MAHATRANSCO
Maharashtra State Electricity Transmission Co. Ltd.

MAHARASHTRA STATE ELECTRICITY TRANSMISSION CO.LTD.
CIN NO. U40109MH2005SGC153646
Maharashtra State Load Dispatch Center
Office of The Executive Director
Maharashtra State Load Dispatch Center, Thane-Belapur Road, P.O. Airoli, Navi Mumbai Pin – 400 708.
Tele :91-22-27601765/1766/1931/2937, Fax :91-22-27601769/2936
Email : edmsebholding@gmail.com
Website : http://www.mahasldc.in

Ref. No. ED/MSLDC/OP/GCC/ Date: No 00519 Dt 3 MAR 2025

To,
As per mailing list GCC Core Group Members.

Sub: - Minutes of the 11th Grid Coordination Committee (GCC) meeting held on 29.01.2025 at MSLDC, Airoli.

Ref.: 1. Agenda Request vide E-mail dated 26.01.2025.
2. Agenda circulated vide Letter No. ED/MSLDC/OP/GCC/205 dated 28.01.2025.

Dear Sir,

With reference to the above subject, the Minutes of the 11th Grid Co-ordination Committee (GCC) meeting held at MSLDC, Airoli on 29.01.2025 at 11:00 hrs. is enclosed herewith.

Thanking you.

With regards,

Encl: As above.

(Shashank Jewalikar)
Executive Director, MSLDC
and
Member Convenor of GCC

Copy s.w.rs. to:

The Director (Operations), Corporate Office, MSETCL, Mumbai.

Copy to:

- The Chief Engineer (STU), Corporate Office, MSETCL, Mumbai.
- The Chief Engineer (ACI&P), Corporate Office, MSETCL, Mumbai.
- The Chief Engineer (SLDC), Airoli, Navi Mumbai.

Mailing List of GCC Core Group Members:

Sr. No.	Name of Organization	Name of Nominee/Designation	Committee Position	Contact No.	E-mail ID
1	MSETCL	Shri Satish Chavan, Director (Operations)	Chairperson	022-26492162	dirop@mahatransco.in
2	MSEDCL	Shri. Yogesh Gadkari Director (Commercial)	Member	022- 26474211 / 26472131	directorcommsedcl@gmail.com
3	MSLDC	Shashank Jewalikar Executive Director (SLDC)	Member Convener	022-27601765	edsldc@mahasldc.in
4	MSETCL	Shri. Mahendra Walke, Chief Engineer (Trans. O&M)	Member	9769213955	ceom@mahatransco.in
5	MSPGCL	Shri. Anil Kathoye CE (Works)	Member	022-6942200 69843434 Ext. 3419	cegw@mahagenco.in
6	WRPC	Shri P. D. Lone, S.E. Commercial	Member	9867622823	comml-wrpc@nic.in
7	MEDA	Shri Manoj Pise, General Manager	Member	9422319093	gmrd@mahaurja.com

Minutes of the 11th Grid Co-ordination Committee meeting held on 29th January 2025 at 11:00 hrs. at MSLDC Airoli.

The 11th Grid Coordination Committee (GCC) meeting of the Core Group was held on 29.01.2025 at 11:00 hrs at MSLDC, Airoli. The meeting was conducted both physically and via video conferencing. A list of members/participants is enclosed as ANNEXURE - A.

The Executive Director of MSLDC and Member Convener of the GCC welcomed all the members and other participants to the 11th GCC Meeting.

With the permission of the Chair, discussions for the 11th GCC Core Committee began as follows:

Item No.1:

1.1 Confirmation of the Minutes of the 10th GCC Meeting held on 23.10.2024.

- The Member Convenor of GCC informed that the minutes of the 10th GCC meeting held on 23.10.2024 were circulated to all the members vide Letter No. MSLDC/TECH/OP/GCC/2449 Dated. 28.11.2024. However, no comments are received from members and hence, the same may be considered as ratified.

  GCC confirmed the Minutes of the 10th GCC Meeting held on 23.10.2024.

1.2 Presentation on Maharashtra System Grid performance-

- The Executive Director, SLDC presented the Maharashtra system grid performance for the Calendar Year 2024.

  GCC after deliberation passed the following directives;

  1. In the operational performance report for CY 2024, the state demand profile shows that the maximum demand for the year was 28,327 MW. Also, recently, in January 2025, state demand reached a new peak of 29,726 MW on January 28, marking the highest demand ever recorded. Similarly, for MSEDCL, the demand is on increasing trend from 24,333 MW in CY 2024 to 26,131 MW on January 28, 2025.
  2. ED, SLDC emphasized the need for enhanced reactive and capacitive compensation within the system, particularly given the significant daily demand variation. The maximum daily demand variation is seen 9,255 MW in CY 2024.
  3. The energy supplied to MSEDCL increased by 6,782 MUs in 2024 compared to 2023.
  4. The issue of partial outages of MSPGCL thermal generators and the submission of lower Declared Capacity (DC) was discussed in the last GCC meeting and further highlighted by WRPC in the 587th OCC meeting. In CY 2024, the average DC submission by MSPGCL was 89%, with the maximum gap between Available Capacity and Declared Capacity reaching 1,858 MW on 10.08.2024. While this gap has improved compared to CY 2023, but, further enhancement in DC declaration is needed to ensure optimal generation capacity.

     The Chairman requested MSPGCL to submit detailed - short term and long-term plans for ensuring maximum DC on plant-to-plant basis to the GCC, at the earliest.

5. Notices have been issued by MSLDC for insufficiency of coal stock whenever observed to be less than 3 days. SLDC also appraised GCC about the insufficient coal stock analysis as per CEA guidelines. Generators to take note and efforts to maintain sufficient coal stock.

6. As informed by the representative of MSPGCL, the Uran Unit A0 will be revived in the 1st week of Feb-25 whereas for Ghatghar Unit 2 repairs, tender is processed and it shall be revived by Mar-25. TPCL unit 5 is planned for revival 31stJan-25.

7. M/s VIPL is in the process of reviving its units, which are under shutdown since 29/12/2018 and 17/01/2019.

8. In recent days, ELR to the tune of 40 MW is being carried out at 220 kV Manmad s/s due to overloading of 132kV Chordiya solar – Manmad line.

   ED, SLDC asked CE STU to verify if SPS on Solar Generator end is provided or not.

   The Chairman has instructed the SE (EHV O&M Circle, Nashik) and SE, PAC Nashik circle to study and inform SLDC regarding the possibility of load diversion or .

9. The issue of RE generation curtailment due to transmission constraints was discussed. On the issue of event of RE generation curtailment, CE STU Has informed that 208 MW Solar Generation which is connected to 132 kV Wagdari & Naldurg S/s, is evacuated through 132 kV Ujani-Naldurg S/C, 132 kV Bale – Naldurg S/C & 132 kV Wagdari – Akkalkot S/C line. 132 kV Naldurg & 132 kV Wagdari S/s are interconnected through S/C line. Out of these three evacuating lines, 132 kV Ujani- Naldurg S/C & 132 kV Bale – Naldurg S/C lines are old more than 30 years. CE, STU said that this scheme is approved in MTC and is placed for ratification in this GCC.

10. Inter State ATC/TTC Constraint: The Available Transfer Capability (ATC): - 10800 MW. CE, STU informed that this limit would increase by around 1000 MW in future, on account of commissioning of 220 kV Lines for evacuation at 400 kV Kudus and 400 kV Pune GIS (Shikrapur). 220 kV evacuation lines from 400 kV Kudus ss may be completed by March 2025.

    Director (Commercial), MSEDCL enquired that updates on Inter State ATC/TTC is not received from STU department. The CE, STU informed that the communication related to the issue from MSEDCL is received to STU department and STU will communicate the details.

11. 400kV Jaigad – Karad ckt – 1 &2 and 400kV Khadka – Aurangabad (Waluj) lines are hand tripped due to overvoltage.

    The Chairman enquired about the status of reactors proposed. CE, STU informed that a reactor is proposed in this GCC at 400kV Waluj s/s and tenderization for reactors 400kV Karad the tendering is finalized.

12. Due to N-1 non-compliance of ICTs at 765/400 kV Ektuni S/s, in case of tripping or outage on any one ICT, the remaining ICT is either loaded to full rated capacity or above permissible capacity causing the generation at Tiroda & Koradi-II to be backed down. CE, STU informed that the 3rd 1500 MVA 765/400 kV ICT is under tenderization.

13. MSEDCL has asked query, whether Koyna stage-II (unit 5, 6, 7 & 8) can be operated in condenser mode instead on generation at technical minimum, during the times of low voltage in grid. ED, SLDC asked SLDC team to conduct a separate meeting with Koyna to confirm and discuss about Koyna stage-II (unit 5, 6, 7 & 8) operation in condenser mode.
14. Regarding the reactive power requirement in Boisar area:

    The Chairman asked to CE STU to take up the issue on priority and instructed to carry out the work in phase-I of implementation.
15. Three projects need to be executed on urgent basis

    Considering the rising demand and is expected to increase beyond 30000 MW and would cause curtailment in Pune region during summer due to transmission constraints. Pune GIS (Shikrapur) evacuation, 220 kV connection from Talegaon (PG) and installation of capacitors at Pune region are the critical projects needing expedited completion. SLDC also appraised about the Nashik area constraints and likely curtailment continued in that region.
16. On the issue of carrying out fault level studies of Mumbai & MMR substations in view of MUML & KVTL lines, ED, SLDC said that a separate part be added in STU plan for short circuit addressal considering the huge expansion in Vashi and Mumbai region.

    Need to expedite the projects to reduce high loading on 220kV Nashik – Babhaleshwar D/C lines, as generation of RPL Sinnar plant is most likely to be finalized in 6 months.

    CE, STU said that feasibility of a 400kV S/S at Sinnar is being verified.
17. Resource Adequacy Study for the state of Maharashtra FY-2026 -2030 was submitted to MERC on 30th October 2024 in which shortfall is seen during non-solar hours. DISCOMS should take adequate measures to fill the shortfall gap.

All GCC members took note of the discussions.

Item No.2: MSLDC Agenda:

2.1 Appraisal towards approval of the Procedure for implementation of the MERC (F, S & DSM for Solar & Wind Generation) (First Amendment) Regulations, 2024:

In accordance with the provisions of the MERC (Forecasting, Scheduling & Deviation Settlement for Solar & Wind Generation) (First Amendment) Regulations, 2024, MSLDC has submitted draft procedure to Hon'ble Commission for approval on 12-09-2024. Hon'ble MERC vide letter dated 15-01-2024 has issued approval for the said procedure.

As per said procedure, the roles and responsibilities of STU/Transmission Licensees are specified at Clause No. 7.0 which are attached herewith as Annexure - 1

Also, the roles and responsibilities of Distribution Licensees are specified at Clause No. 6.0 which are attached herewith as Annexure - 2

Further, vide letter dated 22-01-2024, MSLDC has requested distribution licensees to provide details of all the Solar projects commissioned under MSKVY scheme and submit information as and when these projects are commissioned.

In this respect, STU, Transmission & Distribution Licensees need to adhere to the roles & responsibilities along with timelines specified in the said procedure.

- The Executive Director (MSLDC) informed the GCC members that Hon'ble MERC has accorded approval for the procedure prepared by MSLDC for implementation of the MERC (Forecasting, Scheduling & Deviation Settlement for Solar & Wind Generation) (First Amendment) Regulations, 2024. The procedure has roles & responsibilities of various stake holders including STU, Transmission/Distribution Licensees. He further directed MSLDC representative to brief agenda points in this respect.

  MSLDC representative, informed that as per the MERC amended RE F&S Procedure, STU & Transmission Licensees are undertaking the responsibility of installation of SEM at EHV PSS. However, some of the responsibilities such as submission of LTOA/MTOA information data required for scheduling need to be completed as per the timelines specified in the said procedure. In this respect, the Chief Engineer (STU) assured that the timelines will be adhered to.

  Also, all the Distribution Licensees are undertaking most of the responsibilities specified in this procedure, however, information regarding STOA approvals is not submitted by MSEDCL in time. A significant delay has been observed while submission of this information. Information is received till 15th day of the month for which STOA has been approved & scheduling is to be carried out. Due to such delay, such capacity is not scheduled resulting in to erroneous deviation accounting. This will have commercial impact on RE Generators & Consumers.

  In this respect, the Director (Commercial), MSEDCL informed that all the STOA approvals are issued by the STOA Software. Hence, to avoid manual intervention, integration of MSEDCL & MSLDC software should be carried out. He further assured that the timeline for submission of information by 27th day of each month will be ensured. The Executive Director (MSLDC) directed MSLDC REMC team to explore the possibility of integration.

  Further, the Executive Director (MSLDC), informed that these amended regulations include MSKVY schemes, however, date for such inclusion will be notified separately. Accordingly, MSLDC has initiated the process of collecting data for integration of these Solar projects in REMC system and requested distribution licensees to provide details of all the Solar projects commissioned under MSKVY scheme and submit information as and when these projects are commissioned.

  The Director (Commercial), MSEDCL, assured that the required information will be shared to MSLDC from time to time.

All GCC members took note of the discussions.

2.2 Monitoring compliance towards the CEA (Technical Standards for Connectivity to the Grid) Regulations, 2019:

MSLDC, vide letters dated 17-10-2019, 31-03-2023, 15-06-2023 has requested STU (attached as **Annexure - 3**) to take appropriate actions towards implementation of the CEA (Technical Standards for connectivity to the Grid) Regulations, 2019. Also, the issue was taken-up in the 5th OCC meeting held on 21-03-2023, wherein OCC has requested STU to include required conditions in the Grid Connectivity letter & Final Grid Connectivity letters. Also, it was requested to monitor the compliance at the time of issuance of Final Grid Connectivity as monitored by CTU. However, till date the same is not yet implemented.

Day by day, RE capacity is increasing exponentially, hence, for stable & smooth operation of the Grid, compliance to these technical standards is necessary.

- Executive Director (MSLDC), informed that the RE capacity addition is taking place in the State with huge pace. It is necessary to strictly monitor the compliance of the CEA (Technical Standards for connectivity to the Grid) Regulations, 2019. However, necessary instructions for simulation studies are not incorporated in the Grid Connectivity Letter issued by STU. Also, the procedure implemented at CTU & RLDC for jointly monitoring before FTC process of the RE plant needs to be adopted in the State and completed at the time of issuance of the Final Grid Connectivity by STU. Presently, MSLDC is seeking compliance of these CEA Regulations at the time of issuing Synchronization permission to the RE Generators. In case simulation study reports are not available, undertaking is sought from the RE Developer/Generator. A timeline for issuance of PO within 1 month & submission of study report within 3 months to MSLDC is permitted.

  The Chairman of the GCC accepted the importance of the compliance of CEA Regulations considering anticipated growth of RE in the State. He suggested to apply such compliance to the Solar projects being commissioned in Distribution network. In this respect, the Executive Director (MSLDC) informed that there are separate standards defined in the CEA Regulations for such distribution embedded RE plants.

  Further, the Chief Engineer (STU) informed that the condition of compliance of these regulations has been added in the Grid Connectivity letter, however, specific condition for simulation study report will be incorporated in the Grid Connectivity Letter. Further, a joint study group will be constituted having representatives from STU Study team, STU RE team & MSLDC REMC study team. This group will monitor the compliance in line with the procedure adopted by CTU-RLDC at national level.

All GCC members took note of the discussions.

Item No.3: Agenda Points from various committees:

3.1 Operation Co-ordination Committee (OCC): -

a) High quantum of Partial Outages in MSPGCL units:

Recently, WRLDC vide letter No. WRLDC/SO/31/2024-25/58 Dated 23.01.2025 & in 582nd WRPC OCCM meeting, WRPC highlighted the high quantum of partial outage in MSPGCL thermal units due to poor coal quality and coal mill issues.

Also, in the various meetings conducted by MoP/CEA, MSPGCL was advised to minimize partial outages by opting for imported coal blending. The agenda point was discussed in 8th OCC, and as per the committee suggestion MSPGCL is requested to submit a long-term plan to mitigate the high quantum of partial outages due to coal quality and coal mill issues.

In this regard, on dt. 24.10.2024 MSLDC sent an email to MSPGCL to submit the short-term and long-term action plan to mitigate High Partial Outage Quantum due to Poor Coal Quality and Coal Mill Issues in MSPGCL Thermal Units. However, no correspondence received from MSPGCL in this regard till date.

The Chairman asked MSPGCL to submit detailed - short term and long-term plans for ensuring maximum DC on plant-to-plant basis to the GCC, at the earliest.

All GCC members took note of the discussions.

b) New Targets of the relief quantum at each stage of AUFLS for Maharashtra State.

As per minutes of 158th Protection Committee meeting held on 24th July 2024, NPC Secretariat, CEA has communicated the new relief quantum for each region (based on Regional Peak Demand Met during the previous year) for implementation in the upcoming Financial Year (FY).

Existing target of the relief quantum at each stage of AUFLS for Maharashtra is given below:

UFR settings & Existing Target Quantum (in MW)					
Utility	49.40 Hz	49.20 Hz	49.00 Hz	48.80 Hz	Total
Maharashtra	805	810	815	820	3250

WRPC have calculated the distribution of new targets based on the above WR quantum among the states for different stages based on the peak demand met by states in the

Financial Year 2023-24 and the new targets of the relief quantum at each stage of AUFLS for Maharashtra are as given below:

UFR settings & New Target Quantum (in MW)						
	State Peak Demand (MW)	49.40 Hz	49.20 Hz	49.00 Hz	48.80 Hz	Total
Maharashtra	28969	1313	1576	1839	1839	6567

Based on the above, the additional quantum required to be wired up under each stage of AUFLS is as follows:

Hence, Additional quantum (MW) over existing quantum required to be wired up under each stage of AUFLS					
	49.40 Hz	49.20 Hz	49.00 Hz	48.80 Hz	Total
Maharashtra	508	766	1024	1019	3317

For the implementation of additional AUFLS quantum, additional feeders need to be identified and additional under-frequency relays may be procured, if required. The criteria for identification of feeders is mentioned in the MoM of WRPC 158th PCM held on 24.07.2024 (enclosed).

Correspondence in this regard was done by this office vide L. no. 1728 dtd 28.08.2024 to inform the implementation plan along with the present status to wire up the additional quantum.

ACI& P has communicated MSEDCL vide letter no.744 dtd. 03.10.2024 the substation wise HV feeders (33/22/11kV) data and have requested to confirm zone wise and stage wise HV feeders other than already connected to existing AUFLS to be included for implementation of additional AUFLS quantum as per WRPC guidelines.

MSEDCL may confirm the feeder segregation.

- ED, SLDC informed that this issue was discussed in the last WRPC, OCC meeting. This scheme is being implemented at transmission level, but due to integration of MSKVY generation, AUFLS would be required to be shifted to Distribution locations. He said that AUFLS to be implemented at all T-D interface locations.
- CE, ACI& P said that the quantum required for Stage I & II is fulfilled and for Stage III & IV, a quantum of 90-100 MW is required to be wired up.

The Chairman asked MSEDCL to submit confirmation of the zone wise and stage wise HV feeders to be included for implementation of additional AUFLS quantum as per WRPC guidelines.

All GCC members took note of the discussions.

3.2 Protection Co-ordination Committee (PCC): -

Approval of Revision in Philosophy of Line differential protection Relays for 132kV & above transmission line:

During the 7th PCC meeting, the existing philosophy of provision of line differential relay for 132kV & above transmission lines as per Protection manual for Maharashtra was discussed. Further it was decided to review the existing policy & PCC committee has approved the same.

CE (ACIP) MSETCL CO, Mumbai presented the existing Philosophy for Provision of Line differential Relays for 132kV & above Transmission Line as per Protection manual for Maharashtra System.

As per "Protection Manual for Maharashtra System", for 400kV & above Transmission lines, the provision of both Main-1 & 2 protection should be line differential cum distance relay, whereas 132kV & above Transmission line, the provision of Main-2 protection should be line differential cum distance for all sub-stations in Mumbai & MMR region & for other region, critical / grid connected s/s or short lines having OPGW. However short line length is not defined in the said manual.

Further, he informed that as per Central Electricity Authority (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations, 2022, schedule-V: For short line (less than 10 km) or cable or combination of overhead line and cable, line differential protection shall be used with built-in backup distance protection.

Considering the above aspect, the change in the protection philosophy for Provision of Line differential Relays for 132kV & above Transmission Line was put for approval in the 8th PCC meeting held on 07.11.2024 & PCC committee has in-principle accorded the approval for the same.

The revised Philosophy for Provision of Line differential Relays for 132kV & above Transmission Line discussed during the GCC meeting is as under,

As per Protection Manual for Maharashtra System		**Approved by 8th PCC Meeting**
400kV & above Transmission lines	Main-1 & 2 protection should be line differential cum distance relay	Main-1 & 2 protection shall be line Differential cum distance relay.
132kV & above Transmission line	Main-2 protection should be line differential cum distance for all sub-stations in Mumbai & MMR region & for other region, critical / grid connected s/s or short lines having OPGW. However short line length is	• For 220kV Transmission line Main-1 shall be distance relay & Main2 shall be line differential for all lines emanating from sub-stations in MMR region irrespective of line length and for other region excluding MMR, transmission lines having line length less than 10kM (Short line) or cable or

	not defined in the said manual.	combination of overhead line and cable & having zone-1 setting issue/problem. The provision of OPGW or separate optic fibre cable for the Communication shall be ensured. • <u>For 132kV Transmission line</u> Main-1 shall be distance relay & Main2 shall be line differential for transmission lines having line length less than 10kM (Short line) or cable or combination of overhead line and cable & having zone-1 setting issue/problem. The provision of OPGW or separate optic fibre cable for the Communication shall be ensured.

Executive Director, MSLDC stated that the above change in philosophy & provision of line differential relay for short line having line length 10kM for 220kV & 132kV transmission lines is in-principally accepted, however for 400kV transmission lines, there is need to define the line length criterion by evaluating the protection reliability aspect in case of lines having longer lengths by confirming its operational suitability. CE (ACIP) MSETCL stated that the matter will be discussed with different OEMs.

The GCC committee has in-principally accepted the above change in philosophy for provision of line differential relay for 220kV & 132kV transmission lines and suggested that the long length and the protection reliability aspect for 400kV lines be discussed in the PCC after consultation with OEM.

All GCC members took note of the discussions.

3.3: Agenda Points received from STU
(Maharashtra Transmission Committee (MTC):

Agenda Point No. 1:

Scheme of enhancement of transformation capacity by replacement of existing 2x25 MVA, 220/33 kV T/Fs by 2x50MVA, 220/33 kV T/Fs at 220 kV Sawangi S/s under EHV (O&M) Circle CSN in EHV PC (O&M) zone, CSN.

CE- STU placed before the GCC a proposal for Scheme of enhancement of transformation capacity by replacement of existing 2x25 MVA, 220/33 kV T/Fs by 2x50MVA, 220/33 kV T/Fs at 220 kV Sawangi S/s under EHV (O&M) Circle CSN in EHV PC (O&M) zone, CSN. CE - STU highlighted that the 220kV Sawangi Substation is commissioned in the year 2007. Present installed capacity of 220kV Sawangi S/s is 50 MVA consisting of 2 nos of 2X25 MVA, 220/33 kV T/fs. This substation feeds the urban & rural load demand of CSN District. Average maximum loading reached on both the T/Fs are about 60 % of installed capacity. CE - STU explained that MSEDCL has informed that under the RDSS (Revamped Distribution Sector Scheme – reform-based and results-driven), the following 33/11 kV substations are proposed by MSEDCL: 33 kV Kachara Depot , 33 kV Filter Bed, 33 kV Bhagat Singh Nagar, 33 kV for 132 kV Harsool premises, 33 kV Zilla Parishad Ground.

Accordingly, an estimated additional load of 30–40 MW is expected to be added to the 220 kV Sawangi Substation in the near future. To handle this anticipated demand, capacity expansion at the 220 kV Sawangi Substation is require. CE - STU explained that land is not available at 220kV Sawangi sub-station for augmentation of Substation by addition of new 220/33kV, 25/50MVA power transformer. Hence, here in this case the augmentation of Substation is proposed by carrying out the replacement of existing 2x25MVA, 220/33kV by new 2x50MVA 220/33kV power transformers. Hence, there is no land constraint. During outage/tripping of any one of the T/F, load is not managed on other T/F i.e. not satisfying (N-1) criteria. Hence considering the present loading condition, future load demand of MSEDCL, outage constraints and to satisfy (N-1) criteria replacement of T/Fs is proposed at 220kV Sawangi S/s.

The Estimated cost of the scheme is **Rs. 2053.95 Lakh.** This scheme will be commissioned in **FY 2025-26.**

The said scheme is recommended in 12th MTC meeting Date: 27.01.2025 agenda Pt. 02.

In order to meet the present & future load requirement, N-1 compliance & enhance system reliability and stability after detailed deliberation and discussion, GCC Approved the Scheme.

Agenda point no. 2:

Scheme of enhancement of transformation capacity by addition of 1x50 MVA, 132/33 kV T/F at 132 kV Majalgaon sub-station in EHV (O&M) Dn., Beed and replacement of existing 2x25 MVA, 132/33 kV T/Fs by 2x50MVA, 132/33 kV T/Fs at 132 kV Niwali S/s under EHV (O&M) Dn., Latur in EHV PC (O&M) zone, CSN.

CE- STU placed before the GCC the proposal for "Scheme of enhancement of transformation capacity by addition of 1x50 MVA, 132/33 kV T/F at 132 kV Majalgaon sub-station in EHV (O&M) Dn., Beed and replacement of existing 2x25 MVA, 132/33 kV T/Fs by 2x50MVA, 132/33 kV T/Fs at 132 kV Niwali S/s under EHV (O&M) Dn., Latur in EHV PC (O&M) zone, CSN".

A) 132/33 kV Majalgaon S/s

CE- STU submitted that the 132kV Majalgaon Substation was commissioned in the year 1999. Present installed capacity of 132kV Majalgaon S/s is 100 MVA consisting of 2X50 MVA, 132/33 kV T/fs. The substation supplies power to rural, agricultural, and MIDC (Maharashtra Industrial Development Corporation) loads in Majalgaon and Wadwani Taluka of Beed District. CE - STU highlighted that average maximum loading reached on both the T/Fs are about 58 % of installed capacity. Under the RDSS scheme, MSEDCL has proposed the construction of new 33/11kV substations with a combined capacity of 30 MVA. These include 10 MVA MIDC Substation, 5 MVA Purshottampuri Substation, 5 MVA Roshanpur Substation, 5 MVA Kittiadgaon Substation, and 5 MVA Mangrual Substation. CE - STU mentioned that, as part of the RDSS scheme, plans include the installation of a new 5 MVA, 33/11kV transformer at the Mogra Substation and the augmentation of an existing 33/11kV transformer from 5 MVA to 10 MVA at the Majalgaon Substation, bringing the total additional capacity to 15 MVA.

The feasibility of the 33kV Lonisavangi Hydro Project with an 18 MVA load demand has been issued. MIDC has requested a new 132kV substation in Majalgaon vide L.No. office/P76280 dtd 12.02.2024 to cater to a 25 MW load. This load can be managed through the proposed augmentation of the existing 132kV substation. Hence considering the present loading condition, future load demand of MSEDCL, outage constraints and to satisfy (N-1) criteria, addition of T/F is proposed at 132kV Majalgaon S/s by MSETCL.

B) 132/33 kV Niwali S/s

CE- STU submitted that the 132kV Niwali Substation is commissioned in the year 2012. Present installed capacity of 132kV Niwali S/s is 50 MVA consisting of 2 nos of 2X25 MVA, 132/33 kV T/fs. The 132/33 kV transformers supply part of Latur (Rural) Taluka, part of Dharashiv Taluka, and their surrounding areas. Load demand at the 33 kV level in these regions is steadily increasing, particularly during the Rabi season, due to factors like growing agricultural needs and urbanization. Average maximum loading reached on both the T/Fs are about 75 % of installed capacity. CE - STU highlighted that during outage/tripping of any one of the T/F, load is not managed on other T/F i.e. not satisfying (N-1) criteria. Hence considering the present loading condition, future load, outage constraints and to satisfy (N-1) criteria replacement of T/Fs is proposed at 132 kV Niwali S/s, by MSETCL.

The Estimated cost of the scheme is **Rs. 24.97 Cr.** The scheduled commissioning year for work scheduled for Majalgaon S/s is **FY 2026-27** and for 132 kV Niwali S/s is **FY 2025-26.**

The said scheme is recommended in 12th MTC meeting Date: 27.01.2025 agenda Pt. 03.

In order to meet the present & future load requirement, N-1 compliance & enhance system reliability and stability after detailed deliberation and discussion, GCC Approved the Scheme.

Agenda Point No. 3:

Scheme of enhancement of transformation capacity by Addition and Replacement of Transformers at 07 Nos. of sub-stations under EHV O&M Circle Nashik under EHV PC (O&M) zone, Nashik (132 kV Kalwan, 132 kV Mhasrul, 132 kV Malegaon, 132 kV, Adgaon, 132 kV Taharbad, 132 kV Igatpuri and 132 kV Pimparkhed sub-stations)

CE- STU placed before the GCC a proposal for "Scheme of enhancement of transformation capacity by Addition and Replacement of Transformers at 07 Nos. of sub-stations under EHV O&M Circle Nashik under EHV PC (O&M) zone, Nashik (132 kV Kalwan, 132 kV Mhasrul, 132 kV Malegaon, 132 kV, Adgaon, 132 kV Taharbad, 132 kV Igatpuri and 132 kV Pimparkhed sub-stations)".

A) Kalwan Sub-station:-

The 132kV Kalwan Substation is commissioned in the year 1988. 132kV Kalwan substation is feeding partly urban, rural and agricultural load under Nashik District. Maximum loading reached on T/F 1 & 2 are about 70 % of installed capacity. During outage/Breakdown of one of the T/F, load is not managed on other T/F i.e. not satisfying (N-1) criteria. Hence considering the present loading condition, outage constraints and to satisfy (N-1) criteria addition of T/F is proposed at 132kV Kalwan S/s

B) 132kV Mhasrul Substation

The 132kV Mhasrul Substation was commissioned in the year 2002. 132 kV Mhasrul substation is the substation feeding the load of area near Nashik district. Maximum loading reached on T/F No.1 is above 85 % of installed capacity. Urban load also about 58%. During outage/Breakdown of either of the T/F, load is not managed on other T/F i.e. not satisfying (N-1) criteria. Hence considering the present loading condition, outage constraints and to satisfy N-1 criteria addition of T/F is proposed at 132kV Mhasrul S/s.

C) Malegaon

The 132 kV Malegaon Substation was commissioned in 1978. The substation supplies power to a mix of industrial, urban, rural, and agricultural areas in Malegaon Taluka of Nashik district. Maximum loading on all the three T/Fs is about 75% of their installed capacity. Load growth in the region is steadily increasing, making it essential to ensure sufficient capacity at the 132 kV Malegaon Substation. Although space is available for three additional 33 kV feeders, future commissioning of these feeders could strain the substation's ability to meet demand. Therefore, the addition of a 50 MVA, 132/33 kV transformer is necessary. Over the next three years, a 10% increase in load is projected due to regional growth in industrial, urban, and rural sectors. Hence considering the future loading, outage constraints and to satisfy (N-1) criteria addition of T/F is proposed at 132kV Malegaon S/s.

D) Adgaon

The 132 kV Adgaon Substation was commissioned in the year 2003. Maximum load on both the T/Fs reaches to 63% of its MVA capacity. A load increase of approximately 10 MVA is expected in the next three years in the region, due to new major projects, including electric vehicle charging stations and the growth of industrial, urban, and rural areas. During the upcoming Kumbh Mela in 2026, there is likely to be an additional load increase in the Sadhugram area, which is supplied by the 132 kV Adgaon Substation. Hence considering the future loading, outage constraints and to satisfy (N-1) criteria addition of T/F is proposed at 132kV Adgaon S/s.

E) **132 kV Taharabad S/s**

The 132 kV Taharabad Substation was commissioned in the year 2014. It supplies power to the Satana Taluka and area of Nashik District around the 132kV Taharabad Substation. The average maximum load on both transformers are about 55% of its installed capacity. Also MSEDCL has planned to add 33kV Gholwad (10 MVA), Dasawel (5 MVA) and Nitane (10 MVA) under RDSS scheme vide L.No. EE/NSKRD/T/DY (O)/1730 dated 21.03.2024. Hence considering the future loading, outage constraints and to satisfy (N-1) criteria replacement of T/Fs is proposed at 132kV Taharabad S/s.

F) 132 kV Igatpuri S/s

The 132 kV Igatpuri Substation was commissioned in the year 1965. It supplies power to the rural and agricultural areas of Nashik city and handles generation evacuation of approximately 106 MW from hydroelectric sources at 132kV level, as well as catering to central railway loads. The average maximum load on the 25 MVA, 132/33 kV Transformer 1 has exceeded 90% of its installed capacity. MSEDCL has proposed 33 kV feeders for Bhavali Dam (10 MVA), MSRDC Samruddhi Highway (10 MVA), and Waki (5 MVA) under RDSS scheme. Space constraints here, so replacement proposed. Hence considering the future loading, outage constraints and to satisfy (N-1) criteria replacement of T/F is proposed at 132kV Igatpuri S/s.

G) 132 kV Pimparkhed S/s

The 132 kV Pimparkhed Substation was commissioned in the year 1994. This substation feeding supply to Important load of EHV Consumer i.e Railway and part of Nandgaon Tahasil including Nandgaon City & most of the load covered by SS is rural and agricultural load under Nandgaon taluka of Nashik. During outage/tripping of any one of the T/F, load is not managed on other T/F i.e. not satisfying (N-1) criteria. Hence considering the future loading, outage constraints and to satisfy (N-1) criteria replacement of T/F is proposed at 132kV Pimparkhed S/s.

The Estimated cost of the complete scheme is **Rs. 77.32 Cr.** The scheduled commissioning year **for the cited scheme is FY 2027-28.**

The said scheme is recommended in 12th MTC meeting Date: 27.01.2025 agenda Pt. 04.

In order to meet the present & future load requirement, N-1 compliance & enhance system reliability and stability after detailed deliberation and discussion, GCC Approved the Scheme.

Agenda Point No. 4:

Establishing a 33 kV voltage level by providing additional 2 x 25 MVA, 220/33 kV transformers, along with 6 x 33 kV bays, 2 x 33 kV PT bays, a 33 kV bus with a bus sectionaliser bay, and a 220 kV bus extension at the 220 kV Warud substation, under the EHV PC O&M zone Amravati

CE- STU placed before the GCC a proposal for "Establishing a 33 kV voltage level by providing additional 2 x 25 MVA, 220/33 kV transformers, along with 6 x 33 kV bays, 2 x 33 kV PT bays, a 33 kV bus with a bus sectionaliser bay, and a 220 kV bus extension at the 220 kV Warud substation, under the EHV PC O&M zone Amravati

220kV Warud substation is commissioned in the year 2021 and presently having installed capacity of 200MVA which includes 2 X 100 MVA, 220/132kV ICTs. The Executive Director (Distribution) MSEDCL, Vide L.No. ED (Dist)/SE(Planning)/33kV level at 220/ 132kV Warud/ 32393 dated 14.10.2024, submitted the requirement of 33kV level creation by erection of 2X 25MVA, 220/33kV T/Fs at existing 220kV Warud S/s As mentioned in the aforesaid letter 33kV level creation by addition of 2X 25MVA, 220/33kV T/Fs at 220kV Warud S/stn is approved by CMD, MSEDCL. At present existing 132/33kV Morshi and 132/33kV Warud EHV substation which fed power supply to Morshi and Warud Taluka in Amravati district. The installed capacity of 132/33kV Morshi S/s is 2X25MVA, 132/33kV i.e. 50 MVA and Maximum demand recorded on substation is 38.8 MVA (i.e. 78% loaded against 50MVA) There are 6 nos of outgoing feeder having 10 nos of 33/11kV substation and one HT consumer which are connected to 132kV Morshi substation with total connected capacity of 83.8 MVA. The installed capacity of 132/33kV Warud S/s is 2X25MVA, 132/33kV i.e. 50 MVA and Maximum demand recorded on substation is 41.4 MVA (i.e. 83% loaded against 50MVA). There are 5 nos of outgoing feeder having 10 nos of 33/11kV substation with total connected capacity of 98.15 MVA. Also, new 2X 5MVA, 33/11kV Karajgaon substation is proposed under upcoming RDSS scheme. Both EHV substations are currently operating above 77% loading. Due to space limitation, expanding the infrastructure at this location is not possible.

CE -STU pointed that, the quantum of load diversion and estimated load to be added may be confirmed. CE - STU have confirmed that, 35 MVA for new load and 33 MVA shifting load is considered while scheme preparation. AEML-T representative asked that which load MSETCL considering for future (estimated connected load or estimated load demand). EE-O&M submitted that data are collected from DISCOM (estimated installed capacity).

The estimated cost of the scheme is **Rs. 2648.40 Lakh.** The cited work proposes to be commissioned in **FY 2025-26.**

The said scheme is recommended in 12th MTC meeting Date: 27.01.2025 agenda Pt. 05.

In order to meet the present & future load requirement, N-1 compliance & enhance system reliability and stability after detailed deliberation and discussion, GCC Approved the Scheme.

Agenda Point No. 5:

Scheme of Installation of new 1x125 MVAR, 400 kV Bus Reactor with allied Bay equipment at 400 kV Waluj sub-station, Dist.- CSN

CE-STU placed before the GCC a proposal for "Scheme of Installation of new 1x125 MVAR, 400 kV Bus Reactor with allied Bay equipment at 400 kV Waluj sub-station, Dist.- CSN".

CE - STU submitted that 400 kV Waluj sub-station is commissioned in year 1999. The total installed capacity of this sub-station is 1341 MVA, the details of ICTs in service are as below.

a) 400/220/132kV, 315 MVA ICT-I b) 400/220/132kV, 315 MVA ICT-II

c) 400/220kV, 501 MVA ICT-III d) 220/33kV, 80 MVA TF-I

e) 220/33kV, 80 MVA TF-II f) 220/33kV, 50 MVA TF-III

CE - STU highlighted that 400 kV Waluj sub-station is one of the major grid-connected sub-station connecting MSETCL 400 kV Substations Khadka, Babhleshwar, Thaptitanda, Deepnagar as well as

PGCIL 765/400 KV Chittepimpalgaon (CSN), 765/400 KV GIS Pune (Shikhrapur) substation & caters most of the load of Chhatrapati Sambhaji Nagar District. Being major grid connected & generation station connected 400kV SS, there is a issue of over voltages at 400kV Waluj SS. CE - STU explained that these overvoltage issues are temporarily resolved by keeping 400 kV Waluj - Bhusawal (Khadka) line out of service by hand tripping during night hours in consultation with LD. Hence, the scheme for Installation of 1 x 125 MVAR, 400 kV Bus Reactor at 400 kV Waluj sub-station, Dist. CSN was sanctioned vide BR No. 146/10 dtd.16.03.2021 at a total estimated cost of **Rs.1988.47 lakhs** (including IDC component of Rs.244.81 lakhs). Moreover, MERC had approved the In-Principle approval for the said scheme for cost of Rs.19.04 Crs against the claim of Rs.19.88 Crs of MSETCL.

Due to inadequate response & higher rates for similar works, the tender for said works could not be finalized by Projects section. Board approval validity exhausted in March, 2023. Hence the revised scheme of 125 MVAr Reactor is proposed with costing Rs. 24.70 Cr.

The estimated cost of the scheme is **Rs. 2470.31 Lakh.** The cited work proposes to be commissioned in **FY 2025-26.**

The said scheme is recommended in 12th MTC meeting Date: 27.01.2025 agenda Pt. 06.

In order to maintain the voltage profile, within specified limit, after detailed deliberation and discussion, GCC Approved the Scheme.

