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.
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Ref. No. ED/MSLDC/OP/GCC/ No 01510 Date: 31 JUL 2024

To,
As per mailing list GCC Core Group Members.

Sub: - Minutes of the 9th Grid Coordination Committee (GCC) Meeting held on 11.07.2024 at 11:00 hrs. at MSLDC, Airoli.

Ref.: 1. Agenda Circulated through E-mail Dated. 04.07.2024
2. T.O.L. No. ED/MSLDC/OP/GCC/876 dated 08.05.2024.

Dear Sir,

In reference to the above subject, the 9th Grid Co-ordination Committee (GCC) was convened at MSLDC, Airoli on 11.07.2023 at 11:00 hrs.

The Minutes of Meeting is enclosed herewith.

Thanking you.

With regards,

Encl: As above.

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

Copy s.w.r.s. 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 present for the meeting:

Sr. No.	Name of Organization	Name of Nominee/Designation	Committee Position	Contact No.	E-mail ID
1	MSETCL	Shri Satish Chavan, Director (Operations)	Chairperson	022-26592162	dirop@mahatransco.in
2	MSEDCL	Shri. Annchhatre, S.E. LM Cell	Representing Dir(Commercial) MSEDCL	022-26474211 / 26472131	directorcommsedcl@gmail.com
3	MSPGCL	Shri. Sunil Sonpethkar CE (Works)	Member	8411958588	cegw@mahagenco.in
4	WRPC	Shri P. D. Lone, S.E. Commercial	Member	9867622823	comml-wrpc@nic.in
5	MSLDC	Shashank Jewalikar Executive Director (SLDC) (I/c)	Member Convener	022-27301931	edmsebholding@gmail.com

Minutes of the 9th Grid Co-ordination Committee meeting held on 11th July 2024 at 11:00 Hrs. at MSLDC, Airoli.

The 9th Grid Co-ordination Committee (GCC) meeting of the Core Group was convened on 11.07.2024 at 11:00 hrs at MSLDC, Airoli. The meeting was convened physically as well as through Video conferencing. The list of members/participants is enclosed as per **ANNEXURE - A**.

The Executive Director, MSLDC & Member Convener of GCC welcomed all the GCC members and other participants in the 9th GCC Meeting.

With the permission of the Chair, the discussions of the 9th GCC Core Committee commenced as below:

The Chairman of GCC briefed about the business rules of GCC and emphasized necessity to follow the same. He also insisted that, if any Core member is unable to attend the GCC meeting, nominations for the official attending the meeting, should be sent to MSLDC, prior to the meeting.

Any new CERC / MERC regulation or amendments thereof if any, to be included in the GCC agenda.

1.1 **Confirmation of the Minutes of the 8th GCC Meeting held on 04.12.2023 through Video Conferencing & physically**.

- The Member Convenor of GCC informed that the minutes of the 8th GCC meeting held on 04.12.2023 were circulated to all the members vide Letter No. MSLDC/TECH/OP/GCC/2240 Dated. 21.12.2023. However, no comments are received from members and hence, the same may be considered as ratified.

GCC confirmed the MoM of the 8th GCC Meeting.

1.2 Presentation on Maharashtra System Grid performance from pervious GCC meeting-

- The Chief Engineer, SLDC presented system operational performance for the period from December 2023 to June 2024.

  The Chairman instructed MSEDCL to consider the IMD forecasts for next three months and accordingly generator planned outages shall be reviewed.

  On generators unit revival, CE (Gen Works) informed that early revival of Uran unit A0 follow-up is being taken and in respect to Ghatghar unit 2, the tender for repair is being processed. The revival dates will be submitted by MSPGCL to MSLDC soon.

  The Chairman expressed his displeasure over the high quantum of deferred transmission outages for reasons pertaining to field offices and suggested for proper planning and co-ordination before proposing outages.

Members noted the same.

1.3 **Grid Alerts/Occurrences experienced by Maharashtra from December 2023 till date:**

- Discussions were carried out in detail on the various grid occurrences during December 2023 to June 2024. It was informed that such occurrences are discussed at the PCC meetings and remedial actions are suggested to the concerned utility. The Chairman asked to appraise GCC about the suggestions/ remedial measures proposed by Protection Co-ordination Committee, in the next meeting.

Members noted the same.

1.4 Status of Pending projects required by WRPC in 577th OCCM:

It was informed that WRPC has written about various pending projects in Maharashtra transmission network which are important to relieve system constraints for reliable operation of the Grid.

High Loading in 400 kV Pune Chakan:

220kV Karjat-Jeur D/C construction was to be completed by the end of April 2024. After charging of 220kV Karjat-Jeur D/C line, 400kV Karad -Solapur (PG) can be restored immediately.

Low Voltage Issues in Maharashtra System:

a) 1315 MVAR, 710 MVAR &160 MVAR compensation planned at Pune, Vashi and Nasik respectively. Tender work in progress. Expected to be commissioned in Sep-Oct 2024. (Annexure 1.2 enclosed)

- The Executive Director, MSLDC also expressed concern on the progress of installation of proposed reactors and capacitors. During rainy season, reactors are utmost important for overvoltage control whereas during the high loading seasons availability of capacitors becomes important. MSETCL needs to take corrective measures and speed up the implementation of reactive power compensation proposals.

b) Revised studies are being carried out for STATCOM. Study results required.

- CE, STU informed that the study for STATCOM is done. The chairman instructed to schedule a meeting with STU, SLDC, VJTI and the study team to finalize the results.

c) Project progress for power evacuation outlets from PGCIL substations i.e.400/220kV Talegaon (PG) and 765/400kV Shikrapur (PG).

- The Executive Director, MSLDC expressed concern on progress of the projects regarding the planned evacuation outlets from PGCIL ss in Pune region. The delay in the evacuation arrangement will be affecting the system security in Pune region and forced curtailment of loads will be required in this area. CE (STU) was requested to monitor the progress of the planned projects as per STU plan in the MTC Meeting.

Members noted the same.

1.5 Submission of Annual MSLDC Report in CY 2023:

- MSLDC presented the detailed Annual system report prepared for the year 2023 (Jan –Dec) which included the various system parameters and its trend, performance of sources etc. during 2023.
- The Chairman instructed all stakeholders to study the observations depicted in the annual report and corrective actions to be taken, to improve the performance of Maharashtra Grid system.
- He also suggested that apart from speeding up execution of transmission projects to relieve the constraints in the system, it is also important that MSEDCL takes a review of capacitor banks availability in distribution network.

Members noted the same.

2. MSLDC Agenda:

2.1 Draft Procedure for computation of monthly TTC /ATC and Interconnection studies:

- In accordance with the CERC GNA regulation the TTC/ATC and six months ahead interconnection studies are to be carried out by each state on monthly basis. Accordingly, Hon. CERC has issued a detailed procedure in the said subject which is to be followed by RLDC and states. Hence a draft procedure for computation of monthly TTC /ATC and Interconnection studies has been prepared by MSLDC under the provision of 28.2 of the MEGC in consultation with the stakeholders. The Draft Procedure as prepared by MSLDC is attached in Annexure 2.
- The draft procedure was discussed in the 7th OCC meeting held on 14.02.2024 at MSLDC. In the said meeting, OCC has recommended the draft procedure to GCC for further ratification. Further, the chairman of the OCC has directed MSLDC to formulate a Working Group for undertaking various activities envisaged in the said draft procedure & initiate required activities. Accordingly, vide letter dated 10.05.2024, MSLDC has constituted a Working Group. The copy of the same is attached as Annexure-3. Further, MSLDC has submitted PSSE Case files at four cardinal points to WRLDC for the month of November-2024 & May-2025 on 14.05.2024.

- **The Chairman instructed STU to gather the required information following the timelines for computation of monthly/half yearly TTC /ATC and Interconnection studies scrupulously.**

With due deliberations, GCC ratified the TTC/ATC procedure for implementation.

2.2 Validation of various relay settings of Mumbai Islanding Scheme through Dynamic Studies:

- On the backdrop of the partial grid failure in Mumbai & MMR area on 12.10.2020, the High-Level Committee constituted by Hon'ble MERC had issued various recommendations, wherein formation of special group for monitoring Mumbai Islanding Scheme was one of the recommendations. Accordingly, a Special Group, "Mumbai Islanding Group" has been

constituted on 09.04.2021 under the chairmanship of the Executive Director (MSLDC). All the stake holders in the MMR & Mumbai are the members of the said group. Further, CEA Committee, in its report on same occurrence has suggested to validate the Mumbai Islanding Scheme relay settings through dynamic studies.

- Accordingly, MSLDC has issued work order to VJTI for validation of various relay settings under Mumbai Islanding Scheme through Dynamic Stability Studies. VJTI has carried out the required studies & submitted draft report on 08.07.2023. In the draft report, it has been stated that the existing relay settings are in order and do not require any changes. The said draft report was discussed in the Mumbai Islanding Group meeting held on 23.09.2023 wherein group has accepted the report. Accordingly, VJTI has submitted final report on 02.03.2024.

The important observations & recommendations in the report are as below:

a) The last stage of load shedding at National level is set at 48.8 Hz (triggering), the effect of load shedding considering delays of -100 msec validation time and 40 msec breaker operating time is expected at 48.66 Hz (with 1 Hz/sec ROCOF) & 48.52 Hz (with 2 Hz/sec ROCOF). **In any case, it is safe to start load shedding in Mumbai at 48.4 Hz** as all efforts to save the grid at National level could have been done by the time frequency comes down to 48.52 Hz.

b) In case of disturbances emanating outside the State of Maharashtra, **Mumbai islanding scheme with settings implemented presently can cope up well and survives**. Further load shedding done at 48.4 Hz in Mumbai helps National grid and islanding trigger frequency (47.9 Hz) not expected to come.

c) In all the future hypothetical disturbance scenarios, **after cascade tripping of 400 KV lines, the pattern of disturbance propagation on 220 kV network is almost similar to the sequence of events that occurred on 12th October 2020**.

d) In all the future hypothetical disturbance scenarios, the real threat to Mumbai system starts from the event that is formation of Mumbai plus MMR island. **Due to load far exceeding generation in the Island, ROCOF as high as 4 Hz/sec to 8 Hz/sec is seen in dynamic simulations and the challenge mainly is to counter such high df/dt. It is therefore, prudent to consider formation of Mumbai plus MMR island as reference contingency to test the robustness of Mumbai Islanding scheme.**

e) The revised settings (post 12th Oct 2020 disturbance) are appropriate and validated by the simulation for different scenarios built from FY 2023-24 to FY 2027-28 considering network augmentations, variations in load generation balance and import from grid, phasing out of generation in Mumbai, impact of inertia, etc.

f) A load flow and dynamic simulation case is formulated for FY 2023-24 scenario of maximum demand in which similar load shedding schemes deployed in MMR also. However, **dependence on MMR load shedding is not recommended, Mumbai load should also be curtailed.** Carrying out load shedding in MMR slightly before load shedding in Mumbai is also

studied but could be of little help. **Load shedding in MMR set at 49.2 Hz, 0.5 Hz/sec and 48.5 Hz (for slow frequency events) is also studied but no significant improvement found**.

g) Transient stability, voltage stability and thermal limit constraints to limit the capability of any transmission network and TTC is the minimum of these constraints. As system operating conditions change, the most restrictive limit on TTC may change from one kind of limit to the other. For Mumbai system, since internal generation is reducing while import is increasing, the restrictive limit that has most bearing would be the stability limit. **Mumbai system cannot operate with multiple tripping's of 400 kV lines unless TTC/ATC is revised in real time and accordingly the import must be curtailed and internal generation has to be increased (typically hydro pick up followed by manual load shedding)**. **While transmission depletion is occurring the import TTC/ATC has to be considered with stability limit and TRM has to be increased to provide good margins** (not 2% of real time demand but much higher based on low probability high impact contingencies).

h) It is recommended **to continue with some of the excellent features of present islanding scheme such as dynamic load shedding, automatic load restoration in case of frequency above 51 Hz** shall be continued in the future islanding schemes - South Mumbai islanding scheme and small islands suggested.

i) Due to maximum import, load shedding would be very high which may cause over voltages and over fluxing which may lead to tripping of units just after islanding. **It is recommended to convert generators which are de-commissioned into synchronous condensers to help in voltage control and to supplement inertia for lowering df/dt and help in frequency recovery**.

j) Due to growth in Mumbai load demand and consequent increase in import **it is preferable to have two small islands- one for South Mumbai and another for AEML**. The South Mumbai Island could be similar to that occurred during the disturbance on 27th February 2022 and can carry on till FY 2027-28 and as long as Trombay Unit-5 is not de-commissioned. After de-commissioning of Trombay unit-5, units 7A & 7B, smaller island in South Mumbai using generation of Trombay 8 could be appropriate.

k) In case of AEML, **the present North Mumbai sub-island with Dahanu units and full/part load of North Mumbai can continue till VSC based HVDC is commissioned**. Another new island can be conceived after VSC based HVDC is commissioned (de-commissioning of Dahanu units can be coordinated with commissioning of HVDC).

l) **The future South Mumbai Island may also require 100 MW BESS either at Trombay or several BESS distributed at 3 or 4 locations amounting to 100 MW to help in counter acting high ROCOF** just before islanding and to ensure safe islanding by reducing df/dt and also to support islanded operation with traction loads being essential loads in South Mumbai. BESS with 50% of SOC, can pick up full capacity within 0.2 to 0.5 seconds.

m) **Oscillations are seen in frequency & voltage of Trombay and Dahanu units in some of the dynamic simulation cases, possibly due to low damping**, however, settled within 5 seconds. The frequency of oscillation observed is around 1.2 Hz. It is pertinent to note that due to significant amount of load shedding, system damping gets reduced. When frequency recovery

is taking place, oscillations seen in frequency (TPC and AEML generators in phase opposition) of around 1.2 Hz (not inter-area oscillations). However, oscillations damped out within 5 seconds in most cases. Since, frequency did not come down up to 47.6 Hz in some of the cases, sub-islanding did not occur. **However, in case oscillations during frequency recovery continue for more than 5 seconds, it would be appropriate to separate TPC and AEML systems. This is one of the reasons, separate islanding schemes are proposed for TPC and AEML.**

n) In cases where embedded generation is around 1000 MW (340 MW in AEML and 600 MW in TPC), ROCOF is generally below 6 Hz/sec. Due to adequate inertia, frequency decay and recovery are good enough to have a safe islanding without causing under-frequency tripping of generators and sufficient time to carry out load shedding. However, over voltages and over fluxing are a matter of concern. It is understood that line/bus reactors are planned in TPC and some of these are commissioned/under commissioning.

o) In cases of high import and phasing out of generation, ROCOF is seen around 8 Hz/sec due to low inertia and high overloads in the system during disturbances. Little time is available for carrying out counter measures like UF load shedding in time to limit frequency decay well above generator under frequency trip settings. **Phasing out of generation in AEML system should be after commissioning of Kudus-Aarey VSC based HVDC and in TPC system phasing out schedule should match with commissioning of Vikhroli Phase II system**. Vikhroli Phase I strengthens the transmission from Talegaon-PG and conversion of HTLS of 400 kV Kalwa-Padghe D/C strengthens transmission from Padghe MSETCL. **Further, smaller islands can be planned for both South Mumbai as well as North Mumbai. South Mumbai Island can be commissioned matching with the time lines of Vikhorli Phase II (by FY 2024-25).** After phasing out of Trombay units- 5, 7A & 7B, TPC can go for smaller islands with Carnac, Backbay and some traction loads in South Mumbai.

p) **ROCOF around 8 Hz/sec is seen as a major threat** for successful islanding of Mumbai system and to handle such high ROCOF two-pronged approach is suggested. **By converting phased out generating units as synchronous condensers**, system inertia could be improved. Since, India is harnessing high RE generation in the near future, inertia is bound to get reduced even for the National Grid. **Maharashtra being RE rich State, having synchronous condensers in Mumbai would help the State as well as National Grid** in addition to significantly improving the performance of islanding process and islanding operation of Mumbai. **The other requirement for Mumbai Island would be to go in for BESS of 100 MW at Trombay or distributed across few s/s in South Mumbai island** and future small islands (TPC area) in order to reduce generation/import deficiency at the time of islanding as BESS can pick up full capacity (from 50 % SOC) within 0.25 to 0.5 seconds (2 p.u./sec to 20 p.u./sec ramp up/down rates) to be triggered using 49 Hz, 0.5 Hz/sec signal (the same that triggers UF load shedding). The battery can also control over frequency in case of excessive load shedding during islanding and compliments turbine governors. BESS can also help in countering frequency fluctuations during island operations due to traction loads. **BESS is required for 2 to 3 hours of island operation till hydro generators are black-started and start picking up loads**.

q) The early warning system proposed in chapter 7 is based on bus positive sequence voltage angles and frequencies obtained from several nodes (Mumbai, MMR, outside MMR) in dynamic simulations. The data granularity is 10ms (lower is also possible). As MSLDC is going to have additional PMUs in Mumbai and MMR and outside MMR in Maharashtra reporting at

25/50 phasors per second which can give angle information and frequency at granularity of 40/20 msec. **For the purpose of SPS, it is possible to have PMUs of P-Class (protection class) reporting at 100 phasors per second with data granularity of 10 msec.**

Members noted the same.

2.3 Procedure to recover 'Increment in Generation (VSE)' charges while availing outages proposed for Third party ORC work in Maharashtra Grid:

During major outages for ORC (Outright Contract) works in Mumbai/MMR & Pune area, due to any system constraints, the costlier Mumbai embedded generation, Nasik generation & Koyna hydro is required to be picked up as per requirement to maintain system 'N-1' compliant and to resolve the system constraints. This causes additional burden on the DSM pool. In this respect, MSLDC enquired with such stake holders whether such additional burden needs to be shared by the agency carrying out such ORC works. This scenario is similar to the charges levied by Indian Railways to transmission/distribution licensees for granting power/ traffic blocks.

The subject was discussed in 6th OCC meeting dtd 18.08.2023**,** the procedure for the same is being formulated in accordance with the Regulation No. 28.2 (f) of the MEGC, 2020 and directives of GCC.

- **The Chairman informed to formulate the above said procedure and the same to be made applicable for whole of Maharashtra.**

Members noted the same.

2.4 PCC and MCCC meetings:

No agenda is received from PCC and MCCC.

The Executive Director, MSLDC requested to conduct MCCC meetings at the earliest.

Members noted the same.

3. Agenda Point received from MSEDCL:

MSEDCL's actual drawl available on MSLDC's SCADA screen:

MSEDCL had requested SLDC to share the logic / formula as incorporated by MSLDC to arrive at actual drawl of MSEDCL along with a request to display real time "Mahadiscom total demand" on SCADA screen. However, MSLDC has shared the information from which actual drawl of MSEDCL cannot be found. Further, MSLDC informed that the demand forecasting is the responsibility of concerned Discom and the SCADA data is meant for SLDC operation purpose.

In intra-day, Load-Generation balance is achieved automatically by auto-operation of decentralized MoD for each 15-minute time block. Thus, the despatch instructions are issued to the intrastate generators through SLDC DSM software based on the data available with SLDC. MSLDC is requested to clarify, based on which data SLDC DSM scheduling software is issuing scheduling instructions to generators. SLDC has stated that the SCADA data is meant for SLDC operation purpose and not to be used for demand estimation. It is pertinent to point out that

MSEDCL is not using the SCADA data for demand forecasting, but has to use it for real time operations to minimize the deviations. Therefore, it is requested to clarify whether SLDC is using data available on SCADA to issue schedule up/down instructions to MSEDCL's contracted generators through software or using different data?

In this regards, MSEDCL concerns are as follows:

a) If SLDC is using SCADA data, which deviates significantly from actual data recorded by interface meters and means that SLDC operation is based on erroneous data which financially affecting MSEDCL by contributing to deviation and deviation charges thereon.
b) If SLDC is using different data, then SLDC shall clarify about it and if it is in sync with interface meter data of all MSEDCL drawal points, then such data (MSEDCL's real time demand) needs to be displayed on SCADA screen so that in real time MSEDCL can take corrective actions to minimize deviations and deviation charges.

The Commission, in its order dtd 29.11.2020 in case no 114 of 2020 has acknowledged the fact that the availability of SCADA will provide MSEDCL the visibility of its real time drawal. The Commission has also noted that MSEDCL has been raising this issue time and again. Further, Hon'ble Commission has directed as bellows:

7.64. The Commission in its Statement of Reasons (SOR) to DSM Regulations has dealt with the issue of SCADA visibility and preparedness for DSM implementation. Further, Metering and Communication Coordination Committee to be constituted under the MERC (State Grid Code) Regulations 2020, inter alia, would be required to undertake a periodic review of SCADA visibility of all Drawal and injection points. For establishing connectivity and communication link at T<>D interface for drawal point of Distribution Licensee to ensure visibility to MSLDC is responsibility of STU. ***Hence, STU should come up with a concrete and cost-effective and timely implementable plan within 3 months in consultation with the Grid Co-ordination Committee for implementation of SCADA to ensure required real time visibility at MSLDC.***

MSEDCL vide its letter dtd 19.04.2022 had requested to take up this matter with concerned MSETCL office to arrange for display of actual real time drawl data of MSEDCL. However, despite the directives of Hon'ble Commission in the subject matter and repeated requests by MSEDCL, the actual real time drawl data of MSEDCL is yet not displayed on SCADA screen.

- **The Chief Engineer, MSLDC informed that a communication in this regard is already done by SLDC and information has been shared with MSEDCL. The available SCADA data with SLDC is already being shared with MSEDCL.**
- **CE ACI&P briefed about the actions initiated by MSETCL for establishing communication through VSAT at all the MSETCL substations. He also emphasized that the current AMR system design is basically to cater to the needs of MSLDC for implementing the DSM regulation.**

- **It was also informed that at the meeting held at Mantralaya to review power supply scenario in Maharashtra on 1.09.2023, this issue was raised by Director (Commercial) MSEDCL and he requested that considering the time for VSAT installation by MSETCL; MSEDCL be allowed to put additional meter at interface locations of MSEDCL. The Chairman instructed MSEDCL and MSLDC to conduct a separate meeting so that queries of MSEDCL can be addressed to best possible way.**

Members noted the same.

 # Additional agenda from MSLDC:

MSLDC's difficulties and issues for processing of short term GEOA applications.

Hon'ble MERC had published the 2nd amendment in the DOA regulation 2016. In this amendment, **consumers having contract demand or sanctioned load of 100 KW and above** become eligible for green energy open access. This leads to increase in the flow of Short-Term **Green Energy Open Access applications of approx. 1500 in next few months.**

MSLDC is nodal agency for Short Term Green Energy Open Access, whereas STU is nodal agency for medium term and long-term Green Energy Open Access.
MSLDC has prepared procedure for processing of short term GEOA applications in line with NLDC GOAR procedure and Hon'ble MERC DOA (2nd Amendment) Regulation.

Further, as per clause No 5 and 6 of Hon'ble MERC DOA second amendment in regulation 2016, which is reproduced as below:

"…5. Amendment to Regulation 4 of the Principal Regulations :—

Introduction of 3rd Proviso to Regulation 4.1 of the Principal Regulations :—

"Provided also that procedures and formats devised by Central Nodal Agency as per provisions of Rules shall be followed for seeking Green Energy open access."

6. Amendment to Regulation 8 of the Principal Regulations :—

Introduction of 3rd, 4th and 5th Provisos after 2nd Proviso to Regulation 8.1 of the Principal Regulations :

"Provided further that formats and timelines devised by Central Nodal Agency as per provisions of Rules shall be followed for seeking Green Energy open access :…"

As defined in the NLDC (Central Nodal Agency) procedure, all Green Energy Open Access applications to be processed on national GOAR portal developed by NLDC only.
The Green Energy Open Access Rules (GOAR) portal, developed by the Grid Controller of India Limited (NLDC), is designed to facilitate the processing of Green Open Access Applications. The Maharashtra State Load Dispatch Centre (MSLDC) is the nodal agency responsible for processing short-term green energy open access applications within Maharashtra.

Key Issues

1. Insufficient Fields in Registration and Application Pages in National GOAR portal:
The current National GOAR portal lacks several critical fields necessary for the comprehensive processing and scheduling of short-term green energy open access applications. Fields such as "buyer consent," "seller consent," "Pooling Substation Name," "Unique Identification No," and

"Location Numbers" are vital for ensuring accurate and efficient application processing. During various meeting these issues were already communicated to NLDC team. Further, MSLDC had issued letter to NLDC for the same on dated 22.05.2024.

2. Lack of Separate Discom Login in National GOAR portal:

A separate login for Distribution Companies (Discoms) is essential for the streamlined handling of applications. Without this, the coordination between MSLDC and Discoms becomes cumbersome, affecting the overall efficiency of the process. Furthermore, the Green Energy Open Access Rules, the NLDC Procedure, and the Hon'ble MERC DOA Regulation second amendment regulation have established provisions for "Deemed Approval."

3. Existing STOA software of MSLDC:

A meeting was convened on 21st June 2024 at 11:30 hrs at MSLDC through VC with Distribution Licensees and NLDC to discuss the process of granting Short-Term Green Energy Open Access in Maharashtra. The interim procedures and requirements were discussed to ensure smooth operation until the necessary fields are integrated into the National GOAR portal.

The Existing STOA software is developed way back based on MERC TOA Regulation 2016. In view of above MSLDC has taken meeting with existing software developer for incorporation of changes in the existing software to use MSLDC's STOA software as interim arrangement. After discussion held with developer, Developer conveyed that existing software's server database may not handle these number of applications processing smoothly and up gradation of overall software would also be needed which includes significant time and commercial aspects. Along with this some modification also required for smooth processing of short term GEOA applications. It is not capable of handling such tremendous applications.

4. Stakeholder Feedback:

During a National GOAR portal demonstration arranged by NLDC, the need for additional fields was discussed. Further, state Discoms have highlighted the necessity of these fields for effective application processing. MSLDC has compiled and communicated these requirements to NLDC.

5. Additional Requirement of manpower:

Processing of these applications (1000-1500 per month presently) requires additional manpower. Also, the flow of applications will increase tremendously in coming few months. Processing applications involves lot of manual activities like forwarding all applications to Discoms via email, taking consent of same application through email, uploading of this consent for each application, post approval preparation of common registry sheet for the purpose of scheduling. These all activities need to be performed errorless in offline mode and within 10-15 days from date of receipt of applications. This manual activity is cumbersome.

Implications

The absence of these crucial fields and features poses significant challenges for MSLDC in processing green energy open access applications. This leads to delays and potential inaccuracies in scheduling, affecting the stakeholders involved, including consumers who are already approaching MSLDC for their applications.

Recommendations

1**. Incorporation of Additional Fields by NLDC:**

Implement the required fields such as "buyer consent," "seller consent," "Pooling Substation Name," "Unique Identification No," and "Location Numbers" to facilitate accurate processing and scheduling.

2**. Provision of Separate Discom Login by NLDC:**
Create a separate login for Discoms to streamline their involvement in the application process, enhancing coordination and efficiency.

3. **Existing MSLDC STOA software**:
MSLDC has considered to use existing STOA software for processing of GOAR applications until the full fledge development of National GOAR portal by NLDC. However, existing software is not designed and capable to handle such large number of applications. Hence, the same could not be done.

3. **SLDC Action:**
MSLDC has communicated to NLDC about the issues in National GOAR portal from the beginning itself through various meetings. MSLDC has communicated the point on implementation of Green Energy Open Access Rules in consecutive DOA review meeting in presence of representative of Hon'ble MERC. MSLDC has prepared a draft procedure for implementation of Green Energy Open Access in state of Maharashtra.
Considering the ongoing and increasing demand from consumers, it is essential to incorporate these changes into the National GOAR portal promptly to ensure smooth processing and scheduling of applications.

The Chairman enquired whether STU also needs to consider these points for medium and long term contracts under green energy open access and whether STU has prepared any procedure for the same. CE STU informed that STU is in process of preparing the same. The Chairman, GCC opined that development of common software for all the functionalities covering all GOAR transactions & billing at the state level by STU & SLDC be considered. The difficulties faced in the integration of central GOAR portal also to be informed to the Hon'ble commission.

Members noted the same.

- **The 1st 20 points from STU agenda is to be ignored as they are already ratified in the 8th GCC and mistakenly submitted in 9th GCC.**

CE STU informed GCC that all the STU plan agenda points proposed here were discussed at the MTC meeting and STU has made its recommendations considering the MTC deliberations and approval.

4.21: Replacement of 2 x 25 MVA, 110/33 kV T/F by 2 x 50 MVA, 110/33 kV T/F at 110 kV Savlaj S/S under EHV PC O&M zone Karad
CE, STU placed before GCC a proposal for Replacement of 2 x 25 MVA 110/33 kV T/F by 2 x 50 MVA, 110/33 kV T/F at 110 kV Savlaj S/S under EHV PC O&M zone Karad
CE, STU stated that 110/33 kV Savlaj S/s , commissioned on 04.12.2007, having installed capacity of total 50 MVA at 110kV Savlaj S/s, consisting of 2 nos of 25 MVA, 110/33 kV T/Fs. 31 MW injection is observed at 110/33 kV Savlaj S/s, based on MSEDCL data of Cluster-11 & Cluster-12. As a result, during the N-1 contingency of 1x25 MVA, 110/33 kV transformer at 110 kV Savlaj S/s, the remaining 25 MVA transformer will be loaded beyond its rated capacity. But as per latest data submitted by MSEDCL, regarding MSKVY-2.0, there is no generation at this S/s. Further, MSEDCL has informed additional load demand of approx. 26.85 MVA on nearby 33 kV MSEDCL s/stn in order to meet future agriculture and irrigation loading requirements and N-1 compliance additional 25 MVA T/F is needed. It was informed that space is not available for an additional

1X25 MVA, 110/33 kV T/F at 110 kV Savlaj S/s, hence augmentation by replacement of 2X 25 MVA,110/33 kV T/Fs by 2 X 50 MVA 132-110/33 kV T/Fs are proposed to meet future load demand & not for MSKVY-2.0.

This Constrain although identified under MSKVY 2.0. cluster based studies for Phase-1 & Phase 2 studies ,is not identified under studies carries out based on the revised data received from MSEDCL on 10.05.2024 of 9169 MW tendered capacity However in view of the additional load requirement of MSEDCL to meet future agriculture and irrigation loading requiremnts with due deliberations, GCC ratified the scheme for inclusion in STU plan.

4.22: Providing additional 1X50MVA, 132-110/33 kV T/F along with HV & LV bays at 110kV Kavathe Mahakal S/s under EHV division, Sangli under Karad Zone

CE, STU placed before the GCC, a proposal for providing additional 1X50MVA, 132-110/33 kV T/F along with HV & LV bays at 110kV Kavathe Mahakal S/s under EHV division, Sangli under Karad Zone **.** It was informed that 110kV Kavathe Mahankal Substation was commissioned in year 2010. The total installed capacity of 110kV Kavathe Mahankal Substation is 100 MVA (i.e. 2X50 MVA 110/33kV Power Transformers). Additional Load demand of 15 MVA & 03 Nos. of new proposed 33/11 kV Substations with 5 MVA capacity ,each is submitted by MSEDCL Dn, Kavathe Mahanakal

In case of tripping/outage on 1 No. of T/F load cannot managed on other T/F i.e. the substation does not fulfil the (N-1) criteria This S/s having peak load of This scheme was earlier proposed under 'Mukhyamantri Saur Krishi Vahini Yojna (MSKVY 2.0) to ensure evacuation reliability & N-1 compliance. However, as per latest data submitted by MSEDCL, regarding MSKVY-2.0, there is no generation at this S/s. To meet the future load demand, additional T/F is required.

This Constrain although identified under MSKVY 2.0. cluster based studies for Phase-1 & Phase 2 studies ,is not identified under studies carries out based on the revised data received from MSEDCL on 10.05.2024 of 9169 MW tendered capacity. However in view of the additional load requirement of MSEDCL to meet future loading requiremnts with due deliberations, GCC ratified the scheme for inclusion in STU plan.

4.23: Replacement of 1 x 25 MVA 132/33 kV T/F by 1 x 50 MVA, 132/33 kV T/F at 132 kV Kudal S/S under EHV PC O&M zone Karad

CE, STU placed before GCC the proposal for replacement of 1 x 25 MVA 132/33 kV T/F by 1 x 50 MVA, 132/33 kV T/F at 132 kV Kudal S/S under EHV PC O&M zone Karad

CE, STU informed that 132 kV Kudal S/s has 02 Nos of 132/33 kV T/fs one with a capacity of 50 MVA and the other with a capacity of 25 MVA. The maximum load at the Kudal substation has reached 43 MVA in Jan, 2024. Further, there is additional demand from MSEDCL for two new 33 kV feeders (33 kV Adeli and 33 kV MIDC Kudal) along with supply for the Airport Chipi through the 33 kV Malwan feeder.

During peak load the 25 MVA T/F is insufficient to meet load demand. 25 MVA T/F Peak observed during 2022-23 is 82.56% and 50 MVA T/F is 63.54%.In case of tripping of 50MVA Transformer ,another 25MVA transformer cannot feed the complete load. Thus the substation is presently N-1 non-compliant. Considering the present non N-1 compliant & additional feeder requirement from MSEDCL it is necessary to replace the existing 25 MVA T/f by 50 MVA T/f.

In view of the additional load requirement of MSEDCL to meet future loading requirements and present N-1 non compliance with due deliberations, GCC ratified the scheme for inclusion in STU plan.

4.24: Providing additional 1X50 MVA, 132-110/33 kV T/F at 110 kV Sankh S/s under EHV O&M Division, Sangli.

CE, STU placed before GCC the proposal for additional 1X50 MVA, 132-110/33kV T/F along with HV & LV Bays at 110kV Sankh S/s under EHV (O&M) Division, Sangli.

CE, STU explained that 110kV Sankh Substation caters the RURAL & agricultural load through 2X50MVA, 110/33kV T/Fs. Present peak loading for TF-1 is 58.32 MVA & 57.80 MVA for TF-2. During outage/tripping of either of the T/F, load cannot managed on other T/F i.e. not satisfying (N-1) criteria. This scheme was earlier proposed under 'Mukhyamantri Saur Krishi Vahini Yojna (MSKVY 2.0) to ensure evacuation reliability & N-1 compliance. However, as per latest data submitted by MSEDCL, regarding MSKVY-2.0, there is no generation at this S/s. To meet the future load demand, additional T/F is required.. In view of above, the scheme of addition of 1X50MVA, 132-110/33kV T/F is proposed at 110kV Sankh S/s.

This Constrain although identified under MSKVY 2.0. cluster based studies for Phase-1 & Phase 2 studies ,is not identified under studies carries out based on the revised data received from MSEDCL on 10.05.2024 of 9169 MW tendered capacity. However in view of the N-1 non compliance with due deliberations, GCC ratified the scheme for inclusion in STU plan.

4.25: Providing additional 1X25 MVA, 132-110/11 kV T/F at 110 kV Rethare S/s under EHV O&M Division, Karad

CE, STU placed before the GCC a proposal for Scheme of Providing additional 1X25 MVA, 132-110/11 kV T/F at 110 kV Rethare S/s under EHV O&M Division, Karad

CE STU explained that 110kV Rethare Substation was commissioned in the year 2017. 110kV Rethare S/s caters Rural & Agricultural load through a single T/F of capacity 25 MVA, 110/11 kV. Being a single transformer substation,the 110kV Rethare substation does not satisfy (N-1) criteria.This scheme is proposed under 'Mukhyamantri Saur Krishi Vahini Yojana (MSKVY 2.0) to ensure evacuation reliability & N-1 compliance. In view of above, the scheme of addition of 1X25MVA, 132-110/11kV T/F is proposed at 110kV Rethare S/s.

This Constrain was identified under MSKVY 2.0. cluster based studies for Phase-1 & Phase 2 studies ,is also identified under studies carries out based on the revised data received from MSEDCL on 10.05.2024 of 9169 MW tendered capacity. Also being a single transformer & N-1 non compliant with due deliberations, GCC ratified the scheme for inclusion in STU plan.

4.26: Replacement of 1 X 25 MVA, 132/33 kV T/F by 1 X 50 MVA, 132/33kV T/F at 132 kV Dahiwadi S/s under EHV O&M Division, Karad.

CE, STU placed before the GCC a proposal for Scheme of Replacement of 1 X 25 MVA, 132/33 kV T/F by 1 X 50 MVA, 132/33kV T/F at 132 kV Dahiwadi S/s under EHV O&M Division, Karad.

CE, STU explained that 132kV Dahiwadi Substation was commissioned in the year 2010. 132kV Dahiwadi S/s caters to Rural & Agriculture load through 50 MVA, 132/33 kV T/F & 25 MVA, 132/33 kV T/F. During outage/tripping of 50 MVA, 132/33 kV T/F the total load cannot be managed on 25 MVA, 132/33 kV T/F i.e. not satisfying (N-1) criteria. This S/s having peak load of 38 MVA. This scheme was earlier proposed under 'Mukhyamantri Saur Krishi Vahini Yojna (MSKVY 2.0) to ensure evacuation reliability & N-1 compliance. However, as per latest data submitted by MSEDCL, regarding MSKVY-2.0, there is no generation at this S/s. To meet the future load demand, additional T/F is required.

In view of above, the scheme of replacement of 1X25MVA, 132/33kV T/F by 1X50MVA, 132/33kV T/F are proposed at 132kV Dahiwadi S/s

This Constrain although identified under MSKVY 2.0. cluster based studies for Phase-1 & Phase 2 studies ,is not identified under studies carries out based on the revised data received from MSEDCL on 10.05.2024 of 9169 MW tendered capacity. However in view of the N-1 non compliance with due deliberations, GCC ratified the scheme for inclusion in STU plan.

4.27: Scheme of Providing additional 1 X 50 MVA, 132/33 kV T/F along with HV and LV bays, 132kV bus extension (twin bus conductor), 33 kV bus extension (Twin bus conductor), 1 No of 33 kV feeder bay, 1 No of 33kV PT bay and 1 No. of station transformer bay at 132 kV Besa S/s under R.S ring main division Nagpur.

CE, STU stated that the 132kV Besa Substation was commissioned in the year 1987. 132kV Besa substation caters to the load of Nagpur Urban and rural area through 3 nos. of 50 MVA T/F. Maximum loading on all the T/Fs is above 80 % of installed capacity. The proposed scheme fulfills the augmentation scheme criteria. During outage/Breakdown of either of the T/F, load is not managed on other T/F i.e. not satisfying (N-1) criteria. Considering the present loading condition, outage constraints and to satisfy N-1 criteria, the addition of T/Fs is proposed at 132kV Besa S/s.

In view of the substation feeding urban load requirement of MSEDCL in Nagpur city and present N-1 non compliance with due deliberations, GCC ratified the scheme for inclusion in STU plan.

4.28: Scheme for Providing additional 1 X 50 MVA 132/33 kV T/F along with HV and LV bays, 33 kV bus extension (Twin bus conductor) and 1 No of 33kV feeder bay at 132 kV Mankapur S/s under R.S ring main division Nagpur.

CE, STU placed before GCC a proposal for Scheme for Providing additional 1 X 50 MVA 132/33 kV T/F along with HV and LV bays, 33 kV bus extension (Twin bus conductor) and 1 No of 33kV feeder bay at 132 kV Mankapur S/s under R.S ring main division Nagpur.

The 132 kV Mankapur Substation was commissioned in the year 1978. 132kV Mankapur Substation caters to the load of the residential, commercial, and industrial center of the area close to Mankapur. Present maximum loading on all the T/Fs is above 80 % of installed capacity. Also, maximum loading on T/F No. 1 has reached 112.88 % of its installed capacity in the last six months from the date of commissioning. During outage/Breakdown of either of the T/F, load is not managed on other T/F i.e. not satisfying N-1 criteria. The proposal fulfills the augmentation scheme criteria. Considering the present loading condition, outage constraints and to satisfy N-1 criteria additional T/F is proposed at 132kV Mankapur S/s.

In view of the substation feeding urban load requirement of MSEDCL in Nagpur city and present N-1 non compliance with due deliberations, GCC ratified the scheme for inclusion in STU plan.

4.29: Scheme of Providing additional 1 X 50 MVA 132/33 kV T/F along with HV and LV bays, 33 kV bus extension (Twin bus conductor) , and 1 No of 33kV feeder bay at 132 kV Pardi S/s under R.S ring main division Nagpur

CE, STU placed before the GCC a proposal for Scheme of Providing additional 1 X 50 MVA 132/33 kV T/F along with HV and LV bays, 33 kV bus extension (Twin bus conductor) , and 1 No of 33kV feeder bay at 132 kV Pardi S/s under R.S ring main division Nagpur

CE, STU explained that the 132kV Pardi Substation was commissioned in the year 1978. The 132kV Pardi area caters to the load of Nagpur, urban, and rural areas through 33 kV feeders. Average maximum loading on all the T/Fs is above 80 % of installed capacity. During outage/Breakdown of either of the T/F, load is not managed on other T/F i.e. not satisfying N-1 criteria. The proposal fulfills the augmentation scheme criteria. Considering the present loading condition, outage constraints and to satisfy N-1 criteria additional T/F is proposed at 132kV Pardi S/s.

In view of the the substation feeding urban load requirement of MSEDCL in Nagpur city and present N-1 non compliance with due deliberations, GCC ratified the scheme for inclusion in STU plan.

4.30: Scheme of providing additional 3x167MVA, 400/220/33kV ICT along with HV & LV bays and 1x167MVA, 400/220/33kV spare ICT unit for RRS at 400kV Koradi -II S/s under Nagpur Zone.

CE, STU placed before the GCC a proposal for scheme of providing additional 3x167MVA, 400/220/33kV ICT along with HV & LV bays and 1x167MVA, 400/220/33kV spare ICT unit for RRS at 400kV Koradi -II S/s under Nagpur Zone. He explained that there are 24 Nos. of 400kV bays and 10 Nos. of 220kV bays at 400/220kV Koradi-II Substation. 400kV lines are connected to 400kV Wardha (PGCIL), 400kV IEPL & 765/400kV S/s Koradi-III (Tidangi).

220kV lines feed supply to 220kV Kaulewada S/s via D/C lines. In addition, the 220kV feeder namely 220kV Uppalwadi D/C, 220kV Mankapur D/C & 220kV Butibori III D/C are proposed to be charged form 400/220kV Koradi-II S/s. Hence, 220kV Ring main of Nagpur city will also be supplied from 400/220kV Koradi-II S/s.

The issue of less Available Transfer Capability (ATC) for drawl of power from Inter State Transmission System (ISTS) Grid was highlighted during the Power Minister's Conference held on dt. 14th & 15th October 2022. Considering, the upcoming load of 220kV Nagpur Ring main through the planned network (i,e 220kV Butibori-III S/s, 220kV Mankapur S/s; 220kV Uppalwadi & Pardi S/stn) there may be a possibility of overloading of existing 2x501MVA 400/220/33KV ICTs at 400/220kV Koradi-II S/s, the said situation has also been taken into consideration at meeting on dt. 18.10.2022 vide L.No. MSETCL/CO/STU/7556 dt. 25.10.2022 and the CE STU requested to initiate the scheme for enhancement of ATC of Maharashtra vides l.no. MSETCL/CO/STU/8567 dt. 02.12.2022.

Hence, considering the above facts & also to meet the future load demand, additional 3X167MVA, 400/220/33kV ICT-III along with HV & LV Bays and with Rapid Restoration System (RRS) of 1X167MVA, 400/220/33kV ICT with spare bay is proposed at 400/220kV Koradi-II S/s.

In view of the future increase in loading at Koradi substation with the completion of 220kV ring main network and enhancing the TTC/ATC for drawl of power from ISTS network with due deliberations, GCC ratified the scheme for inclusion in STU Plan.

4.31: Scheme for Replacement of 2 X 25 MVA, 220/33 kV T/F by 2 X 50 MVA, 220/33kV T/F at 220 kV Balapur S/s under EHV O&M Division, Akola.

CE, STU placed before the GCC a proposal for Replacement of 2 X 25 MVA, 220/33 kV T/F by 2 X 50 MVA, 220/33kV T/F at 220 kV Balapur S/s under EHV O&M Division,Akola. CE, STU explained that the 220kV Balapur Substation was commissioned in the year 2016. 220kV Balapur substation caters to the load of Urban and rural area of Akola, Balapur and Washim District through 2X25 MVA, 220/33 kV T/Fs. The maximum loading on T/F No.2 is above 85 % of installed capacity. Maximum loading on existing feeders along with feeders name from 220 kV Balapur S/s:

Sr.No	Name of 33 kV feeder	Max load reached in MVA		
		2020-21	2021-22	2022-23
1	Ambuja Feeder	1.875	1.35	1.875
2	Kanheri Feeder	4.375	4.375	5.52
3	Hatrun Feeder	3.75	9.79	10.31
4	Ridhora Feeder	2.60	9.51	10.20
5	Balapur Feeder	13.85	16.14	16.66
		26.45	41.17	44.56

He further mentioned that during outage/tripping of either of the T/F, load cannot managed on other T/F i.e. not satisfying (N-1) criteria. This scheme was earlier proposed under 'Mukhyamantri Saur Krishi Vahini Yojna (MSKVY 2.0) to ensure evacuation reliability & N-1 compliance. However, as per latest data submitted by MSEDCL, regarding MSKVY-2.0, there is no generation at this S/s. To meet the future load demand, additional T/F is required.

Due to space constraint of 220kV Balapur S/s, addition of T/F is not possible hence the replacement of T/Fs is proposed. In view of above, the scheme of replacement of existing 2x25 MVA T/Fs by 2X 50 MVA T/Fs is proposed at 220kV Balapur S/s.

This Constrain although identified under MSKVY 2.0. cluster based studies for Phase-1 & Phase 2 studies ,is not identified under studies carries out based on the revised data received from MSEDCL on 10.05.2024 of 9169 MW tendered capacity. However in view of the N-1 non compliance with due deliberations, GCC ratified the scheme for inclusion in STU plan.

4.32: Scheme for Replacement of 2 X 25 MVA, 132/33 kV T/F by 2 X 50 MVA, 132/33kV T/F at 132 kV Patur S/s under EHV O&M Division, Akola.

CE, STU placed before the GCC a proposal for Scheme for work of LILO arrangement of 132kV Deepnagar-Muktainagar line along with 132kV bays at Varangaon substation under EHV O&M Dn. Jalgaon under EHV O&M Circle, Bhusawal.

CE, STU explained that the 132 kV Patur Substation was commissioned in the year 2010. 132kV Patur Substation caters to the load of the Urban and rural area of Patur Tehsil and nearby rural areas through 2X 25 MVA, 132/33 kV T/Fs. At present maximum loading on both the T/Fs is above 80 % of installed capacity. The proposed scheme fulfills the augmentation scheme criteria. Also during outage/tripping of either of the T/F, load cannot managed on other T/F i.e. not satisfying (N-1) criteria. This scheme is proposed under 'Mukhyamantri Saur Krishi Vahini Yojana (MSKVY 2.0) to ensure evacuation reliability & N-1 compliance. Due to space constraint of 132kV Patur S/s, addition of T/F is not possible hence the scheme of replacement of existing 2X 25MVA 132/33 kV T/Fs by 2x 50MVA 132/33 kV T/Fs are proposed at 132kV Patur S/s.
as per latest data submitted by MSEDCL, regarding MSKVY-2.0, additional 50 MVA T/F is requied, alongwith above said replacement total Capacity of the S/s will be 3 X50 MVA =150 MVA.

This Constrain was identified under MSKVY 2.0. cluster based studies for Phase-1 & Phase 2 studies ,is also identified under studies carries out based on the revised data received from MSEDCL on 10.05.2024 of 9169 MW tendered capacity. During the latest studies requirement of additional transformer is identified along with the above scheme. With due deliberations, GCC ratified this scheme for inclusion in STU plan and further directed to prepare scheme as per additional requirement identified in the latest studies.

4.33: Replacement of 2 X 25 MVA, 132/33 kV T/F by 2 X 50 MVA, 132/33kV T/F at 132 kV Murtizapur S/s under EHV O&M Division, Akola.

CE, STU placed before the GCC a proposal for Scheme for Replacement of 2 X 25 MVA, 132/33 kV T/F by 2 X 50 MVA, 132/33kV T/F at 132 kV Murtizapur S/s under EHV O&M Division, Akola. He added that 132kV Murtizapur Substation was commissioned in the year 2016.The 132kV Murtizapur S/s caters to the load of urban, rural, MIDC and solar generation area of Murtizapur Tehsil.

CE, STU explained that the maximum loading on T/F No.2, of S/s, is above 90 % of installed capacity. During outage/tripping of either of the T/F, load is not managed on other T/F i.e. not satisfying (N-1) criteria. This scheme is proposed under 'Mukhyamantri Saur Krishi Vahini Yojana (MSKVY 2.0) to ensure evacuation reliability & N-1 compliance. Due to space constraint of 132kV Murtizapur S/s, addition of T/F is not possible hence the scheme of replacement of existing 2X 25MVA 132/33 kV T/Fs by 2X 50MVA 132/33 kV T/Fs is proposed at 132kV Murtizapur S/s.

This Constrain was identified under MSKVY 2.0. cluster based studies for Phase-1 & Phase 2 ,is also identified under studies carries out based on the revised data received from MSEDCL on 10.05.2024 of 9169 MW tendered capacity. Also the loading on the transformers being N-1 non compliant with due deliberations, GCC ratified the scheme for inclusion in STU plan.

4.34: Providing additional 1X100MVA, 220/132kV ICT with HV and LV bays at 220kV Narangwadi S/S under EHV (O&M) Division, Beed in Aurangabad zone

CE, STU placed before the GCC a proposal for Scheme for providing additional 1X100MVA, 220/132kV ICT with HV and LV bays at 220kV Narangwadi S/S under EHV (O&M) Division, Beed in Aurangabad zone.

CE, STU mentioned that 220kV Narangwadi S/s is commissioned on 29.03.2019. 220 kV Narangwadi Substation has 2 nos. of ICTs with a capacity of 100 MVA, 220/132 kV, and 2 nos of power transformers with a capacity of 50 MVA, 220/33kV each. Parts of Osmanabad and Latur district of Marathwada region are fed by the 132kV Bus of 220 kV Narangwadi S/S. He highlighted that 295 MW proposed RE generation is coming up at Narangwadi ss. Considering the future RE generation at 220kV Narangwadi Substation to 132kV bus side, additional ICT is proposed at 220kV Narangwadi S/s.

In view of the RE potential expected to come up in the region along with applications under process GCC agreed with the requiremnt of Augumentation of the ICTs at Narangwadi & ratified the scheme for inclusion in STU plan.

4.35: Providing additional 1X100MVA, 220/132kV ICT with HV and LV bays at 220kV Jalkot S/S under EHV (O&M) Division, Latur in Aurangabad zone

CE, STU placed before the GCC a proposal "Providing additional 1X100MVA, 220/132kV ICT with HV and LV bays at 220kV Jalkot S/S under EHV (O&M) Division, Latur in Aurangabad zone.

He stated that 220kV Jalkot S/s is commissioned on 22.10.2019. Presently at 220kV Jalkot S/S, 2 nos. of 100MVA, 220/132kV ICTs are installed. Total 330 MW Solar Generation on 132 kV level, is upcoming in this area. The STU section has carried out load flow studies of Grid Connectivity for the various RE Generation developers. It is observed that further proposed solar projects are not feasible due to the overloading of 1X 100MVA, 220/132kV ICT at Jalkot under N-1 contingency.During load flow study of M/s. Fairsun Renewable Energy Pvt. Ltd. STU has remarked that the solar project can be feasible after enhancement of transformation capacity by an

additional 1 x 100 MVA ICT at 220 kV Jalkot S/s. Single ICT during outage/Breakdown of either of the ICTs i.e. not satisfying N-1 criteria. The above-said scheme (220 kV Jalkot S/S) is an identified project proposed for RE evacuation arrangement.

In view of the RE potential expected to come up in the region along with applications under process GCC agreed with the requiremnt of Augumentation of the ICTs at Jalkot & ratified the scheme for inclusion in STU plan.

4.36: Establishment of 33kV Level at 220/132kV Padegaon substation by providing additional 2X50MVA, 220/33kV T/Fs along with 2 x 220 kV AIS bays, 2 x 33 kV GIS Incomer Bay, 8 X 33 kV GIS bays along with PT bays, Bus sectionaliser bay & 2no.of 200KVA, 33/0.4kV station transformer under EHV O&M division, Aurangabad in Aurangabad Zone.

CE STU explained that Chawani Sub-Division of Urban Division – I of MSEDCL is presently fed from 132kV Harsool and 132kV Waluj S/s, which is situated in the vicinity of 220kV Padegaon substation. Also, this area has heavy load growth. These substation feeds industrial, commercial & residential consumers.

Present capacity of 132 kV Harsool S/s is 150 MW, Max Demand is 72.33 MW and future load growth is 105 MW. At 132 kV Waluj S/s the total installed capacity is 150 MW, max demand is 81.55 MW and future load growth is 50 MW.

In addition to that 132/33kV Harsool S/s has total 8 nos. of MSEDCL feeders out of which 33kV Maliwada feeder has length of 36kms. The voltage regulation of this feeder is 15.75%. Also length of 33kV Nakshtrawadi feeder emanating from 132/33kV Harsool is long. The feeder feeds water works of Amravati Municipal Corporation. Due to long feeder length it is difficult to identify the fault and restore supply within stipulated time during break down. Existing 220/132kV Padegaon S/s is at distance of 7.55 kms from 132/33kV Waluj S/s & 6.88kms from 132kV Harsool S/s.

After establishment of 33kV voltage level at 220/132kV Padegaon S/s, total 8 nos. of MSEDCL S/s (4 nos.- Padegaon, Samadhan colony, Golwadi & Waluj Mahanagar will shift from 132kV Waluj S/s & 4 nos.- Power House, Chawani, University & Maliwada from 132kV Harsool S/s.) will shift on 220kV Padegaon S/s.

After cited Establishments, the length of 33kV feeders i.e. 33kV Maliwada & 33kV Chawani will get reduced. This will result in improvement of voltage regulations of long length feeder & will resolve low voltage problem of feeders. Thereby consumers will get reliable & quality power supply.

There is no sufficient space available for 33kV AIS feeder bays as well as T/F LV bays, nearby existing control room of 220/132kV Padegaon S/s however suitable space for GIS bays is available near existing control room. Further this place is nearer to existing 33kV Bus made for auxiliary supply of 220kV Padegaon S/s (As no station T/F for auxiliary supply & presently S/s auxiliary supply obtained from MSEDCL 33kV lines).

As such, to fulfill the future demand of MSEDCL and thereby reducing the future loading of 132kV lines of 220/132kV Padegaon S/s and to improve the voltage regulation, establishment of 33kV voltage level is proposed at 220/132kV Padegaon S/s.

In view of the requirement to fulfill MSEDCL demand and enhance system reliability with due deliberations GCC ratified the scheme for inclusion in STU Plan.

4.37: Providing additional 1x200MVA, 220/132kV ICT along with Hybrid Switchgear HV & LV bays at 220kV Jalna S/s under Aurangabad Zone.

CE, STU placed before the GCC a proposal for providing additional 1x200MVA, 220/132kV ICT along with Hybrid Switchgear HV & LV bays at 220kV Jalna S/s under Aurangabad Zone.
CE, STU added that the Jalna MIDC is hub for steel industries which is growing continuously. Due to this rising industrialization, the demand for electricity is also rising. The power to this is supplied by MSETCL's substations i.e. from 220kV Jalna Substation and 132kV Jalna Substation through the express feeders at 132 kV and 33 kV level.At present, 220kV Jalna Substation has total capacity of 600MVA which includes 3x200 MVA, 220/132kV ICTs. The average maximum load on each ICT has reached about 60% of its capacity.
Further, the feasibilities to 6 nos. of new EHV consumer for total load of 190MVA have been issued from 220kV Jalna Substation. The details are as follows:

M/s. Gajkesari Steels & Alloys Pvt. Ltd. - 35 MVA
M/s. Geetai Steels Pvt. Ltd. - 35MVA
M/s. Rathi Steels Metal - 35 MVA
M/s. Shree Om Rolling Mills - 20 MVA
M/s. Matsyodari Steel and alloy Pvt. Ltd. - 30 MVA
M/s. Rajuri Steels and TMT Bars - 35 MVA

Also, the feasibilities for load enhancement in contract demand to existing EHV consumers are received for total load of 75MVA, out of which feasibilities for load of 67MVA have been issued. The details are as follows:

i. M/s. Om Sai ram Steel & Alloy Pvt. Ltd. load enhancement from existing 46 MVA to 75 MVA i.e. load enhancement of 29MVA.

ii. M/s. Bhagyalaxmi Rolling Mills Pvt. Ltd. load enhancement from existing 68 MVA to 106 MVA i.e. load enhancement of 38MVA

iii. M/s. SRJ Steels Pvt. Ltd. load enhancement from existing 68 MVA to 76 MVA i.e. load enhancement of 08 MVA (feasibility is under process)

Therefore, the total expected load at 220kV Jalna Substation is as follows:

i) Existing Max load on all three ICTs : 348 MVA
ii) Feasibility issued for new consumers: 190 MVA
iii) Feasibility issued/in-process for load enhancement of existing consumer :75 MVA
TOTAL EXPECTED LOAD : 613 MVA

Further, it is to mention that the scheme was earlier forwarded to STU for system study. STU had stated that work of provision of additional ICT will be reviewed after the shifting of load of Jalna substation on the adjoining substation . However with the newly emerged scenario even after load shifting & spur of steel industry demand in the region additional ICT is proposed to be installed at 220kV Jalna susbstation to cater to the demand reliably.

