North Eastern Regional Power Committee

Agenda For

26th NETeST Sub-Committee Meeting

Time of meeting : 10:30 Hrs.

Date of meeting : 10th October, 2023 (Tuesday)

Venue : "NERPC Conference Hall", Shillong.

1. CONFIRMATION OF MINUTES

CONFIRMATION OF MINUTES OF 25th MEETING OF NETeST SUB-COMMITTEE OF NERPC.

The minutes of 25th meeting of NETeST Sub-committee held on 25th May, 2023 at Shillong were circulated vide letter No. NERPC/SE (O)/NETeST/2023/ dated 07th June, 2023.

The Sub-committee may confirm the minutes of 25th NETeST of NERPC as no other comments/observations were received from the constituents.

A. ITEMS FOR DISCUSSION

A.1 Upgradation Activities of SCADA-EMS systems at Regional/State level in North-Eastern Region.

The SCADA-EMS systems of NERLDC and SLDCs in NER were established under ULDC Phase-2 scheme during period of 2016-2018 with M/s GE T&D India Limited as the Contractor and all these systems at SLDCs & NERLDC are near to its life-cycle completion. Most of the hardware and software systems are obsolete and getting its support from OEMs is getting difficult with time. Most of the SLDCs have already completed seven (07) years AMC cycle and entered into extended AMC period of two (02) years with M/s GE T&D India Limited. Considering round-the-clock operations of SCADA-EMS systems at SLDCs and NERLDC, the associated systems need to be upgraded/replaced at the earliest.

As the SLDCs had applied for PSDF funding which got rejected in Techno-economic sub-group forum of PSDF Secretariat; subsequently the cognizance of the matter was taken by the Appraisal Committee of PSDF Secretariat on request made by Chairperson-NERPC vide letter dated 04th May 2023.

As per Minutes-of-meeting held on 19th June 2023 by Appraisal Committee, it has been mentioned that – ***"The Appraisal committee discussed the SCADA***

upgradation proposals of entities of NER (DPR 375 to 381). The Appraisal Committee suggested that SCADA Upgradation proposal of NER states may be considered as a special case for PSDF funding due to their poor financial conditions. It was discussed that the SCADA projects may be coordinated/ monitored by NERLDC (GRID-INDIA) for all NER states. In this regard, NERLDC may prepare the technical document along with BOQ and a combined tender may be floated for all states of NER. As per PSDF guidelines, the funds will be sanctioned and released to the respective states of NER through TSA account. Accordingly, NLDC to get the revise DPR from NER states. NLDC was also requested to put the above decision to Monitoring Committee for concurrence."

Accordingly, NERLDC shared draft Technical Specifications & BoQ with all SLDCs and requested for nomination of nodal-officer(s) to discuss and finalize upon the Technical Specifications & Bill-of-Quantity. Subsequently, in-person meetings were held with all SLDCs (except Manipur SLDC) and majority of the clarifications were given regarding the ULDC Phase-3 project. The present status in this regard is mentioned in *table* below.

S. No.	Description	Signing of MoU	Nomination of Nodal Officer(s)	Technical Specifications & BoQ	Tentative Location of Backup SLDC
1	Meghalaya	Signed on 28th October 2021.	Received on 28th September 2023.	Finalized version not submitted to NERLDC yet.	Mawphlang
2	Mizoram	Signed on 01st November 2021.	Received on 10th July 2023.	Finalized version not submitted to NERLDC yet.	Kolasib or Serchhip
3	Assam	Signed on 06th January 2022.	Received on 12th September 2023.	Finalized version not submitted to NERLDC yet.	Samaguri or Jorhat
4	Tripura	Signed on 20th May 2022.	Received on 10th August 2023.	Finalized version not submitted to NERLDC yet.	P.K. Bari
5	Arunachal Pradesh	Signed on 07th July 2022.	Received on 03rd August 2023.	Finalized version not submitted to NERLDC yet.	Namsai, Roing or Pasighat.
6	Nagaland	Signed on 01st March 2022.	Received on 13th July 2023.	Finalized version not submitted to NERLDC yet.	Zhadima or Kohima

S. No.	Description	Signing of MoU	Nomination of Nodal Officer(s)	Technical Specifications & BoQ	Tentative Location of Backup SLDC
7	Manipur	Signed on 11th June 2022.	Received on 13th July 2023.	Finalized version not submitted to NERLDC yet.	*Not yet decided.*

Establishment of Backup SLDCs has been mandated in "Disaster Management Plan for Power Sector" by CEA released in December 2022 and available at web-link https://cea.nic.in/wp-content/uploads/ps___lf/2023/01/Disaster_Management_Plan_DMP_2022_for_power_sector.pdf which states that - ***"Back up EOC/ Control room should also be set up preferably at remote location & kept ready to manage adverse situations if main control room dysfunctions or gets affected due to any disaster. Back up control room should be set up keeping all important features/functions of main control room with full access control so that officials can operate the entire system without any difficulty. Backup control room should be tested periodically for intended functionality by making it main control room."***

All SLDCs are requested to finalize the Technical Specifications/BoQ at the earliest so that Cost-Estimate can be taken from prospective bidders and revised DPR can be drafted for submission to PSDF Secretariat.

Members may please discuss.

A.2 Issues related to Maintenance activities of SCADA/EMS system of SLDCs

It has been found and observed since last few months that various issues related to Hardware/Software (incl. Auxiliary Power Supply System) are getting faced at SLDCs in NER and AMC personnel deployed at NERLDC, Shillong are being involved in resolution of the same by GE. Due to this, the maintenance activities of NERLDC are getting delayed and affected. So, it is requested that M/s GE T&D India Limited may work upon a comprehensive check-list (daily/weekly/ monthly basis) and share with the SLDCs so that it can be reviewed by them to know the correct status of the SCADA-EMS system. A sample checklist for the same is attached as **Annexure A2**.

Members may please discuss.

A.3 Establishment of VSAT Communication in selected remote locations for state-utilities in North-Eastern region

The Detailed Project Reports (DPRs) for establishment of VSAT Communication in selected stations under ownership of state-utilities in NER were submitted for PSDF funding. The cost-details in respective DPRs are – Arunachal Pradesh: ₹ 6.328 Crores; Assam: ₹ 0.951 Crores; Manipur: ₹ 0.422 Crores; Meghalaya: ