 4 Nos. of 22/22kV switching stations from 100kV Ambernath (Morivali) S/s. Hence, 4 Nos. of 22kV Bays have been sanctioned by competent authority in December-2018. The work of these 4 Nos. of 22kV feeders is in progress and total load of 30MVA is expected on the substation. Hence, considering the power demand from MSEDCL & for redundancy of supply, additional 1X50MVA, 100/22kV T/F is proposed at 100kV Ambernath substation.

TPC representative informed that there is spare capacity available at TPC-T Ambernath s/s, MSETCL can utilize the spare capacity instead of providing additional 1X50 MVA, 100/22kV T/F. MTC members noted the point.

The chairman, MTC suggested that joint study involving TPC, MSETCL, and MSEDCL shall be carried out to arrive at optimum utilization of capacity. Accordingly the report shall be submitted to GCC for consideration.

After detailed deliberation and discussion, the committee recommended the above proposal for providing additional 1X50 MVA, 100/22kV T/F along with HV & LV bays at 100kV Ambernath S/s & the said proposal shall be referred to GCC for further discussion & their recommendations.

Agenda Point No. 20:

Replacement of existing 1X50MVA, 220/22kV Transformer by 1X100MVA, 220/22-22 kV Transformer along with establishment of 06 Nos. 22kV GIS feeder bays at 220kV Temghar S/s under Vashi Zone.

SE (Schemes), MSETCL highlighted that at present five T/Fs having capacity of 50 MVA, 80MVA, 50MVA, 50MVA, 50MVA capacities are under operation. Maximum load reached on 50 MVA T/F-I is 49.01 MVA in the year 2019-20, 80 MVA T/F-II is 59.17 MVA in the year 2020-21, 50 MVA T/F-III is 49.59 MVA in the year 2019-20, 50 MVA T/F-IV is 48.58 MVA in the year 2019-20, 50 MVA T/F-V is 43.90 MVA in the year 2019-20

220kV Temghar is supplying power to Bhiwandi area which is a Commercial/Industrial hub. The load observed on T/F-3 is more than 1300 Amp. Also, T/F-2 is having capacity of 80MVA. Load cannot be managed in case of tripping of T/F-2 Therefore, overloaded T/F-3 is proposed for augmentation to 100MVA so that it will support in case of tripping/Outage on 50MVA T/F. The maximum load on all the transformer has already reached 70% of their capacity. Also, there is requirement of 3X22kV bays from M/s Torrent Power Ltd at 220kV Temghar S/s. Total 15 MVA load is expected on this S/s in near future.

TPC-Distribution representative asked that the load of temghar s/s is roughly around 180MW & MSETCL have a capacity of 280MW. Is the replacement of T/f by higher capacity so urgent? MSETCL representative replied that there are indoor & outdoor buses at temghar s/s. T/Fs 3 & 5 are connected to indoor bus. When the load increases T/F 3 gets overloaded, in such situation T/Fs 3 & 5 are operated in parallel. Hence in order to avoid this condition, replacement of existing 1X50MVA, 220/22kV Transformer by 1X100MVA, 220/22-22 kV is necessary

Also, considering the power demand from Torrent Power Ltd. & for redundancy of supply replacement of 1X50MVA, 220/22kV T/F by 1X 100MVA, 220/22-22kV T/F along with establishment of 6 Nos. of GIS bays is proposed at 220kV Temghar substation.

After detailed deliberation and discussion, the committee recommended the above proposal of Replacement of existing 1X50MVA, 220/22kV Transformer by 1X100MVA, 220/22-22 kV Transformer along with establishment of 06 Nos. 22kV GIS feeder bays at 220kV Temghar S/s for consideration by GCC for inclusion in upcoming 5 year STU transmission plan.

Agenda Point No. 21:

Replacement of existing 1X50MVA, 220/22kV T/F by 1X100MVA, 220/22-22kV T/F alongwith 06 Nos. 22kV GIS feeder bays at 220kV Kolshet S/s under Vashi Zone.

SE (Schemes), MSETCL explained that at present three T/Fs each having 50 MVA are under operation. Maximum load reached on T/F-I is 44.75 MVA in the year 2019-20, T/F-II is 47.17 MVA in the year 2018-19 & T/F-III is 44.89 MVA in the year 2019-20.

220kV Kolshet S/s is an important & critical S/s supplying power to industrial, commercial & residential areas of Thane city & Greater Mumbai. The power demand from MSEDCL for Thane city, especially the newly developing Ghodbunder road and Metro rail is increasing day-by-day. The annual load growth of this area is nearly 10 to 15%. This S/s does not fulfill the N-1 criteria as all the existing 3 Nos. of 50 MVA transformers are fully loaded. The proposed scheme fulfills P-I criteria (80% loading) of Augmentation scheme. Hence, considering the power demand from MSEDCL & for redundancy of supply replacement of 1X50MVA, 220/22kV T/F by 1X100MVA, 220/22-22kV T/F along with 06 Nos. 22kV GIS feeder bays is proposed at 220kV Kolshet S/s.

AEML representative informed that MSETCL is expecting a 10-12% load growth in this area, perhaps MSETCL may consider addition of 50MVA T/F. MSETCL representative replied that there is space constraint for additional T/Fs at this s/s. hence we have proposed to replace existing 50MVA by 100MVA T/F.

TPC-Distribution representative suggested that TPC is having the capacity available at kolshet s/s. MSETCL can think of using TPC kolshet s/s outlets. Chairperson-MTC enquired about the No. of T/Fs & spare capacity at TPC kolshet s/s. TPC representative said that at kolshet DPR is approved & TPC are in process of installing 2x90MVA T/Fs at kolshet s/s. firm capacity is available at TPC kolshet s/s.

The chairman, MTC suggested that joint study involving TPC, MSETCL, and MSEDCL shall be carried out to arrive at optimum utilization of capacity. Accordingly the report shall be submitted to GCC for consideration.

After detailed deliberation and discussion, the committee noted TPC suggestions and proposal of replacement of existing 1X50MVA, 220/22kV T/F by 1X100MVA, 220/22-22kV T/F with 06 Nos. 22kV GIS feeder bays at 220kV Kolshet S/s & shall be referred to GCC for further discussion & their recommendations.