In view of the future shifting of steel consumer load on EHV and N-1 non compliance of the ICTs in such a scenario with due deliberation GCC ratified the scheme for inclusion in STU plan.

4.38: Providing additional 220/132kV, 1 X 100 MVA ICT at 220 kV Paranda S/stn Dist Beed Under EHV O&M Division Beed Under EHV PC O&M zone Chhatrapati Sambhajinagar

CE, STU placed before the GCC a proposal for Providing additional 220/132kV, 1 X 100 MVA ICT at 220 kV Paranda S/stn Dist Beed Under EHV O&M Division Beed Under EHV PC O&M zone Chhatrapati Sambhajinagar.

CE, STU stated that 220 kV Paranda Substation is commissioned in the year 2012. Presently at 220 kV Paranda S/S, 2 nos. of 100MVA, 220/132 kV ICTs and 02 nos. of 50MVA Power Transformers (2x50MVA, 220/33kV Transformer) are installed i.e. the total installed capacity of the Substation is 300 MVA. Both T/Fs are operating in parallel.

This substation feeds the urban, rural, and agricultural load of partly Osmanabad, Beed, and Solapur districts. Over the time, the demand for electrical power in the serving area of the above-mentioned substations is increasing due to factors like an increase in agricultural load, industrial expansion, urbanization, etc. By augmenting, the capacity of the ICTs allows it to handle a larger load, ensuring that it can meet the growing demand. The 220/132kV ICTs feed to the 132kV Bus of 220kV Paranda Substation, which further feeds to part of Osmanabad, Beed, Solapur, and Ahmednagar Districts through various Substations viz. 132kV Bhoom, 132kV Kallam,132kV Kallamb Road TSS (Railway), 132kV Kharda, 132kV Kurdwadi, 132kV Kaij through 132kV Kallamb & now newly charged(07.09.2023) 132kV Ashti Substation through Kharda Link

As Osmanabad and Beed are identified as RE Prone areas, the demand for RE power evacuation is ever increasing. As the demand for renewable energy sources like wind and solar power increases, the ability to handle intermittent and variable power generation becomes crucial. Maximum loading on both the ICTs is 80 % of installed capacity.

During an outage/Breakdown of either of the ICTs, load is not managed on other ICT i.e. not satisfying N-1 criteria. Hence considering the present loading condition, RE evacuation ,future load, outage constraints and to satisfy N-1 criteria replacement of T/fs is proposed at 220 kV Paranda S/s.

In view of the RE potential expected to come up in the region along with applications under process GCC agreed with the requiremnt of Augumentation of the ICTs at Paranda & ratified the scheme for inclusion in STU plan.

4.39: Scheme of Providing additional 1X50 MVA, 132/33 kV T/F at 132 kV Soygaon S/s under EHV O&M Division, Aurangabad.

CE, STU placed before the GCC a proposal for Scheme of Providing additional 1X50 MVA, 132/33 kV T/F at 132 kV Soygaon S/s under EHV O&M Division, Aurangabad.

CE, STU stated that the 132kV Soygaon Substation was commissioned in the year 2012. 132kV Soygaon substation caters to the load of rural and agricultural load of Soygaon Taluka in Chhatrapati Sambhaji Nagar District through 2X25 MVA, 132/33 kV T/Fs. The maximum loading on both the T/fs are above 45 % of installed capacity.This scheme is proposed under ‘Mukhyamantri Saur Krishi Vahini Yojana (MSKVY 2.0) to ensure evacuation reliability & N-1

compliance.. In view of above, the scheme of addition of 50 MVA, 132/33kV T/F is proposed at 132kV Soygaon S/s.

This Constrain was identified under MSKVY 2.0. cluster based studies for Phase-1 & Phase 2 ,is also identified under studies carries out based on the revised data received from MSEDCL on 10.05.2024 of 9169 MW tendered capacity with due deliberations, GCC ratified the scheme for inclusion in STU plan.

4.40: Providing additional 1X50 MVA, 132/33 kV T/F at 132 kV Sillod S/s under EHV O&M Division, Aurangabad.

CE, STU placed before the GCC a proposal for Providing additional 1X50 MVA, 132/33 kV T/F at 132 kV Sillod S/s under EHV O&M Division, Aurangabad.

CE, STU highlighted that this substation was commissioned in the year 1985. 132kV Sillod Substation caters to the load of the Urban, Rural & AG load through 2X 50 MVA, 132/33 kV T/Fs. Present maximum loading on both the T/Fs is about 70 % of installed capacity. During outage/tripping of either of the T/F, load can not managed on other T/F i.e. not satisfying (N-1) criteria. This scheme was earlier proposed under 'Mukhyamantri Saur Krishi Vahini Yojna (MSKVY 2.0) to ensure evacuation reliability & N-1 compliance. However, as per latest data submitted by MSEDCL, regarding MSKVY-2.0, there is no generation at this S/s. To meet the future load demand, additional T/F is required. In view of above, the scheme of addition of 50 MVA, 132/33kV T/F is proposed at 132kV Sillod S/s.

This Constrain although identified under MSKVY 2.0. cluster based studies for Phase-1 & Phase 2 studies ,is not identified under studies carries out based on the revised data received from MSEDCL on 10.05.2024 of 9169 MW tendered capacity. However in view of the N-1 non compliance with due deliberations, GCC ratified the scheme for inclusion in STU plan.

4.41: Replacement of 2 X 25 MVA, 132/33 kV T/F by 2 X 50 MVA, 132/33kV T/F at 132 kV Mantha S/s under EHV O&M Division,Jalna.

CE, STU placed before the GCC a proposal for Replacement of 2 X 25 MVA, 132/33 kV T/F by 2 X 50 MVA, 132/33kV T/F at 132 kV Mantha S/s under EHV O&M Division,Jalna.

CE, STU stated that the 132kV Mantha Substation was commissioned in the year 2009. The 132kV Mantha S/s caters to the load of MIDC, Urban, Rural & Agriculture area under Jalna District through 2 nos. of 25 MVA, 132/33 kV T/Fs. The maximum loading on both T/Fs are above 50 % of installed capacity. This scheme is proposed under 'Mukhyamantri Saur Krishi Vahini Yojana (MSKVY 2.0) to ensure evacuation reliability & N-1 compliance. In view of above, the scheme of replacement of T/Fs is proposed at 132kV Mantha S/s.

This Constrain was identified under MSKVY 2.0. cluster based studies for Phase-1 & Phase 2 ,is also identified under studies carries out based on the revised data received from MSEDCL on 10.05.2024 of 9169 MW tendered capacity with due deliberations, GCC ratified the scheme for inclusion in STU plan.

4.42: Providing additional 1X50 MVA, 220/33 kV T/F at 220 kV Krushnoor S/s under EHV O&M Division, Nanded.

CE, STU placed before the GCC a proposal for Providing additional 1X50 MVA, 220/33 kV T/F at 220 kV Krushnoor S/s under EHV O&M Division, Nanded.

CE, STU submitted that the The 220kV Krushnoor Substation was commissioned in the year 2019. This substation is commissioned vide BR NO. 34/4 dtd 04.10.08 through EPC contract. The sanctioned scope of the substation against the BR 34/4 is 2X50 MVA, 220/33kV T/Fs & 1 X 100MVA 220/132kV ICT. But presently only 1 X 25MVA, 220/33 kV T/F was commissioned. The 220kV Krushnoor S/s caters to the load of Krushnoor MIDC and Part of Naigaon Taluka having urban, rural and agriculture load through 1 no. of 25 MVA, 132/33 kV T/F. The maximum loading on T/F is above 75 % of installed capacity.
Considering single T/F substation 220kV Krushnoor is N-1 non compliant. The proposed scheme satisfies the augmentation criteria. This scheme is proposed under 'Mukhyamantri Saur Krishi Vahini Yojana (MSKVY 2.0) to ensure evacuation reliability & N-1 compliance. In view of above, the scheme of addition of T/F is proposed at 220kV Krushnoor S/s.

This Constrain was identified under MSKVY 2.0. cluster based studies for Phase-1 & Phase 2 ,is also identified under studies carries out based on the revised data received from MSEDCL on 10.05.2024 of 9169 MW tendered capacity. Also the loading on the transformers being N-1 non compliant with due deliberations, GCC ratified the scheme for inclusion in STU plan.

4.43: Replacement of 2 X 25 MVA, 220/33 kV T/F by 2 X 50 MVA, 220/33kV T/F at 220 kV Bhokar S/s under EHV O&M Division, Nanded.

CE, STU placed before the GCC a proposal for Replacement of 2 X 25 MVA, 220/33 kV T/F by 2 X 50 MVA, 220/33kV T/F at 220 kV Bhokar S/s under EHV O&M Division,Nanded.
CE, STU stated that the 220kV Bhokar Substation was commissioned in the year 2016. The 220kV Bhokar S/s caters to the Bhokar Taluka having majority of Urban and Agriculture load, major part of rural load through 2 nos. of 25 MVA, 220/33 kV T/Fs. The maximum loading on both T/Fs are more than 75 % of installed capacity. During outage/tripping of either of the T/F, load is not managed i.e. not satisfying (N-1) criteria.
He highlighted the proposed scheme satisfies the augmentation criteria. This scheme is proposed under 'Mukhyamantri Saur Krishi Vahini Yojana (MSKVY 2.0) to ensure evacuation reliability & N-1 compliance. In view of above, the scheme of replacement of T/Fs is proposed at 220kV Bhokar S/s.
This Constrain was identified under MSKVY 2.0. cluster based studies for Phase-1 & Phase 2 ,is also identified under studies carries out based on the revised data received from MSEDCL on 10.05.2024 of 9169 MW tendered capacity. Also the loading on the transformers being N-1 non compliant with due deliberations, GCC ratified the scheme for inclusion in STU plan.

4.44: Replacement of 2 X 25 MVA, 132/33 kV T/F by 2 X 50 MVA, 132/33kV T/F at 132 kV Umari S/s under EHV O&M Division, Nnaded.

CE, STU placed before the GCC a proposal for Replacement of 2 X 25 MVA, 132/33 kV T/F by 2 X 50 MVA, 132/33kV T/F at 132 kV Umari S/s under EHV O&M Division,Nnaded.
CE, STU stated that the 132kV Umari Substation was commissioned in the year 1998.The 132kV Umari S/s caters to the Umari Taluka & part of Mudkhed Taluka having majority of Urban and Agriculture load through 2 nos. of 25 MVA, 132/33 kV T/Fs. The maximum loading on both T/Fs are about 70 % of installed capacity.During outage/tripping of either of the T/F, load is not managed i.e. not satisfying (N-1) criteria. This scheme was earlier proposed under 'Mukhyamantri Saur Krishi Vahini Yojna (MSKVY 2.0) to ensure evacuation reliability & N-1 compliance. However, as per latest data submitted by MSEDCL, regarding MSKVY-2.0, there is no generation at this S/s. To meet the future load demand, additional T/F is required. In view of above, the scheme of replacement of T/Fs is proposed at 132kV Umari S/s.

This Constrain although identified under MSKVY 2.0. cluster based studies for Phase-1 & Phase 2 studies ,is not identified under studies carries out based on the revised data received from MSEDCL on 10.05.2024 of 9169 MW tendered capacity. However in view of the N-1 non compliance with due deliberations, GCC ratified the scheme for inclusion in STU plan.

4.45: Providing additional 1X25 MVA, 132/33 kV T/F at 132 kV Nampur S/s under EHV O&M Division,Nashik

CE, STU placed before the GCC a proposal for Providing additional 1X25 MVA, 132/33 kV T/F at 132 kV Nampur S/s under EHV O&M Division, Nashik.

CE, STU stated that the 132 kV Nampur Substation was commissioned in the year 1999. 132kV Nampur Substation caters the agricultural load of Nampur Taluka through 1X50MVA, 132/33 kV T/F & 1X25MVA, 132/33 kV T/F. Present maximum loading on both the T/Fs is about 70 % of installed capacity.
During outage/tripping of either of the T/F, load cannot managed on other T/F i.e. not satisfying (N-1) criteria. This scheme is proposed under 'Mukhyamantri Saur Krishi Vahini Yojana (MSKVY 2.0) to ensure evacuation reliability & N-1 compliance.. In view of above, the scheme of addition of 1X25MVA, 132/33kV T/F is proposed at 132kV Nampur S/s. as per latest data submitted by MSEDCL, regarding MSKVY-2.0, Replacement of 25 MVA by 50 MVA T/F is requied, alongwith above said addition, total Capacity of the S/s will be 125 MVA.

This Constrain was identified under MSKVY 2.0. cluster based studies for Phase-1 & Phase 2 studies ,is also identified under studies carries out based on the revised data received from MSEDCL on 10.05.2024 of 9169 MW tendered capacity. During the latest studies requirement of additional transformer is identified along with the above scheme. With due deliberations, GCC ratified this scheme for inclusion in STU plan and further directed to prepare scheme as per additional requirement identified in the latest studies.

4.46: Providing additional 1X25 MVA, 132/33 kV T/F at 132 kV Rashin S/s under EHV O&M Division,Nashik

CE, STU placed before the GCC a proposal for Providing additional 1X25 MVA, 132/33 kV T/F at 132 kV Rashin S/s under EHV O&M Division, Nashik

CE, STU stated that the 132kV Rashin Substation was commissioned in the year 2012. 132kV Rashin S/s is generation attached substation & caters the agricultural load through 2 nos. of 25 MVA, 132/33 kV T/Fs. The maximum loading on both T/Fs are above 70 % of installed capacity.During outage/tripping of either of the T/F, load is not managed on other T/F i.e. not satisfying (N-1) criteria. However, as per latest data submitted by MSEDCL, regarding MSKVY-2.0, there is no generation at this S/s. To meet the future load demand, additional T/F is required. In view of above, the scheme of addition of 1X25MVA, 132/33kV T/F is proposed at 132kV Rashin S/s.

This Constrain although identified under MSKVY 2.0. cluster based studies for Phase-1 & Phase 2 studies ,is not identified under studies carries out based on the revised data received from MSEDCL on 10.05.2024 of 9169 MW tendered capacity. However in view of the N-1 non compliance with due deliberations, GCC ratified the scheme for inclusion in STU plan.

4.47: Replacement of 2 X 25 MVA, 132/33kV by 132/33 kV T/F by 2 X 50 MVA, 132/33kV T/F at 132kV Nimbhora S/s under EHV O&M Division, Jalgaon

CE, STU placed before the GCC a proposal for Replacement of 2 X 25 MVA, 132/33kV by 132/33 kV T/F by 2 X 50 MVA, 132/33kV T/F at 132kV Nimbhora S/s under EHV O&M Division, Jalgaon

CE, STU stated that the 132kV Nimbhora Substation was commissioned in the year 1985. 132kV Nimbhora S/s caters to the load of Jalgaon rural & industrial load nearby Raver Taluka through 2 nos. of 25 MVA, 132/33 kV T/Fs. The maximum loading on both T/Fs are above 50% of installed capacity.

However, as per latest data submitted by MSEDCL, regarding MSKVY-2.0, there is no generation at this S/s. To meet the future load demand, additional T/F is required. In view of above, the scheme of replacement of 2X25MVA, 132/33kV T/Fs by 2X50MVA, 132/33kV T/Fs are proposed at 132kV Nimbhora S/s.

This Constrain although identified under MSKVY 2.0. cluster based studies for Phase-1 & Phase 2 studies ,is not identified under studies carries out based on the revised data received from MSEDCL on 10.05.2024 of 9169 MW tendered capacity. The loading on the substation is N-1 compliant and with due deliberations, GCC did not approve the scheme inclusion in STU plan.

4.48: Replacement of 2 X 25 MVA, 132/33kV by 2 X 50 MVA, 132/33kV T/F at 132kV ECR Deepnagar S/s under EHV O&M Division, Jalgaon.

CE, STU placed before the GCC a proposal for Replacement of 2 X 25 MVA, 132/33kV by 2 X 50 MVA, 132/33kV T/F at 132kV ECR Deepnagar S/s under EHV O&M Division, Jalgaon.

CE, STU stated that the 132kV ECR Deepnagar Substation was commissioned in the year 1968. 132kV ECR Deepnagar S/s caters load of Bhusawal, Bodwad, Muktainagar, Varangaon & Deepnagar rural through 2 nos. of 25 MVA, 132/33 kV T/Fs.

The maximum loading on both T/Fs are more than 30 % of installed capacity. However, as per latest data submitted by MSEDCL, regarding MSKVY-2.0, there is no generation at this S/s. To meet the future load demand, additional T/F is required. In view of above, the scheme of replacement of 2X25MVA, 132/33kV T/Fs by 2X50MVA, 132/33kV T/Fs are proposed at 132kV ECR Deepnagar S/s.

This Constrain although identified under MSKVY 2.0. cluster based studies for Phase-1 & Phase 2 studies ,is not identified under studies carries out based on the revised data received from MSEDCL on 10.05.2024 of 9169 MW tendered capacity. The loading on the substation is N-1 compliant and with due deliberations, GCC did not approve the scheme inclusion in STU plan.

4.49: Providing additional 1x25MVA, 132/33kV power transformer along with HV & LV bays along with 33 kV Bus extension at 132kV Janai Substation under EHV (O&M) Division, Baramati

CE, STU placed before the GCC a proposal for providing additional 1x25MVA, 132/33kV power transformer along with HV & LV bays along with 33 kV Bus extension at 132kV Janai Substation under EHV (O&M) Division, Baramati

CE, STU stated that the 132 kV Janai substation was commissioned in the year 1999 and feeds some parts of the Baramati and Daund Taluka under the Pune District. Presently at 132 kV Janai substation, 2 nos. of 25 MVA, 132/33 kV T/fs are installed. The peak load on both T/Fs are more than 70%. 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 additional T/F is proposed at 132kV Janai S/s.

In view of the additional load requirement of MSEDCL to meet future loading requirements and present N-1 non compliance with due deliberations, GCC ratified the scheme for inclusion in STU plan.

4.50: Procurement of 06 sets of Emergency Restoration System (ERS) comprising of 10 towers each (Suspension Towers - 6 nos. and Angle Towers - 4 nos.) for MSETCL

CE, STU placed before the GCC a proposal for procurement of 06 sets of Emergency Restoration System (ERS) comprising of 10 towers each (Suspension Towers - 6 nos. and Angle Towers - 4 nos.) for MSETCL.

CE, STU further stated that at present, MSETCL is having 2 sets of ERS towers (each set comprising of 7 towers, kept at Amravati and Vashi zone) since 2006. Since then, no procurement has been done for this item.

CE, STU informed that the state of Maharashtra has faced various storms in past 3 to 4 years such as Nisarg, Tauktae, Biparjoy etc. During this period if any transmission tower collapse then in order to bring out normalcy of power supply ERS is important and necessary so as to reduce the interruption time. Also these ERS are used for diversion of lines in urban during various project

activities without hampering the continuity of the supply through critical lines. As per Disaster Management Plan circulated by CEA, sufficient quantity of ERS system is to maintained & utilized by each transmission utility during disasters & natural calamities.

CE, STU further highlighted the benefits of ERS scheme, as follows:

- **Speed of Erection:** With ERS Towers can be erected within four hours, without heavy equipment.
- **Flexibility & Modularity of Design:** ERS is made of standard, interchangeable components that make it straightforward to adapt the structures for site specific situations.
- **Logistics & Deployability:** ERS towers are stored in containers. Smaller Components, fittings and fasteners are stored in boxes and larger components are paced securely and smartly to ensure quick unpacking and faster erection times.

He further added that Locations of ERS will be as follows:

Sr. No.	Particulars	Zone
1	ERS 1	Amravati
2	ERS 2	Ch. Shambhaji Nagar
3	ERS 3	Karad
4	ERS 4	Nagpur
5	ERS 5	Pune
6	ERS 6	Vashi
7	Existing ERS	Vashi
8	Existing ERS	Nasik

Considering all facts & benefits, CE, STU highlighted the necessity of this scheme.

GCC recognized the need for requirement of additional ERS in view of the completion of critical projects in the urban areas without availment of outages and maintaining the system reliability & continuity thus with due deliberations, GCC ratified the scheme for inclusion in STU Plan.

4.51: Replacement of existing conductor of 220kV Jamde -Dondaicha 1 & 2 (Length = 34+34=68 ckm) by High performance/Ampicity conductor under Nashik Zone

CE, STU placed before the GCC a proposal for Replacement of existing conductor by High Ampacity conductor of 220kV Jamde -Dondaicha 1 & 2 (Length = 34+34=68 ckm) under Nashik Zone

CE, STU stated that t 220kV Jamde s/s is purely Hybrid Generation based s/s commissioned on 23.10.2005 having total capacity of 400MVA. Total sanctioned generation for wind generating feeder is 337 MW & for Solar generating feeder 70MW (total about 400MW). For evacuating this total generation, there are three no. of 220kV lines, namely 220kV Jamde-Valve line, 220kV Jamde-Dondaicha line 1 & 220kV Jamde-Dondaicha line 2. Both 220kV Jamde-Dondaicha circuits are main source lines for 220kV Dondaicha s/s.

220kV Dondaicha s/s is purely load consuming s/s, further 220kV Jamde is also connected to purely generating s/s i.e. 220kV Valve s/s through 220kV S/C line. The total wind generation at 220kV Valve is 157 MW. In this way the total power flow via 220kV Jamde s/s to 220kV Dondaicha is about 557MW/1671Amp (400+157=557MW) through 220kV Jamde Dondaicha Line 1 & 2. Both circuits have 0.4 ACSR zebra conductor having full load capacity of 840A. During the full load condition, if any one circuit gets tripped, then the load on other circuit is unable to be managed, hence the situation for forced generation curtailment for the generating feeder may arise. Hence replacement of existing 0.4 Zebra ACSR conductor by adequate HPC (High Performance Conductor) for 220kV Jamde Dondaicha 1 & 2 is necessary.

Benefits of scheme:

(a) The Capacity of the said corridor will be increased.

(b) Criteria of N-1 system compliance will be addressed.

(c) Load trimming due to tripping will be eliminated.

(d) Reduction in interruptions/tripping & occurrences..

(e) Reliability and availability of the system will be improved.

(f) Life enhancement of existing line.

In view of this being RE rich pocket with present RE evacuation constrains in the area with due deliberations, GCC ratified the scheme for inclusion in STU Plan

4.52: Replacement of existing conductor of 132KV Satana-Dindori line (Length=80 ckm) by High performance/ampacity conductor under Nashik Zone

CE, STU placed before the GCC a proposal for Replacement of existing conductor by High Ampacity conductor of 132KV Satana-Dindori line (Length=80 ckm) under Nashik Zone

CE, STUstated that 132KV Satana-Dindori line, existing conductor is 0.2 ACSR panther having current carrying capacity of 395Amp at 65ºC. Further Vasaka Co- Generation is attached at 132 kV level to 132kV Satana –Dindori line.

MSEDCL is implementing various schemes for Agriculture & Industrial connections. Additional load of 30 MVA is anticipated in this area as per the rate of load growth of 10% per year in the next three years. He mentioned the following benefits of scheme:

Benefits of the Scheme:

- The Capacity of the said corridor will be increased.
- Criteria of N-1 system compliance will be addressed.
- Load trimming due to tripping will be eliminated.
- Reduction in interruptions/tripping & occurrences..
- Reliability and availability of the system will be improved.
- Life enhancement of existing line.

In view of this being RE rich pocket with present RE evacuation constrains in the area with due deliberations, GCC ratified the scheme for inclusion in STU Plan

4.53: Replacement of existing conductor of 132kV Kekatnimbhora-Pahur DCDC line (Length=18+18=36 Ckm) by High performance/ampacity conductor under Nashik Zone.

CE, STUplaced before the GCC a proposal for Replacement of existing conductor by High Ampacity conductor of 132kV Kekatnimbhora-Pahur DCDC line (Length=18+18=36 Ckm) under Nashik Zone.

CE, STU stated that 132kV Kekatnimbhora-Pahur Ckt-I & II are commissioned on 11.04.2022. The major source to 132kV Pahur s/s is 132kV Deepnagar. The second source is from 220kV Kekatnimbhora s/s through 132kV Kekatnimbhora-Pahur Ckt-I & II.

The Current carrying capacity of 0.2 Panther ACSR conductor at standard temp is 487Amp. The Max load till now reached on 132kV Kekatnimbhora-Pahur ckt-I is 31MW/142Amp & for 132kV Kekatnimbhora-Pahur Ckt-II is 31MW/146Amp which is 30 % of the capacity of conductor. There is upcoming 50MW solar generation of M/s Lucerne Solar Pvt Ltd at 132kV level of 220kV Kekatnimbhora s/s.

After commissioning of above solar generation of 50MW, one line may get overloaded upto 125 MW (Approx.). During contingency, i.e. when one ckt of 132kV Kekatnimbhora- Pahur D/C line is out of service, the other ckt will be loaded to 125 MW (approx.) which is above its rated thermal capacity.

In view of above, for evacuation of proposed 50MW solar generation, requires conversion of existing conductor with High Performance Conductor for 132kV Kekatnimbhora- Pahur D/C line to satisfy N-1 Compliance.

In view of this being RE rich pocket with present RE evacuation constrains in the area with due deliberations, GCC ratified the scheme for inclusion in STU Plan

4.54: Replacement of existing 0.2 ACSR conductor along with hardwares of 132kV Akole-Kombhalne line (Length=22.50 Ckm) by by High Performance/ampacity Conductor under Nashik.

CE, STUplaced before the GCC a proposal for Replacement of existing 0.2 ACSR conductor along with hardwares by High Performance Conductor (HPC) of 132kV Akole- Kombhalne line (Length=22.50 Ckm).

CE, STUstated that 132 kV Kombhalne Substation caters the demand of Sangamner Taluka, Akole Taluka, adjoining rural area and adjoining industrial pockets. It has source from 220 kV Babhaleshwar Substation via 132 kV Sanganmner - Akole substation.

132kV Kombhalne has both the Solar and Wind generation attached to it. Total Solar power generation at Kombhalne is 50 MW from Bhageria group (Pvt Power Supplier) and wind generation from M/s K. P. Power Pvt Ltd of 50 MW. Upcoming solar generation at Kombhalne is about 20MW from Bhageria group (Pvt Power Supplier). 132kV Akole- Kombhalne line is crucial for evacuating this solar power.

The 132kV Akole- Kombhalne line has 0.2 ACSR Panther conductor, having current carrying capacity of 487 Amp at 65ºC. Considering future load growth and increasing Solar and Wind Power generation, more power will be needed to evacuate at Sangamner via 132kV Akole-Kombhalne line. Therefore it is recommended to replace existing conductor by high ampacity conductor.

In view of this being RE rich pocket with present RE evacuation constrains in the area with due deliberations, GCC ratified the scheme for inclusion in STU Plan

4.55: Replacement of existing 0.2 ACSR conductor along with hardware's by High Performance Conductor (HPC) and strengthening of associated line end bays on a) 132kV

Ghatodi-Pusad SC line, b) 132kV SC line from 220kV Warud-132kV Warud Ss, c) 132kV Nandgaonpeth – Amravati SC line for RE power evacuation under Amravati zone

CE, STUplaced before the GCC a proposal for Replacement of existing 0.2 ACSR conductor along with hardware's by High Performance Conductor (HPC) and strengthening of associated line end bays on a) 132kV Ghatodi-Pusad SC line, b) 132kV SC line from 220kV Warud-132kV Warud Ss, c) 132kV Nandgaonpeth – Amravati SC line for RE power evacuation under Amravati zone

CE, STUmentioned that Amravati District is RE prone area, where various Solar IPPs have applied for Grid Connectivity and STU section has approved Grid Connectivity for about 1520 MW Solar IPPs.

Out of these, 615 MW Solar Plants are commissioned and in working and balance 905 MW Solar Plants are under construction stage & likely to be completed soon.

In view of such upcoming Solar Power Generation in Amravati district, the existing EHV lines may get loaded beyond their thermal limit.

Considering existing & proposed RE generations, STU carried out Load flow study of above lines and recommended for HPC conversion on said EHV lines after load flow study.

In view of this being RE rich pocket with present RE evacuation constrains in the area with due deliberations, GCC ratified the scheme for inclusion in STU Plan

4.56: Replacement of existing conductor along with hardwares by High Performance Conductor (HPC) on various EHV lines and strengthening of associated line end bays for RE power evacuation under Green Energy Corridor (GEC) under Chhatrapati Sambhajinagar zone

a) 132kV Partur-Partur DC line (14.7 km)
b) 132kV Rajpimpri-Paithan line (11km)
c) 220kV Solapur PG- Narangwadi DC line (25.81km)
d) 220kV Beed-Patoda-Manjarsumba line (45km)
e) 220kV Beed-Patoda line (35km)
f) 132kV Bhoom-Kallam line (km)
g) 132kV Bhoom-Paranda line (km)

CE, STUplaced before the GCC a proposal for cited scheme. He mentioned that Chhatrapati Sambhajinagar District is RE prone area and due to such upcoming Solar Power Generation, the existing EHV lines may get loaded beyond their thermal limit.Considering existing & proposed RE generations, In addition to above STU has recommended for HPC conversion on above said EHV lines after load flow study.

132kV Partur-Partur DC line (14.33 Ckm):

132kV Partur substation has installed capacity of 2x50MVA, 132/33kV transformer & there is only one outgoing line from 132kV Partur substation. i.e. 132kV Partur-Jalna old line. Thus, to increase system reliability, second circuit stringing on 132kV Partur-Jalna old line is also proposed.

In addition to above, 100MW Solar Power Project of M/s. RK Infra Management Ltd. generation is proposed at 132kV level of 220/132/33kV Partur substation. STU has carried out load flow study as per feasibility report received from field office.

After Load flow study, STU department has concluded that, to evacuate this 100MW generation under N- 1 compliance, replacement of 132kV Partur (220kV)- 132kV Partur DC line using high performance conductor is required.

Thus, for evacuation of above RE, it is necessary to strengthen the existing grid of EHV transmission lines under Jalna District. The same is also included for year 2022-23 in the STU plan 2022-23 to 2026-27.

220kV Solapur PG- Narangwadi DC line (149 Ckm)

220kV Solapur PG- Narangwadi DC line was commissioned on 30.06.2021, which is D/C on D/C and has 74 km of route length. The 0.4 ACSR ZEBRA conductor is used on these lines having current carrying capacity of 590A @ 65 deg C & 739A @75 deg C. At present 715 MW Wind/Solar Generation project application are recived at STU. Therefore, it is necessary to replacement the conductor of said line with high performance conductor.

220kV Beed-Patoda (47 Ckm) & Beed- Manjarsumba –Patoda (57 Ckm)

220kV Beed-Patoda DC line was commissioned on 14.07.2012, which is DC on DC and has 47 km of route length. The ACSR ZEBRA conductor is used on these lines having current carrying capacity of 590A @ 65ºC & 739A @75ºC.

In the year 2016, 220kV Manjarsumba substation was commissioned by making LILO on 2nd ckt. of 220kV Beed-Patoda line. The power supply from these two circuits feed to 220kV Manjarsumba, 220kV Patoda & 33kV substations connected to 220kV Manjarsumba & 220kV Patoda substations, which feeds power to urban, rural & agricultural area of Beed, Shirur & Patoda taluka of Beed district. 220/33kV Patoda substation has 220kV DC source line from 220/132/33kV Beed substation (one ckt.via 220kV Manjarsumba substation). It has 2x50MVA, 220/33kV transformers installed at substation.

500 MW Solar, 100 MW Wind Generation proposal were sanctioned by STU through Grid Connectivity at 220 kV Patoda S/s, further 500 MW hybrid Generation application received at STU. In view of the same, it is necessary to replace the conductor of said line with high performance conductor.

132kV Rajpimpri-Paithan line (59Ckm):

132kV Georai-Paithan SCDC line was commissioned on 14.02.1989, which is SC on DC tower.

The 0.2 ACSR PANTHER conductor used on this line is having current carrying capacity of 395A @ 65ºC & 487A @75ºC. In the year 2014, for evacuation of M/s. Panama Wind generation of 80MW at Mirkala Tal. Georai, the pooling station at Rajpimpri was made LILO on 132kV Georai-Paithan line.Most of the urban, rural & agricultural load of Georai, Majalgaon Taluka and Beed district & Paithan Taluka of Aurangabad district are fed from this line. At present 80 MW Wind Generation is connected at nearby vicinity. In addition to above 250 MW Hybrid (Solar+Wind) Power Generation proposed. For evacuation of these Hybrid Power Generation, it is necessary to replace the conductor of said line with high performance conductor.

132kV Bhoom-Kallamb line (43 Ckm) & 132kV Bhoom-Paranda line (37 Ckm):

132kV Bhoom-Kallamb & 132kV Bhoom-Paranda lines were commissioned in year 1992 & 2011 respectively. Both are S/C line on D/C tower. The 0.2 ACSR PANTHER conductor is used on this line having current carrying capacity of 395A @ 65ºC & 487A @75ºC. Most of urban, rural & agricultural area of Kallamb, Bhoom, Paranda & Washi taluka of Osmanabad district is fed from these lines.

132/33kV Bhoom substation is fed by 220/132/33kV Paranda substation by two connections i.e. 132kV Bhoom-Paranda S/C line and 132kV Paranda-Kharda-Bhoom S/C line.

Apart from this, Bhoom substation is also fed from 400/220/132kV Girawali substation via 132kV Girawali-Yedeshwari (Co-Gen)-Kaij- Kallamb-Bhom S/C line. 132kV Bhoom substation has 2x50MVA, 132/33kV transformers having average load of 43.8MW. At present 70 MW Solar Generation application received at STU. Further 150 MW Hybrid Power Project Load Flow study has been carry out by STU. After load flow study, it is observed that, with proposed generations, the above said lines are getting overloaded. Thus, for evacuation of 150MW hybrid power, it is necessary to replace the conductor of said line with high performance conductor.

In view of this being RE rich pocket with present RE evacuation constrains in the area with due deliberations, GCC ratified the scheme for inclusion in STU Plan

4.57: Replacement of existing 0.4 ACSR conductor along with hardware's by High Performance Conductor (HPC) along with hardware's of a) 220kV Khaparkheda (new)- Kanhan (61.53km), b) 220kV Khaparkheda (old)- Suryalaxmi (56.35km) & c) 220kV Suryalaxmi- Kanhan (19.5km) under EHV PC O&M Zone, Nagpur

CE, STUplaced before the GCC a proposal of Replacement of existing 0.4 ACSR conductor along with hardware's by High Performance Conductor (HPC) along with hardwares of a) 220kV Khaparkheda (new)- Kanhan (61.53km), b) 220kV Khaparkheda (old)- Suryalaxmi (56.35km) & c) 220kV Suryalaxmi- Kanhan (19.5km) under EHV PC O&M Zone, Nagpur

CE, STUstated that 220kV Khaparkheda substation and 220kV Kanhan substation, both under EHV (O&M) Division, Nagpur, are important and grid-connected substations. 220kV Khaparkheda substation was commissioned on 01.04.1988 and has completed almost 35 years of service life. 220kV

Khaparkheda - Suryalaxmi circuit is heavily loaded during the months of April, May and June, with the load reaching up to 580A. In the event of tripping or outage on the 220kV Khaparkheda - Kanhan circuit, the load increases up to 780A. Therefore, it is necessary to replace the existing 0.4 single zebra conductor with High Performance Conductor (HPC). Additionally, the following changes need to be carried out in the 220kV TBC and 220kV Suryalaxmi bay for the aforementioned work. Presently, the 220kV CTs have a ratio of 800-400-200/1A, which needs to be replaced by 1600/1 or 1600-800/1A, 5C. Also, the 220kV isolators and wave traps with a 1250A capacity need to be replaced by a 2000A capacity.

220kV Kanhan substation was commissioned on 01.04.1988 and has completed almost 35 years of service life. The 220kV Khaperkheda - Kanhan circuit originating from the 400kV Khaperkheda GCR and the 220kV Kanhan- Suryalakshmi circuit are the two sources feeding power to the 220kV Kanhan substation.

Additionally, the incoming source for the 220kV Suryalakshmi substation is the 220kV Khaperkheda- Suryalakshmi circuit originating from the 220kV Khaperkheda GCR. During the summer season in April 2022, the total load on the 220kV Khaperkheda - Kanhan (624 Amps, 220 MW) and 220kV Suryalakshmi- Kanhan (526 Amps, 184 MW) circuits exceeded 1150A at the 220kV Kanhan substation. In this condition, if any one of the above circuits trips, the total current exceeds the rating of the conductor, i.e., 737 A. Consequently, the other circuit becomes overloaded and trips, leading to a total incoming supply failure at the 220kV Kanhan, 220kV Umred, 220kV Bhandara, 132kV Mauda, and 132kV Mansar substations.

On 10.05.2022, the 220kV Khaperkheda- Kanhan circuit tripped due to a fault at the Khaperkheda end. As a result, the 220kV Khaperkheda- Suryalakshmi circuit was overloaded and tripped at the Khaperkheda end, and the 220kV Kanhan, 220kV Umred, 220kV Bhandara, 132kV Mauda, 132kV Mansar substations, and some parts of Nagpur and Chandrapur district went into dark.

To avoid this kind of incidences, LTS is commissioned on the 220kV Khaperkheda- Kanhan and 220kV Suryalakshmi- Kanhan circuits. LTS operates when the load on the 220kV Khaperkheda- Kanhan circuit or 220kV Suryalakshmi- Kanhan circuit reaches 728 Amps.

Due to the operation of LTS at 132kV Mansar, 132kV Pardi, 132kV Uppalwadi, 132kV Bhandara, 132kV Mauda, 33kV Incomer-1, and 33kV Incomer-2 will trip at the 220kV Kanhan substation, thereby making 132kV Mansar substation dark and causing the system to become unstable.

This will also result in revenue loss. Hence, to avoid any unforeseen incidents due to an increase in load and to maintain the stability of power supply to the 220kV Khaparkheda (new)- Kanhan circuit, 220kV Khaparkheda (old)- Suryalaxmi circuit, and 220kV Suryalaxmi- Kanhan circuit, it is necessary to replace the existing 0.4 ACSR conductor (Zebra) of the above lines with a high performance conductor.

It will also be necessary to replace the existing 245kV CTs, 800-400/1A, with 245kV CTs, 1600-800/1A, at the 220kV Kanhan, 220kV Suryalaxmi, and 220kV Khaparkheda substation, so that bay equipment will be compatible with the capacity of high performance conductor.

Furthermore, outages on the 220kV Khaparkheda (new)- Kanhan circuit, 220kV Khaparkheda (old)- Suryalaxmi circuit, and 220kV Suryalaxmi- Kanhan circuit are not easily sanctioned due to system constraints. All maintenance works couldn't be completed on time. Hence, considering the necessity and importance, a subject scheme is prepared and proposed for approval.

In view of the loading constrains in the Nagpur ring main with due deliberations, GCC ratified the scheme for inclusion in STU Plan

4.58: Providing additional 1X100MVA, 220/132kV ICT along with HV & LV bays at 220kV Shivajinagar S/s under EHV O&M Circle, Bhusawal.

CE, STUplaced before the GCC a proposal for Providing additional 1X100MVA, 220/132kV ICT along with HV & LV bays at 220kV Shivajinagar S/s under EHV O&M Circle, Bhusawal.

CE, STUstated that 220/132/33kV Shivajinagar Substation is one of the important generation attached substation under Dhule District, said substation was commissioned in Year 2013.

Solar Generation is connected to 220kV Shivajinagar substation. After addition of 70 MW generations, the load on each Transformer during peak hours will be upto 70-75%. And, in that case if one of the TF is under outage / Tripping, the generation will not be completely managed on another 100 MVA TF resulting in loss of generation and revenue loss to MSETCL.New generation is proposed at 132kV level (100 MW through 132kV Shivajinagar-Huoban-Sakri Line) & also proposed at 33kV level. In case of tripping/outage on 1 No. of ICT load cannot managed on other ICT i.e. Not fulfil the (N-1) criteriaHence, to satisfy (N-1) criteria & also to meet the future load demand, replacement of 2X100MVA, 220/132kV ICTs by 2X200MVA, 220/132kV ICT-I & II is proposed at 220kV Shivajinagar S/s.

In view of the RE potential expected to come up in the region along with applications under process & present N-1 non compliance with due deliberation ,GCC agreed with the requirement of Augumentation of the ICTs at Shivaji nagar & ratified the scheme for inclusion in STU plan.

4.59: Providing additional 1X100 MVA 220/33-33kV T/F along with HV & LV bays at 220kV Shivajinagar S/s under EHV O&M Circle, Bhusawal.

CE, STUplaced before the GCC a proposal for, Providing additional 1X100 MVA 220/33-33kV T/F along with HV & LV bays at 220kV Shivajinagar S/s under EHV O&M Circle, Bhusawal.
CE, STUstated that 220/132/33kV Shivajinagar Substation is one of the important generation attached substation under Dhule District, said substation was commissioned in Year 2013.
Solar Generation is connected to 220kV Shivajinagar substation. After addition of 70 MW generations, the load on each Transformer during peak hours will be upto 70-75%. And, in that case if one of the TF is under outage / Tripping, the generation will not be completely managed on another 100 MVA TF resulting in loss of generation and revenue loss to MSETCL.New generation is proposed at 132kV level (100 MW through 132kV Shivajinagar-Huoban-Sakri Line) & also proposed at 33kV level. In case of tripping/outage on 1 No. of T/F load cannot managed on other T/F i.e. Not fulfil the (N-1) criteria. Hence, to satisfy (N-1) criteria & also to meet the future load demand, addition of 1X100MVA, 220/33-33kV T/F is proposed at 220kV Shivajinagar S/s.

In view of the RE potential expected to come up in the region along with applications under process & present N-1 non compliance with due deliberation ,GCC agreed with the requirement of Augumentation of the TFs at Shivaji nagar & ratified the scheme for inclusion in STU plan.

4.60: Providing additional 1X25 MVA, 132/33kV T/F along with HV and LV bays at 132kV Samsherpur S/s under EHV O&M Circle, Bhusawal.

CE, STUplaced before the GCC a proposal for, Providing additional 1X25 MVA 132/33kV T/F along with HV and LV bays at 132kV Samsherpur S/s under EHV O&M Circle, Bhusawal.
CE, STUstated that 132kV Samsherpur Substation under EHV O&M Division, Dhule was commissioned in Year 2016. 132kV Samsherpur S/s is attached with 30 MW Co-generation.
The load of Samsherpur is catered by 25 MVA 132/33kV T/F. Presently 01 no. of 33kV Bay requirement for 33kV Hatmohida Feeder is submitted by MSEDCL authorities in Year 2018. 132kV Samsherpur Substation is single Transformer Substation, hence in case of outage/tripping the load of Samsherpur will get affected. i.e. Not fulfil the (N-1) criteria.

Hence, to satisfy (N-1) criteria & also to meet the future load demand, additional 1X25 MVA 132/33kV T/F along with HV and LV Bay is proposed at 132kV Samsherpur S/s.

In view of the additional load requirement of MSEDCL to meet future loading requirements and present N-1 non compliance with due deliberations, GCC ratified the scheme for inclusion in STU plan.

4.61: Replacement of 1X25MVA, 220/33kV T/F by 1X50 MVA, 220/33kV T/F at 220kV Dhule S/s under EHV O&M Circle, Bhusawal.

CE, STUplaced before the GCC a proposal for, Replacement of 1X25MVA, 220/33kV T/F by 1X50 MVA, 220/33kV T/F at 220kV Dhule S/s under EHV O&M Circle, Bhusawal.
CE, STUstated that 220kV Dhule Substation is very vital important Substation under EHV (O&M) Circle, Bhusawal commissioned in year 2011. The Total installed capacity of 220kV Dhule Substation is 475 MVA (i.e. 2X200 MVA 220/132kV ICTs and 1X50 & 1X25 MVA 220/33kV Power Transformers);
Most of the load of Dhule Urban and Rural area is catered by 50 MVA 220/33kV TF-I and 25 MVA 220/33kV TF-II. On 25 MVA TF-II there are 2 heavily loaded feeder i.e. 33kV Lamkani and 33kV Varkhedi Feeder.01 no. of new 33kV Feeder viz. 33kV Parola Road is commissioned at 220kV Dhule Substation and load will be taken by MSEDCL shortly.
The proposed scheme fulfils the augmentation criteria. In case of tripping/outage on 1 No. of T/F load cannot be managed on other T/F i.e. Not fulfil the (N-1) criteria. Hence, to satisfy (N-1) criteria & also to meet the future load demand, replacement of 1X25MVA, 220/33kV T/F by 1X50 MVA, 220/33kV T/F is proposed at 220kV Dhule S/s.

In view of the additional load requirement of MSEDCL to meet future loading requirements and present N-1 non compliance with due deliberations, GCC ratified the scheme for inclusion in STU plan.

4.62: Replacement of 2X25MVA, 220/33kV T/Fs by 2X50MVA, 220/33kV T/Fs at 220kV Bambhori S/s under EHV O&M Circle, Bhusawal.

CE, STU placed before the GCC a proposal for Replacement of 2X25MVA, 220/33kV T/Fs by 2X50MVA, 220/33kV T/Fs at 220kV Bambhori S/s under EHV O&M Circle, Bhusawal.
CE, STUstated that 220kV Bambhori Substation is commissioned in year 2011. The Total installed capacity of 220kV Bambhori Substation is 250 MVA (i.e. 2X100 MVA 220/132kV ICTs and 2X25 MVA 220/33kV Power Transformer).
The load of Jalgaon Rural, North Maharashtra University and Industrial Load nearby Jalgaon and Dharangaon Taluka – Rural, Ag, Industrial and Domestic Load is catered by 220kV Bambhori Substation. Both Transformers are loaded above 68%. Hence, in case of tripping/outage on 1 No. of T/F load cannot managed on other T/F i.e. Not fulfil the (N-1) criteria. This scheme was earlier proposed under 'Mukhyamantri Saur Krishi Vahini Yojna (MSKVY 2.0) to ensure evacuation reliability & N-1 compliance. However, as per latest data submitted by MSEDCL, regarding MSKVY-2.0, there is no generation at this S/s. To meet the future load demand, replacement of T/F is required.

In view of above the scheme of replacement of existing 2X25MVA, 220/33kV T/Fs by 2X50MVA, 220/33kV T/Fs is proposed at 220kV Bambhori S/s.

This Constrain although identified under MSKVY 2.0. cluster based studies for Phase-1 & Phase 2 studies ,is not identified under studies carries out based on the revised data received from MSEDCL on 10.05.2024 of 9169 MW tendered capacity. However in view of the N-1 non compliance with due deliberations, GCC ratified the scheme for inclusion in STU plan.

4.63: Replacement of 1X20MVA, 132/33kV T/F by 1X50MVA, 132/33kV T/F at 132kV Savda S/s under EHV O&M Circle, Bhusawal.

CE, STUplaced before the GCC a proposal for Replacement of 1X20MVA, 132/33kV T/F by 1X50MVA, 132/33kV T/F at 132kV Savda S/s under EHV O&M Circle, Bhusawal.
He stated that 132kV Savda Substation is commissioned in year 1975. The load of Savda, Faizpur Urban & Savda, Faizpur Rural is catered by 132kV Savda Substation. Presently, in case of failure/ outage / tripping of one of the existing 50 MVA T/F remaining power transformers (i.e. other 50 MVA and 20 MVA T/Fs) not catered the load which may result into heavy load shedding as in Savda & Faizpur rural region. i.e. Not fulfil the (N-1) criteria.
Hence, to satisfy (N-1) criteria & also to meet the future load demand, replacement of 1X20MVA, 132/33kV T/F by 1X50MVA, 132/33kV T/F is proposed at132kV Savda S/s.

In view of the furture load requirement of MSEDCL to meet future loading requirements and present N-1 non compliance with due deliberations, GCC ratified the scheme for inclusion in STU plan.

4.64: Replacement of 2X25MVA, 132/33kV T/Fs by 2X50MVA, 132/33kV T/Fs at 132kV Dharangaon S/s under EHV O&M Circle, Bhusawal.

CE, STUplaced before the GCC a proposal for Replacement of 2X25MVA, 132/33kV T/Fs by 2X50MVA, 132/33kV T/Fs at 132kV Dharangaon S/s under EHV O&M Circle, Bhusawal.
CE, STUstated that 132/33kV Dharangaon Substation is commissioned in year 1987. The load in and around Dharangaon is catered by 132/33kV 25 MVA TF-I & T/F-II.
In case of tripping/outage on 1 No. of T/F load cannot managed on other T/F i.e. Not fulfil the (N-1) criteria. Hence, to satisfy (N-1) criteria & also to meet the future load demand, replacement of 2X25MVA, 132/33kV T/F by 2X50MVA,132/33kV T/F is proposed at 132kV Dharangaon S/s.

In view of the furture load requirement of MSEDCL to meet future loading requirements and present N-1 non compliance with due deliberations, GCC ratified the scheme for inclusion in STU plan.

4.65: Providing additional 1X50MVA, 132/33kV T/F along with HV and LV bays at 132kV New MIDC Jalgaon S/s under EHV O&M Circle, Bhusawal.

CE, STUplaced before the GCC a proposal for Providing additional 1X50MVA, 132/33kV T/F along with HV and LV bays at 132kV New MIDC Jalgaon S/s under EHV O&M Circle, Bhusawal.
CE, STUstated that 132kV New MIDC Jalgaon Substation is cater most of the urban, industrial and rural load of Jalgaon District; said substation was commissioned on Dtd. 11.03.1992.
132kV New MIDC Jalgaon Substation is resided in District headquarter feeding the urban area/Civil hospital/Private Hospitals/Critical Centre i.e. medical Hub/VIP rest house/ some of the agriculture/rural area and Jalgaon MIDC area having many HT consumers.MSEDCL has proposed 04 nos. of Substation [Out of which 03 nos. of 33kV Substation in MIDC area and 01 no. of 33kV Substation in Chincholi Shivar (Medical Hub Centre)]; also increasing MVA capacity of existing 33kV MSEDCL Substation at their end i.e. approximately 40-50 MVA load demand will increased in future.
In case of tripping/outage on 1 No. of T/F load cannot managed on other T/F i.e. Not fulfil the (N-1) criteria. Hence, to satisfy (N-1) criteria & also to meet the future load demand, additional 1X50MVA, 132/33kV T/F along with HV and LV Bay is proposed at 132kV New MIDC Jalgaon S/s.

In view of the furture load requirement of MSEDCL to meet future loading requirements and present N-1 non compliance with due deliberations, GCC ratified the scheme for inclusion in STU plan.

4.66: Replacement of 2X25MVA,132/33kV T/Fs by 2X50 MVA, 132/33kV T/Fs at 132kV Parola S/s under EHV O&M Circle, Bhusawal.

CE, STUplaced before the GCC a proposal for Replacement of 2X25MVA,132/33kV T/Fs by 2X50 MVA, 132/33kV T/Fs at 132kV Parola S/s under EHV O&M Circle, Bhusawal.
CE, STUstated that 132kV Parola Substation is commissioned in year 2000. It caters the load of Parola Taluka and nearby villages. In case of tripping/outage on 1 No. of T/F, load cannot be managed on other T/F i.e. Not fulfil the (N-1) criteria. Hence, to satisfy (N-1) criteria & also to meet the future load demand, replacement of 2X25MVA,132/33kV T/Fs by 2X50 MVA, 132/33kV T/Fs is proposed at 132kV Parola S/stn.

In view of the furture load requirement of MSEDCL to meet future loading requirements and present N-1 non compliance with due deliberations, GCC ratified the scheme for inclusion in STU plan.

4.67: Replacement of 2X25MVA,132/33kV T/Fs by 2X50MVA, 132/33kV T/Fs at 132kV Bodwad S/s under EHV O&M Circle, Bhusawal.

CE, STUplaced before the GCC a proposal for Replacement of 2X25MVA,132/33kV T/Fs by 2X50MVA, 132/33kV T/Fs at 132kV Bodwad S/s under EHV O&M Circle, Bhusawal.
CE, STUstated that 132kV Bodwad Substation is commissioned in year 2002. It caters the load of Bodwad, Varangaon Rural, Jamner Rural. In case of tripping/outage on 1 No. of T/F load cannot managed on other T/F i.e. Not fulfil the (N-1) criteria. Hence, to satisfy (N-1) criteria & also to

meet the future load demand, replacement of 2X25MVA, 132/33kV T/Fs by 2X50 MVA, 132/33kV T/Fs is proposed at 132kV Bodwad S/stn.

In view of the furture load requirement of MSEDCL to meet future loading requirements and present N-1 non compliance with due deliberations, GCC ratified the scheme for inclusion in STU plan.

4.68: Replacement of existing 0.4 ACSR Zebra Conductor by equivalent HPC (High Performance Conductor of 220kV PGCIL - Vasai Line (Presently termed as 220kV PGCIL-Nalasopra line) & 220kV Kamba - Vasai Line under the jurisdiction of Line (M) Sub-Division, Boisar under EHV O&M Circle, Kalwa & EHV Line maintenance S/dn., Padghe under EHV O&M Dn., Dombivali under EHV O&M Circle, Panvel

CE, STUplaced before the GCC a proposal for Replacement of existing 0.4 ACSR Zebra Conductor by equivalent HPC (High Performance Conductor of 220kV PGCIL - Vasai Line (Presently termed as 220kV PGCIL-Nalasopra line) & 220kV Kamba - Vasai Line under the jurisdiction of Line (M)

Sub-Division, Boisar under EHV O&M Circle, Kalwa & EHV Line maintenance S/dn., Padghe under EHV O&M Dn., Dombivali under EHV O&M Circle, Panvel.

220kV PGCIL-Vasai Line:
220kV PGCIL-Vasai Line (now converted to 220kV PGCIL Nalasopara Line since 16.10.2017) was commissioned in the year 1997. The Scheme for Permanent Second Source to 220kV Nalasopara S/Stn is already approved under MBR No. MSETCL/ED/TR.O&M/SE-II/EE-VII/321 dated 15.01.2021 [(Dir (Ops) – 1753 dated 11.01.2021]. Under this scheme the now dead 220kV PGCIL - Nalasopara Line will be recommissioned within one year (LOA issued to M/s. MD Transcon Pvt. Ltd, Navi Mumbai vide no. CE/VSH/2480 dated 27.09.2022). And the present 220kV PGCIL - Nalasopara Line will be converted to original 220kV PGCIL-Vasai Line in coming years.

Presently, 220kV PGCIL - Nalasopara (future 220kV PGCIL-Vasai) Line has 0.4 ACSR Zebra Conductor with current carrying capacity of 737 A and thermal capacity of 810 A. The present loading of 220kV PGCIL - Nalasopara is 771A/ 271 MW, and in future this line will be converted as the 220kV PGCIL - Vasai, then though the load of 220kV Nalasopara S/S will be cut off, but the additional load of about 200 MW will be added on this line due to upcoming 05 nos. of S/S which are proposed by DFCCIL, Bullet Train, MRVCL and MSETCL.

Thus, considering the present loading situation and upcoming loads and conversion status, the total loading on this line will be much higher than the thermal rating of 0.4 ACSR Zebra Conductor and the incident of snapping of conductor, elongation of conductor due to aging leading to problem of low ground clearance and induction to the people in low clearance area will be more and there is risk of electrically fatal accidents.

220kV Vasai Kamba:

The 220kV Vasai Kamba Line which was firstly 220kV Padgha - Tarapur Circuit - 2 line and commissioned in the year 1984, then converted to 220kV Padgha - Boisar CKT 2 in the year 1987 and then converted as 220kV Padgha Kamba Line in the year 1997 and in the year 2002 as 220kV Vasai Kamba Line which means this line have crossed the useful life of 35 years. Hence, due to aging effect the elongation of conductor has started and in various span the conductor came down and there is ground clearance issue, most of the time the local public complain regarding the induction due to line. Though, the incidents of conductor snapping on these two lines are NIL but as the line has rendered the useful service life, it needs the replacement for better service in future years.