Agenda Point No. 6:

Scheme of installation of new 2x80 MVAR, 400 kV line Reactor for 400 kV Kumbhargaon-Chandrapur Ckt-1 & Ckt-2 line with allied equipment at 400 kV Kumbhargaon sub-station under CSN

CE - STU placed before the GCC a proposal for "Scheme of installation of new 2x80 MVAR, 400 kV line Reactor for 400 kV Kumbhargaon-Chandrapur Ckt-1 & Ckt-2 line with allied equipment at 400 kV Kumbhargaon sub-station under CSN

CE - STU submitted that 400 kV Kumbhargaon Substation (Dist. Nanded) is very vital sub-station under EHV O&M Circle Parli. The total installed capacity of this sub-station is 1,002 MVA, the details of ICTs in service are as below:

i) 400/220kV, 501 MVA ICT-I
ii) 400/220kV, 501 MVA ICT-II

CE - STU highlighted that 400kV Kumbhargaon sub-station (Dist. Nanded) is one of the major grid-connected sub-station connecting 400kV Chandrapur Ckt-1 (277 KM) & 400kV Chandrapur Ckt-2 (301 KM) and 400kV Girwali Ckt-1 (160 KM) & 400kV Girwali Ckt-2 (163 KM). Also 220kV Waghala Ckt-1 & Ckt-2, 220kV Jalkot Ckt-1 & Ckt-2, 220kV Krishnur Ckt-1 & Ckt-2 and 220kV Bhokar Ckt-1 & Ckt-2 & caters most of the load of Nanded District. CE - STU submitted that 400kV Kumbhargaon SS (Dist. Nanded) having long length 400kV lines, there is the issue of over voltage. As per MERC Grid Code-2020, Part-C (Operating Code), Sr. No 37.13, the prescribed limits for maintaining bus voltage at 400kV bus is ±5% i.e., 380kV to 420kV. However, is seen that the limits of over voltage are crossed at 400kV Kumbhargaon SS many times. As such, the scheme for Installation of 2 x 80MVAR, 400 kV Line Reactor at 400 kV Kumbhargaon sub-station, Dist. Nanded was sanctioned vide **BR No. 136/42 Dt.29.07.2019** at a total estimated cost of Rs.1581.41 lakhs (including IDC component of Rs. 89.51 lakhs). Accordingly, Hon. MERC had approved the In-Principle approval for the said scheme for cost of Rs.15.59 Crs against the claim of

Rs.15.81 Crs. of MSETCL. Due to inadequate response & higher quoted rates by bidders, the tender could not be finalized by Projects section. Validity of Board Approval was exhausted. Hence the revised scheme of 80 MVAr Reactor is proposed, with revised cost. CE - STU explained benefits of scheme as follows: Voltage profile will be maintained in the system. 400 kV line tripping on over voltage can be avoided. Overvoltage stresses on equipment insulation will be reduced, which will result in increase in life of equipment. Protection of substation equipment against overvoltage condition will be ensured.

CE- STU mentioned that these being Line reactors the provision of switchable Line reactors is essential considering the Operational aspect. & MTC directed MSETCL to explore the feasibility of switchable Reactor considering the operational aspects and resubmit he proposal for approval of MTC. The said agenda point is to apprise the views of the MTC to GCC

The estimated cost of the scheme is **Rs. 3175.98 Lakh.** The cited work proposes to be commissioned in **FY 2025-26.**

After detailed deliberation and discussion, GCC referred back the scheme to MTC for reverification.

Agenda Point No. 7:

Scheme of Installation of new 1x125 MVAR, 400 kV Bus Reactor with allied Bay equipment at 400 kV Kudus sub-station under Vashi zone.

CE - STU placed before the GCC a proposal for "Scheme of Installation of new 1x125 MVAR, 400 kV Bus Reactor with allied Bay equipment at 400 kV Kudus sub-station under Vashi zone".

CE - STU submitted that 400 kV Kudus Substation is very vital sub-station under EHV O&M Circle Kalwa. The total installed capacity of this sub-station is 1000 MVA, the details of ICTs in service are as below. a) 400/220kV, 500 MVA ICT-I b) 400/220kV, 500 MVA ICT-II. 400kV Kudus S/s is very important Substation in the grid. As per the overvoltage data, the over voltage duration (i.e. voltage above 420 KV) is max instant of total duration during year. Also, the overvoltage causes stress on insulation of other equipment which may lead to failure of equipment. CE - STU highlighted that at 400kV R.S. Kudus, there are 17 Nos. of 400 kV bays including tie bays {i.e. 400kV PGCIL Padghe 1 (Import), PGCIL Padghe 2 (Import), 400kV PGCIL Kala 1, 400kV PGCIL Kala 2 (Export), ICT 1, ICT 2 are in service. As well as 400kV Babhleshwar 1 (Proposed), Babhleshwar 2 (Proposed), Tarapur (Proposed), Padghe (Proposed) are upcoming lines ICT 3 (Proposed), Other 06 Nos are tie bays}, in addition to above, the 400KV incoming lines i.e Babhaleshwar-Kudus work is under progress. In view of the above upcoming lines and to control of over voltages, and to reduce the damage of equipment due to the high voltage stresses the Reactor scheme was proposed.

By absorbing reactive power, bus reactors can improve voltage stability on the grid. This helps to prevent voltage collapse or instability, which can occur when there is an excess of reactive power on the system. Therefore, by adding reactors to a power system, the reactive power balance can be adjusted improving voltage stability.

The installation of 400 kV, 1 x 125 MVAr bus reactor at 400 kV Kudus sub-station was included in STU Plan 2018-19 to 2023-24 for the year 2020-21 & same is also included in year 2025-26 of 10 years STU plan of 2024-25 to 2033-34 on last page of Vashi zone scheme. CE - STU submitted that due to due to insufficient MVAr compensation. There is necessity of reactor at 400 kV Kudus sub-station. As such, the scheme for Installation of 1 x 125 MVAR, 400 kV Bus Reactor at 400 kV

Kudus sub-station, Dist. Vashi was sanctioned vide BR No. 146/08 dtd.22.01.2021 at a total estimated cost of Rs.1613.20 lakhs (including IDC component of Rs.198.61lakhs). Moreover, MERC had approved the In-Principle approval for the said scheme for cost of Rs.15.45Crs. against the claim of Rs.16.13 Crs of MSETCL. As per administrative approval, SRM e-tender for the said scheme was floated by Project section. Due to inadequate response & higher rates for similar works, the tender could not be finalized by Projects section. The Board approval was valid up to Jan 2023 only. Hence the revised scheme of 125 MVAr Reactor is proposed, with revised cost.

The estimated cost of the scheme is **Rs. 2379.39 Lakh.** The cited work proposes to be commissioned in **FY 2025-26.**

The said scheme is recommended in 12th MTC meeting Date: 27.01.2025 agenda Pt. 08.

In order to maintain the voltage profile, within specified limit, after detailed deliberation and discussion, GCC Approved the Scheme.

Agenda Point No. 8

Scheme of replacement of existing 0.5 ACSR Twin Moose Conductor along with insulators and hardware by Twin HTLS Conductor equivalent to 0.5 ACSR Moose Conductor & allied hardwares & insulators of 400 kV Kalwa - Talegaon, Kalwa - Kharghar, Kharghar-Talegaon (DC) line and 400 kV Kalwa - Kharghar Bays at 400 kV RS Kalwa, 400 kV RS Kharghar and PGCIL Talegaon under Vashi and Pune Zone.

CE - STU placed before the GCC a proposal for "Scheme of replacement of existing 0.5 ACSR Twin Moose Conductor along with insulators and hardware by Twin HTLS Conductor equivalent to 0.5 ACSR Moose Conductor & allied hardwares & insulators of 400 kV Kalwa - Talegaon, Kalwa - Kharghar, Kharghar-Talegaon (DC) line and 400 kV Kalwa - Kharghar Bays at 400 kV RS Kalwa, 400 kV RS Kharghar and PGCIL Talegaon under Vashi and Pune Zone".

CE - STU submitted that, this scheme is put up in front of GCC for Appraisal. Previously this scheme was presented in 11th MTC and recommended by MTC with costing Rs.503.53 Cr. However, the cost of scheme is increased to 621.70 Cr due to consideration of revised Overheads as per Circular No. 7913 dt.13.11.2024 while preparing estimates of scheme which is mentioned.

CE- STU mentioned that, MTC recommended the scheme for submission to GCC for approval subject to coordination with other utilities to complete the associated work at their end within matching timelines.

The cost of the Scheme is **Rs. 621.70 Cr.** Cited Work will be commissioned in **FY 2026-27**

The said scheme is recommended in 12th MTC meeting Date: 27.01.2025 agenda Pt. 09.

In order to meet the present & future load requirement, for evacuation of upcoming RE generation, to address the overloading problems, enhance system reliability and stability after detailed deliberation and discussion, GCC Approved the Scheme & directed STU to coordinate with other ISTS/InSTS transmission licensees for associated elements at Talegaon (PG), Navi Mumbai (PG) ,Adani & KVTL so as to complete the work in coordination .

Agenda Point No. 9:

Scheme of replacement of existing Twin 0.5 Moose Conductor, insulators, all accessories and hardwares by equivalent Twin High Performance Conductor along with insulators & suitable hardwares & accessories of 400kV Lonikand to Chakan line (25km) along with associated bay strengthening work at 400kV Lonikand- I & 400kV Chakan substation

CE - STU placed before the GCC a proposal for "Scheme of replacement of existing Twin 0.5 Moose Conductor, insulators, all accessories and hardwares by equivalent Twin High Performance Conductor along with insulators & suitable hardwares & accessories of 400kV Lonikand to Chakan line (25km) along with associated bay strengthening work at 400kV Lonikand- I & 400kV Chakan substation"

CE - STU highlighted 400 kV Chakan substation is having two transmission lines, i.e. 400 kV Talegaon (PG) to Chakan & 400 kV Lonikand I to Chakan line. Both these lines are in service since dtd. 23/03/1992 (33 years). At present, Pune transmission ring main system is facing critical operational constraints due to increase in loading of Pune District. To remove the transmission constraints and strengthening of present transmission network, following projects were planned & envisaged to be commissioned on Top- Priority : Conversion of existing S/C 220kV Chinchwad-Urse corridor into M/ckt corridor (Package A/B/C under BR No. 69/17 dt. 31.12.2011.) Establishment of 400/220kV Hinjewadi substation. 220kV D/C line from 400kV Talegaon (PG) substation to 220kV Chakan MIDC Phase-II substation (6km) 220kV LILO on 220kV Chinchwad-Telco S/C line at 400 220kV level creation at 765kV Shikrapur PG substation. The delay in commissioning of above projects is resulting into critical operation of Pune district transmission network & Pune ring main system. This results into frequent operation of LTS which leads to power cut off in Pune city. The rapid urbanization & industrialization of Pune city & nearby area is at its peak and present transmission system stretching beyond its capacity to match the rising load demand due to delayed projects. This required immediate remedial action to cope up alarming loading condition in Pune transmission network.

CE - STU explained that 400kV Talegaon (PG) substation act as main power source to 400kv Lonikand-I & Chakan substation through 400kV Talegaon(PG)- Chakan S/C line, 400kV Talegaon(PG)- Lonikand-I S/C line & 400kV Chakan- Lonikand-I line. In case of failure of 400kV Talegaon (PG)- Chakan line, 400kV Talegaon(PG)- Lonikand –I S/C & 400kV Lonikand-I-Chakan lines act as source for 400kV Lonikand-I & 400kV Chakan substations respectively. The thermal limit of 0.5 ACSR twin moose conductor of above lines is 1600A. The peak load observed in the recent condition of 400kV Talegaon (PG)- Chakan is around **1350A**. In case of breakdown on 400kV Talegaon (PG)- Lonikand-I line, the loading of 400kV Talegaon(PG)- Chakan RS exceeds 1400A & LTS operates. Also, in case of 400kV Talegaon(PG)- Lonikand-I line, the maximum loading observed in recent condition is around 942A. Maximum load reached on 400 kV Lonikand I to Chakan during the year 2023-24 is **386 MW**. CE - STU added that recently, major occurrences observed due to overloading of any one of above lines and LTS operated causing power disruption in Pune city which caused economic loss to MSEDCL & MSETCL.

The cost of the Scheme is **Rs. 7251.89 Lakhs.** Cited Work will be commissioned in **FY 2026-27.**

The said scheme is recommended in 12th MTC meeting Date: 27.01.2025 agenda Pt. 10.

In order to meet the present & future load requirement, to address the overloading problems, enhance system reliability and stability after detailed deliberation and discussion, GCC Approved the Scheme.

Agenda Point No. 10:

Scheme of replacement of existing twin 0.5 Moose conductor, insulators, all accessories & hardwares by equivalent new high performance conductor (twin HTLS conductor having current carrying capacity 3000A) along with insulators & suitable hardwares & accessories of 400 kV Talegaon (PG) to Lonikand- I line (42.57 km) (for MSETCL portion only) along with associated bay strengthening work at 400kV Lonikand -I substation under Pune Zone

CE - STU placed before the GCC a proposal for "Scheme of replacement of existing twin 0.5 Moose conductor, insulators, all accessories & hardwares by equivalent new high performance conductor (twin HTLS conductor having current carrying capacity 3000A) along with insulators & suitable hardwares & accessories of 400 kV Talegaon (PG) to Lonikand- I line (42.57 km) (for MSETCL portion only) along with associated bay strengthening work at 400kV Lonikand -I substation under Pune Zone

CE - STU explained scope of work, for cited scheme:

- Supply of High Performance Conductor (HPC) along with allied hardwares & accessories equivalent to existing 0.5 Moose conductor, Long rod anti fog porcelain insulators etc. Dismantling of existing 0.5 Moose conductor with all accessories & hardwares and transportation of removed/dismantled materials to 400kV Chakan RS Division site store. Stringing of HPC conductor along with allied hardwares, accessories & Long rod anti fog porcelain insulator etc. Strengthening of end bay at 400kV Lonikand-I substation.

CE - STU submitted that 400kV Talegaon (PG) - Lonikand-I line was commissioned on 08.07.2013 by making LILO on existing 400kV Lonikand-I - Kalwa line commissioned on 17.02.1990, which has completed almost 35 years of service life. The details of 400kV Talegaon (PG) - Lonikand-I line is as follows:-

- Total no. of towers: 110 nos. S/C towers (MSETCL) & 07 nos. D/C towers (Adani)
- Total no. of cut point towers on S/C, D/C: 21 nos. S/C (MSETCL) & 07 nos. D/C (Adani)

CE - STU added that the scope of replacement of twin moose conductor from loc. no. 111 to 117 (Adani) & bay strengthening work at 400kV Talegaon(PG) substation is not covered in this scheme, which is a part of CTU/ISTS. The same needs to be strengthened for fully utilization of corridor capacity.

At present, Pune transmission ring main system is facing critical operational constraints due to increase in loading of Pune District. To remove the transmission constraints and strengthening of present transmission network, following projects were planned & envisaged to be commissioned on **Top- Priority**

a) Conversion of existing S/C 220kV Chinchwad-Urse corridor into M/Ckt corridor (Package A/B/C under BR No. 69/17 dt. 31.12.2011.)
b) Establishment of 400/220kV Hinjewadi substation.
c) 220kV D/C line from 400kV Talegaon (PG) substation to 220kV Chakan MIDC Phase-II substation (6km).
d) 220kV LILO on 220kV Chinchwad- Telco S/C line at 400kV Chakan-9km.
e) 220kV level creation at 765kV Shikrapur PG substation.

CE - STU highlighted that the delay in commissioning of above projects is resulting into critical operation of Pune district transmission network & Pune ring main system. This results into frequent operation of LTS which leads to power cut off in Pune city. The rapid urbanization & industrialization of Pune city & nearby area is at its peak and present transmission system stretching beyond its capacity to match the rising load demand due to delayed projects. This required immediate remedial action to cope up alarming loading condition in Pune transmission network.

CE - STU explained that at present, 400kV Talegaon (PG) substation act as main power source to 400kV Lonikand-I & Chakan substation through 400kV Talegaon(PG)- Lonikand-I S/C line, 400kV Talegaon(PG) - Chakan S/C line, & 400kV Chakan- Lonikand-I line. In case of failure of 400kV Talegaon (PG)- Chakan line, 400kV Talegaon(PG)- Lonikand –I S/C & 400kV Lonikand-I-Chakan lines act as source for 400kV Lonikand-I & 400kV Chakan substations respectively

The thermal limit of 0.5 ACSR twin moose conductor of above lines is 1600A. The peak load observed in the recent condition of 400kV Talegaon (PG) - Chakan is around 1350A. In case of breakdown on 400kV Talegaon (PG) - Lonikand-I line, the loading of 400kV Talegaon(PG)-Chakan exceeds **1400A & LTS operates.** Recently, major occurrences observed due to overloading of any one of above lines and LTS operated causing power disruption in Pune city which caused economic loss to MSEDCL & MSETCL

CE-STU mentioned that, this is burning issue and for short term measures. Long term plans also been considered in the STU prospective plan which will provide additional sources to Pune ring main network. Further MTC had directed to coordinate with other stakeholders to carry out associated strengthening at their end in matching timelines.

The estimated cost of the scheme is **₹ 118.83 Cr.** This scheduled commissioning of the cited scheme is in **FY 2026-27.**

The said scheme is recommended in 12th MTC meeting Date: 27.01.2025 agenda Pt. 11.

In order to meet the present & future load requirement, to address the overloading problems, enhance system reliability and stability after detailed deliberation and discussion, GCC Approved the Scheme & directed STU to coordinate with other ISTS/InSTS transmission licensees for associated elements at Talegaon (PG), Navi Mumbai (PG) ,Adani & KVTL so as to complete the work in coordination .

Agenda Point No. 11:

Replacement of existing 0.2 ACSR Panther conductor along with hardwares, insulator strings by HTLS conductor of 132kV Pandharpur-Utopian-Welspun-Mangalwedha & 132kV Pandharpur-Nimboli- Mangalwedha lines along with associated 132kV bay strengthening work under EHV O&M Division, Solapur

CE - STU placed before the GCC a proposal for a scheme for "Replacement of existing 0.2 ACSR Panther conductor along with hardwares, insulator strings by HTLS conductor of 132kV Pandharpur-Utopian-Welspun-Mangalwedha & 132kV Pandharpur-Nimboli- Mangalwedha lines along with associated 132kV bay strengthening work under EHV O&M Division, Solapur

CE - STU submitted that 132kV Pandharpur- Mangalwedha D/C line was commissioned on 31.03.1998. Following substation/Co-generations was made LILO on original 132kV Pandharpur-Mangalwedha line 1 & 2.

Sr.No.	Name of S/S/ Co-Gen	D.O.C.	LILO arrangement
1	132kV Welspun solar	03.10.2013	132kV Pandharpur- Mangalwedha Line – I
2	132kV Utopian Sugar	26.11.2014	132kV Pandharpur- Welspun Line
3	132kV Nimboni s/s	01.04.2021	132kV Pandharpur -Mangalwedha line -II

There are 2x50MVA, 132/33kV T/Fs installed at 132kV Mangalwedha substation & max load reached is around 65MW. Similarly, 132kV Nimboni substation is fed from 220/132kV Pandharpur substation through 132kV line from one end and from 132kV Mangalwedha s/s through other end. There are 2x25MVA, 132/33kV T/Fs installed at 132kV Nimboni substation & max load reached is around 30MW.

CE - STU submitted that currently, 220kV Pandharpur substation is having connectivity from 400kV Lamboti substation via 220kV Pandharpur - Lamboti - 1 Line & 400kV Karad through 220kV Pandharpur – Bhalwani line & 220kV Pandharpur-Khanapur lines. CE - STU added that evacuation of above generations i.e. **215MW** will be carried out through 132kV Mangalwedha-Nimboni-Pandharpur line and Mangalwedha-Welspun Solar-Utopian Cogen-Pandharpur line. In case of tripping or breakdown on either line will results in overloading of other line & generation evacuation constraints in the Mangalwedha-Nimboni-Pandharpur Network.

Hence, to create the transmission margin & to facilitate the generation evacuation through 132kV Mangalwedha-Nimboni-Pandharpur network, it is proposed to replace the existing conductor of 132kV Pandharpur-Nimboni-Mangalwedha line & 132kV Pandharpur-Utpoian cogen-Welspun Solar-Mangalwedha line by high performance conductor. CE - STU explained scope of work for cited scheme as below:

- Supply of High Performance Conductor (HPC) along with allied hardwares & accessories equivalent to existing 0.2 ACSR conductor, Porcelain insulators etc. Dismantling of existing 0.2 ACSR conductor with all accessories & hardwares and transportation of removed/dismantled materials to site store as per instructions of site-incharge. Stringing of HPC conductor along with allied hardwares, accessories & porcelain insulator etc. Strengthening of associated end bays.

CE - STU explained technical benefits of the scheme as follows:

- Enhanced current carrying capacity of the existing corridor using same RoW. Enhanced reliability and availability of 132kV network of Pandharpur-Nimboni-Mangalwedha ss. Grid stability will be improved. Increased transmission capacity to evacuate RE generation, meet future load growth demands.

The Estimated cost of the scheme is **₹ 67.61 Lakh**. The scheduled completion year of said scheme is **FY 2026-27.**

The said scheme is recommended in 12th MTC meeting Date: 27.01.2025 agenda Pt. 12.

In order to meet the present & future load requirement, for evacuation of RE generation, to address the overloading problems, enhance system reliability and stability after detailed deliberation and discussion, GCC Approved the Scheme.

Agenda Point No. 12:

Providing additional 1x50 MVA, 220/22kV T/F along with HV GIS Bay & LV Bays at 220kV Hinjewadi-II S/s under Pune zone.

CE - STU placed before the GCC a proposal for "Providing additional 1x50 MVA, 220/22kV T/F along with HV GIS Bay & LV Bays at 220kV Hinjewadi-II S/s under Pune zone"
CE - STU explained that 220kV Hinjewadi-II S/s was commissioned in year 2009 & caters the load of Hinjewadi-II area, MIDC, IT Park and urban areas through 2x50MVA, 220/22kV T/Fs.
CE - STU highlighted that 220kV Pirangut & 220kV Pegasus lines are the main source to this substation while 2X220kV Hinjewadi-II, Hinjewadi-III GIS lines feed power (around 10MW) to 220kV NXTRA Date EHV consumer via 400kV Hinjewadi-III GIS substation. Also 2X220kV GIS lines will be commissioned soon for the ongoing Pune Metro project. CE - STU highlighted that DISCOM load of 70MVA is sanctioned on T/F-1 & 79.9MVA is sanctioned on T/F-2. It is difficult to manage the load in case of tripping/outage on any of the T/F i.e. Not fulfill N-1 criteria. Hence, to satisfy (N-1) criteria & also to meet the future load demand, additional 1x50 MVA, 220/22kV T/F is proposed at 220kV Hinjewadi-II S/s by CE, EHV PC(O&M) zone, Pune
The Estimated cost of the scheme is **₹ 1093.75 Lakh**, The Scheduled commissioning year of said scheme is **FY 2025-26.**
The said scheme is recommended in 12th MTC meeting Date: 27.01.2025 agenda Pt. 13
In order to meet the present & future load requirement, N-1 compliance & enhance system reliability and stability after detailed deliberation and discussion, GCC Approved the Scheme.

Agenda Point No. 13:

Replacement of 3x50 MVA, 220/22kV T/Fs by 3x100 MVA, 220/22kV T/Fs, 3x22kV Incomer GIS Bays, 2x22kV Bus section GIS bays, 12x22kV GIS Feeder bays at 220kV Telco S/s under Pune zone.

CE - STU placed before the GCC a proposal for "Replacement of 3x50 MVA, 220/22kV T/Fs by 3x100 MVA, 220/22kV T/Fs, 3x22kV Incomer GIS Bays, 2x22kV Bus section GIS bays, 12x22kV GIS Feeder bays at 220kV Telco S/s under Pune zone".

CE - STU submitted that 220kV Telco Sub-Station was commissioned in 19.06.1993 & caters the load of Industrial area, MIDC, TATA motors and urban areas through 3x50MVA, 220/22kV T/Fs. CE - STU added that 220kV Bhosari-I & 220kV Chichwad-II lines are the main sources to this substation. It feeds the power supply of 35MW to M/s TATA motors. Due to uneven loading of 22kV Bus, the transformer needs to be run in parallel many times & cannot be put individual to restrict the fault level. CE - STU highlighted that there is no space available for commissioning additional T/F at 220kV Telco S/s as situated in M/s TATA motors premises in compact space in MIDC area. It is difficult to manage the load in case of tripping/outage on any of the T/Fs i.e. Not fulfill N-1 criteria. The proposed scheme fulfils the augmentation criteria. Hence, to satisfy (N-1) criteria & also to meet the future load demand, replacement of 3x50 MVA, 220/22kV T/Fs by 3x100 MVA, 220/22kV T/Fs is proposed at 220kV Telco S/s by CE, EHV PC(O&M) zone, Pune.
CE -STU mentioned about constraints of lines to be considered & Source lines to be strengthen in same time frame as per said scheme plan and to be executed.

The Estimated cost of the scheme is **₹ 3786.58 Lakh**. The above scheme will be commissioned in **FY 2025-26.**

The said scheme is recommended in 12th MTC meeting Date: 27.01.2025 agenda Pt. 14

In order to meet the present & future load requirement, N-1 compliance & enhance system reliability and stability after detailed deliberation and discussion, GCC Approved the Scheme.

Agenda Point No. 14:

Replacement of 1x10 MVA, 132/22kV T/F by 1x25 MVA, 132/22kV T/F at 132kV Bhatghar S/s under Pune zone.

CE - STU placed before the GCC a proposal of "Replacement of 1x10 MVA, 132/22kV T/F by 1x25 MVA, 132/22kV T/F at 132kV Bhatghar S/s under Pune zone.

CE - STU submitted that 132kV Bhatghar Sub-Station was commissioned in the year 1977 & caters the load of Bhor & Velhe Taluka through 1x25MVA, 132/22kV & 1x10MVA, 132/22kV T/Fs. 132kV Kamthadi & 132kV Shirwal lines are the main sources to this substation and it is attached to Hydro Generation plant having 16MW power generation capacity. CE - STU highlighted that it is difficult to manage the load on 10MVA T/F in case of tripping/outage on 25MVA T/F i.e. Not fulfill N-1 criteria. Hence, to satisfy (N-1) criteria, replacement of 1x10 MVA, 132/22kV T/F by 1x25 MVA, 132/22kV T/F is proposed at 132kV Bhatghar S/s by CE, EHV PC(O&M) zone, Pune.
The Estimated cost of the scheme is **₹ 347.96 Lakh**. The schedule year of commissioning of the above scheme is **FY 2025-26.**

The said scheme is recommended in 12th MTC meeting Date: 27.01.2025 agenda Pt. 15

In order to meet the present & future load requirement, N-1 compliance & enhance system reliability and stability after detailed deliberation and discussion, GCC Approved the Scheme.

Agenda Point No. 15:

Up gradation of voltage level from 22kV level to 33kV Level by replacement of 2X50MVA, 132/22kV T/Fs by 2X50MVA, 132/33kV T/Fs at 132kV Baramati S/s under Pune Zone

CE - STU placed before the GCC a proposal of "Upgradation of voltage level from 22kV level to 33kV Level by replacement of 2X50MVA, 132/22kV T/Fs by 2X50MVA, 132/33kV T/Fs at 132kV Baramati S/s under Pune Zone".

CE - STU explained that 33/11 kV Baramati City substation having installed capacity 20 MVA (2X10MVA) is commissioned under RAPDRP Scheme in the period of 2013-2015. This feeder is nearer to 132/22kV Baramati S/s however, at present it is fed from 220kV Baramati S/s. At present, only one 22kV feeder (Industrial Estate) of Baramati Urban Sub-division is emanating from 132/22 kV Baramati substation.
CE - STU highlighted that considering the growth of Baramati City and MIDC area, MSEDCL has already proposed 3 Nos. of 33/11kV substations namely 33/11kV Urja Bhavan (2X5MVA), 33/11kV Urban Gram (2X5MVA) & 33/11kV Gokulnagar (2X10MVA).

CE - STU added that load of 7 nos. of feeders namely 22kV Pandare (Ag), 22kV Baramati Industrial Estate, 22kV Sawal (Ag), 22kV Anjangaon (Ag), 22kV Anjangaon Gaothan, 22kV Pandare Gaothan and 22kV Sawal Gaothan emanating from 132/22kV Baramati S/s will be shifted on these 3 nos. of proposed MSEDCL S/s.

CE - STU submitted that, the load of 4 Nos. of 33/11 kV Substations (namely Mekhali, Zargadwadi, Pahunewadi & Sangavi) & 6 Nos. of HT Consumer connected at 33 kV Pahunewadi Feeder and load of 2 Nos. of 33/11 kV Substations (namely Kanheri & Parawadi) & 1 No. of HT consumers connected at 33kV Bigwan feeder of 220/33kV Baramati S/s will also be shifted to 132kV Baramati S/s after elimination of 22kV Voltage level and creation of 33kV Voltage level.

CE - STU added that, there is no spare 33kV bay available at nearby 220/33 kV Baramati substation and also possibility of new 33 kV Bay is Nil due to space constraints. Further, there is no other 33kV source available for proposed MSEDCL's substations. At present, MSEDCL's 33/11kV Baramati City substation is fed by 220/33kV Baramati S/s as other alternative 33kV source is not available nearby. Hence, it is required to create 33kV level at 132kV Baramati S/s to feed power to total 4 nos. of 33/11kV MSEDCL S/s i.e. 33/11kV Baramati City (2x10 MVA), 33/11kV Urja Bhavan (2x5 MVA), 33/11kV Gokulnagar (2x5 MVA) & 33/11kV Urban Gram (2x10 MVA). MSEDCL has also confirmed the requirement of elimination of 22kV level & establishment of 33kV level at 132kV Baramati S/s.

Hence, the scheme for up-gradation of voltage level from 22kV level to 33kV Level by replacement of 2X50MVA, 132/22kV T/Fs by 2X50MVA, 132/33kV T/Fs at 132kV Baramati S/s under Pune Zone, is necessary. CE –STU mentioned that, possibility of elimination of 222kv level at EHV substations at Mumbai & Pune Cities may be explored by utilities in coordination with Discoms.

The Estimated cost of the scheme is **₹ 993.30 Lakh**.

The said scheme is recommended in 12th MTC meeting Date: 27.01.2025 agenda Pt. 16

In order to meet the MSEDCL requirement, enhance system reliability and stability after detailed deliberation and discussion, GCC Approved the Scheme.

Agenda Point No. 16:

Replacement of existing 2 x 25MVA, 132/33kV T/Fs by 2 X 50 MVA, 132/33kV T/Fs at 132kV Shaha S/s under EHV O&M Division Nashik

CE - STU placed before the GCC a proposal for "Replacement of existing 2 x 25MVA, 132/33kV T/Fs by 2 X 50 MVA, 132/33kV T/Fs at 132kV Shaha S/s under EHV O&M Division Nashik".

CE - STU submitted that the 132 kV Shaha Substation is commissioned in the year 2023. Average maximum loading reached on both the T/Fs are about 76 % of installed capacity. Due to the indirect connection of the 33 kV Somthane and Wadangali feeders through the Deopur feeder, the load on the 132 kV Shaha Substation has reached 75% of its installed capacity during peak periods. Once the aforementioned feeders from Kopergaon Rural Subdivision are connected, the load is expected to exceed the substation's capacity, potentially leading to transformer tripping or forced load shedding to prevent overload.

CE - STU highlighted that, 220kV Babhaleshwar - Eklahare GCR DCDC line is getting overloaded on daily basis. Considering situation of large ELR in the tune of 200MW to 250MW, it is required to shift some of load from sinner pocket i.e. shifting of some of 33kV feeders from 132kV Sinner (Old) to 132kV Shaha S/s. The relief of around 30MW on Babhaleshwar line will be achieved by shifting of load on 132kV Shaha S/s.

CE - STU added that due to present loading condition, the shifting of 33kV feeders from 132kV Sinner (Old) S/s to 132kV Shaha S/s is not possible. Hence, it is necessary to replace existing 2x25MVA, 132/33kV T/Fs by 2x50MVA, 132/33kV T/Fs at 132kV Shaha S/s, on priority basis.
The estimated cost of the scheme is **Rs. 1361.13 Lakhs.** The cited scheme will commissioned in **FY 2025-26**

The said scheme is recommended in 12th MTC meeting Date: 27.01.2025 agenda Pt. 17
In order to meet the present & future load requirement, N-1 compliance & enhance system reliability and stability after detailed deliberation and discussion, GCC Approved the Scheme and considering the criticality of the scheme directed to complete the above in 2024-25.

Agenda Point No. 17:

Conversion of existing 400 kV Kalwa - Padghe Ckt-I & II SCSC line to DCDC by using Twin HPC conductor.

CE - STU placed before the GCC a proposal for Conversion of existing 400 kV Kalwa - Padghe Ckt-I & II SCSC line to DCDC by using Twin HPC conductor.

CE - STU **submitted that** 400/220 kV Kalwa S/S is a 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 to 400 kV Kalwa S/S from 400 kV Padghe S/S and these two SC lines are on SC towers. 400 kV Kalwa – Padghe Ckt. I and Ckt. II are in service from around 44 years. CE - STU highlighted that in case of tripping or major breakdown on any of the circuit, the other circuit gets overloaded & results in critical condition of the Grid. With the implementation of proposed scheme two additional 400 kV sources will be available to 400 kV Kalwa s/s, which will help in catering the increasing load and future load demand of the Mumbai, Mumbai suburban, Navi Mumbai & Thane Urban areas. These additional two sources can be made available by using MSETCL's same line corridor.
CE - STU explained that projected load of Mumbai & MMR is 5500 MW. Hence, 400 kV Kalwa-Padghe ckt.-I & II will not be sufficient to cater future load. Additional GIS Substation is proposed at 400kV Kalwa premises. Considering future load growth and grid connectivity issued to various consumers, the available Total Transmission Capacity (TTC) of transmission system of MSETCL serving Mumbai region needs to be strengthened. With the completion of the proposed works, reliability of the supply will be increased due to increase in the transmission capacity, Overloading of Sub-stations & lines can be eliminated and future load growth can also be met. The execution of proposed line work is possible only after completion of replacement of existing conductor by HPC conductor of 400kV Kalwa-Padghe ckt-I & II (DoC Ckt-I: 14.01.2025 and DoC Ckt-II: 28.01.2023).
CE - STU **explained Scope of work as follows:**

1) Conversion of existing SCSC 400 kV Kalwa-Padghe ckt-I into DCDC using the same corridor by using HPC Conductor – 30.371 kms - formation of 400 kV Kalwa-Padghe DCDC line ckt-III.
2) Conversion of existing SCSC 400 kV Kalwa-Padghe ckt-II into DCDC using the same corridor by using HPC Conductor – 30.679 kms. & replacement of ACSR conductor of 22.82 kms of existing DCDC line by HPC from Padghe end - formation of 400 kV Kalwa-Padghe DCDC line ckt-IV.

CE - STU explained benefits as follows:

1. Mumbai Metropolitan Region System Strengthening.
2. To bring additional source to 400kV Kalwa S/S.
3. For evacuation of Khavda generation.
4. To enhance loading capacity of 400kV Kalwa – Padghe corridor.
5. To increase reliability and quality of supply.
6. To save transmission loss at 400kV level.

The estimated cost of the scheme is **₹ 962.66 Cr.** The scheduled completion year for said scheme is **2026-27.**

The said scheme is recommended in 12th MTC meeting Date: 27.01.2025 agenda Pt. 18.
GCC opined that existing Kalwa – Padgha Tr. Lines capacities are recently upgraded. As such, reutilization of the same corridor for the proposed scheme will result in compromising the enhanced capacity for execution period. The committee member suggested that the comparison of the present scheme vis-à-vis utilization 220kV Nashik – Padghe circuit by conversion of multi circuit in respect to utilisation of capcity, ease of execution and cost needs to be to be verified and presented to the committee. The committee also opined that in view of the criticality of scheme for Khavda evacuation STU STU should explore the possibility of execution of scheme through TBCB considering a new corridor formation.
After detailed deliberation and discussion, GCC referred back to MTC for reverification.

Agenda Point No. 18:

Construction of LILO on 100 kV Mohane - Amberath Line at 220 kV Jambhul Subsation.

CE - STU placed before the GCC a proposal for "construction of LILO on 100 kV Mohane - Amberath Line at 220 kV Jambhul Subsation".
CE - STU submitted that there are constraints of overloading of Padghe-Mohane-Ambernath 100kV D/C line under contingency. In case, if loading of 100 kV Padghe-Mohane line and Padghe-Ambernath line is increased the entire load will not shift on any other line. Due to this both 100 kV Ambernath s/s and 100 kV Mohane s/s goes into dark, hence N-1 criteria cannot be fulfil.
CE - STU highlighted that Presently, 100 kV Ambernath s/s & 100 kV Mohone s/s arte having single 220 kV source from 400/220 kV Padghe s/s. There are constraints of overloading of Padghe-Mohane-Ambernath 100kV D/C line under contingency. In case, if loading of 100 kV Padghe-Mohane line and Padghe-Ambernath line is increased the entire load will not shift on any other line. Due to this both 100 kV Ambernath s/s and 100 kV Mohane s/s goes into dark, hence N-1 criteria cannot be fulfil.
CE - STU added that work of replacement of existing 0.3 ACSR Goat conductor with High Performance Conductor (HPC) of 100kV Padgha-Ambernath, 100 kV Padgha-Mohane & 100 kV Mohane-Ambernath lines under EHV PC O&M Zone, Vashi is already approved by BR No 167/23 Dated 08.03.2024.

CE - STU submitted that 220 kV Padghe- Jambhul & Padghe- Pal conductor is replaced by HTLS. Further, CE - STU mentioned brief scope of work, of scheme as follows:

Construction of LILO on 100 kV Mohane - Ambernath Line for 220/100 kV Jambhul s/s in new corridor – 5 kms

1) 100 kV line bay at 220 kV Jambhul s/s- 02 nos. with contingencies.
2) Construction of LILO on 100 kV Ambernath - Mohone line at 220 kV Jambhul s/s – 5
   i. 100 kV DC line on DC tower - 4 kms
   ii. Underground cable(2500sqmm) - 1 km

CE - STU highlighted benefits of scheme as follows:

- Second source alternative to 100 kV Ambernath , 100 kV Mohane s/stns & 220 kV Jambhul S/S.
- Reliability and availability of power supply to consumers of Mohane&Ambernath s/s.
- Utilization of under loaded 1x100 MVA + 125 MVA ICT at Jambhul s/s.
- Network improvement work of Vashi Zone.

The estimated cost of the scheme is **₹ 7027 Lakh**. The scheduled completion year for said scheme is **2026-27.**

The said scheme is recommended in 12th MTC meeting Date: 27.01.2025 agenda Pt. 19. The committee opined that the scheme is pending since long due to Forest issue and therefore the cable has been included for the forest portion. It further directed that an execution plan for the same needs to be submitted. Chairman,GCC directed STU to verify the scheme in reference to the upgradation of conductor of 100kV Padghe -Ambernath -Mohana circuits which has already been accorded approval by the committee.He also directed STU to reverify the scheme in co-relation with establishment of proposed 400 kV Ambarnath upgradation of 110 kV Kalyan (TPC-T) to 220 kV and utilization of existing 220 kV Anandngar.

After detailed deliberation and discussion, GCC referred back to MTC for reverification.

Agenda Point No. 19:

Establishment of 400 kV Kalwa GIS S/s. in the premises of existing 400 kV Kalwa, Airoli, Dist. Thane

CE - STU placed before the GCC a proposal for "Establishment of 400 kV Kalwa GIS S/s. in the premises of existing 400 kV Kalwa, Airoli, Dist. Thane".

CE - STU submitted that existing 400/220kV Kalwa substation is commissioned in the year 1981 and served around 43 years old. It Feeds Mumbai region and the average load is 1600-1700 MW (approx.) & maximum load reached is about 1900 MVA. At present, the existing 400/220kV Kalwa s/s having installed capacity of 3 x 500 MVA and 3x200 MVA i.e. total capacity 2100 MVA.

CE - STU highlighted that during N-1 contingency of 1x 600MVA ICT, the load cannot be managed by other ICTs. Also, in future many IT park and data centres are expected in Vashi area.

Hence, the total anticipated load as on existing Kalwa s/s during the year 2027 will be nearly 3900 MW (approx.). And the anticipated load by the year 2034 will reach upto 5957 MW. This upcoming demand cannot met by existing 400/220kV Kalwa s/s. Also, the fault level of existing 400 kV Kalwa s/s has reached 54 kA against permissible fault level of 40 kA. If the existing bus of 400/220kV Kalwa s/s is split-up then the fault level will reduce.

Accordingly in order to cater the upcoming load and to reduce the fault level of existing 400kV Kalwa s/s, it is proposed to establish of new 400/220kV GIS s/s in the same premises. Land is made available by demolishing Office Building, T/F repair shed and staff Quarters.

CE - STU explained scope of work, as below:

1. 3 X 167MVA, 400/220 kV ICT – 3 Nos., with 1 spare 167 MVA ICT along with HV, LV bays.
2. 4 X 400kV bays and 8 X 220kV bays.
3. Re-orientation work of 400kV line using 400kV cables for proposed GIS-I at Kalwa
4. Re-orientation work of 220kV line using 220kV cables for proposed GIS-I at Kalwa.