Agenda Point No. 22:

Replacement of existing 2X50MVA, 220/22kV T/Fs by 2 X 100 MVA, 220/22-22 kV T/Fs along with 12 Nos. of 22 kV GIS bays, 2 Nos. of T/F LV bays, 02 Nos. of PT bays and 03 Nos. of Bus coupler/Tie bays for interconnection with existing 22 kV Indoor Feeders along with strengthening of 220kV Auxiliary Bus at 220kV Mahape S/s under Vashi Zone.

SE (Schemes), MSETCL stated that at present four T/Fs each having 50 MVA are under operation. Maximum load reached on T/F-I is 49.66 MVA in the year 2019-20, T/F-II is 46.19 MVA in the year 2020-21, T/F-III is 46.19 MVA in the year 2019-20 & T/F-IV is 46.19 MVA in the year 2019-20.

220kV Mahape S/s is one of the most important & critical S/s supplying power to Mahape MIDC, Rabale MIDC, Pawane MIDC which are important industrial sectors of Maharashtra State. The maximum load reached is more than 85% of its capacity. The proposed scheme fulfills P-I criteria (80% loading) of augmentation scheme. In view of above, replacement of existing 2X50MVA,

220/22kV T/F by 2X 00MVA, 220/22-22kV T/F along with 10 Nos. of 22 kV GIS bays is proposed at 220kV Mahape S/s.

TPC-Distribution representative asked that the present load at this s/s is around 150MVA & the total capacity is 200MVA. Then why MSETCL is proposed to replace 2x50MVA T/Fs by 2x100MVA T/Fs instead of 1x50MVA T/Fs by 1x100MVA T/Fs. MSETCL representative replied that at this s/s 75% power is fed to MIDC area (industrial load). Out of 4 T/Fs, three T/Fs are loaded more than 80%. Hence MSETCL has proposed to replace existing 2X50MVA, 220/22kV T/Fs by 2 X 100 MVA, 220/22- 22 kV T/Fs.

After detailed deliberation and discussion, the committee recommended the above proposal of Replacement of existing 2X50MVA, 220/22kV T/Fs by 2 X 100 MVA, 220/22-22 kV T/Fs along with 12 Nos. of 22 kV GIS bays, 2 Nos. of T/F LV bays, 02 Nos. of PT bays and 03 Nos. of Bus coupler/Tie bays for interconnection with existing 22 kV Indoor Feeders along with strengthening of 220kV Auxiliary Bus at 220kV Mahape S/s for consideration by GCC for inclusion in upcoming 5 year STU transmission plan.

Agenda Point No. 23:

Replacement of 2X50MVA, 220/22kV T/Fs by 2X100MVA, 220/22-22kV T/Fs at 220kV Colourchem S/s under Vashi Zone.

SE (Schemes), MSETCL placed before the MTC a proposal for Replacement of 2X50MVA, 220/22kV T/Fs by 2X100MVA, 220/22-22kV T/Fs at 220kV Colourchem S/s under Vashi Zone.

SE (Schemes), MSETCL explained that at present four T/Fs, i.e. three having 50 MVA & one 100MVA capacity are under operation. Maximum load reached on 100 MVA T/F-I is 79.80 MVA in the year 2019-20, 100MVA T/F-II is 86.87 MVA in the year 2019-20, T/F-III is 45.36 MVA in the year 2019-20 & 50MVA T/F-IV is 45.50 MVA in the year 2019-20.

This Substation is supplying power to Industrial, Commercial & Residential areas of Thane city. The power demand of Thane City especially newly developing Ghodbunder Road, Kolshet & Dhokali area is increasing day by day. The annual load growth of these areas is about 10%.

The Average Maximum load on all the four transformers has crossed 70% of its rated capacity. In case of outage or tripping on 100MVA transformer the load cannot be managed on the other transformers i.e. it does not fulfil the N-1 contingency criteria.

Also, the scheme for establishment of 18 nos. of GIS bays at 220kV Colourchem S/s has been sanctioned in May-2021 which includes 10 Nos. of feeder bays, incomer to these outgoing feeders are proposed from the T/F No. 3 & 4 after augmentation of the same from 50MVA, 220/22kV to 100MVA, 220/22-22kV.

Total 8 nos. of feeder bays are requested by MSEDCL and required to be established under Phase-I. Also, M/s Torrent Power has requested urgent requirement of 2 Nos. of feeders from Colourchem S/s.

This substation fulfils the P-I criteria (80% loading) of augmentation. Therefore, considering the current loading conditions and the upcoming load, the augmentation of S/s is proposed by replacement of 2X50MVA, 220/22kV T/Fs by 2X100MVA, 220/22-22kV T/Fs at 220kV Colourchem

TPC-Distribution representative suggested that TPC Kolshet s/s, MSETCL Kolshet s/s & 220KV Colourchem s/s all three together should be studied comprehensively for optimum utilization of capacity.

The chairman, MTC suggested that joint study involving TPC, MSEDCL & MSETCL shall be carried out to arrive at optimum utilization of capacity. Accordingly the report shall be submitted to GCC for consideration.

After detailed deliberation and discussion, the committee recommended the above proposal of Replacement of 2X50MVA, 220/22kV T/Fs by 2X100MVA, 220/22-22kV T/Fs at 220kV Colourchem S/s for consideration by GCC for inclusion in upcoming 5 year STU transmission plan.

Agenda Point No. 24:

Providing additional 1X50MVA, 220/22kV T/F alongwith HV (AIS) & LV (GIS) bay, 6X22kV GIS feeder bays, 1X22kV GIS PT Bay, 1X22kV GIS Bus coupler/Tie bay & 1X22kV AIS Bus coupler bay at 220kV Bapgaon S/s under Vashi Zone.

SE (Schemes), MSETCL explained that at present two T/Fs each having 50 MVA are working under operation. Maximum load reached on T/F-I is 34.49 MVA in the year 2019-20, T/F-II is 33.13 MVA in the year 2020-21.

He further explained that this substation is supplying the load to Urban and Industrial areas. The average maximum load on both the transformers has already reached 60% of their capacity. The combined load of 30-40MW of M/s Torrent Power Ltd and MSEDCL is expected in the next 2 years in Kalyan Urban and Bhiwandi Industrial & Residential areas which are to be fed from 220kV Bapgaon S/s. M/s Torrent Power Ltd. has requirement of 4 Nos. of feeder bays from 220kV Bapgaon S/s which are to be erected & commissioned in phase-II.