If the 220kV PGCIL - Nalasopara (future 220kV PGCIL Vasai) Line trips, then the 220kV Kamba - Vasai & 220kV Padgha - Nalasopara Vasai Line cannot take the load of 220kV Nalasopara, 220kV Vasai S/S with existing conductor. Recently, such incident happened on 01.09.2022 when 220kV PGCIL - Nalasopara Line tripped and then 220kV Padgha - Nalasopara - Vasai Line also tripped resulting in complete darkness at 220kV Nalasopara S/S for 6 hours.

Therefore, considering all above aspects and in order to cater the present and future upcoming loads, the higher capacity conductor is required. He added that If the 220kV PGCIL - Nalasopara (future 220kV PGCIL Vasai) Line trips, then the 220kV Kamba - Vasai & 220kV Padgha - Nalasopara Vasai Line cannot take the load of 220kV Nalasopara, 220kV Vasai S/S with existing conductor. Recently, such incident happened on 01.09.2022 when 220kV PGCIL - Nalasopara Line tripped and then 220kV Padgha - Nalasopara - Vasai Line also tripped resulting in complete darkness at 220kV Nalasopara S/S for 6 hours.

Also, most of the parts of these two lines passes though the creek area, due to presence of saline weather, all the hardwares of these lines have rusted heavily and become prone to breakage and may result in frequent breakdown of line in coming years.

Thus, in order to cater the present and future loading and upcoming future industrial loads in the belt of Nalasopara and Vasai, Virar Industrial Belt and also to avoid the low ground clearance issue the replacement of existing 0.4 ACSR Zebra conductor with by equivalent HPC (High performance Conductor) is very much necessary. Therefore, considering all above aspects and in order to cater the present and future upcoming loads, the higher capacity conductor is required.

This line being an important interconnection between 400kV Boisar(PG) ss & 400kV Padghe ss , it will also cater the upcoming load in the Nalasopara & Vasai areas therefore to strengthen this interconnection and enhance system reliability and stability with due deliberations, GCC ratified the scheme for inclusion in STU Plan

4.69: Scheme for Construction of LILO on 400 kV Lonikand-I – Jejuri Ckt I with Quad Moose conductor at 765 kV Shikrapur (Pune, Power Grid) SS with replacement of Twin Moose conductor of existing line with High Performance Conductor (HPC). - Under Pune Zone

CE, STU placed before the GCC a proposal of Scheme for Construction of LILO on 400 kV Lonikand-I – Jejuri Ckt I with Quad Moose conductor at 765 kV Shikrapur (Pune, Power Grid) SS with replacement of Twin Moose conductor of existing line with High Performance Conductor (HPC). - Under Pune Zone

CE, STU stated that at present load of Pune Dist. is mainly fed from 400 kV Lonikand-I, Lonikand-II, Jejuri&Chakan SS. These 400 kV substations are dependent on three power sources which are: 400 kV Talegaon PG, 400 kV Koyna Stage IV via 400 kV Karad substation & 400 kV Parli Girwali via 400 kV Karjat substation.
The tripping / breakdown on any of these sources, results in overloading of major 400 kV & 220 kV lines in Pune District & force load shedding needs to be carried out on downstream 220 kV & 132 kV network. Hence for additional 400 kV source line, scheme for construction of 400 kV DC line from 765 kV Shikrapur (Pune, Power Grid) Substation to 400 kV Lonikand – II Substation was sanctioned. (BR No 154/11, dated 19.05.2022).In LFS it was clear that after execution of this modified scheme the fault level reduces from 44 kA to 35 kA at 400 kV Lonikand substation.
The strong source of 765 kV Shikrapur (Pune, PG) substation will be available to both the 400 kV Jejuri and Lonikand Substations. This scheme will be helpful in strengthening of CTU - STU network and enhance ATC / TTC of Maharashtra.

In view of the discussion with CTU regarding 400 kV quad double circuit from Solapur PS to 765 kV Pune-III, with both lines LILO at 400 kV Jejuri, to be executed by CTU, and further 400 kV quad D/C from 400 kV Jejuri to Hinjewadi. The necessity of the above scheme need to be verified by STU, considering the space requirements & flow studies. GCC recommended that the scheme may be modified accordingly and further appraise.

4.70: Establishment of 132/33 kV Selu s/s, Tal-Selu Dist: Parbhani.

CE, STU placed before the GCC a proposal of Establishment of 132/33 kV Selu s/s, Tal-Selu Dist: Parbhani.
CE, STU stated that at present, the power supply to Selu is fed from 132 kV Pathari , Jintur & 132 kV Partur s/s. Selu Taluka does not have any EHV substation. Existing 132 kV Pathari, 132kV Jintur & 132 kV Parthur s/s having lengthy 33kV feeders. Hence the consumers at the far end are facing low voltage problems. For 132 kV Parthur s/s increase in load growth is at the farthest end i.e. from 33 kV Dhengali Pimpalgaon, Walur switching stations and onwards. This stations are on 33 kV Selu feeder and 42.5 km, 43.5 km away from 132 kV Parthur respectively with %VR as 18.75%. Considering the geographical condition & existing electrical network, establishment of 132 kV Selu Substation will improve voltage regulation and power supply quality.
Considering the additional load requirement of MSEDCL, re-orientation of existing load and voltage Regulation improvement, with due deliberations, GCC ratified the scheme for inclusion in STU Plan.

4.71: Scheme for conversion of 110 kV DCDC to 132 kV DCDC line from Mayani LILO point to Diganchi s/s for up gradation of voltage level

CE, STUplaced before the GCC a proposal of Scheme for conversion of 110 kV DCDC to 132 kV DCDC line from Mayani LILO point to Diganchi s/s for up gradation of voltage level

CE, STUinformed that in Satara & Sangli district main network is of 110 kV level, 110 kV Oglewadi - Degaon DCDC is the main transmission line which is in service since 1963. The line has completed its service of 60 years.

Line I of 110 kV Oglewadi-Degaon feeding to Mayani, Dighanchi & Pandharpur which caters major load of Mayani, Dighanchi area (100 MW) and is connected to co-gen plant (Sadguru SSK) (11.3 MW). Line-II made LILO to 110 kV Kaledhon (wind Power S/s) & 110 kV Palaswadi (TATA Solar S/s) for evacuation of renewable energy (wind & Solar, 150 MW). Therefore, Mayani LILO point to Dighanchi line needs to be upgraded to 132 kV level so that Oglewadi - Dighanchi network can be operated at 132 kV Level.

For reliability and provision of second source to Diganchi, with due deliberations, GCC ratified the scheme for inclusion in STU Plan

4.72: Scheme for Establishment of 132/33kV Kanashi Substation Dist.- Nashik

CE, STU placed before the GCC a proposal of Scheme for Establishment of 132/33kV Kanashi Substation Dist.- Nashik

CE, STU explained that At present the power supply to Kalwan Taluka is fed from two EHV substation ie.132/33kV Kalwan & 220/33 kV Bhendi s/s. 220/132kV Bhendi s/s is having source from 220 kV Malegaon ss. The installed capacity of 132/33kV Kalwan is 125 MVA. Maximum demand reached to 73.7MVA. 9 nos of 33kV feeders from Kalwan ss having capacity of 94MVA & 3 nos are proposed in ongoing scheme, so the total installed capacity of DISCOM will rise to 108 MVA. After Establishment of 132/33 kV Kanashi S/s voltage profile of Kalwan Taluka, will be improve. There will be reduction in the interruptions/breakdowns thereby reducing line losses. Load relief to existing 132 kV Kalwan s/s, after establishment of cited S/s.

Considering the additional load requirement of MSEDCL, re-orientation of existing load and voltage Regulation improvement, with due deliberations, GCC ratified the scheme for inclusion in STU Plan.

4.73: Establishment of 132/33 kV Barashiv(Hanuman)s/s, Tal- Aundha Dist: Hingoli.

CE, STU placed before the GCC a proposal of Establishment of 132/33 kV Barashiv (Hanuman)s/s, Tal- Aundha Dist: Hingoli.

CE, STU informed that presently south part of Aundha Taluka is fed from 3nos of EHV substations as follows: 220/33kV Hingoli (50 MVA), 132/33kV Kurunda (100MVA) & 132/33 kV Jintur (100MVA). At present there is no any EHV substation adjacent to existing EHV substations to divert the lengthy feeders. Various 33kV feeders are feeding multiple 33 kV substations. To overcome the low voltage problem at various 33 kV MSEDCL Feeders and to get reliable, quality supply, it is necessary to establish new EHV s/s in Aundha Taluka.

Considering the additional load requirement of MSEDCL, re-orientation of existing load and voltage Regulation improvement, with due deliberations, GCC ratified the scheme for inclusion in STU Plan.

4.74: Construction of 132kV DC line on MC towers from 220kV Chakan-II S/s (Loc No. 39) to LILO point of 132kV Vighnahar-132kV Mahindra Forging line - 9.9 km

CE, STU placed before the GCC a proposal of Construction of 132kV DC line on MC towers from 220kV Chakan-II S/s (Loc No. 39) to LILO point of 132kV Vighnahar-132kV Mahindra Forging line - 9.9 km

CE, STU stated that at present, 132 kV Chakan Substation is one of the major source to feed power supply to various industrial consumers on 132kV network of Chakan area. 132 kV Chakan Substation is connected to 220 kV Alephata source through 132 kV Mahindra Forging Substation to 132 kV Vighnahar Substation to 132 kV Narayangaon Substation. Considering upcoming development in industrial area of Chakan, it is necessary to provide alternate power supply to existing 132 kV Chakan Substation. The scheme for construction of 132 kV Chakan to 220 kV Chakan II Substation is included in STU Plan 2021-22 to 2025-26 for the year 2023-24.
The surrounding area of existing 132kV Chakan (Kharabwadi) is densely populated, urbanized and industrialized therefore, no separate belt available for 132kV Proposed 132kV line. Therefore, it is proposed new scheme for construction of 132kV DC line on MC towers from 220kV Chakan-II S/s (Loc No. 39) to LILO point of 132kV Vighnahar-132kV Mahindra Forging line of 9.9 km is required. After completion of above work, 220 kV Alephata, 220 kV Chakan Phase II & 220 kV Chinchwad Substation will get connected into grid which will help in load management at 132 kV level in Chakan area. Further, 132 kV Tayyo Nippon Substation will have alternate source of supply. The reliability & availability of 132 kV network between Chakan – Chinchwad – Alephata pocket will be improved. Voltage profile of 132 kV Network between Chinchwad to Chakan corridor will be improved. There will be saving in transmission losses is 1.61 MW, after completion of this work.
For reliability and stability of Pune ring main, with due deliberations, GCC ratified the scheme for inclusion in STU Plan

4.75: LILO of 400 kV Kharghar- Vikhroli Line at Tata Vikhroli plot

CE, STU placed before the GCC a proposal of LILO of 400 kV Kharghar- Vikhroli Line at Tata Vikhroli plot
CE, STU explained that scheme is part of the DPR 'Establishing connectivity between North and South Mumbai by 400 kV Phase I, Creation of 400 kV level at existing Dharavi RSS with 400 kV Tata Power Vikhroli - Dharavi S/c line' which is approved in GCC, GCC and STU and submitted Hon'ble commission for further approval.
CE, STU mentioned that in the 7th GCC meet, TPC-T was asked to make presentation on the proposed scheme. The scheme of installing 400 kV LILO station to make LILO arrangement of one of the 400 kV Kharghar – Vikhroli D/c lines at TPC owned plot near Vikhroli for extending 400 kV supply to Dharavi RSS. GCC opined that "the said scheme is critical to establishment to 400kV network in South Mumbai. Hence a site visit to be planned by CE STU along with TPC-T and MSETCL representatives for verifying the feasibility of necessary line termination and connectivity arrangement at Tata Power Vikhroli Plot".
GCC has ratified the establishment of 400kV station at Dharavi for inclusion in STU Five-year plan for implementation in 7th GCC. STU, MSETCL representatives along with TPC-T conducted a site visit of proposed site to check availability of space and feasibility of the proposed LILO option on 24th May 2023 and validated the feasibility the report for which has been submitted to STU by

TPC-T. The representative of TPC-T also informed that Length of cable from proposed Tata Vikhroli Plot to Dharavi Receiving station will be less by 0.7 km as compared to cable length from KVTPL and Dharavi Receiving station. This will result in reduction in cable cost and associated RI charges.He highlighted advantages of scheme and mentioned that as the space is available for expansion, this scheme will facilitate the proposed 400 kV Ring network planned for South Mumbai.

During the discussions meeting held on 30.04.2024 at STU:

1. TPC-T representative informed that they have proposed connectivity to proposed 400kV Dharavi (TPC-T) through establishment of 400 kV Ghatkopar (switching) by LILO of 400 kV Kharghar-Vikhroli line and underground cable arrangement from 400 kV Ghatkopar (switching) as KVTL has not confirmed the feasibility of space availability for 400 kV bay at KVTL 400 kV Vikhroli S/s .
2. It is orally confirmed by KVTL representative that there is no space for 400 kV Bay at existing 400 kV Vikhroli substation for connection with 400kV Dharavi station proposed by TPC-T.
3. However, during discussion KVTL agreed to verify possibility of creation of space for 400 kV Bay at 400 kV Vikhroli after discussion with GIS OEM and civil engineering department and submit the feasibility of space for additional bay at KVTL 400 kV Vikhroli S/s within a week.

KVTL in its submission to this office has confirmed that with modification in existing infrastructure availability of 1 Nos of 400 kV Bay at 400 kV Vikhroli can be made available at 400 kV Vikhroli GIS substation.

GCC opined that 400 kV Source from Ghatkopar switching(Tata Vikhroli Plot) by LILO of 400 kV Kharghar-Vikhroli S/c Line seems to be more reliable as compared to 400 kV Kharghar-Vikhroli S/c Line and also results in reduction in cable length of ~0.5 km approx from Ghatkopar switching. In view of the same STU shall verify & finalize the interconnection requirement based on the most technically feasible option.

4.76: Installation of New 110/22 kV Sub-station at Mulashi

CE, STU placed before the GCC a proposal of Installation of New 110/22 kV Sub-station at Mulashi.

CE, STU stated that the scheme was necessary to meet additional Load demand of MSEDCL & low voltages in Mulashi and adjacent. Joint site visit by MSEDCL officials and Tata Power Representatives was carried out on 12.01.2024 to finalize location of proposed S/s. Subsequently, Chief Engineer (Pune Zone) confirmed location near Nive Village technically viable via letter dated 02.02.2024

Considering the additional load requirement of MSEDCL as submitted by them, re-orientation of existing load and voltage Regulation improvement, with due deliberations, GCC ratified the scheme for inclusion in STU Plan.

4.77: Installation of New 110/33 kV Sub-station at Badlapur

CE, STU placed before the GCC a proposal of Installation of New 110/33 kV Sub-station at Badlapur.

CE, STU informed that to meet Load demand of MSEDCL of @ 52.8 MVA in the Badlapur and adjacent area, this scheme is required.

CE, STU further highlighted the major scope of work:

1. LILO of 110 kV Ambernath – Neral line at badlapur.
2. 110 kV GIS (07 bays including PTs) and 22 kV GIS (20 bays including PTs) along with Protection, Communication and Automation.
3. 2 X 110 kV / 22 kV, 125 MVA Transformers

CE, STU explained that Meeting for this project was held at the office of Director (operations), MSEDCL on 05.01.2024 between MSEDCL Kalyan Zone and Tata Power representatives. Tata Power Transmission expressed interest and briefed about the plan of installation of station at Badlapur. Further Tata Power submitted expression of interest to SE, Kalyan Circle II on 16.01.2024

CE, STU highlighted that CE, Kalyan Zone submitted proposal to CE (Distribution), MSEDCL regarding establishment of new 110 / 22 kV S/s at Badlapur East in order to cater existing and future load growth in Badlapur and adjoining area. Further, CE (Distribution) MSEDCL, has validated this proposal and submitted the proposal to The Director (Operations), MSETCL on 04th March 2024 via letter no CE (Distribution)/SE (Planning)/EHV S/Stn./6927.

Considering the additional load requirement of MSEDCL as submitted by them, re-orientation of existing load and voltage Regulation improvement, with due deliberations, GCC ratified the scheme for inclusion in STU Plan.

4.78 & 4.79:

Upgradation of existing 110/33/22 kV Transformer at Saki RSS

Upgradation of existing 110/33/22 kV Transformer at Malad RSS

CE, STU placed before the GCC a proposal of Upgradation of existing 110/33/22 kV Transformer at Saki RSS & Malad RSS.

CE, STU explain that Saki Transformer commissioning in 1981 and completed useful life of 43 years. Also, Malad Transformer commissioning year : 1989 and completed useful life of 35 years. In the past, TPC-T has submitted the DPRs to Hon'ble commission on 22nd July 2020 based on poor DGA results. He further added that Hon'ble commission while referring back DPRs directed to adopt O & M practices like oil filtration and monitor the parameters. And if the problem is not resolved then may come back with fresh proposal.

CE, STU highlighted that since then, TPC-T has carried out oil filtration and monitored the parameters like the Polarization Index, Winding Capacitance, Furan content which indicated deterioration.

TPC-T has consulted M/s V.J.T.I. for Residual Life Assessment study. The recommendation is "Based on test results, condition of Transformer's insulation is highly deteriorated. Residual life of Transformer is expected 2 to 3 years hence Tata Power is suggested to plan for replacement of Transformer". Considering load growth & useful life of 35 yrs, TPC-T proposes:

1) Upgradation of exiting 110 / 22 kV, 75 MVA Transformer # 3 by replacing with 90 MVA, 110 / 33 / 22 kV Transformer at Saki.

2) Upgradation of exiting 110 / 22 kV, 75 MVA Transformer # 2 by replacing with 90 MVA, 110 / 33 / 22 kV Transformer at Malad.

Considering the residual life assessment study and the completion of service life ofboth he T/F, the replacement alongwith Augumentation of the existing100/22 kV 75 MVA T/F's at Saki & Malad are ratified by GCC, for inclusion in STU Plan.

4.80: 220 kV GIS Upgradation at Salsette

CE, STU placed before the GCC a proposal of 220 kV GIS Upgradation at Salsette

CE, STU explained that Present 220 kV GIS at Salsette is M/s Toshiba (Japan) make commissioned in 1992. At present, 220 kV Salsette is interconnected with TPC-T 220 kV Borivali RSS, 220 kV Trombay RSS and MSETCL 220 kV Kalwa RSS. Rated Short time current rating of the existing Salsette 245 kV GIS is 40 kA. The existing fault level of 220 kV Salsette after commissioning of 400 kV KVTPL Vikhroli substation is 59 kA which is far beyond the rated capacity of existing 220 kV GIS (40kA).

CE, STU added that through this project, TPC-T proposes to upgrade the existing 245 kV GIS (40 kA) by new 245 kV, GIS (17 bays excluding PTs). New 245 kV GIS STC rating shall be 63 kA, 3 sec as compared existing GIS with 40 kA, 3 sec in line. This will ensure reliable and uninterrupted power supply to existing & expected load growth at Salsette RSS.

Considering the increased fault levels at Salsette S/s, verified through Joint studies and the existing lower switchgear capacity of Salsette GIS, the upgradation of GIS is ratified by GCC, for inclusion in STU Plan.

The GCC also asked STU to take up a detailed study of fault levels at various substations in the state grid and identify remedial measures.

4.81: Installation of 220/33 kV Station at Vile Parle

CE, STU placed before the GCC a proposal of Installation of 220/33 kV Station at Vile Parle

CE, STU explained that at present, there is no EHV station on the western periphery of Mumbai between 110 kV Tata Power Malad RSS to Tata Power Versova and between Tata Power Versova

and Tata Power Mahalaxmi RSS. Load demand in Western suburbs is increasing at an average 3 to 4 % per annum. To meet additional Load demand of DISCOMs of 80 MVA in Juhu / Vile Parle area, this S/s required.

This scheme was discussed in 2nd GCC meet held on 20th Dec 2021. STU directed to TPC- and AEML to conduct joint study for the proposals of 220 kV Vile Parle (TPC) and 220 kV Khardanda (AEML) and submit report. Joint study conducted by TPC-T and AEML. Joint study & new load requirement was verified by STU.

Considering the stage wise additional load and re-orientation of existing load of DISCOM, with due deliberations, GCC ratified the scheme for inclusion in STU Plan.

4.82: 220 kV Tilak Nagar EHV Station Scheme

CE, STU placed before the GCC a proposal of 220 kV Tilak Nagar EHV Station Scheme

CE, STU mentioned that currently there is no EHV Station between TPC Vikhroli and AEML-Chembur EHV Station including the area till Chunabhatti/Sion on eastern side of Central Railway. In this region, Major Load growth expected due to high raise buildings, shopping

complex, Commercial Business hubs, Upcoming Transport infrastructure development in the region, SRA projects & new development. He added that Estimated load in this region is 126MVA Approx (75 MVA New + 51 MVA reshuffling).

Major scope of scheme is as follows:

a) Installation of 220 kV GIS EHV Substation at Tilaknagar with 220kV (7 nos.) and 33kV (28 nos.) GIS Bays,

b) 2x125 MVA Transformers (220/33kV), including procurement of land, Civil work for substation building etc.

c) LILO of TPC Vikroli -Trombay line at proposed 220kV Tilaknagar EHV S/s

d) SCADA, Security equipment's provisions.

He highlighted that to meet the load growth with reliable power supply and facilitated development Transmission substation will be required.

Considering the stage wise additional load and re-orientation of existing load of DISCOM, with due deliberations, GCC ratified the scheme for inclusion in STU Plan.

4.83: 2nd feed Chandivali (220 kV Aarey-Chandivali Link)

CE, STU informed that the Scheme is included in Transmission License No. 1 of 2011 under case no. 127 of 2022 dated 30.05.2023

CE, STU informed that this Scheme was already discussed in 7th & 8th GCC meeting, In 8th GCC STU had presented the load flow studies, based on upcoming Amazon load it was observed that 2nd Ckt of Aarey-Chandivali was overloaded above its Thermal Limits. Thus, alternatively, STU suggested to 220kV S/C of Aarey-Chandivali Line and 220kV S/C of Aarey-TPC Saki Line. AEML-T agreed to the alternative solution suggested by STU.

He added that major load is expected in Chandivali area in view of upcoming data centers and commercial developments, hence strengthening of Transmission Network is required.

For reliability and of supply to Chandivali S/s with due deliberations, GCC ratified the scheme for inclusion in STU Plan

4.84: 250 MW BESS (DTPS) Scheme

CE, STU presented "Proposed 250MWh BESS Scheme" details along with necessity of the scheme in case of contingency in the network. He stated that Provision of BESS for Transmission entity, introduced in Draft MYT Regulation 2024, MERC .

It was mentioned that BESS with Grid level capacity embedded within Mumbai System can provide much required relief during contingency in MMR network, also support Load leveling / peak saving, Network congestion mgmt., Voltage / Frequency regulation, Spinning reserve, Black start capability etc.

Major scope of scheme is as follows:

- Battery Storage Scope:
- 250 MWh BESS, with Transformers, 220 & 33kV GIS & cable
- 220kV D/C UG Cable connectivity from existing AEML DTPS Main Bus-1 & 2 with BESS System.
- Control & protection systems

After detailed deliberation and discussion in view of the provision of BESS for Transmission entity, introduced in Draft MERC MYT Regulation 2024 the GCC instructed STU for joint study prior to the next control period so as for further recommendations.

AD1: Revision in scope of work, cost and procurement plan for the scheme of Supply, Installation, Testing and Commissioning of 125 MVAr, 400kV Bus Reactor along with new bay and allied equipment,
A) At 400kV Chandrapur Switching Substation with NGR under Nagpur Zone.
B) i) At 400kV Chakan S/s under Pune Zone ii) At 400kV Lonikand-I S/s, by replacement of old 50 MVAr, 400kV Bus Reactor under Pune Zone, due to change in scope with regards to 400 kV Jejuri S/s.

CE, STU placed before the GCC a proposal of "Revision in scope of work, cost and procurement plan for the scheme of Supply, Installation, Testing and Commissioning of 125 MVAr, 400kV Bus Reactor along with new bay and allied equipment,
A) At 400kV Chandrapur Switching Substation with NGR under Nagpur Zone.
B) i) At 400kV Chakan S/s under Pune Zone ii) At 400kV Lonikand-I S/s, by replacement of old 50 MVAr, 400kV Bus Reactor under Pune Zone, due to change in scope with regards to 400 kV Jejuri S/s.

CE, STU informed that the earlier scheme had been recommended in 1st GCC meeting. CE Pune informed that 400kV Jejuri SS is predominantly low voltage area. The peak seasonal load of 400kV Jejuri is about 1300MVA against the present ICT capacity of 3x500MVA. Thus, there is no (N-1) redundancy at Jejuri. There will be requirement of additional 500MVA, 400/220kV ICT. However, installation of 125MVAR, 400kV Reactor at 400kV Jejuri S/S will leave no space for 4th ICT. Hence, CE Pune has recommended to consider 4th 500MVA, 400/220KV ICT instead of Reactor and recommended to remove the scope of SITC of 125MVAR, 400kV Bus Reactor at 400kV Jejuri S/s from sanctioned scope.

Accordingly, STU has carried out revised system study for installation of additional 400kV, 500 MVA ICT in place of sanctioned 400kV, 125 MVAR Reactor at 400kV Jejuri Substation and recommended for installation of additional ICT in place of Reactor. Above scheme excluding 400 kV Jejuri reactor is sanctioned vide BR No. 167/47 dated 04.03.2024 for Rs. 44.85 Crs.

Considering the reactive compensation requirements and ICT requirement at 400 kV Jejuri S/s with due deliberations, GCC ratified the scheme for inclusion in STU Plan.

AD2: Scheme of procurement of balance 04 Nos of ICTs & 02 Nos of PTRs of various ratings along with required New Uninhibited High Grade Mineral Insulating Oil out of earlier sanctioned scheme of procurement of 21 Nos of ICTs & PTRs as emergency/critical spares in all zones of MSETCL.

CE, STU placed before the GCC a proposal for Scheme of procurement of balance 04 Nos of ICTs & 02 Nos of PTRs of various ratings along with required New Uninhibited High Grade Mineral

Insulating Oil out of earlier sanctioned scheme of procurement of 21 Nos of ICTs & PTRs as emergency/critical spares in all zones of MSETCL.

CE, STU mentioned that to meet emergency requirements arising out of failure of ICTs/Power Transformers, MSETCL, need to have spare ICTs/Power Transformers available. As the failure affects power supply & procurement time/supply period is also long for new ICTs/Power Transformers. Moreover, in view of early restoration of the power supply in the event of failure of Transformers/ICTs, extra spare stock of Power Transformers/ICTs is very essential. This Scheme was approved in Board Meeting dtd 04.03.2024.

Considering the criticality of spares and mitigating emergency requirements with due deliberations, GCC ratified the scheme for inclusion in STU Plan.

AD3: Installation of Centralized BESS for Transmission at Trombay

CE, STU placed before the GCC a proposal for Installation of Centralized BESS for Transmission at Trombay.

CE, STU informed that after scrutiny, DPR was returned by STU.
After detailed deliberation and discussion in view of the provision of BESS for Transmission entity, introduced in Draft MERC MYT Regulation 2024 the GCC instructed STU to take up study prior to the next control period to identify necessity and locations for BESS in the network.

AD4: Installation of Distributed BESS for Transmission at Saki, Mankhurd & Salsette

CE, STU placed before the GCC a proposal for Installation of Distributed BESS for Transmission at Saki, Mankhurd & Salsette.

CE, STU informed that after scrutiny, DPR was returned by STU.

After detailed deliberation and discussion in view of the provision of BESS for Transmission entity, introduced in Draft MERC MYT Regulation 2024 the GCC instructed STU to take up study prior to the next control period to identify necessity and locations for BESS in the network.

AD5: 220 kV Khardanda Scheme

CE, STU placed before the GCC a proposal, of **220 kV Khardanda Scheme**

CE, STU mentioned that no Transmission substation between Versova to Bandra covering a stretch of 15 kms on western side of suburb & Huge development potential and anticipated growth of power demand in & around Khardanda area due to upcoming re-development, up gradation in transport infrastructure like proposed Metrorail project, fly overs connecting west / east area, development of commercial establishment etc.

In absence of sufficient Transmission capacity, laying long 33kV feeders from nearby EHV stations will lead to high losses & undue CAPEX burden. In view of above, it is proposed to commission 220/33kV EHV Substation . This scheme was discussed in 2nd, 6th, 7th , 8th GCC. CE, STU submitted that Considering the load growth and new load details, the EHV scheme implementation in the area is very much important.

Considering the stage wise additional load and re-orientation of existing load of DISCOM, with due deliberations, GCC ratified the scheme for inclusion in STU Plan.

AD6: 220 kV Borivali-Ghodbunder-Boisar LILO Line augmentation

CE, STU placed before the GCC a proposal, of 220 kV Borivali-Ghodbunder-Boisar LILO Line augmentation

CE, STU mentioned that to match the uprating capacity of MSETCL Overhead Line, AEML-T proposes to Install of a 220kV GIS near the existing LILO Tower, Tapping of MSETCL line through 220kV GIL/ Cable system will be connected to proposed 220kV GIS switching station and existing 220 kV underground D/C cable from AEML Ghobunder will be connected to proposed GIS switching station. This is augmentation of existing LILO scheme. For strengthen transmission line corridor and power flow capacity utilizing the GIS switching station, this augmentation required.

Major scope of scheme is as follows:

1. Procurement of land
2. Installation of 220kV GIS with necessary arrangement
3. Termination of existing 220kV line cable i.e. from Ghodbunder EHV station to pro- posed GIS switching station
4. Overhead line tapping from tower to 220kV GIS through Gantry / GIBD arrangement
5. Construction of Control room along with Compound wall & necessary infrastructure
6. To upgrade Protection and SCADA System

CE STU informed that AEML-T has informed that both the options of upgradation of EHV cable or LILO of line at a switching station and extending radial feed to Godhbunder S/s from the switching are feasible. GCC recommended that STU shall study the option based on reliability of the system and approve the better option, GCC ratified the inclusion the scheme as approved by the STU in the STU Plan. The GCC be appraised of the decision of Stu subsequently.

AD7: 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

CE, STUplaced before the GCC a proposal, of 132 KV DCDC link line by making LILO of one circuit of 220 KV Amalner (A-II) to Nardane line to one circuit of 132 KV Amalner (A-I) to Parola line.

CE, STUMentioned that presently, 132 KV Amalner-I having source only through S/C line from 220/132KV Amalner-I subsequently connected to 132KV Parola ss. During any contingency of 132KV Amalner-II –Amalner-I S/C line will hamper supply to both substations and also 132kV Parola ss, as there is no any alternative/additional source to them.

Due to urbanization, there is no possibility of second circuit stringing or conversion even on monopole from 132KV Amalner-I to Amalner-II ss . Cabling laying also not possible. To resolve above issue the best option is -132 KV DCDC link line by LILO on 132KV Amalner –Nardane to LILO on 132KV Amalner-Parola line. This link line will be second source to 132KV Amalner, 132KV Nardane & 132kv Parola substation .

She added that 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 Amalner-I ,Amalner- II SCSC Line supply of both 132KV Amalner & 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. Therefore, It is not possible to lay second source from 220 kv Amalner(A-II) to 132 KV Amalner –II ss.

After execution of this 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. This scheme will help for proper maintenance activity of 132 KV Amalner (A-II)-Amalner(A-I) Line. Reliability of supply will be increase.

For reliability and providing second source to 132 kV Ambalner and Parola S/s with due deliberations, GCC ratified the scheme for inclusion in STU Plan

4.85: Review of Projects under STU Plan 2022-23 to 2026-27

GCC directed STU to submit the quarterly reports of review of projects under STU Plan carried out by MTC on regular basis, as mandated in MEGC-2020.

4.86: Replacement of 2x100 MVA, 220/132kV ICTs by 2x200 MVA, 220/132kV ICTs at 220kV Alephata Sub-Station under EHV O&M Division, Manchar

CE, STU placed before the GCC a proposal for the Replacement of 2x100 MVA, 220/132kV ICTs by 2x200 MVA, 220/132kV ICTs at 220kV Alephata Sub-Station under EHV O&M Division, Mancha.

CE, STU explained that 220kV Alephata S/s feeds, MIDC, Urban & Rural Part of Junnar, Ambegaon, Khed, Chakan Taluka, 132 kV Vighnahar Cogen & area fed by Narayangaon S/s. The cited S/s having two no. ICT. Max. loading on both ICT in the past 3 years is more than 70%.

In case of an outage/ tripping on one ICT, it is difficult to manage the load on other ICT. Due to the loading condition of the substation, MSEDCL/ EHV consumers also deny the NOC for an outage on either ICT. 220kV Alephata S/s fulfills the criteria of the augmentation scheme. Hence, to satisfy (N-1) criteria & also to meet the future load demand, the replacement of 2x100 MVA, 220/132kV ICT to 2x200 MVA, 220/132kV ICT is proposed at 220kV Alephata S/s. The Estimated cost of the scheme is **Rs. 2689.90 Lakh.** The scheduled commissioning year of the scheme is **FY 2023-24.**

In view of the additional load requirement of MSEDCL to meet future loading requirements and present N-1 non compliance with due deliberations, GCC ratified the scheme for inclusion in STU plan.

4.87: Providing additional 1X50 MVA 220/33kV T/F alongwith HV & LV bays at 220 kV Badnera S/S under EHV O&M Division Amravati.

CE, STU Proposed & presented the proposal for The 220 kV Badnera Substation commissioned in the year 1993. The current installed capacity of the substation at 220 kV Badnera S/S is 100 MVA, consisting of 2 No's of 50 MVA, 220/33 kV T/fs.

This substation feeds the urban area of Amravati, MIDC load, and rural and agricultural load in the areas of Amravati, Badnera, Bhatkuli, and Nandgaon Kh area. Maximum loading reached on both the T/Fs is above 80 % of installed capacity. The proposal fulfills the augmentation scheme criteria. During an outage/Breakdown of either of the T/f, the load is not managed on the other T/f i.e. not satisfying N-1 criteria.

Hence considering the present loading condition, outage constraints and to satisfy N-1 criteria additional T/f is proposed at 220 kV Badnera S/s. The Estimated cost of the scheme is **Rs. 907.84 Lakh.** The scheduled commissioning year for the scheme is **FY 2025-26.**

In view of the additional load requirement of MSEDCL to meet future loading requirements and present N-1 non compliance with due deliberations, GCC ratified the scheme for inclusion in STU plan.

4.88: Providing additional 1X25 MVA 132/33kV T/F along with HV & LV bays at 132kV Digras S/s under EHV O&M Division Yavatmal

CE, STU placed before the GCC a proposal for "Providing additional 1X25 MVA 132/33kV T/F along with HV & LV bays at 132kV Digras S/s under EHV O&M Division Yavatmal".

CE, STU explained that the 132kV Digras Substation was commissioned in 1999. The current installed capacity of the substation at 132 kV Digras S/S is 50 MVA, consisting of 2 Noes of 25 MVA, 132/33 kV T/fs. 132kV Digras substation is the only substation feeding the load in Digras Taluka.

CE, STU submitted that the Maximum loading reached on both the T/Fs is above 85 % of installed capacity. The proposal fulfills the augmentation scheme criteria. During an outage/Breakdown of either of the T/f, the load is not managed on the other T/f i.e. not satisfying N-1 criteria. Hence, the Proposal is put up for approval from the GCC Committee. The Estimated cost of the scheme is **Rs. 907.84 Lakh.** The scheduled commissioning year **for the cited scheme is FY 2025-26**

In view of the additional load requirement of MSEDCL to meet future loading requirements and present N-1 non compliance with due deliberations, GCC ratified the scheme for inclusion in STU plan.

4.89: Replacement of 2x25 MVA,132/33kV power transformers with 2x50MVA, 132/33kV power transformers' at 132kV Pandharkawada S/Stn under EHV O&M Division, Yavatmal

CE, STU placed before the GCC a proposal for "Replacement of 2x25 MVA,132/33kV power transformers with 2x50MVA, 132/33kV power transformers' at 132kV Pandharkawada S/Stn under EHV O&M Division, Yavatmal".

CE, STU explained that the 132kV Pandharkawada Substation was commissioned in 2012. The current installed capacity of the substation at 132 kV Pandharkawada Substation is 50 MVA, consisting of 2 nos of 25 MVA, 132/33 kV T/fs. 132kV Pandharkawada substation supplies urban and rural areas of Kelapur, Ghatanji, Zari Zamni, Maregaon (partial) & Wani (partial) Taluka. Both Transformers presently operate on more than 90% average load. The maximum quantum of the load is shared by the agriculture load which is increasing at a high rate. Hence, the Proposal is put up for approval from the GCC Committee by MSETCL. The estimated Cost of the Scheme is **Rs. 10.30 Lakh (Incl. IDC).** The cited work proposes to be commissioned in FY 2025-26.

In view of the additional load requirement of MSEDCL to meet future loading requirements with due deliberations, GCC ratified the scheme for inclusion in STU plan.

4.90: Providing additional 1X25 MVA 132/33kV T/F alongwith HV & LV bays at 132kV Karanja S/s under EHV O&M Division Akola

CE, STU placed before the GCC a proposal for Providing an additional 1X25 MVA 132/33kV T/F along with HV & LV bays at 132kV Karanja S/s under EHV O&M Division Akola

CE, STU explained that the 132kV Karanja Substation was commissioned in the year 2010. 132kV Karanja substation is the only substation feeding the load in Digras Taluka. The average maximum loading reached on both the 25 MVAT/Fs is above 90 % of installed capacity. During an

outage/Breakdown of either of the T/F, the load is not managed on the other T/F i.e. not satisfying (N-1) criteria.

In view of the above, the scheme of Providing an additional 1X25 MVA 132/33kV T/F along with HV & LV bays at 132kV Karanja S/s under EHV O&M Division Akola, proposed by MSETCL. The Cost of the Scheme is **Rs. 790.69 Lakh**. Said Work will be commissioned in **FY 2024-25.**

In view of the additional load requirement of MSEDCL to meet future loading requirements and present N-1 non compliance with due deliberations, GCC ratified the scheme for inclusion in STU plan.

4.91: Providing additional 1X50 MVA 132/33kV T/F alongwith HV & LV bays at 132kV Malegaon S/s under EHV O&M Division Akola

CE, STU placed before the GCC a proposal for Providing an additional 1X50 MVA 132/33kV T/F along with HV & LV bays at 132kV Malegaon S/s under EHV O&M Division Akola.

CE, STU submitted that The 132kV Malegaon Substation was commissioned in the year 1977. 132 kV Malegaon substation is the substation feeding the load of urban and rural areas in Malegaon Tehsil and nearby rural areas.

The Substation has two T/Fs and the Maximum loading reached on both T/Fs is above 85 % of installed capacity. During an outage/Breakdown of either of the T/F, the load is not managed on the 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 Malegaon S/s. The cost of the scheme is **₹ 714.58 Lakh.** The scheduled commissioning year for this scheme is **FY 2025-26.**

In view of the substation feeding urban and rural load requirement of MSEDCL in Malegaon area and present N-1 non compliance with due deliberations, GCC ratified the scheme for inclusion in STU plan.

4.92: Providing additional 1X25 MVA 132/33kV T/F alongwith HV & LV bays at 132kV Mangrulpir S/s under EHV O&M Division Akola.

CE, STU placed before the GCC a proposal for The 132kV Mangrulpir Substation was commissioned in the year 1999.

132 kV Mangrulpir substation is the substation feeding the load of urban and rural areas in Mangrulpir Taluka.

This S/s has two T/F each 25 MVA. Maximum loading reached on both the T/Fs is above 85 % of installed capacity. The proposed scheme fulfills the augmentation scheme criteria. During an outage/Breakdown of either of the T/F, the load is not managed on the 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 Mangrulpir S/s. The estimated cost of the scheme is **Rs. 654.29 Lakh**. Scheme scheduled to be commissioned in **FY 2025-26.**

In view of the substation feeding urban and rural load requirement of MSEDCL in Mangrulpir area and present N-1 non compliance with due deliberations, GCC ratified the scheme for inclusion in STU plan.

4.93: Replacement of 2X25 MVA, 132/33kV T/Fs by 2X50MVA, 132/33kV T/Fs along with HV & LV bays at 132kV Dusarbid S/S under EHV O&M Division Buldhana

CE, STU placed before the GCC a proposal for Replacement of 2X25 MVA, 132/33kV T/Fs by 2X50MVA, 132/33kV T/Fs along with HV & LV bays at 132kV Dusarbid S/S under EHV O&M Division Buldhana

CE, STU explained that the 132kV Dusarbid Substation was commissioned in 1992. 132kV Dusarbid substation is the substation feeding the load in Sindkhedraja and Lonar taluka. This S/s has two No. 25 MVA T/F. The average maximum loading reached on both the T/Fs is about 70% of the installed capacity. The land is not available for additional T/F hence proposed for replacement.

During an outage/Breakdown of either of the T/F, the load is not managed on the other T/F i.e. not satisfying (N-1) criteria. Hence considering the present loading condition, and outage constraints to satisfy (N-criteria replacement of T/Fs is proposed at 132kV Dusarbid S/s. The cost of the Scheme is **Rs. 971.31 Lakh.** Cited Work will be commissioned in **FY 2024-25.**

In view of the substation feeding urban and rural load requirement of MSEDCL in Dusarbid area, non-availability of land and present N-1 non compliance with due deliberations, GCC ratified the scheme for inclusion in STU plan.

4.94: Providing additional 1X25 MVA 132/33kV T/F alongwith HV & LV bays at 132kV Buldhana S/s under EHV O&M Division Buldhana.

CE, STU placed before the GCC a proposal for providing an additional 1X25 MVA 132/33kV T/F along with HV & LV bays at 132kV Buldhana S/s under EHV O&M Division Buldhana.

CE, STU explained that the 132 kV Buldhana Substation was commissioned in the year 1993. This substation feeds the urban and rural areas of Buldhana Taluka and nearby rural areas. Maximum loading reached on both the T/Fs is about 80 % of installed capacity. During outage/tripping of any one of the T/F, the load is not managed on other T/F i.e. not satisfying (N-1) criteria.
The proposed scheme fulfills the augmentation scheme criteria. Hence considering the present loading condition, and outage constraints and to satisfy (N-1) criteria additional T/F is proposed at 132kV Buldhana S/s. The Estimated cost of the scheme is **₹ 531.09 Lakh**. The cited Scheme will be commissioned in **FY 2024-25**.

In view of the substation feeding urban and rural load requirement of MSEDCL in Buldhana area, and present N-1 non compliance with due deliberations, GCC ratified the scheme for inclusion in STU plan.

4.95: Providing additional 1X50MVA 132/33kV T/F alongwith HV & LV bays at 132kV Khamgaon S/s under EHV O&M Division Buldhana

CE, STU placed before the GCC a proposal for Providing an additional 1X50MVA 132/33kV T/F along with HV & LV bays at 132kV Khamgaon S/s under EHV O&M Division Buldhana.

CE, STU explained that the 132 kV Khamgaon Substation was commissioned in 1987. This substation feeds the urban and rural areas of Khamgaon & Shegaon taluka through 2 nos of

50MVA, 132/33kV T/Fs. Maximum loading reached T/F No. 1 is more than 90 % of installed capacity. As per MSEDCL load growth for the year 2023-24, 33kV Kanarkhed S/s(5MVA), 33kV Parkhed S/s(5 MVA) & 33kV Umra Phata S/s(5 MVA) are proposed by MSEDCL.
The proposed scheme fulfills the augmentation criteria. During outage/tripping of any one of the T/F, the load is not managed on other T/F i.e. not satisfying (N-1) criteria. In view of the above, an additional 50 MVA T/F is proposed at 132kV Khamgaon S/s. The estimated cost of the scheme is **₹ 662.37 Lakh.** This scheduled commissioning of the cited scheme is in **FY 2025-26**

In view of the substation feeding urban and rural load requirement of MSEDCL in Khamgaon area, and present N-1 non compliance with due deliberations, GCC ratified the scheme for inclusion in STU plan.

4.96: Providing additional 1X50 MVA 220/33kV T/F alongwith HV & LV bays at 220kV Chikhali S/s under EHV O&M Division Buldhana

CE, STU placed before the GCC a proposal for a Scheme for Providing additional 1X50 MVA 220/33kV T/F along with HV & LV bays at 220kV Chikhali S/s under EHV O&M Division Buldhana.
CE, STU explained that the Substation was commissioned in the year 1987. This substation feeds the urban and rural areas of Chikhali Taluka, through 2 nos of 50MVA, 220/33kV T/Fs. Maximum loading reached for both Transformers is more than 70 % of installed capacity.

During the outage/tripping of any one of the T/F, the load is not managed on other T/F i.e. not satisfying (N-1) criteria. In view of the above, additional T/F is proposed at 220 kV Chikhali S/s. The Estimated cost of the scheme is **₹ 658.49 Lakh**. The scheduled completion year of said scheme is **FY 2025-26.**

In view of the substation feeding urban and rural load requirement of MSEDCL in Chikhali area, and present N-1 non compliance with due deliberations, GCC ratified the scheme for inclusion in STU plan.

4.97: Providing additional 1X50 MVA 132/33kV T/F alongwith HV & LV bays at 132kV Mehkar S/s under EHV O&M Division Buldhana

CE, STU placed before the GCC a proposal for "Providing additional 1X50 MVA 132/33kV T/F along with HV & LV bays at 132kV Mehkar S/s under EHV O&M Division Buldhana"
CE, STU explained that 132kV Mehkar Substation was commissioned in the year 1987. 132 kV Mehkar substation is the only substation feeding the load of urban and rural areas in Mehkar & Lonar taluka. Maximum loading reached on both the T/Fs is above 70 % of installed capacity.
CE, STU highlighted that presently total of 33kV MSEDCL's commissioned S/s having installed capacity 123.15 MVA against our installed capacity of 50 x 2 = 100 MVA are being fed through 7 nos of 33kV feeders emanating from 132kV Mehkar s/s. If agricultural load shedding is withdrawn our Transformers will not be able to feed the load. According to the estimate of total load growth of MSEDCL during 2023-24 will be approximately 10 MVA, submitted by the EE, MSEDCL, Khamgaon vide. No.3666; dt.13.09.23.

Load on both the T/Fs at 132kV Mehkar S/s for the last 3 years are rising in trend. During an outage/Breakdown of either of the T/F, the load is not managed on the other T/F i.e. not satisfying (N-1) criteria. Hence considering the present loading condition, and outage constraints and to satisfy (N-1) criteria addition of T/F is proposed at 132kV Mehkar S/s The Estimated cost of the scheme is **₹ 653.83 Lakh**, The Scheduled commissioning year of said scheme is **FY 2025-26.**

In view of the substation feeding urban and rural load requirement of MSEDCL in Mehkar & Lonar Taluka, and present N-1 non compliance with due deliberations, GCC ratified the scheme for inclusion in STU plan.

4.98: Replacement of existing 2X25 MVA, 220/33kV T/Fs by 2X50 MVA, 220/33kV T/Fs at 220 kV Dhamangaon S/s under EHV (O&M) Division Amravati

CE, STU placed before the GCC a proposal for Replacement of existing 2X25 MVA, 220/33kV T/Fs by 2X50 MVA, 220/33kV T/Fs at 220 kV Dhamangaon S/s under EHV (O&M) Division Amravati.

CE, STU explained that the 220 kV Dhamangaon Substation was commissioned in the year 2000. The current installed capacity of the substation at 220 kV Dhamangaon S/S is 50 MVA, consisting of 2 Noes of 25 MVA, 220/33 kV T/fs. The only substation that supplies power to the Dhamangaon and Chandur Railway Taluka areas is Dhamangaon. Maximum loadings reached on both the T/Fs are above 80 % of installed capacity. The proposal fulfills the augmentation scheme criteria. During an outage/Breakdown of either of the T/f, the load is not managed on the other T/f i.e. not satisfying N-1 criteria.

Hence considering the present loading condition, outage constraints and to satisfy N-1 criteria replacement of T/fs is proposed at 220 kV Dhamangaon S/s. The Estimated cost of the scheme is **₹ 1351.31 Lakh**. The above scheme will be commissioned in **FY 2025-26.**

In view of the substation feeding urban and rural load requirement of MSEDCL in Dhamangaon and Chandur Taluka areas, and present N-1 non compliance with due deliberations, GCC ratified the scheme for inclusion in STU plan.

4.99: Replacement of existing 3X105 MVA, 400/220/33kV ICT by 3X167 MVA, 400/220/33kV ICT along with replacement of spare 1X105 MVA, 400/220/33kV ICT unit by 1X167 MVA, 400/220/33 kV ICT unit at 400/220/33kV ICT at 400kV Akola S/s under EHV PC (O&M) zone, Amravati

CE, STU placed before the GCC a proposal of "Replacement of existing 3X105 MVA, 400/220/33kV ICT by 3X167 MVA, 400/220/33kV ICT along with replacement of spare 1X105 MVA, 400/220/33kV ICT unit by 1X167 MVA, 400/220/33 kV ICT unit at 400/220/33kV ICT at 400kV Akola S/s under EHV PC (O&M) zone, Amravati"

CE STU stated that 400kV Akola Substation is commissioned in the year 2009. The current installed capacity of the substation at 400kV Akola Substation is 1130 MVA, consisting of 3X105 MVA 400/ 220/ 33kV ICT-1, 1X 315 MVA 400/220/33kV ICT-2 and 3X167 MVA 400 / 220/ 33kV ICT-3. 400kV Akola substation supplies 220kV grid in Akola, Washim, Buldhana, and part of Jalna District. Maximum loadings reached on ICT I and ICT II are above 75 % of installed capacity. The space is not available for additional ICT and hence proposed for replacement. During

the outage/Breakdown of 3X 167 MVA, 400/220/33kV ICT, the load is not managed on the other two ICTs i.e. not satisfying N-1 criteria. Hence considering the present loading condition, and outage constraints and to satisfy N-1 criteria replacement of ICT is proposed at 400kV Akola S/s.
The Estimated cost of the scheme is **₹ 3839.40 Lakh**. The schedule year of commissioning of the above scheme is **FY 2025-26.**

In view of the substation feeding urban and rural load requirement of MSEDCL in Akola, Washim, Buldhana, and part of Jalna District, space constraints, and present N-1 non compliance with due deliberations, GCC ratified the scheme for inclusion in STU plan.

4.100: Providing additional 3X167 MVA 400/220/33kV ICT along with HV & LV bays at 400 kV Jejuri S/s under Pune Zone

CE, STU placed before the GCC a proposal of "Providing additional 3X167 MVA 400/220/33kV ICT along with HV & LV bays at 400 kV Jejuri S/s under Pune Zone".

CE, STU explained that 400kV Jejuri S/s was commissioned on 31.10.2004. This substation caters the load of Pune District through 220kV Phursungi, 220kV Jejuri, 220kV Baramati, 220kV Lonand & 220kV Kondhwa S/stns.
The present load demand of Pune District is about 3000MW, which is expected to be increased at the rate of about 80MW to 100MW every year. At present, there are 3Nos. of 500MVA, 400/220/33kV ICTs in service at 400kV Jejuri S/s, having average loading of more than 80%.
In addition to that, caters the load of Rajewadi TSS-I & II which is around 9MW is nearing to the completion. Also, 220kV Lonand I & II lines charged on 11.01.2024 with 120MW additional load on ICTs of 400kV Jejuri S/s. It is difficult to manage the load in case of tripping/outage on any of the ICTs i.e. Not fulfill N-1 criteria.
Hence, to satisfy (N-1) criteria & also to meet the future load demand, additional 3x167 MVA, 400/220/132kV ICT is proposed at 400kV Jejuri S/s. Estimated cost of scheme is **₹ 4501.66 Lakh.** This scheme will be commissioned in **FY 2025-26.**

In view of the requirement to fulfill MSEDCL demand in Pune District, enhance system reliability, and present N-1 noncompliance with due deliberations GCC ratified the scheme for inclusion in STU Plan.

4.101: Providing additional 1x50MVA, 220/33kV T/F along with HV & LV Bays at 220kV Jejuri S/s under EHV (O&M) Division, Baramati.

CE, STU placed before the GCC a proposal for Providing an additional 1x50MVA, 220/33kV T/F along with HV & LV Bays at 220kV Jejuri S/s under EHV (O&M) Division, Baramati.
CE, STU added that 220/33kV Jejuri S/s was commissioned on 27.03.1992. 220/33kV Jejuri S/s having installed capacity of 2X50MVA, 220/33kV along with 08 Nos. of 33kV Feeders feeding Purandar Taluka. MSEDCL has proposed 02 Nos. of switching 33/22kV substation at Belsar & Dive village in Purandar Taluka.
CE STU highlighted that one 33kV Express feeder is sanctioned under the Gunjavani Lift Irrigation scheme at 220/33kV Jejuri S/s. In case of outage/tripping of any of the T/F, the load cannot be

managed on other T/F. i.e. not satisfying (N-1) criteria. The proposed scheme satisfies augmentation criteria. Hence, to satisfy (N-1) criteria & also to meet the future load demand, an additional 1x50MVA, 220/33kV T/F along with HV & LV Bays is proposed at 220/33kV Jejuri S/s. The estimated cost of the scheme is **Rs. 833.48 Lakhs.** The cited scheme will commissioned in **FY 2025-26.**

In view of the requirement to fulfill MSEDCL demand in Jejuri, Belsar & Dive village in Purandar Taluka, enhance system reliability, and present N-1 noncompliance with due deliberations GCC ratified the scheme for inclusion in STU Plan.

4.102: Providing additional 1X25MVA, 132/33kV T/F along with HV & LV Bays and shifting of 33kV PT-I bay at 132kV Someshwarnagar S/s under EHV (O&M) Division Baramati

CE, STU placed before the GCC a proposal for Providing additional 1X25MVA, 132/33kV T/F along with HV & LV Bays and shifting of 33kV PT-I bay at 132kV Someshwarnagar S/s under EHV (O&M) Division Baramati

CE, STU mentioned that 132/33kV Someshwarnagar S/s was commissioned on 14.09.2010 having a capacity of 2X25MVA, 132/33kV T/Fs & 6 nos. of 33kV MSEDCL Feeders. It is catering load of Someshwarnagar & Purandar Taluka (Ag domain feeders).

The average max load for peak 03 months in a year on both the existing T/Fs is more than 85% of their capacity. In case of tripping/outage on 1 No. of T/F load cannot managed on other T/F i.e. Not fulfil the (N-1) criteria. The proposed scheme satisfies augmentation criteria. Hence, to satisfy (N-1) criteria & also to meet the future load demand, the addition of 1X25MVA, 132/33kV T/F is proposed at 132/33kV Someshwarnagar S/s. The estimated cost of the scheme is **₹ 562.85 Lakh**. The scheduled completion year for said scheme is **2025-26.**

In view of the requirement to fulfill MSEDCL demand in Someshwarnagar & Purandar Taluka, enhance system reliability, and present N-1 non compliance with due deliberations GCC ratified the scheme for inclusion in STU Plan.

4.103: Providing additional 1X50 MVA, 132/33kV T/F along with bus extension and HV & LV Bays at 132kV Ranwad Sub-Station under EHV (O&M) Division, Nashik.

CE, STU placed before the GCC a proposal for Providing additional 1X50 MVA, 132/33kV T/F along with bus extension and HV & LV Bays at 132kV Ranwad Sub-Station under EHV (O&M) Division, Nashik.

CE, STU mentioned that the 132kV Ranwad Substation under EHV O&M Division, Nashik was commissioned on 26.07.1977. 132kV Ranwad Substation caters to the load of Niphad & Chandwad Taluka under Nashik District. In case of tripping/outage on 1 No. of T/F load cannot be managed on other T/F i.e. Not fulfil the (N-1) criteria. 132kV Ranwad Substation fulfills the augmentation criteria. Hence, to satisfy (N-1) criteria & also to meet the future load demand, an additional 1X50MVA, 132/33kV TF along with bus extension and HV & LV Bays is proposed at 132kV Ranwad substation. The Estimated cost of the scheme is **Rs. 639.64 Lakh.** The scheduled commissioning year of the cited scheme is **FY 2024-25.**

In view of the requirement to fulfill MSEDCL demand in Niphad & Chandwad Taluka, enhance system reliability, and present N-1 noncompliance with due deliberations GCC ratified the scheme for inclusion in STU Plan.