CE - STU added objective of the scheme:
a) To reduce the fault level at existing 400/220kV Kalwa substation.
b) To address the existing overloading constraint of ICTs at existing 400/220kV Kalwa substation.
c) To cater the upcoming Load in Mumbai & MMR region

CE - STU highlighted benefit of this scheme:

- Reduction in Fault level at 220kV bus.
- Transformation capacity will add upto 1500MVA.
- Evacuation of Khavda generation.
- Reduction in 400/220 kV ICT loading thereby SS will be n -1 compliant.
- Reliable and qualitative supply

CE - STU highlighted that this scheme was recommended in 4th MTC for the cost of Rs. **791.14 Cr. At present** cost increase due change in SOR and considering one and half breaker system in GIS. Land is available at 400 kV Kalwa GIS.

CE-STU informed that re-orientation of lines will be carried out at 400 kV level and 220 kV level only. As the scheme the scheme involves up gradation of existing Substation and thus can be taken up through RTM route however, the relevant process of MERC approval / appraisal to Empowered Committee as defined in MYT regulation shall be followed by STU.

The Estimated cost of the scheme is **Rs. 876.71 Cr.** The scheduled year of completion for the cited scheme is **FY 2025-26.**

The said scheme is recommended in 12th MTC meeting Date: 27.01.2025 agenda Pt. 20.
GCC opined that, possibility of use of Monopole M/C for O/H lines or GIL may be explored EHV Cable for 220 kV inter-connector lines.

In order to meet the present & future load requirement, N-1 compliance & enhance system reliability and stability after detailed deliberation and discussion, GCC accorded in principle approval for the scheme.

Agenda Point No. 20:

Establishment of 220/132/33kV Substation along with associated EHV lines at Kesurdi MIDC, Tal. Khandala, Dist. Satara

CE - STU placed before the GCC a proposal for "Establishment of 220/132/33kV Substation along with associated EHV lines at **Kesurdi MIDC**, Tal. Khandala, Dist. Satara"

CE - STU submitted that the MIDC has proposed development of Kesurdi Phase – II area. The EHV consumers and HT consumers planned to set up industries in this area.

CE - STU highlighted that the Kesurdi MIDC is expected to be developed rapidly. It is near to Pune and National Highway-4. At present, the area near Kesurdi is fed from 132 kV Shirwal S/s – 97/150 MVA.

CE - STU added that there is no alternate provision at existing 132/33/22kV Shirwal S/s to meet the upcoming load growth of 80 MW/89 MVA in MIDC area. Considering the load growth, to meet the upcoming load demand and to get load relief at existing 132kV Shirwal S/s, establishment of EHV S/s at Kesurdi MIDC is essential.

CE - STU explained scope of Work as follows:

a. 2x100 MVA, 220/132 kV ICT alongwith HV/LV bays.

b. 2x100 MVA 220/33-22 KV Power transformers (Dual ratio).

c. LILO on 220kV Kanadalgaon– Sona alloys line between Loc.No.266-267 (M/c towers)-2 km

d. LILO on 132kV Lonand- Wai DCDC line at Loc. No. 78 (cut point). Route length – 6.5 kms

e. LILO on 132kV Bhatghar – Shirwal MCDC line using existing RoW of 132 kV SCMC Shirwal-Iuin line– 4.8 km.

CE - STU highlighted objective of the scheme:

- Catering future upcoming load growth of 80 MW in Kesurdi , MIDC area.
- Bringing source nearer to load pockets of Khandala Taluka
- Reducing line lengths of 33 kV feeders.
- Reducing line interruptions / breakdowns and increase system availability.
- Providing reliable and quality supply to customers.

In addition to above, CE - STU added benefits of scheme:

In future upcoming MIDC load i.e EHV consumer can be catered from 132kV level.

- Bringing source nearer to load pockets of Khandala Taluka.
- Reduces line lengths of 33/22 KV feeders.
- Reduction in line interruptions / breakdowns thereby reducing line losses.
- Improving Voltage Regulation of area.
- Providing reliable and quality supply to customers.
- The system availability will be increases.

There is saving in losses by 4.84 MW.

This scheme was recommended in 11th MTC for the cost of Rs. **151.58 Cr.**, but due to increase in electrical and civil cost, overall cost of scheme was increased.

The Estimated cost of the scheme is **₹ 21440.82 Lakh**. The scheduled year of commissioning of the cited scheme is **FY 2027-28**

The said scheme is recommended in 12th MTC meeting Date: 27.01.2025 agenda Pt. 22
Chairman GCC mentioned that, reliability of using dual ratio 100 MVA 220/33-22 kV TF to be confirmed. Further, possibility of using separate TF for 33kV & 22 kV or Trasformers with LV selection may be explored.
In view of the requirement to fulfill present & future MSEDCL demand in Kesurdi and Khandala, enhance system reliability, after detailed deliberation and discussion, GCC in principally Approved the Scheme

Agenda Point No. 21:

Establishment of 220/22KV Suraksha Smart City GIS Substation at Rajavali ,Vasai (East), Tal-Vasai , Dist- Palghar

CE - STU placed before the GCC a proposal for the "Establishment of 220/22KV Suraksha Smart City GIS Substation at Rajavali ,Vasai (East), Tal-Vasai , Dist- Palghar"
CE - STU submitted that As per MSEDCL proposal, PM Awas Yojna is planned in Vasai Taluka. The load of this scheme is proposed 110 MVA and load of 32 MVA of 100 kV Vasai and 220 kV Vasai substations is proposed to shift on 220/22 kV Suraksha Smart City substation – Total load of 142 MVA. At present, consumers of Vasai & Virar are fed by 220/100/ 22 kV Vasai and 100 /22 kV Vasai substations. 100/22 kV Vasai SS & 220/22 kV Vasai GIS SS are overloaded.
CE - STU highlighted scope of work as below:

- 3 x 100 MVA , 220/22 kV Transformers
- LILO on existing 220 kV Kamba-Vasai Line at 220 kV Suraksha Smart City Substation - 0.365 kms.
- 14 x 22 kV Bays
- Remote end Automation.

CE - STU added that the scheme is proposed to cater to the load of the Suraksha Smart City area and resolve low voltage issues faced by consumers in the Vasai area which are currently fed by lengthy 22 kV Feeders from 1 00/22 kV Vasai and 220/22 kV Vasai substations. Hence in view of the above low voltage issues, insufficiency of transformation capacities at the above-mentioned substations, and proposed load of Suraksha Smart City, the requirement of 220 kV Suraksha Smart City substation is feasible on 220 kV Kamba-Vasai Line.
CE - STU highlighted benefits of the scheme:

- To cater MSEDCL PM Awas Yojna Laod.
- Load relief to existing 100/22 kV Vasai and 220 kV Vasai GIS Substation
- To improve reliability of power supply in Palghar District area.
- Saving in system losses is **3.9 MW**

CE - STU highlighted that this scheme was recommended in 10th MTC (AD12) for the cost of Rs. **70.00** Cr.) In earlier estimate tentative block cost of AIS substation is considered. Now it revised by considering GIS with fully automated from remote end. CE-STU said that it is for Reference in PM Aawas Yojna which work is going on. The said scheme is as per DISCOM requirements.
The Estimated revised cost of cited scheme is ₹ **146.61 Crore.** The Scheduled Commission year for scheme is **FY 2027-28.**

The said scheme is recommended in 12th MTC meeting Date: 27.01.2025 agenda Pt. 23
Considering the additional load requirement of MSEDCL, re-orientation of existing load and voltage Regulation improvement, after detailed deliberation and discussion, GCC Approved the Scheme.

Agenda Point No. 22:

Conversion of 110 kV SCSC link from 220/110 kV Oglewadi S/s to 110 kV Borgaon S/s

CE - STU placed before the GCC a proposal for "Conversion of 110 kV SCSC link from 220/110 kV Oglewadi S/s to 110 kV Borgaon S/s"

CE - STU explained that in Satara & Sangli district main network is of 110 kV level. 110 kV Oglewadi - Borgaon SCSC is the main transmission line which is in service since 1963.

CE - STU added that the line has given more than 60 years of service life. Single ckt of 110 kV Oglewadi - Borgaon line caters major load & connected to co-gen plant Krishna SSK & HPP Tembhu. Oglewadi - Borgaon line needs to be upgraded to 132 kV level so that Oglewadi - Miraj network can be operated at 132 kV Level. Upgradation of 110 kV Oglewadi – Mayani – 42.03 km to 132 kV level is already completed and commissioned on 15.01.2019. 132 kV new Peth - Borgaon line is also under construction.90% work is completed. (Oglewadi-Borgaon line construction work will be taken up after the completion of 132 kV Peth - Borgaon line.)

CE - STU submitted Scope of work for said Non-DPR scheme:

Conversion of 110 kV Ogelwadi - Borgaon SCSC to 132 kV SCDC Line - 30.69 km.

CE - STU highlighted Objective of this scheme:

- Level upgradation from 110 KV to 132 KV standard voltage level.
- To enhance line loading capacity.
- To reduce transmission losses .

CE - STU highlighted benefits of above scheme:

- Loading capacity of Oglewadi – Tembhu – Rethre - Borgaon corridor will be increased.
- Possibility of accidents due to increased sag can be avoided.
- Tripping of lines reduces. Hence reliability of power evacuation of C0-gen and hydro power will be increased.
- Transmission losses of the line will be reduced.

The Estimated cost of the scheme is **₹ 24.60 Cr.** The scheduled commissioning year for said scheme is **FY 2024-25**

The said scheme is recommended in 12th MTC meeting Date: 27.01.2025 agenda Pt. 24
In view of the requirement to fulfill present & future MSEDCL demand, enhance system reliability, up gradation to 132 kV standard voltage level, to evacuate Co-Gen and Hydro power, after detailed deliberation and discussion, GCC Approved the Scheme.

Agenda Point No. 23:

Construction 132 kV DCDC link line by making LILO of one circuit of 132 kV Amalner (220 kV Amalner-II s/s) to Nardane to one circuit of 132 kV Amalner (132 kV Amalner-I s/s) to Parola line

CE - STU placed before the GCC a proposal for "construction 132 kV DCDC link line by making LILO of one circuit of 132 kV Amalner (220 kV Amalner-II s/s) to Nardane to one circuit of 132 kV Amalner (132 kV Amalner-I s/s) to Parola line".

CE - STU mentioned that the Presently, 132 Kv Amalner & 132 Kv Parola s/s are single source substations fed from 220 Kv Amalner ss through 132 Amalner –I Amalner II SCSC line & 132 Kv Amalner-Parola DCDC line.In case of interuptions of 132 kV AmalnerI ,Amalner II SCSC Line supply of both 132kV Amalner & Parola gets interrupted.

CE - STU highlighted that from maintenance point of view, it is difficult to carry out the routine, emergency work due to single line source. To avoid single line source connectivity it is essential to establish LILO on one of the circuits 132 kV Amalner II-Nardana line to LILO on 132 kV Amalner I- Parola Line . 132 Kv DCDC link line will be established on second circuit of 132 kv Amalner-Nardana & Second circuit of 132 Kv Amalner-I –Parola line. Considering populated area of Amlner & Parola city, second line is essential.

CE - STU added that, it is not possible to lay second source from 220 kV Amalner(A-II) to 132 kV Amalner –II ss. As per compliancs received from Field severe ROW problem,it is not possible to lay the second source from 220 Kv Amalner –II to 132 KV Amalner –I SS. 2nd circuit stringing is already done of 132 Kv Amalner (A-II) to Nardane line & 132 Kv Amalner (A-I)

CE - STU explained brief scope of work for above scheme is as follows:

- Construction of 132 kV DCDC link line by making LILO of one circuit of 220 kV Amalner (A-Il) to Nardane line to one circuit of 132 kV Amalner (A-I) to Parola line. (RL-17.6 Kms)

CE - STU explained objectives of scheme:

1) Second line connectivity to 132 kV Amalner –I and 132 kV Parola substation.

2) To increase system reliability.

CE - STU highlighted benefits of scheme:

- It will eliminate single line source connectivity of 132 Kv Amalner –I SS, 132 Kv Parola SS and enable N-I criteria to 132 kV Amalner –I –Amalner –II SCSC Line.
- It is beneficial to establish DCDC Line
- It will increase supply reliability.
- This scheme will help for proper maintenance activity of 132 kV Amalner (A-II)-Aalner(A-I) Line.
-

The Estimated cost of the scheme is **₹ 1530 Lakh.** The scheduled commissioning year for said scheme is **FY 2026-27.**

The said scheme is recommended in 12th MTC meeting Date: 27.01.2025 agenda Pt. 25

In view of the requirement to fulfill present & future MSEDCL demand, enhance system reliability, and present N-1 non-compliance, after detailed deliberation and discussion, GCC Approved the Scheme.

Agenda Point No. 24:

Establishment of 220/132 kV Waghdari Substation along with associated lines

CE - STU placed before the GCC a proposal for the "Establishment of 220/132 kV Waghdari Substation along with associated lines"

CE - STU submitted that Presently, in Akkalkot Taluka there are 2 nos. of 132kV EHV sub-stations and 01 no. of 220kV s/s which are used for the evacuation of solar power & other sugar co-generation.

132kV Waghdari s/s was established in 2004-05 with an installed capacity of 100 MVA (1x50 MVA & 2x25 MVA). 33kV & 132 kV both levels are connected for evacuation of renewable power. This s/s is evacuating power of total evacuation is 220 MW which is overloading the line and s/s capacity. It is observed that this capacity is not sufficient to evacuate present and future generations.

In order, to address generation constraints, at present, the Bus sections of 33kV & 132kV side requires to be kept open at 132/33 kV Wagdari s/s. Also, a special protection scheme (SPS) is provided to restrict line overloading due to generation evacuation connected with Wagdari s/s.

Further, evacuation of these renewable generation from 132kV Wagdari s/s is carried out by only two 132kV lines i.e. 132kV Wagdari-Akkalkot DC line & Akkalkot-Naldurg SC line. Any tripping/breakdown on any one line results in a Back down of generation as well as overloading of these lines, which in turn increases commercial & system losses.

In addition to this, developers have submitted the feasibilities for connectivity at 132kV Waghdari s/s. Due to the non-availability of transmission margin, grid connectivity cannot be issued. As such there is no other alternative available to evacuate the existing & future RE power in the region. Considering the present scenario of 132 kV Akkalkot-Wagdari-Naldurg pocket & upcoming generation in the Osmanabad-Solapur region, the establishment of 220/132/33kV Wagdari s/s is proposed. The proposed 220/132/33kV Wagdari s/s will help to mitigate the transmission margin constraint & to cope with the existing & envisaged renewable generation in the region.

Hence, 220/132/33 kV Waghdari s/s is proposed to address the present transmission constraints, with this sub-station, evacuation of existing & envisaged renewable generation in the region will be smooth & it will also facilitate the evacuation of renewable energy sources in Akkalkot-Waghdari-Naldurg region

CE - STU highlighted scope of work:

1) 2 x 200 MVA, 220/132 kV ICT with bays.
2) 1 x 50 MVA, 220/33 kV transformer with bays.
3) Construction of

a) LILO on both circuits of 220 kV Solapur (PG) – Narangwadi DC line at 220kV Waghdari s/s with HPC – 19.509 km

b) LILO on both circuits of 132 kV Waghdari – Tata Solar DC line at 220 kV Waghdari – 3.082 km.

4) 4 x 220kV line bay at proposed Waghdari s/s.

5) 4 x 132kV line bay at proposed Waghdari s/s.

6) 6 x 33 kV outlets at proposed Waghdari s/s.

CE - STU highlighted benefits of scheme:

- It will facilitate 600MW evacuation of RE power in Akkalkot – Waghdari - Naldurg area.
- 220 kV & 132 kV network in Akkalkot Taluka will get strengthen.
- Saving in system transmission losses is 4.73 MW.
- The Pay Back Period for this scheme will be after 3years of commissioning of the s/s.

This scheme was previously recommended in Approved in 10th MTC for the cost of Rs. **151.24** Crs.). Due to change in equipment rating due to utilization of HTLS conductor, Cost of CT, WT, Isolator revised. Change in conductor for LILO portion from 0.4 Z ACSR to 525 sq.mm HPC due to which revision in cost of conductor and Line Hardware's. The stringing rate for conductor is revised due to utilization of HPC

The Estimated cost of the scheme is **₹ 229.11 Cr**. The scheduled commissioning year of the cited scheme is **FY 2025-26.**

The said scheme is recommended in 12th MTC meeting Date: 27.01.2025 agenda Pt. 26 Considering the Wagdhari & adjoining area being RE rich in order to cater to the evacuation of RE power after detailed deliberation and discussion, the committee approved the scheme and directed STU to follow the relevant provisions of MYT regulations 2024.

TPC-T Schemes

Agenda Point No. 25

Augmentation of source and transformation capacity of existing 110 kV Powai station & up gradation of 110 kV system to 220 kV

CE - STU placed before the GCC a proposal for the "Augmentation of source and transformation capacity of existing 110 kV Powai station & up gradation of 110 kV system to 220 kV"

CE - STU submitted that TPC-T has already submitted proposal with feasibility for 220 kV level creation at Powai in 11th MTC with 2 no's 220 kV Source lines from AEML's 220 kV Chandivali RSS. M/s AEML informed that space for only 1 no's 220 kV line bays is available. Hence TPC-T change the scope of 220 kV source line in this DPR to LILO of 220 kV Salsette-Amazon line at 220 kV Powai RSS. Load flow study jointly completed with STU for revised option.

CE - STU explained that MMRDA has applied to STU for the 110 kV load @ 57 MVA for proposed Metro Station. TPC-D has applied to STU for 33 kV load @ 90 MVA.

The existing firm transformation capacity (90 MVA) and Source capacity (150 MVA) is not adequate to cater this load demand. MERC has opined to upgrade existing 110 kV Stations to 220

kV level in view of long-term transmission planning. Hence, to meet the existing and future load requirement it will be necessary to augment the existing 110 kV Powai RSS at 220 kV level.

CE - STU explained brief scope of the work, as below

- Source line to 220 kV GIS by LILO of 220 kV Salsette-Amazon line (Approx 7 Ckt km cable)
- Installation and commissioning of 220 kV 07 bay GIS.
- Installation and commissioning of 2X160 MVA 220 kV / 110 kV / 33 kV ICT.
- Installation and commissioning of 33 kV GIS bus.

The Estimated cost of the scheme is **₹ 424 Cr and RI cost is 124 Cr.** The scheduled commissioning year for the cited scheme is **FY 2027-28**

The said scheme is recommended in 12th MTC meeting Date: 27.01.2025 agenda Pt. 27

Considering the cost of the scheme above the threshold limit of TBCB under MYT Regulations 2019/2024 the committee opined that although the scheme involves up gradation of existing Substation and thus can be taken up through RTM route however, the relevant process of MERC approval / appraisal to Empowered Committee as defined in MYT regulations should be followed by STU. In view of the requirement to fulfill present & future load demand, enhance system reliability and considering system point of view, after detailed deliberation and discussion, the GCC Approved the scheme.

Agenda Point No. 26:

New 22 kV/33 kV bus extension for Discom outlet requirement at Versova, Saki, Panvel, Carnac, Kalyan, Dharavi, Trombay, Vikhroli, Kurla, Malad RSS.

CE - STU placed before the GCC a proposal for "New 22 kV/33 kV bus extension for Discom outlet requirement at Versova, Saki, Panvel, Carnac, Kalyan, Dharavi, Trombay, Vikhroli, Kurla, Malad RSS".

CE - STU explained that to meet Load demand of Discoms at Transmission RSS, this scheme was proposed to MTC. 90% bay extension is there in this scheme. Discom received connectivity from STU for additional outlets requirement from TPC-Ts receiving stations as per above list. But this scheme will be gone in Non-DPR category. CE-STU mentioned that the said agenda point is for appraisal purpose.

The Estimated cost of the scheme is **Rs. 30 Cr.** The scheduled commissioning of the cited scheme is in **FY 2025-26.**

The said scheme is recommended in 12th MTC meeting Date: 27.01.2025 agenda Pt. 28

ED-SLDC stated that while implementation metering/Communication and integration with SLDC to be taken care of.

GCC took note of the proposal.

Agenda Point No. 27:

MV AIS switchgear conversion with GIS at Salsette, Borivali, Mankhurd

CE - STU placed before the GCC a proposal for the "MV AIS switchgear conversion with GIS at Salsette, Borivali, Mankhurd".

CE - STU submitted necessity of work as below:

Salsette – 22 kV MV AIS commissioned in 1991. Existing switchgear is having multiple defects. OEM also stopped the supplying of spares. Also, Discom have requested additional outlets from existing 22kV AIS.

Borivali- 33 kV MVA AIS commissioned in 1996. Existing switchgear is having multiple defects. OEM also stopped the supplying of spares.

Mankhurd- 22 kV MV AIS commissioned in 1998. Discom have requested segregation of back-to-back feeders for network reliability. Also, existing switchgears is having multiple defects & OEM stopped the supplying of spares.

CE - STU explained brief scope of work, as below:

- Installation & Commissioning of 22 kV MV AIS to GIS conversion at Salsette & Mankhurd with additional outlets to discom
- Installation & Commissioning of 33 kV MV AIS to GIS conversion at Borivali.

CE - STU explained that detail engineering work for MV AIS to GIS conversion is in progress and DPR for these works will be submitted to STU.

The said scheme is recommended in 12th MTC meeting Date: 27.01.2025 agenda Pt. 29

In view of the requirement to fulfill present & future load demand, enhance system reliability, and system point of view, after detailed deliberation and discussion, GCC Approved the Scheme.

AEML-T Schemes

Agenda Point No. 28:

1000 MW HVDC (VSC based) Kudus-Aarey scheme (Pole-2)

CE - STU placed before the GCC a proposal for "1000 MW HVDC (VSC based) Kudus-Aarey scheme (Pole-2)".

CE - STU stated that Mumbai Power Peak demand growth has been 8.5% (last 3-year CAGR). Mumbai System demand ~4300 MW, supply through embedded generation 1877 MW + ~2400 MW import via Transmission Corridor lines. Mumbai Generation 1877 MW includes 930 MW Thermal + 447MW Hydro Generation of TPC and 500 MW Thermal Generation of Adani.

Mumbai Peak Load has reached up to 4306 MW in FY 2025. Considering the load growth @ 3.6%, the load is estimated to be in the range of 5140 MW. Further, estimated point loads on account of Data Centres, EV Charging, New Infra will add ~800 MW. This will add up to total ~6000 MW Peak Demand of Mumbai by FY 2030.

CE - STU highlighted that any addition in Mumbai Generation is not feasible. Hence, all load growth + System contingencies has to be supported by Transmission corridor capacity. As mentioned in Report on 'PPA Extension of Mumbai Embedded Generation, July 2022', that estimated Network capacity margin estimated to be significantly eroded post FY2028 and will require Corridor capacity enhancement. ATC margin is estimated to be exhausted by FY 2028. Need to enhance Available Transmission Capacity (ATC) of Mumbai was discussed/ recommended in various forums and reports.

CE - STU submitted that as age old generation units are due to be phased out and considering growing Mumbai demand, transmission corridor capacity strengthening is the most critical need for Mumbai.

CE - STU highlighted that STU's 10-year plan dated 05/09/2024, outlines HVDC (VSC-based) schemes for Mumbai: **1000 MW HVDC (VSC Based) from Kudus to Aarey (Pole 2), is part of Plan.**

CE - STU explained that Kudus, strong upcoming source, ~ 80 kms North of Mumbai, with huge RE feed, as 765kV BOISAR-II / 400kV Velgaon & connectivity with 400kV Kudus under execution. AEMIL already developing 1000MW HVDC (VSC based) link between Kudus to Aarey, with estimated CoD FY2026. (1000MW HVDC scheme (Pole-1) under construction.

CE - STU submitted that 1000 MW HVDC (VSC based) Kudus – Aarey scheme (2nd pole), is found to be a Technically feasible, techno-economical with short construction period and a beneficial scheme for Mumbai power system.

CE - STU explained brief scope of work as below:

- Extension of 400kV GIS Bays at AEMIL Kudus.
- 1000 MW HVDC (VSC based) Convertor S/s (Pole 2) at Kudus and Aarey.
- OH HVDC Line: 30 kms, existing OH line conductor to be utilized. UG HVDC Cable system: 50 km, cable to be threaded through spare HDPE pipes.
- Transit S/sn at Mandvi – Existing Land usage to be optimized.
- 400kV and 220kV GIS Bays at Aarey.
- 3 x 500 MVA 400/220kV ICTs at Aarey.
- Land at Aarey: Existing land usage optimization + ~22,000 sq.m. land adjacent to existing Aarey EHV S/s.
- Land at Kudus – Existing land usage to be optimized.

CE - STU explained benefits of the scheme:

1. As per existing network and STU-5 year/10-year plan, extensive upstream and downstream network has been planned out around Aarey, facilitating evacuation of upcoming HVDC feeds across Mumbai including to South Mumbai (through aarey – BKC – Chembur – Trombay).
2. Unlike 400kV HVAC, aforesaid 1000MW HVDC link(2nd pole) shall push another 1000MW to Mumbai, relieving Kalwa/Vikhroli/Kharghar transmission corridors, whereby its capacity may be better deployed for meeting up-coming load (Data Centers, Metro & New Infra projects) for Navi Mumbai/Thane load growth.
3. Another 1000MW feed at Aarey (2nd pole), shall also disburse power towards Borivali / Goregaon/ Versova / Gorai/ Ghodbunder, thereby also relieve North Mumbai corridors i.e. Boisar – Borivali, DTPS/Boisar – Versova/Ghodbunder etc.
4. Schemes shall add 1000MW Transmission capacity, thereby increasing power import capacity (ATC) of Mumbai Network, reduce dependency on Embedded Generation, facilitate sourcing cheaper/ green power to Mumbai Discoms.

5. HVDC technology brings benefits of Capacity addition w/o adversely impacting system fault level, Active/reactive power management, Black start, cable friendly technology to transmit bulk power etc.

CE - STU submitted that while recommending said 1000MW HVDC scheme, CEA (vide letter 'I/5525/2019/1307-1310 dated 13.06.2019), also suggested provision of RoW/space for second 1000MW HVDC feed from kudus to Mumbai.

"……6.0 Keeping in view future requirements, possibility of provisions in terms of RoW and space at Kudus for another 1000MW may be explored along with Kudus to Aarey HVDC link. ……."

Hon. MERC while approving the scheme vide MERC/Capex/AEMIL/2021-22 /47 dated 22nd Oct 2021 ,also approved the future provision of another 1×1000MW link by way of civil/HDPE pipe under approved scope of work.

Based on CEA recommendation and as approved by Hon MERC, the provision of space & RoW has already been made for additional 1000MW HVDC link Kudus to Aarey (2nd pole), during execution of 1st HVDC scheme (Pole-1) by AEMIL and has now proposed 1000 MW HVDC (VSC based) Kudus – Aarey (Pole 2) scheme.

CE STU informed that considering above factors the said scheme has been discussed in 12th MTC Dtd 27.01.2025 under agenda Pt. 30 and is recommended for approval. Further the committee has also opined that as the scheme is an up gradation/addition of pole to the already approved scheme of +- 320 kV 1000 MW Kudus – Aarey HVDC utilizing the substation land and same O/H / Cable line RoW and may lead to ownership or interface issues, considering the cost of the scheme above the threshold limit of TBCB under MYT Regulations 2019/2024 can be taken up through RTM route subject to relevant process of prior MERC approval defined in MYT regulation and appraisal to Empowered committee .

The relevant extract of MYT regulations 2024 Annexure IV,(5) are reproduced as below :

In case the STU intends to implement any Intra-State Transmission System above the Threshold Limit through cost-plus approach under Section 62 of the Act, due to some specific reasons such as project is of critical nature (e.g., Transmission System being developed for Defence, Railways, Airport, etc.) or the Project may lead to ownership or interface issues, i.e., the ownership of new Intra-State Transmission System cannot be delineated from the assets of existing transmission assets, the STU shall obtain prior approval of the Commission for the same.

The Estimated cost of the scheme is **₹ 8000 Cr.** The scheduled commissioning year of the cited scheme is **FY 2029-30.**

GCC took note of the CEA recommendations and Hon MERC approval of the the scheme for future provision of another 1×1000MW link by way of civil/HDPE pipe. GCC also noted MTC recommendation of the scheme being Technically feasible, techno-economical having short a shorter construction period and being beneficial to Mumbai power system. Taking into consideration the MTC opinion that scheme is an up gradation/addition of pole to the already approved scheme of +- 320 kV 1000 MW Kudus – Aarey HVDC utilizing the substation land and same O/H / Cable line RoW ,GCC which may lead to ownership and interface issues directed STU to follow the relevant process of prior MERC approval defined under MYT regulation with due justification and appraisal to Empowered committee before

taking the scheme through the RTM route. In view of the requirement to fulfill future Mumbai demand, enhance system reliability after detailed deliberation and discussion the GCC approved the scheme.

With these discussions the meeting concluded with vote of thanks.

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Annexure A

List of participants for 11th GCC meeting held on 29.01.2025

Sr no	Name of member	Designation	Committee position
1	Shri Satish Chavan	Director (Operations), MSETCL	Chairperson
2	Shri Shashank Jewalikar	Executive Director (MSLDC)	Member Convener
3	Shri Yogesh Gadkari	Director (Commercial)	Member
4	Shri Mahendra Walke	Chief Engineer (O&M), MSETCL, Mumbai	Member
5	Shri. Anil Kathoye	CE (Works), MSPGCL	Member
6	Shri P. D. Lone	S.E. Commercial, WRPC	Member
7	Shri Manoj Pise	General Manager, MEDA	Member
	Special Invitees		
8	Shri Dinesh Agarwal	E.D (Comm), MSEDCL	---
9	Shri Peeyush Sharma	Chief Engineer, STU	---
10	Shri Girish Pantoji	Chief Engineer (I/C), MSLDC	---

Maharashtra State Load Despatch Centre
“Maharashtra System Grid Performance CY: 2024”

GCC Meeting

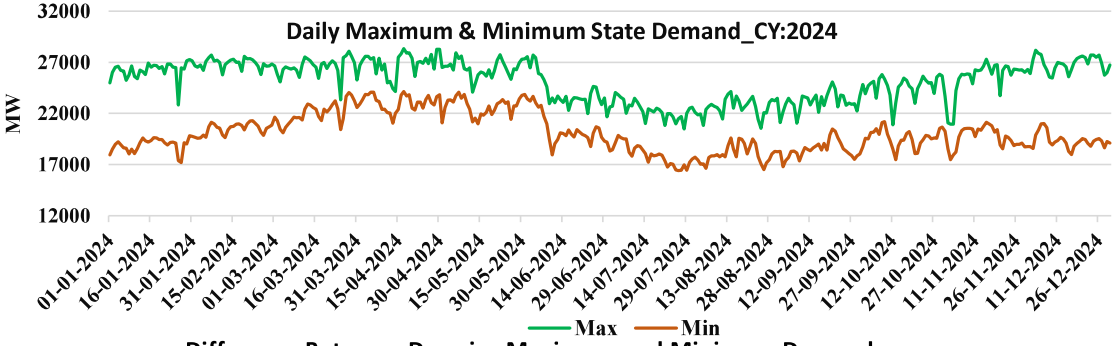
29-01-2025

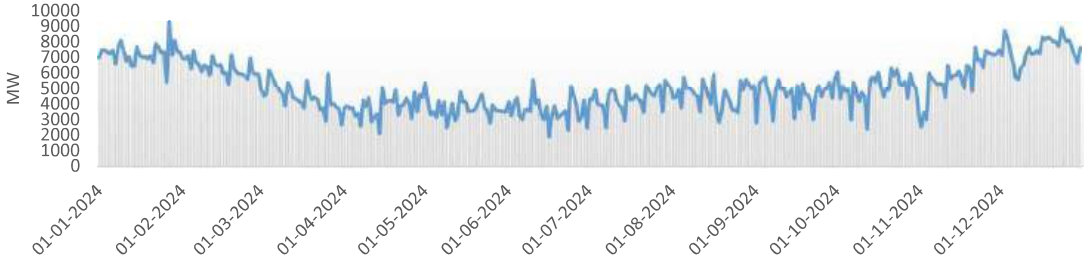
State Demand Profile

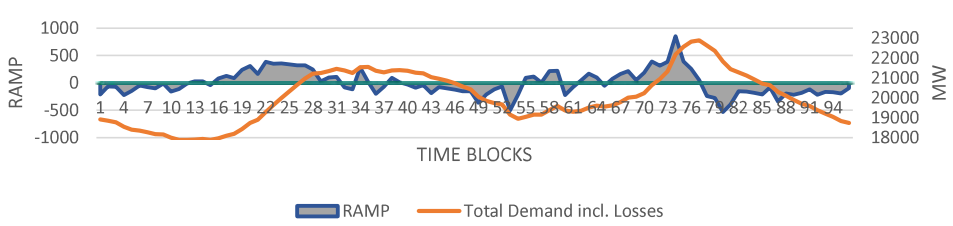
- Maximum seasonal variation: **11,919 MW**
- Maximum daily variation: **9,255 MW**

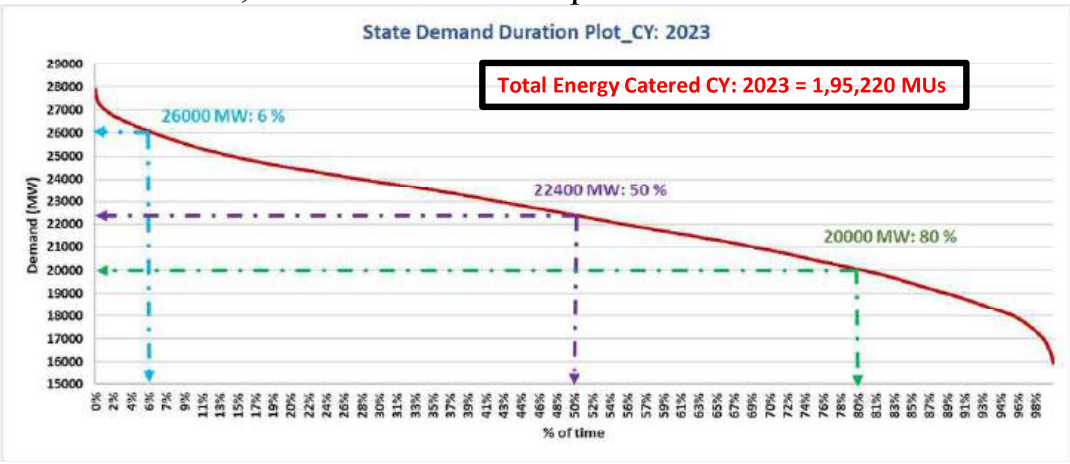
Max. Demand: 28,327 MW
Min. Demand : 16,409 MW

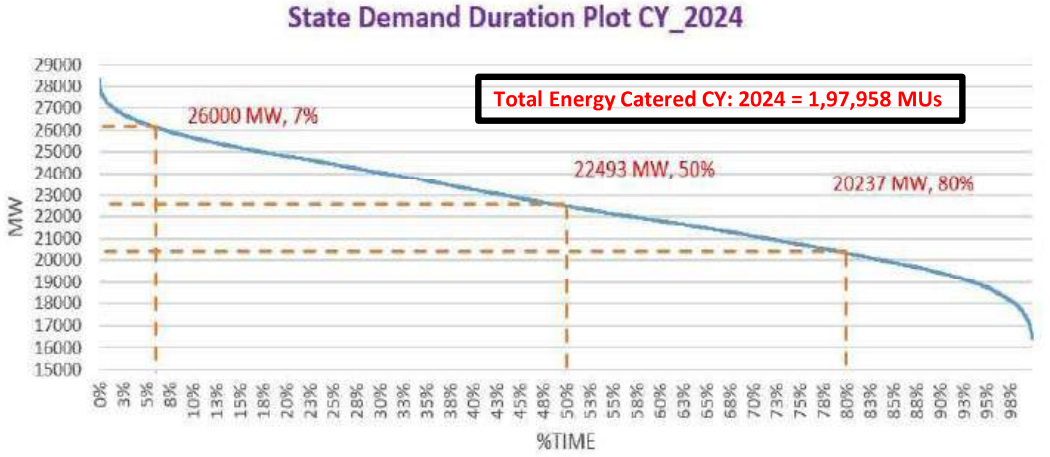
- In CY: 2023 for 80 % of the period, demand was 20000 MW increased to 20237 MW in CY: 2024
- In CY: 2023, demand was above 26000 MW for 6 % of the period whereas in CY: 2024, it was for 7% of the period