Also, in case of tripping/outage on one transformer, it is difficult to manage the 100% load on the other transformer. Hence, to cater the future load and to ensure the redundancy of the supply, addition of 1X50MVA, 220/22kV T/F is proposed at 220kV Bapgaon Substation.

After detailed deliberation and discussion, the committee recommended the above proposal of Providing additional 1X50MVA, 220/22kV T/F alongwith HV (AIS) & LV (GIS) bay, 6X22kV GIS feeder bays, 1X22kV GIS PT Bay, 1X22kV GIS Bus coupler/Tie bay & 1X22kV

AIS Bus coupler bay at 220kV Bapgaon S/s for consideration by GCC for inclusion in upcoming 5 year STU transmission plan.

Agenda Point No. 25:

Augmentation of 220/22 kV Nalasopara S/S by providing additional 100MVA, 220/22-22 kV TF alongwith Hybrid HV Bay, LV Bay including shifting of 22kV Bus Coupler bay at 220/22 kV Nalasopara S/S under Vashi Zone.

SE (Schemes), MSETCL placed before the MTC a proposal for Augmentation of 220/22 kV Nalasopara S/S by providing additional 100MVA, 220/22-22 kV TF alongwith Hybrid HV Bay, LV Bay including shifting of 22kV Bus Coupler bay at 220/22 kV Nalasopara S/S under Vashi Zone.

SE (Schemes), MSETCL explained that at present three T/Fs each having 80 MVA are under operation.

This substation is supplying power to Industrial & Residential load of Nalasopara, Virar and part of Vasai area. Load on 2 Nos. of T/Fs has already reached 100% of their capacity and average peak load of the substation has reached 208.10MVA (86.70%) against the total capacity of 240MVA in the FY 2020-21. It is difficult to manage the load in case of tripping/outage of any one of the transformer i.e. substation does not fulfils N-1 contingency criteria.

Also, there was an incident in August-2020, due to failure of one no. of 80 MVA, 220/22-22kV T/F-2, force load shedding was implemented in VVMC Area. In view of above, addition of 100MVA, 220/22-22kV T/F is proposed at 220kV Nalasopara S/s.

TPC-Distribution representative asked the basis for adding 100MVA T/F instead of 80MVA T/F as existing T/Fs are of 80MVA capacity. MSETCL representative clarified that 80MVA T/F are not easily available in market. Existing 80MVA T/Fs are also converted T/Fs. It takes long time to repair 80MVA T/F. hence MSETCL is proposed to add 100MVA T/F instead of 80MVA T/F.

After detailed deliberation and discussion, the committee recommended the above proposal of Augmentation of 220/22 kV Nalasopara S/S by providing additional 100MVA, 220/22-22 kV TF alongwith Hybrid HV Bay, LV Bay including shifting of 22kV Bus Coupler bay at 220/22 kV Nalasopara S/S for consideration by GCC for inclusion in upcoming 5 year STU transmission plan.

Agenda Point No. 26:

Scheme of Augmentation of Substation by replacement of existing 1 no. of 3X105MVA, 400/220/33kV ICT by 1 No. of 3X167 MVA, 400/220/33kV ICT at 400kV Nagothane S/s under Vashi Zone.

SE (Schemes), MSETCL explained that at present there are three ICTs, ICT-I: 3x105MVA 400/220kV, ICT-II 3x105MVA 400/220Kv & ICT-III 3x167MVA 400/220KV. Maximum load reached on ICT-I is 223MVA in the year 2018-19, ICT-II is 233 MVA in the year 2018-19 & on ICT-III is 333 MVA in the year 2018-19

He further emphasized the necessity for Augmentation of Substation by replacement of existing 1 no. of 3X105M.VA, 400/220/33kV ICT by 1 No. of 3X167 MVA, 400/220/33kV ICT at 400kV Nagothane S/s

Grid connectivity is granted to M/s JSW steel Ltd by STU for additional power requirement for Mega expansion of Steel plant from 5 to 10MTPA (Phase-II - 222MVA) at Dolvi, District-Raigad, Maharashtra subject to implementation of Load Trimming Scheme approved by SE TCC, Vashi and subsequent augmentation of 3X105MVA, 400/220kV ICT by 3X167MVA ICT at 400kV Nagothane substation. Presently, existing load availed by M/s JSW Steel Ltd. is as given below:

SN	Particular	Load in MVA
1	Existing Load	416
2	Phase-I Load Availed	69
3	Total Availed Load of M/s JSW Steel Ltd.	485
4	Grid Connectivity Granted By MSETCL (416MVA + 222MVA)	638MVA

The individual maximum load of all the ICTs have reached more than 60% of their capacity. The average maximum load reached for FY 2019-20 is 684 MVA (60.48%) against the present capacity of 1130MVA. It will not be possible to ensure N-1 contingency compliance if 222MVA load of M/s JSW, Dolvi is connected at 400kV Nagothane S/s. In case of tripping/maintenance of 500MVA ICT, it will be difficult to manage the load on the other two 315 MVA ICTs.

TPC-Distribution representative asked about the action plan for usage of replaced ICT (old ICT) in some other projects. Chairperson-MTC noted the points and informed MSETCL representative to carry out necessary action plan for utilization of removed 3x105MVA ICT.

After detailed deliberation and discussion, the committee recommended the above proposal of Augmentation of Substation by replacement of existing 1 no. of 3X105MVA, 400/220/33kV ICT by 1 No. of 3X167 MVA, 400/220/33kV ICT at 400kV Nagothane S/s for consideration by GCC for inclusion in upcoming 5 year STU transmission plan.

Agenda Point No. 27:

Establishment of 400KV Pimpalgaon (sarole) GIS s/s at Nashik under Nashik Zone.

SE (Schemes), MSETCL placed before the MTC a proposal for Establishment of 400KV Pimpalgaon (sarole) GIS s/s at Nashik under Nashik Zone.