4.104: Providing additional 1X50 MVA, 132/33kV T/F along with HV & LV Bays at 132kV Shevgaon Sub-Station under EHV (O&M) Division, Babhaleshwar.

CE, STU placed before the GCC a proposal for "Providing additional 1X50 MVA, 132/33kV T/F along with HV & LV Bays at 132kV Shevgaon Sub-Station under EHV (O&M) Division, Babhaleshwar".

CE, STU highlighted that 132kV Shevgaon Substation under EHV O&M Division, Babhaleshwar was commissioned on 06.09.1994. 132kV Shevgaon Substation caters to the load of Shevgaon Taluka under Ahmednagar District. The load of Shevgaon is catered by 2X50 MVA 132/33kV TF. The additional load of 4.75MVA Tajnapur LIS approval is in process. A 5 MVA transformer is proposed on the existing 33kV feeder by DISCOM. The total load growth of 20MVA (including above 4.75MVA + 5MVA=9.75MVA)

In case of tripping/outage on 1 No. of T/F load cannot be managed on other T/F i.e. Not fulfil the (N-1) criteria. 132kV Shevgaon Substation fulfills the augmentation criteria. Hence, to satisfy (N-1) criteria & also to meet the future load demand, an additional 1X50MVA, 132/33kV TF along with HV & LV Bays is proposed at 132kV Shevgaon Substation. The Estimated cost of the scheme is **Rs. 654.72 Lakh.** The scheduled year of completion for the cited scheme is **FY 2024-25.**

In view of the requirement to fulfill present & future MSEDCL demand in Shevgaon Taluka, enhance system reliability, and present N-1 non compliance with due deliberations GCC ratified the scheme for inclusion in STU Plan.

4.105: Providing additional 1X50 MVA, 132/33kV T/F along with HV & LV Bays at 132kV Wadzire Sub-Station under EHV (O&M) Division, Babhaleshwar.

CE, STU placed before the GCC a proposal for "Providing additional 1X50 MVA, 132/33kV T/F along with HV & LV Bays at 132kV Wadzire Sub-Station under EHV (O&M) Division, Babhaleshwar".

CE, STU mentioned that the 132kV Wadzire Substation under EHV O&M Division, Babhaleshwar was commissioned on 05.12.2018. 132kV Wadzire Substation caters to the load of Parner Taluka under Ahmednagar District.

In case of tripping/outage on 1 No. of T/F load cannot be managed on other T/F i.e. Not fulfil the (N-1) criteria. 132kV Wadzire Substation fulfills the augmentation criteria vide Circular No. MSETCL/DIR (OP)/ 4044 dtd. 14.06.2023. Hence, to satisfy (N-1) criteria & also to meet the future load demand, an additional 1X50MVA, 132/33kV TF along with HV & LV Bays is proposed at 132kV Shevgaon Substation. The Estimated cost of the scheme is **₹ 723.18 Lakh.** The scheduled year of commissioning of said scheme is **FY 2024-25.**

In view of the requirement to fulfill present & future MSEDCL demand in Parner Taluka, enhance system reliability, and present N-1 non compliance with due deliberations GCC ratified the scheme for inclusion in STU Plan.

4.106: Providing additional 1X50 MVA, 132/33kV T/F along with HV & LV Bays at 132kV Karjat Sub-Station under EHV (O&M) Division, Babhaleshwar.

CE, STU placed before the GCC a proposal for "Providing additional 1X50 MVA, 132/33kV T/F along with HV & LV Bays at 132kV Karjat Sub-Station under EHV (O&M) Division, Babhaleshwar".

CE, STU submitted that 132kV Karjat Substation under EHV O&M Division, Nashik was commissioned on 15.03.1995. 132kV Karjat Substation caters to the load of Karjat and part of Shrigonda Taluka under Ahmednagar District. In case of tripping/outage on 1 No. of T/F load cannot be managed on other T/F i.e. Not fulfil the (N-1) criteria. Hence, to satisfy (N-1) criteria & also to meet the future load demand, an additional 1X50MVA, 132/33kV TF along with HV & LV Bays is proposed at 132kV Karjat Substation. The Estimated cost of the scheme is **₹ 673.43 Lakh**. The scheduled year of commissioning of the cited scheme is **FY 2024-25.**

In view of the requirement to fulfill present & future MSEDCL demand in Karjat and part of Shrigonda Taluka, enhance system reliability, and present N-1 non compliance with due deliberations GCC ratified the scheme for inclusion in STU Plan.

4.107: Replacement of existing 2x25MVA 132/33kV T/Fs by 2x50 MVA 132/33kV T/Fs at 132kV Chandwad Substation under EHV O&M Division, Nashik

CE, STU placed before the GCC a proposal for the Replacement of existing 2x25MVA 132/33kV T/Fs by 2x50 MVA 132/33kV T/Fs at 132kV Chandwad Substation under EHV O&M Division, Nashik

CE, STU explained that the 132kV Chandwad Substation was commissioned on 07.02.2009 having 2x25MVA, 132/33kV T/Fs catering to the load of Chandwad Taluka. MSEDCL has proposed a 33KV Tisgaon feeder from the 132KV Chandwad substation. Chandwad is famous, particularly for the belt of crops such as onions, wheat, marigold flowers, maize, soybean, bajra, etc. In case of tripping/outage on 1 No. of T/F, load cannot be managed on other T/F i.e. Not fulfil the (N-1) criteria. 132kV Chandwad Substation fulfills the augmentation criteria.

Hence, to satisfy (N-1) criteria & also to meet the future load demand, the replacement of 2x25MVA, 132/33kV T/Fs by 2x50MVA, 132/33kV T/Fs are proposed at 132kV Chandwad Substation. The Estimated cost of the scheme is **₹ 992.29 Lakh.** The scheduled year of commissioning is **FY 2024-25.**

In view of the requirement to fulfill present & future MSEDCL demand in Chandwad Taluka, enhance system reliability, Space constraints, and present N-1 non compliance with due deliberations GCC ratified the scheme for inclusion in STU Plan.

4.108: Providing additional 2X50MVA, 220/22kV T/Fs along with HV & LV Bays, 12 Nos. of 22kV GIS Bays, 2 Nos. of PT GIS Bays, 1 No. of 22kV Bus sectionalizer GIS Bay, 1 No. of Bus PT and allied civil works at 220kV Century Enka S/s under Pune Zone

CE, STU placed before the GCC a proposal for Providing additional 2X50MVA, 220/22kV T/Fs along with HV & LV Bays, 12 Nos. of 22kV GIS Bays, 2 Nos. of PT GIS Bays, 1 No. of 22kV Bus

sectionalizer GIS Bay, 1 No. of Bus PT and allied civil works at 220kV Century Enka S/s under Pune Zone.

CE, STU submitted that the 220kV Century Enka S/s is commissioned in 1993 in the Bhosari MIDC area for feeding EHV consumer M/s Century Enka through 2 nos. of 220kV Bays. This S/s is running unmanned as there are no transformers. 220kV Bhosari-I, 220kV Bhosari-II & 220kV Telco S/Stns are situated in the vicinity of Bhosari which feeds load of industrial, commercial & residential areas.

CE, STU highlighted that at present, 220/22kV Bhosari-I S/s caters to the load of the Bhosari MIDC area. The installed capacity of 220/22kV Bhosari-I S/s is 235MVA. There are 27 Nos. of 22kV Feeders emanating from 220/22kV Bhosari-I S/s. Also, this substation caters to the load of Mahametro load along the old Mumbai-Pune road. The future load requirement on this substation is 25MVA approximately. Thus, the total maximum load will be raised up to 169MVA against capacity of 235MVA.

Considering load growth of approximately 10% per annum, the future load is approximately 25MVA in the next 3-4 years due to which maximum demand will be more than 70% in the next 3 years. To meet the current and future demand, the existing capacity of 220/22kV Bhosari-I S/s is insufficient. There is no scope for capacity enhancement at 220/22kV Bhosari-I S/s and no space for the erection of new 22kV feeder bays.

Outgoing 22KV feeders emanating from 220/22kV Bhosari-I S/s have radial network. The existing load to be diverted from 220/22kV Bhosari-I S/s to 220/22kV Century Enka S/s will be 41MVA approximately & the future upcoming load of fast-growing Bhosari MIDC will also be supplied from this proposed new EHV substation which is 25MVA. So, the total load of 220/22kV Century Enka S/s will be 66MVA. 220/22kV Century Enka S/s is commissioned for HT consumer M/s Century Enka having a sanctioned load of 33360 KW. Sufficient land is available for installation of 2X50MVA, 220/22kV T/Fs at 220/22kV Century Enka S/s.

The Estimated cost of the scheme is **₹ 3221.91 Lakh**. The scheduled commissioning year for said scheme is **FY 2025-26**

In view of the requirement to fulfill present & future MSEDCL demand, enhance system reliability, and present N-1 non compliance with due deliberations GCC ratified the scheme for inclusion in STU Plan.

4.109: Replacement of existing 80MVA, 220/132kV ICT by 100MVA, 220/132kV ICT at 220kV Hinganghat S/s under EHV O&M Division Nagpur

CE, STU placed before the GCC a proposal for "Replacement of existing 80MVA, 220/132kV ICT by 100MVA, 220/132kV ICT at 220kV Hinganghat S/s under EHV O&M Division Nagpur

CE, STU mentioned that the 220 kV Hinganghat Substation was commissioned in the year 2006. The current installed capacity of the substation at 220kV Hinganghat S/S is 180 MVA, consisting of 1 nos. of 80 MVA, 220/132 kV ICT, and 1 no of 100 MVA, 220/132 kV ICT.

220kV Hinganghat Substation caters to the load of Wardha District through a 132kV level network. The present maximum loading on ICT 2 is above 60 % of the installed capacity. 220KV Hinganghat S/s is feeding power to 132kV Jam S/s and 132kV ISMT (Now OMSAIRAM) CPP substations. Generally, at 220kV Hinganghat substation 220/132kV 100MVA ICT-2 is on load and

220/132kV 80MVA ICT-1 is kept on no load. 80MVA ICT-1 is put on load whenever there is any tripping, breakdown, or Shutdown on 220/132kV 100MVA ICT-2. Considering the loading condition of 220kV Hinganghat S/s of the last three years 2020-21 to 2023-24, it is observed that the load of approx. 10MW increased on 132kV.

CE, STU submitted that 220kV Hinganghat substation is attached with 40MW CPP generation of M/s ISMT (Now company name changed to OMSAIRAM Power Ltd.) on 132kV level. If this generation plant is under shutdown, it again adds an extra 40MW burden on this ICT. Also, the existing 200/132kV 80MVA ICT-1 is very old and completed its service more than 40 years after the initial commissioning.

As of now, 80 MW solar projects by M/s Ravindra Energy Ltd at 132kV Jam S/s and 100 MW Solar projects by M/s Utrayan Energy Brunswick Pvt.Ltd at 220kV Hinganghat S/s is sanctioned. If these solar projects are considered there will be overloading of 80 MVA, 220/132 kV under the contingency of 100 MVA, 220/132 220/132 kV ICT.

During an outage/Breakdown of either of the ICTs, the load is not managed on other ICTs i.e. not satisfying N-1 criteria. Considering the present loading condition, outage constraints and to satisfy N-1 criteria replacement of ICT is proposed at 220kV Hinganghat S/s. The Estimated cost of the scheme is **₹ 207.48 Lakh.** The scheduled commissioning year for said scheme is **FY 2025-26.**

In view of the requirement to fulfill present & future MSEDCL demand, enhance system reliability, and present N-1 non compliance with due deliberations GCC ratified the scheme for inclusion in STU Plan.

4.110: Replacement of existing 50MVA, 220/132kV ICT by 100MVA, 220/132kV ICT at 220kV Gadchiroli S/s under EHV O&M Division Ballarshah

CE, STU placed before the GCC a proposal for the Replacement of existing 50MVA, 220/132kV ICT by 100MVA, 220/132kV ICT at 220kV Gadchiroli S/s under EHV O&M Division Ballarshah.

CE, STU mentioned that the 220kV Gadchiroli Substation was commissioned in 2004. The current installed capacity of the substation at 220kV Gadchiroli S/S is 150 MVA, consisting of 1 of 50 MVA, 220/132 kV ICT and 1 no. of 100 MVA, 220/132 kV ICT.

220kV Gadchiroli substation caters to the load of Gadchiroli and Chandrapur districts through the 132kV network. Previously 132kV Bramhapuri S/s was fed through the link line from 132kV Asgaon S/s. But after the commissioning of the 132kV Bramhapuri-Sindewahi link line same is fed from 220kV Gadchiroli S/s instead of 132KV Asgaon S/s, considering 220KV Gadchiroli S/s is the strong source.

CE, STU highlighted that If any major shutdown or any tripping occurred on 100MVA, 220/132kV ICT it is very difficult to manage the load of 132kV network through 50MVA, 220/132KV ICT-1 at Gadchiroli substation. There may be chances of overloading of 50MVA, 220/132KV ICT-1.

In case of failure of the 132KV Virur-Ashti circuit from the 220KV Virur substation due to any tripping or major breakdown, a complete load of 132kV substations (Allapalli, Ashti, Chamorshi, Mul, Sindewahi, Bramhapuri) will be fed through 220KV Gadchiroli substation via 100MVA, 220/132kV ICT-II. Hence there is the possibility of overloading of said 100MVA,220/132kV ICT. Further in the same situation, if 100MVA, 220/132KV ICT-II is not available or under shutdown

then 50MVA,220/132kV ICT-1 cannot cater to the complete load. Hence 50MVA, 220/132kV ICT is needs to be replaced with 100MVA, 220/132kV ICT at 220kV Gadchiroli S/s

CE, STU further highlighted that 220KV Gadchiroli substation is attached with 10MW Biomass generation of M/s Vayunandana power Ltd. on 132kV level. If this generation plant is under shutdown, it again adds an extra 10MW burden on this ICT. Also, the load cannot be bifurcated on both ICTs as only a single 132kV Mul feeder is emanating from 220kV Gadchiroli S/s. Hence complete load is shared by single 100MVA,220/132kV 100MVA ICT at 220kV Gadchiroli S/s.

The average Maximum loading on 100 MVA, 220/132kV ICT 2 is above 70 % of its capacity. During outage/Breakdown of 100 MVA, 220/132kV ICT 2 load is not managed on 50MVA, 220/132kV ICT i.e. not satisfying N-1 criteria.

Considering the present loading condition, outage constraints and to satisfy N-1 criteria, the replacement of ICT is proposed at 220kV Gadchiroli S/s. The Estimated cost of the scheme is **₹ 256.55 Lakh**. The scheduled commissioning year of the cited scheme is **FY 2025-26.**

In view of the requirement to fulfill present & future MSEDCL demand, enhance system reliability, and present N-1 non compliance with due deliberations GCC ratified the scheme for inclusion in STU Plan.

4.111: Replacement of existing 2 X (200-100) MVA, 220/132 kV ICTs at 220kV Butibori S/s under EHV (O&M) Division Nagpur

CE, STU placed before the GCC a proposal for the Replacement of existing 2 X (200-100) MVA, 220/132 kV ICTs at 220kV Butibori S/s under EHV (O&M) Division Nagpur

CE, STU mentioned that the Butibori Substation was commissioned in the year 1994. The current installed capacity of the substation at 220 kV Butibori S/S is 200 MVA, consisting of 2 nos. of 100 MVA, 220/132 kV ICTs. The 220kV Butibori II S/s caters to urban, MIDC, and Rural areas of Nagpur City. Also, 2 X100 MVA, 220/132kV ICTs at 220 kV Butibori I substation are feeding Nagpur Ring main via 132kv Butibori – Khapari Ckt 1 & 2.

The average maximum loading on all the ICTs is above 85 % of installed capacity. During an outage/Breakdown of either of the ICTs, the load is not managed on other ICTs i.e. not satisfying (N-1) criteria. Considering the present loading condition, outage constraints and to satisfy N-1 criteria replacement of ICTs is proposed at 220kV Butibori-1 S/s. The Estimated cost of the scheme is **₹ 2443.30 Lakh.** The scheduled commissioning year for the cited scheme is **FY 2024-25.**

In view of the requirement to fulfill present & future MSEDCL demand, enhance system reliability, and present N-1 non compliance with due deliberations GCC ratified the scheme for inclusion in STU Plan.

4.112: Addition of 1 X 25 MVA, 220/33 kV T/F along with HV and LV bays, conversion of 33kV bus into twin bus by 0.4 twin conductor and 33 kV Bus sectionaliser at 220 kV Umred S/s under EHV (O&M) Division Nagpur

CE, STU placed before the GCC a proposal for the Addition of 1 X 25 MVA, 220/33 kV T/F along with HV and LV bays, conversion of 33kV bus into twin bus by 0.4 twin conductor and 33 kV Bus sectionaliser at 220 kV Umred S/s under EHV (O&M) Division Nagpur.

CE, STU submitted that the 220kV Umred Substation was commissioned in the year 2007. The current installed capacity of the substation at 220kV Umred S/S is 50 MVA, consisting of 2 nos of 25 MVA, 220/33 kV T/Fs. 220kV Umred S/s substation caters to the load of Part of Nagpur District covering Umred/ Bhiwapur/Kuhi Tehsils through 2 nos. of 25 MVA 220/33kV T/Fs. Maximum loading on both the T/Fs is above 90 % of installed capacity. The proposed scheme fulfills the augmentation scheme criteria. During an outage/Breakdown of either of the T/F, the load is not managed on the other T/F i.e. not satisfying N-1 criteria.

Considering the present loading condition, future load, and outage constraints and to satisfy N-1 criteria, the addition of T/F is proposed at 220 kV Umred S/s. The Estimated cost of the scheme is **Rs. 706.49 Lakh.** The scheduled commissioning of the cited scheme is in **FY 2025-26.**

In view of the requirement to fulfill present & future MSEDCL demand, enhance system reliability, and present N-1 non compliance with due deliberations GCC ratified the scheme for inclusion in STU Plan.

4.113: Addition of 1 X 50 MVA, 132/33 kV T/F along with HV and LV bays and allied civil works at 132kV Mouda S/s under EHV (O&M) Division Nagpur

CE, STU placed before the GCC a proposal for the "Addition of 1 X 50 MVA, 132/33 kV T/F along with HV and LV bays and allied civil works at 132kV Mouda S/s under EHV (O&M) Division Nagpur"

CE, STU mentioned that the 132 kV Mouda Substation was commissioned in the year 1989. The current installed capacity of the substation at 132kV Mouda S/S is 100 MVA, consisting of 2 nos. of 50 MVA, 132/33 kV T/Fs. 132kV Mouda Substation caters to the load of the industrial, rural, and agricultural of Mouda Tehsil and part of Nagpur District through 2 nos. of 50 MVA, 132/33 kV T/Fs. Also, 132kV Mouda S/s is supplying power to major 132kV EHV consumers like Reliance, Hindalco (Aditya Birla), NTPC and 33 kV EHV consumers like Visaka, Haldirams, DPL, 33kV Mouda S/s, 33kV Gumthala S/s, 33 kV Wadoda S/s, 33 kV Chafegadi S/s, 33kV Chirwa S/s.

CE, STU submitted that currently, MSEDCL has operating various schemes such as additional Infra II, DDUGJY, East Vidarbha Infra I, and IPDS. Hence there is the possibility of an increase in the 33 kV Bus load. The present maximum loading on both the T/Fs is about 70 % of the installed capacity. During an outage/Breakdown of either of the T/F, the load is not managed on the other T/F i.e. not satisfying N-1 criteria. The proposed scheme fulfills the augmentation scheme criteria. Considering the present loading condition, outage constraints and to satisfy (N-1) criteria additional

T/F is proposed at 132kV Mouda S/s. The Estimated cost of the scheme is **Rs. 642.17 Lakhs.** The scheduled commissioning of the cited scheme is in **FY 2025-26.**

In view of the requirement to fulfill present & future MSEDCL demand, enhance system reliability, and present N-1 non compliance with due deliberations GCC ratified the scheme for inclusion in STU Plan.

4.114: Replacement of existing 2 X 25 MVA, 220/33 kV T/Fs by 2 X 50 MVA, 220/33 kV T/Fs at 220kV Kanhan S/s under EHV (O&M) Division Nagpur

CE, STU placed before the GCC a proposal for Replacement of existing 2 X 25 MVA, 220/33 kV T/Fs by 2 X 50 MVA, 220/33 kV T/Fs at 220kV Kanhan S/s under EHV (O&M) Division Nagpur.

CE, STU mentioned that The 220kV Kanhan Substation was commissioned in the year 1988. The 220kV Kanhan S/s caters to an industrial and rural load of Kanhan & Mouda Tehsil through 2 x 25 MVA 132/33kV T/Fs. The average maximum loading on all the T/Fs is about 65 % of the installed capacity.
Currently, MSEDCL has operating various schemes such as additional Infra II, DDUGJY, East Vidarbha Infra-I, and IPDS. Hence there is the possibility of an increase in the 33 kV bus load.

During an outage/Breakdown of either of the T/F, the load is not managed on the other T/F i.e. not satisfying (N-1) criteria. Considering the present loading condition, outage constraints and to satisfy N-1 criteria replacement of T/Fs is proposed at 220kV Kanhan S/s. The Estimated cost of the scheme is **₹ 642.17 Lakh.** The scheduled commissioning year of the cited scheme is **FY 2025-26.**

In view of the requirement to fulfill present & future MSEDCL demand, enhance system reliability, and present N-1 non compliance with due deliberations GCC ratified the scheme for inclusion in STU Plan.

4.115: Additional 50MVA,132/33kV T/F alongwith HV & LV bays, conversion of 33kV bus into twin twin bus and 33 kV Bus sectionaliser at 132kV Saoner S/s under EHV O&M Division Nagpur

CE, STU placed before the GCC a proposal for an additional 50MVA,132/33kV T/F along with HV & LV bays, conversion of 33kV bus into twin bus and 33 kV Bus sectionaliser at 132kV Saoner S/s under EHV O&M Division Nagpur.
CE, STU mentioned that the 132kV Saoner Substation was commissioned in the year 2000. The current installed capacity of the substation at 132kV Saoner S/s is 100 MVA, consisting of 2 of 50 MVA, 132/33 kV T/Fs. 132kV Saoner substation caters to the part of Nagpur District covering Saoner Tehsil by 33 kV feeders i.e. 33kV Saoner-1, 33kV GTn (Cotton Mill), 33kV Saoner-3, 33kV Patansawangi, 33kV Khapa, 33kV Umari, 33 kV Kelod, 33kV Saoner MIDC, 33kV Mohapa, 33kV Nanda, 33 kV Gati (Adani feeder). As major industrial loads are connected on 132kV Saoner S/s, this substation is very crucial for Saoner Taluka under Nagpur District.

CE, STU highlighted that there are various schemes operated by MSEDCL such as additional Infra-II, DDUGJY, East Vidarbha, infra 1 & IPDS, and 2 no. 33 kV spare bay available that can be charged in the future. This will result in an increase in 33 kV bus loading at the sub-station. In case of outage/breakdown of any one of the T/F loads is not managed on another 50MVA, 132/33kV T/F i.e. not satisfying N-1 criteria.

Considering the present loading condition, and outage constraints, to satisfy N-1 criteria and to cope with the future load demand, the addition of T/F is proposed 132kV Saoner S/s. The Estimated cost of the scheme is **₹ 689.53 Lakh.** The scheduled commissioning of the cited scheme is **FY 2025-26.**

In view of the requirement to fulfill present & future MSEDCL demand, enhance system reliability, and present N-1 non compliance with due deliberations GCC ratified the scheme for inclusion in STU Plan.

4.116: Replacement of existing 2X25MVA, 132/33kV T/Fs by 2X50MVA, 132/33kV T/Fs at 132kV Seloo S/s under EHV O&M Division Wardha.

CE, STU placed before the GCC a proposal for "replacement of existing 2X25MVA, 132/33kV T/Fs by 2X50MVA, 132/33kV T/Fs at 132kV Seloo S/s under EHV O&M Division Wardha".

CE, STU mentioned that the 132 kV Seloo Substation was commissioned in 1985. The current installed capacity of the substation at 132kV Seloo S/s is 50 MVA, consisting of 2 nos. of 25 MVA, 132/33 kV T/Fs.

During the month of October to March period when there is an Agriculture schedule, both the transformers get critically loaded above 80%, however, MVAR drawl is within acceptable limit (less than 30%). At 132kV Seloo S/stn presently total of 8 Nos. of 33kV feeders bays are available. Out of which 06 Nos. of bays are utilized for 1)33kV Seloo, 2) 33kV Dattpur, 3) 33kV Shri Sainath, 4) 33kV Higani, 5) 33kV Seldoh, 6) 33kV Wardha feeders & 2 Nos. of 33kV bays are spare.

Further, as informed by the MSEDCL, Wardha, 01 No. 33kV bay is required for 33kV Kotamba S/stn (1X5MVA) of MSEDCL proposed under the RDSS scheme.

CE, STU highlighted that as space is not available for installation of 3rd 25MVA,132/33kV T/F at 132kV Seloo S/stn, it is decided to replace both 25MVA, T/Fs with 50MVA. The proposal fulfills the augmentation scheme criteria. In case of an outage/breakdown of either of the T/F, the load is not managed on the other T/F i.e. not satisfying N-1 criteria. Considering the present loading condition, and outage constraints, to satisfy N-1 criteria and to cope with the future load demand replacement of T/Fs is proposed at 132kV Seloo S/s. The Estimated cost of the scheme is **₹ 995.19 Lakh.** The scheduled commissioning of the cited scheme is **FY 2025-26.**

In view of the requirement to fulfill present & future MSEDCL demand, enhance system reliability, space constraints and present N-1 non compliance with due deliberations GCC ratified the scheme for inclusion in STU Plan.

4.117: Replacement of old existing 0.4 ACSR conductor by High Performance Conductor (HPC) along with suitable hardware, accessories for 220 kV Chinchwad-2-Chakan Line and 220 kV Bhosari 1-Chakan Line along with strengthening of bays at 220 kV Chinchwad-2, 400 kV Chakan and 220 kV Bhosari-I S/Stn by replacement of 0.4ACSR single conductor by HPC & allied equipment, hardware under EHV O&M Division, Pimpri Chinchwad, Pune.

CE, STU placed before the GCC a proposal for the Replacement of the old existing 0.4 ACSR conductor by High-Performance Conductor (HPC) along with suitable hardware, accessories for 220 kV Chinchwad-2-Chakan Line and 220 kV Bhosari 1-Chakan Line along with strengthening of bays at 220 kV Chinchwad-2, 400 kV Chakan and 220 kV Bhosari-I S/Stn by replacement of 0.4ACSR single conductor by HPC & allied equipment, hardware under EHV O&M Division, Pimpri Chinchwad, Pune.

CE, STU explained that Bhosari is the most developing industrial area. It is one of the biggest MIDCs in Pune region. Due to industrialization, load growth is at its peak. Recently data center of Microsoft Company is getting established in Bhosari industrial area. Data centre load is around 155MW+74MW

CE, STU mentioned that Microsoft intends to establish more data centers which may need a power demand around 1GW. Therefore strengthening the source line is very essential to meet the further load requirement at Bhosari, hence strengthening of 220kV Bhosari 1- Chakan Line by HPC stringing should be done to cater to the power flow. EHV lines are mainly in the most developing area of Pimpri Chinchwad Municipal Corporation and Hinjewadi IT Hub. Also, these lines feed power in one of the biggest MIDCs in Bhosari etc. At present, development is at full speed under PCMC. there is consistent increase in demand year on year basis. At present, the 220 kV Chinchwad - Urse line is one of the main source lines for 220 kV Chinchwad 1 S/s. It is a heavily loaded line and has frequent overloading online. In the month of May 2023, Max MW/Amp was 260MW /766 Amp.

Due to this overloading problem, DLS needs to be implemented as per system conditions. For e.g. in the last summer season, a DLS of 60 MW was implemented on 22.05.2023. Due to the overloading of the 220 kV Chinchwad Urse line, there are frequent LTS operations at Chinchwad 1 S/s to avoid the tripping of the line. For controlling the load on the 220 kV Urse- Chinchwad line, it is daily practice to hand trip 220 kV Chinchwad- Hinjewadi 1 line. Due to this, all EHV S/Stns in the Hinjewadi pocket and Pirangut S/Stn (total 180 MW) are fed radially. 220 kV Chakan-Chinchwad 2 will act as a strong source to 220 kV Chinchwad 1, Telco, 132 kV Rahatani, Varasgaon & NCL S/Stns, and Hinjewadi IT pocket. In view of the above aspects, the replacement of the existing conductor of the 220 kV Chinchwad 2- Chakan line by HPC is proposed.

The SE, SLDC(Operations), highlighted that said lines existing towers (Up to Bus cross-arm) are of M.S. As the work is to be carried out with HPC, therefore, we are expecting more than 25 years of life of the line from the present year, then, the present condition of existing towers to be examined.

In view of the up gradation of the source line to mitigate the present & future load requirement of Data Centers, to address the overloading problems, minimizing the frequent LTS operations, enhance system reliability and stability with due deliberations, GCC ratified the scheme for inclusion in STU Plan subject to the further verification and strengthening /replacement of the existing deteriorated towers.

4.118: Replacement of existing twin conductor, insulators, all accessories & hardwares by High Ampacity twin HPC conductor equivalent to 0.5 Moose conductor along with insulators & suitable hardwares & accessories of 400 kV Talegaon (PG) to Chakan line (17.8km) along with associated bay strengthening work at 400 kV Chakan R.S. under Pune Zone.

CE, STU placed before the GCC a proposal for the Replacement of the existing twin conductor, insulators, all accessories & hardware by High Ampacity twin HPC conductor equivalent to 0.5 Moose conductor along with insulators & suitable hardware & accessories of 400 kV Talegaon (PG) to Chakan line (17.8km) along with associated bay strengthening work at 400 kV Chakan R.S. under Pune Zone.

CE, STU mentioned that 400 kV Chakan R.S. is having two transmission lines, i.e. 400 kV Talegaon (PG) to Chakan & 400 kV Lonikand to Chakan line. Both lines have been in service since dtd. 23/03/1992.

The thermal limit of 0.5 ACSR Twin Moose Conductor of both lines is 1600A. After serving for more than 30 years, due to the aging effect, and continuous heavy loading conditions, the sag of the conductor of both lines increased in many spans. It also resulted in rusting/erosion of the socket balls of existing disc insulators & ultimately it also resulted in the tripping of lines a number of times. The peak loading observed in the recent condition of 400 kV Talegaon (PG) to Chakan is around 1350 A. In case of breakdown on the 400 kV Lonikand to Talegaon PG line, the loading of 400 kV

Talegaon (PG) to Chakan R.S. exceeds 1400 A & LTS operates. Industrialization and urbanization of Pune is at its peak and the transmission system does not have the capacity to catch up with this rising demand or future demand. In view of the above, it has been decided to carry out the replacement of the existing 0.5 Moose conductor with a High Ampacity Conductor with less sag along with its associated hardware as well as Accessories, etc. The Estimated cost of the scheme is **₹ 6878.97 Lakh.**

In order to meet the present & future load requirement, to address the overloading problems, eliminate the frequent LTS operations, enhance system reliability and stability with due deliberations, GCC ratified the scheme for inclusion in STU Plan

4.119: Accord of Administrative Approval for the scheme of Second Circuit Stringing on a) 132kV Mandrup – Karajgi, b) 132kV Akkalkot – Karajgi, c) 132kV Jeur-Parewadi d) 220 kV Lamboti- Vairag SCDC lines along with construction of associated end bays under Pune zone.

CE, STU placed before the GCC a proposal for Accord of Administrative Approval for the scheme of Second Circuit Stringing on a) 132kV Mandrup – Karajgi, b) 132kV Akkalkot – Karajgi, c) 132kV Jeur-Parewadi d) 220 kV Lamboti- Vairag SCDC lines along with construction of associated end bays under Pune zone

a) 132kV Mandrup – Karajgi line

&

b) 132kV Akkalkot – Karajgi line

132kV Karajgi Substation commissioned on dt: 14.12.2012, having installed capacity of 2x25MVA 132/33kV T/F i.e. 50 MVA at present. This substation is fed through the 132kV Akkalkot-Karajgi SCDC line from 132kV Akkalkot Substation & 132kV Mandrup-Karajgi SCDC line from 132kV Mandrup Substation.

At present 230 MW, 50 MW & 88.5 MW RE generation is connected to 132 kV Akkalkot, 132 kV Karajgi & 132 kV Mandrup substations respectively. Furthermore, the 132kV Wagdari substation, which is fed from the 132kV Akkalkot source, is also located in the same renewable energy (RE) corridor. It is associated with 230 MW of RE generation.

This generation has two paths for incorporation into the grid: namely, the 132kV Waghdari-Akkalkot-Gokul Sugar-Kumbari-Bale route or the 132kV Akkalkot-Karajgi-Manrup route. In the event of a tripping or outage of the 132kV Akkalkot-Gokul Sugar line, the entire flow of this RE generation is rerouted through the Akkalkot-Karajgi-Manrdup corridor.

Any tripping/breakdown of any of the lines within the Akkalkot-Karajgi-Manrdup RE corridor results in the backing down of RE generation.

Due to the lack of available transmission margin and overloading of the existing transmission network, grid connectivity for these new upcoming RE generation projects is currently on hold...

Hence, to address the current transmission constraints and enable power evacuation from the RE projects, MSETCL mentioned that STU has recommended giving top priority to the completion of the DCDC line work.

c) 132kV Jeur-Parewadi line:

CE, STU submitted that the 132kV Parewadi Substation was commissioned in June 2000, with an installed capacity of 2x25 MVA 132/33kV transformers, totaling 50 MVA. Currently, this substation is supplied through the 132kV Jeur-Parewadi SCDC line from the 220kV Jeur Substation.

Situated in a remote area, the substation lacks an alternative power source in case of a breakdown or outage of the 132kV Jeur-Parewadi line, thus failing to meet the N-1 criteria.

The 132kV Parewadi Substation serves a portion of Karmala Taluka, primarily catering to agricultural loads located on the banks of the Ujani Dam backwater.

The maximum load recorded at the substation during 2018-19 was 26.65 MW.

Furthermore, grid connectivity for a railway traction substation on a radial feeder from the 132kV Parewadi Substation has been sanctioned. To provide a second power source, it is necessary to carry out a second circuit stringing on the existing 132kV Jeur-Parewadi SCDC line.

d) 220 kV Lamboti- Vairag line :

CE, STU explained that the 220kV Vairag Substation has an installed capacity of 2x25 MVA 220 kV/ 33kV transformers, totaling 50 MVA. Currently, it is supplied through the 400kV Lamboti Substation via the 220kV Lamboti-Vairag Ckt-I. The substation is situated in a remote area, with no alternative power source available in case of a breakdown or outage of the 220kV Lamboti-Vairag line, thus not meeting the N-1 criteria.

The substation serves parts of Barshi, Madha, and North Solapur Taluka, primarily catering to agricultural loads. The maximum load recorded at the substation during 2021-22 was 40.00 MW.

In addition, a 100 MW solar generator from M/s Avada Solar was commissioned on August 3, 2022, and connected to the 220kV Vairag Substation through a 220kV radial line. M/s Avada Solar is planning for solar power extension, which will further increase renewable energy (RE) evacuation at the 220kV Vairag Substation. M/s Avada has already been approved for 100 MW of

solar generation, and they have proposed an additional 40 MW. **The Estimated cost of the scheme is ₹ 3232.11 Lakh.**

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 with due deliberations, GCC ratified the scheme for inclusion in STU Plan

4.120: Replacement of old existing 0.4 deer ACSR conductor by equivalent CCC HTLS conductor along with suitable hardware, accessories, porcelein long rod insulator and equipment for 220kV GCR (Eklahare) - Babhleshwar Ckt-1 (Line length -83.57km) & Ckt-2 (Line length -83.57km) along with end bay work at 220kV GCR SS & 400kV Babhleshwar SS under EHV PC O & M Zone, Nashik.

CE, STU placed before the GCC a proposal for the Replacement of the old existing 0.4 deer ACSR conductor by an equivalent CCC HTLS conductor along with suitable hardware, accessories, porcelain long rod insulator, and equipment for 220kV GCR (Eklahare) - Babhleshwar Ckt-1 (Line length -83.57km) & Ckt-2 (Line length -83.57km) along with end bay work at 220kV GCR SS & 400kV Babhleshwar SS under EHV PC O & M Zone, Nashik

CE, STU explained that presently 220kV GCR (Eklahare) –Babhaleswar Ckt-I & Ckt-II line are two main sources of power supply feeding power to 220 kV GCR Sub-Station from 400kV Babhaleswar Sub-station.

The 220kV GCR-Babhaleshwar Ckt-I & Ckt-II play a very important role in maintaining of supply to the 132 kV ring main grid of Nashik District, also it exports power to Mumbai. 220kV GCR (Eklahare) –Babhaleswar Ckt-I has completed more than 45 years and 220kV GCR (Eklahare) – Babhaleswar Ckt-II has completed more than 33 years. Due to higher power demand, the line is continuously supplying 700 Amp to Nashik and sometimes it goes up to 110 % of its capacity, the current carrying capacity of the conductor is 800 Amperes.

Therefore, MSETCL proposed the Replacement of old existing 0.4 deer ACSR conductor by equivalent CCC HTLS conductor along with suitable hardware, accessories, porcelein long rod insulator and equipment for 220kV GCR (Eklahare) - Babhleshwar Ckt-1 (Line length -83.57km) & Ckt-2 (Line length -83.57km) along with end bay work at 220kV GCR SS & 400kV Babhleshwar SS under EHV PC O & M Zone, Nashik. The Estimated cost of the scheme is ₹ **15735.60 Lakhs.**

In order to meet the present & future load requirement, to address the overloading problems, Non N-1 compliance of the circuits enhance system reliability and stability with due deliberations, GCC ratified the scheme for inclusion in STU Plan Further GCC also noted that the work plan for the same should be worked our in detail and should utilise ERS to minimize outages and interruptions during execution.

4.121: Scheme of replacement of old existing 0.4 ACSR conductor by High Performance Conductor (CCC type HTLS conductor) along with suitable hardware, accessories of 220kV Bhosari-I- Bhosari-II, 220kV Bhosari-II-Telco, 220kV Bhosari-I- Century Enka, 220kV Century Enka-Khadki, 220kV Khadki-VSNL, 220kV VSNL-Lonikand-II & 220kV Bhosari-I-Lonikand-II lines along with strengthening of bays at respective substation & allied equipment, hardware under EHV O&M Circle, Pune

CE, STU placed before the GCC a proposal for Scheme of replacement of old existing 0.4 ACSR conductor by High Performance Conductor (CCC type HTLS conductor) along with suitable hardware, accessories of 220kV Bhosari-I- Bhosari-II, 220kV Bhosari-II-Telco, 220kV Bhosari-I-Century Enka, 220kV Century Enka-Khadki, 220kV Khadki-VSNL, 220kV VSNL-Lonikand-II & 220kV Bhosari-I-Lonikand-II lines along with strengthening of bays at respective substation & allied equipment, hardware under EHV O&M Circle, Pune

CE, STU placed before the GCC a proposal for Scheme of replacement of old existing 0.4 ACSR conductor by High Performance Conductor (CCC type HTLS conductor) along with suitable hardware, accessories of 220kV Bhosari-I- Bhosari-II, 220kV Bhosari-II-Telco, 220kV Bhosari-I-Century Enka, 220kV Century Enka-Khadki, 220kV Khadki-VSNL, 220kV VSNL-Lonikand-II & 220kV Bhosari-I-Lonikand-II lines along with strengthening of bays at respective substation & allied equipment, hardware under EHV O&M Circle, Pune

CE, STU explained that 400kV Talegaon(PG), Chakan, Lonikand-l & Lonikand-ll substations are feeding power supply to the 220kV network of the Pune Ring Main transmission system.

220kV Urse-Chinchwad, 220kV Chinchwad ll-Chakan, 220kV Chakan-Bhosari-I & 220kV Lonikand-Bhosari-I are the main trunk lines of power supply to Pune ring main. These lines are continuously operating in critical conditions due to the increase in loading in Pune District.

220kV Urse-Chinchwad is one of the main source lines to 220kV Chinchwad S/s carrying approx. 260MW continuously. lt has frequent LTS operations at Chinchwad-l s/s to avoid the tripping of this line. Due to the overloading problem, distress load shedding needs to be implemented as per system conditions. For controlling the loading on the 220kV Urse-Chinchwad line, it is required to hand trip the 220kV Chinchwad-Hinjewadi -l line. Due to this all EHV s/s under Hinjewadi MIDC pocket & Pirangut s/s are fed radially through 220kV Kandlagaon
s/s.

The work of the 220kV Chinchwad-Urse S/C line into the M/C line is in progress. For this work completion, there is a shutdown constraint on the 220kV Chinchwad-Urse line as a load of around 260MW could not be managed on the 220kV Chinchwad-Chakan line and other lines in the Pune Ring main.

Similarly, the 220kV Chakan-Bhosari-l S/C line & Lonikand II-Bhosari-I S/C line also act as the main power source line to the Pune Ring Main network. Any tripping or breakdown on either of the above line, results in an increase in loading on the 220kV Urse-Chinchwad line or 220kV Chinchwad-Chakan line.

Hence, to avoid the overloading of the Pune Ring Main network LTS is implemented on 220kV Chinchwad-Urse, 220kV Chinchwad-Chakan, 220kV Chakan-Bhosari-I & 220kV Lonikand-Bhosari-I line.

Further, M/s. Microsoft Corporation & STT Global data center's load demand is coming in the near future which will be fed through 220kV Bhosari-1, Centruty Enka & VSNL substations under PRM Network which will increase the loading of EHV lines of Pune Ring Main Network.

The rapid urbanization & industrialization of Pune city & nearby areas are at their peak and the present transmission system is stretched beyond its capacity to match the rising load demand.

Considering the present loading constraints & to cope with increased load demand it is required the conversion of the existing conductor of 220kV lines under PRM by a high-performance conductor.

The SE, SLDC(Operations), opined that the present condition of existing towers is to be re-verified before the execution of the replacement of the old conductor by HPC. The Estimated cost of scheme is **₹ 9000 Lakh.**

In view of the upgradation of the source line to mitigate the present & future load requirement of Data Centers, to address the overloading problems, minimizing the frequent LTS operations, enhance system reliability and stability with due deliberations, GCC ratified the scheme for inclusion in STU Plan subject to the further verification and strengthening /replacement of the existing deteriorated towers.

4.122:
Scheme for:
1) Work of replacement of existing 0.4 ACSR Conductor by equivalent High-Performance conductor of 220KV Kalwa-Colorchem, 220kv Kalwa-Temghar & 220kv Colorchem-Temghar Line under EHV O&M Division Kalwa under EHV O&M Circle Kalwa.
2) Bay strengthening work of 220Kv Temghar - Kalwa, 220KV Temghar – Colourchem line and 220kV Kalwa- Temghar bays at 220/22 kv Temghar substation, 220kV Colorchem Substation, 400kV Kalwa Substation and 220kV Kalwa Substation under EHV O&M Circle Kalwa.

CE, STU placed before the GCC a proposal for the scheme:
1) Work of replacement of existing 0.4 ACSR Conductor by equivalent High-Performance conductor of 220KV Kalwa-Colorchem, 220kv Kalwa-Temghar & 220kv Colorchem-Temghar Line under EHV O&M Division Kalwa under EHV O&M Circle Kalwa.
2) Bay strengthening work of 220Kv Temghar - Kalwa, 220KV Temghar – Colourchem line and 220kV Kalwa- Temghar bays at 220/22 kv Temghar substation, 220kV Colorchem Substation, 400kV Kalwa Substation and 220kV Kalwa Substation under EHV O&M Circle Kalwa.
CE, STU submitted that the 220kV Kalwa- Temghar line was commissioned in 1969 and has been in operation for 50 years. The (LILO) connection at the Colourchem sub-station was established in 1994, making it LILO portion 25 years old. Consequently, the life of the main line conductor is now exhausted.
The load growth in the Thane, Kalyan, and Bhiwandi areas has been consistently increasing. Most transformers are experiencing higher loads. A study of the minimum and maximum loading data for the 220kV Kalwa-Colorchem line reveals that a maximum current of 680 Amps flows through the line, approaching the full Ampere capacity of the conductor.
Considering this data, it is evident that the present power transmission capacity of the 220kV Kalwa-Colorchem line may not be sufficient to meet the future power load demand and growth. The line consistently transmits power at levels exceeding 500 Amps, indicating the need for the upgradation of the conductor to accommodate the increasing demand for power.

b) 220kV Kalwa – Temghar Line:

CE, STU submitted that the 220kV Kalwa-Temghar main line was commissioned in 1969. Consequently, the life of the main line conductor is now above 50 years.
CE, STU highlighted The load growth in the Thane, Kalyan, and Bhiwandi areas has been consistently increasing, leading to a gradual increase in the load. A study of the minimum and maximum loading data for the 220kV Kalwa-Temghar line indicates that a maximum current of 700 Amps flows through the line.
Over the past six months, the maximum current has varied between 650 Amps and 750 Amps, which is close to the full Ampere capacity of the conductor. Hence, it is clear from available data that the power transmission capacity of the 220kV Kalwa-Temghar line may not be sufficient to meet future power load demand and growth. The line consistently transmits power at levels

exceeding 650 Amps, highlighting the need for the upgradation of the conductor to accommodate the increasing demand for power.

C) 220kV Colorchem – Temghar Line :

CE, STU submitted that the 220kV Colorchem-Temghar main line(up to LILO point), commissioned in 1969, is now 50 years old, and the (LILO) connection was done in 1994, making it 29 years old.

CE, STU highlighted that load growth in the Thane, Kalyan, and Bhiwandi areas has been consistently increasing, leading to a gradual rise in the load. A study of the minimum and maximum loading data for the 220kV Colorchem-Temghar line reveals that a maximum current of 700 Amps flows through the line. Over the past six months, the maximum current has varied between 550 Amps and 700 Amps, which is close to the full Ampere capacity of the conductor.

Considering this data, it is apparent that the power transmission capacity of the 220kV Colorchem-Temghar line may not be sufficient to meet future power load demand and growth. The line consistently transmits power at levels exceeding 600 Amps, indicating the need for the upgradation of the conductor to accommodate the increasing demand for power.

In view of the above, it is proposed to replace the existing 0.4 ACSR Deer (Mainline) and Zebra (LILO line) with the High-Performance HPC conductor. This strategic replacement aims to uphold the quality of the power supply and adequately address the anticipated growth in future power demands. The Estimated cost of cited scheme is **₹ 6519.36 Lakh.**

In order to meet the present & future load requirement, to address the overloading problems, enhance system reliability and stability with due deliberations, GCC ratified the scheme for inclusion in STU Plan

4.123 : Establishment of 132/33kV Ajani bk S/s Ta. Shirur Anantpal, Dist. Latur

CE, STU placed before the GCC a proposal for the Establishment of 132/33kV Ajani bk S/s Ta. Shirur Anantpal, Dist. Latur

CE, STU submitted that at present 132/33 KV Nilanga,132/33KV Udgir & 132/33KV Chakur EHV Substations fed power supply to Shirur Anantpal, Udgir & Chakur Talukas. The loading is 87%, 96%, and 83% respectively. Due to lengthy 33kv feeders, the problem of low voltage arises. The existing distance from existing EHV substations & proposed EHV substation is 28 km, 42km & 35 km also the voltage regulation of some of the lengthy feeders are as under:- 19 Ujed, 19% Zari, 9% Devranjan, 19% Deoni, 7% Ujalamb.

The distance between the 132Kv Ajani substation from adjacent s/stn i.e. 132 KV Nilanga, 132KV Udgir &132kv Chakur which is 28km, 42km & 35km respectively. The new 132/33kv Ajani substation will help strengthen the network and avoid interruptions and line-loading problems. The low voltage problem shall be resolved. The consumers shall get reliable and quality supply. A new substation is proposed which is nearby 12km.

The creation of a new Ajani Bk substation will help strengthen the network and avoid the breakdown and overloading of the system. The low voltage problem will be resolved and consumers will get a reliable and quality supply. CE, STU highlighted that the establishment of

Ajni Bk EHV new s/s will be beneficial for binging source nearer to load pockets of shirur Anatpal Taluka, reduction in length of 33 Kv Feders. reduction in line interruption/breakdowns thereby reducing line losses, and improving voltage regulation of the Shirur Aanantpal area. In view of the above facts, the proposal for the establishment of a new 132/33 KV Ajani substation has been submitted to the GCC committee. The Estimated cost of the scheme is ₹ **6369.41 Lakh**. The Scheduled Commission year for scheme is **FY 2025-26.**

Considering the additional load requirement of MSEDCL, re-orientation of existing load and voltage Regulation improvement, with due deliberations, GCC ratified the scheme for inclusion in STU Plan.

4.124 Establishment of 132/33 kV Bazargaon S/s Dist-Nagpur

CE, STU placed before the GCC a proposal for the establishment of 132/33 kV Bazargaon S/s Dist-Nagpur

CE, STU submitted that the Bazargaon area is fed from 132/33 kv Kalmeswar and 132/33 kv Katol substation.

The installed capacity on the 33Kv level emanating from 220/132/33KV, 100MVA Kalmeshwar ss is 142.09MVA. The maximum demand reached is 67.5MVA. The installed capacity on the 33Kv level emanating from 220/132/33KV, 75MVA Katol ss is 61.45MVA. The maximum demand reached is 61 MVA.

CE, STU highlighted that there is no space available at existing Kalmeshwar and Katol EHV s/s for the erection of additional power transformers further for the erection of additional 33kVfeeders at Kalmeshwar and Katol EHV s/stns. %VR at fag end is not in permissible limit and hence in case of emergency back feeding does not serve the purpose from any side due to low voltage. The %VR 47.21 for the Bazargaon feeder & 13.13 % for the Ramson feeder are not permissible.

Proposed 132 kV Bazargaon s/s is on Nagpur-Gondkhairy-Kondhali road. The area is in the vicinity of Bazargaon village and is fast developing as an Industrial/Solar/Agriculture center being on the National High Way of Nagpur city. after proposing 33kV ss in various new schemes, the present 33kv network is not sufficient to cater to this load efficiently.

The creation of a new Bazaragaon substation will help in strengthening the network and avoiding the breakdown and overloading of the system. The low voltage problem will be resolved and consumers will get a reliable and quality supply.

Now the scheme is prepared for approval. The scheme for "Establishment of 132/33 kV s/s at Bazargaon, Dist.-Nagpur" was sanctioned vide BR No 119/09 dated 05.08.2017 for an amount of Rs 3211.54. As per resolution no 92/20 dt 19.08.2014, it is directed that all administrative approval needs to be revalidated after the lapse of 5 years from the date of administrative approval & in such cases the revalidation/fresh approval will be done by the competent authority.

Bazargaon Substation will help in strengthening the network and avoiding the breakdown and overloading of the system. The low voltage problem will be resolved and consumers will get a reliable and quality supply. The Estimated cost of scheme is **₹ 4611.00 Lakhs.** The Scheduled Commission year for scheme is **FY 2026-27.**

Considering the additional load requirement of MSEDCL, re-orientation of existing load and voltage Regulation improvement, with due deliberations, GCC ratified the scheme for inclusion in STU Plan.

4.125: Establishment of 132 /33 kV Pimpalner S/s, Taluka-Sakri. Dist-Dhule

CE, STU placed before the GCC a proposal for the Establishment of 132 /33 kV Pimpalner S/s, Taluka-Sakri. Dist-Dhule

CE, STU submitted that the installed capacity at EHV Substation Sakri is 150 MVA and the maximum load recorded on the substation is 78 MVA. There are a total of 12 Nos of substations connected to 132/33 kV Sakri S/stn having an installed capacity of 123.15 MVA. The installed capacity at EHV Substation 132/33 kV Taharabad is 50 MVA and the maximum load recorded on the substation is 32 MVA. There are a total of 04 Nos of substations connected to S/stn having an installed capacity of 45 MVA. The Length of the 33 kV Pimpalner feeder is 53 km from EHV Sakari S/s. The voltage received at 33/11 kV Umarpata is as low as 24.6 kV. The Length of 33 kV Balhane feeder is 20 km from EHV Taharabad S/stn. The voltage regulation of the feeder is 5.003 %.

After shifting these two feeders on the proposed 132/33 kV Pimpalner substation, the voltage regulation will improve. A total load of 55 MVA is proposed to be shifted on the new 132 kV Pimpalner S/stn which includes 45 MVA from 132 kV Sakri and 10 MVA from 132 kV Taharabad S/stn.

An increase of @ 20 MVA load is also anticipated by Discom in the near future. With the existing network of EHV and 33 kV, it is not possible to cater to this 75 MVA load. Hence to manage @ 75 MVA of existing and anticipated load and to avoid issues like the involvement of forest for emanating 33 kV feeders and also to facilitate RE power evacuation a new 132 kV S/stn connecting Dhule and Nashik district is required at Pimpalner.In view of the above facts, the proposal for the establishment of a new 132/33 KV Pimpalner substation is justified. The Estimated cost of the scheme is **₹ 11752.36 Lakh.** The Scheduled Commission year for scheme is **FY 2026-27.**

Considering the additional load requirement of MSEDCL, RE power evacuation, re-orientation of existing load and voltage Regulation improvement, with due deliberations, GCC ratified the scheme for inclusion in STU Plan.

4.126: Establishment of 132 /33 kV Deori S/s, Dist- Gondia

CE, STU placed before the GCC a proposal for the Establishment of 132 /33 kV Deori S/s, Dist-Gondia

CE, STU submitted that At present, Deori Taluka is fed from 132/33 kV Amgaon s/s having an installed capacity of 100 MVA, (2x50 MVA, 132/33 kV T/F) and the maximum load of 132/33 kV Amgaon s/s is 61.78 MW. Details of neighboring substations with installed capacity and corresponding loading are given below:

Sr. No.	Name of EHV s/s	Installed Capacity	Max Load (MVA)	% Loading
1.	132kV Amgaon	132/33kV, 2X50 MVA	61.78	61.78
2.	132 kV Gondia	132/33kV, 2X50 MVA,	47.69	47.69
		132/11kV, 1X25 MVA	23.15	92.6

The 33 kV Deori feeder is catering to the load of Amgaon, Salekasa, and Deori Talukas. Out of which Deori and Salekasa Talukas are highly Naxal-affected tribal areas surrounded by dense forest.

CE, STU highlighted that the installed capacity of 132/33 KV Amgaon s/s is 100 MVA and its maximum demand reached is 61.78 MVA. There are 8 nos. of 33 kV feeders emanating from 132/33 kV Amgaon s/s having 15 nos. of 33/11 kV substations.

There is 01 no. of proposed 33/11 kV substation on this EHV s/s with a capacity of 5 MVA capacity. (Proposed in RDSS scheme). The length of the 33 kV Deori feeder emanating from 132/33 kV Amgaon s/s is 85 km and voltage regulation on this lengthy feeder at the far end is 35.65%. Due to this, the consumers at the far end are facing very low voltage problems.

The area in the vicinity of the proposed 132/33 KV Deori EHV substation is AG loaded and fulfilled with 1) Keshori Water Reservoir, 2) Pujaritola Water Reservoir, 3) Shirpur Dam, 4) Kalisarad Dam, 5) Kotara Dam, 6) Nakta Futaba Water Reservoir.

As there is no EHV Substation at Deori, the formation of new EHV s/s will help in strengthening the network and avoiding the breakdowns and overloading of the system. The low voltage problems will be resolved and the consumers will get a reliable and quality supply.

In view of the above facts, the Sub-station of 132 /33 kV Deori S/s, Dist- Gondia, proposed by MSETCL. **The Estimated cost of scheme is ₹ 8711.43 Lakh.** The Scheduled Commission year for scheme is **FY 2027-28.**

Considering the additional load requirement of MSEDCL, re-orientation of existing load and voltage Regulation improvement, with due deliberations, GCC ratified the scheme for inclusion in STU Plan.

4.127: Establishment of 132kv level at 220/33kV Insuli S/s

CE, STU placed before the GCC a proposal for establishment of 132kv level at 220/33kV Insuli S/s.

CE, STU mentioned that Ratnagiri & Sindhudurg districts have rapid growth of tourism, and new important projects such as Refinery, Power Plants. Due to heavy rainfall, lightning & cyclones in Ratnagiri & Shindhudurg districts, the 220/132kV source line extended from 220kV Pedhambe s/s up to Kudal S/s trips frequently. The 110kV SC Radhanagari Kankavali line is old & passes through a hilly area, hence not a reliable alternative source. Kudal s/s goes into the dark in case of failure of any of the source lines.