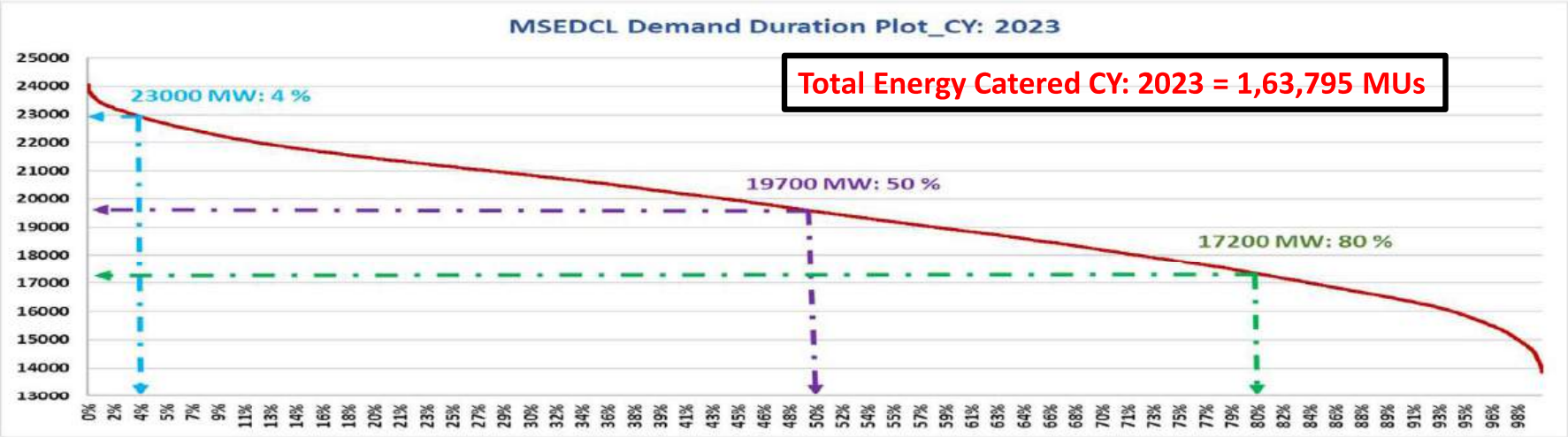


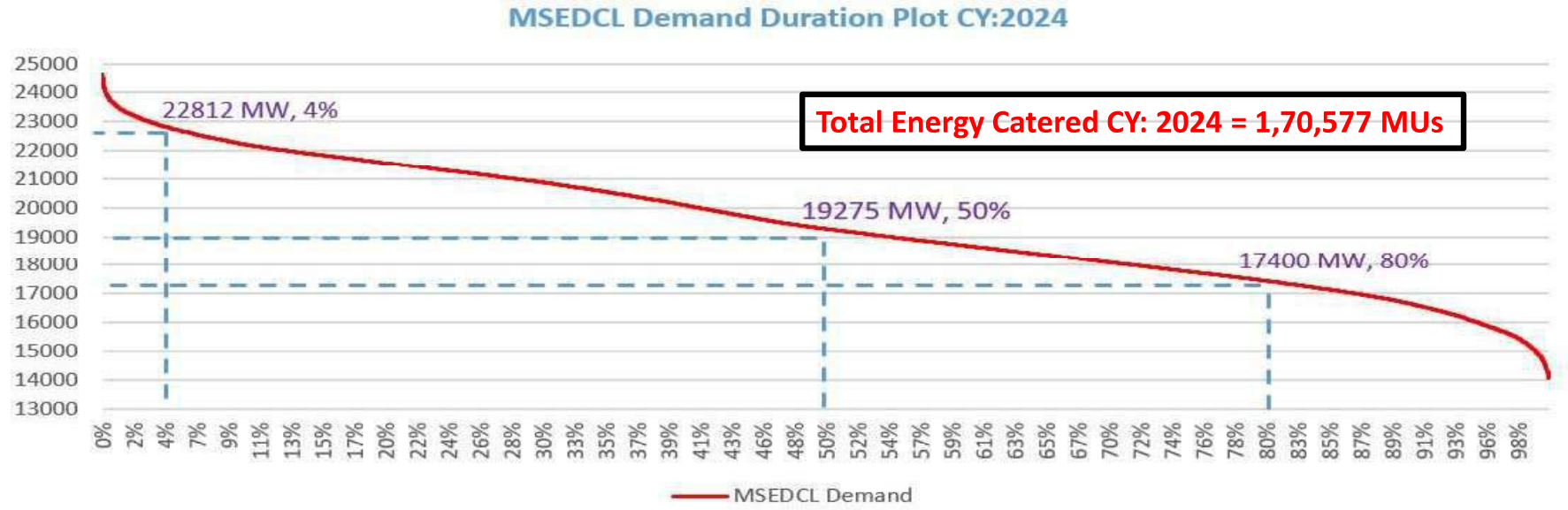






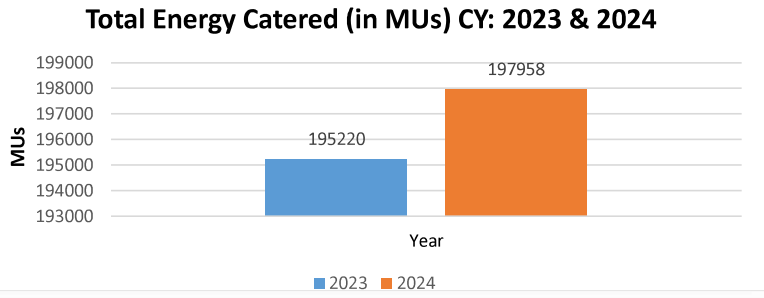
Demand Profile: MSEDCL

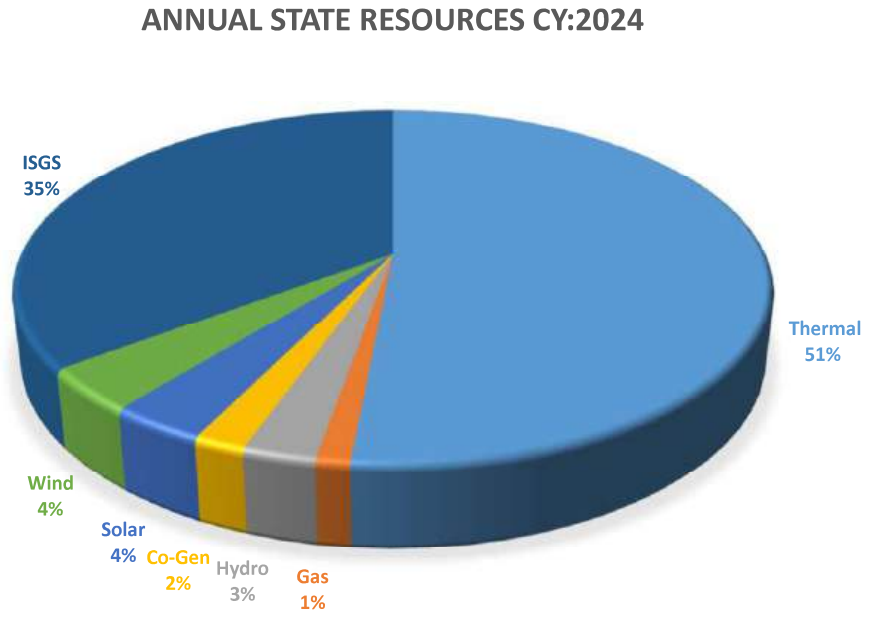


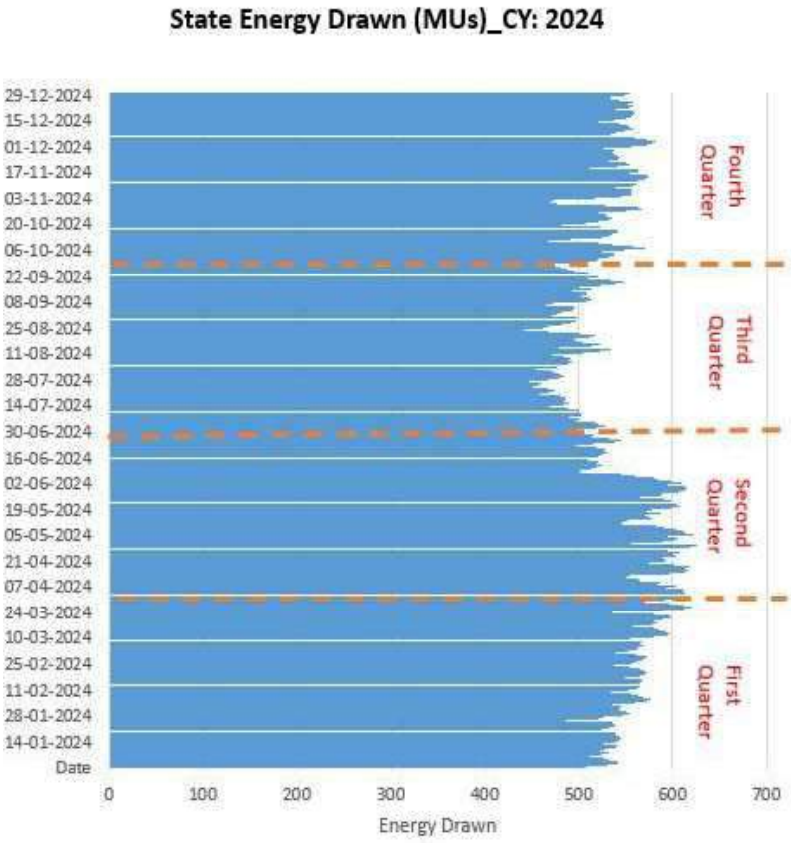


Energy Profile of the State

	Source	Hydro	Thermal	Gas	Wind	Co-gen	Solar	ISGS	Total
CY 2024	MUs	5,291	1,01,931	2,455	7,729	3,750	6,971	69,831	1,97,958
	%	3	51	1	4	2	4	35	100

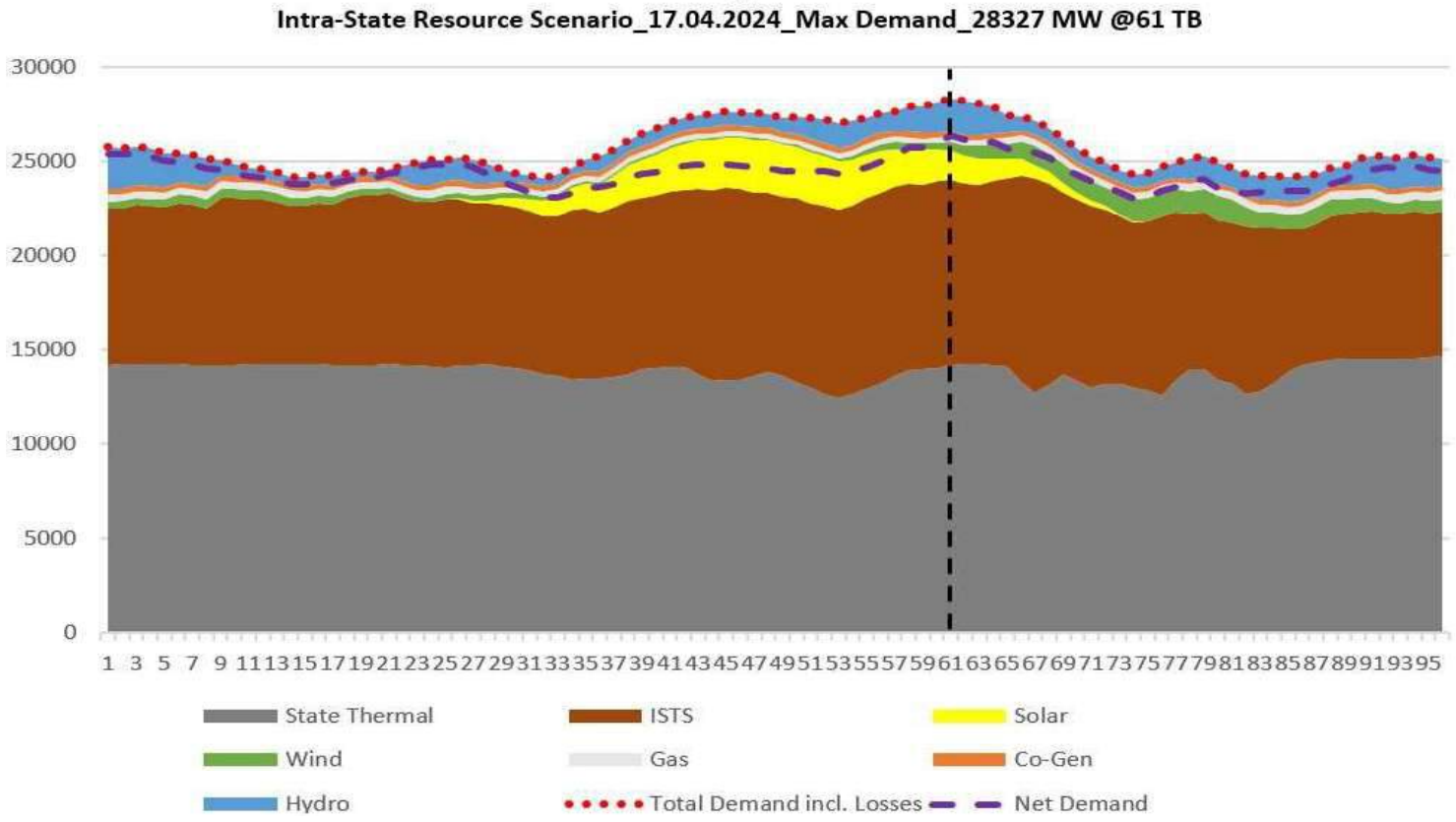






- Total annual contribution of Thermal generation is 51 % which excludes the thermal energy used from ISGS resources
- The contribution of Intrastate VRE i.e. Wind & Solar generation is 8 %
- Maximum energy of around 52,254 MUs was catered in the 2nd quarter of the CY: 2024 followed by First quarter with 50,666 MUs

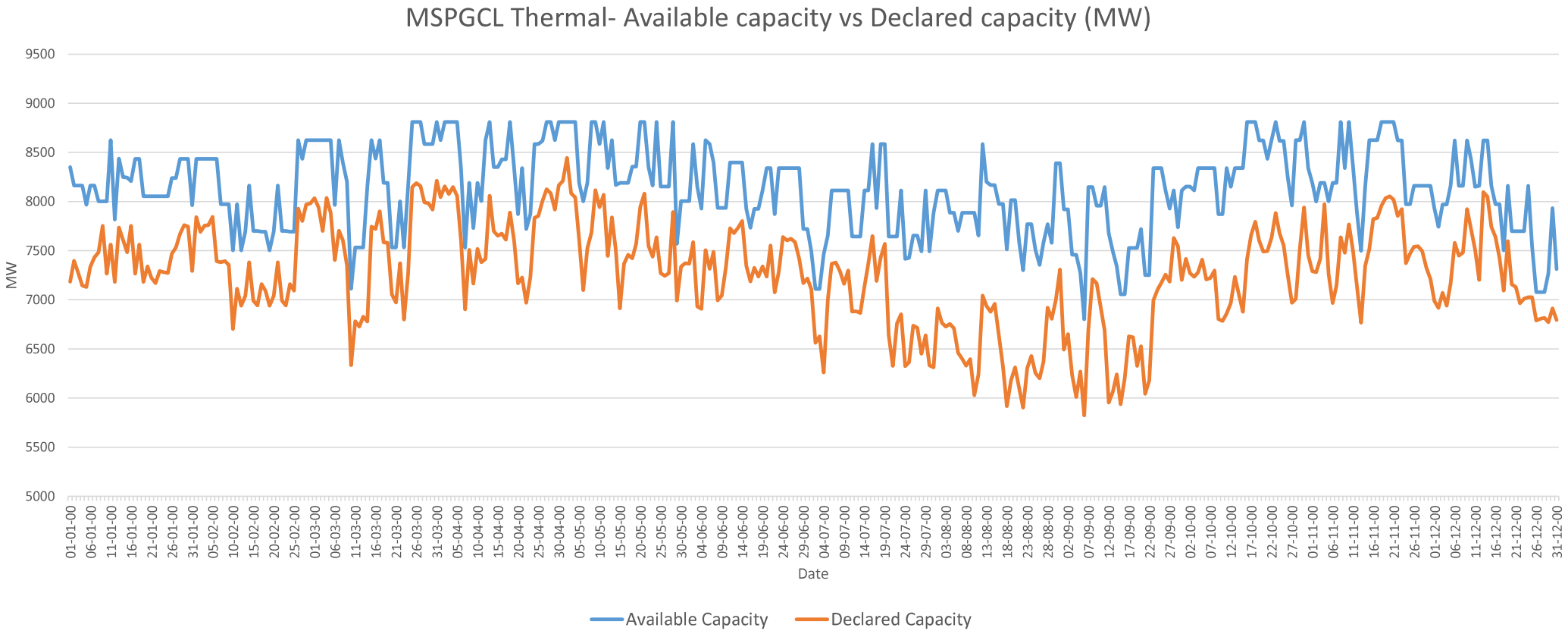
Intra-State Resource Mix of the State_ Peak Demand



Source	Injection (MW)	Contribution (%)
State Thermal	14223	50%
Gas	268	1%
Hydro	1718	6%
Co-Gen	277	1%
Solar	1528	5%
Wind	448	2%
ISTS	9865	35%

- The contribution of intrastate V_{RE} in mitigating State Peak Demand is 7 %
- State is mainly relying on the thermal generation for meeting peak demand

MSPGCL Thermal- Available capacity vs Declared capacity (MW)



- The average Declared Capacity for MSPGCL Thermal Generators for CY 2024 is 89%
- Maximum difference between Available Capacity and Declared Capacity is 1858 MW on 10.08.2024

Coal position at Thermal Generating Stations

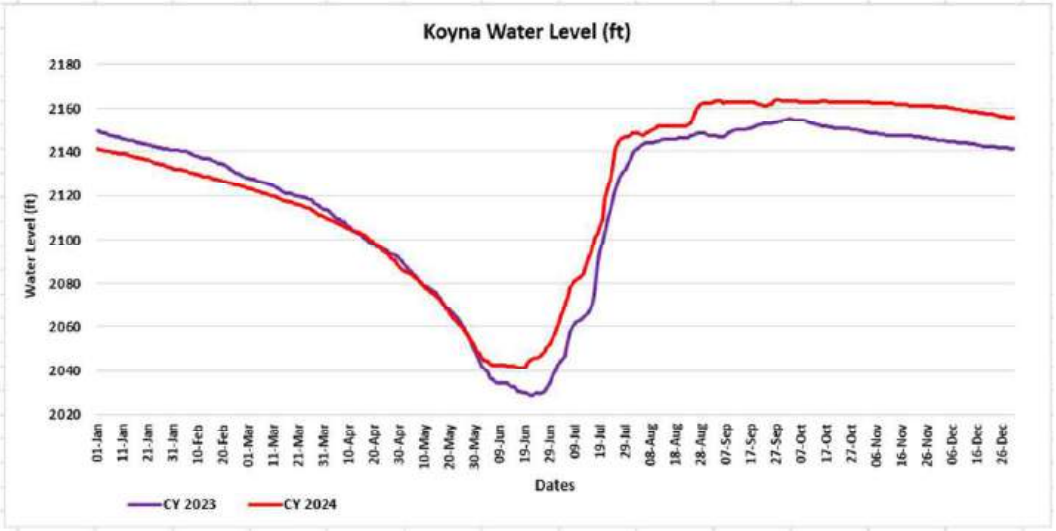
Coal Stock less than 3 days	
Power Station	CY 2024
	No. of Days
ADTPS	67
Khaparkheda Unit 1 to 4	26
APML, TIRORA	16
SWPGPL	6

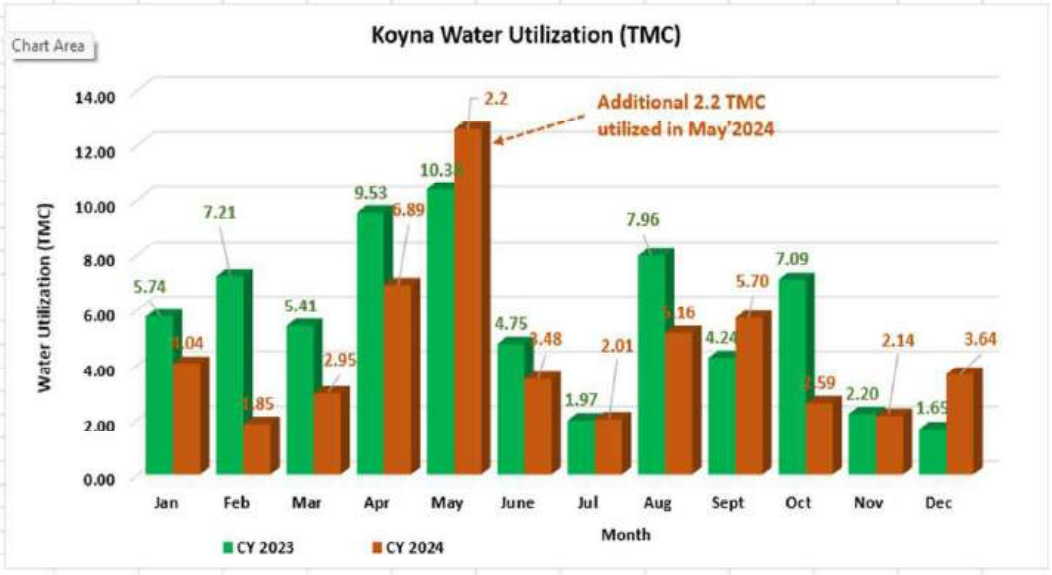
Coal Stock less than 7 days	
Power Station	CY 2024
	No. of Days
APML, TIRORA	289
Chandrapur Unit 3 to 7	245
Chandrapur Unit 8 and 9	245
Khaparkheda Unit 1 to 4	87
Parli Unit 6 and 7	65
Khaparkheda Unit 5	63
SWPGPL	47
ADTPS	46
RPL (AMT)	37
Bhusawal Unit 4	31
Bhusawal Unit 5	31
Koradi Unit 8 to 10	25
Parli Unit 8	25
Paras	24
Koradi Unit 6	10
Bhusawal Unit 3	4

Coal Stock less than 15 days	
Power Station	CY 2024
	No. of Days
Koradi Unit 8 to 10	292
Bhusawal Unit 4	270
Bhusawal Unit 5	270
RPL (AMT)	233
Parli Unit 6 and 7	219
APML, TIRORA	192
Khaparkheda Unit 5	175
Paras	148
Koradi Unit 6	144
Khaparkheda Unit 1 to 4	141
Nashik	131
SWPGPL	113
Parli Unit 8	101
Bhusawal Unit 3	63
Chandrapur Unit 3 to 7	55
Chandrapur Unit 8 and 9	55
JSWEL	26
ADTPS	21
TPCL	3

- The CEA Coal Stock norms for Coal-based plants dated 06.12.2021, mandates every thermal Generating Company to maintain coal stock.
- Notices for default in maintaining coal position issued by MSLDC are as below:
  - MSPGCL: 26 Nos.
  - AEML (Dahanu): 67 Nos.
  - APML (Tiroda): 16 Nos.
  - SWPGPL: 6 Nos.

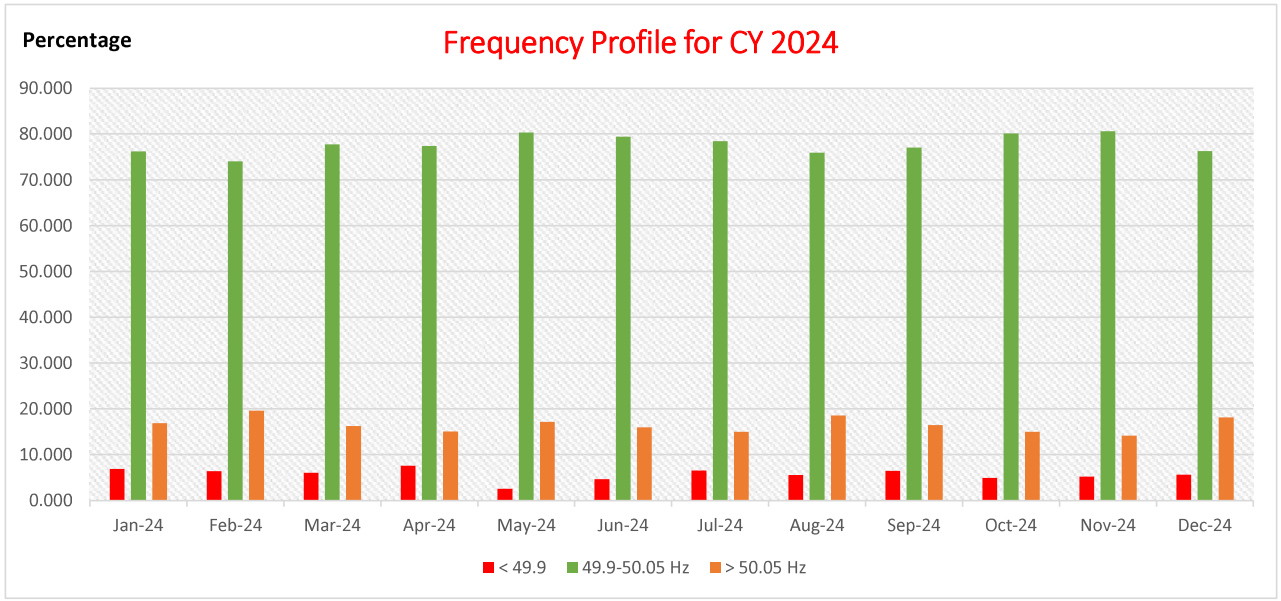
Koyna Lake Level



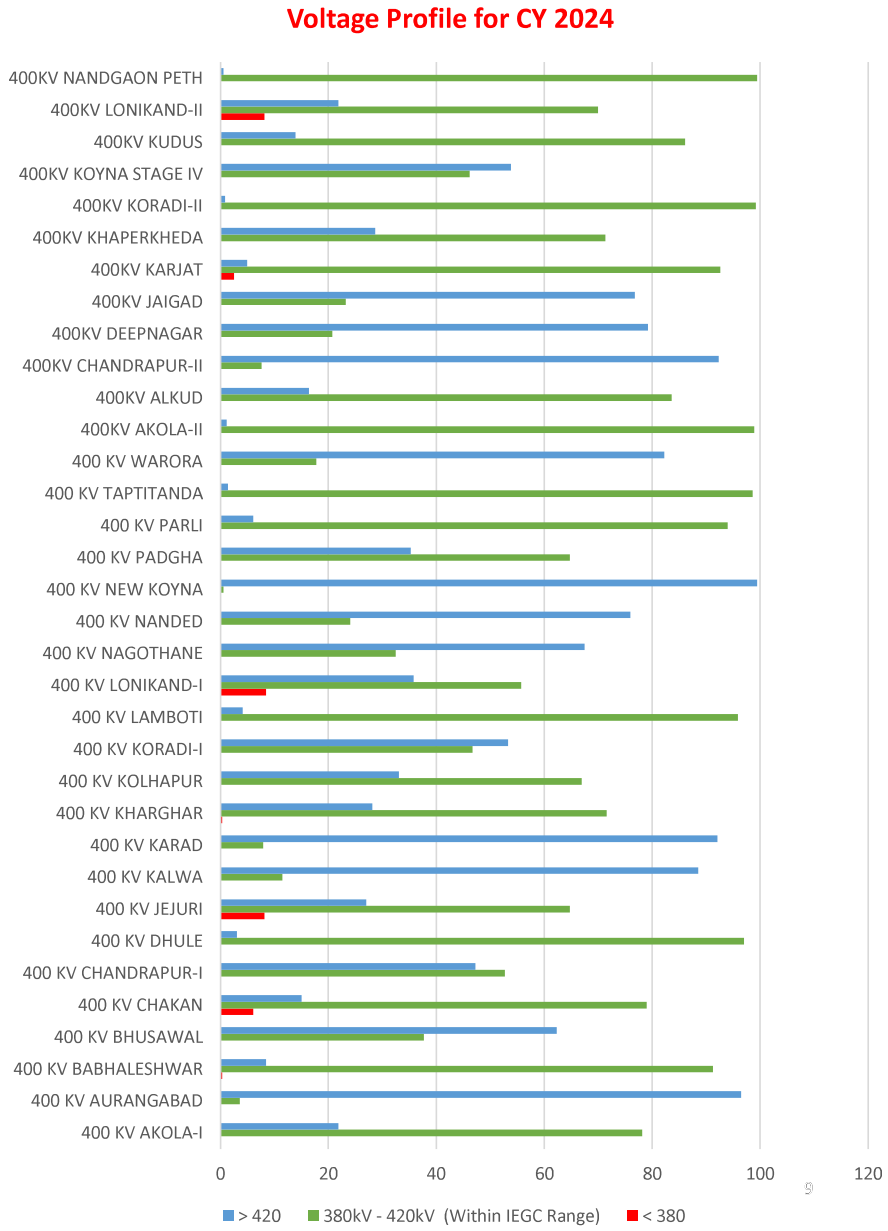


- The Water allocation for Maharashtra Koyna Generating Plant is 67.5 TMC for a Water year starting from June to May
- The water utilized by Koyna St-I & II and Stage-IV is utilized for generation at Koyna Stage-III. Hence, the water utilized at Koyna Stage-III is not considered in the TMC utilization quota
- Additional 7 TMC was allotted for water year 2022-23, out of which 3.47 TMC was utilized in CY: 2023
- 12.583 TMC of Koyna water is utilized in the month of May – 2024. As per the MSPGCL Letter vide CE/KGSC/TECH/MSLDC/No.0015 Dated 03.02.2024 the westward water quota was reduced by 8.644 TMC for water year 2023-24 due to less rain fall and low dam storage. Hence total TMC allocated for water year 2023-24 was 58.856 out of which 0.69 TMC remains unutilized.

Frequency & Voltage Profile



- In accordance with the IEGC' 2023, the permissible band of Frequency is 49.90 Hz to 50.05 Hz.
- For 77.79 % of the period, the System Frequency was within permissible band.
- The Maximum frequency of 50.63 Hz was recorded in June' 2024.
- Minimum Frequency was recorded was 49.46 Hz in September' 2024.
- The average frequency for the complete year was 49.99 Hz.
- The frequency was above 50.05 Hz for average 16.52 % of times whereas frequency was below 49.90 Hz for 5.69 % of times.



ISTS Drawl Violation

- In accordance with the CERC (DSM) Regulations, 2022, the permissible deviations in drawl for RE rich States is 200 MW for each time block.
- Though it is the permissible limit, each State is mandated to maintain the drawl as per Schedule.
- Further, the violations are categorized in two parts viz. Category-1 (between 200 MW to 300 MW) and Category-II (Above 300 MW).

Deviation Violation Report of Maharashtra State for CY 2024							
Month	Total Time block	Over-drawl			Under-drawl		
		No. of O/D Block category I	No. of O/D Block category II	Max. O/D (MW)	No. of U/D Block category I	No. of U/D Block category II	Max. U/D (MW)
Jan	2976	278	366	1067	283	495	-1147
Feb	2784	331	303	1570	195	160	-866
Mar	2976	332	445	1271	209	326	-1494
Apr	2880	359	538	1130	216	247	-1079
May	2976	357	505	1559	189	171	-858
Jun	2880	312	713	1450	207	343	-1619
Jul	2976	101	112	919	443	835	-1090
Aug	2976	170	246	1129	311	368	-992
Sep	2880	163	184	1365	323	550	-1239
Oct	2976	143	132	706	352	463	-1353
Nov	2880	224	180	742	299	476	-1161
Dec	2976	146	369	1061	594	73	-699

Points covered_Constraints

Generation Constraints

- Low DC & Availability of Thermal Generators
- Non-contracted Generation Capacity
- Low availability of APM Gas
- Generation capacity under long outage
- Generator responsible for transmission constraints

Transmission Constraints

- LTS Operation & ELR
- Line Hand tripped due to overloading
- ‘N-1’ Non-Compliant Elements
- Constraint in evacuation of Solar Generation
- Inter State ATC/TTC Constraint
- Line Hand tripped due to overvoltage

Transmission constraints affecting Generation

- Nashik TPS Generation constraints
- Backing Down of APML (Tiroda) & Koradi-II Generation
- Koyna water utilization
- Reactive Power Requirement in Boisar area

System Constraints_Generation Constraints

- **Low DC & Availability of Thermal Generators:**
  - DC declared by the Thermal Generators is always on lower side.
  - The % Availability of the MSPGCL thermal units is not up to the target set in the MERC MYT Regulations, 2019.
  - Due to low DC & availability, it is becoming difficult for MSLDC to manage Load-Generation on day ahead as well as in real time.
  - As complete InSGS is scheduled, no reserve capacity is available to mitigate any contingencies.
  - Many times, Koyna Generation is required to be picked-up to meet demand which is resulting in to additional usage of water.
- **Low availability of APM Gas:**
  - MSPGCL's Uran (672 MW) & TPCL's Trombay U-7 (180 MW) are gas-based generating plants.
  - APM gas provided is on lower side compared to it sanctioned allocated quota.
  - Considering location of these plants, any increase in the generation capacity of these plants will reduce the congestion in the 400 kV lines in MMR & Mumbai. Use of RLNG gas is very costly and hence, the power is to be scheduled under 'VSE' which is additional burden on the State DSM Pool.
  - Hence, efforts need to be made in increasing the supply of APM gas as per sanctioned allocations.
- **Generator responsible for transmission constraints:**
  - The installed capacity of Nashik Thermal units is 630 MW.
  - These units are not operated to its Ex-Bus capacity being old units & coal issues.
  - Due to low generation, the transmission network in Nashik Ring Main is severely stressed.
  - The loading on 220 kV Babhaleshwar-Nashik D/C lines is always on higher side and in case of overload, LTS is operated resulting in to load shedding in Nashik Ring Main.
  - Hence, it is necessary to operate Nashik units to its full capacity.

System Constraints_Generation Constraints

- **Generation capacity under long outage:**
  - Some of the units are under long outage.
  - All these outages are either due to major overhaul or due to technical faults.

- **Non-contracted Generation Capacity:**
  - 988 MW capacity is not contracted.
  - All these plants are presently out from the grid. The generation from this capacity will be beneficial for managing Grid.

UNIT UNDER NO PPA

Utility	Name of Unit	Capacity	Date Trip	Time Trip	Date Sync	Time Sync	Reason	Expected Date
PGPL	PGPL U 1	262	07-02-17	17:30		Continued.	No PPA	
PGPL	PGPL U 2	126	07-02-17	17:30		Continued.	No PPA	
IPP	VIPL U-1	300	29-12-18	0:30		Continued.	No PPA from 20.05.2019	
IPP	VIPL U-2	300	17-01-19	0:15		Continued.	No PPA from 20.05.2019	
	Total	**988**						

UNIT UNDER FORCED OUTAGE

Utility	Name of Unit	Capacity	Date Trip	Time Trip	Date Sync	Time Sync	Reason	Expected Date
MSPGCL	Uran Unit A0	120	07-09-22	16:30		Continued.	Turbine Tripped on High Vibrations	31-01-25
MSPGCL	Ghatghar Unit-2	125	26-05-24	13:17		Continued.	Stator Earth Fault	31-03-25
TPC-G	Trombay 5	500	22-09-24	16:14		Continued.	Emergency withdrwan due to fire in cable vault.	31-01-25
MSPGCL	Koradi U-9	660	30-12-24	16:36		Continued.	FD Fan Problem	15-01-25
	Total	**1405**						

System Constraints_Transmission Constraints

- **LTS Operation & ELR:**

- **Following Elements are overloaded which causes ELR and LTS operation frequently :**
- 132kV Rahuri Babhaleshwar Ckt.
- 220kV Nashik Babhaleshwar D/C
- 132kV Nagar MIDC Sonewadi
- 132/33kV 25 MVA T.F I& II at Wadzire

- **Line Hand tripped for Load Management:**

Name of Element	No. of Times
220kV Alephata - Kathapur	57
Aurangabad (MS) - Pune (GIS) CKT - 1	15
Aurangabad (MS) - Pune (GIS) CKT - 2	15
Nashik - Airoli knowledge Park	48
Nashik - Navsari ckt - 1	18
Nashik - Navsari ckt - 2	15
Ghatghar - Jindal	63
Chinchwad - Hinjewadi	37

System Constraints_Transmission Constraints

- **Constraint in evacuation of Solar Generation:**
  - A total 208 MW Solar Generation is connected to 132 kV Wagdari & Naldurg S/s, 149 MW & 59 MW Solar Generation respectively.
  - The said generation is evacuated through 132 kV Ujani-Naldurg S/C, 132 kV Bale – Naldurg S/C & 132 kV Wagdari – Akkalkot S/C line. 132 kV Naldurg & 132 kV Wagdari S/s are interconnected through S/C line. Out of these three evacuating lines, 132 kV Ujani-Naldurg S/C & 132 kV Bale – Naldurg S/C lines are old more than 30 years.
  - In case of tripping of any line, the solar generation required to backed down so as to avoid tripping of remaining lines on overload.

Details of Grid Event (RE) during the Month of Dec-2024:

Month	Category of Grid Event	Affected Area	Time and Date of occurrence of Grid Event	Time and Date of Restoration	Generation Loss	Brief details of the event
Dec-2024	Transmission Constraints on dt:26-12-2024	Generation connected to 132kV Naldurg PSS & Wagdari PSS	12:30	14:28	44 MW 0.022MUs	Breakdown of 132KV Naldurg - Tuljapur on 26.12.2024 @ 09:20Hrs. due to R-Ph conductor snapped between Loc No. 75 & 76. To control loading on 132kV Naldurg-Bale line curtailment was issued.

System Constraints_Transmission Constraints

- **Inter State ATC/TTC Constraint:**
  - Presently, ATC / TTC for the Maharashtra State is as below:
  - Total Transfer Capability (TTC): - 11400 MW
  - Transmission reliability Margin (TRM): - 600 MW
  - Available Transfer Capability (ATC): - 10800 MW
  - During the violation of ATC, to control the Over drawl, Load shedding is required to carried out.

- Line Hand tripped due to overvoltage:

Name of Line	No. of Times Hand tripped
400kV Jaigad – Karad ckt - 1	41
400kV Jaigad – Karad ckt - 2	34
400kV Khadka – Aurangabad (Waluj)	84

System Constraints_Transmission Constraints affecting Generation

- **Backing Down of APML (Tiroda) & Koradi-II Generation:**
  - The generation of APML (Tiroda) & MSPGCL's Koradi-II is evacuated through 765 kV network through 765/400 kV Ektuni S/s.
  - The transformation capacity at 765/400 kV Ektoni S/s is 2 x 1500 MVA.
  - Both the ICTs are loaded to more than 60 % of tis installed capacity.
  - There is no redundancy available in the transformation capacity.
  - In case of tripping or outage on any one ICT, the remaining ICT is either loaded to full rated capacity or above permissible capacity.
  - Hence to maintain the loading within permissible limits, the generation at Tiroda & Koradi-II is required to be backed down.
  - It is difficult for MSLDC to approve outage on these ICTs.
  - To avoid tripping on overload due to tripping or outage on any ICT, SPS is installed which is providing alarm at both the generating stations & generation is backed down manually as per MSLDC's instructions.
  - Hence, it is necessary to provide additional 1 x 1500 MVA 765/400 kV ICT at Ektuni S/s.

System Constraints_Transmission Constraints affecting Generation

- **Koyna water utilization:**
  - Koyna Generation is utilized by MSLDC as per the schedule issued by MSEDCL. Further, the dispatch is dependent up on the availability of other resources arranged by MSEDCL for meeting its demand. Hence, majority of water is utilized for meeting MSEDCL Demand.
  - However, Koyna generation is utilized by the MSLDC under some contingent conditions descried below:
  - To control over-drawl by the State above 200 MW when all the State thermal generation is exhausted. This action is carried out to avoid hefty penalties at State Periphery.
  - To support the Grid frequency when frequency-profile is at lower side, mainly below 49.85 Hz.
  - To control overloading of 400 KV lines viz., Talegaon (PG) –Chakan ckt which normally loaded above 750 MW.
  - To support the grid during system emergencies such as tripping of any generating unit and evacuating grid lines, HVDC pole, multiple tripping of important grid elements, to operate grid securely & reliably.
  - During the power shortfall conditions, till actual effect of load shedding is visible.
  - As there are restrictions in water utilization, it is important to utilize Koyna Generation judiciously. Further, it has been observed that out of allocated annual quota of 67.5 TMC, around 5-6 TMC is used by MSLDC for mitigating Transmission Constraints.

System Constraints_Transmission Constraints affecting Generation

- **Reactive Power Requirement in Boisar area:**
  - It has been informed by ADTPS in the OCC & GCC meeting that the reactive power sharing through the 220 kV Dahanu – Viraj line is on higher side.
  - In peak hours the sharing of reactive power by Dahanu generators increases.
  - Due to this high MVAr injection, the active power needs to be reduced.
  - ADTPS units have been commissioned in 1995 and are old.
  - Due to mechanical vibration issue in the Turbines, it is not possible to provide Reactive power support without reducing active power even within Capability curve.
  - Hence, adequate reactive power compensation needs to be planned & implemented in Boisar area.

System Constraints_Transmission Constraints

- **Issues in Pune region:**

  1) Overloading of 400kV Pune (PG) – Pune GIS Q/C > 3000 MW,

  2) Overloading of 400kV Chakan– Talegaon (PG) ckt > 800 MW

  3) Under voltage phenomenon in Pune region

- **Actions taken by SLDC:**

  1) Hand tripping of 400kV Aurangabad (MS) – Pune GIS ckt -1 :- 15 Nos (hand tripped for 216 days) in CY 2024

  2) Hand tripping of 400kV Aurangabad (MS) – Pune GIS ckt -2 :- 15 Nos (hand tripped for 205 days) in CY 2024

Remedial measures:

To reduce the line loading expedite completion of Shikrapur (Pune GIS) evacuation scheme by MSETCL

System Constraints

- **Issues to be resolved on priority basis :**

In view of upcoming summer season, when state demand may cross 30 GW and Mumbai demand will be around 4.5 GW, following actions are needed on priority to ensure transmission adequacy in the state for upcoming summer season,

- Restoration of 220kV Ulwe – Waghivali ckt – 2 (tripped on 25/06/2024)
- Augmentation of 400/220kV ICTs at Kharghar s/s
- Completion of 245 kV outdoor GIS interconnector project at Kalwa s/s
- Completion of HTLS conductoring of lines emanating from Navi Mumbai (PG) s/s towards Kalwa s/s
- Carrying out fault level studies of Mumbai & MMR substations in view of MUML & KVTL lines
- Planning to reduce Vikhroli 400/220kV ICT loadings (N-1 Non-compliant)
- Expedition of projects to reduce high loading on 220kV Nashik – Babhaleshwar D/C lines.

Outage Planning

Outage Type	Total proposed Outages (Nos)	Total Deferred Outages			Total Approved Outages (Nos)	Total Availed Outages (Nos)	Approved / Availed %
		Deferred from site (Nos)	Deferred by SLDC (Nos)	Deferred by WRLDC (Nos)			
OCCM	9025	5546	1041	293	2145	1175	54.78
State Element	16891	1290	1754	41	13806	7493	54.27
Emergency	1834	46	80	19	1689	1082	64.06
Total	**27750**	**6882**	**2875**	**353**	**17640**	**9750**	**55.27**

Details of Outages processed at ALDC, Ambazari						
Year	PLANNED			FORCED		
	220 kV	132 kV	Total	220 kV	132 kV	Total
CY 2024	858	82	940	153	203	356

Outages of 220 kV & below network in VKM area are processed at ALDC, Ambazari.

- MSLDC Airoli carries out important function of managing outages of 220 kV level & above.
- All such outages are processed through web-based software.
- Total 27750 No. of outages were processed during CY: 2024 out of which around 25% of the outages were deferred by site itself.
- Around 10 % & 1 % outages were deferred by MSLDC & WRLDC respectively.
- 64 % outages i.e. 17640 No. of outages were approved by MSLDC.
- Thus, the net percentage of proposed v/s availed outages is 35.14 % for CY: 2024

Resource Adequacy Study for the state of Maharashtra FY-2026 -2030

As per Maharashtra Electricity Regulatory Commission (Framework for Resource Adequacy) Regulations, 2024. Clause no. 19.1. Monitoring and Reporting, based on the MT-DRAP and ST-DRAP, STU and MSLDC shall communicate the state-aggregated capacity shortfall to the Commission by 15th September of each year for the ensuring year(s).

As per revised timeline the date for submission of state-aggregated capacity shortfall to the commission by 30th October 2024.

Accordingly, all distribution licensees except Railways have submitted their ST-DRAP and MT-DRAP to this office along with requisite data

Based on the data submitted by distribution licensees and historical data available with MSLDC the Resource Adequacy study carried out by MSLDC as below: -

State Level aggregated demand Assessment: -

All distribution licensees submitted hourly forecasted demand for next 5 years, accordingly MSLDC aggregated this hourly forecasted demand of all distribution licensees by addition of block wise demand of each distribution licensees and calculated solar hrs peak demand and non-solar hrs peak demand for the state on monthly basis. The peak demand of state so calculated is non coincident peak

For calculation of solar-hrs peak demand the duration of 06:00 hrs to 18:00 hrs is considered whereas for non-solar hrs peak demand the 18:00 hrs to 06:00 hrs of next day is considered.