Scope of work includes:

1. 3x167 MVA, 400/220 kV ICT alongwith HV/LV GIS bays -2 nos.
2. 1x167 MVA, 400/220 kV spare ICT alongwith HV/LV GIS bays -1no.
3. Construction of 400 kV line by making LILO on both ckt of 400 kV Aurangabad (PG)-Boisar (PG)
Line – 1.136 kms
4. Construction of 220 kV M/C line on 220 kV M/C towers by making LILO on both circuits on 220 kV Eklahare-Pimpalgaon line to proposed 400/220 kV Sarole s/s - 6.881 km
5. Reorientation of 132kV lines at existing 132 kV Ranwad s/s- 2km
6. 125 MVAR, 400 kV GIS bus reactor– 1 no.
7. 80 MVAR, 400 kV AIS line reactor– 2 nos.
8. 400 kV line GIS bays- 4 nos.
9. 400 kV GIS Bus coupler – 1 no.
10. 220 kV line GIS bays– 4 nos.
11. 220 kV GIS Bus coupler – 1 no.
12. 132 kV AIS End bays at 132kV Ranwad s/s- 4 nos

SE (Schemes), MSETCL explained in depth that presently, supply of 220 kV & 132 kV s/s in Nashik district is mainly provided from 220 kV Eklahare s/s and partly from 400 kV Dhule & Babhaleshwar s/s. The integrated 220 kV & 132 kV network in Nashik district needs to be supported by source from 400 kV s/s in the vicinity.

Nashik & nearby area is fed through 220 kV Babhaleshwar –Nashik DC line and 2x210 MW generating units of Nashik Thermal Power Station.

In case of failure of generation or tripping of one of the 220 kV Babhaleshwar I & II line on fault results in overloading of 2nd line as well as subsequent load shedding.

Establishment of proposed 400 kV s/s at Pimpalgaon (Sarole) will be beneficial for creation of 2nd source to 220 kV GCR & OCR s/s at Eklahare Nashik in case of above condition.

Complete load of 220 kV GCR & OCR s/s can be fed from proposed 400 kV Sarole GIS s/s which will provide redundancy 220 kV Babhaleshwar ckt I & II lines & it will be beneficial for taking outage on these lines for routine maintenance.

He stated that Establishment of 400KV Pimpalgaon (sarole) GIS s/s will provide following benefits:

- 1) Alternate supply arrangement to interstate lines such as 220 kV Navsari I & II
- 2) In case of blackout at 400 kV Babhaleshwar s/s subsequent failure of supply in Nashik district can be avoided.
- 3) Alternate supply to 220 kV Kalwan, 220 kV Satana & 220 kV Malegaon will be available through 132 kV grid lines.
- 4) No dependency on Ekhlare generation.

TPC-Distribution representative asked the basis for going GIS s/s or whether AIS s/s will also be okay. MSETCL representative clarified that there is space constraint also land allotted by government is not sufficient to accommodate 400KV AIS s/s.

After detailed deliberation and discussion, the committee recommended the above proposal of Establishment of 400KV Pimpalgaon (sarole) GIS s/s at for consideration by GCC for inclusion in upcoming 5 year STU transmission plan.

Agenda Point No. 28:

Establishment of 400/220KV GIS-I s/s at kalwa Dist. Thane under Vashi Zone.

SE (Schemes), MSETCL placed before the MTC a proposal for Establishment of 400/220KV GIS-I s/s at kalwa Dist. Thane under Vashi Zone.

Scope of work includes:

- 1) 400/220 kV, 3 X 167MVA, ICT – 3 Nos., with 1 spare ICT along with HV and LV bays.
- 2) 400kV bays total=4 Nos. and 220kV bays total=8 Nos.
- 3) 400kV Reactor Bay - 1 No.
- 4) Re-orientation work of 400kV Transmission line using 400kV cables for proposed GIS-I at Kalwa
- 5) Re-orientation work of 220kV Transmission line using 220kV cables for proposed GIS-I at Kalwa.
- 6) Shifting of 220kV lines by Underground cable.

SE (Schemes), MSETCL explained that existing 400/220kV Kalwa substation has capacity of 2100 MVA. Average load is about 1200-1300 MW. Near about 730 MW new EHV load applications are received and this load cannot be met from existing 400kV Kalwa substation.

Mahape area is developing with various IT park and data centres. In future there is forecasting of increase in load demand due to upcoming data centre. This load also cannot be met from existing 400/220kV Kalwa substation,

Also during N-1 contingency of 1x 600MVA ICT, the load cannot be managed by other ICTs.

The fault level of 400kV Kalwa substation has reached up to 69kA, which is above the permissible limit. If the existing bus of 400/220kV Kalwa substation is splitted up then the fault level will also reduce. To reduce the fault level and to meet the upcoming load demand it is necessary to establish a new 400/220kV substation.

As there is no land space available near to Kalwa (Airoli) because of dense residential construction. Also rates of ready-reckoner is very high in Kalwa area. Hence only possible way is to construct GIS substation besides existing 400/220kV s/s. The required land for 400/220kV GIS-I can be made available by demolishing existing MSETCL quarters & office buildings.

TPC-Distribution representative asked about the feasibility study or calculations carried out about existing load & the new additional loads & also how much MSETCL will be able to cater. MSETCL representative clarified that in kalwa – mahape area near about 2075MW data center load is coming. MSETCL has received 12 application from data center consumer in that area only. |7 to cater this much load we require a separate source from 400KV padghe so that we can feed this load & upcoming load.

TPC-Distribution representative asked that by adding three ICTs bays & two incomer bays (without transferring), will it be possible to cater the data center loads. MSETCL representative clarified that as per CEA planning criteria only 2500MVA maximum capacity is allowed on existing s/s. if the capacity exceeds the limit, new s/s has to be erected.

AEML representative enquired that upcoming load of about 2075MW is coming in near future in these region, after meeting that load requirement, how it is being planned with the existing supply to Mumbai. Will the reliability for the Mumbai will be maintained. MSETCL representative clarified that STU has carried out system study for this & hence reliability is taken care off in the existing system.

After detailed deliberation and discussion, the committee recommended the above proposal of Establishment of 400/220KV GIS-I s/s at kalwa Dist for consideration by GCC for inclusion in upcoming 5 year STU transmission plan.

Agenda Point No. 29:

“Conversion of existing 400Kv kalwa-padghe SCSC line (Circuit-I&II) to DC line on DC tower (both circuit)”.

SE (Schemes), MSETCL highlighted the need for “Conversion of existing 400Kv kalwa-padghe SCSC line (Circuit-I&II) to DC line on DC tower (both circuits)”

400KV Kalwa – Padghe Ckt. I and Ckt. II are in service for around 39 years. The total length of the line is 50 kms, out of which 30 km of the line is erected on SC tower configuration and balance 20 kms is erected on DC towers.