Presently the total load of Kudal & Vengurla Taluka in Sindhudurg district is fed from 220/33 KV Insuli & 132/33 KV Kudal S/s. Kudal S/s. is fed from Kharepatan S/s., through 132 KV Kankawali – Kudal line.

CE, STU highlighted that in case of failure of this source due to tripping of 132 KV lines or Kharepatan S/s. there is no alternative EHV source for Kudal S/s. The existing 33 KV lines Sawantwadi & 33 KV Malewad lines emanating from Insuli S/s. cannot cater to the additional load of Kudal & Vengurla Tq. So Kudal, Vengurla, Malvan Tq. Goes into the dark. Due to this, the consumers in Sindhudurg District are facing problems.

As there is no alternative EHV source for Kudal S/s., the formation of a new construction of 132 KV DC link line from 132 KV Kudal S/s. to 220 KV Sawantwadi (Insuli) S/s. along with the end bay will help in strengthening the network and avoiding the breakdowns & overloading of the system. The consumers will get reliable and quality of supply.

The construction of 132 KV DC link line from 132 KV Kudal S/s to 220 KV Sawantwadi (Insuli) S/s. along with the end bay will help in strengthening the network and avoiding the breakdowns & overloading of the system. Hence to overcome the problem of Kudal, Vengurla, Malvan Tq. Which goes into the dark after tripping of 132 KV lines or Kharepatan S/s. also to get the reliability and quality of supply to the consumer, it is necessary to establish a new 132kV level at 220/33kV Insuli (Sawantwadi) S/stn. The Estimated cost of the scheme is **₹ 6136.09 Lakhs.** The Scheduled Commission year for scheme is **FY 2026-27.**

For 132 kV system strengthening, avoiding overloading & breakdowns, reliability, voltage Regulation improvement, with due deliberations, GCC ratified the scheme for inclusion in STU Plan.

4.128: Establishment of 220/132 /33 KV Waghdari S/s,Ta. Akkalkot,Dist. Solapur

CE, STU placed before the GCC a proposal for the Establishment of 220/132 /33 KV Waghdari S/s, Taluka- Akkalkot, Dist. Solapur

CE, STU explained 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, such as Sorigin-50 MW, and Sunsure-200 MW. In addition to this, the connectivity proposal is also submitted to the field office of the following developers: TS wind- 150 MW, Sunsure-100 MW, Infra-volt -100 MW, etc. i.e. altogether 600 MW of RE will be upcoming in the future. 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. The Estimated cost of the scheme is **Rs.15124.20 Lakh.** The Scheduled Commission year for scheme is **FY 2026-27.**

Considering the additional load requirement of MSEDCL, RE power evacuation, re-orientation of existing load and voltage Regulation improvement, with due deliberations, GCC ratified the scheme for inclusion in STU Plan.

4.129: Conversion of 132kV SCSC Sangamner – Babhaleshwar line into DCDC line in same corridor Tal- Sangamner/Akole , Dist-Ahmednagar by using ERS

CE, STU placed before the GCC a proposal for the Conversion of 132kV SCSC Sangamner – Babhaleshwar line into the DCDC line in the same corridor Tal- Sangamner/Akole, Dist-Ahmednagar by using ERS.

CE, STU mentioned that The 220 kV Babhaleshwar s/s is connected to 132 kV Sangamner s/s on the SCSC line. This line is commissioned on dtd. 28.03.1985 along with 132 kV Sangamner s/s. 132 kV Akole s/s was commissioned on dtd. 20.03.1993. The 132 kV Rajur s/s was commissioned in the year 15.03.2017.
Total load of 132 kV Sangamner, 132 kV Akole, 132 kV Rajur, 132 kV SMBT, 132 kV Kombhalne s/s is feeding from 220 kV Babhaleshwar s/s through existing SC on SC 132 kV Babhaleshwar-Sangamner line. Further, in case of an outage/tripping on the 132 kV BBLR Sangamner line, no alternate supply is available for the complete area of Akole and Sangamner taluka
CE, STU highlighted that while tripping on the 132 kV BBLR - Sangamner line, the 132kV Sangamner, Akole & Rajur substation gets affected. The maximum load of 132kV Sangamner S/s is 80.77 MVA, 132kV Akole S/s is 73.60 MVA and 132kV Rajur S/s is 30 MVA gets affected during the above breakdown/ trippings. 132 kV Khaprale and 132 kV Kumbhalne Generation is seasonal generation and not sufficient to cater load of Akole & Sangamner Taluka during tripping of existing BBLR Sangamner line. load of 132 kV BBLR-Sangamner line is increasing day by day. The maximum load reached on the 132 kV BBLR-Sangamner line is 549A.

This is a very old line having a 0.2 panther conductor. The total rated current carrying capacity of the 0.2 panther conductor is 487A. However, this conductor is very old and completed more than 33 years of service period. Hence it is not desirable to load the line at the rated current also. Further, it is not possible to extend the supply of 132 kV GCR-Sinnar old -Sangamner due to overloading of 132 kV GCR-Sinnar old line. Therefore it is proposed to convert the 132 kV Babhaleshwar- Sangamner SCSC line to the DCDC line (34 Ckm), by using ERS.
To overcome the issues of single source connectivity of 132 kV Sangamner s/s, the necessary second source needs to be established from 220 kV Babhaleshwar s/s. The Estimated cost of the scheme is **₹ 6575.10 Lakhs.** The Scheduled Commission year for scheme is **FY 2024-25.**

Considering the system stability & reliability with due deliberations, GCC ratified the scheme for inclusion in STU Plan

4.130: Establishment of 220/132 kV Igatpuri Substation by up-gradation of existing 132 kV Igatpuri Substation, Dist. Nashik

CE, STU placed before the GCC a proposal for the Establishment of 220/132 kV Igatpuri Substation by up-gradation of existing 132 kV Igatpuri Substation, Dist. Nashik.

CE, STU mentioned that Central Railway has initiated the proposal of renovation of 132/ 25 kV Railway yard in premises of 132 kV Igatpuri. In the new proposal railway is planning to augment, the existing transformer capacity from 2x 12.5 MVA to 2x30/42 MVA.

In addition to this, a new TSS at 132 kV Igatpuri of 30 MVA in Kalyan Circle was already approved by the corporate office. The existing transformer capacity is 132/25 kV, 12.5 MVA under the central Railway. However, the proposed transformer capacity is 132/25 kV, 30/42 MVA & will result in the addition of a new load. MSEDCL Load of around 25 MVA is expected to increase up to 40 MVA in upcoming years. Therefore, the total estimated load at 132kV Igatpuri Substation will be (MSEDCL load 40 MVA-3ph) 174 A + (Central Railway Kalyan Circle load 30 MVA-1 ph.) 227A+ (Central Railway Bhusawal Circle load 30MVA- 1ph, assumed load 30MVA) 227A= 628 A (total Load). This would be difficult to manage the load on a single 132kV Line in case of an outage on one of the circuits & it is difficult to take outages on 132kV Igatpuri-Raymond line, 132kV Igatpuri-Bhandardara stage-I Line, 132 kV GCR-Pachpatta line & for short duration to increase in load line may overload. Due to space constraints & following reasons, GIS is considered over AIS for, 220/132 kV Igatpuri Substation. Therefore, MSETCL proposed the scheme of eestablishment of 220/132 kV Igatpuri Substation by up-gradation of existing 132 kV Igatpuri Substation, Dist. Nashik. The Estimated cost of the scheme is **₹ 11633.53 Lakh.** The Scheduled Commission year for scheme is **FY 2025-26.**

For 220 kV system strengthening, to manage the additional load demand of Central railway, MSEDCL, reliability, voltage Regulation improvement with due deliberations, GCC ratified the scheme for inclusion in STU Plan.

4.131: Establishment of 132/33 kV Shiradwad S/s

CE, STU placed before the GCC a proposal for Establishment of 132/33 kV Shiradwad S/s.

CE, STU submitted that the Ichalkaranji Town & nearby area is fed from 220 kV Tilwani & 110 kV Ichalkaranji s/s. However load demand is continuously rising due to urbanization, growth of power loom industries etc. The power loom industries which is dominant, the load of this area requires 24x7 Hrs continuous supply.
To meet the current and future demand, the existing capacity of Kurundwad and Ichalkaranji EHV substation are insufficient. The capacity augmentation or addition power transformers at this existing EHV substation is not possible due to space constraints.
Hence, to avoid the problem of overloading of existing EHV substation and to get reliable and quality supply, it is necessary to establish new EHV substation in this area. This will help in strengthening the network and avoiding the interruptions, overloading problems. In order to meet the rising Load demand & to provide the reliable good supply to the consumers, MSEDCL has submitted the proposal for establishment of s/s at Shiradwad. The Estimated cost of scheme is **₹ 4243.63 Lakhs**. The Scheduled Commission year for scheme is **FY 2025-26.**

Considering the additional load requirement of MSEDCL, re-orientation of existing load and voltage Regulation improvement, with due deliberations, GCC ratified the scheme for inclusion in STU Plan.

4.132: Establishment of 132/33 kV Kurkheda S/s ,Ta. Kurkheda, dist. Gadchiroli

CE, STU placed before the GCC a proposal for the Establishment of 132/33 kV Kurkheda S/s, Ta. Kurkheda, dist. Gadchiroli

CE, STU mentioned that Presently Kurkheda area is fed from 132/33 kV Lakhandur s/s, 132/33 kV Bramhpuri s/s and 220/132/33 kV Gadchiroli s/s. Kurkheda taluka has no EHV substation. The existing 220/33KV Gadchiroli substation has having 50 MVA installed capacity. The connected load on this EHV substation is 93.9 MVA. The maximum demand reached is 37 MVA.

There are 6 nos. of 33 kV feeders emanating from 220/33 kV Gadchiroli S/s having 14 nos. of 33/11 kV substations. There are 2 nos of 33/11 kV proposed substation on Gadchroli EHV substation with 10MVA installed capacity. Thus, the total installed capacity will rise to 103.9 MVA against 50 MVA.
The length of the 33 kV Armori feeder emanating from 220 kV Gadchiroli S/s is 70 Km and its % VR is 24.99 %. The existing 132/33 KV Lakhandur substation is having 50MVA installed capacity. The connected load on the 33 kV level from 132/33 kV Lakhandur s/s is 68.15 MVA. The maximum demand reached is 40 MVA.

CE, STU highlighted that there are 6 nos. of 33 kV feeders emanating from 132/33 kV Lakhandur s/s having 10 nos. of 33/11 kV substations. There is 1 no 33/11 kV substation proposed on this EHV substation of 1x5 MVA capacity. Thus, the total installed capacity will rise to 73.15 MVA against 50 MVA.

The length of the 33 kV Sawangi feeder emanating from the 132 kV Lakhandur EHV substation is 92 Km and its % VR is 25.25 %. The existing 132/33 kV EHV Bramhapuri sub-station has having installed capacity of 100 MVA (2x50). The connected load on this EHV sub-station is 130 MVA. The maximum load recorded on the EHV Bramhapuri sub-station is 66 MVA. There are 9 nos 33 kV feeders emanating from 132/33 kV Bramhapuri sub-station having 12 nos. of 33/11 kV substations. There is 1 no of 33/11 kV of 1 X 5 MVA (Muzda), substation proposed on Brahmapuri EHV substation. Thus, the total installed capacity will rise to 135 MVA against 100.

The length of the 33 kV Wadsa feeder emanating from the 132 kV Brahmpuri S/s substation is 40 Km and its % VR is 10.46 %. The distance between 220 kV Gadchiroli to 132 kV Brahmpuri S/s is 56 km. The distance between 220 kV Gadchiroli to 132 kV Lakhandur is 72 km. The distance between 132 kV Lakhandur to 132 kV Brahmpuri S/s is 30 km. The distance from the proposed Kurkheda S/s to 220 kV Gadchiroli S/s, 132 kV Brahmpuri, and 132 kV Lakhandur are 79 km, 39 km, and 59 km respectively.

The distance between existing and proposed S/s is very long. Also, the 33 kV feeders emanating from existing EHV S/s are lengthy. The formation of new EHV s/s at Kurkheda will help in strengthening the network and avoiding the breakdowns & overloading of the system. The low voltage problems will be resolved and the consumers will get a reliable and quality supply. The Estimated cost of the scheme is **₹. 11675 Lakhs.** The Scheduled Commission year for scheme is **FY 2025-26.**

Considering the additional load requirement of MSEDCL, re-orientation of existing load and voltage Regulation improvement, with due deliberations, GCC ratified the scheme for inclusion in STU Plan.

4.133: Establishment of 220/22 kV Kopri HDIL S/s

CE, STU placed before the GCC a proposal for the Establishment of 220/22 kV Kopri HDIL S/s.

CE, STU submitted that MSEDCL had taken possession of 2.5 acres of land from M/s. Privilege Power and Infrastructure Pvt Ltd, according to the order passed by Hon'ble Bombay High Court on dtd 22.09.2021. The land required for the establishment of Kopri s/s is handed over by MSEDCL on dtd 29.10.2021.

CE, STU highlighted that the requirement for the proposed substation was received from the Director (Operation), MSEDCL vides letter no.04733, dtd. 28.02.2022, regarding the establishment of 220/22 kV Kopri, Virar (East) s/s, Tal.-Vasai, Dist.-Palghar.

A meeting regarding the establishment of 220/22kV Kopri, Virar (East) s/s was convened under the chairmanship of Hon.CMD, MSETCL on dtd 05.01.2023. In the meeting, MSEDCL authorities explained that the future demand in the said area is anticipated around 40 MW, and EHV s/s is essential. As per the Hon. High Court order, MSEDCL has to put up the requirement of balance land separately for their expansion, putting up a new substation in order to cater to the demand of the petitioner and nearby area as per load growth. Hence suggested exploring adjoining land and also visiting the Hon. Collector's office.

For the establishment of 220kV AIS s/s the land requirement is 250x250 mtr. (15.43 acre) Since the size of the land is much smaller than the standard size, hence GIS s/s is proposed. There are 22 nos. of 22 kV feeders emanating from 220 kV Nalasopara s/s. The existing EHV substation is 85% loaded. On 16.05.2024 the substation load reached 250 MVA against 240MVA (3 x 80MVA). On

17.04.2024, the Boisar (PG) - Nalasopara line reached 868 amp (288MW). Even with the addition of a 1x100MVA, 220/22-22kV transformer, the substation will not be N-1 compliant. The Estimated cost of the scheme is **Rs. 12516.74 Lakhs.** The Scheduled Commission year for scheme is **FY 2026-27.**

Considering the additional load requirement of MSEDCL, re-orientation of existing load and voltage Regulation improvement, with due deliberations, GCC ratified the scheme for inclusion in STU Plan.

4.134: Establishment of 220 kV Suraksha Smart City Dist. Palghar under EHV CC O&M Zone Vashi.

CE, STU placed before the GCC a proposal for the Establishment of 220 kV Suraksha Smart City Dist. Palghar under EHV CC O&M Zone Vashi.

CE, STU highlighted that in the present scenario, consumers of the Vasai, Virar, and Nalasopara area are fed by 220 kV Nalasopara,22O kV Vasai, and 100 kV Vasai substations. The region near the proposed Suraksha Smart City area will be catered by existing 100 kV Vasai and 220 kV Vasai substations. The present transformation capacity at22O kV Vasai and 100 kV Vasai substations are as below a) 100 kVVasai substations, 100/22 kV,4x50=200 MVA against peak load of 150 MW. b) 220 kV Vasai substations,220/22 kV,2x50=100 MVA against peak load of 85 MW During N-1 contingency of any single unit of transformers at 100 kV Vasai and 220 kV Vasai substations, the other units will be overloaded affecting reliability of supply to consumers.
CE STU mentioned that to retain the reliability of supply additional 1x50 MVA, 220/22 kV is proposed at 220 kV Vasai during the years 2024-25 in STU five five-year transmission plan 2022-23 to 2026-27. The additional 1x50 MVA,220/22 kV is proposed at 220kV Vasai is still insufficient to cater proposed load of Suraksha Smart City. As per the MSEDCL proposal, the proposed load a|220/22 kV Suraksha Smart City substation is 110 MVA approx. and an additional 32 MVA due to the restructuring of loads of 100 kV Vasai and 220 kV Vasai substations(Total Load at 220/22 kV Suraksha Smart City substation-142 MVA).
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. The Estimated cost of cited scheme is ₹ **70 Lakh.** The Scheduled Commission year for scheme is **FY 2027-28.**

Considering the additional load requirement of MSEDCL, re-orientation of existing load and voltage Regulation improvement, with due deliberations, GCC ratified the scheme for inclusion in STU Plan.

4.135: Level creation of 132 kv / addition of ICT at 220 /33 KV Patoda S/s , Ta. Patoda, Dist. Beed

CE, STU placed before the GCC a proposal for Level creation of 132 kv / addition of ICT at 220 /33 KV Patoda S/s, Ta. Patoda, Dist. Beed

CE, STU highlighted the Beed District area is RE rich area where many RE generators are applied for grid connectivity. As per the Ministry of New & Renewable Energy of GOI, State wise solar potential of the country was calculated by the NATIONAL INSTITUTE OF SOLAR ENERGY (NISE). According to this data, the total solar potential of Maharashtra State was proposed to be 64.32 GW. For Beed District: 2361.1 MW. The tentative load of Beed district is 619.5 MW. Thus, the total Solar Potential of Beed District is around 2980.6 MW. In the Beed District area, there is a total 1963 MW capacity of RE generators, existing and sanctioned/applied for grid connectivity. Considering the above grid connectivity's sanctioned / applications and existing RE generators, the power evacuation system is required to be strengthened of 220 kV Patoda, 132 kV Raimoha, 132 kV Kharda, and 132 kV Ashti Substation.

There is near about 670 MW RE power generation to be evacuated from 220 kV Patoda, 132 kV Raimoha, 132 kV Kharda, and 132 kVAshti Substation area. There are system constraints for RE power evacuation in the existing transmission system of 220 kV Patoda, 132 kV Raimoha, 132 kV Kharda, and 132 kVAshti Substation area.

However, due to delay in the commissioning of the schemes proposed, many RE Generation Project applications received by STU for Grid Connectivity in the region, are being declined as the existing network is getting overloaded and there are no margins available in the transmission network for evacuation of power from these projects.

Accordingly, the STU section has identified this scheme on a priority basis for addressing various constraints in transmission systems related to RE-rich areas. Hence, Level creation of 132 kv / addition of ICT at 220 /33 KV Patoda S/s, Ta. Patoda, Dist. Beed proposed by MSETCL. The Estimated cost of the scheme is **₹ 8224.82 Lakhs.** The Scheduled Commission year for scheme is **FY 2024-25.**

Considering the additional load requirement of MSEDCL, RE power evacuation, re-orientation of existing load and voltage Regulation improvement, with due deliberations, GCC ratified the scheme for inclusion in STU Plan.

4.136: Scheme for DSITC of SDC/ RTU for the visibility of 250 nos. of MSETCL sub stations to SLDC & ALDC

CE, STU placed before the GCC a proposal for, a "Scheme for DSITC of SDC/ RTU for the visibility of 250 nos. of MSETCL sub stations to SLDC & ALDC"

CE, STU highlighted that the Scope of this proposal is limited to the collection of data at the station level and confirming the data output at SDC/RTU/Gateway on IEC-104 at station level. He mentioned the benefits of the scheme:

1. Complete visibility of all 132/ 110 / 100 kV EHV substation's real-time data to the SLDC and ALDC. A major regulatory need will be complied with.

2. Effective monitoring & operations of MSETCL grid system and data utility for other power system studies.
3. It shall be helpful in the improvement of system availability, operational efficiency, outage management, and decision-making in real time.
4. Subsequently or simultaneously the data can also be integrated into MTAMC SCADA. This will improve the asset monitoring mechanisms under implementation at MTAMC.

CE, STU submitted that for close monitoring of this project, a separate digital monitoring tool will be developed before the commencement of the project. In view of achieving the project completion target of Aug-2026, it is proposed that the project execution timeline be linked with financial benefits to the successful bidder for timely or early project completion. The incentive mechanism can also act as an instigating mechanism for finding new ways of implementation by vendors. Through this scheme CE (ACI&P) to be authority to approve any change of location, shifting of locations, adding new locations, or any such change essential for expediting project execution within the overall scope of the order.
Incentives shall be applicable for early completion of the entire defined scope of the project. The maximum limit of the total incentive for early completion of the defined project shall be 4.0% (four percent) of the order value excluding statutory taxes as applicable. The incentive rate shall be 0.25 % of the order value per week, for that time period of project completion which is prior to the project completion deadline as per LOA. This incentive clause shall stand applicable only if the Contract is completed within initial contract period of 24 months and shall not stand applicable in case of any extension of time (if any) granted to the Contractor.
As per the Govt of India, MoP letter no 10/1/24-OM dated 18.09.2014, the aforesaid scheme can be explored for funding from PSDF. The budgetary offers were called from MSETCL-approved vendors-M/s Schneider Electrical, M/s Siemens Ltd, and M/s GE Ltd. The estimated cost for the subject project is **Rs. ₹ 100.72 Crores.**

However, CE ACI&P informed that subsequently the proposal was deemed returned by PSDF committee siting the fund availability issue and hence MSETCL management has approved it to be taken up as MSETCL CAPEX scheme.

Considering the importance of scheme from system point of view, for complete visibility of all 132/ 110 / 100 kV EHV substation's real-time data to the SLDC and ALDC, with due deliberations, GCC ratified the scheme for inclusion in STU Plan and recommended that the scheme be implemented as MSETCL CAPEX scheme as PSDF funding is not available.

4.137: Enhancing Transmission network reliability by Loop in Loop out of 220 kV Kalwa Salsette 5 line at MSETCL Bhandup S/s.

CE, STU placed before the GCC a proposal of Enhancing Transmission network reliability by Loop in Loop out of 220 kV Kalwa Salsette 5 line at MSETCL Bhandup S/s.

CE, STU explained that The scheme is proposed in view of providing additional source and connectivity from MSETCL 220 kV Kalwa and TPC-T 220 kV Salsette S/s to MSETCL 220 kV Bhandup S/s by Loop In Loop Out of existing TPC-T 220 kV Kalwa Salsette – 5 line.
The scope of work for the above scheme is as below:

(a) LILO of existing 220 kV Kalwa Salsette – 5 lines at MSETCL 220 kV Bhandup S/s as the cable portion of the mentioned line traverse near Bhandup S/s @ 250 mtrs. (2 X 1C, 220 kV, 1600 sq.mm Cu cable with lead sheath per ckt). 220 kV Cable system along with the FO cable system from the Proposed Joint Bay location up to the new 220 kV proposed Outdoor GIS.
(b) Procurement, installation, and commissioning of 4 no. of 220 kV GIS bays (02 nos. of Incomer bays, 01 no of Tie bay and 01 Bus Coupler) with Protection, Automation and Communication system.
The Estimated cost of the scheme is **₹ 70 Crore**. The scheduled commissioning year for the cited scheme is **FY 2025-26.**

For reliability and system point of view, providing additional source and connectivity between MSETCL 220 kV Kalwa and TPC-T 220 kV Salsette S/s to MSETCL 220 kV Bhandup S/s by Loop In Loop Out with due deliberations, GCC ratified the scheme for inclusion in STU Plan.

4.138: Upgradation of existing 110 kV Khopoli – Karanjade Corridor by replacing existing conductor by higher capacity conductor along with Towers.

CE, STU placed before the GCC a proposal of Upgradation of existing 110 kV Khopoli – Karanjade Corridor by replacing existing conductor by higher capacity conductor along with Towers.

CE, STU explained that The 110 kV Khopoli – Bhokarpada – Karanjade lines are erected and are in service for more than 100 years ago. Tata Power has engaged M/S Takalkar Power Engineers and Consultant Pvt. Ltd. (TPECPL) Vadodara for the purpose of condition monitoring and Residual Life Assessment as well as suggesting corrective action.
The majority of Towers are Horizontal type with Grillage foundations and after residual life assessment work it is found that there is a loss of zinc coating on tower members resulted into rusting and reduction of thickness of it. Average compressive strength of tower foundation deteriorated resulting into bulging and loss of verticality of tower. Therefore, it is recommended to replace these towers along with new foundations. There is a significant load requirement (Yotta @ 158 MVA) envisaged in the vicinity of Bhokarpada S/s area. In view of this, augmentation of 110 kV Khopoli – Bhokarpada – Karanjade corridor in necessary. Tata Power proposes replacement of existing towers with 220 kV DF multi circuit Towers and existing 2 x 0.15 Wolf ACSR conductor with 0.5 Moose Conductor. The proposed scheme is in line with Long Term Transmission Planning.
CE, STU mentioned the scope of work for cited scheme:

(a) Replacement of existing Horizontal towers (Grillage foundation) with 220 kV DF multi circuit Towers (with new foundation)

(b) Replacement of existing 110 kV, 2 x 0.15 Wolf ACSR conductor with 220 kV, 0.5 Moose Conductor.

The Estimated cost of scheme Cost is **₹ 250 Crore**. The scheduled commissioning year of said scheme is **FY 2026-27.**

The above lines have already outlived their service life .The upgradation of above corridor can be utilised for further inteconnection between planned STU /CTU and Mumbai network in order to meet the present & future load requirement, enhance system reliability and stability with due deliberations, GCC ratified the scheme for inclusion in STU Plan.

4.139: Upgradation and augmentation of Transformation capacity at Dharavi S/s and Carnac S/s by installation of additional Transformers.

125 MVA, 110 kV/33 kV/22 kV Transformer (Dharavi)
125 MVA, 220 kV/33 kV/22 kV Transformer (Carnac)

CE, STU placed before the GCC a proposal of Upgradation and augmentation of Transformation capacity at Dharavi S/s and Carnac S/s by installation of additional Transformers.

125 MVA, 110 kV/33 kV/22 kV Transformer (Dharavi)
125 MVA, 220 kV/33 kV/22 kV Transformer (Carnac)

CE, STU explained the need of schemes as follows:

Dharavi S/s:

Existing 33 kV peak Load is @ 320 MVA against firm capacity @ 375 MVA i.e. 85 %. BEST has a load requirement of @ 30 MVA (5 feeders). The peak load by FY 27 will be 350 MVA (93% of Firm Capacity). The existing 110 kV / 22 kV, 60 MVA, Transformer # 2 has served 57 years of its useful life. Since 22 kV load is getting migrated on 33 kV system, it is proposed to replace this Transformer with 220 kV / 33 kV, 125 MVA Transformer**.**

Carnac S/s:

Existing 33 kV peak Load is @ 310 MVA against firm capacity @ 375 MVA i.e. 83 %. The existing 110 kV / 22 kV, 60 MVA, Transformer # 4 has served 49 years of its useful life. Since 22 kV load is getting migrated on 33 kV system, it is proposed to replace this Transformer # 4 with 110 kV / 33 kV / 22 kV, 125 MVA Transformer.

TPC highlighted scope of work for above scheme:

Dharavi S/s:

Replacement of existing 110 kV / 22 kV, 60 MVA (60 years) with 110 / 33 kV, 125 MVA Transformer at Dharavi.

Carnac S/s:

Replacement of existing 110 kV / 33 kV, 90 MVA (49 years) with 220 / 33 / 22 kV, 125 MVA Transformer.

The Estimated cost of scheme is **₹ 65 Crore.** The scheduled commissioning year for said scheme is **FY 2026-27.**

In order to meet the present & future load requirement, to address the overloading problems, enhance system reliability and stability with due deliberations, GCC ratified the scheme for inclusion in STU Plan

4.140: Source Augmentation of 110 kV Mankhurd S/s with construction of additional 110 kV Tombay Mankhurd line by utilizing existing corridor.

CE, STU placed before the GCC a proposal of Source Augmentation of 110 kV Mankhurd S/s with the construction of an additional 110 kV Tombay Mankhurd line by utilizing the existing corridor.

CE, STU explained that Presently Mankhurd S/s is fed by 110 kV Waghivali – Mankhurd and 110 kV Parel – Mankhurd lines. Central Railway is a major consumer of Mankhurd S/s fed by a 110 kV system. During the outage of any one line of 110 kV Waghivali – Mankhurd and 110 kV Parel – Mankhurd lines, Mankhurd S/s consumers face voltage fluctuations due to railway load.

The Overhead corridor is available between Trombay and Chembur thus additional 110 kV line can be constructed by stringing a conductor and replacing a few horizontal configuration towers. In addition to the above, Hydropower will be directly available to Trombay station during Black Start
CE, STU highlighted the scope of work for the scheme as follows:
(a) Stringing of new 0.5 moose conductor between Trombay to Mankhurd.
(b) Installation of 01 no of the bay at Trombay and Mankhurd with Protection, Automation, and Communication system.
The Estimated cost of the scheme is ₹ **15 Crore.** The scheduled commissioning year of the cited scheme is **FY 2026-27**

The above lines have already outlived their service life .The upgradation of above corridor can be utilized for further inteconnection between planned STU /CTU and Mumbai network in order to meet the present & future load requirement, enhance system reliability and stability with due deliberations, GCC ratified the scheme for inclusion in STU Plan.

4 .141: Augmentation and strengthening of 110 kV Bhira Khopoli Corridor by construction of additional 110 kV Bhira Khopoli Line.

CE, STU placed before the GCC a proposal for the Augmentation and strengthening of the 110 kV Bhira Khopoli Corridor by the construction of an additional 110 kV Bhira Khopoli Line.

CE, STU submitted that Presently there are 02 lines between Bhira and Khopoli namely 110 kV Bhira Khopoli and 110 kV Bhira – Davdi – Khopoli with a conductor size of 0.2 Panther ACSR (550 Amp). Since the existing Overhead corridor is available, only conductor stringing will be required with additional bays at Bhira and Khopoli. The existing power evacuation capacity of this corridor is 2 X 100 MVA (firm capacity 100 MVA). With an additional 110 kV Bhira Khopoli line, the capacity of this corridor will be upgraded to 360 MVA (firm capacity 200 MVA) Augmentation of the Bhira – Khopoli Corridor is necessary for power evacuation in view of upcoming Pump Storage Projects.

CE, STU mentioned the scope of work for the above scheme, as follows:
(a) Stringing of new 0.5 moose conductor between Bhira and Khopoli.
(b) Installation of 01 nos of the bay at Bhira and Khopoli with Protection, Automation, and Communication system.

The Estimated cost of the scheme is **₹ 30 Crore.** The scheduled commissioning year for the cited scheme is **FY 2025-26.**

The above lines have already outlived their service life .The upgradation of above corridor can be utilized for further interconnection between planned STU /CTU and Mumbai network in order to meet the present & future load requirement, enhance system reliability and stability with due deliberations, GCC ratified the scheme for inclusion in STU Plan.

Points for Discussion 1:

STU 10 Year / 5 Year/ 3 Year Plan of Transmission utilities for the period FY 2024-25 to FY 2033-34.

In Compliance to MEGC 2020 & responsibilities entrusted to STU under Electricity Act 2003 the, State Transmission Utility (STU) has prepared the Short term (3 years), Medium Term (5 years) and long term (10 years) Transmission Plan for State of Maharashtra for the period 2024-25 to 2033-34.

CE , STU placed before the GCC the STU Transmission plan for the state of Maharashtra for the period 2024-25 to 2033-34. He informed the plan has been prepared in accordance with the Section 39 of the Electricity Act, 2003, wherein "Planning, coordination, development and undertaking transmission of electricity through intra-state system is to be done by the State Transmission Utilities". While preparing the plan the Load-generation balance scenarios have been worked out corresponding to seasonal / quarterly load & generation variations and has been simulated for Planning years by STU. STU has consulted all stake holder and taken into consideration the following factors while undertaking the preparation of the plan:

- Existing & Planning Year Growth Rate
- CTU Rolling Plan
- Discom Requirements
- Renewable & Conventional Generation Evacuation Planning
- 20th EPS Survey Report
- Identification of Demand Hotspots & Pump Storage Plants
- Green Hydrogen Policy
- Mukhyamantri Saur Krushi Vahini Yojana - 2.0 (MSKVY-2.0)
- Western Region Expansion Schemes
- Transmission Bottleneck of Maharashtra system
- Transmission constraints for Mumbai corridor
- Construction of New Transmission Corridor for Maharashtra Energy Transition Plan

Act, 2003 (with Amended versions), Government Policies, Electricity Commission Regulations, CTU Planning, were considered in Preparation. Various Meetings were held for discussion of STU Plan with Transmission & Distribution Licensees, for finalization of STU 10 Year Plan.

CE STU stated that the State Peak demand Maharashtra is currently at 29GW & has been growing historically at a CAGR of 4-5% (pre-COVID). Led by Maharashtra's Economic growth if a peak to grow rate of 6-7 % going forward is considered for planning purposes, Maharashtra's peak may reach 34-35GW by 2026 and 42-45GW by 2030 translating to an annual growth rate of 2GW/ year.

Over & above this, the demand growth is expected to be further driven by factors viz Datacenters, Green hydrogen and derivatives & Pump Storage plants (PSPs). Taking into consideration these factors the projected peak demand requirement in the state of Maharashtra may rise to 69-70GW by 2030.Catering to this demand would need a mix of long-term and short-term capacity contracting which need evaluation against 3 main factors - cost, reliability/ flexibility and time to implementation to cater to the above requirement Maharashtra will require an additional 130-150K MVA T&D network for connecting load centers to supply centers and end customers; while ensuring higher grid stability measures are taken across generation, transmission, and distribution value chain.

Taking into considerations all the above factors STU has planned an Energy transition plan for the State of Maharashtra & this STU plan is a critical factor in the total scheme of things.

Based on the above parameters CE, STU presented STU 10 Year / 5 Year/ 3 Year Plan of Transmission utilities for the period FY 2024-25 to FY 2033-34.

1) Establishment of **196 No.** ***(Cost: Rs 81315.72 Cr)*** EHV Substations with associated lines from voltage level of 100 kV to 765 kV. This will add **108775 MVA** capacity.
2) Construction of **5716.88**.**Ckt. km** ***(Cost: Rs6622.74 Cr) new EHV link lines*** of various voltage levels from 765 kV to 100 kV.
3) Second circuit stringing of **1663.60 Ckt.km** (C**ost Rs.1919.08 Cr**) of various voltage level from 400kV to 100kV.
4) The total ckt km of EHV lines is **19360 Ckt. km** which is total of Associated lines + link lines+ 2nd ckt stringing)
5) The conductor replacement of existing lines by high ampacity conductor is **4096.29**.**Ckt.km** amounting to **Rs.6333.63 Cr** of various voltage level 400kV to 100kV.
6) Addition of transformation capacity of **35715MVA** ***(Cost: 11397.78 Cr)*** by augmentation / creation of new level / additional TF/ replacement TF in existing substation of various voltage levels from 400 kV to 100 kV.
7) Addition of **2850 MVAR*****(Cost Rs 437.34 Cr***) Reactor & **3835 MVAR*****(Cost: Rs 124.31 Cr)*** Capacitor proposed for maintaining the voltage profile at existing EHV Substations.
8) Up gradation of existing HVDC control & Protection of Chandrapur-Padghe Bipole link for **Cost R**s.**343.17Cr**.
9) Addition of **900MVAR** STATCOM at 3 nos. of location under. Nasik, Pune & Vashi zone.
10) STU to implement **10 No's** of schemes under Annexure-G through TBCB route for timely implementation following the CERC & MERC TBCB guidelines

MTC has also recommended to implement the Ten schemes identified under phase 1 to be implemented through TBCB route ,out of which the following 4 schemes need to be taken up immediately for implementation via TBCB route considering the Transmission constraints, RE evacuation & Data Centre load requirement for timely completion:

a. 400kV Jejuri-Hinjewadi quad DC line. (Pune constrain)
b. 765kV Pune (East) substation along with associated lines. (Pune constrain)
c. 765kV Mahape substation along with associated lines.(Data Centre demand)
d. 400kV Washi substation along with associated lines(RE Evacuation)

After due deliberation and considering the STU studies, recommendation of MTC, GCC accepted the STU proposal implementation of the proposed schemes via TBCB route. GCC also recommended that STU should take up:

i. A detailed study for upgradation of existing 500kV HVDC corridor of Chandrapur to Padghe from 1500MW to 3000MW or higher considering the augmentation of

Thermal capacity at Koradi & Chandrapur by Mahagenco along with upcoming additional CTU connectivity in the eastern side and consider for inclusion it as a part of STU prospective plan.

ii. **There are multiple HVDC schemes proposed in the prospective plan. STU to take up a detailed study considering all the HVDC links proposed and ongoing to access any probable issues requiring necessary design considerations. STU shall also take up with the licensee implementing the ongoing HVDC project and assess requirement of any study considering the proposed future HVDC schemes in the nearby region of MMR..**

GCC recommended the STU 10 Year / 5 Year/ 3 Year Plan of Transmission utilities for the period FY 2024-25 to FY 2033-34.

Point for Discussion 2 :

220 kV Borivali-Ghodbunder –Boisar LILO Line Augmentation

CE, STU placed before the GCC a proposal of 220 kV Borivali-Ghodbunder –Boisar LILO Line Augmentation.

CE, STU explained the scope of work, as a two options submitted by them:

Option – 1 (Switching S/s)

(a) Procurement of land
(b) Installation of 220kV GIS with necessary arrangement
(c) Termination of existing 220kV line cable i.e. from Ghodbunder EHV station to pro- posed GIS switching station
(d) Overhead line tapping from tower to 220kV GIS through Gantry / GIBD arrangement and associated Control room along with protection System

Option -2 (Cable system)

(a) Lay another 220kV Cable system (2500 sq mm) between GHBD S/s to LILO tower, along with 220kV GIS bay at GHBD S/s and termination at tower

CE, STU highlighted that MSETCL OH Line capacity (1800 Amps) after HTLS/twin conductor installation is limited due to 1200mm cable system(800Amps) after LILO portion. To match the OH line capacity, AEML-T proposes to Option-1 Install a 220kV GIS near the existing LILO Tower by tapping of MSETCL line through 220kV GIL/ Cable system, Option-2 Additional 220kV cable system between GHBD S/s to LILO tower. Scheme will strengthen transmission line corridor and power flow capacity.

AEML-T mentioned that On 18.06.2024, CE, SLDC has advised STU to uprate conductor capacity of the existing AEML Ghodbunder- Boisar LILO Line, in view of multiple overload tripping observed in April 2024. The cost of Work through Option-1 is ₹ 121.01 Crore, whereas from Option-2 the cost of work is 162.59 Crore. This, scheme is urgent and as per their analysis, work through Option-1 can be process.

CE STU informed that AEML-T has informed that both the options of upgradation of EHV cable or LILO of line at a switching station and extending radial feed to Godhbunder S/s from the switching are feasible. GCC recommended that STU may study the option based on reliability of the system and approve the better option, GCC ratified the inclusion the scheme as approved by the STU in the STU Plan.

Points for discussion:

MOU for O&M of 2 Nos. 400 kV Kharghar Bays of KVTPL.
For Routine O&M, of KVTPL constructed 2 Nos. 400 kV Bays at Kharghar, KVTPL has proposed @ 1% of the bay capital cost with 0% escalation every year.

CE,STU apprised the forum of the issue that M/s KVPTL has proposed 1% of bay capital cost ***with*** 0% escalation every year as routine O&M charges to MSETCL for the 2 nos of 400kV KVPTL bays at 400kV Kharghar substation . MSETCL has asked them to pay the charges as per the O&M charges defined by Hon. MERC in MYT regulations. CE,STU informed that the issue was taken up as a part of MTC agenda by TrO&M Section MSETCL. During the discussion in the MTC the KVTPL representative submitted that they have requested the above rate on the basis of the earlier agreements between MSETCL and other utilities wherein they are proposing only the routine maintenance charges and shall themselves carry out the breakdown maintenance. However it has been clarified to KVPTL that the charges decided with earlier utilities does not have any regulatory mandate and audit para has been raised for the same by Auditor. Thus the same cannot be taken as precedence for determination of recovery of the O&M charges. was informed requested routine O&M charges only. In such a case KVPTL requested to sign an interim agreement with 1% subject to revision in O&M charges as and when decided based on MERC guidelines. The same was not accepted by MSETCL.

In view of non-agreement, it was decided to call for views from MTC members on the issue and refer to the central guidelines in this respect so as to take a final decision with approval of MSETCL's competent Authority with an option to approach MERC for guidelines in this regard.

GCC suggested that based on the submissions from MTC members and Central guidelines, MTC may suggest methodology for recovery of O&M charges which may further be referred to MERC for clear guidelines.

The meeting concluded with vote of thanks.

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Annexure A

List of participants for 9th GCC meeting held on 11.07.2024

Sr no	Name of member	Designation	Committee position
1	Shri Satish Chavan	Director (Operations) (I/c), MSETCL	Chairperson
2	Shri Shashank Jewalikar	Executive Director (SLDC) (I/c)	Member Convener
3	Shri. Sunil Sonpethkar	CE (Works), MSPGCL	Member
4	Shri P. D. Lone,	S.E. Commercial, WRPC	Member
5	Shri Pravin Annachatre	Nominated from Director (Comm), MSEDCL	Member
	Special Invitees		
6	Shri Peeyush Sharma	Chief Engineer, STU	---
7	Shri Mahesh Bhagwat	Chief Engineer, MSLDC	---
8	Shri Rajan Joshi	S.E. War Room, MSETCL, C.O., Mumbai	---

Maharashtra State Load Despatch Centre
“Annual Operational Report
CY: 2023”

GCC Meeting

11-07-2024

Points covered

Demand & Energy Profile

- Demand Profile for the State
- Demand Profile of MSEDCL
- Demand Profile of Mumbai Area
- Energy Profile
- Resources Mix at State Peak Demand Scenario
- Resources Mix at 4 cardinal points: Morning Peak, Solar Peak, Evening Peak & Night Off-Peak

Generation Profile

- Declared Capacity (DC) of MSPGCL Thermal Generation
- Declared Capacity (DC) of Mumbai Thermal Generation
- Declared Capacity (DC) of IPP Thermal Generators
- Yearly % Availability of Thermal Units
- Injection Patterns of: Hydro, Gas, RE Capacity
- Non-Availability of: Hydro & Gas plants

Grid Parameters

- Frequency Profile
- Voltage Profile
- Violations in ISTS Drawl

Points covered_Constraints

Generation Constraints

- Demand Profile for the State
- 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

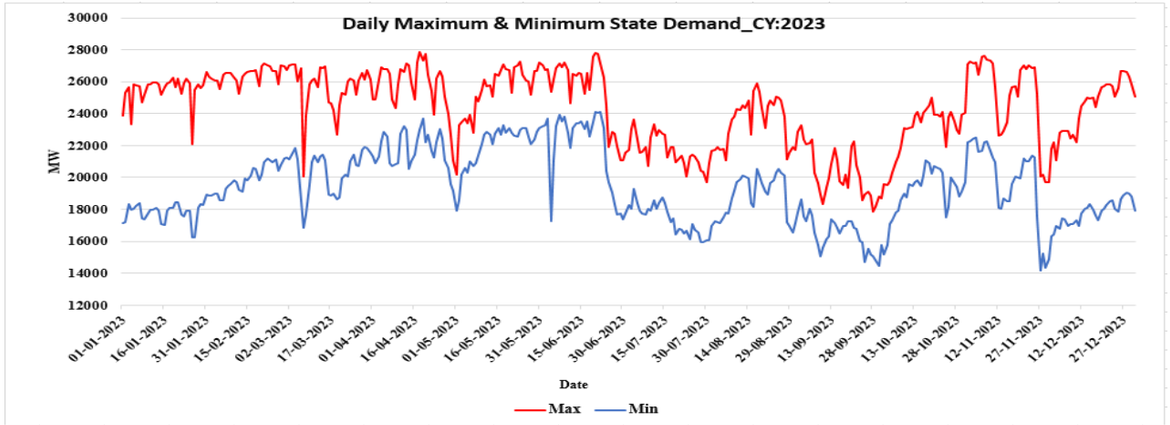
- LTS Operation & ELR
- Line Hand tripped due to overloading
- ‘N-1’ Non-Compliant Elements
- Constraint in evacuation of Solar Generation
- Restoration of 400kV Karad – Solapur (PG)
- MMR Transmission Constraints
- Inter State ATC/TTC Constraint
- Line Hand tripped due to overvoltage

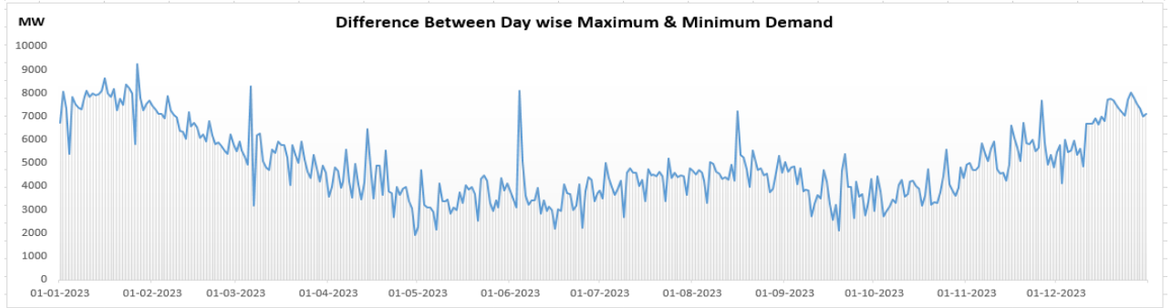
Transmission constraints affecting Generation

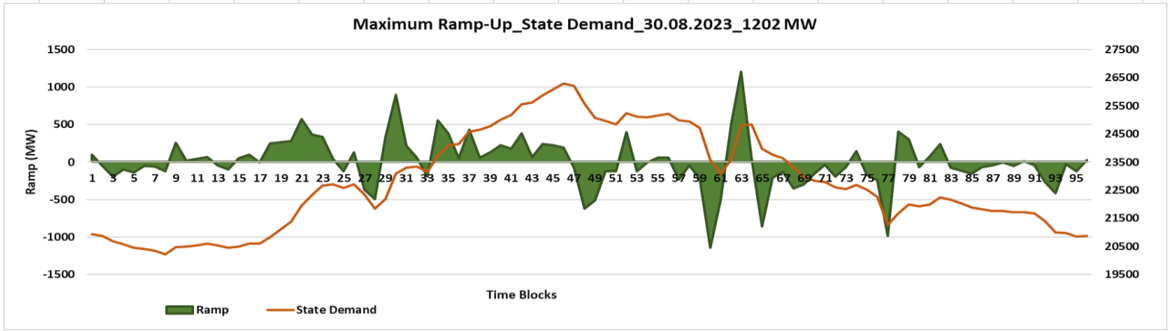
- Nashik TPS Generation constraints
- Backing Down of APML (Tiroda) & Koradi-II Generation
- Koyna water utilization
- MMR Constraints impacting Mumbai Generation
- Reactive Power Requirement in Boisar area

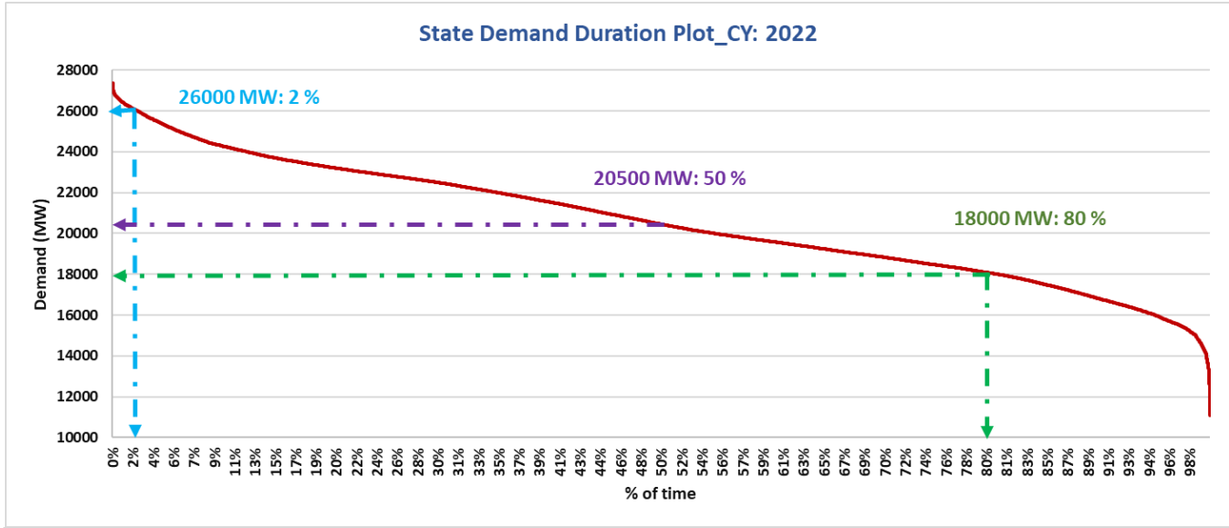
State Demand Profile

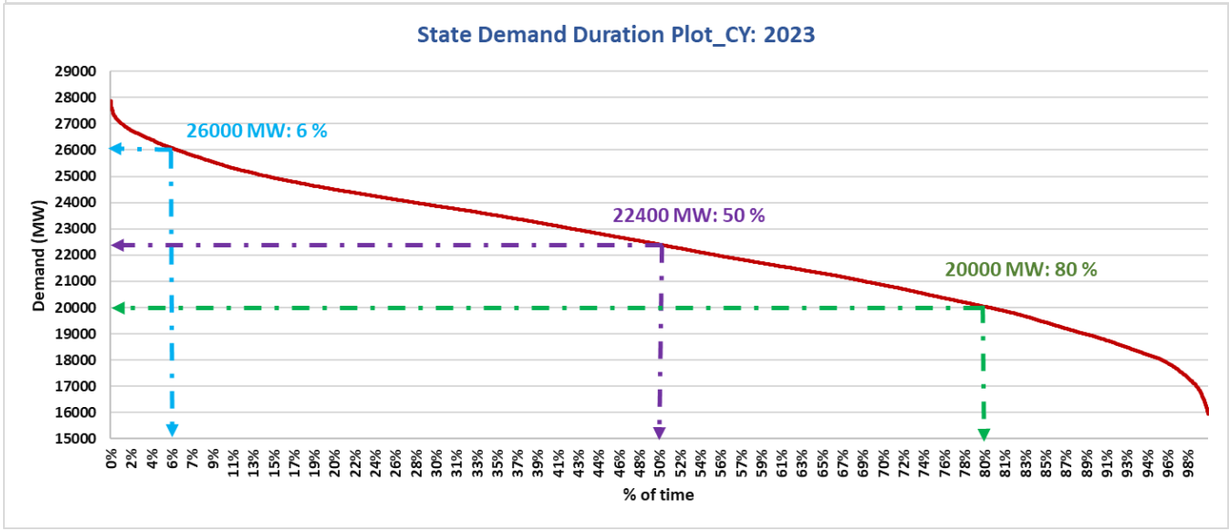
- Maximum seasonal variation: 12000 MW
- Maximum daily variation: 9000 MW
- In CY: 2022 for 80 % of the period, demand was 18000MW increased to 20000 MW in CY: 2023
- In CY: 2022, demand was above 26000 MW for 2 % of the period whereas in CY: 2023, it was for 6 % of the period