The plots for peak demand solar hrs and peak demand non-solar hrs are as below: -

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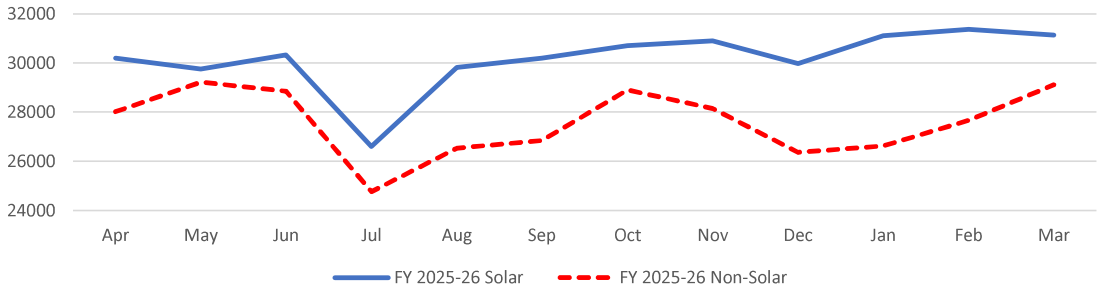
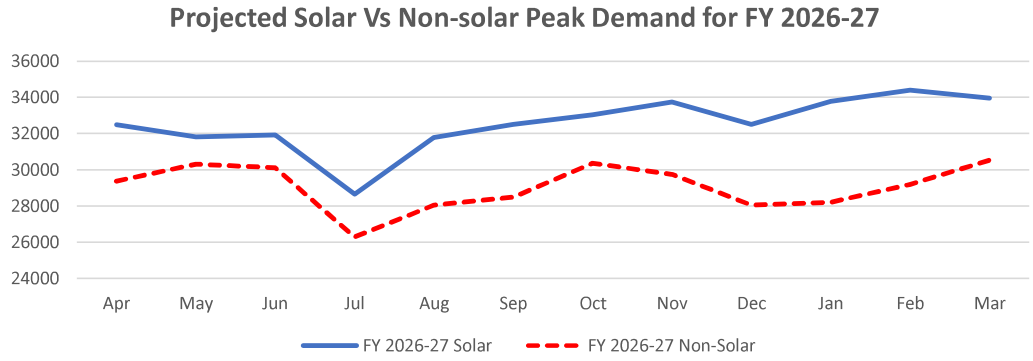
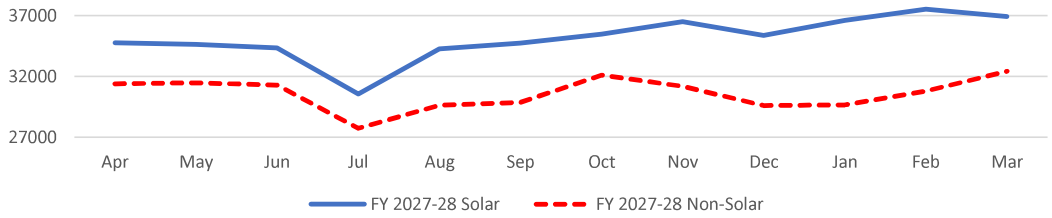
Projected Solar Vs Non-solar Peak Demand for FY 2025-26



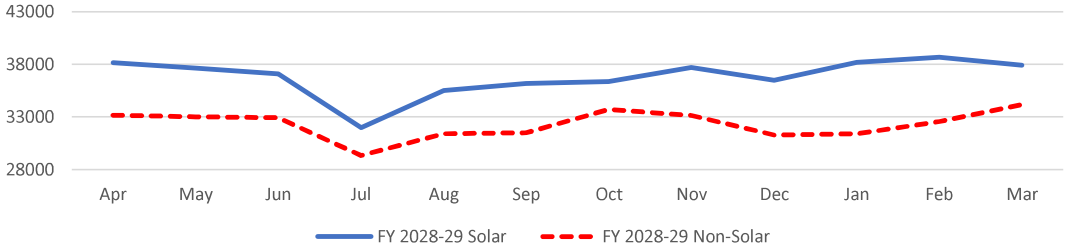
Projected Solar Vs Non-solar Peak Demand for FY 2026-27



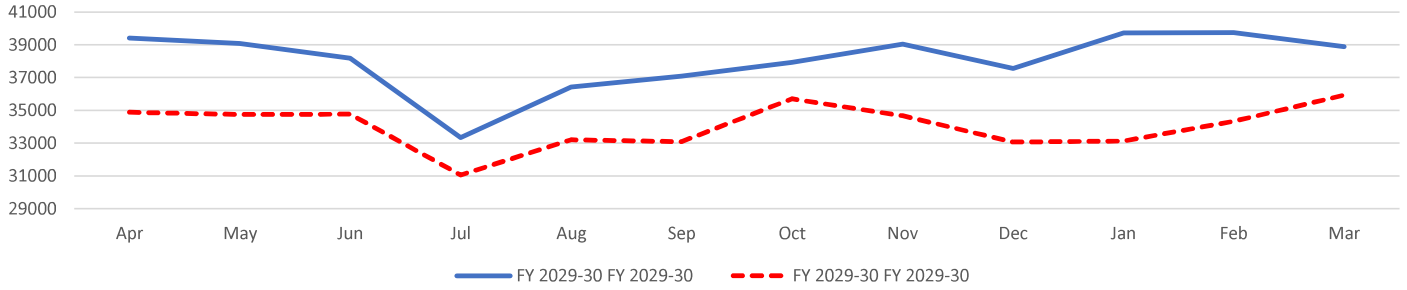
Projected Solar Vs Non-solar Peak Demand for FY 2027-28



Projected Solar Vs Non-solar Peak Demand for FY 2028-29



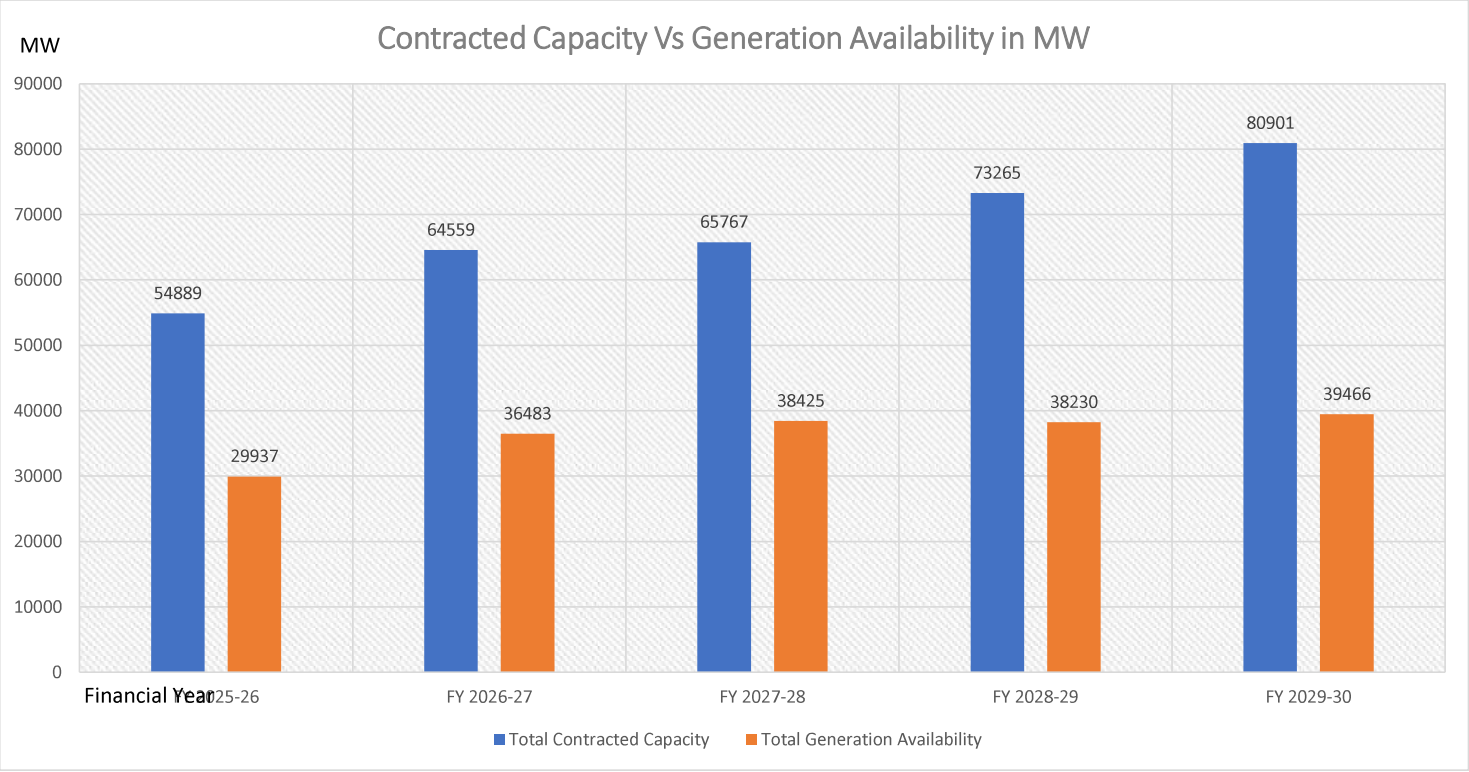
Projected Solar Vs Non-solar Peak Demand for FY 2029-30



The aggregated Generation Resources Availability for state: -

The all-distribution licensees except the Indian railways had submitted their contracted resources to the MSLDC for FY2026 to 2030.

The state level contracted capacity is calculated by summation of all the contracted capacities submitted by all distribution licenses separately for each financial year. The year wise contracted capacity addition is as below:



MSLDC's Submissions on shortfall in State

Maximum shortfall in state is observed as below: -

Sr.No.	Financial Year	Months in which Max. short fall observed	Approx. Max Quantum of shortfall# in MW	Remark if any
1	2025-26	May-25	3149	During non- solar hrs only
2	2026-27	March-27	1464	During non- solar hrs only
3	2027-28	March-28	2800	During non- solar hrs only
4	2028-29	March-29	2926	During non- solar hrs only
5	2029-30	March-30	709	During non- solar hrs only

 # The shortfall is subject to change as per contracted capacity addition proposed by Discoms.

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Maharashtra State Electricity Transmission Co. Ltd.

Thank You!





11th GCC Meeting
January 29, 2025

STU presentation

Venue-MSLDC, Airoli

MAHATRANSCO
Maharashtra State Electricity Transmission Co. Ltd.

Agenda No. 3.3.1

Agenda No.	Name of Substation	Scope	Year of inclusion in STU Plan	Estimated Cost
3.3.1	220kV Sawangi	**Replacement** of existing 2x25MVA, 220/33 kV T/Fs by 2X50MVA, 220/33kV T/Fs	2025-26	Rs.2053.95 lakh
Recommended in 12th MTC meeting Date: 27.01.2025 Agenda Pt No. 02.				

Agenda No. 3.3.1

220kV Sawangi Substation

Present status of T/Fs at 220kV Sawangi Substation is as follows:

S N	Details of T/Fs	Nature of load	Date of comm.	Avg. Max. load of Peak 3 months in a year/ Peak load / Month of Peak			% Loading Avg. Max. / Peak in 2023-24	Aug. proposed by add. in MVA	Aug. proposed by repl. in MVA	Total Capacity after Aug. in MVA
				2021-22	2022-23	2023-24				
1	25 MVA, 220/33 kV T/F 1	Urban-35% **Rural/ Agri- 65 %** MIDC-0%	25.07.07	21.76/ 24.26/ Mar-22	18.66/ 21.56/ Jan-23	15.13/ 15.27/ Jan-24	60.52/ 61.08	-	2 x (50-25) MVA, 220/33 kV	100
2	25 MVA, 220/33 kV T/F 2		23.03.10	13.22/ 14.44/ Apr-21	17.83/ 18.73/ Dec-22	16.26/ 16.49/ Mar-24	65.04/ 65.96			

Agenda No.3.3.1

220kV Sawangi S/s

Reasons for Augmentation

1. The 220kV Sawangi Substation is commissioned in the year 2007
2. MSEDCL has informed establishment of 05 No of new 33/11 kV s/stn to be fed from said s/stn.
3. Accordingly, an estimated additional load of 30–40 MW is expected to be added to the 220 kV Sawangi Substation in the near future. To handle this anticipated demand, capacity expansion at the 220 kV Sawangi Substation is require.
4. Land is not available at 220kV Sawangi sub-station for augmentation of Substation by addition of new 220/33kV, 25/50MVA power transformer. Hence, here in this case the augmentation of Substation is proposed by carrying out the replacement of existing 2x25MVA, 220/33kV by new 2x50MVA 220/33kV power transformers. Hence, there is no land constraint
5. During outage/tripping of any one of the T/F, load is not managed on other T/F i.e. not satisfying (N-1) criteria.
6. Hence considering the present loading condition, future load demand of MSEDCL, outage constraints and to satisfy (N-1) criteria replacement of T/Fs is proposed at 220kV Sawangi S/s.

Agenda No. 3.3.2

Agenda No.	Name of Substation	Scope	Year of inclusion in STU Plan	Estimated Cost
3.3.2 (1)	132kV Majalgaon	**Addition** of 1X50MVA , 132/33kV T/F	2026-27	Rs. 933.28 Lakh
Recommended in 12th MTC meeting Date: 27.01.2025 Agenda Pt No. 03.				

Agenda No. 3.3.2

132kV Majalgaon Substation

Present status of T/Fs at 132kV Majalgaon Substation is as follows:

S N	Details of T/Fs	Nature of load	Date of comm	Avg. Max. load of Peak 3 months in a year/ Peak load / Month of Peak			% Loading Avg. Max. / Peak in 2023-24	Aug. proposed by add. in MVA	Aug. proposed by repl. in MVA	Total Capacity after Aug. in MVA
				2021-22	2022-23	2023-24				
1	50 MVA, 220/33 kV T/F 1	Urban- 30% **Rural/Agri- 70%** MIDC- 0%	07.11. 2007	29.18/ 33.81/ Oct-21	27.05/ 27.4/ May-22	28.78/ 29.71/ Sep-23	57.56/ 59.42	1X50 MVA, 132/ 33kV T/F	-	150
2	50 MVA, 220/33 kV T/F 2		08.11. 2012	24.98/ 26.08/ Mar-22	25.82 26.51/ May-22	27.23/ 28.14/ Sep-23	54.46/ 56.28			

Agenda No.: 3.3.2

132kV MajalgaonS/s

Reasons for Augmentation

1. The 132kV Majalgaon Substation was commissioned in the year 1999. Present installed capacity of 132kV Majalgaon S/s is 100 MVA consisting of 2X50 MVA, 132/33 kV T/fs.
2. The substation supplies power to rural, agricultural, and MIDC (Maharashtra Industrial Development Corporation) loads in Majalgaon and Wadwani Taluka of Beed District.
3. Average maximum loading reached on both the T/Fs are about 58 % of installed capacity.
4. Under the RDSS scheme, MSEDCL has proposed the construction of new 33/11kV substations with a combined capacity of 30 MVA. These include 10 MVA MIDC Substation, 5 MVA Purshottampuri Substation, 5 MVA Roshanpur Substation, 5 MVA Kittiadgaon Substation, and 5 MVA Mangrual Substation.

Agenda No. 3.3.2

Agenda No.	Name of Substation	Scope	Year of inclusion in STU Plan	Estimated Cost
3.3.2 (2)	132kV Niwali	**Replacement** of 2 X (50-25) MVA, 132/33kV T/Fs	2025-26	Rs. 1564.67 Lakh
Recommended in 12th MTC meeting Date: 27.01.2025 Agenda Pt No. 03.				

Agenda No. 3.3.2

132kV Niwali Substation

Present status of T/Fs at 132kV Niwali Substation is as follows:

S N	Details of T/Fs	Nature of load	Date of comm.	Avg. Max. load of Peak 3 months in a year/ Peak load / Month of Peak				% Loading Avg. Max. / Peak in 2023-24	Aug. proposed by add. in MVA	Aug. proposed by repl. in MVA	Total Capacity after Aug. in MVA
				2020-21	2021-22	2022-23	2023-24				
1	25 MVA, 132/33 kV T/F 1	Urban-0% **Rural-20 %** **Agri-80%** MIDC-0%	24.02.12	14.11/ 14.76/ Jan-21	17.08/ 17.37/ Mar-22	18.76/ 22.61/ Nov-22	18.56/ 19.17/ Mar-24	74.24/ 76.68	-	2 x (50-25) MVA, 132/33 kV	100
2	25 MVA, 132/33 kV T/F 2		24.02.12	13.93/ 14.55/ Jan-21	17.79/ 17.94/ Jan-22	19.32/ 23.14/ Nov-22	18.7/ 19.00/ Aug-23	74.8/ 76.00			

Agenda No. 3.3.2

132kV Niwali S/s

Reasons for Augmentation

1)The 132kV Niwali Substation is commissioned in the year 2012. Present installed capacity of 132kV Niwali S/s is 50 MVA consisting of 2 nos of 2X25 MVA, 132/33 kV T/fs.

2)The 132/33 kV transformers supply part of Latur (Rural) Taluka, part of Dharashiv Taluka, and their surrounding areas. Load demand at the 33 kV level in these regions is steadily increasing, particularly during the Rabi season, due to factors like growing agricultural needs and urbanization. Average maximum loading reached on both the T/Fs are about 75 % of installed capacity.

3)During outage/tripping of any one of the T/F, load is not managed on other T/F i.e. not satisfying (N-1) criteria.

4)Hence considering the present loading condition, future load, outage constraints and to satisfy (N-1) criteria replacement of T/Fs is proposed at 132kV Niwali S/s.

Agenda No. GCC-2

132kV MajalgaonS/s

Reasons for Augmentation

6. Additionally, as part of the RDSS scheme, plans include the installation of a new 5 MVA, 33/11kV transformer at the Mogra Substation and the augmentation of an existing 33/11kV transformer from 5 MVA to 10 MVA at the Majalgaon Substation, bringing the total additional capacity to 15 MVA.
7. The feasibility of the 33kV Lonisavangi Hydro Project with an 18 MVA load demand has been issued.
8. MIDC has requested a new 132kV substation in Majalgaon vide L.No. eoffice/P76280 dtd 12.02.2024 to cater to a 25 MW load. This load can be managed through the proposed augmentation of the existing 132kV substation.
9. Hence considering the present loading condition, future load demand of MSEDCL, outage constraints and to satisfy (N-1) criteria addition of T/F is proposed at 132kV Majalgaon S/s.

Agenda No. 3.3.3

Agenda No.	Name of Substation	Scope	Year of inclusion in STU Plan	Estimated Cost
3.3.3 (1)	132kV Kalwan	**Addition** of 1 X 50 MVA, 132/33kV T/F	2026-27	Rs. 927.98 Lakh
Recommended in 12th MTC meeting Date: 27.01.2025 Agenda Pt No. 04.				

Agenda No. 3.3.3

132kV Kalwan Substation

Present status of T/Fs at 132kV Kalwan Substation is as follows:

S N	Details of T/Fs	Nature of Load	Date of comm.	Avg. Max. load of Peak 3 months in a year/ Peak load /Month of peak load			% Loading Avg. Max/ Peak in. 2023-24	Aug. proposed by add. in MVA	Aug. proposed by repl. in MVA	Total Capacity after Aug. in MVA
				2021-22	2022-23	2023-24				
1	50 MVA, 132/33 kV T/F 1	Urban-6.5 % **Rural- 17 % Agri- 75.7 %** MIDC-0.8 %	11.08. 15	34.84/ 36.48/ Mar-22	34.89/ 35.75/ Feb-23	33.88/ 35.18/ Jan-24	67.76/ 70.36	50 MVA, 132/33 kV T/F	-	175
2	50 MVA, 132/33 kV T/F 2		07.04. 97	33.79/35. 39/Mar-22	33.82/ 34.68/ Feb-23	32.93/ 34.18/ Jan-24	65.86/ 68.36			
3	25 MVA, 132/33 kV T/F 3		17.04. 10	15.13/ 17.02/Mar-22	15.74/ 16.2/ Mar-23	14.84/ 15.2 Feb-24	60.8/ 59.36			

Agenda No. 3.3.3

132kV Kalwan S/s

Reasons for Augmentation

1. The 132kV Kalwan Substation is commissioned in the year 1988.
2. 132kV Kalwan substation is feeding partly urban, rural and agricultural load under Nashik District.
3. Maximum loading reached on T/F 1 & 2 are about 70 % of installed capacity.
4. During outage/Breakdown of one of the T/F, load is not managed on other T/F i.e. not satisfying (N-1) criteria.
5. Hence considering the present loading condition, outage constraints and to satisfy (N-1) criteria addition of T/F is proposed at 132kV Kalwan S/s

Agenda No. 3.3.3

Agenda No.	Name of Substation	Scope	Year of inclusion in STU Plan	Estimated Cost
3.3.3 (2)	132kV Mhasrul	**Addition** of 1 X 50 MVA, 132/33kV T/F	2027-28	Rs.**939.04** Lakh
Recommended in 12th MTC meeting Date: 27.01.2025 Agenda Pt No. 04.				

Agenda No. 3.3.3

132kV Mhasrul Substation

Present status of T/Fs at 132kV Mhasrul Substation is as follows:

S N	Details of T/Fs	Nature of Load	Date of comm.	Peak load / Avg. Max. load of Peak 3 months in a year			% Loading Avg. Max./ Peak 2023-24	Aug. proposed by add. in MVA	Aug. proposed by repl. in MVA	Total Capacity after Aug in MVA
				2021-22	2022-23	2023-24				
1	50 MVA, 132/33 kV T/F 1	Urban-58 % Rural- & Agri- 42 %	28.03.2017	38.67/ 42.43/ Dec-21	39.91/ 40.72/ Dec-22	43.45/ 44.18/ Dec-23	86.9/ 88.36	50 MVA 132/33 kV T/F	-	150
2	50 MVA, 132/33 kV T/F 2		31.03.2021	32.47/ 34.56/ Aug-21	34.57/ 35.46/ Aug-22	29.18/ 29.87/ Aug-23	58.36/ 59.4			

Agenda No. 3.3.3

132kV Mhasrul S/s

Reasons for Augmentation

1. The 132kV Mhasrul Substation was commissioned in the year 2002. 132 kV Mhasrul substation is the substation feeding the load of area near Nashik district
2. Maximum loading reached on T/F No.1 is above 85 % of installed capacity.
3. During outage/Breakdown of either of the T/F, load is not managed on other T/F i.e. not satisfying (N-1) criteria.
4. Hence considering the present loading condition, outage constraints and to satisfy N-1 criteria addition of T/F is proposed at 132kV Mhasrul S/s

Agenda No. 3.3.3

Agenda No.	Name of Substation	Scope	Year of inclusion in STU Plan	Estimated Cost
3.3.3 (3)	132kV Malegaon	**Addition** of 1 X 50 MVA, 132/33kV T/F	2027-28	Rs. 943.64 Lakh.
Recommended in 12th MTC meeting Date: 27.01.2025 Agenda Pt No. 04.				

Agenda No. 3.3.3

132kV Malegaon Substation

Present status of T/Fs at 132kV Malegaon Substation is as follows:

SN	Details of T/Fs	Nature of load	Date of comm.	Avg. Max. load of Peak 3 months in a year/ Peak load /Month of peak load			% Loading Avg. Max/ Peak. 2023-24	Aug. proposed by add. in MVA	Aug. proposed by repl. in MVA	Total Capacity after Aug. in MVA
				2021-22	2022-23	2023-24				
1	50 MVA, 132/33 kV T/F 1	Urban- 60 % Rural- 20 % Agri- 10 % MIDC- 10 %	25.08.12	35.01/ 35.48/ Sep-22	37.49/ 39.21 Aug-23	37.88/ 39.33/ Aug-24	75.76/ 78.66	1 x 50MVA, 132/33kV	-	200
2	50 MVA, 132/33 kV T/F 2		01.06.12	33.83/ 34.36/ Sep-22	36.62/ 38.29 Aug-23	36.88/ 38.15/ Jun-24	73.76/ 76.3			
3	50 MVA, 132/33 kV T/F 3		07.10.13	44.02/ 44.42 Dec-22	43.51/ 44.52/ Aug-23	39.20/ 40.35 Sep-24	78.4/ 80.7			

Agenda No. 3.3.3

132kV Malegaon S/s

Reasons for Augmentation

1)The 132 kV Malegaon Substation was commissioned in 1978.

2)The substation supplies power to a mix of industrial, urban, rural, and agricultural areas in Malegaon Taluka of Nashik district.

3)Maximum loading on all the three T/Fs is about 75% of their installed capacity.

4)Load growth in the region is steadily increasing, making it essential to ensure sufficient capacity at the 132 kV Malegaon Substation. Although space is available for three additional 33 kV feeders, future commissioning of these feeders could strain the substation's ability to meet demand. Therefore, the addition of a 50 MVA, 132/33 kV transformer is necessary. Over the next three years, a 10% increase in load is projected due to regional growth in industrial, urban, and rural sectors.

5)Hence considering the future loading, outage constraints and to satisfy (N-1) criteria addition of T/F is proposed at 132kV Malegaon S/s.

Agenda No. 3.3.3

Agenda No.	Name of Substation	Scope	Year of inclusion in STU Plan	Estimated Cost
3.3.3 (4)	132kV Adgaon	**Addition** of 1 X 25 MVA, 132/33kV T/F	2027-28	Rs. 931.76 Lakh.
Recommended in 12th MTC meeting Date: 27.01.2025 Agenda Pt No. 04.				

Agenda No. 3.3.3

132kV Adgaon Substation

Present status of T/Fs at 132kV Adgaon Substation is as follows:

S N	Details of T/Fs	Nature of load	Date of comm.	Avg. Max. load of Peak 3 months in a year/ Peak load /Month of peak load			% Loading Avg. Max/ Peak. 2023-24	Aug. proposed by add. in MVA	Aug. proposed by repl. in MVA	Total Capacity after Aug. in MVA
				2021-22	2022-23	2023-24				
1	50 MVA, 132/33 kV T/F 1	Urban- 20 % **Rural- 40 % Agri- 40 %** MIDC- 0%	18.11. 10	25.05/ 26.31/ Apr-21	26.24/ 27.68/ Jan-23	30.22/ 31.87/ Jan-24	60.44/ 63.74	1 x 50MVA, 132/33kV	-	125
2	25 MVA, 132/33 kV T/F 2		16.09. 2006	12.15/ 12.76/ Apr-21	12.57/ 12.82 Jan-23	14.85/ 15.67 Jan-24	59.40/ 62.68			

Agenda No. 3.3.3

132kV Adgaon S/s

Reasons for Augmentation

1)The 132 kV Adgaon Substation was commissioned in the year 2003.

2)Maximum load on both the T/Fs reaches to 63% of its MVA capacity.

3)A load increase of approximately 10 MVA is expected in the next three years in the region, due to new major projects, including electric vehicle charging stations and the growth of industrial, urban, and rural areas.

4)During the upcoming Kumbh Mela in 2026, there is likely to be an additional load increase in the Sadhugram area, which is supplied by the 132 kV Adgaon Substation.

5)Hence considering the future loading, outage constraints and to satisfy (N-1) criteria addition of T/F is proposed at 132kV Adgaon S/s.

Agenda No. 3.3.3

Agenda No.	Name of Substation	Scope	Year of inclusion in STU Plan	Estimated Cost
3.3.3 (5)	132kV Taharabad	**Replacement** of 2 X (50-25) MVA, 132/33kV T/Fs	2025-26	Rs. 1581.61 Lakh
Recommended in 12th MTC meeting Date: 27.01.2025 Agenda Pt No. 04.				

Agenda No. 3.3.3

132kV Taharabad Substation

Present status of T/Fs at 132kV Taharabad Substation is as follows:

S N	Details of T/Fs	Nature of load	Date of comm.	Avg. Max. load of Peak 3 months in a year/ Peak load /Month of peak load				% Loading Avg. Max./ Peak/ 2023-24	Aug. proposed by add. in MVA	Aug. proposed by repl. in MVA	Total Capacity after Aug. in MVA
				2020-21	2021-22	2022-23	2023-24				
1	25 MVA, 132/33 kV T/F 1	Urban-0 % **Rural- 20 %** **Agri- 80%** MIDC-0%	10.09.14	13.26/ 14.11/ Mar-21	13.79/ 14.00/ Mar-22	14.49/ 14.74/ Mar-23	13.72/ 14.71/ Dec-23	54.88/ 58.84	-	2X (50-25) MVA, 132/33 kV	100
2	25 MVA, 132/33 kV T/F 2		10.09.14	12.73/ 12.84/ Jan-21	13.15/ 13.26/ Feb-22	13.68/ 13.89/ Mar-23	13.64/ 14.21 Dec-23	54.56/ 56.84			

Agenda No. 3.3.3

132kV Taharabad S/s

Reasons for Augmentation

1)The 132 kV Taharabad Substation was commissioned in the year 2014.

2)It supplies power to the Satana Taluka and area of Nashik District around the 132kV Taharabad Substation

3)The average maximum load on both transformers are about 55% of its installed capacity.

4)Also MSEDCL has planned to add 33kV Gholwad (10 MVA), Dasawel (5 MVA) and Nitane (10 MVA) under RDSS scheme vide L.No. EE/NSKRD/T/DY (O)/1730 dated 21.03.2024.

5)Hence considering the future loading, outage constraints and to satisfy (N-1) criteria replacement of T/Fs is proposed at 132kV Taharabad S/s.

Agenda No. 3.3.3

Agenda No.	Name of Substation	Scope	Year of inclusion in STU Plan	Estimated Cost
3.3.3 (6)	132kV Igatpuri	**Replacement** of 1 X (50-25) MVA, 132/33kV T/Fs	2025-26	Rs. 819.09 Lakh
Recommended in 12th MTC meeting Date: 27.01.2025 Agenda Pt No. 04.				

Agenda No. 3.3.3

132kV Igatpuri Substation

Present status of T/Fs at 132kV Igatpuri Substation is as follows:

S N	Details of T/Fs	Nature of load	Date of comm.	Avg. Max. load of Peak 3 months in a year/ Peak load /Month of peak load			% Loading Avg. Max./ Peak/ 2023-24	Aug. proposed by add. in MVA	Aug. proposed by repl. in MVA	Total Capacity after Aug. in MVA
				2021-22	2022-23	2023-24				
1	25 MVA, 132/33 kV T/F 1	Urban-10 % **Rural- 30 % Agri- 50%** MIDC-10%	22.12. 2007	19.57/ 20.72/ Feb-22	21.21/ 21.73/ Mar-23	22.67/ 24.43/ Mar-24	90.68/ 97.72	-	1X (50-25) MVA, 132/33 kV	75
2	50 MVA, 132/33 kV T/F 2		24.10. 2020	20.74/ 20.95/ Mar-22	22.75/ 23.51/ Apr-22	24.57/ 24.77/ Apr-23	49.14/ 49.54			

Agenda No. 3.3.3

132kV Igatpuri S/s

Reasons for Augmentation

1. The 132 kV Igatpuri Substation was commissioned in the year 1965.
2. It supplies power to the rural and agricultural areas of Nashik city and handles generation evacuation of approximately 106 MW from hydroelectric sources at 132kV level, as well as catering to central railway loads.
3. The average maximum load on the 25 MVA, 132/33 kV Transformer 1 has exceeded 90% of its installed capacity.
4. MSEDCL has proposed 33 kV feeders for Bhavali Dam (10 MVA), MSRDC Samruddhi Highway (10 MVA), and Waki (5 MVA) under RDSS scheme.
5. Hence considering the future loading, outage constraints and to satisfy (N-1) criteria replacement of T/F is proposed at 132kV Igatpuri S/s.

Agenda No. 3.3.3

Agenda No.	Name of Substation	Scope	Year of inclusion in STU Plan	Estimated Cost
3.3.3 (7)	132kV Pimparkhed	**Replacement** of 2 X (50-25) MVA, 132/33kV T/Fs	2025-26	Rs. 1589.68 Lakh
Recommended in 12th MTC meeting Date: 27.01.2025 Agenda Pt No. 04.				

Agenda No. 3.3.3

132kV Pimparkhed Substation

Present status of T/Fs at 132kV Pimparkhed Substation is as follows:

SN	Details of T/Fs	Nature of load	Date of comm.	Avg. Max. load of Peak 3 months in a year/ Peak load /Month of peak load			% Loading Avg. Max. / Peak/ 2023-24	Aug. proposed by add. in MVA	Aug. proposed by repl. in MVA	Total Capacity after Aug. in MVA
				2021-22	2022-23	2023-24				
1	25 MVA, 132/33 kV T/F 2	Urban-10 % **Rural-13 % Agri-75%** MIDC -2%	05.06.2010	22.19/ 24.96/ Feb-22	21.29/ 22.35/ Mar-23	16.41/ 17.26/ Apr-23	65.64/ 69.04	-	2 x (50-25) MVA, 132/33kkV	100
2	25 MVA, 132/33 kV T/F 3		06.03.2014	22.19/ 24.96/ Feb-22	21.29/ 22.35/ Mar-23	16.41/ 17.26/ Apr-23	65.64/ 69.04			

Agenda No. 3.3.3

132kV Pimparkhed S/s

Reasons for Augmentation

1)The 132 kV Pimparkhed Substation was commissioned in the year 1994.

2)This substation feeding supply to Important load of EHV Consumer i.e Railway and part of Nandgaon Tahasil including Nadgaon City & most of the load covered by SS is rural and agricultural load under Nandgaon taluka of Nashik

3)During outage/tripping of any one of the T/F, load is not managed on other T/F i.e. not satisfying (N-1) criteria.

4)Hence considering the future loading, outage constraints and to satisfy (N-1) criteria replacement of T/F is proposed at 132kV Pimparkhed S/s.

Agenda No.: 3.3.4

Agenda No.	Name of Substation	Scope	Year of inclusion in STU Plan	Estimated Cost
3.3.4	220kV Warud	Establishment of 33kV Voltage level by providing additional 2X25MVA, 220/33kV T/Fs along with 6 X 33 kV bays, 2 X 33kV PT bays, 33kV Bus with bus sectionaliser bay & 220kV Bus extension	2025-26	Rs.2648.40 Lakhs
Recommended in 12th MTC meeting Date: 27.01.2025 Agenda Pt No. 05.				

Agenda No.3.3.4

220kV Warud S/s

Reasons for Augmentation

1. 220kV Warud substation is commissioned in the year 2021 and presently having installed capacity of 200MVA which includes 2 X 100 MVA, 220/132kV ICTs.
2. MSEDCL has, submitted the requirement of 33kV level creation by erection of 2X 25MVA, 220/33kV T/Fs at existing 220kV Warud S/s
3. The loading details of existing 132/33kV Morshi and 132/33kV Warud EHV substation which fed power supply to Morshi and Warud Taluka in Amravati district are as follows:

Sr. No	Name of existing EHV substations	Installed capacity in MVA	Maximum Load (MVA)	% loading
1	132/33kV Morshi	2X25MVA, 132/33kV T/F	38.8	78%
2	132/33kV Warud	2X25MVA, 132/33kV T/F	41.4	83%

4. Both EHV substations are currently operating above 77% loading. Due to space limitation, expanding the infrastructure at these location is not possible.

5. Hence considering to fulfill the future demand of MSEDCL and improve the voltage regulation, 33 kV Voltage level creation scheme is proposed at 220kV Warud S/s.

Agenda No. 3.3.5

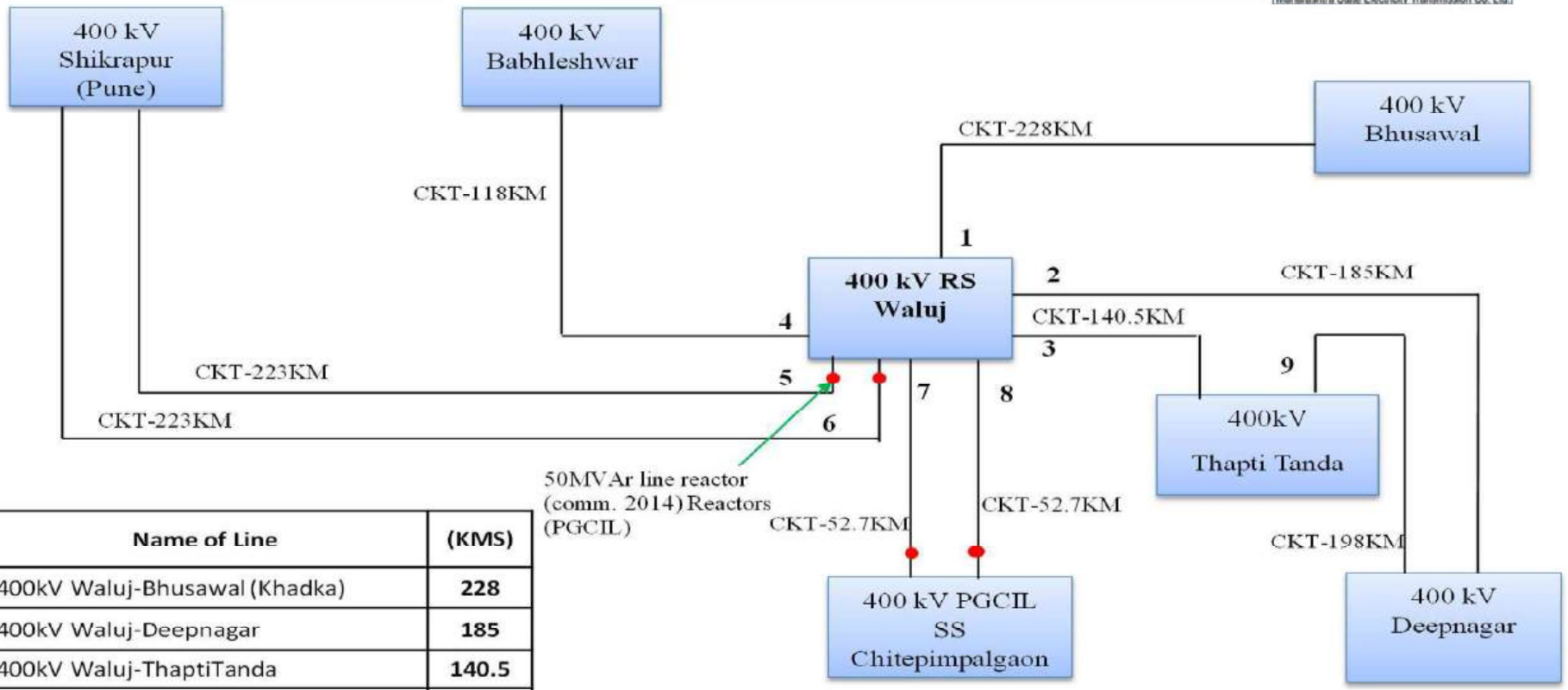
Scheme Name:

Revised scheme of Installation of 1 x 125 MVAR, 400 kV Bus Shunt Reactor at 400 kV Waluj sub-station, Dist. CSN

Agenda No.	Name of Substation	Scope	Year of inclusion in STU Plan	Estimated Cost in Rs Lakhs
3.3.5	400kV Waluj (CSN Zone)	1. Supply, Installation, testing & commissioning of New 1 x 125 MVAR, 400 kV Bus Reactor with allied bay equipment at 400kV Waluj S/S. 2. Allied Civil Works	Included in 2025-26	2470.31
Recommended in 12th MTC meeting Date: 27.01.2025 Agenda Pt No. 06.				

Agenda No. 3.3.5

Block Diagram of EHV Network in respect of Reactors at 400kV Waluj S/S



Sr. No	Name of Line	(KMS)
1	400kV Waluj-Bhusawal (Khadka)	228
2	400kV Waluj-Deepnagar	185
3	400kV Waluj-ThaptiTanda	140.5
4	400kV Waluj-Babhleshwar	118
5	400kV Waluj-Pune Ckt.1 (PGCIL)	223
6	400kV Waluj-Pune Ckt.2 (PGCIL)	223
7	400kV Waluj-ACPG Ckt.1 (PGCIL)	52.7
8	400kV Waluj-ACPG Ckt.2 (PGCIL)	52.7
9	400kV Thapti Tanda –Deepnagar	198

Agenda No. 3.3.5

Need of work:

400 kV Waluj Substation is very vital sub-station under EHV O&M Circle CSN. The total installed capacity of this sub-station is 1341 MVA, the details of ICTs in service are as below.

a) 400/220/132kV, 315 MVA ICT-I b) 400/220/132kV, 315 MVA ICT-II
c) 400/220kV, 501 MVA ICT-III d) 220/33kV, 80 MVA TF-I
e) 220/33kV, 80 MVA TF-II f) 220/33kV, 50 MVA TF-III

400 kV Waluj sub-station is commissioned in year 1999. Being major grid connected & generation station connected 400kV SS, there is a issue of over voltages at 400kV Waluj SS.These overvoltage issues are temporarily resolved by keeping 400 kV Waluj - Bhusawal (Khadka) line out of service by hand tripping during night hours in consultation with LD.