Also, 400/220 kV Kalwa is very critical s/s and is major source to cater the load of Mumbai, Mumbai Suburban, Navi Mumbai and part of Thane District areas. There are only two 400 kV source lines from 400 kV Padghe to 400 kV Kalwa s/s and these two SC lines are on SC towers. In case of tripping or major breakdown on any of the circuit, the other circuit gets overloaded & results in critical condition of the Grid.

Loading on 400 kV Padghe s/s will increase in the year 2024-25 with projected load of 4500 MW for MMR and 5500 MW for Vashi Zone. Hence, 400 kV Kalwa-Padghe ckt.-I & II will be overloaded in future. After commissioning of the 400 kV Vikhroli s/s (TBCB), the loading on 400 kV Kalwa – Padghe Ckt.-I & Ckt.-II will increase.

In case of tripping or major breakdown on any of the circuit, the other circuit gets overloaded & results in critical condition of the Grid. Considering future load growth and grid connectivity the available transmission system of MSETCL serving Mumbai region needs to be strengthened.

Hence summarized the benefits of "Conversion of existing 400Kv kalwa-padge SCSC line (Circuit-I&II) to DC line on DC tower" as below:

Benefits:

- Creation of additional two nos. of 400 kV circuits and increasing redundancy.
- Double the capacity of existing corridor.
- Existing line already crossed life span, hence, proposed scheme is as if creating a new line.
- Utilisation of monopoles in existing corridor shall reduce ROW.
- Reliability of the supply can be increased due to increase in the transmission capacity.
- Saving in transmission system losses.

After detailed deliberation and discussion, the committee recommended the above proposal of "Conversion of existing 400Kv kalwa-padge SCSC line (Circuit-I&II) to DC line on DC tower (both circuit)" for consideration by GCC for inclusion in upcoming 5 year STU transmission plan.

Agenda Point No. 30:

Interconnection of 220kV Murud-Tuljapur and 220kV Osmanabad-Barshi line to create 3rd source to 220kV osmanabad substation.

SE (Schemes), MSETCL placed before the MTC a proposal for Interconnection of 220kV Murud-Tuljapur and 220kV Osmanabad-Barshi line to create 3rd source to 220kV osmanabad substation.

He explained in detail that Presently 75MW wind generation is connected to 220kV Osmanabad s/s at 33kV level. Also 75MW RE is proposed. When wind power is not there and load demand is high, it results in overloading of 220kV Parli PG-Osmanabad line leading to LTS at 33kV level of 220kV Osmanabad s/s. Major load of 220kV Osmanabad s/s is fed from 400kV Parli PG being a strong source as compared to 220kV Bale.

The entire load of 220kV Paranda, 220kV Barshi is fed from 220kV Osmanabad. In case of contingency on any source line of 220kV Osmanabad substation, it is seen that load of 220kV Osmanabad, 220kV Barshi and 220kV Paranda cannot be managed.

Block diagram showing the Interconnection of 220kV Murud-Tuljapur and 220kV Osmanabad-Barshi line.

To resolve the issue it is proposed to interconnect 220kV Murud-Tuljapur and 220kV Osmanabad-Barshi line. This interconnection will provide 3rd source to Osmanabad and further network leading

to maximum utilization of 220kV Tuljapur substation and there will be relief to 220kV Parli PG-Osmanabad line.

After detailed deliberation and discussion, the committee recommended the above proposal of Interconnection of 220kV Murud-Tuljapur and 220kV Osmanabad-Barshi line to create 3rd source to 220kV osmanabad substation for consideration by GCC for inclusion in upcoming 5 year STU transmission plan.

Agenda Point No. 31:

Establishment of 220/132/33 kV Supa (MIDC) s/s., Tal. Parner, Dist. Ahmednagar - Modification thereof.

SE (Schemes), MSETCL placed before the MTC a proposal for Establishment of 220/132/33 kV Supa s/s., Tal. Parner, Dist. Ahmednagar - Modification thereof.

He discussed in detail that presently 132kV Supa S/stn is fed from 220kV Ahmednagar S/stn. 132kV Supa feeds 132kV Wadzire S/stn & extended upto 132kV Kuruli S/stn. The load on 132kV Supa S/stn is mostly agriculture & industrial load. The existing 132kV Supa S/s has installed capacity of 100MVA. The maximum demand reached is 91 MVA against connected load of 142 MVA.

There are 7 nos of 33kV feeders emanating from 132kV Supa S/stn having 11 nos of 33kV S/stn & 9 High tension consumers (HTCs). Further 3 nos of 33kV S/stn of 25MVA capacity & 1 switching station for existing HT consumer are proposed. Total installed capacity will rise to 167MVA. There is no space for additional outgoing 33kV feeder bays.

MIDC has informed that there will be increase in load demand of about 100 MW at Japanese Industrial park, at Supa MIDC. Also 132kV Wadzire S/stn facing low voltage problem at EHV end. Establishment of 220kv Supa (MIDC) s/s will resolve the above issues.

After detailed deliberation and discussion, the committee recommended the above proposal of Establishment of 220/132/33 kV Supa s/s for consideration by GCC for inclusion in upcoming 5 year STU transmission plan.

Agenda Point No. 32:

Interlinking of 400kV Koradi-I s/s to Koradi-II s/s by making LILO on existing Koradi-I - RPL & Koradi-I - Bhusawal at Koradi-II s/s.

SE (Schemes), MSETCL proposed & discussed Interlinking of 400kV Koradi-I s/s to Koradi-II s/s by making LILO on existing Koradi-I - RPL & Koradi-I - Bhusawal at Koradi-II s/s.

In existing scenario 400 kV Wardha PG imports approx. 1600 MW. Hence, Wardha PG needs to be bypass as per decision taken in WRPC meeting. On bypassing 400 kV Wardha PG s/s it is observed that the 400 kV Warora-Chandrapur & Chandrapur-GCR lines gets overloaded.

In case of contingency in anyone of the above ckts. The other ckts will get extremely overloaded. To avoid the above loading conditions the above scheme is proposed.