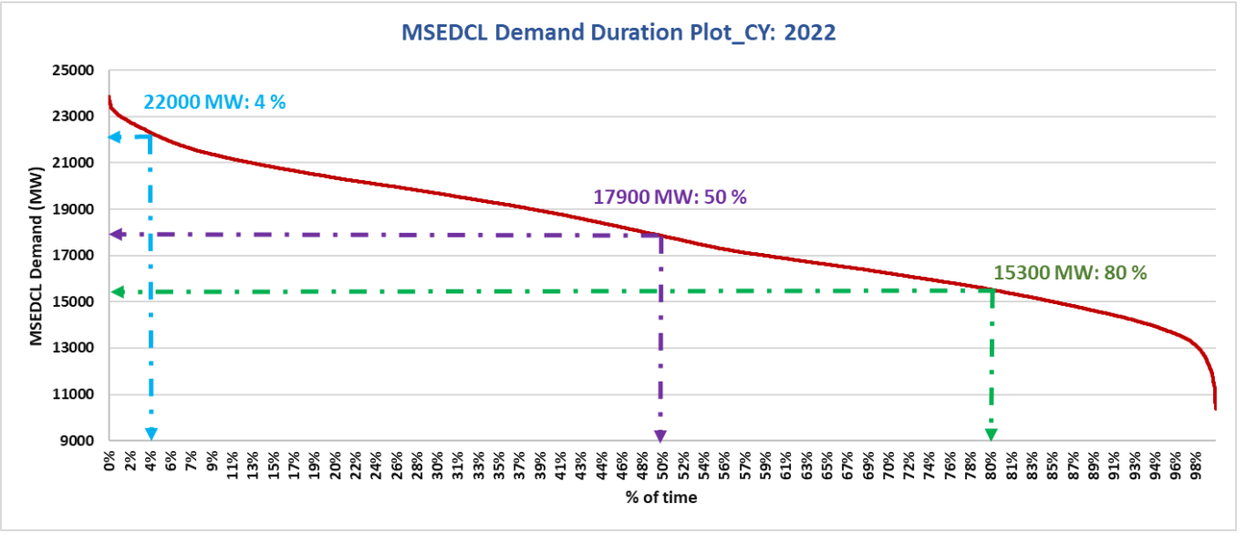


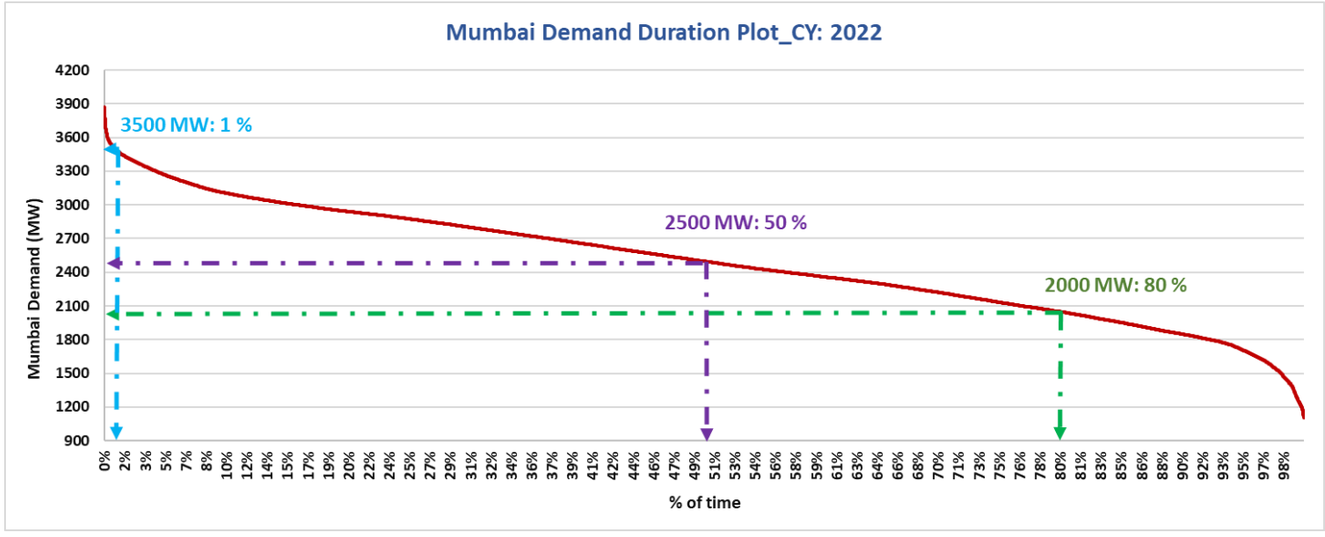


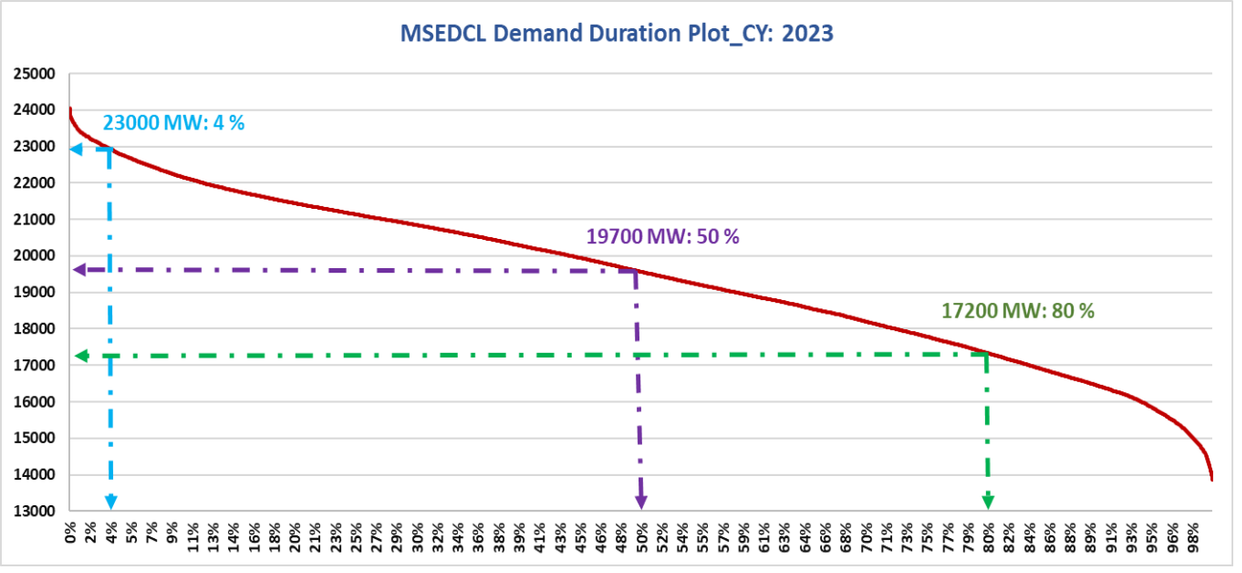


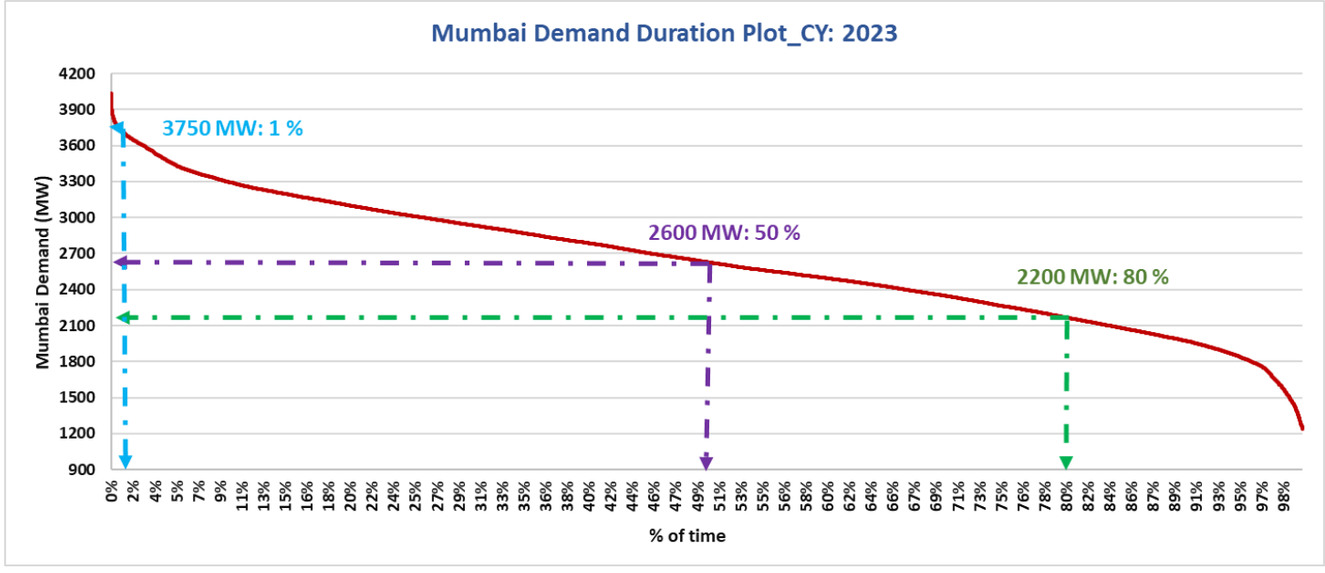


Demand Profile_MSEDCL & Mumbai



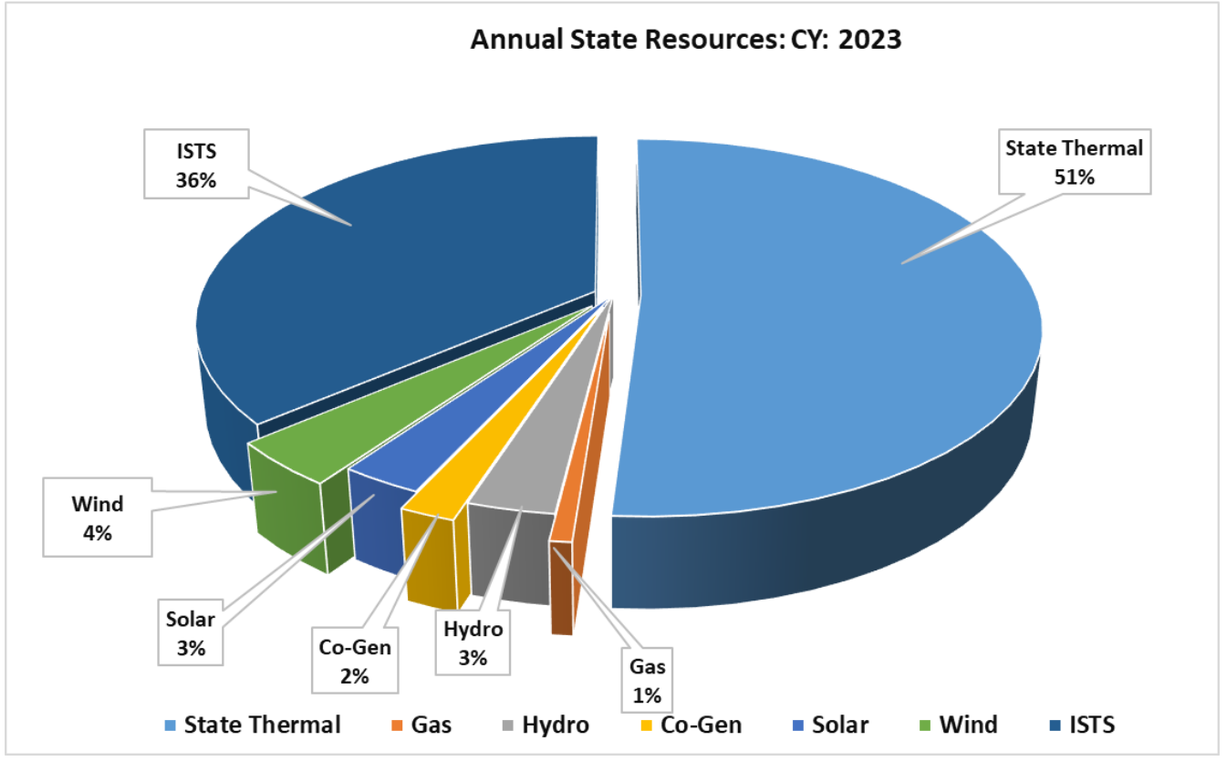


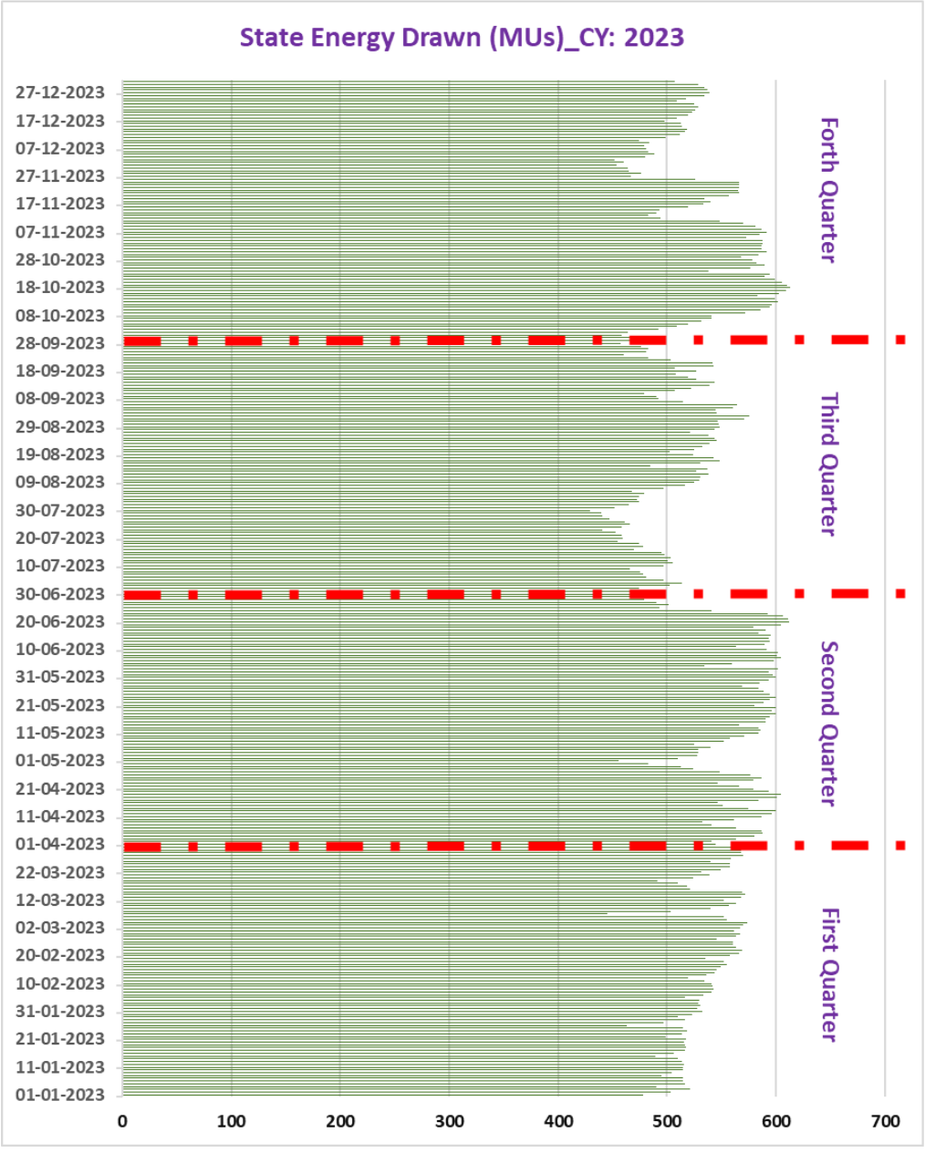




Energy Profile of the State

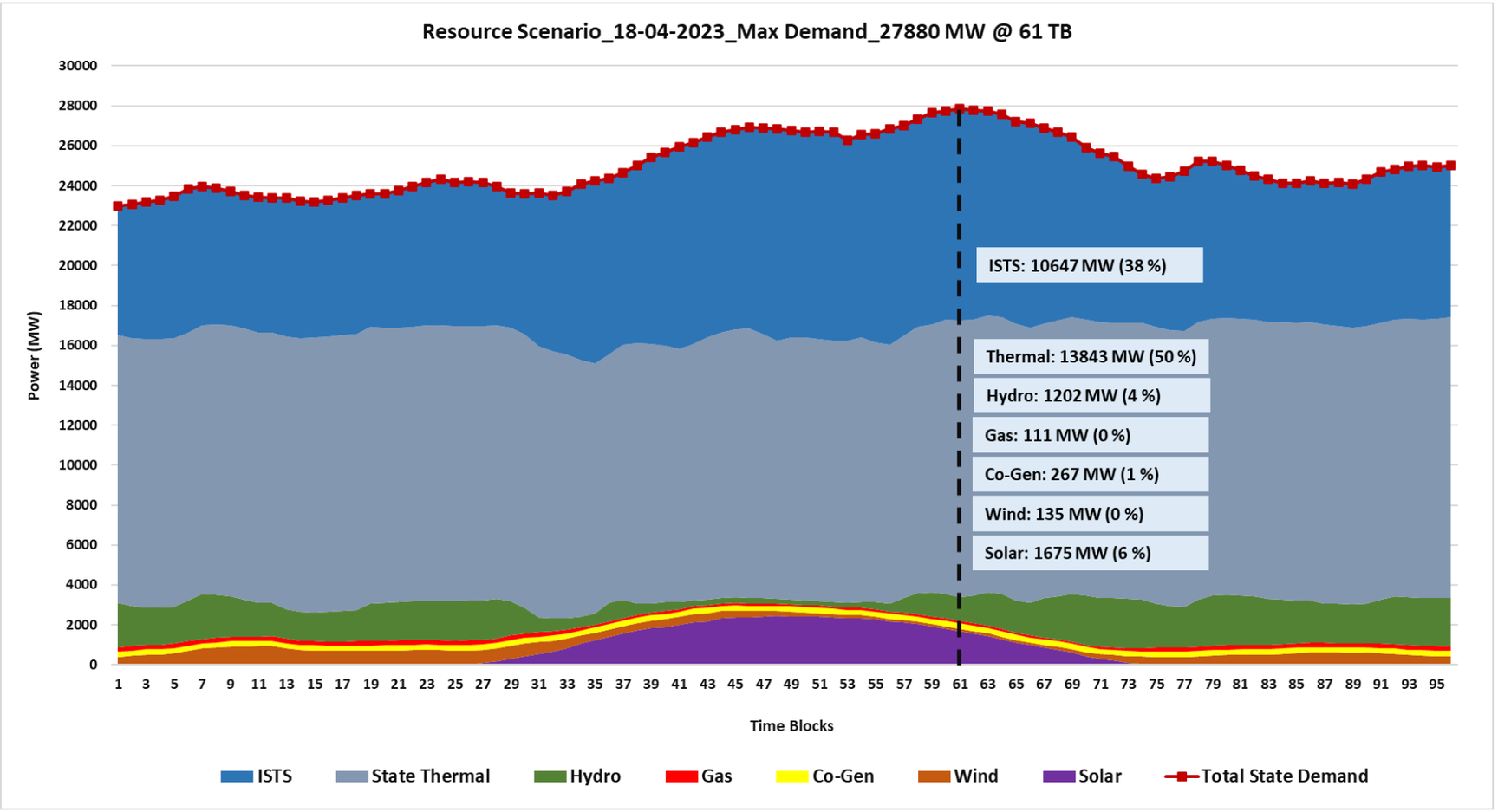
CY 2023	Source	Hydro	Thermal	Gas	Wind	Co gen	Solar	ISGS
	MUs	5,940	9,99,27	1,487	7,623	3,762	5,596	70,886
	%	3	51	1	4	2	3	36





- Total annual contribution of Thermal generation is 51 % which excludes the thermal energy used from ISGS resources
- The contribution of VRE i.e. Wind & Solar generation is only 7 %
- Maximum energy of around 51638 MUs was catered in the 2nd quarter of the CY: 2023 followed by Forth quarter with 49509 MUs

Resource Mix of the State_ Peak Demand

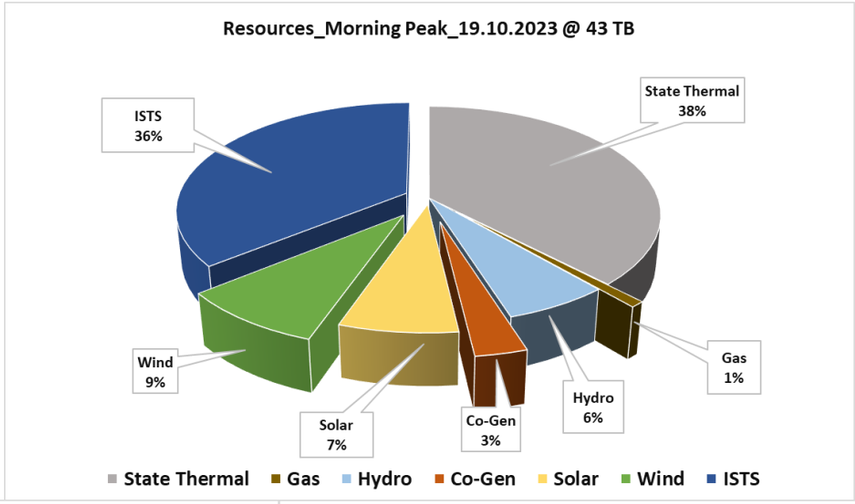


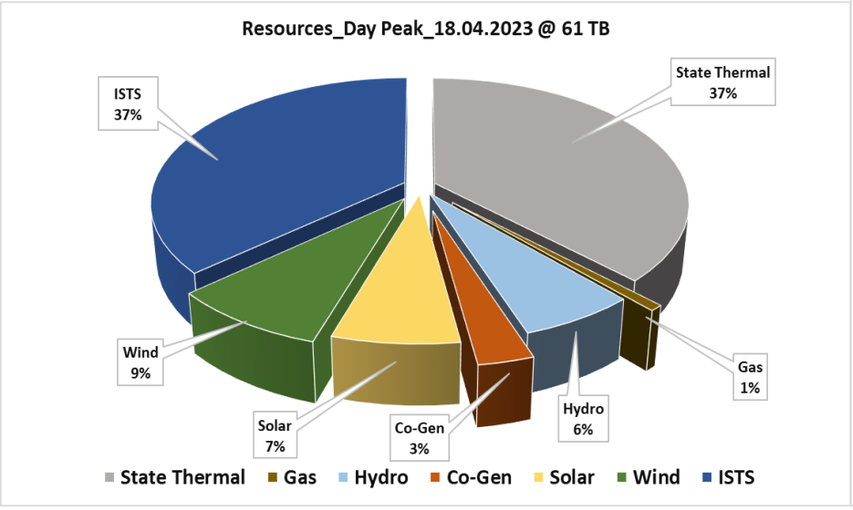
Source	Injection (MW)	Contribution (%)
State Thermal	13843	50%
Gas	111	0%
Hydro	1202	4%
Co-Gen	267	1%
Solar	1675	6%
Wind	135	0%
ISTS	10647	38%

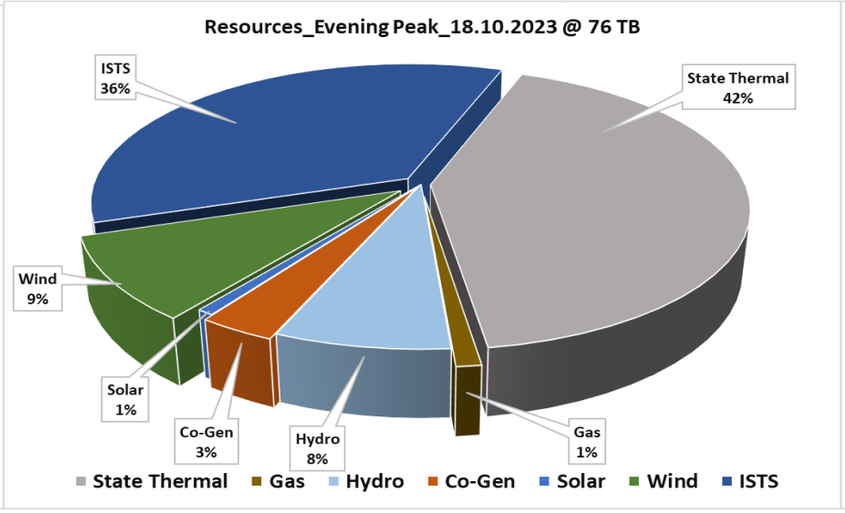
- The contribution of V_{RE} in mitigating State Peak Demand is only 6 %
- State is mainly relying on the thermal generation for meeting peak demand

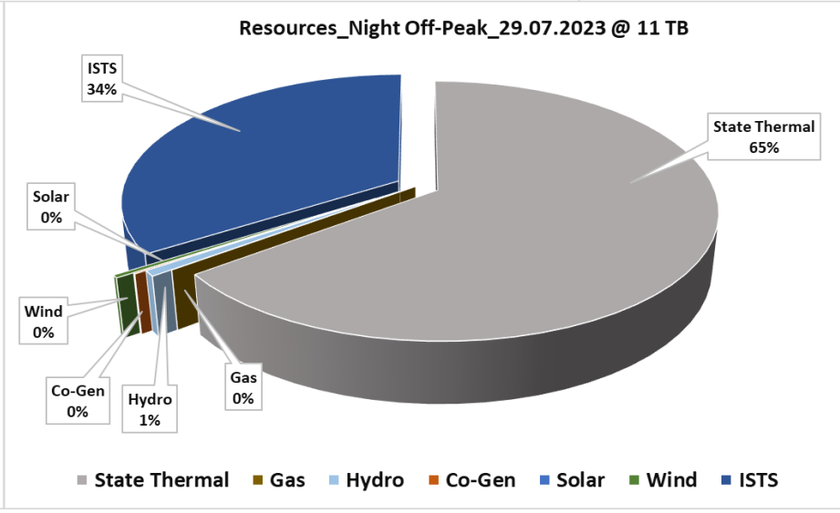
Resource Mix of the State_ 4 Cardinal Points

Scenario/Time	From Hrs	To Hrs	From TB	To TB
Morning Peak	7:00	13:00	29	52
Day Peak (Solar)	13:00	18:00	53	72
Evening Peak (Non-Solar)	18:00	22:00	73	88
Night Off-Peak	23:00	06:00	89	28



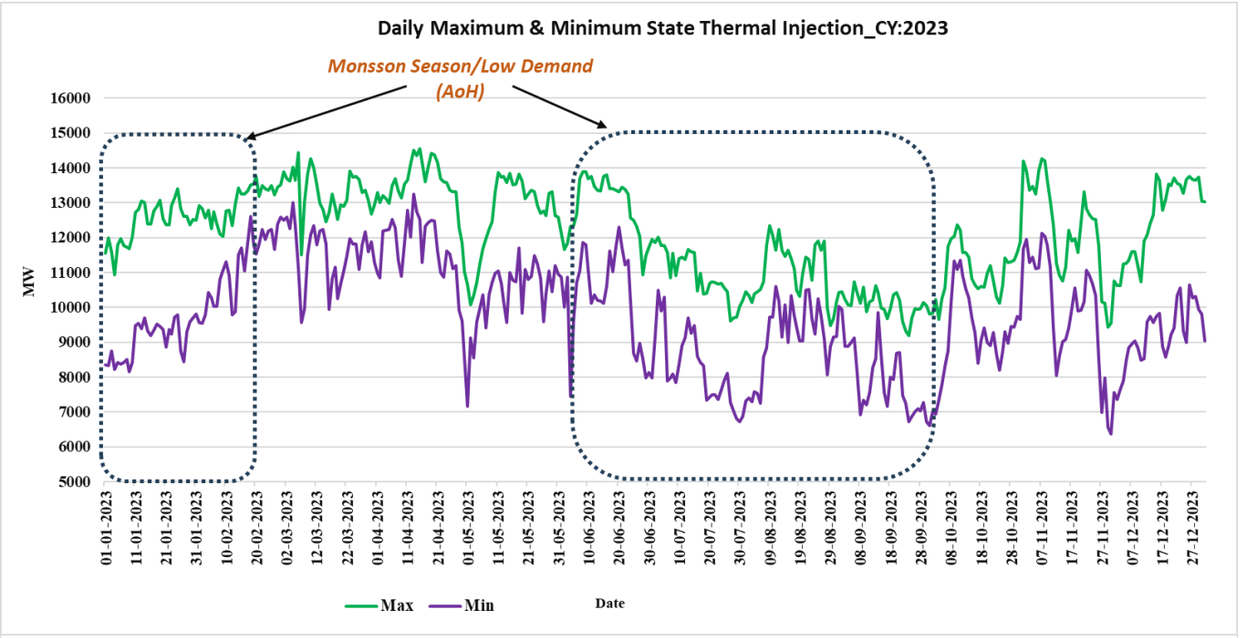


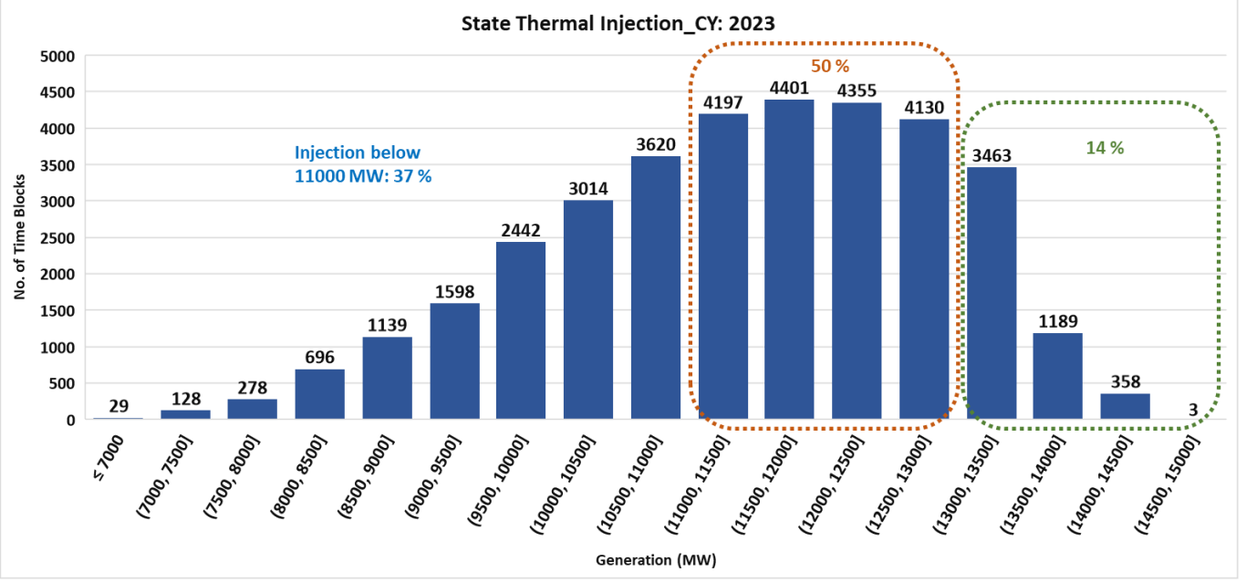




- With the increased penetration of Solar Generation, Day-time contribution reduces reliance on thermal generation
- To meet evening Peak & Night Off-peak demand, thermal contribution is high

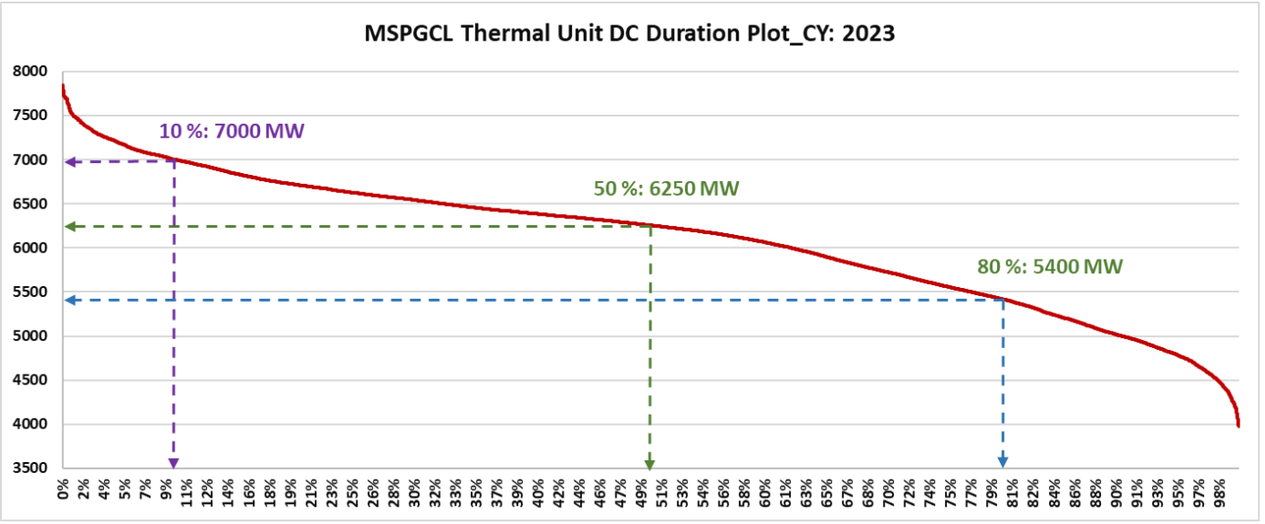
Thermal Generation_ Injection Patterns

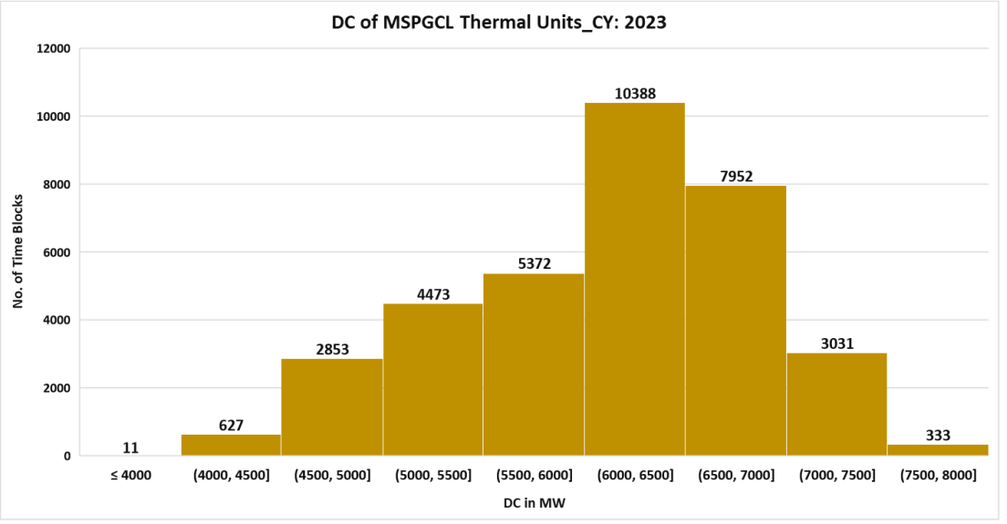


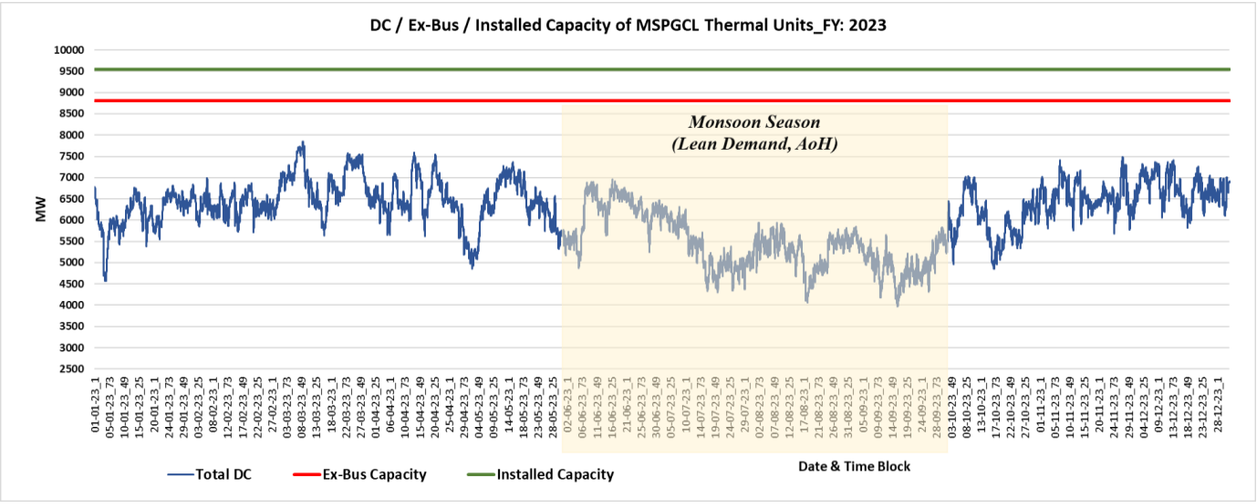


- Installed Capacity:
  - MSPGCL: 9540 MW
  - IPP: 10090 MW
- Total injection from Thermal units is ranging from 14555 MW to 6355 MW
- Maximum daily variation is 4876 MW
- For 37 % of the period, injection from Thermal generation is below 11000 MW
- Injection is above 13000 MW only for 14 % of the period
- For remaining 50 % of the period, thermal injection is between 11000 MW to 13000 MW

DC Analysis of Thermal Generation_ MSPGCL



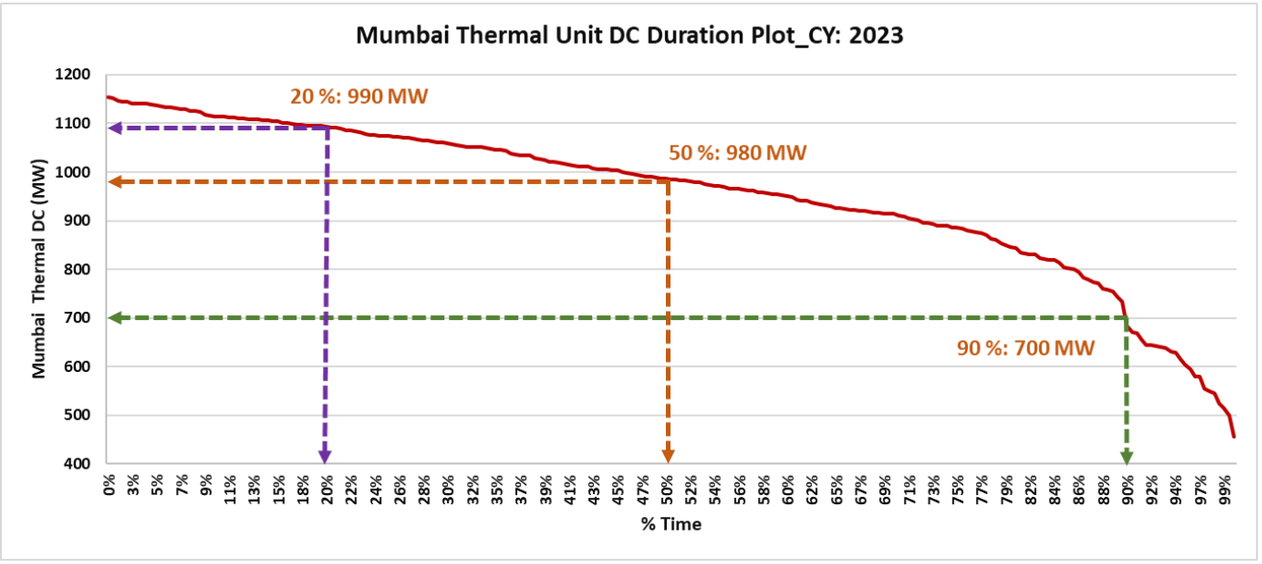


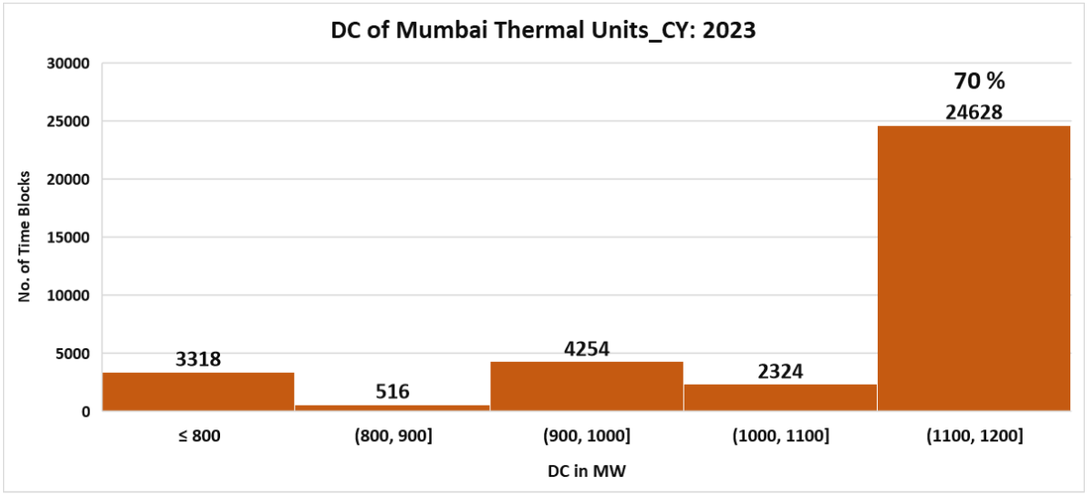


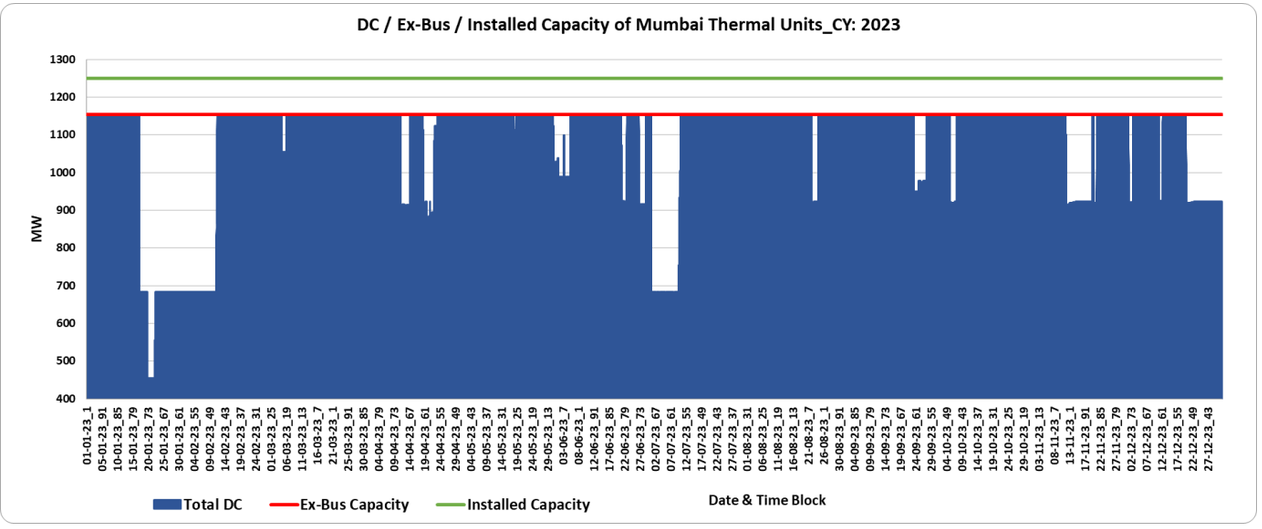
DC against Ex-Bus Capacity (8811 MW)	No. of Time Blocks	No. of Days	% in Year
No. of Time Blocks DC below 50 % (4400 MW)	384	4	1%
No. of Time Blocks DC below 70 % (6200 MW)	16291	170	46%
No. of Time Blocks DC below 75 % (6600 MW)	25855	269	74%
No. of Time Blocks DC below 80 % (7000 MW)	31671	330	90%
No. of Time Blocks DC above 70 % (6200 MW)	18745	195	53%
No. of Time Blocks DC above 80 % (7000 MW)	3364	35	10%
No. of Time Blocks DC above 90 % (8000 MW)	0	0	0%

- For 50% of the period, DC is above 4400 MW
- For 10 % of the period, DC is above 7000 MW
- DC is at much side compared to the Ex-Bus (Installed) Capacity

DC Analysis of Thermal Generation_ Mumbai Units



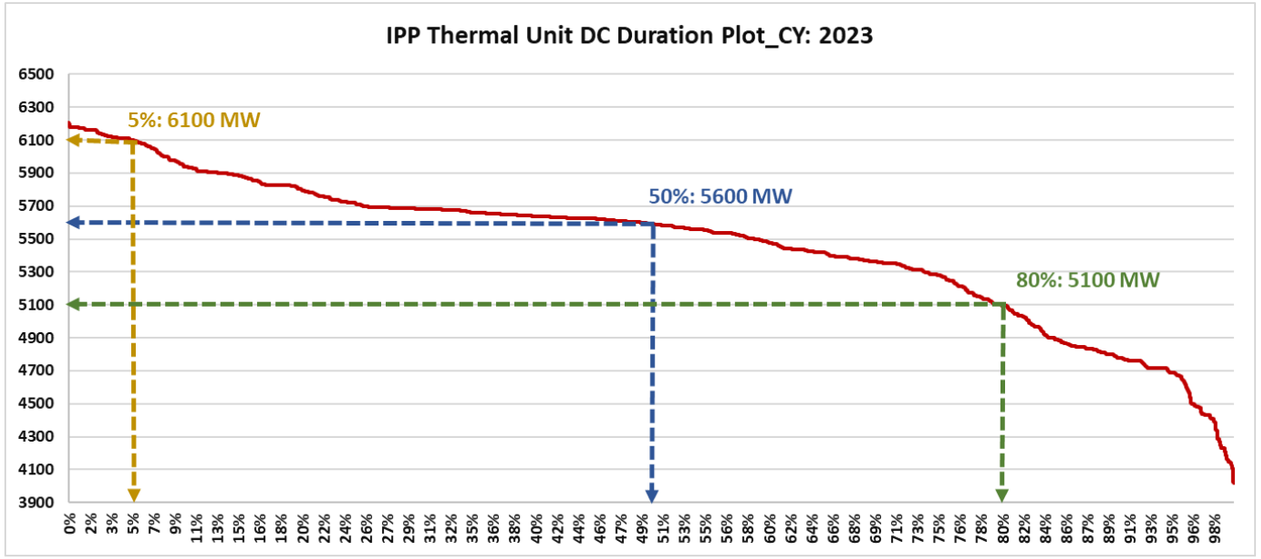


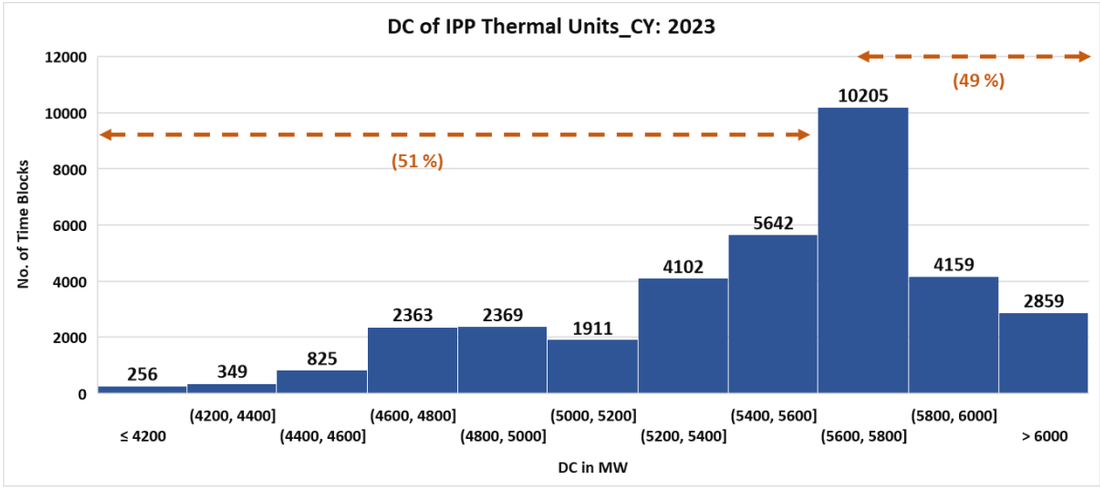


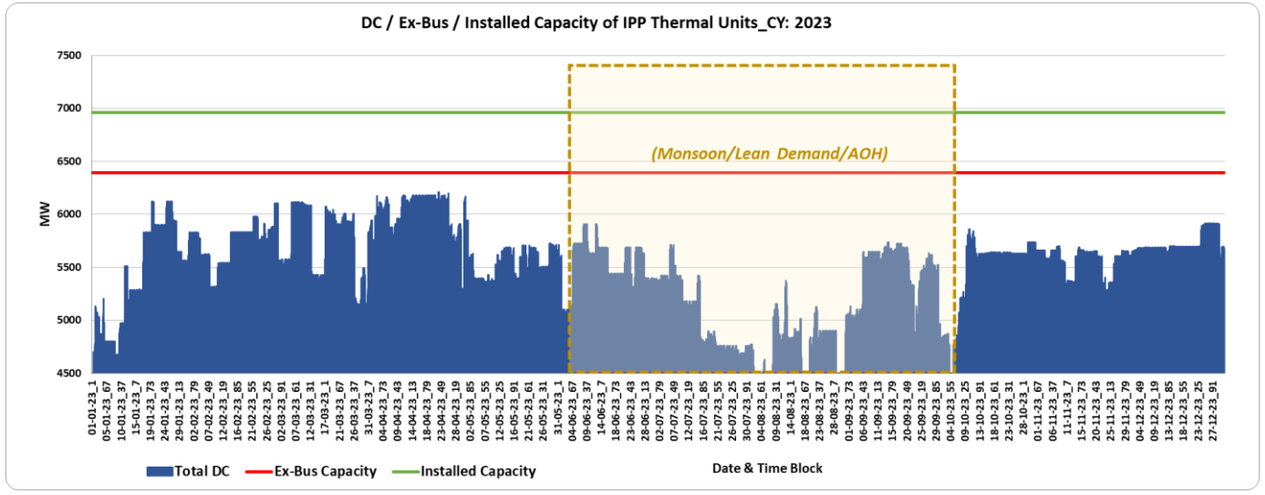
DC against Ex-Bus Capacity (8811 MW)	No. of Time Blocks	No. of Days	% in Year
No. of Time Blocks DC below 50 % (576 MW)	247	3	1%
No. of Time Blocks DC below 70 % (800 MW)	3318	35	9%
No. of Time Blocks DC below 75 % (865 MW)	3529	37	10%
No. of Time Blocks DC below 80 % (923 MW)	6778	71	19%
No. of Time Blocks DC above 70 % (800 MW)	31722	330	91%
No. of Time Blocks DC above 80 % (923MW)	28262	294	81%
No. of Time Blocks DC above 90 % (1038 MW)	26715	278	76%

- For 76% of the period, DC is above 1038 MW
- DC is always near to the Ex-Bus (Installed) Capacity

DC Analysis of Thermal Generation_ IPPs



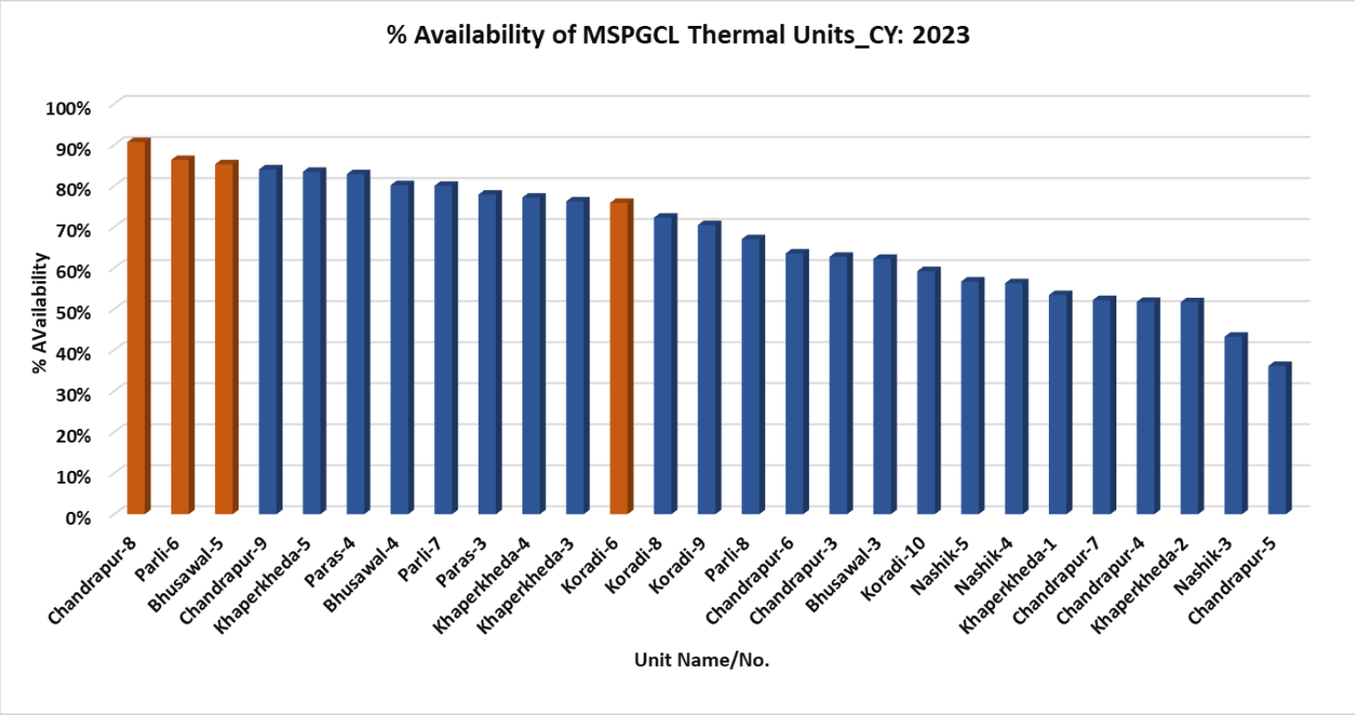




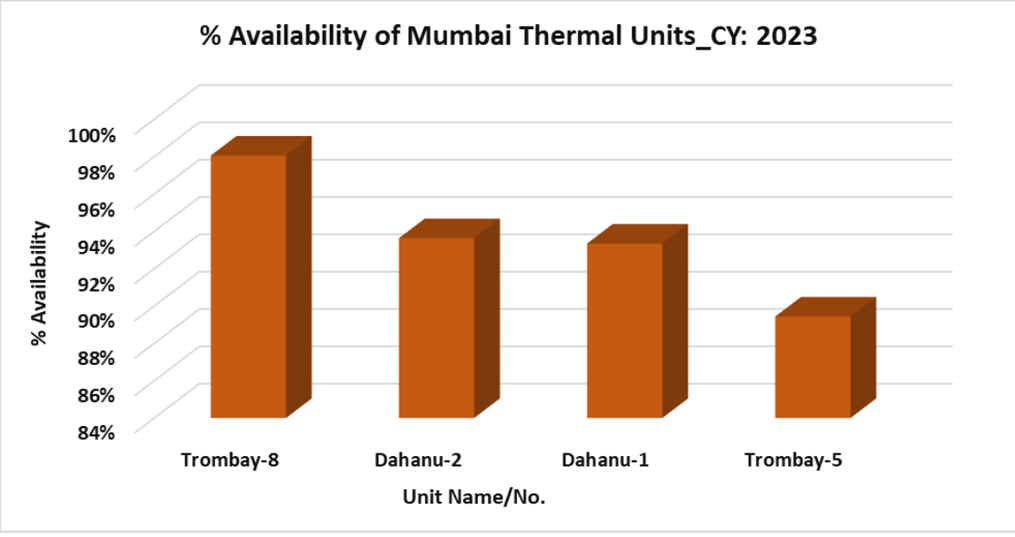
DC against Ex-Bus Capacity (6394 MW)	No. of Time Blocks	No. of Days	% in Year
No. of Time Blocks DC below 50 % (3200 MW)	0	0	0%
No. of Time Blocks DC below 70 % (4500 MW)	1263	13	4%
No. of Time Blocks DC below 75 % (4800 MW)	3649	38	10%
No. of Time Blocks DC below 80 % (5100 MW)	7043	73	20%
No. of Time Blocks DC above 70 % (4500 MW)	33777	352	96%
No. of Time Blocks DC above 80 % (5100MW)	27997	292	80%
No. of Time Blocks DC above 90 % (5800 MW)	7018	73	20%

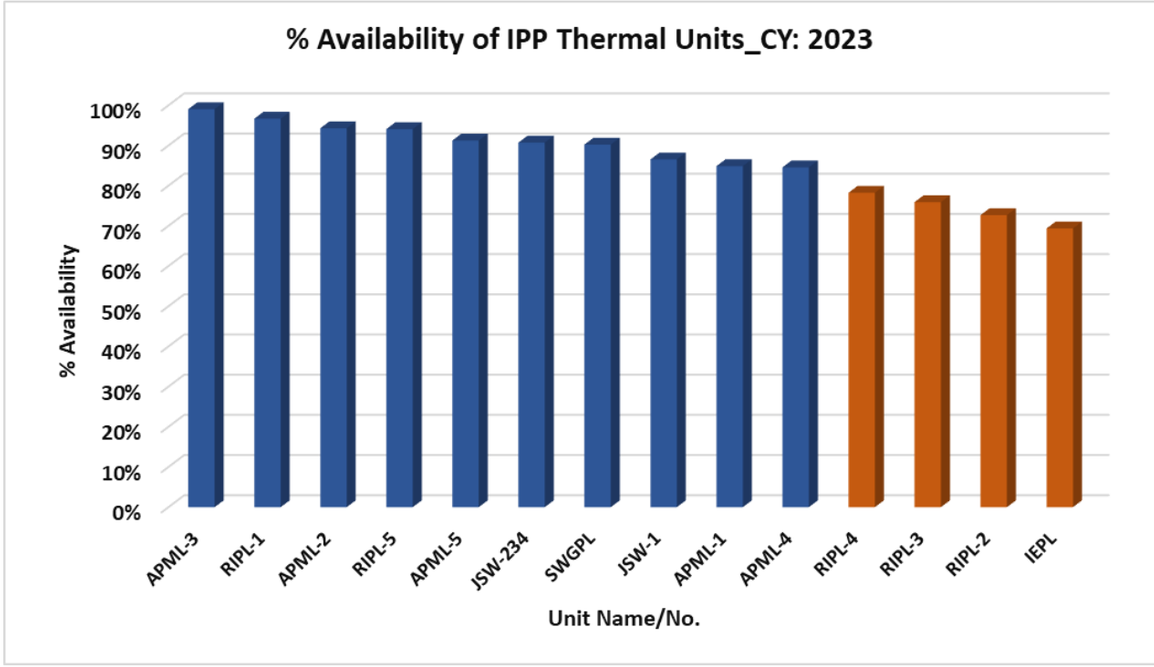
- For 80% of the period, DC is above 5100 MW
- For 20 % of the period, DC is above 5800 MW

Yearly availability of Thermal Generation



- Only 4 units of MSPGCL are meeting the norms as per MYT regulations, 2019.
- All Mumbai thermal units are meeting norms.
- RIPL-2,3,4 units and IEPL unit is not meeting norms under IPPs





MAHATRANSCO
Maharashtra State Electricity Transmission Co. Ltd.