Hence, the scheme for Installation of 1 x 125 MVAR, 400 kV Bus Reactor at 400 kV Waluj sub-station, Dist. CSN was sanctioned vide BR No. 146/10 dtd.16.03.2021 at a total estimated cost of **Rs.1988.47 lakhs** Moreover, MERC had approved the In-Principle approval for the said scheme for cost of Rs.19.04 Crs against the claim of Rs.19.88 Crs of MSETCL.
Due to inadequate response & higher rates for similar works, the tender for said works could not be finalized by Projects section. Board Approval validity exhausted in March, 2023. Hence the revised scheme of 125 MVAr Reactor is proposed with costing Rs. 24.70 Cr.

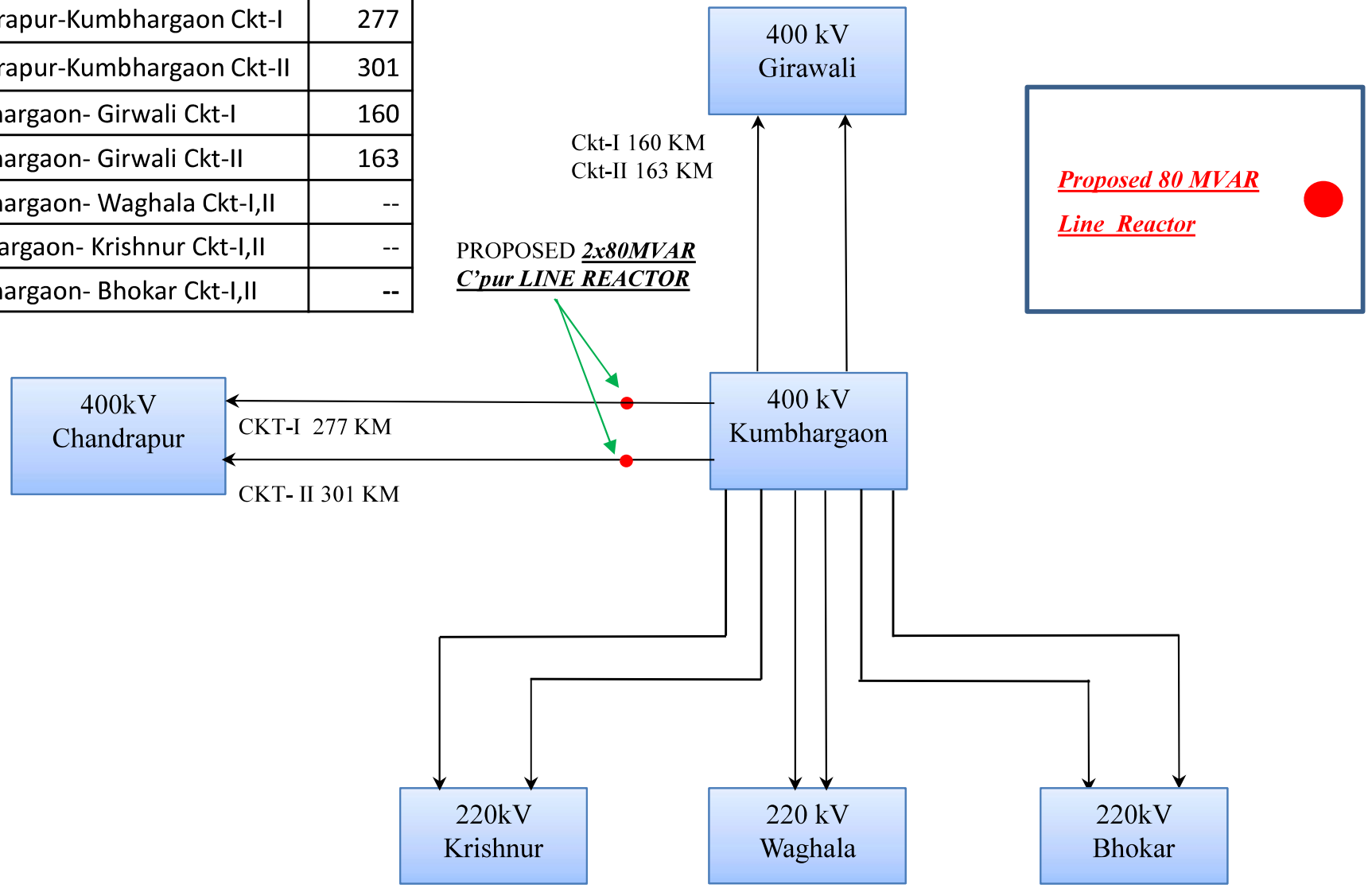
Agenda No. 3.3.6

Scheme:
Revised scheme of Installation of 2x80 MVAR, 400kV Line Reactor for 400kV Kumbhargaon sub-station, (Dist. Nanded) under Chhatrapati. Sambhaji Nagar

Agenda No.	Name of Substation	Scope	Year of inclusion in STU Plan	Estimated Cost
3.3.6	400kV Kumbha-rgaon (CSN Zone)	1. Supply, Installation, testing & commissioning of New 2x80 MVAR, 400kV Line Reactor at 400kV Kumbhargaon S/s 2. Allied Civil Works	2025-26	Rs. 3175.98 Lakhs
Recommended in 12th MTC meeting Date: 27.01.2025 Agenda Pt No. 07.				

Agenda No. 3.3.6

Sr. No	Name of Line at 400 KV Kumbhagaon SS	(KMS)
1	400kV Chandrapur-Kumbhargaon Ckt-I	277
2	400kV Chandrapur-Kumbhargaon Ckt-II	301
3	400kV Kumbhargaon- Girwali Ckt-I	160
4	400kV Kumbhargaon- Girwali Ckt-II	163
5	220kV Kumbhargaon- Waghala Ckt-I,II	--
6	220kVKumbhargaon- Krishnur Ckt-I,II	--
7	220kV Kumbhargaon- Bhokar Ckt-I,II	**--**



Agenda No. 3.3.6

Background of 400 kV Kumbhargaon S/s:

•400 kV Kumbhargaon Substation (Dist. Nanded) is very vital sub-station under EHV O&M Circle Parli. The total installed capacity of this sub-station is 1,002 MVA, the details of ICTs in service are as below:

i) 400/220kV, 501 MVA ICT-I
ii) 400/220kV, 501 MVA ICT-II

- 400kV Kumbhargaon SS (Dist. Nanded) being a major grid connected sub-station, having long length 400kV lines, there is the issue of over voltage. As per MERC Grid Code-2020, Part-C (Operating Code), Sr. No 37.13, the prescribed limits for maintaining bus voltage at 400kV bus is ±5% i.e., 380kV to 420kV. However, is seen that the limits of over voltage are crossed at 400kV Kumbhargaon SS many times.
- As such, the scheme for Installation of 2 x 80MVAR, 400 kV Line Reactor at 400 kV Kumbhargaon sub-station, Dist. Nanded was sanctioned vide **BR No. 136/42 Dt.29.07.2019** at a total estimated cost of Rs.1581.41 lakhs Accordingly, Hon. MERC had approved the In-Principle approval for the said scheme for cost of Rs.15.59 Crs against the claim of Rs.15.81 Crs. of MSETCL.
- due to inadequate response & higher quoted rates by bidders, the tender could not be finalized by Projects section. Validity of Board Approval was exhausted. Hence the revised scheme of 125 MVAr Reactor is proposed, with revised cost.

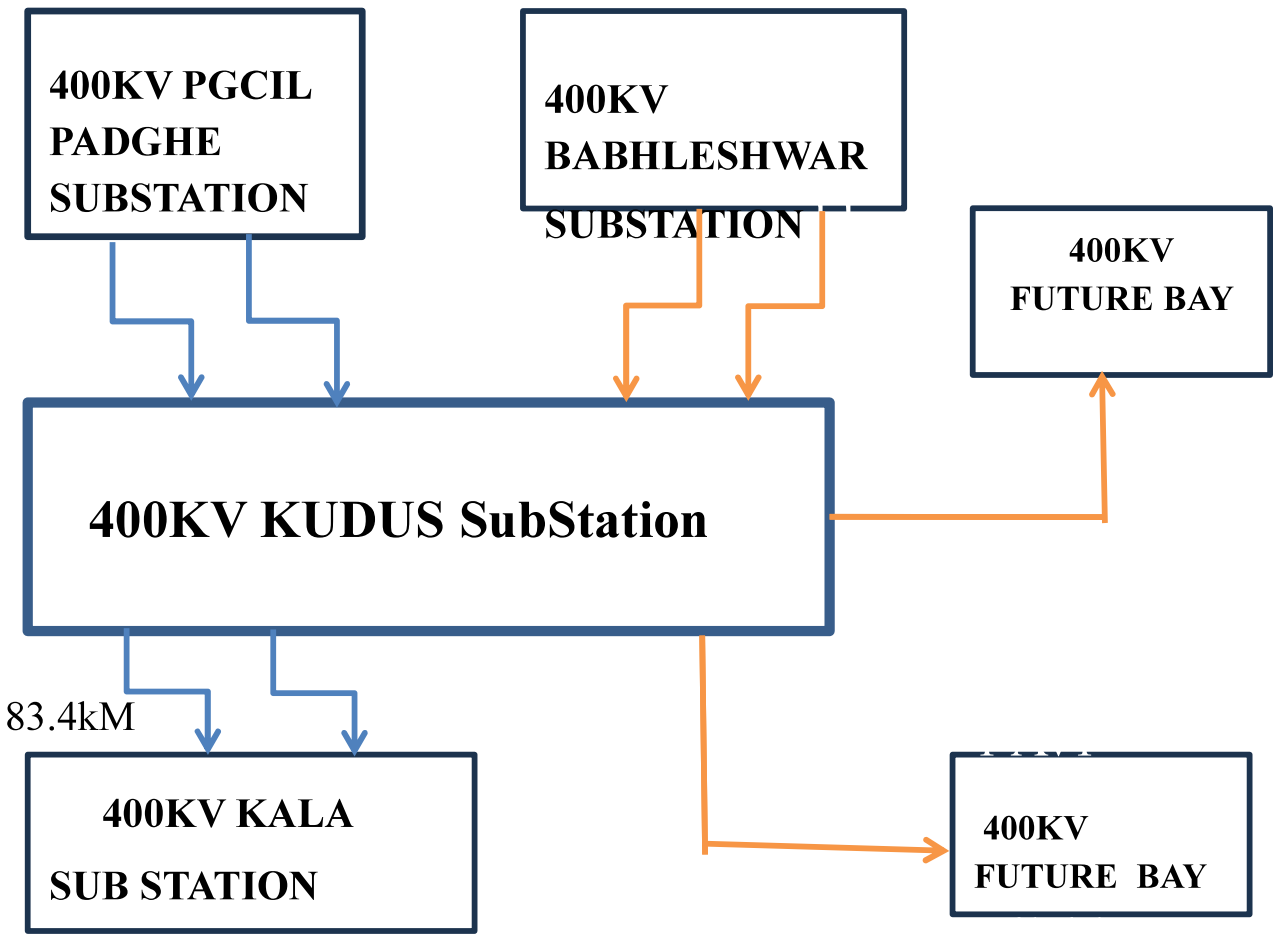
Agenda No. 3.3.7:

Scheme:
Revised scheme of Installation of 1 x 125 MVAR, 400 kV Bus Reactor at 400 kV Kudus sub-station, Vashi Zone

Agenda No.	Name of Substation	Scope	Year of inclusion in STU Plan	Estimated Cost
3.3.7	400kV Kudus (Vashi Zone	1. Supply, Installation, testing & commissioning of New 1 x 125 MVAR, 400 kV Bus Reactor with allied bay equipment at 400kV Kudus S/S. 2. Allied Civil Works	2025-26	Rs. 2379.39 Lakhs
Recommended in 12th MTC meeting Date: 27.01.2025 Agenda Pt No. 08.				

Agenda No. 3.3.7:

Block diagram



Sr. No	Name of Line	KMs
1	400kV PGCIL Padghe-Kudus Ckt- I (In service)	17
2	400kV PGCIL Padghe-Kudus Ckt- II (In service)	17
3	400kV Kudus-Babhaleshwar Ckt- I (Proposed)	228
4	400kV Kudus-Babhaleshwar Ckt- II (Proposed)	228
5	400kV Kudus-PGCIL Kala Ckt- I (In service)	83.4
6	400kV Kudus-PGCIL Kala Ckt- II (In service)	83.4
	Proposed	
	In service	

Agenda No. 3.3.7

Back-ground of 400kV Kudus SS

- At 400kV R.S. Kudus, there are 17 Nos. of 400 kV bays including tie bays {i.e. 400kV PGCIL Padghe 1 (Import), PGCIL Padghe 2 (Import), 400kV PGCIL Kala 1, 400kV PGCIL Kala 2 (Export), ICT 1, ICT 2 are in service. As well as 400kV Babhleshwar 1 (Proposed), Babhleshwar 2 (Proposed), Tarapur (Proposed), Padghe (Proposed) are upcoming lines ICT 3 (Proposed), Other 06 Nos are tie bays}, also The 400KV incoming lines i.e Babhaleshwar-Kudus work is under progress.
- In view of the above upcoming lines and to control of over voltages, and to reduce the damage of equipment due to the high voltage stresses the Reactor scheme was proposed.
- As such, this scheme was sanctioned vide BR No. 146/08 dtd.22.01.2021 at a total estimated cost of Rs.1613.20 lakhs.Moreover, MERC had approved the In-Principle approval for the said scheme for cost of Rs.15.45Crs. against the claim of Rs.16.13 Crs of MSETCL.
- Due to inadequate response & higher rates for similar works, the tender could not be finalized by Projects section.
- The Board approval was valid up to Jan 2023 only. Hence the revised scheme of 125 MVAr Reactor is proposed, with revised cost.

Agenda-3.3.8

Scheme for appraisal in GCC:

Accord of appraisal in respect of revision in cost for scheme of replacement of existing 0.5 ACSR Twin Moose Conductor along with insulators and hardwares by Twin High Performance Conductor (HPC) equivalent to 0.5 ACSR Moose Conductor & allied hardwares & insulators of 400kV Kalwa-Talegaon **(96km),** Kalwa-Kharghar **(28.76km),** Kharghar-Talegaon **(94km)** line and 400kV Kalwa-Kharghar -Talegaon Bays at 400kV RS Kalwa, 400kV RS Kharghar and 400kV PGCIL Talegaon under Vashi and Pune Zone.

Total Ckt km- 218.76km

- **Total Estimated Scheme Cost: Rs. 503.53 Crores**

(*Scheme was ratified in 10th GCC (Agenda 4.11), with Costing Rs. 503.51 Cr. Due to revised cost of Rs. 621.71 Cr. and inclusion of revised overhead charges, Agenda is appraised to 11th GCC.*

- **Revised Estimated Scheme Cost: Rs. 621.70 Crores** (including IDC of Rs. 35.19 Crores)
- ***Recommended in 12th MTC meeting Date: 27.01.2025 Agenda Pt No. 09.***

Agenda-3.3.8

❖ Revision in cost of scheme is due to consideration of revised Overheads as per Circular No. 7913 dt.13.11.2024 while preparing estimates of scheme which is mentioned below:

Sr. No.	Name of the provision	As per Circular No.1235 dt.01.02.18	As per Revised Circular No. 7913 dt.13.11.2024
1.	Price Variation	5% (on individual bare cost of s/s & line)	5% (on individual bare cost of s/s & line)
2.	Land & Crop compensation	15% (on individual bare cost of line)	30% (on individual bare cost of line)
3.	Contingencies (QV)	3% (on individual bare cost of s/s & line)	3% (on individual bare cost of s/s & line)
4.	Statutory Charges	5% (on individual bare cost of line)	5% (on individual bare cost of line)
5.	Centages	10% (on individual bare cost of s/s & line)	7% (on individual bare cost of s/s & line)

Agenda-3.3.9

Scheme:

Replacement of existing Twin 0.5 Moose Conductor, insulators, all accessories and hardwares by equivalent Twin High Performance Conductor along with insulators & suitable hardwares & accessories of 400kV Lonikand to Chakan line (25km) along with associated bay strengthening work at 400kV Lonikand- I & 400kV Chakan substation.

- **Total estimated Scheme Cost:**
  Rs. 72.52 Crores (Including IDC Rs. 410.48 Lakhs).

Recommended in 12th MTC meeting Date: 27.01.2025 Agenda Pt No. 10.

Brief scope of work:

- Supply of High Performance Conductor (HPC) along with allied hardwares, accessories equivalent to existing 0.5 Moose conductor, Long rod anti fog porcelain insulator etc.
- Dismantling of existing 0.5 Moose conductor with all hardware & transportation of removed materials to site store.
- Stringing of HPC conductor along with allied hardwares, accessories & Long rod anti fog porcelain insulator etc.
- Strengthening of end bay at 400kV Lonikand- I & 400kV Chakan substation.

Agenda-3.3.9

Need of the work

- 400 kV Chakan substation is having two transmission lines, i.e. 400 kV Talegaon (PG) to Chakan & 400 kV Lonikand I to Chakan line. Both these lines are in service since dtd. 23/03/1992 (33 years).

  At present, Pune transmission ring main system is facing critical operational constraints due to increase in loading of Pune District. To remove the transmission constraints and strengthening of present transmission network, necessary **projects were planned & envisaged to be commissioned on Top- Priority.**

A) Conversion of existing S/C 220kV Chinchwad-Urse corridor into M/ckt corridor (Package A/B/C under BR No. 69/17 dt. 31.12.2011.

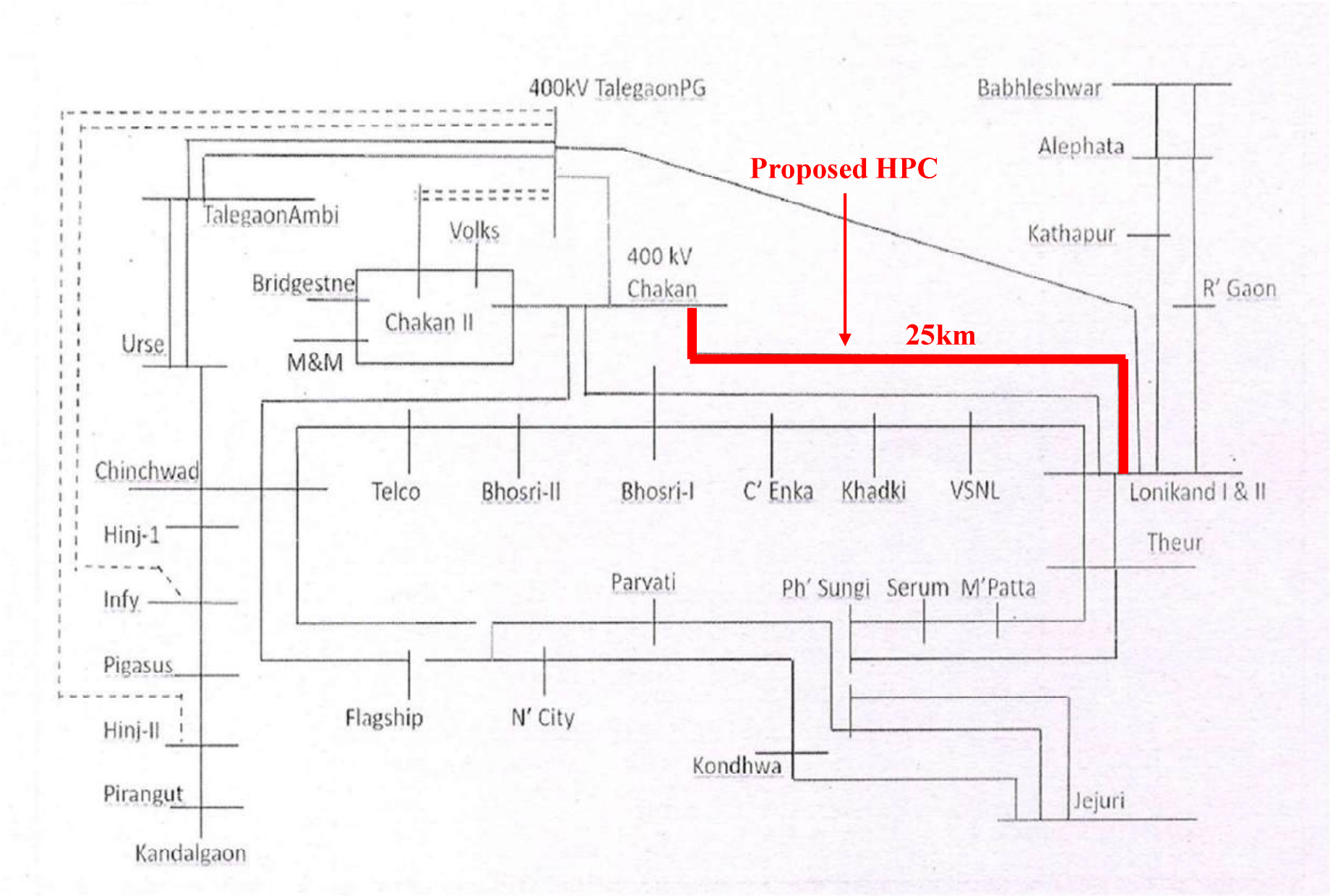
B) B)Establishment of 400/220kV Hinjewadi substation

- 220kV D/C line from 400kV Talegaon (PG) substation to 220kV Chakan MIDC Phase-II substation (6km)
- 220kV LILO on 220kV Chinchwad- Telco S/C line at 400kV Chakan-9km
- 220kV level creation at 765kV Shikrapur PG substation.

Agenda-3.3.9

- The delay in commissioning of above projects is resulting into critical operation of Pune district transmission network & Pune ring main system. This results into frequent operation of LTS which leads to power cut off in Pune city.
- This required immediate remedial action to cope up alarming loading condition in Pune transmission network. At present, 400kV Talegaon (PG) substation act as main power source to 400kv Lonikand-I & Chakan substation through 400kV Talegaon(PG)- Chakan S/C line, 400kV Talegaon(PG)- Lonikand-I S/C line & 400kV Chakan- Lonikand-I line. In case of failure of 400kV Talegaon (PG)- Chakan line, 400kV Talegaon(PG)- Lonikand –I S/C & 400kV Lonikand-I- Chakan lines act as source for 400kV Lonikand-I & 400kV Chakan substations respectively.
- Considering the critical operating condition of Pune transmission network, it is proposed to replace the existing conductor of 400kV Lonikand-Chakan **(25km)** along with associated bay strengthening work at 400kV Lonikand- I & 400kV Chakan substation line by high performance conductor

Agenda-3.3.9


400kV TalegaonPG
Babhleshwar
Alephata
Proposed HPC
TalegaonAmbi
Volks
Kathapur
400 kV
Chakan
Bridgestne
R' Gaon
Chakan II
25km
Urse
M&M
Chinchwad
Telco
Bhosri-II
Bhosri-I
C' Enka
Khadki
VSNL
Lonikand I & II
Hinj-1
Theur
Parvati
Infy
Ph' Sungi
Serum
M'Patta
Pigasus
Flagship
N' City
Hinj-II
Kondhwa
Pirangut
Jejuri
Kandalgaon

Agenda No. 3.3.10

Scheme: Replacement of existing twin 0.5 Moose conductor, insulators, all accessories & hardwares by equivalent new high performance conductor (twin HTLS conductor having current carrying capacity 3000A) along with insulators & suitable hardwares & accessories of 400 kV Talegaon (PG) to Lonikand- I line (42.57 km) (for MSETCL portion only) along with associated bay strengthening work at 400kV Lonikand -I substation under Pune Zone.

❖ **Total Estimated Scheme Cost:** Rs. 118.83 Crores (including IDC of Rs. 905.61 lakhs)

❖ **Scope of work:**

- Supply of High Performance Conductor (HPC) along with allied hardwares & accessories equivalent to existing 0.5 Moose conductor, Long rod anti fog porcelain insulators etc.
- Dismantling of existing 0.5 Moose conductor with all accessories & hardwares and transportation of removed/dismantled materials to 400kV Chakan RS Division site store.
- Stringing of HPC conductor along with allied hardwares, accessories & Long rod anti fog porcelain insulator etc.
- Strengthening of end bay at 400kV Lonikand-I substation.

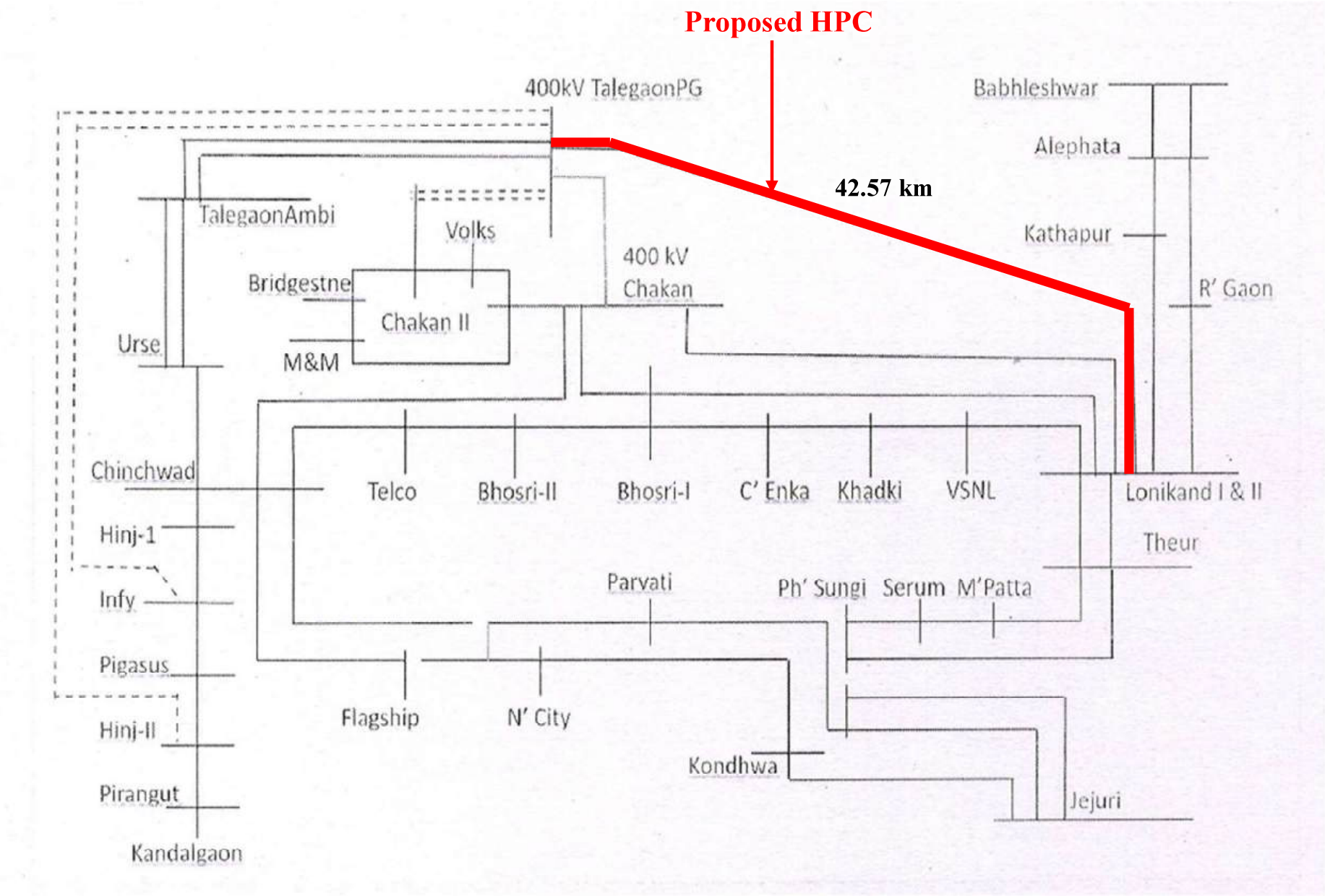
Recommended in 12th MTC meeting Date: 27.01.2025 Agenda Pt No. 11.

Agenda-3.3.10

- 400kV Talegaon (PG) - Lonikand-I line was commissioned on 08.07.2013 by making LILO on existing 400kV Lonikand-I - Kalwa line commissioned on 17.02.1990, which has completed almost 35 years of service life.

- The details of 400kV Talegaon (PG) - Lonikand-I line is as follows:-
  - Total no. of towers: 110 nos. S/C towers (MSETCL) & 07 nos. D/C towers (Adani)
  - Total no. of cut point towers on S/C, D/C: 21 nos. S/C (MSETCL) & 07 nos. D/C (Adani)
  - The scope of replacement of twin moose conductor from loc. no. 111 to 117 (Adani) & bay strengthening work at 400kV Talegaon(PG) substation is not covered in this scheme, which is a part of CTU/ISTS. **The same needs to be strengthened for fully utilization of corridor capacity.**
  - Considering the critical operating condition of Pune transmission network, it is proposed to Replace the existing twin 0.5 Moose conductor, insulators, all accessories & hardwares by equivalent new high performance conductor (twin HTLS conductor having current carrying capacity 3000A) along with insulators & suitable hardwares & accessories of 400 kV Talegaon (PG) to Lonikand- I line (42.57 km) (for MSETCL portion only) along with associated bay strengthening work at 400kV Lonikand -I substation under Pune Zone

Network Diagram



Agenda-3.3.11

❖ **Scheme-**

Replacement of existing 0.2 ACSR Panther conductor along with hardwares, insulator strings by HTLS conductor of 132kV Pandharpur- Utopian- Welspun- Mangalwedha & 132kV Pandharpur- Nimboni- Mangalwedha lines along with associated 132kV bay strengthening work under EHV O&M Division, Solapur.

❖ **Tentative Scheme Cost:** Rs. 67.61 Cr

❖ **Scope of work:**

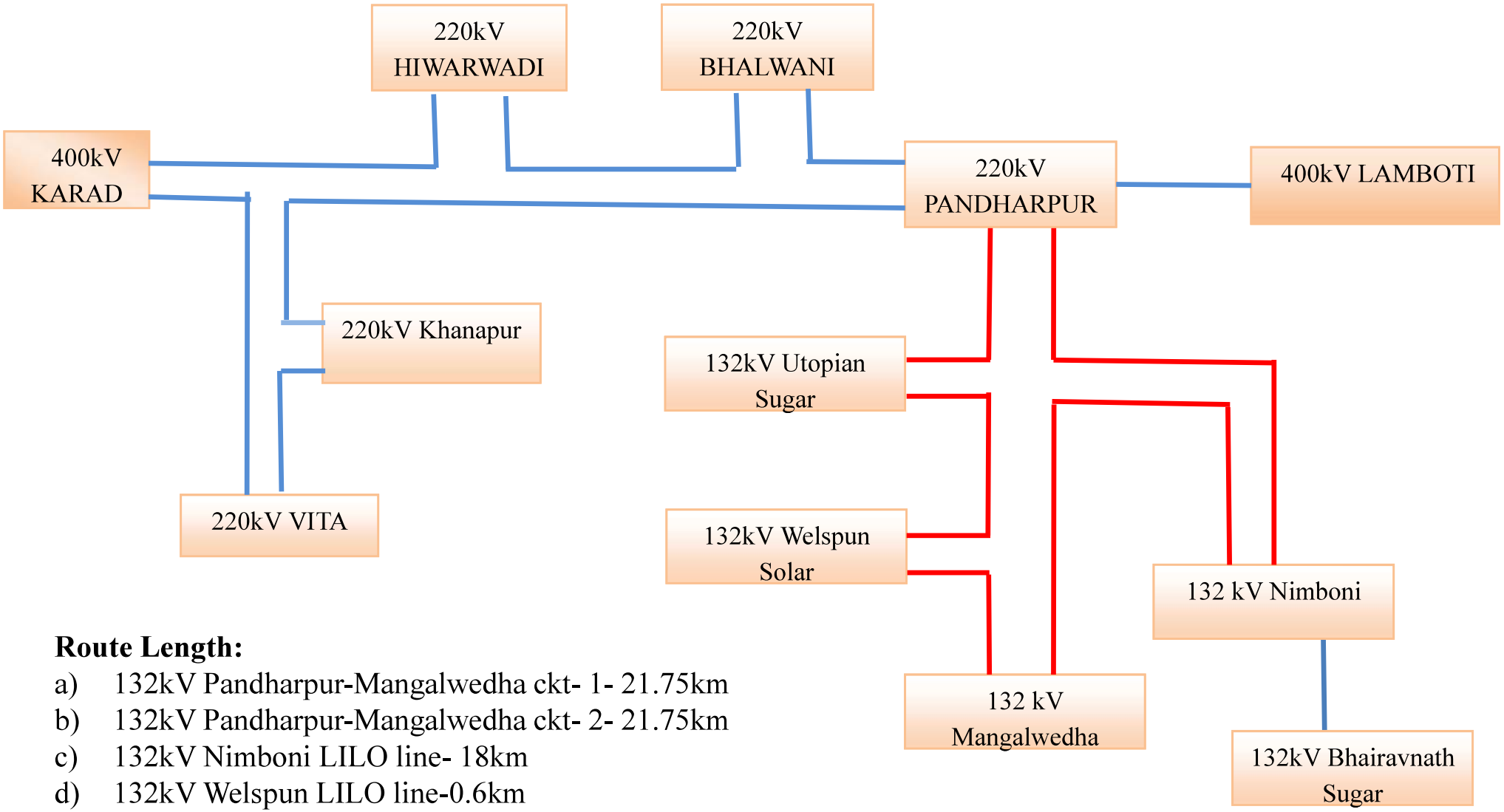
- Supply of High Performance Conductor (HPC) along with allied hardwares & accessories equivalent to existing 0.2 ACSR conductor, Porcelain insulators etc.
- Dismantling of existing 0.2 ACSR conductor with all accessories & hardwares and transportation of removed/dismantled materials to site store as per instructions of site-incharge.
- Stringing of HPC conductor along with allied hardwares, accessories & porcelain insulator etc.
- Strengthening of associated end bays.

Recommended in 12th MTC meeting Date: 27.01.2025 Agenda Pt No. 12.

❖ Agenda-3.3.11

- 132kV Pandharpur- Mangalwedha D/C line was commissioned on 31.03.1998
- There are 2x50MVA, 132/33kV T/Fs installed at 132kV Mangalwedha substation & max load reached is around 65MW. Similarly, 132kV Nimboni substation is fed from 220/132kV Pandharpur substation through 132kV line from one end and from 132kV Mangalwedha s/s through other end. There are 2x25MVA, 132/33kV T/Fs installed at 132kV Nimboni substation & max load reached is around 30MW.
- Evacuation of existing and sanctioned Solar/Co gen. generations i.e. **215MW** will be carried out through 132kV Mangalwedha-Nimboni-Pandharpur line and Mangalwedha-Welspun Solar-Utopian Cogen-Pandharpur line. In case of tripping or breakdown on either line will results in overloading of other line & generation evacuation constraints in the Mangalwedha-Nimboni-Pandharpur Network.
- Hence, to create the transmission margin & to facilitate the generation evacuation through 132kV Mangalwedha-Nimboni-Pandharpur network, it is proposed to replace the existing conductor of 132kV Pandharpur-Nimboni-Mangalwedha line & 132kV Pandharpur-Utpoian cogen-Welspun Solar-Mangalwedha line by high performance conductor.

3.3.11: Network Diagram



Route Length:

a) 132kV Pandharpur-Mangalwedha ckt- 1- 21.75km
b) 132kV Pandharpur-Mangalwedha ckt- 2- 21.75km
c) 132kV Nimboni LILO line- 18km
d) 132kV Welspun LILO line-0.6km
e) 132kV Utopian LILO line- 12.5km

Total Ckt km- 105.7km

Agenda No. 3.3.12

Agenda No.	Name of Substation	Scope	Year of inclusion in STU Plan	Estimated Cost
3.3.12	220kV Hinjewadi-II	Providing additional 1x50 MVA, 220/22kV T/F along with HV GIS Bay & LV Bays at 220kV Hinjewadi-II S/s under Pune zone.	2025-26	Rs. 1093.75 Lakhs.
Recommended in 12th MTC meeting Date: 27.01.2025 Agenda Pt No. 13.				

Agenda: 3.3.12

220kV Hinjewadi-II S/s

Present status of PTRs at 220kV Hinjewadi-II Substation is as follows:

Sr. No.	Existing T/Fs details	Date of comm.	Nature of load	Avg Max load of Peak Three months in a year/ Peak load reach in MVA/Month of peak			% Loading Avg Max./ Peak (2023-24)	Augmentation proposed in MVA		Total Capacity after Aug.
				2021-22	2022-23	2023-24		Add T/F	Repl. T/F	
1	50 MVA 220/22kV T/F-1	09.01.2022	MIDC-**85%**, Rural-3%, Agri- 1% & Urban-10%	20.73/ 22.90	20.40/ 20.60	22.87/ 23.20	45.74/ 46.40	1X 50 MVA, 220/ 22kV	---	150 MVA
2	50 MVA 220/22kV T/F-2	01.01.2013		17.38/ 19.19	25.55/ 25.75	31.00/ 32.10	62.00/ 64.20			

Agenda: 3.3.12

220kV Hinjewadi-II Substation

Reasons for Augmentation

1) 220kV Hinjewadi-II S/s was commissioned in year 2009 & caters the load of Hinjewadi-II area, MIDC, IT Park and urban areas through 2x50MVA, 220/22kV T/Fs.
2) 220kV Pirangut & 220kV Pegasus lines are the main source to this substation while 2X220kV Hinjewadi-II, Hinjewadi-III GIS lines feed power (around 10MW) to 220kV NXTRA Date EHV consumer via 400kV Hinjewadi-III GIS substation. Also 2X220kV GIS lines will be commissioned soon for the ongoing Pune Metro project.
3) DISCOM load of 70MVA is sanctioned on T/F-1 & 79.9MVA is sanctioned on T/F-2.
4) It is difficult to manage the load in case of tripping/outage on any of the T/F i.e. Not fulfill N-1 criteria.
5) Hence, to satisfy (N-1) criteria & also to meet the future load demand, additional 1x50 MVA, 220/22kV T/F is proposed at 220kV Hinjewadi-II S/s by CE, EHV PC(O&M) zone, Pune

Agenda: 3.3.13

Agenda No.	Name of Substation	Scope	Year of inclusion in STU Plan	Estimated Cost
3.3.13	220kV Telco	Replacement of 3x50 MVA, 220/22kV T/Fs by 3x100 MVA, 220/22kV T/Fs, 3x22kV Incomer GIS Bays, 2x22kV Bus section GIS bays, 12x22kV GIS Feeder bays at 220kV Telco S/s under Pune zone.	2025-26	Rs. 3786.58 Lakhs.
Recommended in 12th MTC meeting Date: 27.01.2025 Agenda Pt No. 14				

Agenda: 3.3.13

220kV Telco S/s

Present status of PTRs at 220kV Telco Substation is as follows:

Sr. No.	Existing T/Fs details	Date of comm.	Nature of load	Avg Max load of Peak Three months in a year/ Peak load reach in MVA/Month of peak			% Loading Avg Max./ Peak (2023-24)	Augmentation proposed in MVA		Total Capacity after Aug.
				2021-22	2022-23	2023-24		Add T/F	Repl. T/F	
1	50 MVA 220/22 kV T/F-1	11.09. 2017	MIDC-80% & Urban-20%	41.67/ 42.48	41.62/ 42.74	44.28/ 44.90	88.56/ 89.80	---	3X (100-50) MVA, 220/22kV	300 MVA
2	50 MVA 220/22 kV T/F-2	04.01. 2013		40.08/ 40.70	44.05/ 44.54	45.81/ 46.29	91.62/ 92.58			
3	50 MVA 220/22 kV T/F-3	17.09. 2012		31.89/ 34.04	36.12/ 37.27	38.12/ 41.20	76.24/ 82.40			

Agenda: 3.3.13

220kV Telco Substation

Reasons for Augmentation

1) 220kV Telco Sub-Station was commissioned in 19.06.1993 & caters the load of Industrial area, MIDC, TATA motors and urban areas through 3x50MVA, 220/22kV T/Fs.
2) 220kV Bhosari-I & 220kV Chichwad-II lines are the main sources to this substation. It feeds the power supply of 35MW to M/s TATA motors.
3) Due to uneven loading of 22kV Bus, the transformer needs to be run in parallel many times & cannot be put individual to restrict the fault level.
4) There is no space available for commissioning additional T/F at 220kV Telco S/s as situated in M/s TATA motors premises in compact space in MIDC area.
5) It is difficult to manage the load in case of tripping/outage on any of the T/Fs i.e. Not fulfill N-1 criteria.
6) The proposed scheme fulfils the augmentation criteria.
7) Hence, to satisfy (N-1) criteria & also to meet the future load demand, replacement of 3x50 MVA, 220/22kV T/Fs by 3x100 MVA, 220/22kV T/Fs is proposed at 220kV Telco S/s by CE, EHV PC(O&M) zone, Pune.