After detailed deliberation and discussion, the committee recommended the above proposal of Interlinking of 400kV Koradi-I s/s to Koradi-II s/s by making LILO on existing Koradi-I - RPL & Koradi-I - Bhusawal at Koradi-II s/s for consideration by GCC for inclusion in upcoming 5 year STU transmission plan.

Agenda Point No. 33:

Interlinking between 132kV Sengaon -Hingoli and 132 kV Risod- Yeldari line.

SE (Schemes), MSETCL stated that at present the 132 kV Jintur-Yeldari-Risod line/substation fed through 220 kV Parbhani s/s from one end and from 220 kV Malegaon s/s at other end. The conductor used is of 0.15 wolf conductor and is more than 35 years old. Conductor being old the maximum load permitted on 132 kV Malegaon-Risod section is 40 MW only.

The load of 132kV Jintur s/s is fed via 132kV Risod s/s resulting in overloading of ICT's at 220 kV Malegaon s/s and loading of Malegaon-Risod ckt in case of no generation at Yeldari HPS. In case of tripping of 132 kV Parbhani-Jintur line in the above condition load of 132 kV Jintur s/s can go in dark.

Following diagram indicates the proposed interlinking between 132kV Sengaon -Hingoli and 132 kV Risod- Yeldari line.

After detailed deliberation and discussion, the committee recommended the above proposal of interlinking between 132kV Sengaon -Hingoli and 132 kV Risod- Yeldari line for consideration by GCC for inclusion in upcoming 5 year STU transmission plan.

Agenda Point No. 34:

Installation & Commissioning of 125 MVAR, 400 kV Bus Reactor each at 400 kV Thapatitanda S/S and 400 kV Girwali S/S under Aurangabad Zone.

SE (Schemes), MSETCL proposed the Installation & Commissioning of 125 MVAR, 400 kV Bus Reactor each at 400 kV Thapatitanda S/S and 400 kV Girwali S/S

He stated that there are frequent overvoltage issue at these substations. Following table depicts the overvoltage scenario:

Substation Name	Voltage greater than 420KV
400kV Thapatitanda	17 days in 2019
400kV Girawali	79 days in 2019

Installation of 125MVAR bus reactor at these s/s will overcome following issues:

- 1) Persistent overvoltage problem at these substations
- 2) To control and limit 400kV Bus voltage at these substations
- 3) To avoid Hand Tripping/overvoltage tripping of 400kV Lines
- 4) To protect other equipment's from voltage stress
- 5) To ensure Reliability of 400kV network

After detailed deliberation and discussion, the committee recommended the above proposal of Installation & Commissioning of 125 MVAR, 400 kV Bus Reactor each at 400 kV Thapatitanda S/S and 400 kV Girwali S/S for consideration by GCC for inclusion in upcoming 5 year STU transmission plan.

Agenda Point No. 35 to 38:

Replacement of oil filled cable of 110 kV Parel-Grant Road by XLPE Cable

Replacement of oil filled cable of 110 kV Carnac-Grant Road by XLPE cable

Replacement of 110 kV Parel-Mahalaxmi#1 oil filled cable by XLPE Cable

Replacement of oil filled cable of 110 kV Dharavi- Mahalaxmi by XLPE cable

TPC-T representative explained before the MTC above proposals of 110 kV old OFC cable replacement by XLPE cables. He requested the committee to consider the above cable replacement proposals and further emphasized the necessity for replacement of old aged cable as below:

- OEM has stopped manufacturing of oil filled cables and OEM support for oil filled cables and associated accessories are not available.
- 110 kV Dharavi Mahalaxmi & Parel Mahalaxmi cables have served for more than 50 years old and showing signs of insulation deterioration.
- Replaced XLPE cables will cater important load requirement of South Mumbai for next 35 years strengthening Transmission Network.
- Failure of this aged oil filled cable will result in prolonged outage for repair works, affecting reliability of power supply to South Mumbai.
- Cable route survey carried out for checking feasibility for execution of projects. Various factors like upcoming infrastructure, railway crossings, road dimensions and traffic etc. were considered before finalizing the cable route for new cables. Estimated route length for per Cable is in the range of 5-7 kms.

After detailed deliberation and discussion, the committee recommended the above proposals cited under agenda no. 35 to 38 for replacement of old aged OFC 110 kV cable by XLPE cable for consideration by GCC for inclusion in upcoming five year STU plan.

Agenda Point No. 39 to 40:

Installation of 220 kV, 125 MVAR Reactor each at 220 kV Mahalaxmi.

Installation of 220 kV, 125 MVAR Reactor each at 220 kV Trombay.

TPC-T representative placed before the committee necessity of implementation of the scheme as below:

a) These schemes were envisaged by TPC-T based on recommendations by "Working Group" formed under the chairmanship of Director (Operations) MSETCL, comprising of members from various utilities. Extract of the recommendation:

For reduction in High Voltages:

Providing reactors in Mumbai Transmission Network at 220 kV Trombay (T), 220 kV Salsette (T), 220 kV Carnac (T), NMIA, 220 kV Gorai (A) & 220 kV Chembur (A) which would reduce voltages by around 8 kV.

Considering space constraints at Carnac, TPC-T proposed reactor at Mahalaxmi with the similar voltage profile.

b) At present, many 220 kV stations are facing issue of over voltage in range of 242-247 kV during Off peak condition for about 5-6 hrs every day.

c) Currently EHV Cable network in Tata System is generating around 550 MVAR which is required to be absorbed to control over-voltages.

d) Reactor commissioning will also help in reducing Transmission losses as current will get controlled.

e) The condition will further worsen during Non-availability of Trombay units for absorbing reactive power especially during winter season.

STU's Observation:

At 220 kV Mahalaxmi S/S, 2 nos. of 220 kV lines and 6 nos. of 110 kV lines are connected through EHV cables from TPC-T's various EHV substations, Dharavi, Backbay, Parel, Senapati Bapat, Grandroad. Hence, in view of off-peak system study and to suppress cable capacitances, it is recommended to install 1 x 125 MVAR reactor at 220 kV Mahalaxmi S/S.

Further, as per the report prepared by MSLDC on "*voltage Dips in & around MMR area-reasons & Remedial measures*", installation of reactor at 220 kV Trombay S/S, results in significant reduction in high system voltage. Based on study, it is recommended to install 1 x 125 MVAR reactor at 220 kV Trombay S/S.