Non-Availability of Thermal Generation

Owner	Station	Name of Unit	No. of Times under shut down	No. of Days not available	No. of Days under zero schedule
MSPGCL	Bhusawal TPS	Bhusawal Unit 3	16	37	0
		Bhusawal Unit 4	16	30	0
		Bhusawal Unit 5	11	9	0
	Chandrapur TPS	Chandrapur Unit 3	7	17	0
		Chandrapur Unit 4	18	83	0
		Chandrapur Unit 5	16	194	0
		Chandrapur Unit 6	20	43	0
		Chandrapur Unit 7	4	24	0
		Chandrapur Unit 8	3	5	0
		Chandrapur Unit 9	12	30	0
	Khaparkheda TPS	Khaparkheda Unit 1	17	44	0
		Khaparkheda Unit 2	16	11	0
		Khaparkheda Unit 3	26	21	0
		Khaparkheda Unit 4	16	18	0
		Khaparkheda Unit 5	10	22	0
	Koradi TPS	Koradi Unit 6	12	19	0
		Koradi Unit 8	11	53	0
		Koradi Unit 9	12	47	0
		Koradi Unit 10	12	97	0
	Nashik TPS	Nasik Unit 3	22	132	0
		Nasik Unit 4	12	103	0
		Nasik Unit 5	18	92	0
	Paras TPS	Paras Unit 3	11	20	0
		Paras Unit 4	5	8	0
	Parli TPS	Parli Unit 6	18	19	40
		Parli Unit 7	17	43	37
		Parli Unit 8	8	38	22

Owner	Station	Name of Unit	No. of Times under shut down	No. of Days not available	No. of Days under zero schedule
Adani, Dahanu	ADTPS	AEML Unit 1	9	21	0
		AEML Unit 2	4	16	0

Owner	Station	Name of Unit	No. of Times under shut down	No. of Days not available	No. of Days under zero schedule
TPC-G	TPC	Trombay 5	2	33	0
		Trombay 7A	14	35	1
		Trombay 7B	12	37	1
		Trombay 8	4	5	0

Owner	Station	Name of Unit	No. of Times under shut down	No. of Days not available	No. of Days under zero schedule
Adani, Tirora	APML	Adani U-1	6	37	26
		Adani U-2	6	25	15
		Adani U-3	1	0	15
		Adani U-4	4	33	18
		Adani U-5	1	0	28
Jaigad TPS	JSWEL	JSW (J) U1	6	35	11
		JSW (J) U2	0	0	8 (No sch)
		JSW (J) U3	2	36	17 (No Sch)
		JSW (J) U4	3	4	23 (No sch)
Rattan India, Amravati	RPL AMT	RPL(AMT) U-1	2	6	0
		RPL(AMT) U-2	8	125	0
		RPL(AMT) U-3	4	67	0
		RPL(AMT) U-4	5	80	0
		RPL(AMT) U-5	6	16	0
Sai wardha	SWPGPL	SWPGPL U-1	9	25	0
		SWPGPL U-2	6	31	0
		SWPGPL U-3	6	53	0
		SWPGPL U-4	3	31	0

Coal position at Thermal Generation

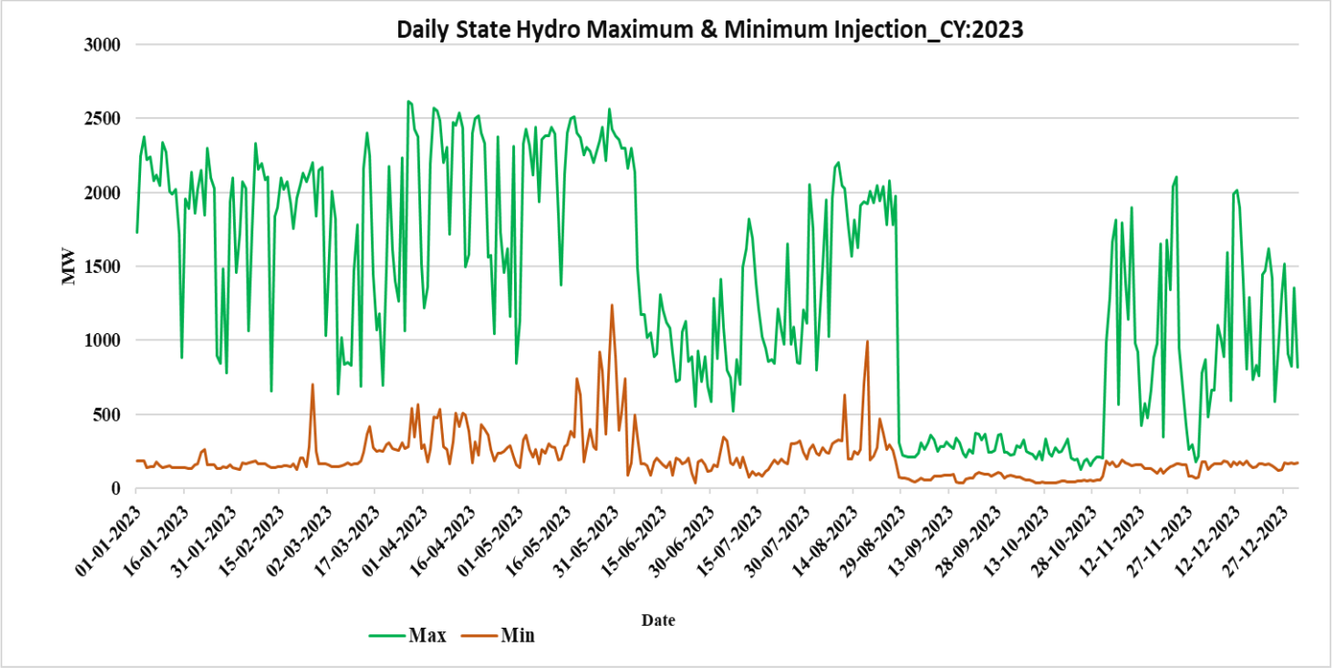
Coal stock less than 3 Days	
Power Station	CY 2023
	No. of days
ADTPS	297
RPL (AMT)	145
Bhusawal Unit 4	131
Bhusawal Unit 5	131
Chandrapur Unit 3 to 7	129
Chandrapur Unit 8 and 9	129
Khaparkheda Unit 1 to 4	100
Bhusawal Unit 3	72
Paras	64
Parli Unit 6 and 7	59
Nasik	49
Khaparkheda Unit 5	43
Parli Unit 8	39
APML, TIRORA	27
Koradi Unit 8 to 10	2
Koradi Unit 6	0
JSWEL	0
SWPGPL	0
TPCL	0

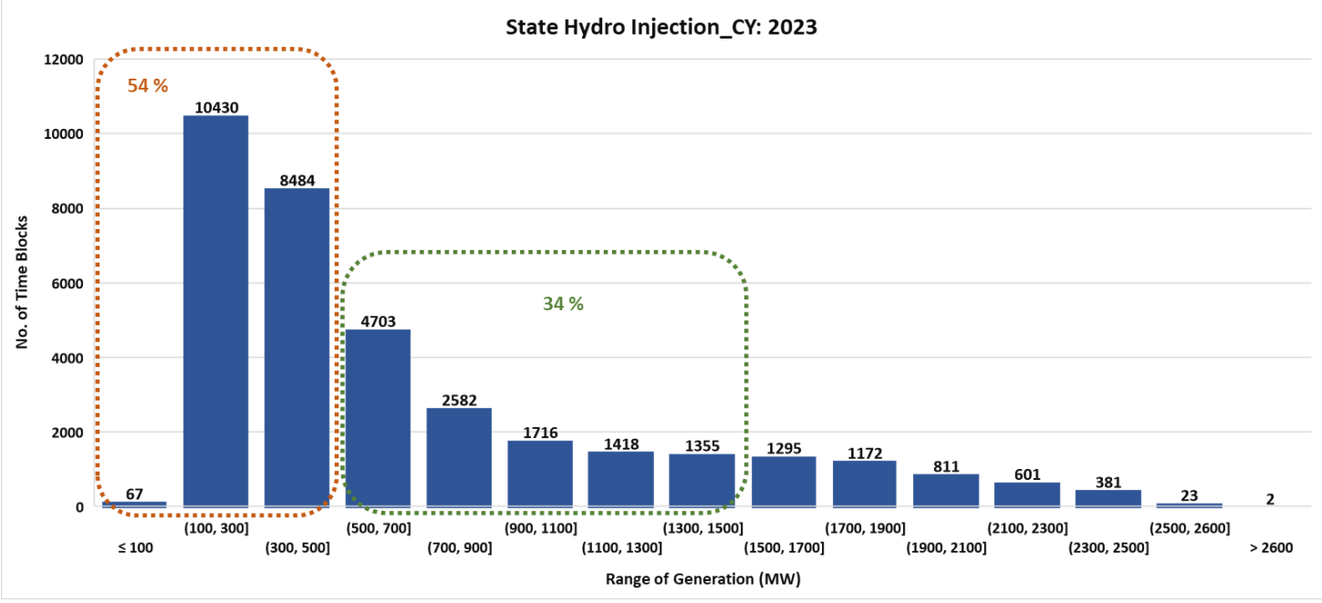
Coal stock less than 7 Days	
Power Station	CY 2023
	No. of days
Bhusawal Unit 4	198
Bhusawal Unit 5	198
Paras	175
Parli Unit 6 and 7	150
Parli Unit 8	148
Koradi Unit 8 to 10	135
Chandrapur Unit 3 to 7	129
Chandrapur Unit 8 and 9	129
Nasik	122
Bhusawal Unit 3	112
Khaparkheda Unit 5	96
Khaparkheda Unit 1 to 4	77
ADTPS	68
APML, TIRORA	53
RPL (AMT)	45
JSWEL	13
SWPGPL	4
Koradi Unit 6	1
TPCL	0

Coal stock less than 15 Days	
Power Station	CY 2023
	No. of days
APML, TIRORA	230
Koradi Unit 8 to 10	228
Bhusawal Unit 3	174
Khaparkheda Unit 5	153
Parli Unit 8	147
RPL (AMT)	145
Nasik	125
Paras	124
Parli Unit 6 and 7	124
Chandrapur Unit 3 to 7	107
Chandrapur Unit 8 and 9	107
JSWEL	85
SWPGPL	84
TPCL	62
Khaparkheda Unit 1 to 4	60
Koradi Unit 6	54
Bhusawal Unit 4	36
Bhusawal Unit 5	36
ADTPS	0

- 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: 94 Nos.
  - AEML (Dahanu): 51 Nos.
  - APML (Tiroda): 7 Nos.

Hydro Generation

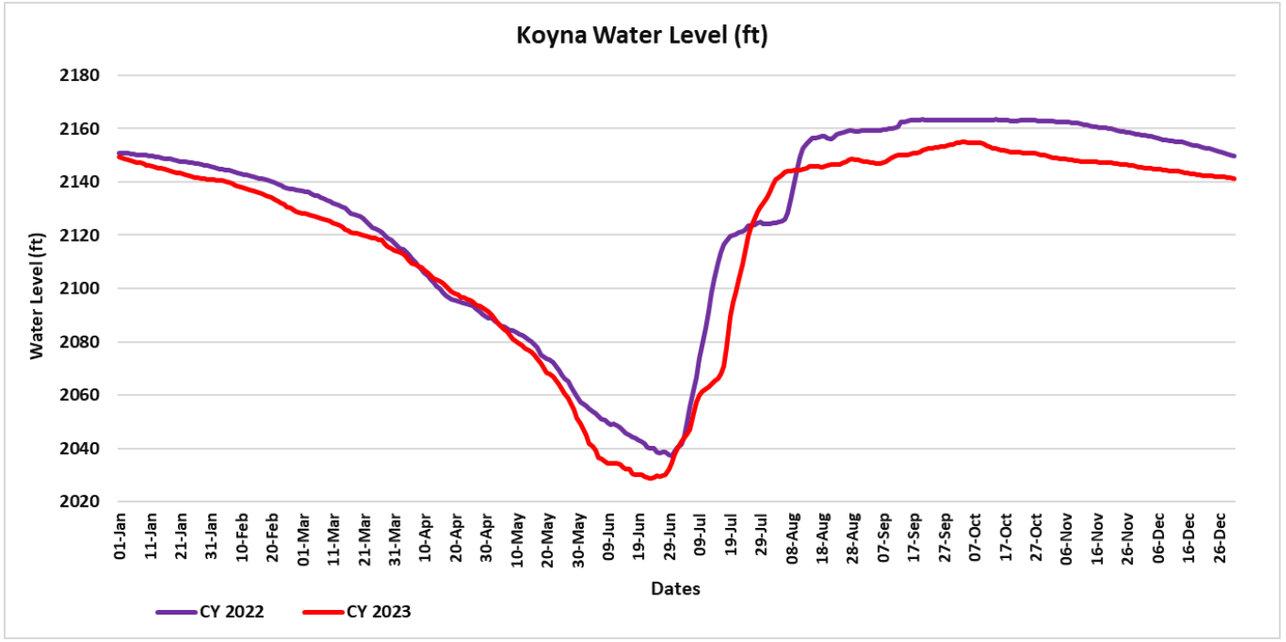


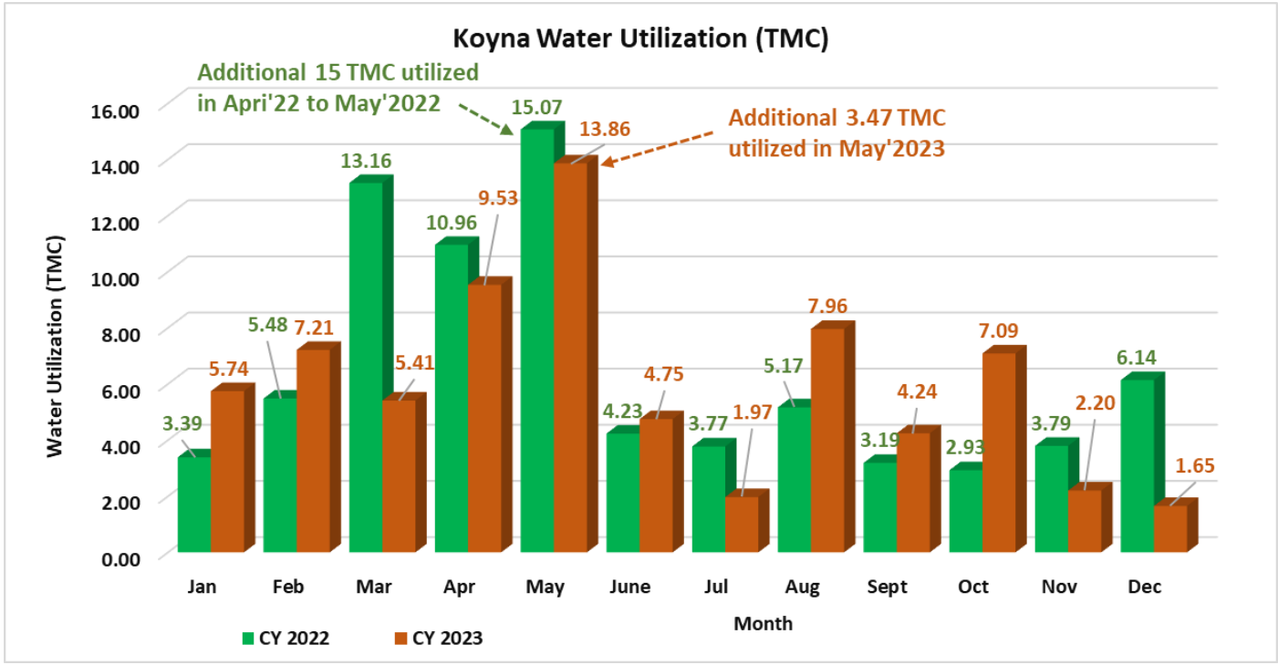


Owner	Station	Name of Unit	No. of Times under shut down	No. of Days not available
MSPGCL	Ghatghar HPS	Ghatghar Unit-2	13	127
	Koyna HPS	Koyna STG-IV Unit-1	6	104
		Koyna STG-IV Unit-2	8	37
		Koyna STG-IV Unit-3	10	83
		Koyna STG-IV Unit-4	10	40
		Koyna Unit 1	9	12
		Koyna Unit 2	6	0
		Koyna Unit 3	6	0
		Koyna Unit 4	7	3
		Koyna Unit 5	7	0
		Koyna Unit 6	7	3
		Koyna Unit 7	9	39
		Koyna Unit 8	8	74
		Koyna Unit 9	3	0
		Koyna Unit 10	5	2
		Koyna Unit 11	2	174
		Koyna Unit 12	5	0

- For 88 % of time period, hydro generation is used below 1500 MW
- For 54 % of the period, hydro generation was used for capacity between 0 to 500 MW.
- For 34% of the period, hydro capacity was used between 500 to 1500 MW
- For 12 % of the period, hydro generation is used above 1500 MW capacity

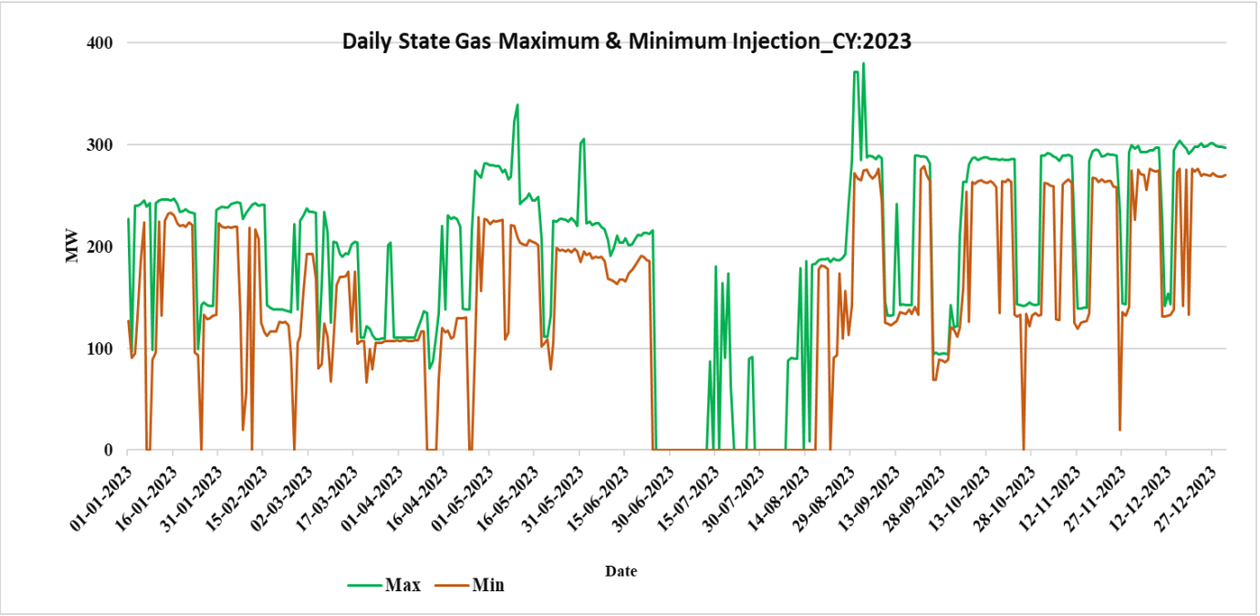
Koyna Lake Level



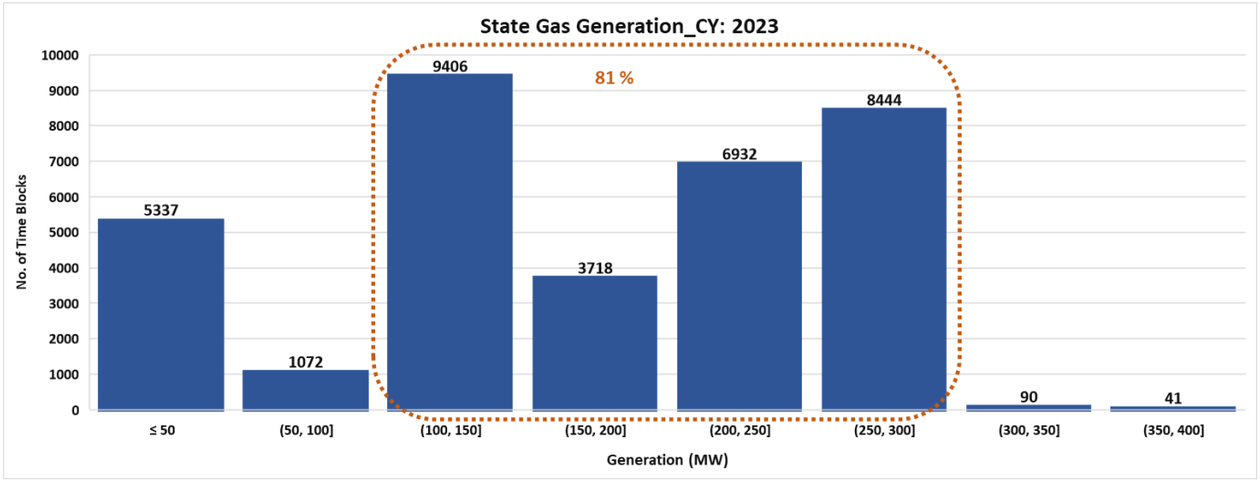


- The Water allocation for Maharashtra Koyna Generating Plant is 67.5 TMC for a Water year starting from June to May
- The water utilized by Koyna St-I & II and Stage-IV is utilized for generation at Koyna Stage-III. Hence, the water utilized at Koyna Stage-III is not considered in the TMC utilization quota
- Additional 15 TMC was allotted for utilization in the month of April’22 & May’22 which was utilized completely
- Additional 7 TMC was allotted for water year 2022-23, out of which 3.47 TMC was utilized in CY: 2023

Gas-based Generation

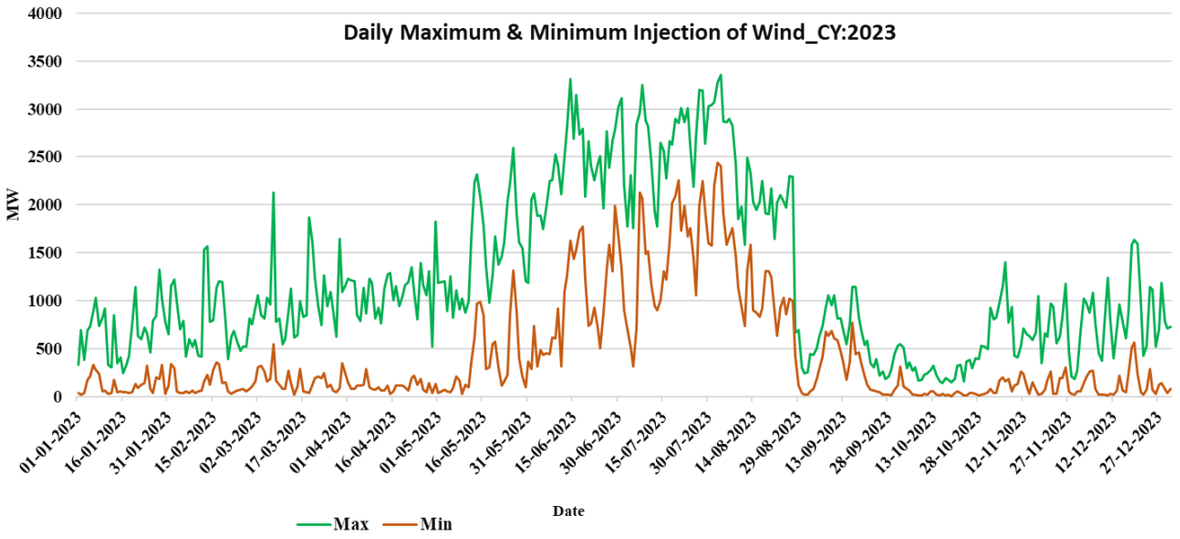


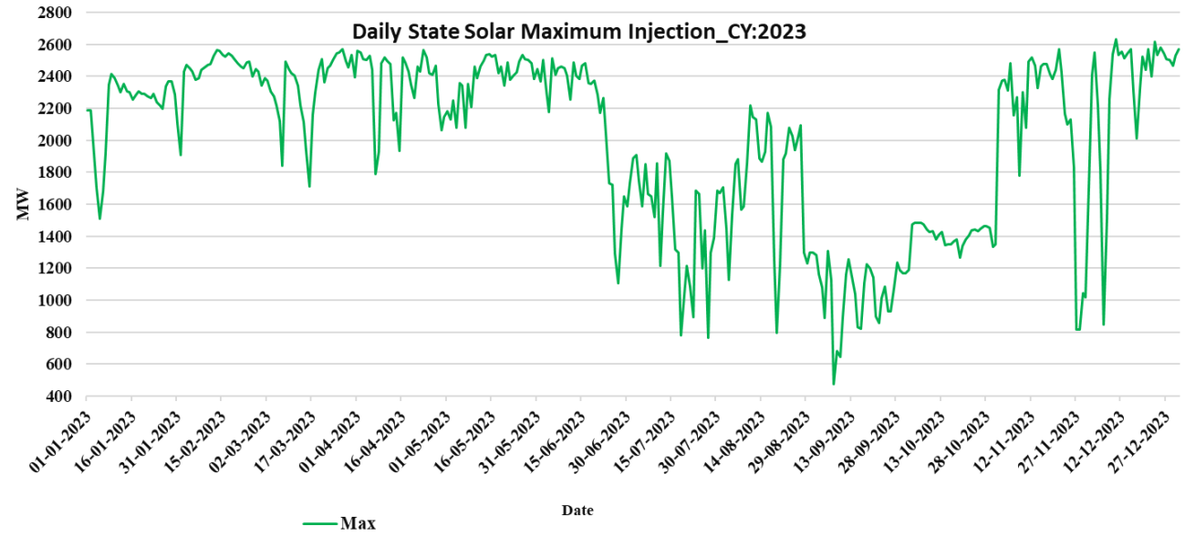
Owner	Station	Name of Unit	No. of Times under shut down	No. of Days not available	No. of Days under zero schedule
MSPGCL	Uran GTPS	Uran Unit 5	-	-	-
		Uran Unit 6	23	148	144
		Uran Unit 7	17	46	30
		Uran Unit 8	22	97	4
		Uran Unit A0	-	-	-
		Uran Unit B0	24	90	0

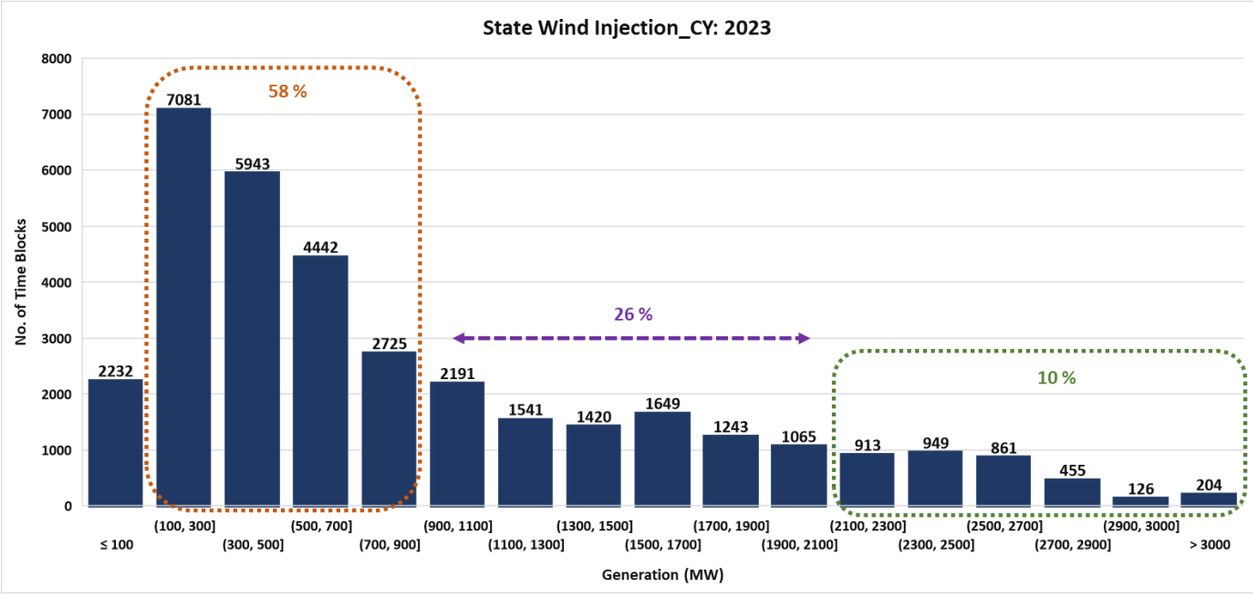


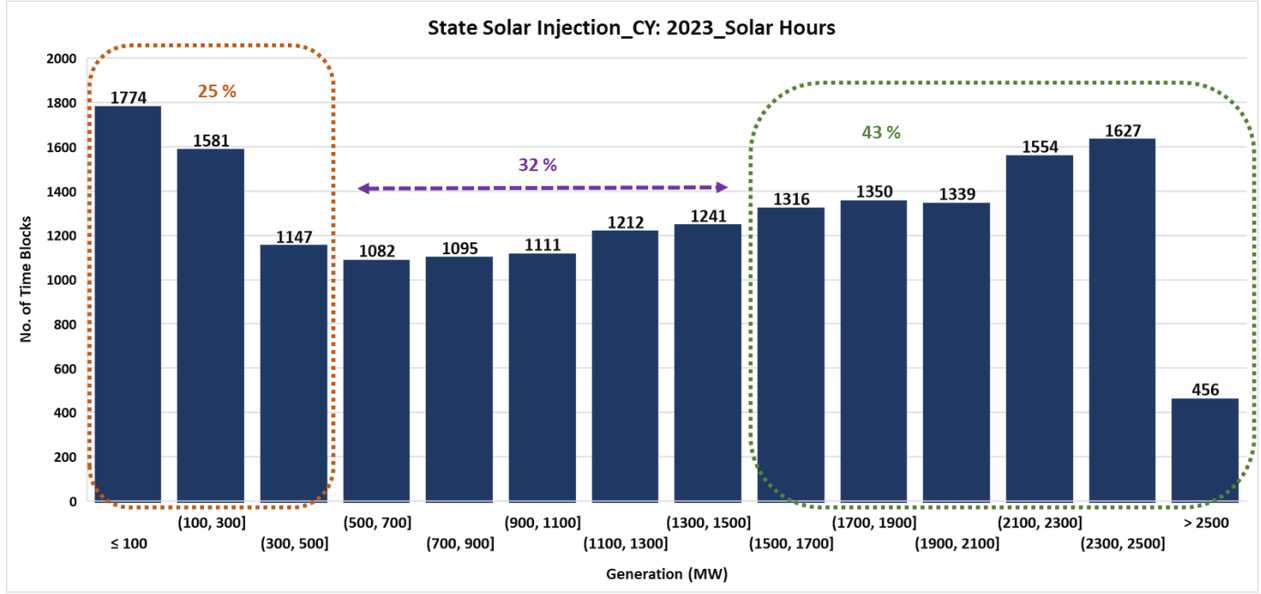
- The total installed capacity of 852 MW (Uran + TPC)
- The generation depends up on availability of APM gas. Hence, based on the gas availability, these units are despatched
- Some times TPCL Unit-7 is operated through RLNG gas to meet out contingencies under emergency situations
- For 81 % of the period, injection is only between 100 MW to 300 MW
- For less than 1 % of the period, generation is above 300 MW
- This indicates that around 50 % of the capacity has become stranded due to non-availability of APM gas

Wind & Solar Generation

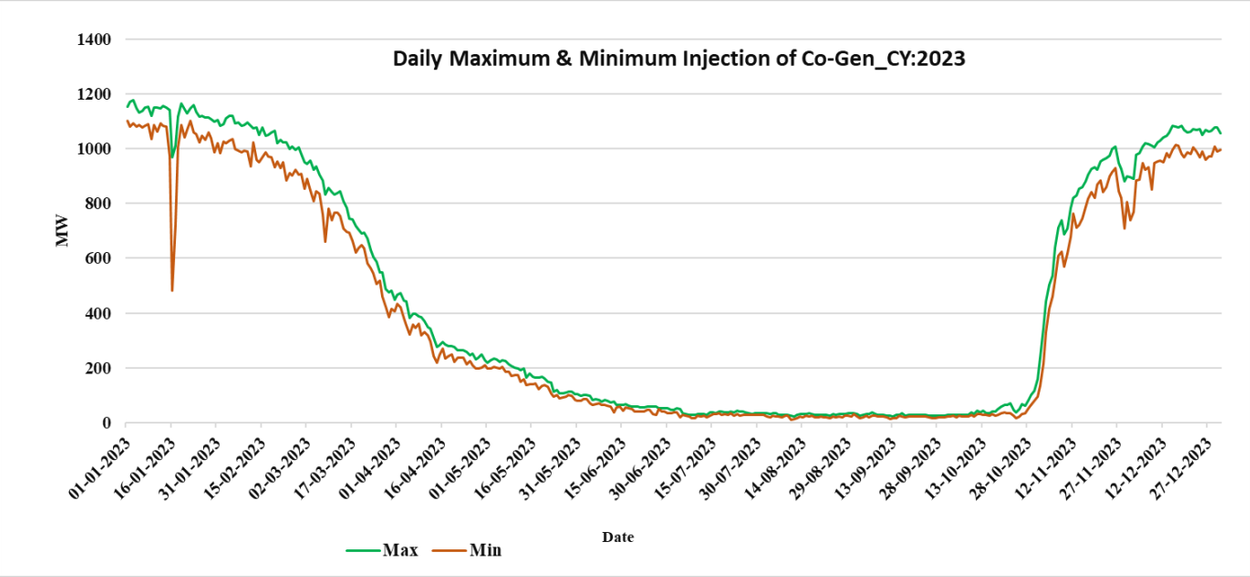


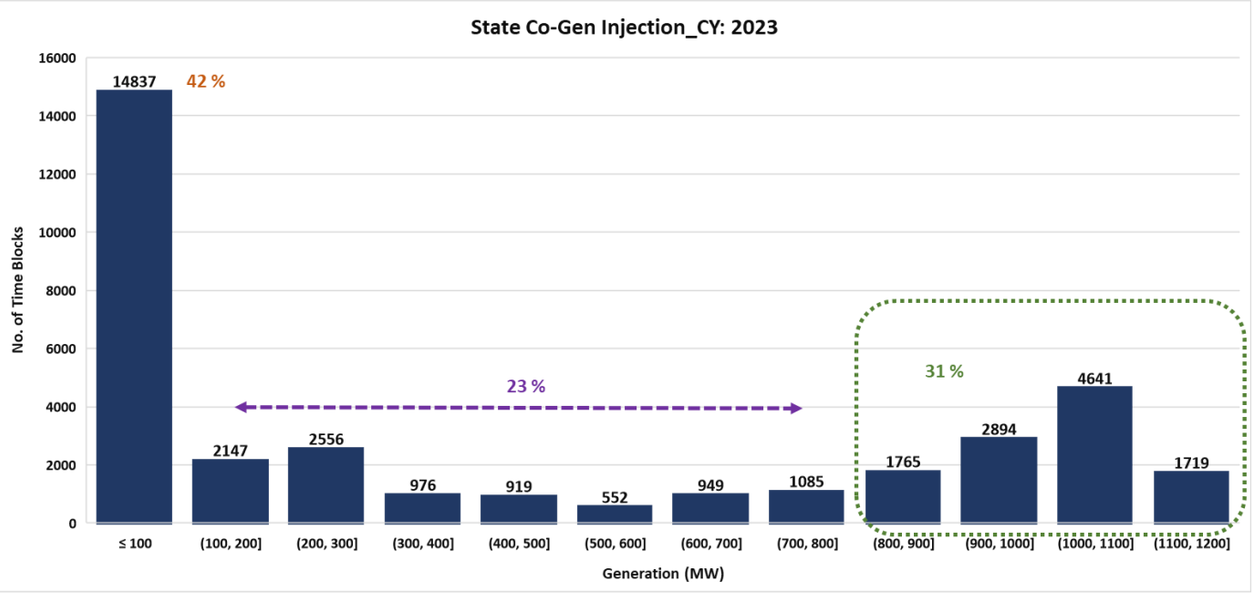






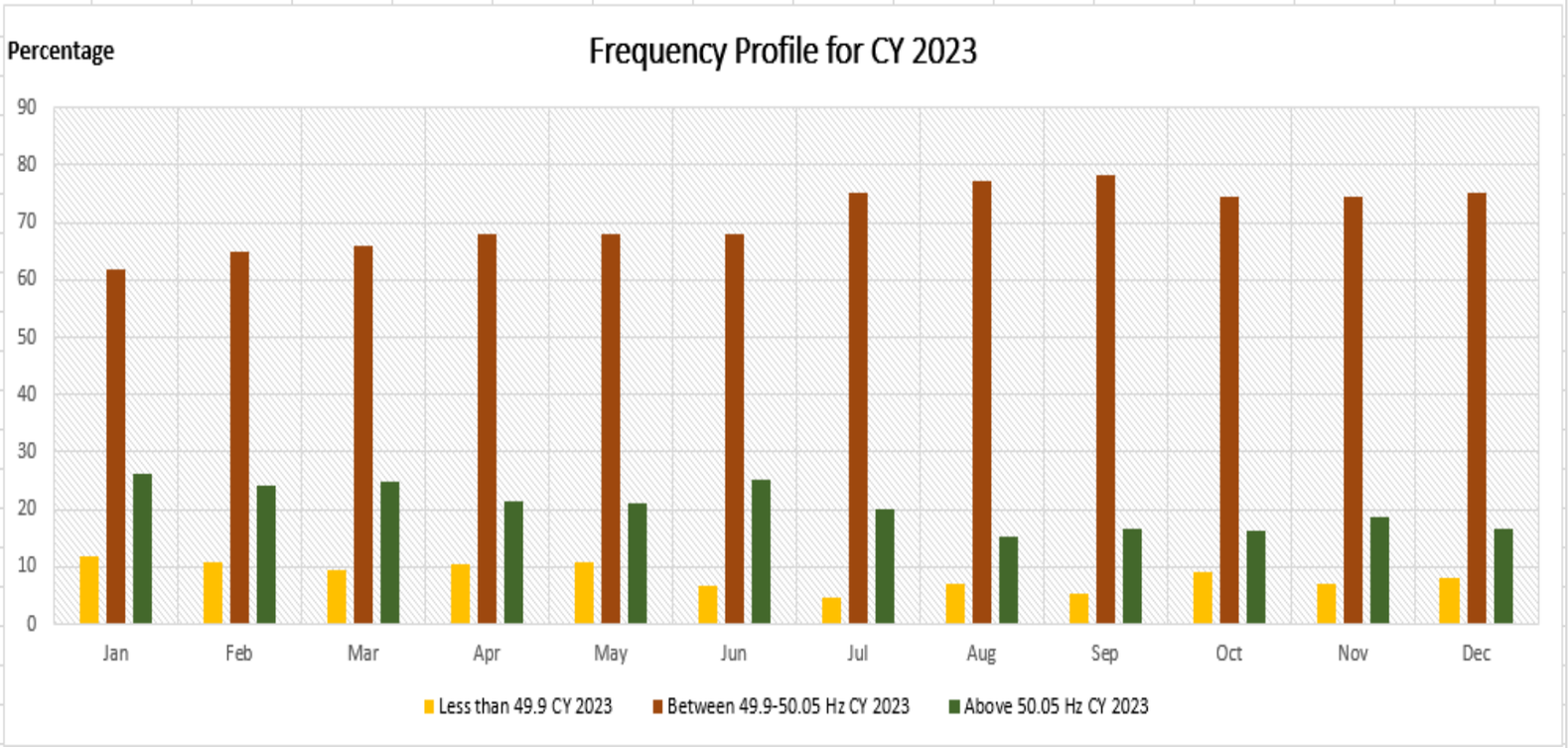
Bagasse based Generation



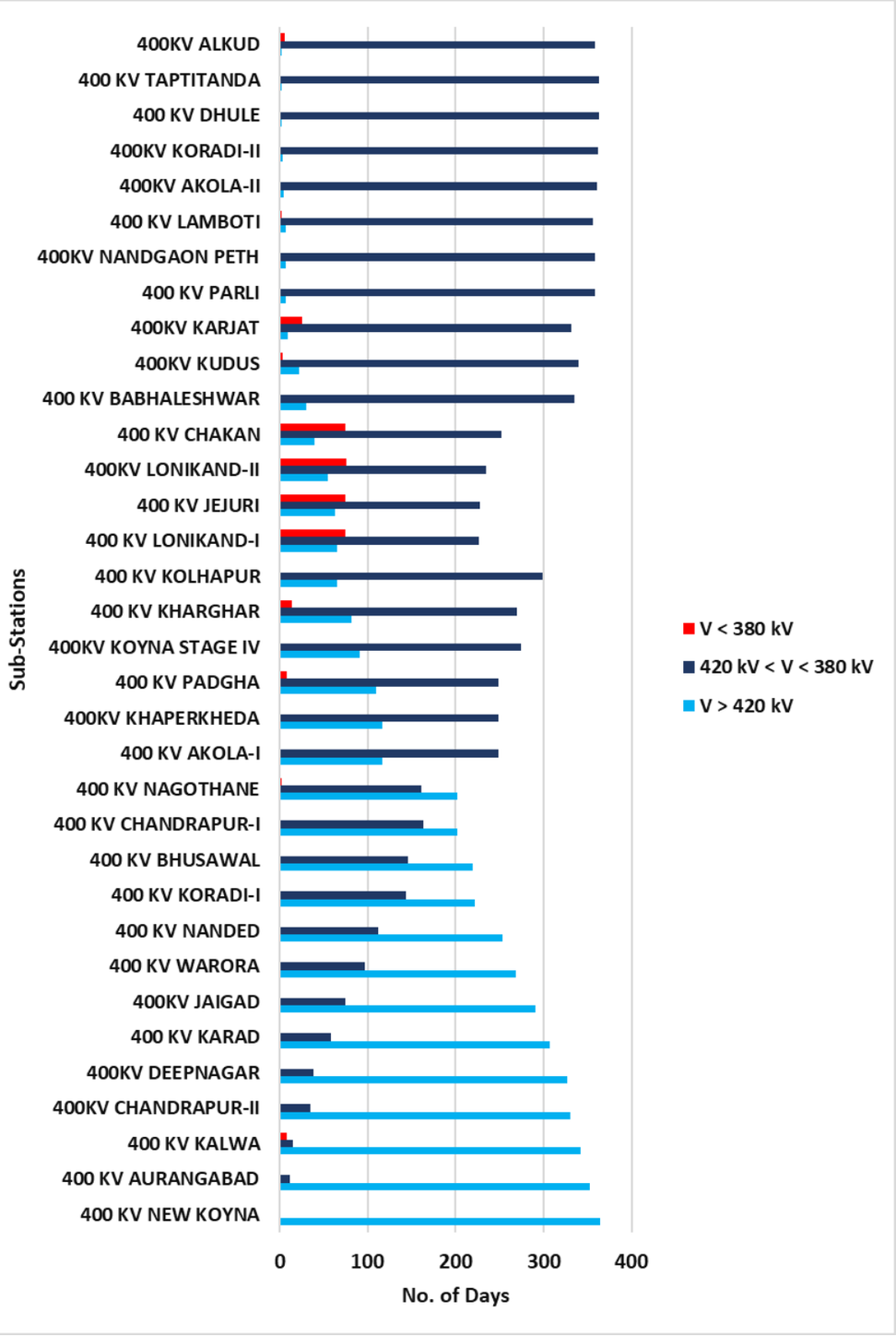


- Generation from Bagasse-based generation is seasonal & depends up on Sugarcane crushing which starts normally in September or October & is available till April/May.
- Against the total installed capacity of around 2700 MW, for 31 % of the period, injection is above 800 MW.
- For 42 % of the time, injection is below 100 MW.

Frequency & Voltage Profile

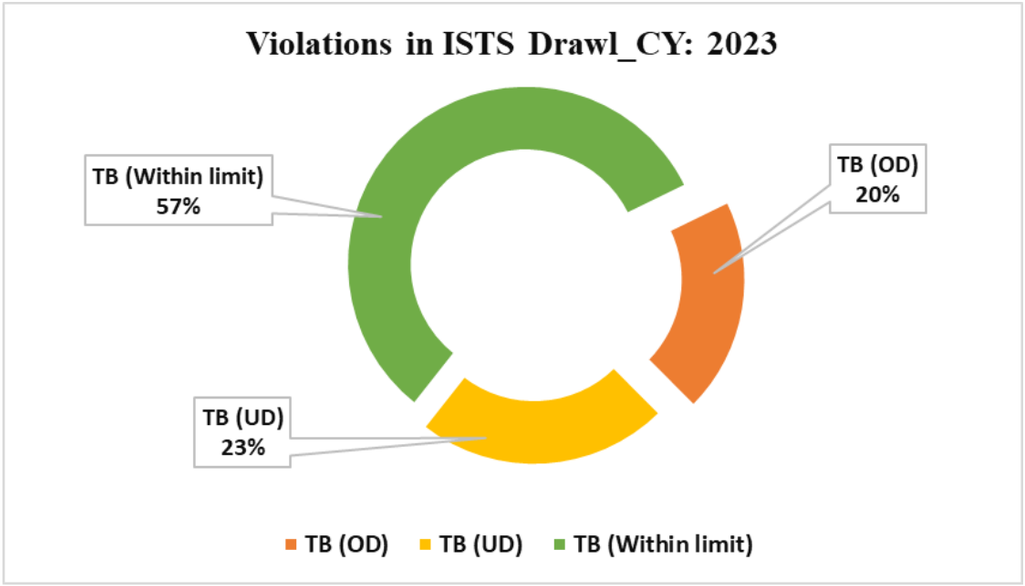


- In accordance with the IEGC' 2023, the permissible band of Frequency is 49.90 Hz to 50.05 Hz.
- For 70.93 % of the period, the System Frequency was within permissible band.
- The Maximum frequency of 50.47 Hz was recorded in January' 2023.
- Minimum Frequency was recorded was 49.41 Hz in July' 2023.
- The average frequency for the complete year was 49.99 Hz.
- The frequency was above 50.05 Hz for average 50.59 % of times whereas frequency was below 49.90 Hz for 8.48 % of times.



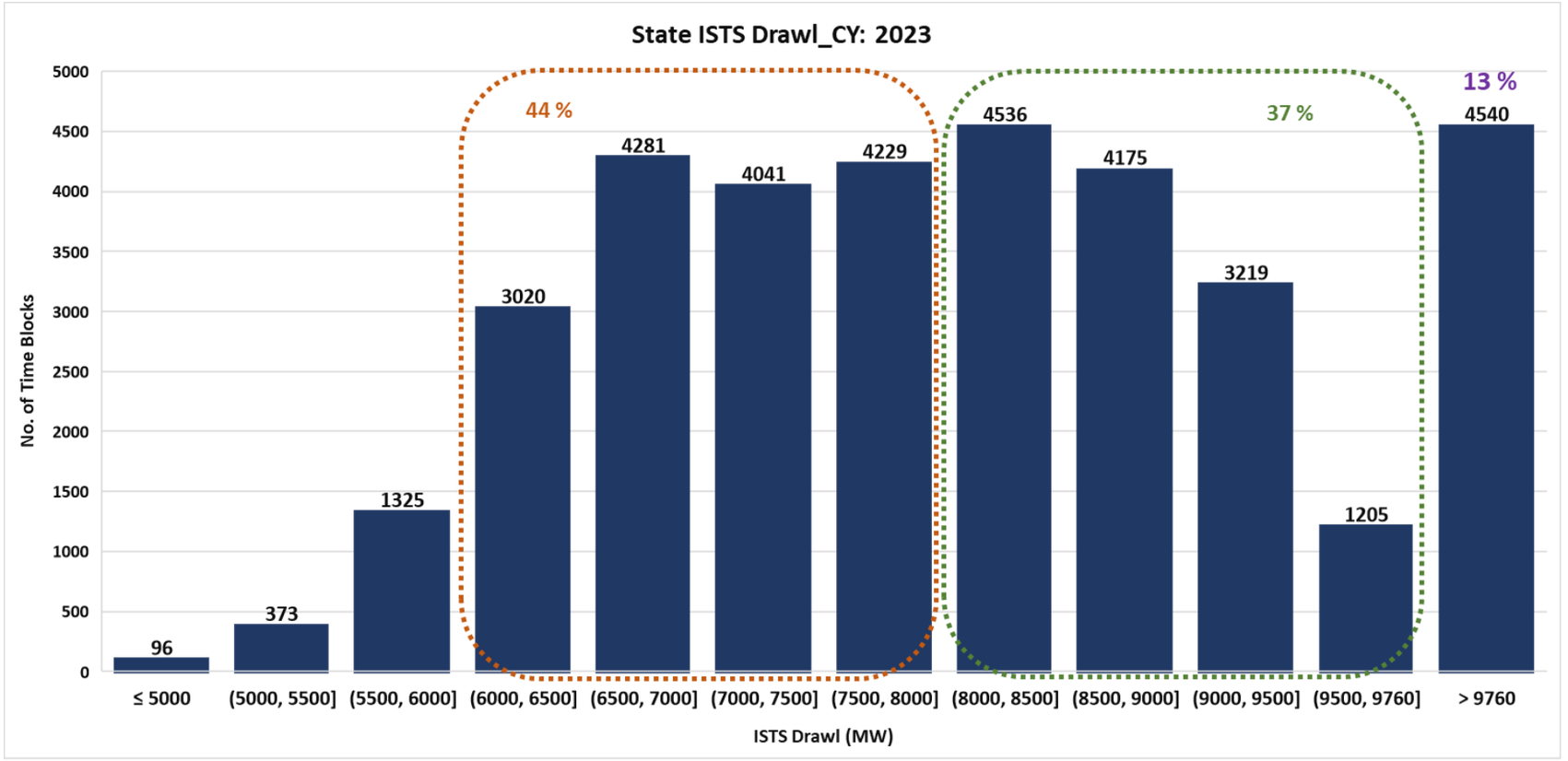
ISTS Drawl Violation

- 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 2023							
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	273	169	785	296	307	-1164
Feb	2688	331	303	1570	195	160	-1691
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	277	351	871	324	482	-965

ISTS Drawl Violation



- The Available Transfer Capability (ATC) of the State is 9760 MW.
- The State is permitted to schedule & draw power from ISTS inter-connection points up to ATC limit.
- For 4540 No. of time blocks, i.e. for 13% of the time, State has violated the ATC limit.
- For 37 % of the period, ISTS Drawl is between 8000 MW to 9760 MW.
- For 44 % of the period, ISTS drawl is between 6000 MW to 8000 MW.

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:**
  - 1528 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.

Name of Unit	Date Trip	Time Trip	Date Sync	Time Sync	Outage Type	Reason	Expected Date of revival
Tarapur 1	08-01-2020	10:37		Continued.	FORCED	Refueling. While refueling preparation, some repair works identified which are being executed before refueling.	01-04-2024
Uran Unit 7	25-05-2020	12.51	26-04-2023	08:44	FORCED	Turbine Blade Failure	
Tarapur 2	13-07-2020	04:38		Continued.	FORCED	For cleaning of clogged basket strainer of cooling water system due to heavy ingress of debris from sea. The outage extended for repair and re-fueling.	01-05-2024
Ghatghar Unit-1	20-04-2022	00:35		Continued.	FORCED	Stator Earth Fault	30-11-2023
Uran Unit A0	07-09-2022	16:30		Continued.	FORCED	TURBINE TRIPPED ON HIGH VIBRATIONS	31-03-2024
Uran Unit 5	12-11-2022	13:23		Continued.	PLANNED	Major overhaul.	15-02-2024
Koyna Unit 11	10-07-2023	09:40		Continued.	PLANNED	COH	07-12-2023

Generating Company	Name of Generating Unit	Capacity (MW)	Tripped Date	Tripped Time	Sync. Date	Sync. Time	Reason of Outage
IPP	PIONEER GAS U1	262	07-02-2017	17.30		Continued.	No Schedule (NO PPA)
IPP	PIONEER GAS U2	126	07-02-2017	17.30		Continued.	No Schedule.(NO PPA)
IPP	VIPL U-1	300	29-12-2018	00.30		Continued.	Coal Shortage. (NO PPA From 20.05.2019)
IPP	VIPL U-2	300	17-01-2019	00.15		Continued.	Coal shortage.(NO PPA From 20.05.2019)
IPP	RPL SINNER U-1	270	--	--		--	No Schedule (NO PPA)
IPP	RPL SINNER U-2	270	--	--		--	No Schedule (NO PPA)
Total		1528					

System Constraints_Transmission Constraints

- **LTS Operation & ELR:**
- **Line Hand tripped due to overloading:**
- **‘N-1’ Non-Compliant Elements:**
- **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.
- **Restoration of 400kV Karad – Solapur (PG):**
  - For improving the voltages in 220 kV Jeur area, 400 kV Karad-Solapur (PG) S/C line has been temporarily converted to 220kV Solapur (PG) – Jeur line. This arrangement has been approved by CEA & WRPC purely on temporary basis.
  - WRLDC & WRPC are continuously requesting MSLDC for restoration of the said line.
  - As informed by the STU, the work of 220 kV Karjat – Jeur D/C line is in progress. Once the line is commissioned, 400 kV Karad-Solapur (PG) line can be restored & charged to 400 kV level.
  - For the system improvement, reconductoring of Moose conductor with HTLS conductor work carried out by Powergrid on 400kV Kolhapur (MS) – Kolhapur (PG) ckt – 1 & 2. Due to such conductor replacement work, loading of 400kV Karad – Kolhapur DC increased around 900MW. It causes the constraints while availing shut down on one of the ckt. This constraint can be resolve after the restoration of 400kV Karad – Solapur (PG).
  - During the peak season, loading on 400kV Alkud – Solapur (PG) remains around 800 MW. This loading can be reduces after the restoration of 400kV Karad – Solapur (PG).

System Constraints_Transmission Constraints

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System Constraints_Transmission Constraints

- **MMR Transmission Constraints:**
  - Major power sources to MMR including Mumbai area at 400 kV level are 400 kV Talegaon (PG) and 400 kV Padghe.
  - In real time it is observed that power to the tune of around 2500-2800 MW is injected from 765/400 kV Pune GIS S/s.
  - This high dumped power at Talegaon (PG) is evacuated through 400 kV Talegaon (PG) – Chakan S/C, 400 kV Talegaon (PG) – Kharghar S/C and 400 kV Talegaon (PG) – Kalwa S/C lines. Same power is evacuated through 400/220 kV ICTs at Talegaon (PG).
  - All the 3 Nos. of 400 kV lines are always loaded above 500 MW.
  - Depending upon MMR & Mumbai demand and Pune area demand, these lines are seen loaded beyond 650 MW.
  - On the staggering day in Pune, the loading on 400 kV Talegaon (PG) – Chakan S/C line is reduced resulting into increased loading on the other 400 kV lines connecting to Kalwa & Kharghar S/s.
  - It is observed that in-spite of HVDC loaded to 1300 MW, the contribution of 400 kV Padghe S/s on 400 kV Kalwa is less which is normally around 650 MW. Whereas the contribution from Talegaon (PG) is around 1000-1300 MW.
  - To control the loading on these 400 kV lines, WRLDC is opening one circuit of 400 kV Aurangabad (PG) – Talegaon (PG) D/C. With opening of this line, the loading on these three 400 kV lines is reduced by around 20-30 MW each. However, opening of any grid line for load management is not desirable as such opening results into weakening of the network.
  - In order to maintain the 400 kV transmission network connected to MMR area ‘N-1’ compliant, it is necessary to limit the line loadings up to 650 MW. Hence, to limit the loading up to 650 MW, internal Mumbai generation is picked up in real time, which is of high rate. As the internal generation is costly, the commercial impact is passed on to the consumers of its contracted Discoms.

System Constraints_Transmission Constraints

- **Inter State ATC/TTC Constraint:**
  - Presently, ATC / TTC for the Maharashtra State is as below:
  - Total Transfer Capability (TTC): - 10060 MW
  - Transmission reliability Margin (TRM): - 300 MW
  - Available Transfer Capability (ATC): - 9760 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	29
400kV Jaigad – Karad ckt - 2	25
400kV Khadka – Aurangabad (Waluj)	45
400kV Lonikand – Koyna Stage IV	16

System Constraints_Transmission Constraints affecting Generation

- **Nashik TPS Generation constraints:**
  - The grid voltages in Nashik area drops below 205 KV mainly due to high reactive power requirement.
  - To meet out the high MVAr requirement in Nashik area & maintain voltages within limits, Nashik Units are continuously sharing high MVAR.
  - MSPGCL has informed that such high injection of reactive power is resulting in to increase of generator winding temperature. The rotor temperature increases up to 115^0C. Also, an Excitation current has reached its maximum limit of 2600 Amperes resulting in huge stress on the insulation of Generator.
  - To maintain the winding temperature at safe limits, generation is restricted which is causing loss in generation.
  - Sudden drop in Grid Voltage results in generation reduction of around 40-50 MW for the running unit causing commercial loss MSPGCL.
  - Reduction in generation (active power sacrificed due to MVAR requirement) results in reduction of availability of the units to be maintained as per Hon'ble MERC Regulations. Further, as per the present regulations, there is no provision of compensation for such reduction in availability due to MVAR requirements.
  - The issue was discussed in OCC & GCC meetings. STU, MSLDC & Nashik field office has carried out detailed studies for providing adequate reactive power compensation in Nashik area. Thus, reactive power compensation has been planned and the same is being implemented.

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 Ektoni 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 Ektoni 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

- **MMR Constraints impacting Mumbai Generation:**
  - Mumbai & partial area in MMR (Navi Mumbai, Thane, Mulund, Bhandup, etc) is mainly fed through 400 kV Kalwa, 400 kV Kharghar Sub-Stations through 400 kV Talegaon (PG) – Kalwa S/C, 400 kV Talegaon (PG) – Kharghar S/C & 400 kV Padghe – Kalwa D/C lines. The import through these lines is restricted to around 1900 MW.
  - Mumbai embedded generators, Trombay U-5, 7 & 8 and Dahanu U-1 & 2 have high sensitivity on these 400 kV lines feeding power to MMR including Mumbai.
  - Considering transmission constraints & ‘N-1’ contingencies over 400 kV network in MMR, MSLDC directs TPCL & AEML to keep these costly generators on bar.
  - It is the responsibility of the Discom to optimize its power purchase cost by procuring low-cost power. Considering Load-Generation balance on Day ahead basis, Trombay Unit-5 & 8 get lower schedule.
  - However, in real time due to transmission constraints, the Trombay generation is picked up. This additional generation pick-up is booked under ‘VSE’ which is compensated through State DSM Pool account.
  - It is observed that during lean demand season, other State Thermal generators are withdrawn under Zero Schedule whereas these units are not permitted to withdraw under zero schedule considering transmission constraints.
  - Under such conditions, cheaper State thermal generators are under zero schedule whereas costly Mumbai generation is kept on bar which has commercial impact on its contracted Discoms.