Agenda: 3.3.14

Agenda No.	Name of Substation	Scope	Year of inclusion in STU Plan	Estimated Cost
3.3.14	132kV Bhatghar	Replacement of 1x10 MVA, 132/22kV T/F by 1x25 MVA, 132/22kV T/F at 132kV Bhatghar S/s under Pune zone.	2025-26	Rs. 347.96 Lakhs.
Recommended in 12th MTC meeting Date: 27.01.2025 Agenda Pt No. 15.				

Agenda: 3.3.14

132kV Bhatghar S/s

Present status of PTRs at 132kV Bhatghar Substation is as follows:

Sr. No.	Existing T/Fs details	Date of comm.	Nature of load	Avg Max load of Peak Three months in a year/ Peak load reach in MVA/Month of peak			% Loading Avg Max./ Peak (2023-24)	Augmentation proposed in MVA		Total Capacity after Aug.
				2021-22	2022-23	2023-24		Add T/F	Repl. T/F	
1	25 MVA 132/22kV T/F-1	21.12.2023	Rural-30%, Agri-**50%** & Urban-20%	13.10/ 14.10	14.03/ 14.90	11.03/ 11.10	44.12/ 44.40	---	1X (25-10) MVA, 132/ 22kV	50 MVA
2	10 MVA 132/22kV T/F-2	12.08.2017		04.17/ 04.20	03.73/ 04.80	04.40/ 04.60	44.00/ 46.00			

Agenda: 3.3.14

132kV Bhatghar Substation

Reasons for Augmentation

1) 132kV Bhatghar Sub-Station was commissioned in the year 1977 & caters the load of Bhor & Velhe Taluka through 1x25MVA, 132/22kV & 1x10MVA, 132/22kV T/Fs.
2) 132kV Kamthadi & 132kV Shirwal lines are the main sources to this substation and it is attached to Hydro Generation plant having 16MW power generation capacity.
3) It is difficult to manage the load on 10MVA T/F in case of tripping/outage on 25MVA T/F i.e. Not fulfill N-1 criteria.
4) Hence, to satisfy (N-1) criteria, replacement of 1x10 MVA, 132/22kV T/F by 1x25 MVA, 132/22kV T/F is proposed at 132kV Bhatghar S/s by CE, EHV PC(O&M) zone, Pune.

Agenda: 3.3.15

Scheme of up gradation of voltage level from 22kV level to 33kV Level by replacement of 2X50MVA, 132/22kV T/Fs by 2X50MVA, 132/33kV T/Fs at 132kV Baramati S/s under Pune Zone.

Sr. No.	Name of Substation	Scope	Year of inclusion in STU Plan	Estimated Cost
3.3.15	132kV Baramati	Upgradation of voltage level from 22kV level to 33kV Level by replacement of 2X50MVA, 132/22kV T/Fs by 2X50MVA, 132/33kV T/Fs at 132kV Baramati S/s	--	Rs. **993.30** Lakh
Recommended in 12th MTC meeting Date: 27.01.2025 Agenda Pt No. 16				

Agenda: 3.3.15

132kV Baramati Substation:

Present status of T/Fs at 132kV Baramati Substation is as follows

S N	Details of T/Fs	Nature of Load	Date of commg.	Peak load in a year (in MVA)			% Loading Peak/Avg Max.
				2021-22	2022-23	2022-23	
1	50MVA, 132/22kV T/F-1	Urban – 55% MIDC-25% & Rural/Ag – 20%	20-12-2010	9.73	19.40	20.39	40.78
2	50MVA, 132/22kV T/F-2		08-04-2010	21.53	20.16	18.63	37.26

Agenda No. 3.3.15

Need:

a) 33/11 kV Baramati City substation having installed capacity 20 MVA (2X10MVA) is commissioned under RAPDRP Scheme in the period of 2013-2015. At present, only one 22kV feeder (Industrial Estate) of Baramati Urban Sub-division is emanating from 132/22 kV Baramati substation.

b) Considering the growth of Baramati City and MIDC area, MSEDCL has already proposed 3 Nos. of 33/11kV substations namely 33/11kV Urja Bhavan (2X5MVA), 33/11kV Urban Gram (2X5MVA) & 33/11kV Gokulnagar (2X10MVA).

c) The load of 7 nos. of feeders namely 22kV Pandare (Ag), 22kV Baramati Industrial Estate, 22kV Sawal (Ag), 22kV Anjangaon (Ag), 22kV Anjangaon Gaothan, 22kV Pandare Gaothan and 22kV Sawal Gaothan emanating from 132/22kV Baramati S/s will be shifted on these 3 nos. of proposed MSEDCL S/s.

Agenda No: 3.3.15

e) Furthermore, the load of 4 Nos. of 33/11 kV Substations & 6 Nos. of HT Consumer connected at 33 kV Pahunewadi Feeder and load of 2 Nos. of 33/11 kV Substations (namely Kanheri & Parawadi) & 1 No. of HT consumers connected at 33kV Bigwan feeder of 220/33kV Baramati S/s will also be shifted to 132kV Baramati S/s after elimination of 22kV Voltage level and creation of 33kV Voltage level.

f) At present, there is no spare 33kV bay available at nearby 220/33 kV Baramati substation and also possibility of new 33 kV Bay is Nil due to space constraints. Further, there is no other 33kV source available for proposed MSEDCL's substations. At present, MSEDCL's 33/11kV Baramati City substation is fed by 220/33kV Baramati S/s as other alternative 33kV source is not available nearby.

g) Hence, it is required to create 33kV level at 132kV Baramati S/s to feed power to total 4 nos. of 33/11kV MSEDCL S/s i.e. 33/11kV Baramati City (2x10 MVA), 33/11kV Urja Bhavan (2x5 MVA), 33/11kV Gokulnagar (2x5 MVA) & 33/11kV Urban Gram (2x10 MVA).

Agenda No. 3.3.16

Agenda No.	Name of Substation	Scope	Year of inclusion in STU Plan	Estimated Cost
3.3.16	132kV Shaha	**Replacement** of existing 2x25MVA, 132/33 kV T/Fs by 2X50MVA, 132/33kV T/Fs	will be included in10 year 2024-25 to 2033-34 STU plan in the year 2025-26	Rs.1361.13 Lakh
Recommended in 12th MTC meeting Date: 27.01.2025 Agenda Pt No. 17.				

Agenda No.3.3.16

132kV Shaha Substation

Present status of T/Fs at 132kV Shaha Substation is as follows:

SN	Details of T/Fs	Nature of load	Date of comm.	Avg. Max. load of Peak 3 months in a year/ Peak load /Month of peak load			% Loading Peak/ Avg. Max. 2024-25	Aug. proposed by add. in MVA	Aug. proposed by repl. in MVA	Total Capacity after Aug. in MVA
				2021-22	2022-23	2023-24				
1	25 MVA, 132/33 kV T/F 1	Urban-0 % Rural- 20 % Agri- 80% MIDC-0%	11.01.2023	-	8.34/ 10.67/ Feb-23	20.03/ 21.72/ DEC-23	80.12/ 86.88		2X (50-25) MVA, 132/33 kV	100
2	25 MVA, 132/33 kV T/F 2		11.01.2023	-	4.44/ 5.56/ Jan-23	18.19/ 19.32/ Jan-24	72.76/ 77.28			

Agenda No. 3.3.16

132kV Shaha S/s

Reasons for Augmentation

- The 132 kV Shaha Substation is commissioned in the year 2023. Average maximum loading reached on both the T/Fs are about 76 % of installed capacity.
- Due to the indirect connection of the 33 kV Somthane and Wadangali feeders through the Deopur feeder, the load on the 132 kV Shaha Substation has reached 75% of its installed capacity during peak periods. Once the aforementioned feeders from Kopergaon Rural Subdivision are connected, the load is expected to exceed the substation's capacity, potentially leading to transformer tripping or forced load shedding to prevent overload.
- Further, 220kV Babhaleshwar - Eklahare GCR DCDC line is getting overloaded on daily basis. Considering situation of large ELR in the tune of 200MW to 250MW, it is required to shift some of load from sinner pocket i.e. shifting of some of 33kV feeders from 132kV Sinner (Old) to 132kV Shaha S/s. The relief of around 30MW on Babhaleshwar line will be achieved by shifting of load on 132kV Shaha S/s.
- Due to present loading condition, the shifting of 33kV feeders from 132kV Sinner (Old) S/s to 132kV Shaha S/s is not possible. Hence, it is required to replace existing 2x25MVA, 132/33kV T/Fs by 2x50MVA, 132/33kV T/Fs at 132kV Shaha S/s

Agenda No. 3.3.17:

- **Scheme name: Conversion of existing 400 kV Kalwa-Padghe SCSC line (Ckt.-I&II) to DC line on DC towers (both ckts)**
- Scope of Work:

1) Conversion of existing SCSC 400 kV Kalwa-Padghe ckt-I into DCDC using the same corridor by using HPC Conductor – 30.371 kms - formation of 400 kV Kalwa-Padghe DCDC line ckt-III.
2) Conversion of existing SCSC 400 kV Kalwa-Padghe ckt-II into DCDC using the same corridor by using HPC Conductor – 30.679 kms. & replacement of ACSR conductor of 22.82 kms of existing DCDC line by HPC from Padghe end - formation of 400 kV Kalwa-Padghe DCDC line ckt-IV.

- Estimated cost of the Scheme : Rs.962.66 Cr.

- Objective: Mumbai & MMR region strengthening.

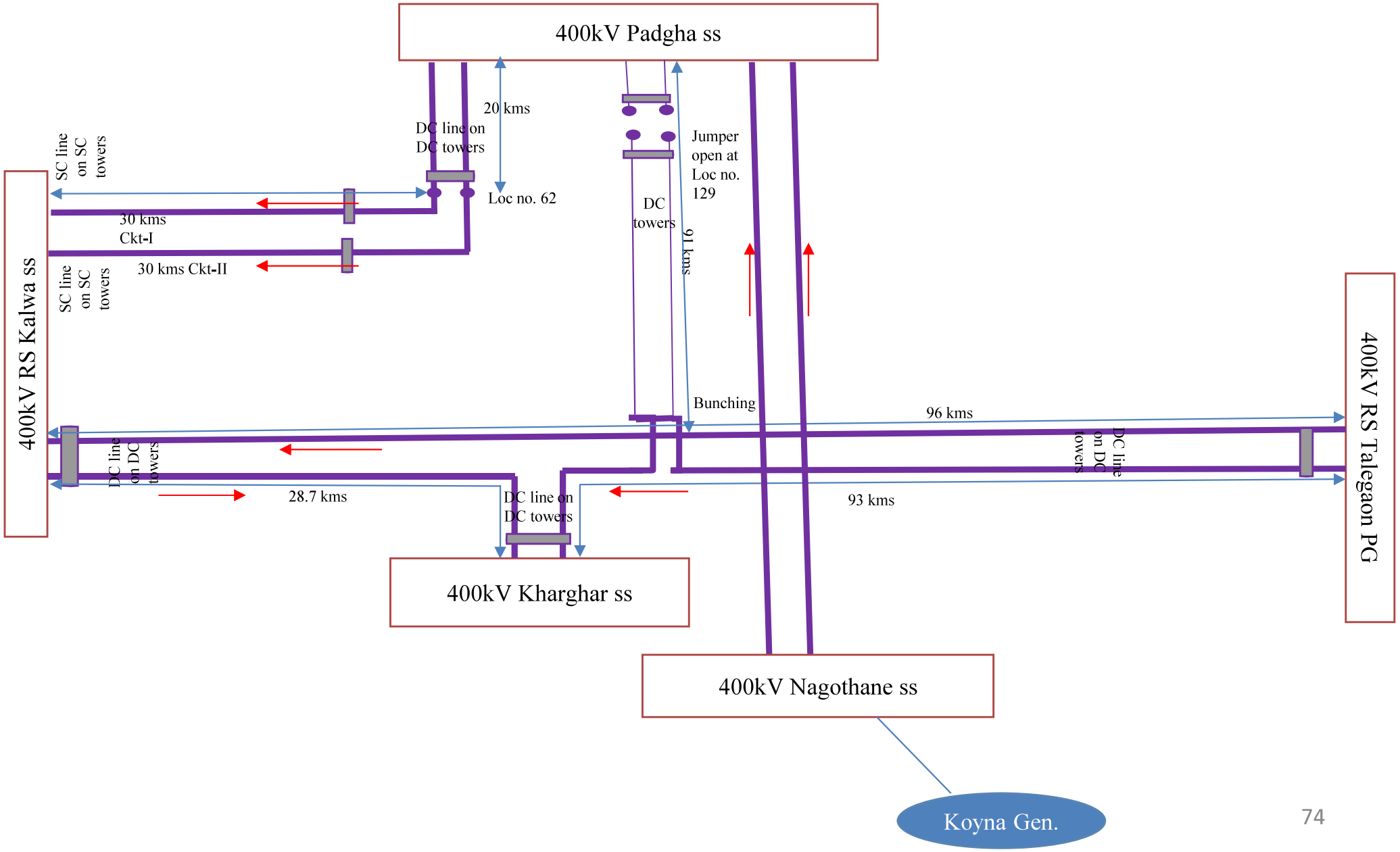
Recommended in 12th MTC meeting Date: 27.01.2025 Agenda Pt No. 18.

Agenda No. 3.3.17

Need of the work:

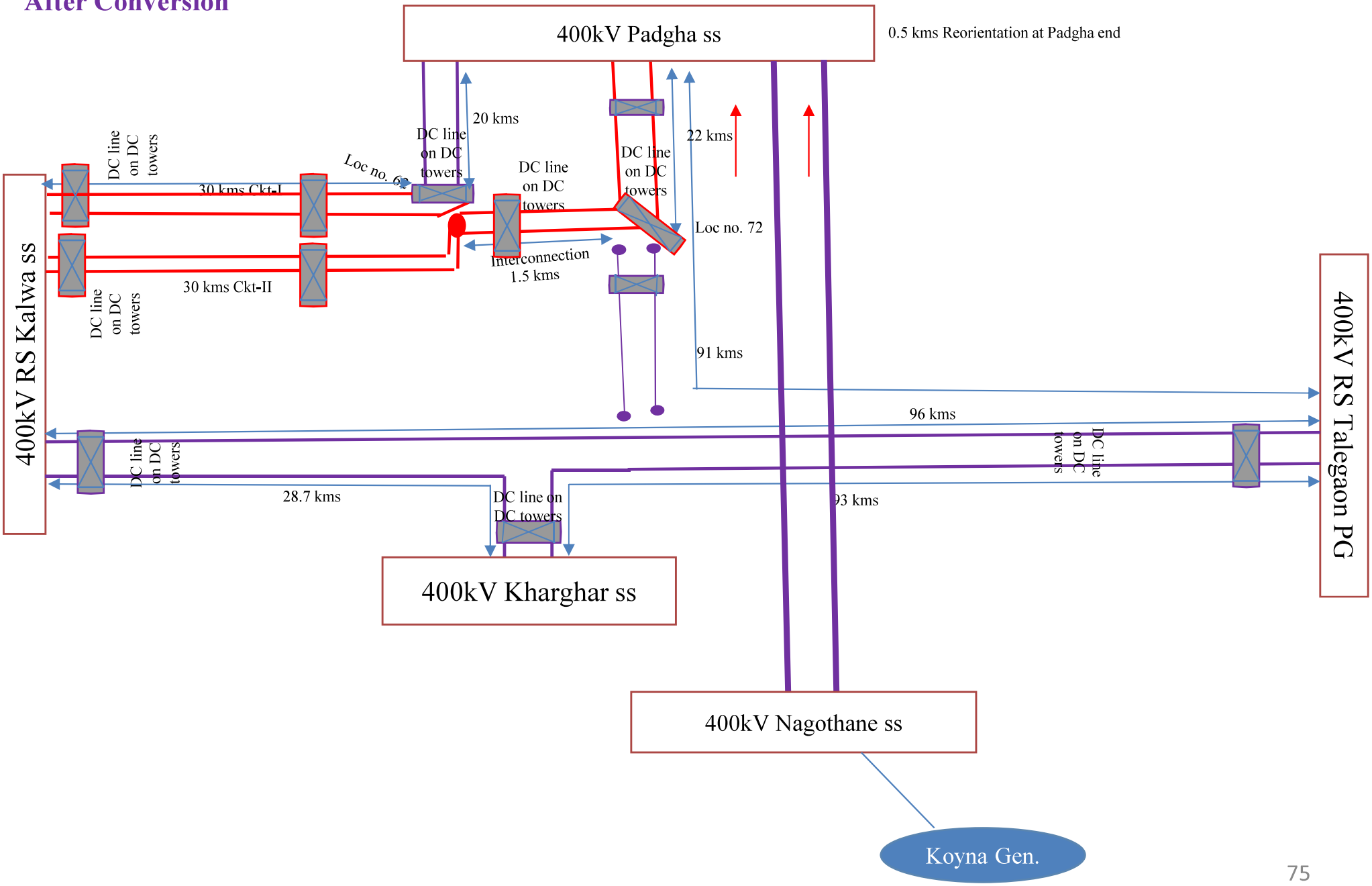
- 400/220 kV Kalwa S/S is a major source to cater the load of Mumbai, Mumbai Suburban, Navi Mumbai and part of Thane District areas. There are only two 400 kV source lines to 400 kV Kalwa S/S from 400 kV Padghe S/S and these two SC lines are on SC towers.
- 400 kV Kalwa – Padghe Ckt. I and Ckt. II are in service from around 44 years. In case of tripping or major breakdown on any of the circuit, the other circuit gets overloaded & results in critical condition of the Grid.
- Projected load of Mumbai & MMR is 5500 MW. Hence, 400 kV Kalwa-Padghe ckt.-I & II will not be sufficient to cater future load. For eliminating overloading of Sub-stations & lines Additional GIS Substation is proposed at 400kV Kalwa premises.
- The execution of proposed line work is possible only after completion of replacement of existing conductor by HPC conductor of 400kV Kalwa-Padghe ckt-I & II

Existing Line Network



Agenda No. 3.3.17

After Conversion



Benefits:

1. Mumbai Metropolitan Region System Strengthening.

2. To bring additional source to 400kV Kalwa S/S.

3. To enhance loading capacity of 400kV Kalwa – Padghe corridor.

4. To increase reliability and quality of supply.

5. To save transmission loss at 400kV level.

Agenda No. 3.3.18

Scheme Name: Scheme for Construction of LILO on 100 kV Mohane-Ambernath Line for 220/100 kV Jambhul s/s in new corridor – 5km

➢Scope Of Work:

1) 100 kV line bay at 220 kV Jambhul s/s- 02 nos. with contingencies.

2) Construction of LILO on 100 kV Ambernath - Mohone line at 220 kV Jambhul s/s – 5 kms

i. 100 kV DC line on DC tower - 4 kms

ii. Underground cable(2500sqmm) - 1 km

➢ STU Plan **:** Included in STU plan 2024-25 to 2033-34 in the year 2026-27.

➢ Estimated cost **:** Rs**.** 7027 Lakhs. (including IDC component 876 Lakhs)

➢ Objective **:** 1) Second source to 100 kV Ambernath, 100 kV Mohane s/s

2) Network improvement of Vashi Zone.

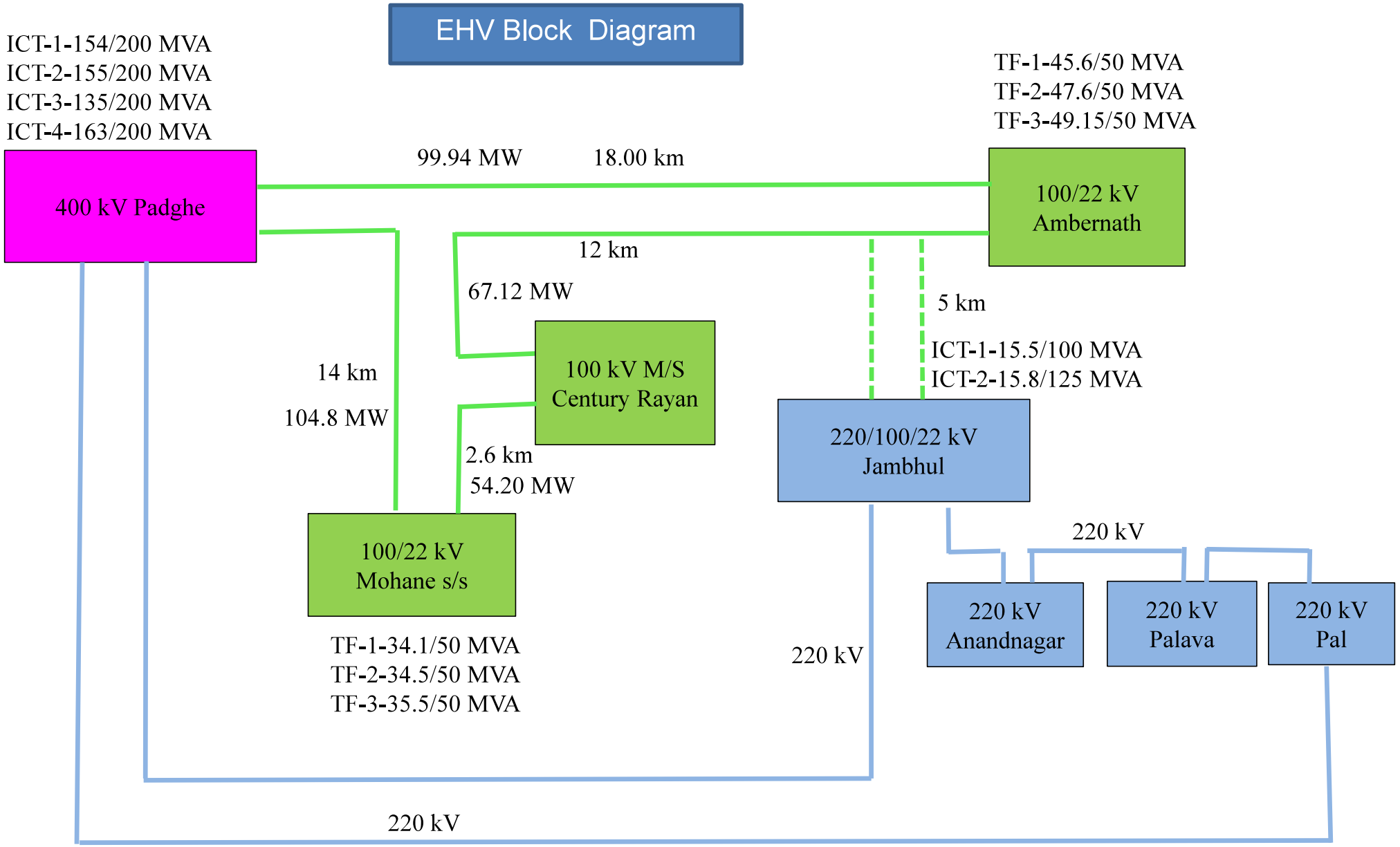
3) Reliability and availability of power supply.

5) Utilization of ICTs at Jambhul

Recommended in 12th MTC meeting Date: 27.01.2025 Agenda Pt No. 19.

Need of the Work

- Presently, 100 kV Ambernath s/s & 100 kV Mohone s/s are having 100 kV D/C line source from 400/220/100 kV Padghe s/s.
- There are constraints of overloading of Padghe-Mohane-Ambernath 100 kV D/C line under contingency as total max. load reached 205 MW as against capacity of 220 MW (0.3 ACSR Goat – 630 Amp.)
- In case, of tripping any one source line i.e. 100 kV Padghe-Mohane or 100 kV Padghe-Ambernath line then entire load will shift on other line. Due to this entire load of 100 kV Ambernath, 100 kV Mohane and 100 kV Century Rayan Substation goes on one circuit and load these Substation can not be managed, hence N-1 criteria cannot be fulfil.
- The work of replacement of existing 0.3 ACSR Goat conductor with High Performance Conductor (HPC) of 100 kV Padghe - Ambernath - Mohane & 100 kV Mohane - Ambernath lines under EHV PC O&M Zone, Vashi is already approved by BR No 167/23, Dated 08.03.2024.
- Also the conductor of 220 kV Padghe - Jambhul - Pal line conductor is under replacement by HPC to strengthen 220 kV & 100 kV network in Kalyan–Dombivali–Ulhasnagar-Ambernath-Badalapur area.


EHV Block Diagram
ICT-1-154/200 MVA
ICT-2-155/200 MVA
ICT-3-135/200 MVA
ICT-4-163/200 MVA
400 kV Padghe
99.94 MW
18.00 km
TF-1-45.6/50 MVA
TF-2-47.6/50 MVA
TF-3-49.15/50 MVA
100/22 kV Ambernath
12 km
67.12 MW
5 km
ICT-1-15.5/100 MVA
ICT-2-15.8/125 MVA
100 kV M/S Century Rayan
14 km
104.8 MW
2.6 km
54.20 MW
220/100/22 kV Jambhul
100/22 kV Mohane s/s
TF-1-34.1/50 MVA
TF-2-34.5/50 MVA
TF-3-35.5/50 MVA
220 kV
220 kV
220 kV Anandnagar
220 kV Palava
220 kV Pal
220 kV

Benefits

- Second source alternative to 100 kV Ambernath, 100 kV Mohane s/stns & 220 kV Jambhul S/S.
- Reliability and availability of power supply to consumers of Mohane & Ambernath s/s.
- Utilization of under loaded 1 x 100 MVA + 125 MVA ICT at Jambhul s/s.
- Network improvement work of network in Kalyan–Dombivali–Ulhasnagar-Ambernath-Badalapur area.
- Management routine maintenance of 100 kV & 220 kV lines.

Scheme Name: Establishment of 400/220 kV GIS-I Substation at Kalwa, Dist: -Thane

➢Scope of Work:

1. 3 X 167MVA, 400/220 kV ICT – 3 Nos., with 1 spare 167 MVA ICT along with HV,LV bays.
2. 4 X 400kV bays and 8 X 220kV bays.
3. Re-orientation work of 400kV line using 400kV cables for proposed GIS-I at Kalwa
4. Re-orientation work of 220kV line using 220kV cables for proposed GIS-I at Kalwa.

- **STU Plan:** Included in STU plan 2024-25 to 2033-34.
- **Land availability:** Land is available with existing 400kV Kalwa S/s.
- **Estimated cost of the Scheme : Rs. 876.71 Cr.** *(The committee ratified the scheme in 5th GCC (Agenda No. No. 3.43) However due to revised cost of due to consideration of one half breaker in GIS, cost is revised as 876.70 Cr.)*
- **Objective:** a) To reduce the fault level at existing 400/220kV Kalwa substation.

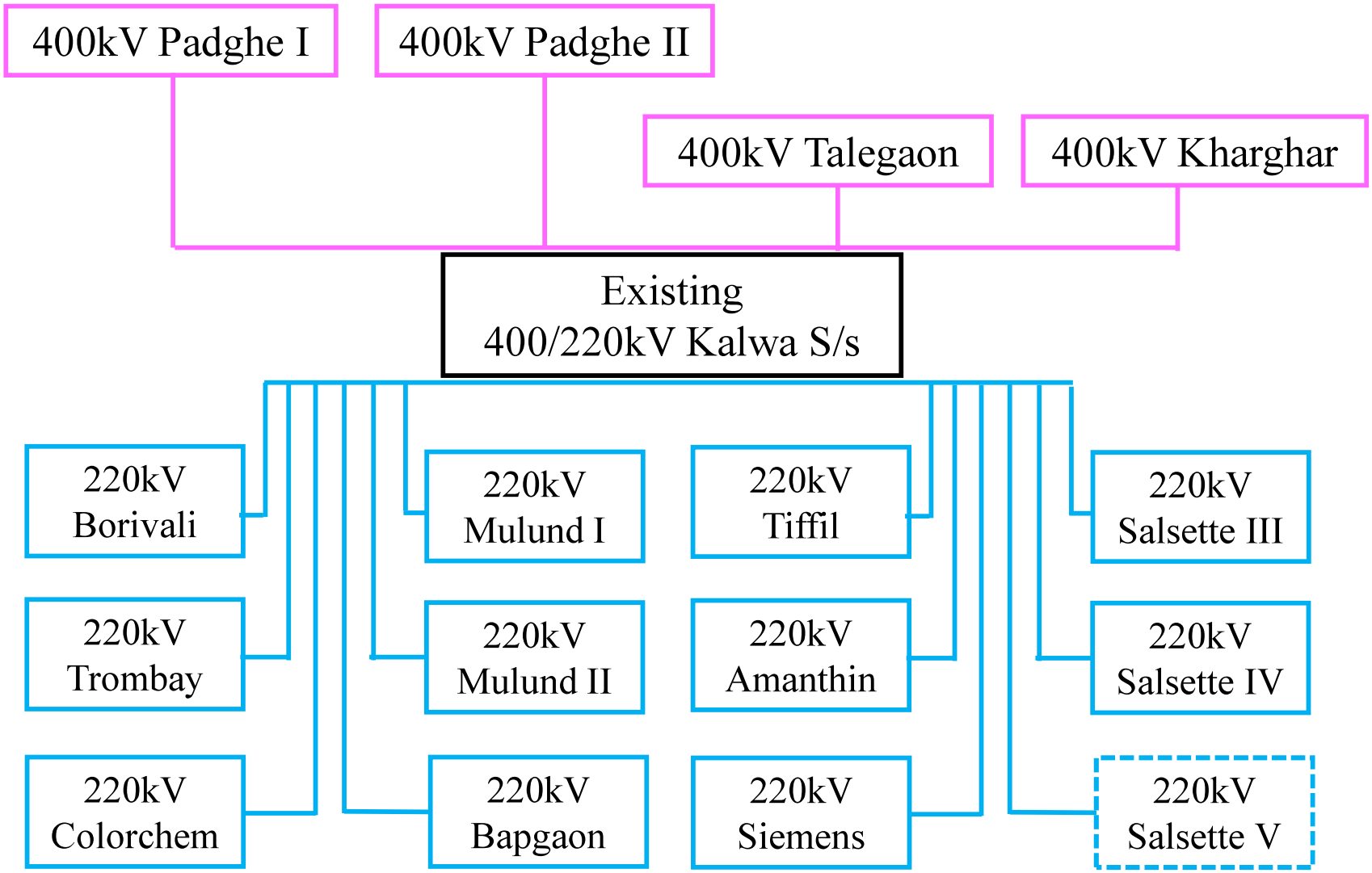
  b) To address the existing overloading constraint of ICTs at existing 400/220kV Kalwa substation.

  c) To cater the upcoming Load in Mumbai & MMR region

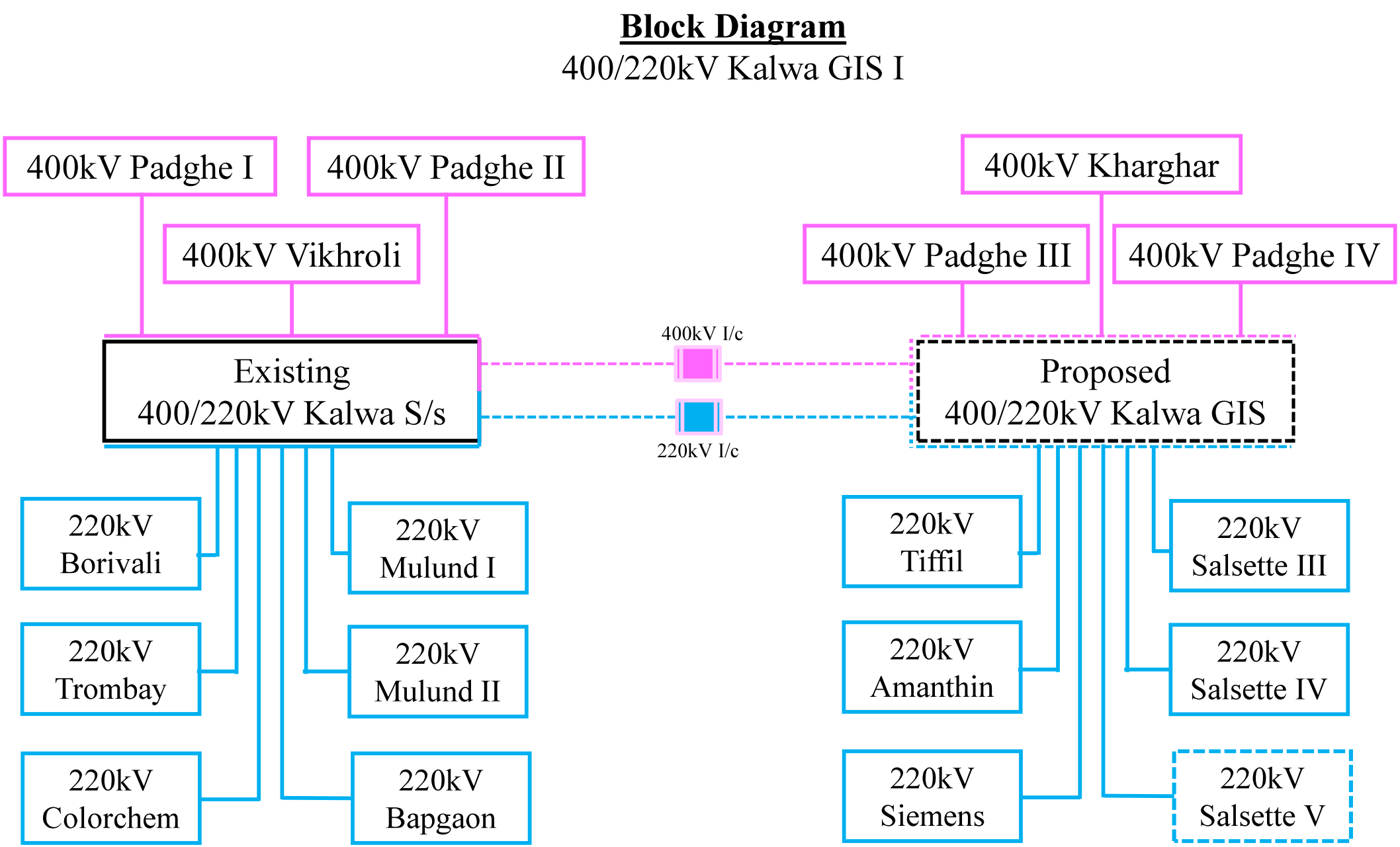
Recommended in 12th MTC meeting Date: 27.01.2025 Agenda Pt No. 20.

Block Diagram

400/220kV Kalwa S/s (existing)



Agenda No. 3.3.19: Network Diagram2



Need of the work

- Anticipated load on Kalwa Substation in Year 2027 - 3900 MW and Year 2034 - 5957 MW
- Fault level at 220kV bus - 54 kA (permissible 40 kA)
- With Kalwa GIS and bus splitting of 400kV & 220kV - Fault level reduces to 33 kA.
- To cater the upcoming load and to reduce the fault level of existing 400kV Kalwa s/s,
- Land is made available by demolishing Office Building, T/F repair shed and staff Quarters.

Benefits

- Reduction in Fault level at 220kV bus.
- Transformation capacity will add upto 1500MVA.
- Reduction in 400/220 kV ICT loading thereby SS will be n -1 compliant.
- Reliable and qualitative supply

Reasion for cost increase:

- Cost increase due change in SOR and considering one and half breaker system in GIS.

Agenda No. 3.3.20

➢**Scheme Name: Establishment of 220/132/33-22kV Substation at Kesurdi MIDC,**

Tal. Khandala, Dist. Satara

➢**Scope of Work:**

a. 2x100 MVA, 220/132 kV ICT alongwith HV/LV bays.

b. 2x100 MVA 220/33-22 KV Power transformers (Dual ratio).

c. LILO on 220kV Kanadalgaon– Sona alloys line between Loc.No.266-267 (M/c towers)-2 km

d. LILO on 132kV Lonand- Wai DCDC line at Loc. No. 78 (cut point). Route length – 6.5 kms

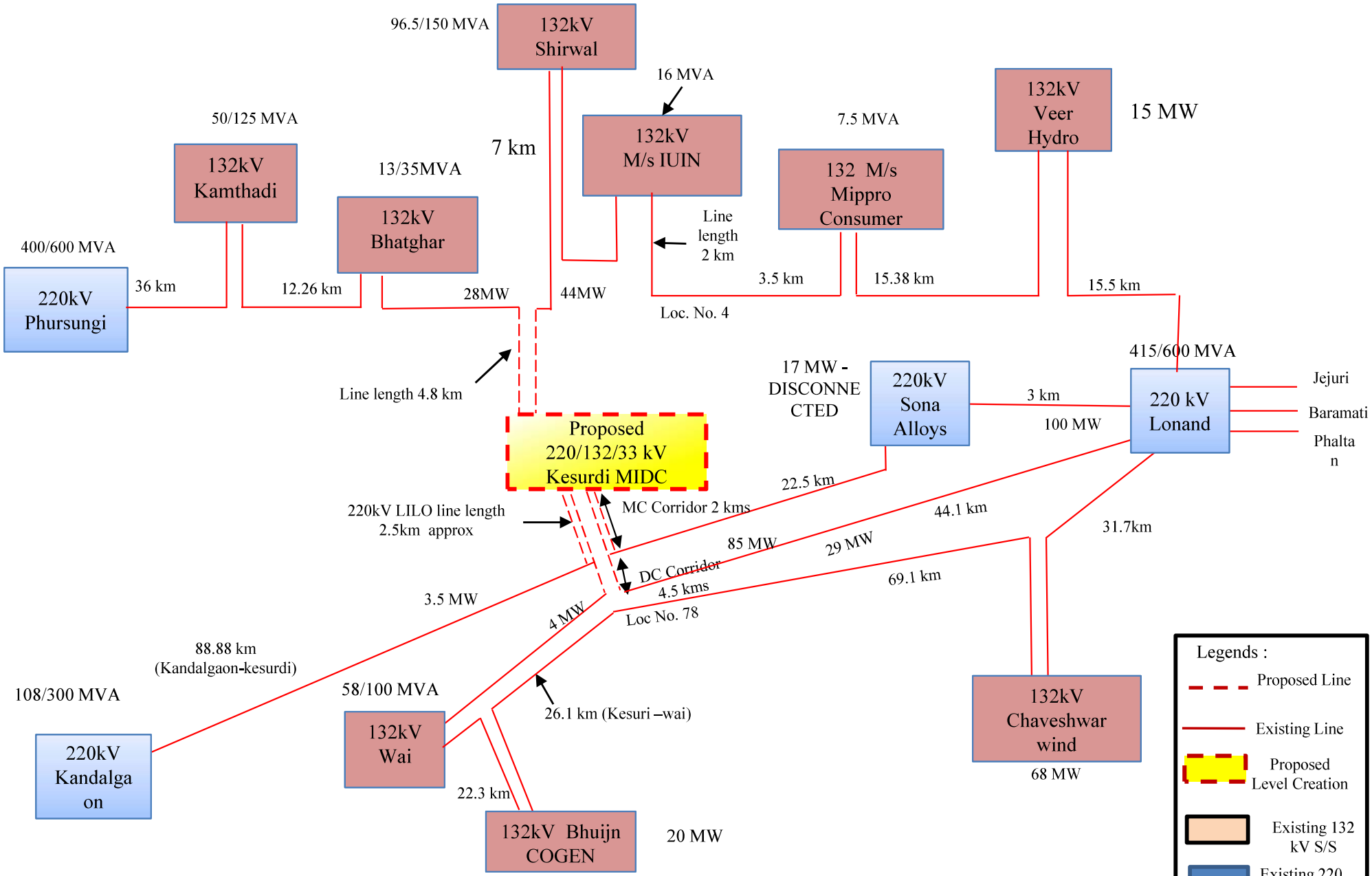
e. LILO on 132kV Bhatghar – Shirwal MCDC line using existing RoW of 132 kV SCMC Shirwal- Iuin line– 4.8 km.

➢ **Estimated cost : Rs. 214.41 Cr.** *The committee ratified the scheme in 10th GCC (Agenda No. 4.46)*

However due to consideration of 100 MVA, 220/33-22 kV T/Fs (Dual ratio) dual LV , cost is revised as 214.41 Cr.)

Objective: 1. Catering future upcoming load growth of 80 MW in Kesurdi , MIDC area.
2. Bringing source nearer to load pockets of Khandala Taluka
3. Reducing line lengths of 33 kV feeders.
4. Reducing line interruptions / breakdowns and increase system availability.
5. Providing reliable and quality supply to customers.