After detailed deliberation/discussion and as per STU's observation, the scheme is in principle accepted, however detailed joint studies with M/s. TPC-T & STU needs to be carried out.

Agenda Point No. 41:

Installation of new 220/33 kV Stn at Vile Parle

TPC-T presented the need of 220 kV substation on western periphery of Mumbai at Vile Parle as below:

- At present, there is no EHV station on the western periphery of Mumbai between 110 kV Tata Power Malad RSS to Tata Power Versova and between Tata Power Versova and Tata Power Mahalaxmi RSS. Load demand in Western suburbs is increasing at an average 3 to 4 % per annum.
- To meet additional Load demand of DISCOMs of 80 MVA in Juhu / Vile Parle area.
- 220 kV / 33 kV station with 02 X 90 MVA Transformers and 13 nos of 33 kV Bays.
- Source from TPC-T 220 kV Versova RSS.

During the discussion AEML-T informed that they have proposed 220 kV Khardanda underground substation in the vicinity of proposed 220 kV Vileparle S/S by TPC

After detailed deliberation and discussion, the committee suggested that both the utilities AEML and TPC shall jointly study the proposals of 220 kV Vileparle and 220 kV Khardanda considering the locations, nearby EHV substations loading & its transmission capacity availability, cost, confirming the actual load growth, present loadings of distribution substations in that area etc. and submit the joint report to STU for assessment for further taking up issue in the next meeting. STU may visit the proposed locations to verify the proposals.

Agenda Point No. 42:

Installation of 220 / 33 kV Station at Worli

TPC-T representative presented to consider the proposal of 220 kV substation at Worli as below:

- MHADA has proposed redevelopment of existing Worli BDD chawl into new residential and commercial societies in a phase wise manner.
- To meet additional estimated load demand of 90 MVA 220 kV / 33 kV station with 02 X 60 MVA Transformers and 13 nos of 33 kV Bays is proposed. Space provision for additional 60 MVA Transformer for future expansion if necessary.
- Source from LILO of 220 kV Dharavi Mahalaxmi line.

SE (STU) informed that TPC to ensure the land availability for proposed Worli substation.

After detailed deliberation and discussion, the committee recommended the above proposal cited under agenda no. 42 for establishment of 220/33 kV substation at Worli for consideration by GCC for inclusion in upcoming five year STU plan.

Agenda Point No. 43:

Construction of new 220 kV Salsette-Backbay hybrid line.

- This project will form 220 kV Ring System of North and South Mumbai Transmission Network. This will reduce the dependance of South Mumbai power supply on the Trombay System.
- This line will provide independent source of power supply to South Mumbai i.e. from Trombay Generating Station and Salsette RS (through MSETCL Kalwa) which is a strong alternate source thereby establishing north south connectivity at 220 kV level.
- TPC-T submitted DPR for Replacement of oil filled cables of 110 kV Trombay Parel 3 & 110 kV Trombay Carnac 3 (which is approved by STU & with MERC for approval) along with DPR for Construction of new 220 kV Salsette Backbay hybrid line to save RI cost and utilize available ROW as the cable route in some sections is common.
- Executing these projects simultaneously will result in savings of approximately Rs 70 Crs. as 3 nos. cable lines including above 110 kV lines will be constructed using same cable trench/route.

After detailed deliberation and discussion, the committee recommended the above proposal cited under agenda no. 43 for Construction of new 220 kV Salsette-Backbay hybrid line for consideration by GCC for inclusion in upcoming five year STU plan.

Agenda Point No. 44:

220kV Chandivali EHV Scheme

AEML-T representative presented to consider the proposal of establishment of 220 kV Chandivali substation to cater upcoming load in Chandivali area and the scheme was also discussed in last MTC meeting. AEML-T further explained the need for implementation of this scheme as below:

- Around Chandivali (Hiranandani, Powai, Saki) major commercial/ IT /residential development in process
- Major loads are fed from 220 kV Aarey, Saki, EHV Stations of AEML, S/s are expected to cross the loading above firm capacity in 2 to 3 years
- Required capacity / outlets not available in nearby Transmission S/s of AEML/TPC.

TPC-T representative further informed that around 300 MVA transmission capacity available at nearby TPC's EHV substations Saki, Sahar, Powai, Kurla which can be utilized by AEML-D to meet their load requirement in Chandivali.

SE (STU) enquired about the spare bays available at nearby TPC-T substations, TPC-T in reply informed to confirm the same. SE (STU) expressed that both the utilities should have exact data of available spare bays on record as 220 kV Chandivali is long pending issue.

STU's Observation:

Loading of AEML-T existing 220 kV Aarey and 220 Saki substations almost reached 70%, hence no transmission capacity available at these substations as per MEGC 2020 planning criteria. As per TPC-T's view sufficient capacity and spare bays are available at their nearby EHV substations which fulfill the requirement of AEML-D. In this regard, it is required to carry out assessment of exact load demand of AEML-D, to check actual loadings of nearby EHV substations as well as distribution substations in that area and also to verify availability of spare bays at existing EHV substations physically.

After detailed deliberation and discussion, the committee suggested that the STU to carry out assessment of exact load demand of AEML-D, to check actual loadings of nearby EHV substations as well as distribution substations in that area and also to verify availability of spare bays at existing EHV substations physically. Accordingly the scheme will be processed based on STU's assessment.

Agenda Point No. 45

220kV Kandivali EHV Scheme

AEML representative presented to consider the proposal of establishment of 220 kV Kandivali EHV scheme. The scope of scheme includes:

- 220 kV GIS Based EHV Substation (2x125 MVA Transformers)
 - 220kV Cable Connectivity with LILO of 220kV Boisar - Versova line at tower no. 321 with necessary gantry structure / tower modification. Associated Civil Works.
- Load requirement 151 MW, Outlet Requirement 13 nos. (AEML-D) and Land identified at Kandivali.

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

- Major residential / commercial / Business hub in Kandivali / Borivali / Malad West seen in last 2 -3 year
- Huge development potential and anticipated growth of power demand considering proposed Transport infrastructure like Metro lines(2A/2B), Coastal Road, Flyover/link roads
- 220kV AEML Transmission S/S at Gorai, load near to its firm capacity, 6 kms from proposed Kandivali EHV Addition of Transformer not feasible at Gorai due to space constraints.