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.

Outage Planning

Outage Type	Total proposed Outages (Nos)	Total Deferred Outages			Total Approved Outages (Nos)	Total Availed Outages (Nos)	Total Not Availed Outages (Nos)	%	
		Deferred from site (Nos)	Deferred by SLDC (Nos)	Deferred by WRLDC (Nos)				Proposed / Availed	Approved / Availed
OCCM	7009	3364	975	582	2088	1280	808	18.26	61.3
State Element	16094	3053	3338	0	9703	6403	3300	39.78	65.98
Emergency	2019	16	91	2	1910	1082	828	53.59	56.65
Total	**25122**	**6433**	**4404**	**584**	**13701**	**8765**	**4936**	**34.88**	**63.97**

Details of Outages processed at ALDC, Ambazari						
Year	PLANNED			FORCED		
	220 kV	132 kV	Total	220 kV	132 kV	Total
CY 2023	1178	1562	2740	212	246	458

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

- MSLDC Airoli is carrying out important function of managing outages of 220 kV level & above.
- All such outages are processed through web-based software.
- Total 25122 No. of outages were processed during CY: 2023 out of which around 26% of the outages were deferred by site itself.
- Around 18 % & 2 % outages were deferred by MSLDC & WRLDC respectively.
- 55 % outages i.e. 13701 No. of outages were approved by MSLDC.
- Out of approved outages, 63.97 % (8765 Nos) of the outages were availed by field whereas 36 % (4936 No) of outages were not availed in-spite of approval.
- Thus, the net percentage of proposed v/s availed outages is 34.88 % for CY: 2023

MAHATRANSCO
Maharashtra State Electricity Transmission Co. Ltd.

Thank You!

Presentation by
State Load Despatch Centre, Maharashtra
9th GCC Meeting
11th July 2024

2.1a Maharashtra System Demand Scenario for the month from Dec 2023 to June 2024

A - State Demand Details

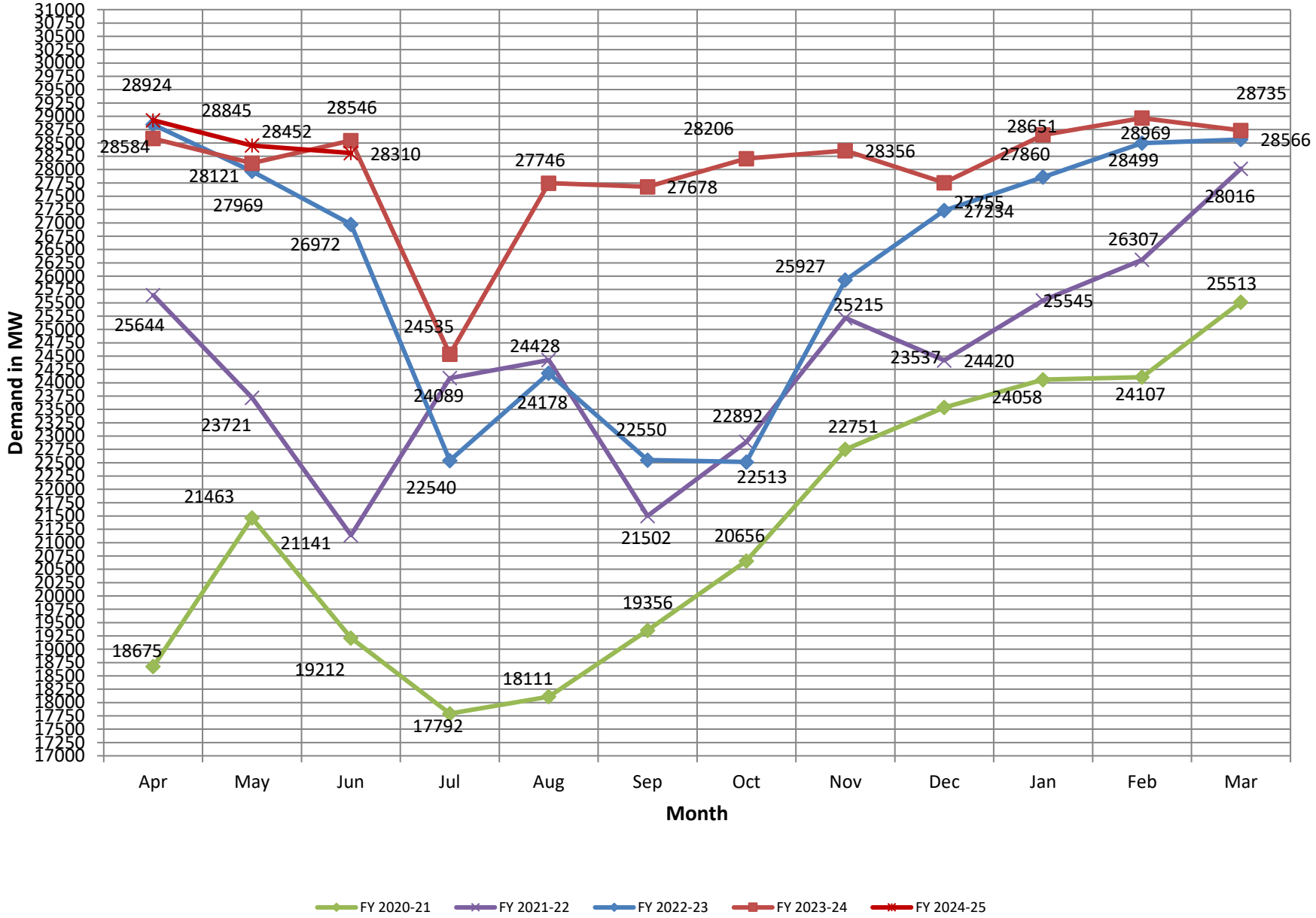
Month	Peak Demand (MW)	Catered Demand (MW)	Load Shedding /Shortfall (MW)	Date	Time (Hrs)		Min. Demand (MW)	Date	Time(Hrs)
Dec-23	27755	27755	0	27.12.2023	11:00		12247	01.12.2023	04:00
Jan-24	28651	28651	0	29.01.2024	11:00		18473	27.01.2024	03:00
Feb-24	28969	28969	0	07.02.2024	11:00		20701	03.02.2024	03:00
Mar-24	28735	28735	0	28.03.2024	12:00		21363	04.03.2024	03:00
Apr-24	28924	28924	0	29.04.2024	16:00		21998	13.04.2024	05:00
May-24	28452	28452	0	06.05.2024	16:00		21913	01.05.2024	19:00
June-24	28310	28310	0	03.06.2024	16:00		18616	10.06.2024	04:00

Maximum State peak demand catered till date – 28969 MW on 07th February 2024.

B - Mumbai Demand Details (including open access)

Months	Peak Demand (MW)	Catered Demand (MW)	Load Shedding /Shortfall (MW)	Date	Time (Hrs)		*Min. Demand (MW)*	*Date*	*Time(Hrs)*
Dec-23	3297	3297	0	04.12.2023	12:00		1766	25.12.2023	04:00
Jan-24	3272	3272	0	12.01.2024	12:00		1479	24.01.2024	04:00
Feb-24	3285	3285	0	29.02.2024	12:00		1593	02.02.2024	04:00
Mar-24	3550	3550	0	28.03.2024	12:00		1668	06.03.2024	04:00
Apr-24	4042	4042	0	16.04.2024	16:00		2150	06.04.2024	05:00
May-24	4306	4306	0	21.05.2024	16:00		2333	14.05.2024	06:00
June-24	4248	4248	0	06.06.2024	16:00		2216	28.06.2024	05:00

Monthly Maharashtra State Max Demand For the FY 20-21, FY 21-22, FY 22-23, FY 23-24 and FY 24-25



2.1C - Energy Catered in MUs

Particulars		Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	June-24
State	Monthly	16471	17515	17169	18804	18519	18809	16587
	Max.	565	588	611	644	648	640	632
	Avg. Per Day	531	565	592	606	617	607	553
Mumbai	Monthly	1858	1743	1698	1943	2182	2399	2242
	Max.	66	65	65	71	82	86	86
	Avg. Per Day	60	56	59	63	73	77	75

Maximum Energy catered till date - 648 MUs on 30th April 2024.

2.2 - Frequency profile for the months from Dec-2023 – June-2024

Range IEGC band:	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	June-24
	% time	% time	% time	% time	% time	% time	% time
> 50.05 Hz	16.679	16.891	19.574	16.219	15.074	17.124	15.968
49.9 - 50.05 Hz	75.204	76.201	74.025	77.756	77.352	80.336	79.400
< 49.9 Hz	8.117	6.908	6.401	6.025	7.574	2.54	4.632

2.3 - UFR Operation for the months from Dec- 2023 – June-2024

Month	Date	Total MW
Dec-23	NIL	
Jan-24		
Feb-24		
Mar-24		
Apr-24		
May-24		
June-24		

2.4 - Voltage Profile for the months from Dec-23 – June-24

Range	Voltage level	Dec-23		Jan-24		Feb-24		Mar-24		Apr-24		May-24		June-24	
Max	765kV	AKOLA	795	EKTUNI	792	EKTUNI AKOLA	788	EKTUNI	791	EKTUNI	791	EKTUNI	798	EKTUNI	791
	400kV	KALWA	437	KALWA	438	KALWA	436	KALWA NEW KOYNA	433	KALWA	438	KALWA	432	NEW KOYNA	433
Min	765kV	AKOLA	736	KORADI - III	754	EKTUNI	746	EKTUNI	707	EKTUNI	746	EKTUNI	744	AKOLA	757
	400kV	LONIKAND -II	379	LONIKAND - I & II	377	CHAKAN	373	JEJURI	375	LONIKAND -I	371	JEJURI	372	LONIKAND -I	372

2.5 - Generating Units under Prolonged outage

Utility	Name of Unit	Capacity	Date Trip	Time Trip	Date Sync	Time Sync	Reason	Expected date of revival
CS	Tarapur 1	160	08-01-20	10:37	-	Continued.	Refueling. While refueling preparation, some repair works identified which are being executed before refueling.	30.12.24
CS	Tarapur 2	160	13-07-20	4:38	-	Continued.	For cleaning of clogged basket strainer of cooling water system due to heavy ingress of debris from sea. The outage extended for repair and re-fueling.	30.11.24
MSPGCL	Uran Unit A0	120	07-09-22	16:30	-	Continued.	Turbine tripped on high vibrations.	31.08.24
MSPGCL	Ghatghar U-2	125	26.05.24	13:17	-	Continued.	Stator Earth Fault	26.07.24
MSPGCL	Uran Unit 5	108	17-06-24	21:44	-	Continued.	Zero Schedule given by MSEDCL	
MSPGCL	Uran Unit 6	108	26-06-24	22:30	-	Continued.	No Schedule from MSEDCL.	
IPP	JSW (J) U2	300	01-07-24	01:12	-	Continued.	Non availability of load schedule	
MSPGCL	Koyna Unit 5	80	02-07-24	11:00	-	Continued.	PLC upgradation work	27-07-2024
MSPGCL	Bhusawal Unit 4	500	16-06-24	00:00	-	Continued.	Annual Overhaul	11-07-2024
MSPGCL	Paras Unit 3	250	30-06-24	22:35	-	Continued.	Annual Overhaul	14-08-2024
IPP	RPL(AMT) U-1	270	01-07-24	07:00	-	Continued.	Annual Overhaul	01-08-2024
MSPGCL	Koyna Unit 3	70	09-07-24	11:00	-	Continued.	Governor replacement work.	07-08-2024

2.6 – Failed Reactor Status

Sr. No	Name of the Line Reactors	MVAR	Date of failure	In/Out	STATUS as on 30.06.2024
1	400kV Dhule S/S-SSP-1 (CSR)	50	23.12.2016	OUT OF SERVICE (faulty)	Work is held up due to no response from M/s BHEL.
2	400kV Dhule S/S-SSP-2 (CSR)	50	27.05.2017	OUT OF SERVICE (faulty)	
3	400kV Karad – Lonikand (CSR)	80	14.09.2017	OUT OF SERVICE (faulty)	Work is held up due to no response from M/s BHEL.
4	400kV Babhleshwar Bus Reactor	80	26.06.2019	OUT OF SERVICE (faulty)	Reactor is taken out and 125 MVAr reactor is being commissioned.
5	400kV Khadka Bus Reactor	50	10.11.2018	OUT OF SERVICE (faulty)	Due to non finalization of Tender Project wing recently handed over the scheme to O&M Wing. Scheme is to be revised.
6	400kV Kharghar Bus Reactor	80	04.06.2020	OUT OF SERVICE (faulty)	Turret CT & Bushing Testing work is done & Erection activity including erection of turret CTs, Bushing & filtration / vacuum is in progress.
7	400kV Nagothane Bus Reactor	80	23.11.2021	OUT OF SERVICE (faulty)	The proposal is returned on 05.04.2023 to field office for compliance, the same is awaited from field office.
8	400kV Kalwa Bus Reactor	125	10.03.2024	OUT OF SERVICE (faulty)	New 125 MVAR BHEL make Reactor allotted from 400kV Babhaleshwar SS received & erection work is completed at 400kV Kalwa SS. Vacuum cycle is in progress and expected to be commissioned in July 2024.
9	400kV Deepnagar	125	H/T on 21.06.2024 at 19.49 hrs.	Rising trend of Acetylene (C2H2)	Due to continuous rising trend of Acetylene (C2H2) in 400KV, 125MVAr BUS SHUNT Reactor installed at 400KV RS Deepnagar, Bhusawal-II, it is recommended by SE, PAC Circle, Nashik, to not keep the said reactor in service.

2.7 Outages Availed Abstract from Dec-2023 to June-2024

Month	Total nos. of outages approved			Total nos. of outages availed			% of Availed outages	Total nos. of outages Deferred			% of Deferred outages
	OCCM	Addl. OCCM	Post OCCM	OCCM	Addl. OCCM	Post OCCM		WRLDC	Site	MSLDC	
Dec-23	898	0	9	121	0	7	**14**	57	612	110	**86**
Jan-24	752	0	9	110	0	7	**15.37**	34	552	58	**84.63**
Feb-24	631	0	8	84	0	4	**13.77**	38	424	89	**86.23**
Mar-24	681	0	12	125	0	4	**18.61**	26	423	115	**81.39**
Apr-24	824	0	10	124	0	10	**16.07**	22	547	131	**81.39**
May-24	852	0	126	46	0	52	**10.02**	2	782	96	**89.98**
June-24	821	0	45	108	0	2	**12.7**	25	654	77	**87.3**

2.8 - Koyna Lake Level in Ft.

Month	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	June-24
At the end of the month	2141.3	2132.4	2123.7	2110.2	2087	2048.8	2055
Corresponding Figure of the month Last Year	2149.6	2140.9	2128.3	2114.5	2092.2	2049.2	2034.8

2.9 - New Network Addition during Dec-2023 to June-24

Sr. No.	Name of substation	Lines Details	Synch. Date
1	220 kV Print House	220/22kV 90MVA T/F-I charged at 19:35 Hrs	20.12.2023
2	220 kV Print House	220/22kV 90MVA T/F-II charged at 20:01 Hrs	20.12.2023
3	132 kV Kinwat	At 132 kV Kinwat s/s Himayatnagar Bay & Kinwat Himayatnagar ckt charged on no load at 15:10 Hrs	23.12.2023
4	132 kV Ida	132kV LILO (Tap) on 132kV Bhoom -Paranda line for 132/33kV Ida Substation charged successfully at 19.42 hrs and stood ok. 132kV Bhoom Line bay at 132/33kV Ida ss is charged successfully at 20.14 hrs and stood ok. 132kV Aayan bay at 132/33 kV Ida ss charged successfully at 20.21 hrs	29.12.2023
5	132 kV Shirpur	132 kV End bay of Velapur charged at 17:44 Hrs	30.12.2023
6	132 kV Purandwade	132 kV End bay of Walchandnagar charged at 17:44 Hrs	30.12.2023
7	400kV Babhaleshwar	400/220kV ICT 5 charged at 17:48 hrs	28.02.2024
8	132 KV Umarkhed	At 132 KV Umarkhed S/s, New 25 MVA, 132/33 KV power Transformer is charged at 20:40 Hrs	29.02.2024
9	110 kV M/s Athani Sugar	110 kV Kale (T) Line Bay charged at 20:05 Hrs	01.03.2024
10	110 kV M/s Athani Sugar	110 kV Bambarwadi Line Bay charged at 20:08 Hrs	01.03.2024
11	110 kV M/s Athani Sugar	132/11 kV 16MVA T/F charged at 16:37 Hrs	02.03.2024
12	110 kV M/s Athani Sugar	11 kV , 16 MW Cogeneration synchronized at 17:17 Hrs	02.03.2024
13	132 kV Pandharkawada S/s	132 kV Pandharkawada - Mukutban TSS line charged at 00:18 Hrs	03.03.2024

2.9 - New Network Addition during Dec-2023 – June-24

Sr. No.	Name of substation	Lines Details	Synch. Date
14	132 kV Samudral S/s	132 kV Samudral S/s charged by making LILO on 132kV Omerga-Narangwadi Ckt-I tap arrangement at 15:50 Hrs	07.03.2024
15	132 kV Samudral S/s	M/s Quineregy Industries Ltd. 32 MW Co-Generationcharged at 20:50 Hrs	07.03.2024
16	400 kV Kalwa RS	125 MVAR Bus reactor charged at 17:12 Hrs ***However, the reactor tripped on the same day due to R phase bushing burst.***	10.03.2024
17	220 kV Jalkot S/s	132 kV Jalkot - M/s Sri Maruti wind park (Vaspeth) line charged at 17:55 Hrs	11.03.2024
18	110 kV Salgare TSS	110 kV Kavathemahankal S/s to Salgare TSS SCDC line & 110 kV Metering bay charged at 19:13 Hrs	13.03.2024
19	220 kV Karanja S/s	2 Nos of 33 kV Bays of M/s Swami Samarth Solar Green Energy LLP charged at 14:18 & 14:19 respectively.	14.03.2024
20	220 kV Narangwadi S/s	33 kV Bay of M/s Kalpa Solar alongwith line charged at 16:50 Hrs	14.03.2024
21	220 kV Bhandup S/s	Spare bay charged at 18:12 Hrs	14.03.2024
22	220 kV Kharghar S/s	50 MVA,220/33 kV , T/F -4 charged at 15:40 Hrs	15.03.2024
23	220 kV Bhaveghar S/s	220 kV Bhaveghar- Inox line charged at 03:01 Hrs	16.03.2024
24	220 kV Inox S/s	220 kV Inox S/s charged on 220kV Bhevaghar-Wada line by LILO arrangement at 02:30 Hrs	16.03.2024
25	220 kV Inox S/s	220/6.6 kV , 15 MVA T/F charged at 01:00 Hrs	17.03.2024
26	400 kV Kumbhargaon S/s	At 400 kV Kumbhargaon S/s 220 kV Kumbhargaon- Kurunda Ckt- I & II alongwith end bays charged at 14:48 Hrs	20.03.2024

2.9 - New Network Addition during Dec-2023 – June-24

Sr. No.	Name of substation	Lines Details	Synch. Date
27	132 kV Chikhalthana	132 kV Hybrid Pass charged at 13:55 Hrs	03.04.2024
28	132 kV Khapri	132/33 kV, 25 MVA transformer charged at 14:19 Hrs	04.04.2024
29	220 kV Akola	132/ 33 kV, 50 MVA transformer charged at 18:40 Hrs	05.04.2024
30	220 kV Pirangut	220/22 kV , 50 MVA transformer -1 charged at 18:35 Hrs	06.04.2024
31	400 kV Vikhroli	400 kV Vikhroli- Kalwa line (Bay-410) (Anti Theft) charged on no load at 14:51 Hrs	28.04.2024
32	400 kV Vikhroli	400 kV Vikhroli- Talegaon line (Bay-412) (Anti Theft) charged on no load at 15:27 Hrs	28.04.2024
33	220 kV Shivajinagar	25 MW Tata Power Solar project of Mahagenco 33 kV Feeder bay-1 charged at 16:05 Hrs	29.04.2024
34	220 kV Shivajinagar	25 MW Tata Power Solar project of Mahagenco 33 kV Feeder bay-2 charged at 16:06 Hrs	29.04.2024
35	220 kV Jambhul	220/22 kV 50 MVA PTR-I charged at 18:22 Hrs	02.05.2024
36	220 kV Patoda	220 kV Patoda s/stn 220kV Maruti wind park (100 MW) linealong with Bay charged at 18:50 Hrs, up to line isolator of M/S Maruti Wind park.	03.05.2024
37	132 kV Bambhulwadi	132 kV Bambhulwadi S/s charged by making LILO on 132kV Manmad chalisgaon line (with metering bay) & 132kV line from locn no 1 (2.782km) for 100MW Solar power park proposed by M/s Chordiya and Sons Builders & Land Developers Pvt. Limited at 03:30 Hrs.	07.05.2024
38	132 kV Bambhulwadi	50 MVA, 33/132 kV T/F- I charged at 13:07 Hrs	07.05.2024
39	132 kV Bambhulwadi	50 MVA, 33/132 kV T/F- II charged at 13:38 Hrs	07.05.2024
40	220 kV Palghar	100 MVA , 220/132 kV ICT- II charged at 21:04 Hrs	10.05.2024
41	220 kV Chitegaon	220 kV Hybrid Switchgear of Bus sectionaliser first time charged at 21:54 Hrs	24.05.2024

2.9 - New Network Addition during Dec-2023 –June-24

Sr. No.	Name of substation	Lines Details	Synch. Date
42	220 kV Tuljapur	33 kV TS wind (20MW) bay and line charged at 15:28 Hrs.	29.05.2024
43	220 kV Umred	2 X 33 kV WCL I & II AIS bays at 220KV Umred s/stn for M/S Western Coal Fields, MZ-Makardhokada, Tal-Umred, Dist. Nagpur under EHV (O&M) Division Nagpur charged at 18.56 Hrs.	29.05.2024
44	220 kV Chalisgaon	200MVA, 220/132 kV ICT-3 first time charged on No-load at 16.07hrs.	30.05.2024
45	132 kV SRJ Strip	132 kV SRJ Strip SS (Steel factory) charged at 19:12 Hrs LILO on 132 kV Jalna -SRJ PEETY line.	10.06.2024
46	132 kV Mantha	132 kV ADICCA Solar Bay (50 MW) alongwith line at 22:24 Hrs	21.06.2024
47	132 kV Kombhalne	33 kV Line bay charged at 16:09 Hrs for 20 MW Solar project of M/s Bhageria Industries Limited	22.06.2024
48	220 kV KVTL Vikhroli	250 MVA , 220/132 kV ICT-I charged at 20:04 Hrs	22.06.2024
49	220 kV Jamkhed	220 kV Jamkhed S/s charged on 220 kV Taptitanda Nagewadi Ckt-II with LILO arrangment at 22:29 Hrs	23.06.2024
50	132 kV Mohol	33kV Laxmihira Solar bay charged at 18:45 Hrs	25.06.2024
51	132 kV Procer Energy	132 kV Sonpeth to M/s Procer Energy 70 MW Solar park Ckt charged at 16:03 Hrs	26.06.2024
52	132 kV Gosekhurd	25 MVA, 132/33 kV T/F charged at 18:35 Hrs	26.06.2024
53	132 kV Procer Energy	Solar End Bay and 70 MVA T/F charged on humming at 17:52 Hrs	26.06.2024
54	110 kV Reliable Sugar and Distilleries	110 kV Reliable Sugar 110 kV Reliable Sugar and Distilleries S/s - 2 Nos of 110kV Line bay chagred at 20:35 Hrs (Through Tap LILO arrangment will be done after SCADA work completion. Proposed arrangment is LILO on 110kV Bidri- Dudhganga Line)	27.06.2024
55	220 kV Khandeshwar	220 kV Khandeshwar Timber Market Ckt-I charged at 18:23 Hrs	28.06.2024

2.9 - New Network Addition during Dec-2023 –June-24

Sr. No.	Name of substation	Lines Details	Synch. Date
56	220 kV Timber Market GIS (Panvel-II)	50 MVA, 220/33 kV T/F-I charged at 18:30 Hrs	28.06.2024
57	220 kV Khandeshwar	220 kV Khandeshwar Timber Market Ckt-II charged at 19:46 Hrs	28.06.2024
58	132 kV CTRLS	132kV CTRLS S/s charged on 132 kV Karanja - Talegaon Line with LILO arrangment at 02:52 Hrs	29.06.2024
59	132 kV ADICCA (ISMT)	50 MVA T/F at ADDICCA Solar Park charged at 20:46 Hrs	29.06.2024
60	220 kV Jamkhed	35 MVA , 220/33 kV T/F charged at 16:06 Hrs	29.06.2024
61	220 kV Jamkhed	50 MVA , 220/33 kV T/F charged at 16:16 Hrs	29.06.2024

3.0 - System Disturbance in Maharashtra Network for the period Dec 23 to June-24

SR. NO.	SUB-STATION	LINE/EQPT/ BUS AFFECTED	DATE OF TRIPPING	TIME (hrs)	Sync. Hrs.	EQUIP. FAILURE	LOAD/GEN AFFECTED (approx.)	REASONS OF FAILURE
1	220 kV Bapgaon	1) 220kV Kalwa 2) 220kV Ghatghar tripped at Ghatghar end only. 3) 50 MVA T/F1 4) 50 MVA T/F2	29.12.2023	14:55	1) 220kV Kalwa : 01:29 hrs of 30.12.2023 2) 220kV Ghatghar : 15:13 hrs 3) 50 MVA T/F1 : 15:16 hrs 4) 50 MVA T/F2 : 15:16 hrs	Nil	Nil	Wave Trap jumper snapped at 220 kV Kalwa s/s.
2	220 kV Chinchwad 1	All elements affected as there is single bus system.	07.01.2024	05:53	6:04	220 kV 'Y' Phase PT burst	88 MW	220 kV 'Y' Phase PT burst.
3	400 kV Parly	400 kV Main Bus-1 along with connected elements.	27.01.2024	12:27	14:25	Nil	Nil	While doing arrangements for stringing of 400kV Parli - Parli(M)- Ckt2 line gantry(PGCIL work), the Steel sling slipped from the pulley and it came to vicinity of dropper of bus-1 isolator then bus-1 was tripped.

3.0 - System Disturbance in Maharashtra Network for the period Dec-23 to June-24

SR. NO.	SUB-STATION	LINE/EQPT/ BUS AFFECTED	DATE OF TRIPPING	TIME (hrs)	Sync. Hrs.	EQUIP. FAILURE	LOAD/GEN AFFECTED (approx.)	REASONS OF FAILURE
4	400 kV Kharghar	220 kV Bus-1 alongwith 1) 220kV Ulwe-I line 2) 220kV khandeshwar-II 3) 220kV Sonkhar 4) 220kV Netmagic 5) 220/33kV 50MVA PTR-2 6) 220/33kV 50MVA PTR-3 7) 400/220kV 315MVA ICT-III 8) 220 kV Buscoupler	02.02.2024	13:25	17:30	220 kV Bus-1 'Y' Phase PT burst	26 MW	220 kV Bus-1 'Y' Phase PT burst
5	400 kV Talegaon PG - Lonikand -I & Talegaon PG- Chakan tripped simultaneously	400 kV Talegaon PG - Lonikand -I & Talegaon PG- Chakan	11.03.2024	10:31	11:45	NIL	773 MW (DLS+LTS)	Distance Protection

3.0 - System Disturbance in Maharashtra Network for the period Dec-23 to June-24

SR. NO.	SUB-STATION / LINE	LINE/EQPT/ BUS AFFECTED	DATE OF TRIPPING	TIME (hrs)	Sync. Hrs.	EQUIP. FAILURE	LOAD/GEN AFFECTED (approx.)	REASONS OF FAILURE
6	400kV Warora-Adani ckt-1	400kV Warora-Adani ckt-1	05.04.2024	13:14	19:05	NIL	446 MW	R-ph to earth fault in Zone-1
7	400 kV Lonikand-I	all the elements on 400kV Bus- A	08.04.2024	09:31	09:38	NIL	197.05 MW (DLS+LTS)	HV side LBB scheme checked & It is found that 86C relay not operated properly . & same is replaced with spare 86C relay
8	220 kV Tarapur – Borivali	220 kV Tarapur – Borivali line	17.04.2024	12:04	13:14	NIL	45 MW DLS	Overcurrent protection
9	220 kV Talandage Hamidwada	220 kV Talandage Hamidwada & at the same time 220 kV Belewadi - Mumewadi at Belewadi end only	23.04.2024	15:09	15:38	NIL	Load 111 MW & Generation -18 MW	Distance protection
10	765/400 kV APML Tiroda	400 kV Tiroda - Warora Ckt-II	23.04.2024	20:14	22:51	NIL	APML Generation-1800 MW	400 kV Bus-1 & 2 tripped
11	400KV Chandrapur-2	400kV Chandrapur-2-Nanded Ckt-1	22.04.2024	17:44	20:18	NIL	396 MW	Distance Protection
12	400 kV Talegaon PG S/s	400/220 kV ICT's 1 & 2	26.04.2024	13:49	14:33	NIL	500 MW DLS + 476 MW LTS	Main bus-2 operated

3.0 - System Disturbance in Maharashtra Network for the period Dec-23 to June-24

SR. NO.	SUB-STATION / LINE	LINE/EQPT/ BUS AFFECTED	DATE OF TRIPPING	TIME (hrs)	Sync. Hrs.	EQUIP. FAILURE	LOAD/GEN AFFECTED (approx.)	REASONS OF FAILURE
13	400 kV Kalwa	220 kV Bus with following elements 1.220 kV Kalwa DCHI line 2.220 kV Kalwa Tifil line 3.220 kV Kalwa Mulund line 4. 220 kV Kalwa Salette - III line 5.220 kV Kalwa Borivali line 6. 220 kV Interconnector at Kalwa 7. 400/220 kV 600 MVA ICT-I 8. 400/220 kV 500 MVA ICT-II	13.05.2024	15:46	16:26	NIL	35 MW (29 MW at 220 kV Pawne s/s & 6 MW of M/s NTT & Print House)	220 kV Bus 2 LBB operated due to DCHI line.
14	400 kV Kharghar	400/220 kV , 315 MVA ICT-2	13.05.2024	15:53	16:31	NIL	357 MW (LTS at Kharghar - 102 MW, AEML - 9 MW TPCL Load due to LTS - 246 MW, at Dharavi - 155 MW, Kalyan-71 MW, Ambernath- 12 MW & Chembur- 18 MW)	Oil Surge Relay Protection operated.
15	400 kV Jejuri	220 kV Bus - II with following elements 1.220kV Phursungi II 2. 220 kV Jejuri II 3. 220 kV Baramati 4. ICT II,III and following elements on Bus - I tripped 1.220 Phursungi-I 2.Lonand-I & 3.Kondhwa	20.05.2024	23:24	02:31	NIl	139 MW (220 kV Kondhwa-39 MW, 132 kV NCL-53 MW & Kothrud - 47 MW)	LBB protection operated.
16	220 kV Gorai (AEML)	220kV Bus I & II with all bays	28.05.2024	17:59	20:30	NIL	99 MW	Bus bar protection operated.

3.0 - System Disturbance in Maharashtra Network for the period Dec-23 to June-24

SR. NO.	SUB-STATION / LINE	LINE/EQPT/ BUS AFFECTED	DATE OF TRIPPING	TIME (hrs)	Sync. Hrs.	EQUIP. FAILURE	LOAD/GEN AFFECTED (approx.)	REASONS OF FAILURE
17	220kV Nalasopara	220kV Padghe-Nalasopara line tripped at 06:03 hrs	09.06.2024	06:03		-	75 MW	At 06:03 hrs 220kV Nalasopara s/s went into dark as 220kV Padghe-Nalasopara line tripped at 06:03 hrs and planned outage on 220 kV Boisar PG-Panchali ckt availed at 05:46 hrs which feeds 220 kV Panchali-Nalasopara ckt. This resulted in 75 MW load loss in Nalasopara .
18	Tata Backbay 110kV	Tata Backbay 110kV Bus -1, 2 & all 33kV buses	15.06.2024	16:59	18:12		62 MW	At 1659 hrs on 15th June 2024, Tata Backbay 110kV Bus -1, 2 & all 33kV buses got shutdown due to operation of 110kV LBBU of 250 MVA Auto Transformer-1 & 2.
19	765 Akola II	765kV Akola II-Ektuni II	26-05-2024	18:11	12-06-2024	20:44		Tripped on distance protection.(Due to tower collapsed).
20	400kV Khaperkheda	220 KV NEW KHAPERKHEDA (400 KV)-220KV OLD KHAPERKHEDA CKT 2	16-06-2024	16:56	16-06-2024	18:17		Bus-1 Bus bar Protection operated

3.1 Status of New Reactors

Sr. No.	Name of the Line Reactors	MVAr	Work Completion By	STATUS
1	400 kV Thaptitanda	125	Sep-24	Reactor (CGL make) received at 400kV Thaptitanda SS along with accessories & oil on 13.01.2024. 400kV Isolators received at site, CT, LA & Panels are balance for supply.
2	400 kV Girwali	125	Sep-24	Existing Reactor is dismantled in Dec 23 & Reactor plinth work is in progress.
3	400 kV Waluj	125		Under tendering at C.O.Project
4	400 kV Chandrapur	125	Dec-24	Revised scheme is sanctioned excluding Jejuri Reactor vide BR No.167/46 dtd.04.03.2024. Indent submitted to CPA for procurement & scheme conveyed to field for ETC tender.
5	400 kV Khadka	125		Due to low response & higher rate tender cancellation note is put up by Project Department
6	400 kV Babhaleshwar	2 x 125	June 24	01 No of Reactor is supplied at site on 16.10.2023 and 2nd on 13.12.2023, but transported to 400kV Kalwa SS due to reactor failure at Kalwa SS. 1st reactor expected to be commissioned by 30.06.2024
7	400 kV Lonikand-I	125	Dec-24	Revised scheme is sanctioned excluding Jejuri Reactor vide BR No.167/46 dtd.04.03.2024. Indent submitted to CPA for procurement & scheme conveyed to field for ETC tender.
8	400 kV Jejuri	125		
9	400 kV Chakan	125		
10	400 kV Kalwa	125	June 24	Reactor commissioned on 10.03.2024 but failed due to R ph. Bushing burst on dt. 10.03.2024 at 19:07. Failed reactor is transported to M/s BHEL, Joint inspection is done at BHEL Factory. No sign of major damage to windings & core. New 125 MVAR BHEL make Reactor allotted from 400kV Babhaleshwar SS received at 400kV Kalwa SS. Work in progress and expected to be commissioned by 27.06.2024.
11	400 kV Kudus	125		Due to low response & higher rate tender cancellation note is put up by Project Department

3.2 - Status of State Transmission Schemes

Sr. No.	Name of the Scheme	CoD	Status
1	400 kV Bableshwar -Kudus D/C (Quad)		Foundations - 689/719 Erection – 673/719 Stringing – 286/457 Ckt km.
2	400 kV D/C Jejuri-Hinjewadi Line (Jejuri Wainjhar) Package-1.	2024-25	Balance work tenderization is in progress.
3	400 kV D/C Jejuri-Hinjewadi Line (Jejuri Wainjhar) Package-2.		Balance work tenderization is in progress.
4	LILO on another Ckt. Of 400kV Bhusawal 2 - Aurangabad 1 for Thaptitanda.		50% work done approx. and for balance work LOA issued to new agency by C.O. Package 1 Foundations - 270/273 Erection - 244/273 Stringing - 126/176 Ckt km.

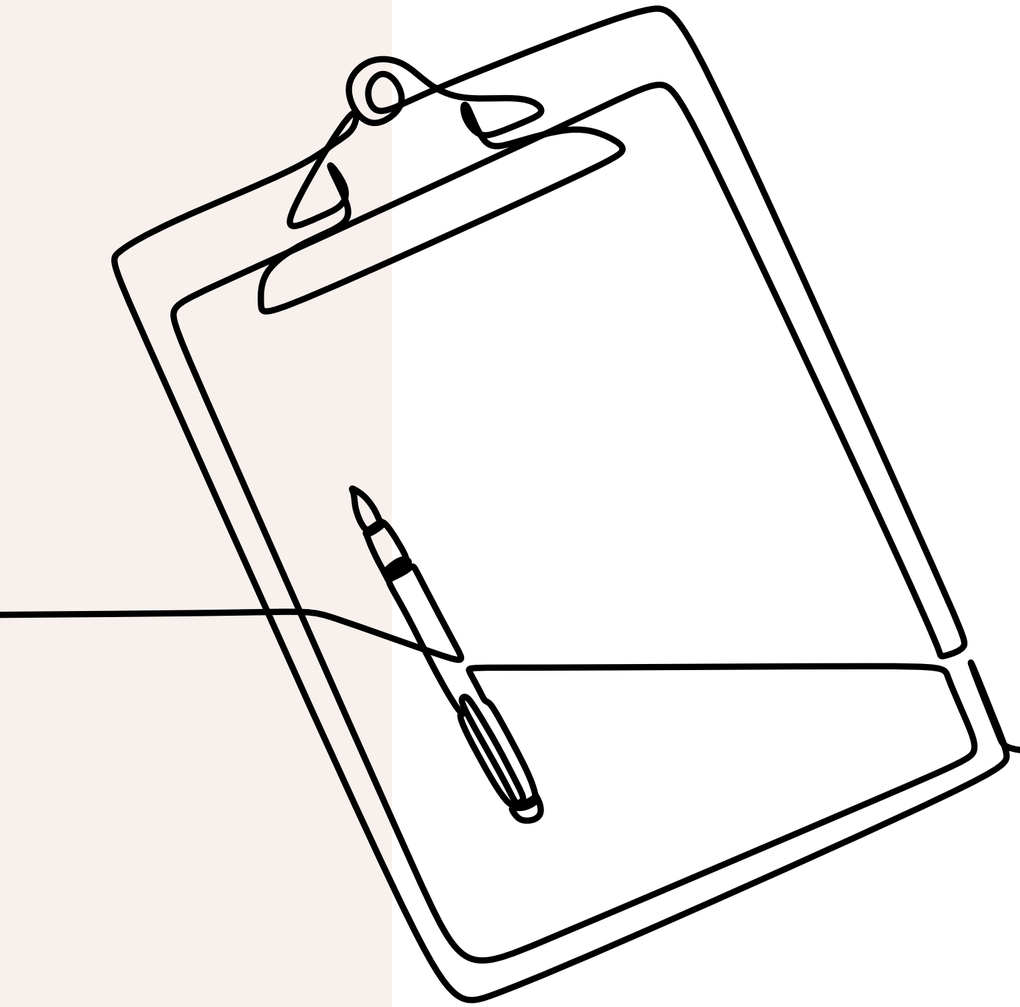
3.3 - Status of MMR and Mumbai Transmission Schemes

Sr. No	Name of the Scheme	CoD	Status
1	LILO of 220 kV Boisar – Ghodbunder & Tarapur – Borivali at Kudus. (Twin AAAC) - 10 km		Foundations: - 110/120 Erection: - 108/120 Stringing: - 22.8/31.5 km.

Thank

YOU

STU PLAN



OF

Maharashtra State

Transmission Licensees

For

FY 2024-25 To FY 2033-34

Presentation by: STU along with Transmission Licensees

TABLE OF CONTENTS

TABLE OF CONTENTS

Need for STU Plan

Planning:

As per Section 39 of the Electricity Act, 2003, "*Planning, coordination, development and undertaking transmission of electricity through intra-state system is to be done by the State Transmission Utilities".*

As per Regulation 12.8 of MERC (Maharashtra Electricity Grid Code) Regulations, 2020 :

STU shall prepare a transmission system plan based on the data obtained from the Users and internal sources for: a) Short term period, i.e., up to 3 years; b) Medium term period, i.e., up to 5 years; and c) Long term period, i.e., up to 10 years.

As per Regulation 12.9 of MERC (Maharashtra Electricity Grid Code) Regulations, 2020 :

Transmission system plan prepared by the STU shall consist of the following sections:

a) *Executive summary of Transmission plan shall clearly indicate location of existing and proposed EHT substations, connecting lines, no. of bays at each voltage level with details of present occupancy and availability for future expansion.*

b) *Generation evacuation planning: This section shall target evacuation of the upcoming generation capacity deemed to be connected to InSTS including RE Generators;*

c) *Load Projection Planning: This section shall deliberate transmission planning to meet the increasing demands from distribution licensee(s) and other Users including deemed distribution licensees;*

Need for STU Plan

d) Interconnection Planning: This section shall deliberate transmission planning for interconnection between the network for generation evacuation and load projection; and

e) Inter-state transmission connection planning: This section shall deliberate transmission planning for the evacuation of power by the State from neighbouring states or regions via inter-state transmission:

Provided that the STU may add any other section as it deems fit for intra-state transmission schemes and system strengthening schemes for the benefit of all Users. Provided further that, transmission system plan shall also include schemes related augmentation of equipment such as Power Transformers, ICTs, Capacitors, Reactors, Static VAR Compensators and FACTS, substation and lines modernisation, major replacement of equipment in the substations and lines augmentation etc.

Need for STU Plan

Updation of STU Plan:

Regulation 12.11 of MEGC-2020 stipulated that:

STU shall update the perspective transmission plan every year to take care of the revisions in load projections and generation scenarios considering the seasonal and the time of the day variations.

Publication of STU Plan:

As per Regulation 12.14 , of MEGC-2020:

STU shall publish the transmission system plan for the InSTS on its website and shall also make the same available to any person upon request in hard copy as desired at a reasonable cost

Factors Considered in STU Plan

- Existing & Planning Year Growth Rate
- CTU Planning
- Discom Requirements
- Renewable & Conventional Generation Evacuation Planning
- 20th EPS Survey Report
- Identification of Demand Hotspots & Pump Storage Plants
- Green Hydrogen Policy
- Mukhyamantri Saur Krishi Vahini Yojna (MSKVY)
- Western region expression schemes
- Transmission Bottleneck of Maharashtra
- Chicken-neck issues for Power Evacuation in Mumbai
- New Corridor in Maharashtra Transition Plan

Process of making STU Plan

1) Existing & under construction transmission facilities and requirement of additional transmission system has been assessed based on the power system studies, with representation of the power system network of the Intra-state transmission system of Maharashtra..
2) The Load-generation balance scenarios have been worked out, corresponding to seasonal / quarterly load & generation variations and has been simulated for Planning years.
3) Electricity Act, 2003 (with Amended versions), Government Policies, Electricity Commission Regulations, CTU Planning, were considered in Preparation.
4) Various Meetings were held for discussion of STU Plan with Transmission & Distribution Licensees.

Sr. No.	Zone	Discom Zone	Date
1	Amravati	Akola & Amravati	11.10.2023
2	CSN	Aurangabad ,Latur & Nanded	21.07.2023
3	Karad	Kokan, Kolhapur& Baramati	12.10.2023
4	Nashik	Jalgaon & Nashik	09.10.2023
5	Nagpur	Nagpur, Gondia & Chandrapur	24.10.2023
6	Pune	Pune, Baramati ,Kolhapur	13.10.2023
7	Vashi	Bhandup, Kokan &Kalyan	03.08.2023
8	TPC-T	TPC-D	25.10.2023
9	AEML-T	AEML-D	25.10.2023

Component of STU Plan

1) New Substation
2) Associate Lines
3) Link Lines
4) Second Circuit Lines
5) High Performance Conductor
6) New Level Creation
7) ICT /TF Addition
8) ICT/TF Replacement
9) Capacitor/Rector/STATCOM
10) Special Schemes

Existing Infrastructure –MSETCL (31 March, 2024)

Voltage level	EHV Substation (No.)	Transformation Capacity (MVA)	EHV Lines (CKT KM.)
765	1	3000	0
500 (HVDC)	2	3582	1504
400	33	34048	8462
220.	254	60840	19882.4
132	365	31529.5	18568.76
110	41	2605	1798.4
100	39	2823	706
66	7	170.5	595
TOTAL	**742**	**138598**	**51518**

Existing Infrastructure –TPC-T (31 March, 2024)

Voltage level	EHV Substation (No.)	Transformation Capacity (MVA)	EHV Lines (CKT KM.)
765			
500 (HVDC)			
400			
220.	13	7265	466.65
132			
110	13	3353.5	820.62
100			
66			
TOTAL	**26**	**10618.5**	**1287.27**

Existing Infrastructure –AEML-T (31 March, 2024)

Voltage level	EHV Substation (No.)	Transformation Capacity (MVA)	EHV Lines (CKT KM.)
765			
500 (HVDC)			
400			
220.	08	3250	573.02
132			
110			
100			
66			
TOTAL	**08**	**3250**	**573.02**

Substations proposed –MSETCL (STU Plan 2024-25 to 2033-34)

Voltage Level	AMT	CHSN	KRD	NGP	NSK	PUN	VSH	Total as per voltage level
765 kV	0	0	0	0	0	0	0	0
440 kV	2	0	0	0	2	1	3	8
220 kV	5	7	3	7	16	12	17	67
132 kV	9	16	2	11	13	2	2	55
110 kV		0	3	0	0	0	3	6
100 kV		0	0	0	0	0	2	2
Total in Zone	**16**	**23**	**8**	**18**	**31**	**15**	**27**	**138**

MSETCL 10 Year Plan Abstract

Particulars	Year	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33	2033-34	Total
New Sub-station & Associated lines (1	Nos	18.00	34.00	25.00	17.00	13.00	10.00	10.00	5.00	5.00	1.00	138.00
	MVA	2225.00	6600.00	5050.00	2500.00	900.00	900.00	850.00	1300.00	300.00	100.00	20725.00
	CKM	748.81	1185.88	1116.30	1416.63	377.50	71.00	6.00	50.00	10.00	0.00	4982.12
	Cost Cr	1633.00	3506.11	2908.48	1694.45	833.94	836.44	787.04	730.69	375.69	121.75	13427.59
Link Line (2)	CKM	2018.70	1518.90	1236.10	536.50	175.08	55.00	0	0	0	0	5540.28
	Cost Crs	1855.38	1353.39	1169.65	481.84	122.21	50.19	0	0	0	0	5032.66
2nd Ckt Stringing(3)	CKM	514.28	617.02	253.30	118.00	45.00	0	0	0	0	0	1547.60
	Cost Crs	201.85	170.03	66.19	62.00	53.00	0	0	0	0	0	553.08
Total Ckt km (1+2+3)	CKM	3281.79	3321.80	2605.70	2071.13	597.58	126.00	6.00	50.00	10.00	0	12070.00
HTLS	CKM	805.59	1794.54	946.08	137.00	0	0	0	0	0	0	3683.21
	Cost Crs	738.88	1769.86	1114.54	171.35	0	0	0	0	0	0	3794.63
New Level Creation/ICT/TF Augmentation and Addition	MVA	7300.00	13205.00	5085.00	450.00	685.00	25.00	0	0	0	0	26750.00
	Cost Crs	1037.23	2216.58	773.42	78.64	161.04	8.24	0	0	0	0	4275.15
Reactors	MVAr	1055.00	910.00	0	0	0	0	0	0	0	0	1965.00
	Cost Crs	146.72	96.86	0	0	0	0	0	0	0	0	243.58
Capacitor	MVAR	3335.00	500.00	0	0	0	0	0	0	0	0	3835.00
	Cost Crs	105.06	19.25	0	0	0	0	0	0	0	0	124.31
HVDC	Cost Crs	0	0	343.17	0	0	0	0	0	0	0	343.17
STATCOM	MVAR	0	300.00	300.00	300.00	0	0	0	0	0	0	900.00
	Cost Cr	0	300.00	300.00	300.00	0	0	0	0	0	0	900.00
Special schemes	Cost Cr	521.31	314.04	0	0	0	0	0	0	0	0	835.35
Nagpur Islanding Scheme	Cost Cr	82.87	0	0	0	0	0	0	0	0	0	82.87
Total Cost (Rs. Cr.)	Cost Rs	6322.31	9746.12	6675.45	2788.28	1170.19	894.87	787.04	730.69	375.69	121.75	29612.39

TPC-T 10 Year Plan Abstract

Particulars	Year	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33	2033-34	Total
New Sub-station & Associated lines (1)	Nos	0	1	2	3	2	3	1	0	0	0	12
	MVA	0	180	310	680	430	750	250	0	0	0	2600
	CKM	0	4	22.7	15	3.5	6.5	16	0	0	0	67.7
	Cost Cr	0	350	580	1278	400	1150	340	0	0	0	4098
Link Line (2)	CKM	0	0	0	0	0	0	0	0	0	0	0
	Cost Crs	0	0	0	0	0	0	0	0	0	0	0
2nd Ckt Stringing(3)	CKM	0	73	37	0	0	0	0	6	0	0	116
	Cost Crs	0	390	576	0	0	0	0	400	0	0	1366
Total Ckt km (1+2+3)	CKM											
HTLS/EHV Cables	CKM	2.15	0.77	9.4	2	0	0	3	0	0	0	17.32
	Cost Crs	199	252	677	400	0	450	225	0	0	0	2203
Creation of New level/ Augmentation by addition and replacement (ICT/TF)	MVA	875	775	590	475	750	2000	750	500	750	0	7465
	Cost Crs	138	478	1075	635	150	400	650	570	450	0	4546
Reactors	MVAr	250	0	250	0	125		0		0	0	625
	Cost Crs	51	0	0	0	35	0	0	0	0	0	86
Capacitor	MVAR	0	0	0	0	0	0	0	0	0	0	0
	Cost Crs	0	0	0	0	0	0	0	0	0	0	0
HVDC	Cost Crs	0	0	0	0	0	0	0	0	0	0	0
VSAT	Cost Crs	0	0	250	0	0	90	0	0	0	0	340
ISLANDING SCHEME	Cost Crs	0	0	0	0	0	0	0	0	0	0	0
BESS	Cost Crs	0	900	0	0	0	0	0	0	0	0	900
Total Cost Year wise	**Cost Rs**	**388**	**2370**	**3158**	**2313**	**585**	**2090**	**1215**	**970**	**450**	**0**	**13539**

AEML-T 10 Year Plan Abstract

Particulars	Year	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33	2033-34	Total
New Sub-station & Associated lines (1)	Nos	1	1	4	2	2	3	0	0	0	0	13
	MVA	250	250	1000	750	500	750	0	0	0	0	3500
	CKM	24	1	29.4	20	6	97	0	0	0	0	177.4
	Cost Cr	1126.85	325.44	1564.06	1289.29	808.49	1019	0	0	0	0	6133.13
Link Line (2)	CKM	0	0	0	18.6	38	0	0	0	0	0	56.6
	Cost Crs	0	0	0	549.51	800.57	0	0	0	0	0	1350.08
2nd Ckt Stringing(3)	CKM	0	0	0	0	0	0	0	0	0	0	0
	Cost Crs	0	0	0	0	0	0	0	0	0	0	0
Total Ckt km (1+2+3)	CKM	0	1	29.4	38.6	44	97	0	0	0	0	210
HTLS	CKM	0	0	0	395.76	0	0	0	0	0	0	395.76
	Cost Crs	0	0	0	336	0	0	0	0	0	0	336
Creation of New level/ Augmentation by addition and replacement (ICT/TF)	MVA	0	0	125	125	375	625	250	250	0	0	1750
	Cost Crs	135.75	0	351.71	1789.17	90	90	60	60	0	0	2576.63
Reactors	MVAr	0	120	0	140	0	0	0	0	0	0	260
	Cost Crs	0	36.34	0	71.42	0	0	0	0	0	0	107.76
Capacitor	MVAR	0	0	0	0	0	0	0	0	0	0	0
	Cost Crs	0	0	0	0	0	0	0	0	0	0	0
HVDC	Cost Crs	0	6211.51	0	0	0	8000	0	0	0	0	14211.51
VSAT	Cost Crs	0	0	0	0	0	0	0	0	0	0	0
ISLANDING SCHEME	Cost Crs	0	0	0	0	0	0	0	0	0	0	0
Total Cost Year wise	Cost Rs	1262.6	6573.29	1915.77	4035.39	1699.06	9109	60	60	0	0	24715.11

New Corridor in Maharashtra Energy Transition Plan (2024-25 to 2033-34)

Voltage Level	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33	2033-34	Total S/s Planned (No.)
400 Kv	0	0	6	0	4	8	0	0	0	0	18
765 Kv	0	0	1	4	4	3	0	0	0	0	12
HVDC	0	0	0	0	0	2	0	0	0	0	2
Total S/s Planned (No.)	**0**	**0**	**7**	**4**	**8**	**13**	**0**	**0**	**0**	**0**	**32**

New Corridor in Maharashtra Energy Transition Plan (2024-25 to 2033-34)

Particular	Year	2024-25	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33	2033-34	Total
New Sub-station & Associated lines	Nos	0	0	0	7	4	8	13	0	0	0	0	**32**
	MVA	0	0	0	16400	13300	24000	23000	0	0	0	0	**76700**
	CKM	0	0	0	1644	1780	2782	253	0	0	0	0	**6459**
	Cost Cr	0	0	0	4385.4	6929	10059.6	16482	0	0	0	0	**37856**
Link Lines	CKM	0	0	120	0	0	0	0	0	0	0	0	**120**
	Cost Crs	0	0	240	0	0	0	0	0	0	0	0	**240**
HVDC	MVA	0	0	0	0	0	0	5250	0	0	0	0	**5250**
	CKm	0	0	0	0	0	0	300	0	0	0	0	**300**
	Cost Crs	0	0	0	0	0	0	48560	0	0	0	0	**48560**
Grand Total	**Cost Rs**	**0**	**0**	**240**	**4385.4**	**6929**	**10059.6**	**65042**	**0**	**0**	**0**	**0**	**86656**

New Corridor in Maharashtra Energy Transition Plan (2024-25 to 2033-34)

Voltage Level	2025-26	2026-27	2027-28	2028-29	2029-30
400 kV	400kV D/C line from 400kV Jejuri (existing) to 400kV Hinjewadi	400/220 kV Saswad 400/132 kV Jalna 400/220/132 kV Washi 400/220kV Wagdari 400/220 kV Umred 400/220 kV Sakoli		400/220 kV Ambernath 400/220 kV Hingoli West 400/220 kV Latur / Tuljapur / (Belkund Sindhala) 400/220 kV Yavatmal	400 kV Mazgaon 400 kV Trombay 400 kV Mahalaxmi 400 kV Dharavi 400 kV Versova 400 kV Khardanda 400 kV Aarey 400 kV Chandivali
765 kV		765/400/220 kV Mahape	765/400 kV Pune (East) 765/400 kV Balsane-II 765kV Pune (WEST) 765/400kV Nashik	765/400/220 kV Alkud-II / Jath 765/400 kV Kandalgaon 765/400/220 kV Dolvi 765kV Apta	765 kV Dahanu (Vadhwan) 765 kV JNPT 765 kV Revdanda
HVDC					(HVDC Dolvi - Trombay HVDC Dolvi – Mazgaon) HVDC Velgaon -Ghodbandar- Versova
Total S/s Planned (No.)	0	7	4	8	13
Total S/s Planned=32 No.					

STU Plan cost of Transmission Licensee for 2024-25 to 2033-34

Licensee	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33	2033-34	Total Cost (Rs. Cr.)
MSETCL	6322.31	9746.12	6675.45	2788.28	1170.19	894.87	787.04	730.69	375.69	121.75	**29612.39**
TPC-T	388.00	2370.00	3158.00	2313.00	585.00	2090.00	1215.00	970.00	450.00	0.00	**13539.00**
AEML-T	1262.60	6573.29	1915.77	4035.39	1699.06	9109.00	60.00	60.00	0.00	0.00	**24715.11**
New Corridor	0.00	240.00	4385.40	6929.00	10059.60	65042.00	0.00	0.00	0.00	0	**86656.00**
Grand Total (Cost Rs. Cr.)	**7972.91**	**18929.41**	**16134.62**	**16065.67**	**13513.85**	**77135.87**	**2062.04**	**1760.69**	**825.69**	**121.75**	**154522.50**

Thank You

FOR DISCUSSION,
SUPPORT &
TEAM WORK

STU-Maharashtra