Recommended in 12th MTC meeting Date: 27.01.2025 Agenda Pt No. 22.



Note : LILO on 132kV Lonand –Wai line -6.5 (4.5kms DCDC line and 2 kms MC corridor of proposed LILO on Kandaigaon-Sona Allyos line for Kesurdi s/s will be used)

Need of the work:

- The MIDC has proposed development of Kesurdi Phase – II area. The EHV consumers and HT consumers planned to set up industries in this area.
- The Kesurdi MIDC is expected to be developed rapidly. It is near to Pune and National Highway-4.
- At present, the area near Kesurdi is fed from 132 kV Shirwal S/s – 97/150 MVA.
- There is no alternate provision at existing 132/33/22kV Shirwal S/s to meet the upcoming load growth of 80 MW/89 MVA in MIDC area. Considering the load growth, to meet the upcoming load demand and to get load relief at existing 132kV Shirwal S/s, establishment of EHV S/s at Kesurdi MIDC is essential.
- The load details of 33 kV S/s to be diverted from existing EHV S/s to proposed 220/132/33kV Kesurdi S/s :

S.N	EHV s/s	Existing 33/11 kV Capacity (No./MVA)	33/11 kV s/s to be diverted on proposed EHV S/s (No./MVA)		Total load remains on existing EHV S/s (No./MVA)		Total Load on Kesurdi (No./MVA)
			Existing	Future	Existing	Future	
1	132/33/22kV Shirwal	19 / 182.77 MVA	6 / 69.15	----	13/113.62	-----	6/69.15
	Future load as per Discom requirement						89
Total load on proposed 220/132/33kV Kesurdi S/s including future load							**158.15 MVA**

The **comparison of estimate earlier & revised estimate** are as below:

Sr. No.	Particulars	Earlier estimate in lakhs	Revised estimate in lakhs
1	Civil cost including Taxes	2726.20	3718.27
2	land cost	448.67	448.67
3	Substation Electrical cost	6179.52	10625.21
4	LILO on 220kV Kanadalgaon – Sona alloys line	1712.60	1693.17
5	LILO on 132kV Lonand- Wai MCDC line	1018.32	1003.23
6	LILO on 132kV Bhatghar – Shirwal MCDC line	1182.48	1171.59
7	LT & HT shifting in ROW of 132 kV Lonand-Bhatghar line	0.00	106.44
8	Subtotal	13267.80	18766.58
9	IDC	1890.66	2674.24
Total cost of scheme		**15158.46**	**21440.82**

Agenda no. 3.3.21

Scheme Name: Establishment of 220/22 kV GIS Suraksha Smart City (Rajevali SS), Vasai (East), Tal- Vasai, Dist. Palghar

Scope Of Works:

- 3 x 100 MVA , 220/22 kV Transformers
- LILO on existing 220 kV Kamba-Vasai Line at 220 kV Suraksha Smart City Substation - 0.365 kms.
- 14 x 22 kV Bays
- Remote end Automation.

- STU Plan: Included in the STU 10 years plan 2024-25 to 2033-34 for the year 2027-28.
- Cost of scheme: Rs. 146.61 Cr. (The committee ratified the scheme in 9th GCC (Agenda No.4.134) However due to revised cost of ICT & consideration of M/C narrow based towers ,cost is revised as 146.61 Cr.(Privious cost of schme was 70 Cr.)
- Land Status: Land is in possession of MSETCL.(1.01 Ha 08.08.2024)

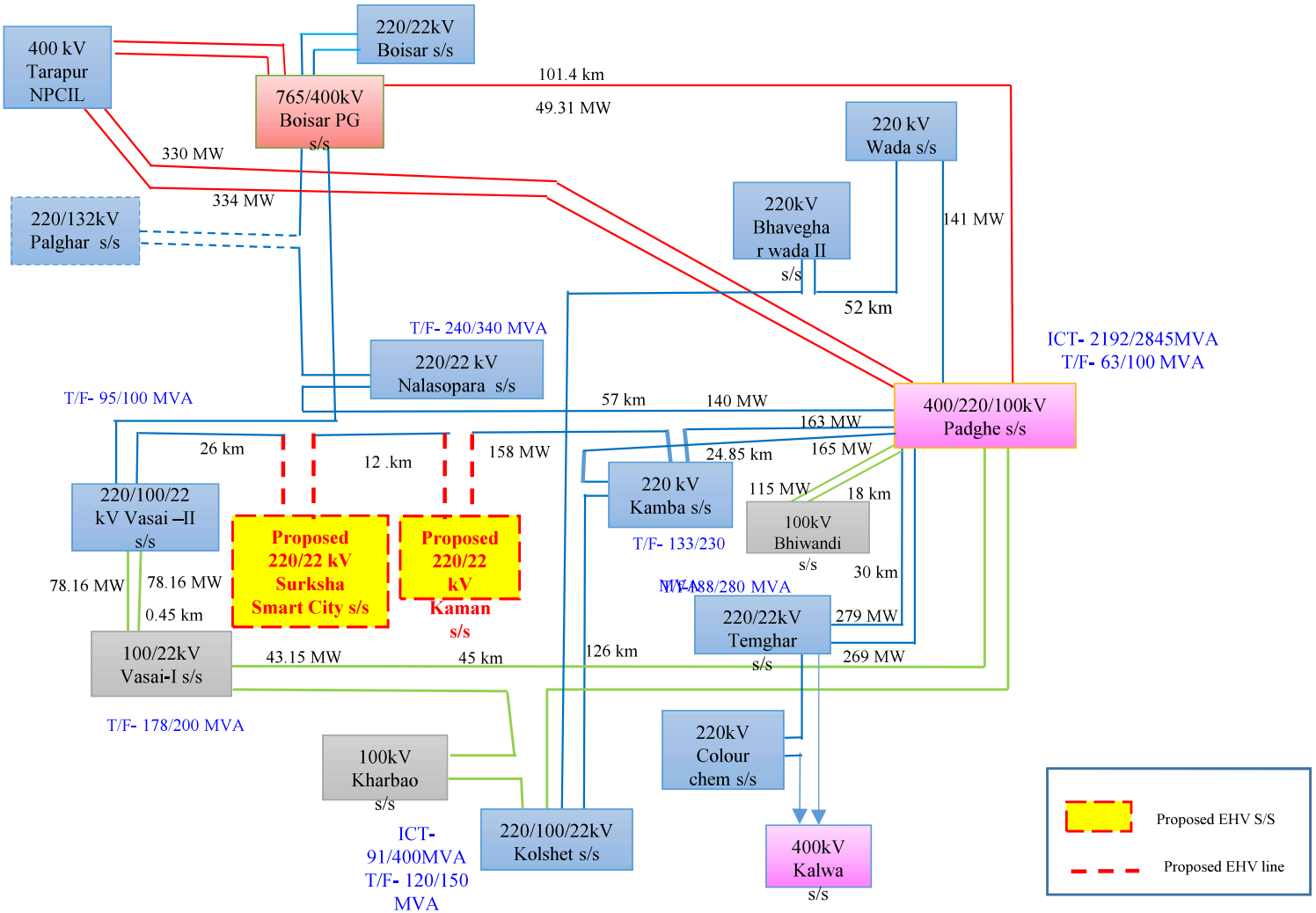
  (Land given by M/s. Conceptual Advisory Services LLP Ltd. On lease basis)
- Objective: 1) To cater MSEDCL Load in Palghar District especially PM Awas Yojana

  2) To improve voltage regulation.

  3) To improve reliability of power supply in Palghar District area.

Recommended in 12th MTC meeting Date: 27.01.2025 Agenda Pt No. 23.

EHV NETWORK DIAGRAM



Need of the work:

- As per MSEDCL proposal, PM Awas Yojna is planned in Vasai Taluka.
- The load of this scheme is proposed 110 MVA and load of 32 MVA of 100 kV Vasai and 220 kV Vasai substations is proposed to shift on 220/22 kV Suraksha Smart City substation – Total load of 142 MVA.
- At present, consumers of Vasai & Virar are fed by 220/100/ 22 kV Vasai and 100 /22 kV Vasai substations. 100/22 kV Vasai SS & 220/22 kV Vasai GIS SS are overloaded.

Benefits:

1. To cater MSEDCL PM Awas Yojna Laod.
2. Load relief to existing 100/22 kV Vasai and 220 kV Vasai GIS Substation
3. To improve reliability of power supply in Palghar District area.
4. Saving in system losses is 3.9 MW

Cost Comparison:

In earlier estimate tentative block cost of AIS substation is considered. Now it revised by considering GIS with fully automated from remote end.

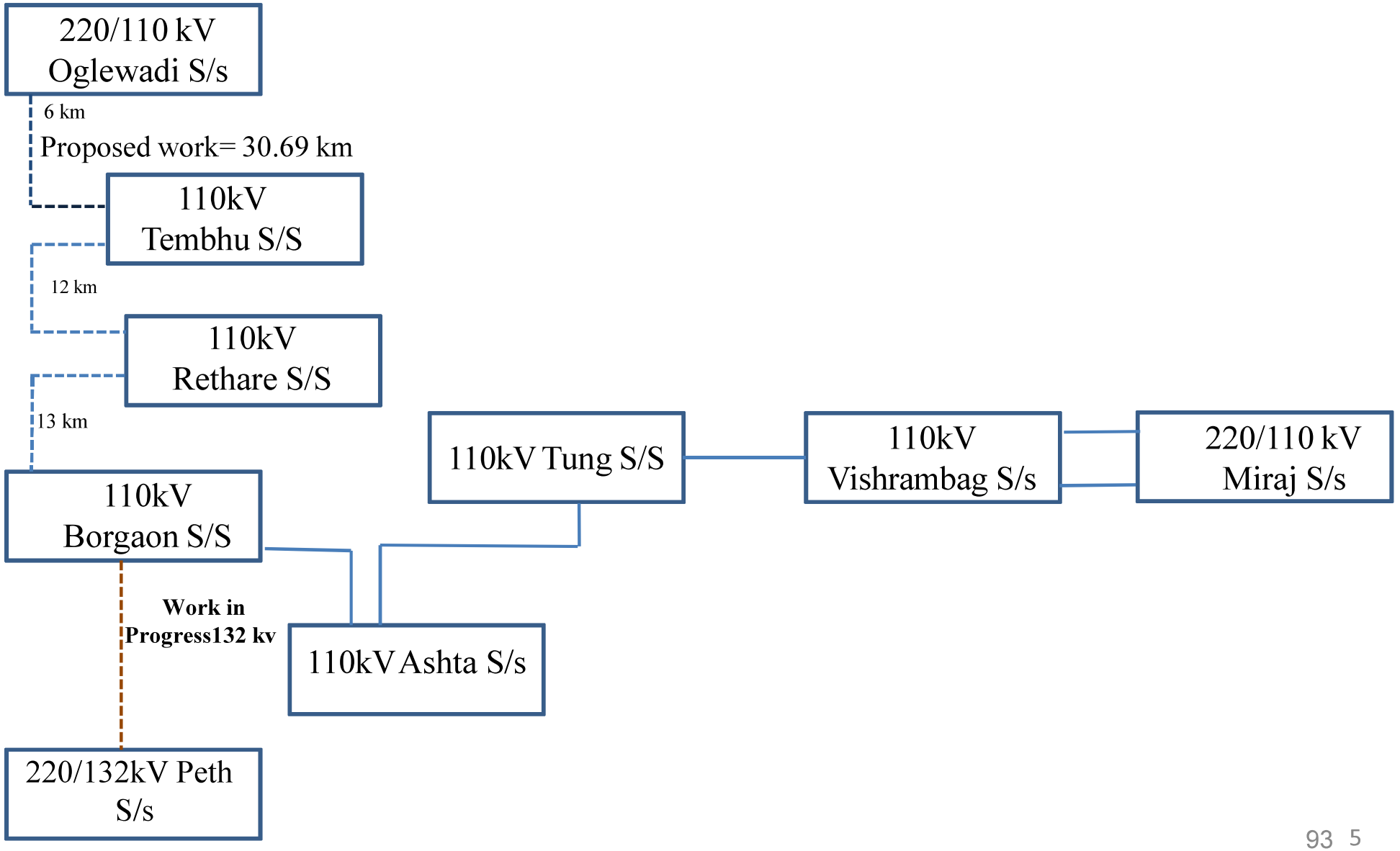
Scheme Name: Conversion of 110 kV Ogelwadi - Borgaon SCSC line to 132 kV SCDC line

- **Scope of Work:**
  - Conversion of 110 kV Ogelwadi - Borgaon SCSC to 132 kV SCDC Line - 30.69 km.
- **STU Plan :** Scheme is being included in STU plan. 2023-24 to 2025-26.
- **Estimated cost :** Rs. **24.60 Cr.**
- **Objective**:
  - Level upgradation from 110 KV to 132 KV standard voltage level.
  - To enhance line loading capacity.
  - To reduce transmission losses .
- **Benefits** :

- Loading capacity of Oglewadi – Tembhu – Rethre - Borgaon corridor will be increased.
- Possibility of accidents due to increased sag can be avoided.
- Tripping of lines reduces .Hence reliability of power evacuation of C0-gen and hydro power will be increased.
- Transmission losses of the line will be reduced.

Recommended in 12th MTC meeting Date: 27.01.2025 Agenda Pt No. 24.

Network Diagram



Need of the work:

- In Satara & Sangli district main network is of 110 kV level.
- 110 kV Oglewadi - Borgaon SCSC is the main transmission line which is in service since 1963.
- The line has given more than 60 years of service life.
- Single ckt of 110 kV Oglewadi - Borgaon line caters major load & connected to co-gen plant Krishna SSK & HPP Tembhu.
- Oglewadi - Borgaon line needs to be upgraded to 132 kV level so that Oglewadi - Miraj network can be operated at 132 kV Level.
- Upgradation of 110 kV Oglewadi – Mayani – 42.03 km to 132 kV level is already completed and commissioned on 15.01.2019.
- 132 kV new Peth - Borgaon line is also under construction.90% work is completed. (Oglewadi-Borgaon line construction work will be taken up after the completion of 132 kV Peth - Borgaon line.)

Agenda No. 3.3.23

Scheme Name: Construction 132 kV DCDC link line by making LILO of one circuit of 132 kV Amalner (220 kV Amalner-II s/s) to Nardane to one circuit of 132 kV Amalner (132 kV Amalner-I s/s) to Parola line

Scope of Work:

- Construction of 132 kV DCDC link line by making LILO of one circuit of 132 kV Amalner-II to Nardane line to one circuit of 132 kV Amalner (A-I) to Parola line. (RL-17.6 Kms)

➢ Estimated cost : Rs. 15.30 Cr. (Scheme is included in STU plan for FY 2026-27).

➢ Objective: 1) Second line connectivity to 132 kV Amalner –I and 132 kV Parola substation.

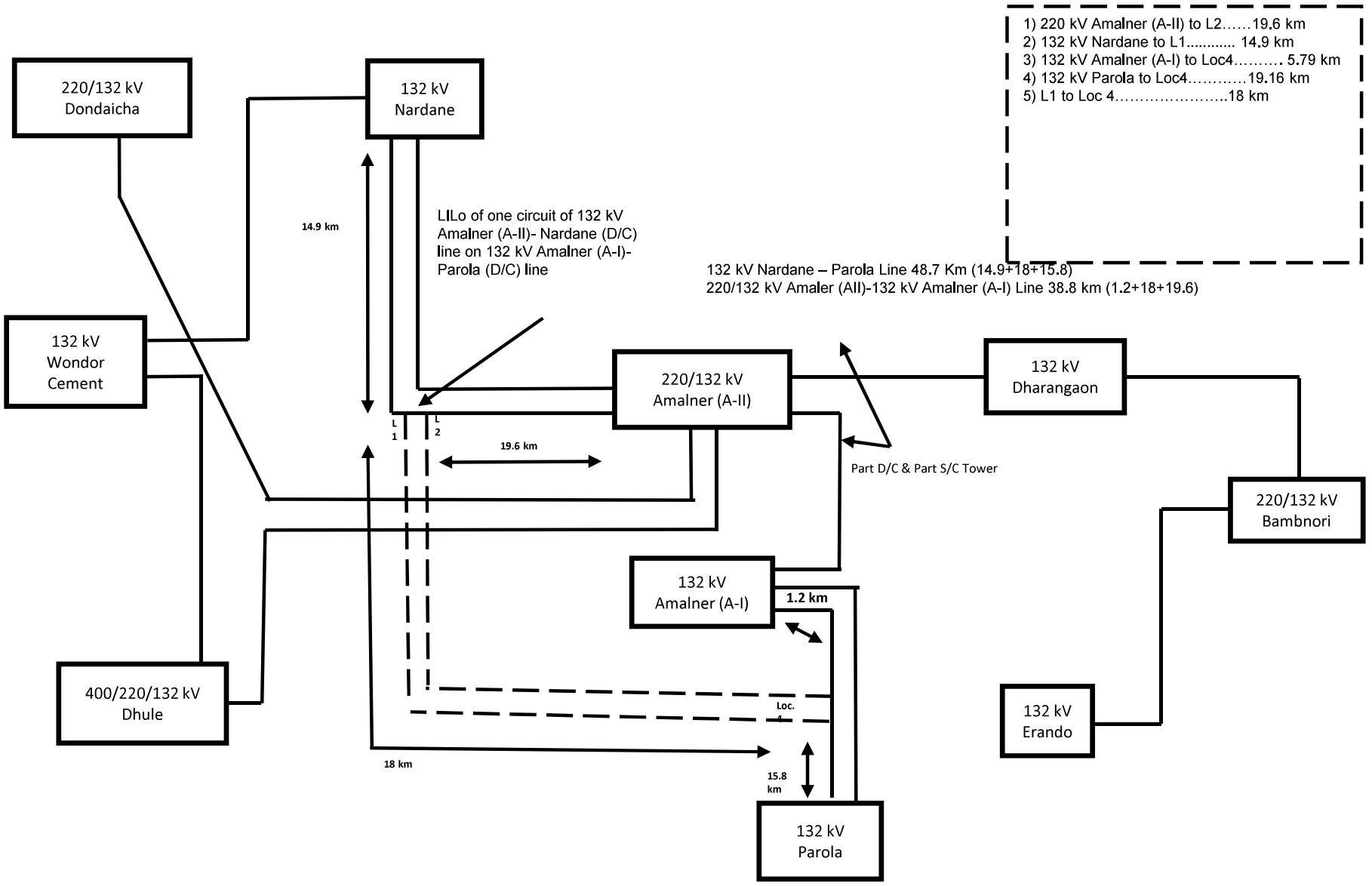
2) To increase system reliability.

➢ Benefits of the scheme:

- It will eliminate single line source connectivity of 132 Kv Amalner –I SS, 132 Kv Parola SS and enable N-I criteria to 132 kV Amalner –I –Amalner –II SCSC Line.
- It is beneficial to establish DCDC Line
- It will increase supply reliability.
- This scheme will help for proper maintenance activity of 132 kV Amalner (A-II)-Aalner(A-I) Line.

Recommended in 12th MTC meeting Date: 27.01.2025 Agenda Pt No. 25.

EHV NETWORK DIAGRAM



Need of the work:

- Presently, 132 kV Amalner & 132 kV Parola s/s are single source substations fed from 220 kV Amalner-II s/s through 132 Amalner–I - Amalner-II SCSC line & 132 kV Amalner-I - Parola DCDC line. In case of interruptions of 132 kV Amalner-I – Amalner-II SCSC Line supply of both 132 kV Amalner-I & Parola gets interrupted.
- Considering populated area of Amlner & Parola city, second line is essential. Maintenance point of view, it is difficult to carry out the routine, emergency work due to single line source.
- To avoid single line source connectivity, it is essential to establish LILO on one of the circuits 132 kV Amalner-II - Nardana line to LILO on 132 kV Amalner-I - Parola Line.
- As per detail survey of field there is severe ROW problem, it is not possible to lay the second source line from 220 kV Amalner–II to 132 KV Amalner–I Substation.
- 2nd circuit stringing is already done of 132 kV Amalner-II to Nardane line & 132 kV Amalner-I.

Agenda No.3.3.24:

- Scheme Name: Scheme for "Establishment of 220/132/33kV Waghdari s/s"
- Scope of Work:

1) 2 x 200 MVA, 220/132 kV ICT with bays. 1 x 50 MVA, 220/33 kV transformer with bays.

2) Construction of a) LILO on both circuits of 220 kV Solapur (PG) – Narangwadi DC line at 220kV Waghdari s/s with HPC – 19.509 km

b) LILO on both circuits of 132 kV Waghdari – Tata Solar DC line at 220 kV Waghdari – 3.082 km.

4) 4 x 220kV line bay at proposed Waghdari s/s.

5) 4 x 132kV line bay at proposed Waghdari s/s.

6) 6 x 33 kV outlets at proposed Waghdari s/s.

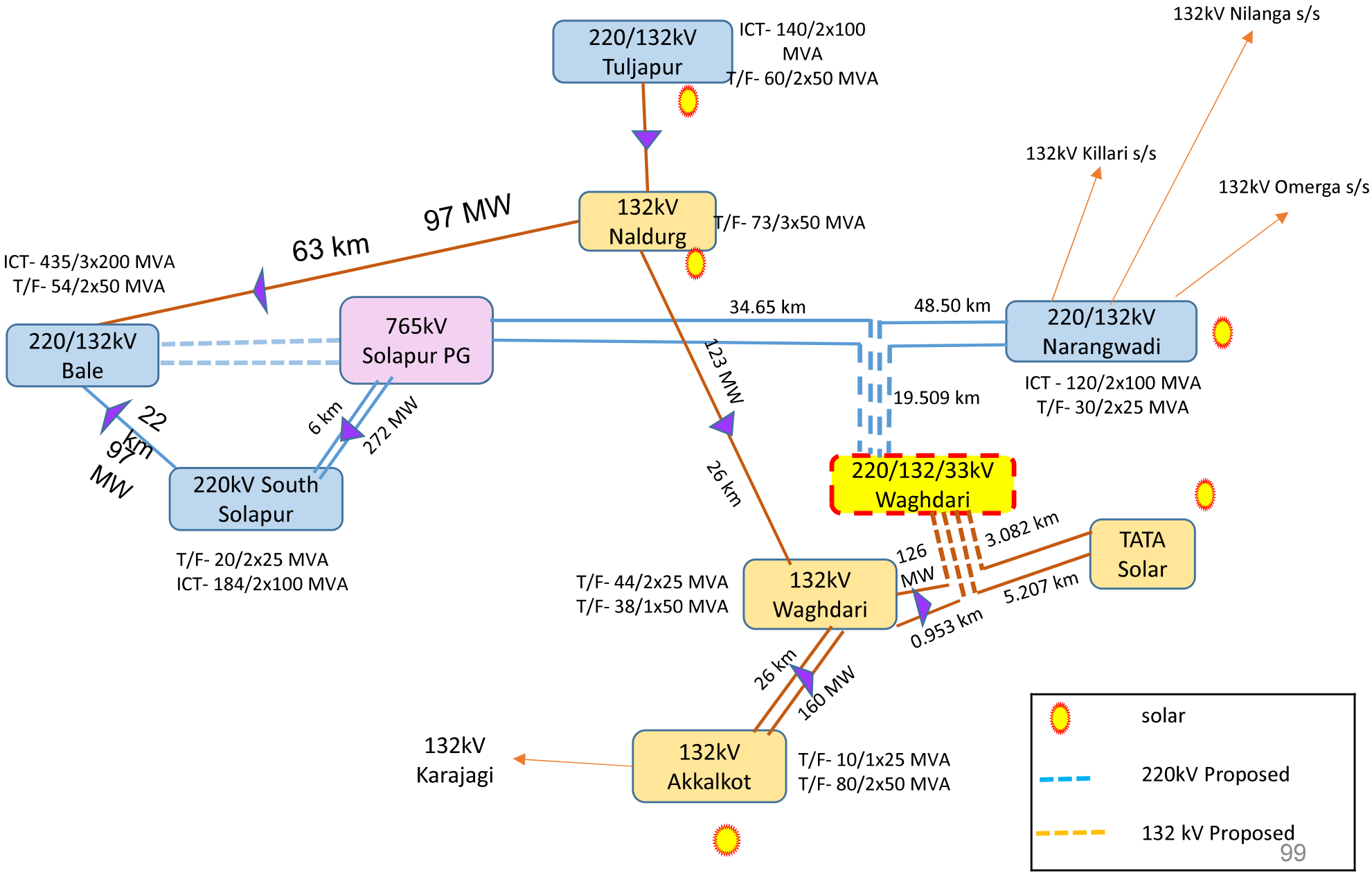
- Estimated cost: Rs.229.11 Crs. *(The committee ratified the scheme in 9th GCC (Agenda No. 4.128), However due to change in conductor for LILO portion of 220 kV line from 0.4 Z ACSR Zebra to 525 sq.mm HPC conductor along with Hardwares, cost is revised as 229.11 Cr. (previous Cost Rs.151.24 Cr.)*
- Objective: a) To facilitate evacuation of RE power in Akkalkot-Waghdari-Naldurg area

b) To strengthen 220 kV & 132 kV network in Akkalkot area.

Recommended in 12th MTC meeting Date: 27.01.2025 Agenda Pt No. 26.

Network Diagram

EHV NETWORK DIAGRAM



Need of the work

- N-1 non-compliant:
  - Any tripping / breakdown on any one ckt. of 132 kV Akkalkot - Waghdari DC line results in Back down of generation
- Address transmission constraints - Conversion of 220kV Solapur PG – Naragwadi to HPC
  - LILO to 220kV Waghdari S/s with HPC = 19.509 kms.
- Also, special protection scheme (SPS) is provided to restrict the line overloading due to generation evacuation connected with Waghdari s/s.
- RE power generator applications (for grid connectivity) at 132 kV Waghdari s/s - 600 MW.
- Due to non-availability of transmission margin, grid connectivity cannot be issued.
- The scheme of conductor replacement by HPC of existing 220 kV Solapur PG – Narangwadi D/C line is approved vide B.R. No. 167/56, Dtd. 4-3-2024. Tenderisation under process by CSN zone.
- Hence the earlier scheme is revised by considering HPC conductor for LILO of both circuits of 220 kV Solapur PG – Narangwadi D/C line.

Comparison Previous Cost Vs Revised Cost:

Sr. No	Scope	Estimated cost in Rs. Lakhs			Remark
		169/19	Revised	Diff.	
1)	**Sub-station works along with Civil:** 1) 2 x 200 MVA, 220/132 kV ICT with bays. 2) 1 x 50 MVA, 220/33 kV transformer with bays. 3) 4 x 220kV line bay 4) 4 x 132kV line bay. 5) 6 x 33 kV outlets	8945.32	10357.80	1412.48	1.Due to change in equipment rating due to utilisation of HTLS conductor, Cost of CT, WT, Isolator revised. 2.Due to revised SOR for ICT & T/F cost revised.
2)	**Lines** i. Construction of 220kV MCMC LILO on both circuits of 220kV Solapur (PG) – Narangwadi DC line at 220kV Waghdari s/s– 19.509 km	4171.18	9924.48	5753.3	1. The estimate is revised as per approved tower schedule. 2. Change in conductor for LILO portion from 0.4 Z ACSR to 525 sq.mm HPC due to which revision in cost of conductor and Line Hardwares 3.The stringing rate for conductor is revised due to utilisation of HPC
	i. 132kV MCMC LILO on both circuits of 132kV Waghdari – Tata Solar DC line at 220kV Waghdari s/s – 3.082 km.	758.92	737.11	-21.81	1. The estimate is revised as per approved tower schedule.
3)	IDC	1248.79	1891.74	642.95	
TOTAL		**15124.20**	**22911.13**	**7786.93**	

Agenda No. 3.3.25

TPC-T Scheme

Name of the scheme	Augmentation of existing 110 kV Powai RSS capacity by creating 220 kV level at Powai
Completion	FY 27 - 28
Status	• TPC-T has already submitted proposal with feasibility for 220 kV level creation at Powai in 11th MTC with 2 no's 220 kV Source lines from AEML's 220 kV Chandivali RSS. M/s AEML informed that space for only 1 no's 220 kV line bays is available. Hence TPC-T change the scope of 220 kV source line in this DPR to LILO of 220 kV Salsette-Amazon line at 220 kV Powai RSS. Load flow study jointly completed with STU for revised option.
Necessity of the scheme	• MMRDA has applied to STU for the 110 kV load @ 57 MVA for proposed Metro Station. • TPC-D has applied to STU for 33 kV load @ 90 MVA. • The existing firm transformation capacity (90 MVA) and Source capacity (150 MVA) is not adequate to cater this load demand. MERC has opined to upgrade existing 110 kV Stations to 220 kV level in view of long-term transmission planning. • To meet the existing and future load requirement it will be necessary to augment the existing 110 kV Powai RSS at 220 kV level.
Details of the scheme	• Source line to 220 kV GIS by LILO of 220 kV Salsette-Amazon line (Approx 7 Ckt km cable) • Installation and commissioning of 220 kV 07 bay GIS. • Installation and commissioning of 2X160 MVA 220 kV / 110 kV / 33 kV ICT. • Installation and commissioning of 33 kV GIS bus.
Estimated cost (In Crs.)	@ 424 Cr (RI Cost – 124 Cr)

Recommended in 12th MTC meeting Date: 27.01.2025 Agenda Pt No. 27.

Agenda No. 3.3.26:

TPC-T Scheme:

Name of the scheme	New 22kV & 33kV Bus extension schemes as per discom requirement at various Transmission RSS.
5 year STU Plan (FY 24 - 33)	2025 – 26
Necessity of the scheme	• To meet Load demand of Discoms at Transmission RSS.

Details of the scheme

Voltage level	Versova	Saki	Carnac	Vikhroli	Kurla	Mahalaxmi	Powai	Total
33 kV outlets requirement	03	08	04	02	02	10	03	**32**
Scheme type	BE*	BE*	BE*	NB**	BE*	NB**	BE*	

Voltage level	Panvel	Kalyan	Dharavi	Trombay	Malad	Parel	Total
22 kV outlets requirement	02	03	02	02	02	09	**23**
Scheme type	BE*	BE*	BE*	BE*	BE*	BE*	

* Extension of existing MV bus

** Creation of new MV bus sections

Recommended in 12th MTC meeting Date: 27.01.2025 Agenda Pt No. 28.

Agenda No. 3.3.27

TPC-T Scheme

Name of the scheme	MV AIS Switchgear Conversion with GIS at Salsette, Borivali & Mankhurd RSS
5 year STU Plan (FY 24 - 33)	Borivali & Salsette 2027 – 28 , Mankhurd-2026-27
Necessity of the scheme	• Salsette – 22 kV MV AIS commissioned in 1991. Existing switchgear is having multiple defects. OEM also stopped the supplying of spares. Also, Discom have requested additional outlets from existing 22kV AIS. • Borivali- 33 kV MVA AIS commissioned in 1996. Existing switchgear is having multiple defects. OEM also stopped the supplying of spares. • Mankhurd- 22 kV MV AIS commissioned in 1998. Discom have requested segregation of back-to-back feeders for network reliability. Also, existing switchgears is having multiple defects & OEM stopped the supplying of spares.
Details of the scheme	• Installation & Commissioning of 22 kV MV AIS to GIS conversion at Salsette & Mankhurd with additional outlets to discom • Installation & Commissioning of 33 kV MV AIS to GIS conversion at Borivali.

Recommended in 12th MTC meeting Date: 27.01.2025 Agenda Pt No. 29.

Agenda No. 3.3.28:

AEML-T Scheme:

Name of the scheme	1000 MW HVDC (VSC based) Kudus-Aarey scheme (Pole-2)
Necessity of the scheme	• Mumbai Peak Load has reached up to 4306 MW in FY 2025. Considering the load growth @ 3.6%, the load is estimated to be in the range of 5140 MW. Further, estimated point loads on account of Data Centres, EV Charging, New Infra will add ~800 MW. This will add up to total ~6000 MW Peak Demand of Mumbai by FY 2030. • ATC margin is estimated to be exhausted by FY 2028. Need to enhance Available Transmission Capacity (ATC) of Mumbai was discussed/ recommended in various forums and reports • 1000 MW HVDC (VSC based) Kudus – Aarey scheme (2nd pole), is found to be the most feasible, techno-economical, short construction period and most beneficial scheme for Mumbai power system and ATC.
Benefits	❑ Unlike 400kV HVAC, aforesaid 1000MW HVDC link(2nd pole) shall push another 1000MW to Mumbai, relieving Kalwa/Vikhroli/Kharghar transmission corridors, whereby its capacity may be better deployed for meeting up-coming load (Data Centers, Metro & New Infra projects) for Navi Mumbai/Thane load growth. ❑ Schemes shall add 1000MW Transmission capacity, thereby increasing power import capacity (ATC) of Mumbai Network, reduce dependency on Embedded

Agenda No. 3.3.28

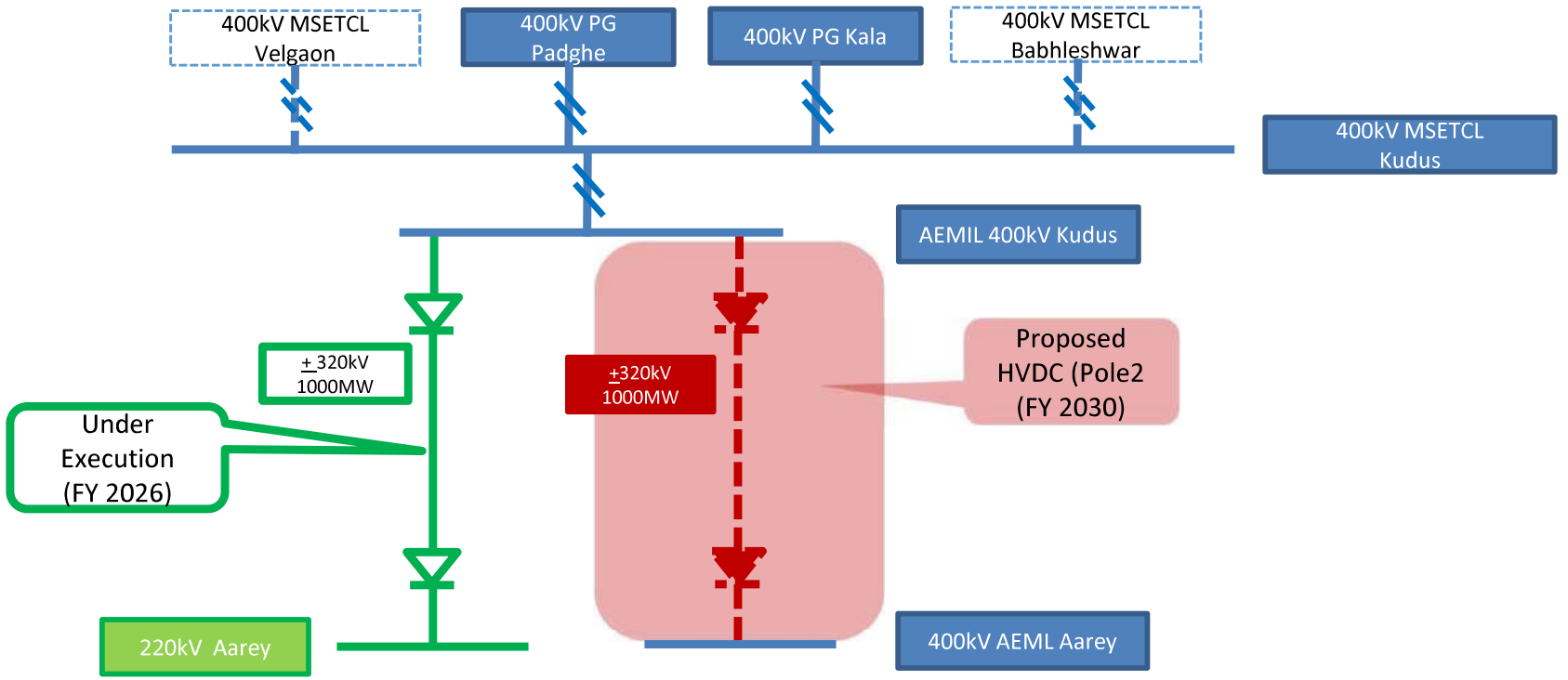
AEML-T Scheme

Name of the scheme	1000 MW HVDC (VSC based) Kudus-Aarey scheme (Pole-2)
Benefits	❑ Generation, facilitate sourcing cheaper/ green power to Mumbai Discoms. Another 1000MW feed at Aarey (2nd pole), shall also disburse power towards Borivali / Goregaon/ Versova / Gorai/ Ghodbunder, thereby also relieve North Mumbai corridors i.e. Boisar – Borivali, DTPS/Boisar – Versova/Ghodbunder etc.
Scope of work	❖ Extension of 400kV GIS Bays at AEMIL Kudus. ❖ 1000 MW HVDC (VSC based) Convertor S/s (Pole 2) at Kudus and Aarey. ❖ OH HVDC Line: 30 kms, existing OH line conductor to be utilized. UG HVDC Cable system: 50 km, cable to be threaded through spare HDPE pipes. ❖ Transit S/sn at Mandvi – Existing Land usage to be optimized. ❖ 400kV and 220kV GIS Bays at Aarey. 3 x 500 MVA 400/220kV ICTs at Aarey. ❖ Land at Aarey: Existing land usage optimization + ~22,000 sq.m. land adjacent to existing Aarey EHV S/s. Land at Kudus – Existing land usage to be optimized..
Estimated COD:	❖ FY 2030 (36 months from DPR approval), Est. Cost~ 8000 Cr.

Recommended in 12th MTC meeting Date: 27.01.2025 Agenda Pt No. 30.

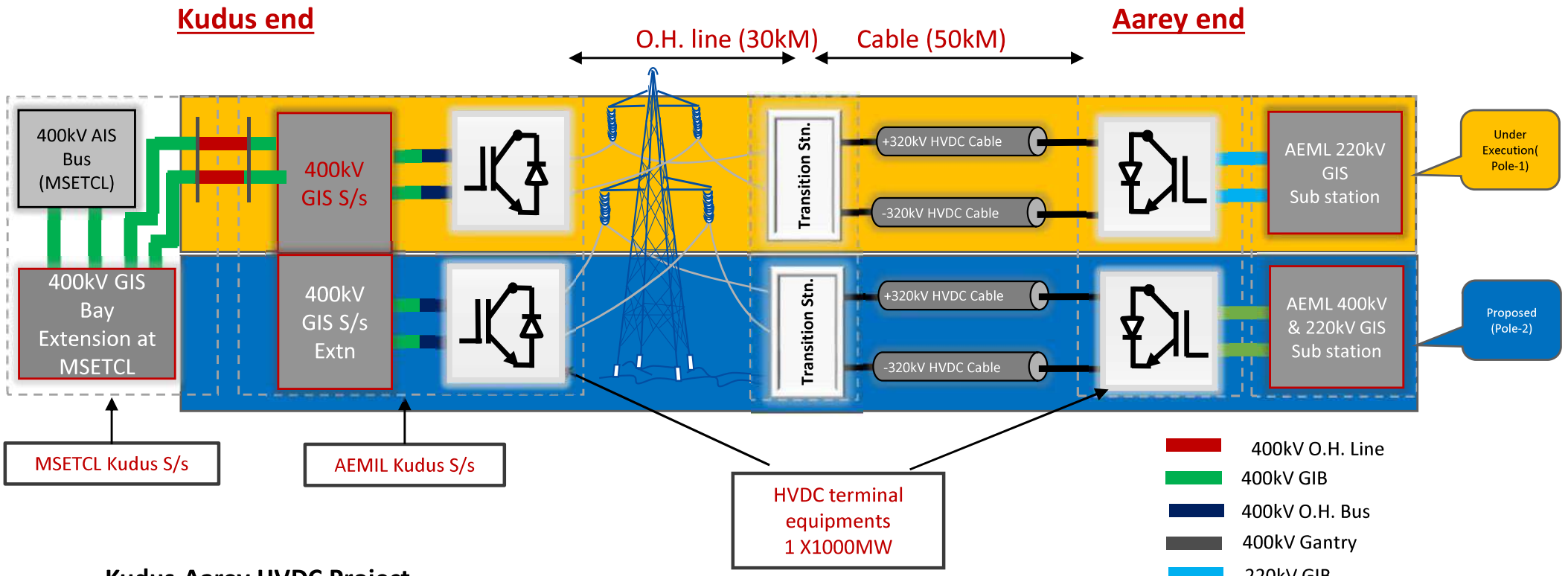
Agenda No. 3.3.28

Propose Scheme -



Agenda No. 3.3.28

Overall HVDC Scheme



Kudus-Aarey HVDC Project-

- 1x1000MW, ±320kV VSC Based HVDC Project.
- Hybrid Transmission link (O.H. line 30kM, U/G Cable 50kM).

Thank You