STU observations:

AEML proposed 220 kV Kandivali substation at Jankalyan Nagar where the land is available, the distance from existing 220 kV Gorai S/s is 6 km and about 10 km from Versova T & Versova AEML. Loadings of 220 KV Gorai (A) and 110 kV Malad T substations almost reached to 70% of installed capacity. Hence STU to carry assessment for requirement of Substation at Kandivali considering new load/additional load only, as existing Tata 110 kV Malad substation will not be under-loaded. Proposed 220 kV Malad substation by AEML is also to be considered for study in view of locations of both the proposed substations thereof.

After detailed deliberation and discussion, the committee suggested that the STU to carry out assessment of requirement of substation at Kandivali considering new load/additional load only, as existing Tata 110 kV Malad substation will not be under-loaded. Also to study jointly for proposed 220 kV Kandivali and Malad considering the locations. STU may visit locations of both proposed substations and may carried joint survey of the area considering existing substations. Accordingly the scheme will be processed based on STU's assessment.

Agenda Point No. 46:

220kV Dahisar EHV Scheme

AEML representative presented to consider the proposal of establishment of 220 kV Dahisar EHV scheme. The scope of scheme includes:

Substation Scope:

- 220 kV GIS Based EHV Substation (2x125 MVA Transformers)

Cable Connectivity.

- 220kV D/C Underground Cable from AEML Ghodbunder EHV S/S to proposed 220kV Dahisar EHV S/S
- . Associated Civil Works
- Underground substation option also being explored

Load requirement - 115 MW, Outlet Requirement -10 nos. (AEML-D), Land Location- Land options identified.

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

- Major residential / commercial / Business hub in Dahisar seen in last 2 -3 year
- Huge development potential and anticipated growth of power demand in & around Dahisar area
- Connectivity between Link Road/ SV Road/Western Express Highway is established and two major Metro lines i.e. Metro 2A, 7, 7 Extension/ 4 Extension are planned from this region, expected to boost development & load growth going forward. Region with many premium Residential / Commercial / Business hubs

STU observations:

The distance of proposed 220 kV Dahisar substation from existing TPC 220 kV Borivali substation is around 4 km and loading on 220 kV Borivali S/S is reached upto 40%, hence sufficient capacity available at Borivali. It is suggested that feasibility may explore for drawing 33 kV feeders from TPC 220 kV Borivali S/S to cater load of AEML-D confirming space constraints, RoW issues, local authority instatement charges etc.

After detailed deliberation and discussion, the committee suggested that the feasibility may explore for drawing 33 kV feeders from TPC 220 kV Borivali S/S to cater load of AEML-D confirming space constraints, RoW issues, local authority instatement charges etc. Accordingly the scheme will be processed.

Agenda Point No. 47:

220kV Malad (E) EHV Scheme

AEML representative presented to consider the proposal of establishment of 220 kV Malad (East) EHV scheme. The scope of scheme includes:

- 220kV GIS EHV Station at Malad (2 x 125 MVA Capacity). Cable Connectivity.
- LILO of existing 220kV AEML Aarey – TPC Borivali Line at Loc No. VAB-50 using 220kV underground cable system.
- Associated Civil works
- Underground substation option also being explored.

Load requirement- 108 MW, Outlet Requirement- 12 nos. (AEML-D), Land Location- Land options identified.

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

- Between Aarey upto Borivali, over 13 kms, there is no Transmission infrastructure available. Distribution licensee draws long distance 33kV feeders from Aarey, Goregaon, Borivali substation to feed consumer demand in/around Malad (E) – Goregaon (E) area.
- Existing AEML 220kV Aarey EHV Sub-Station peak load near to its firm capacity, located far away from load points, has been approaching towards its firm capacity.

After detailed deliberation and discussion, the committee suggested that the STU to carry out assessment of requirement of substation at Malad considering new load/additional load only, so that existing Tata 220 kV Borivali substation can be utilized. Also to study jointly for proposed 220 kV Kandivali and Malad considering the locations. STU may visit locations of both proposed substations and may carried joint survey of the area considering existing substations. Accordingly the scheme will be processed based on STU's assessment.

Agenda Point No. 48:

220kV Khardanda EHV scheme

AEML representative presented to consider the proposal of establishment of 220 kV Khardanda underground EHV scheme. The scope of scheme includes:

- 220 kV GIS Based Underground Substation (2x125 MVA Transformers)
- Installation of 220kV GIS Bays extension at AEML Versova
- 220kV D/C Underground Cable from AEML Versova EHV S/S to proposed 220kV Khardanda EHV S/S. (18 cktm)

Load requirement - 131 MW, Outlet Requirement - 12 + 4 nos. (AEML-D), Land Location - Land options identified

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

- No EHV station between Versova & Bandra/Dharavi area in west side of Mumbai.
- Huge development potential and anticipated growth of power demand in & around Khardanda area due to upcoming re-development, up gradation in transport infrastructure like proposed Metrorail project, fly overs connecting west / east area, development of commercial establishment etc.
- In absence of sufficient Transmission capacity, laying long 33kV feeders from nearby EHV stations, will lead to high losses & undue CAPEX burden. In view of above, it is proposed to commission 220/33kV Underground EHV Substation. During the discussion TPC-T informed that they have proposed 220 kV Vileparle substation in the vicinity of proposed 220 kV Khardanda S/S by AEML.

After detailed deliberation and discussion, the committee suggested that both the utilities AEML and TPC shall jointly study the proposals of 220 kV Vileparle and 220 kV Khardanda considering the locations, nearby EHV substations loading & its transmission capacity availability, cost, confirming the actual load growth, present loadings of distribution substations in that area etc. and submit the joint report to STU for assessment for further taking up issue in the next meeting. STU may visit the proposed locations to verify the proposals.

Note:

TPC-T and AEML-T shall prepare Standard Schedule of Rates (SOR) based on economical, reasonable and competitive rates of purchase orders, IEEMA guidelines, Ready reckoner rate of land in MMR, statutory charges of local authorities in MMR etc. Both the utilities may refer the MSETCL's SOR for reference.

Hence, TPC-T and AEML-T are requested to submit the standard schedule of rates to STU for consideration and approval within 15 days from the issuance of this MOM letter so as to scrutinize the Mumbai DPRs.

SE (STU), Member Secretary offered the vote of thanks to all the MTC members and other participants.

Chairperson –MTC
Chief Engineer (STU)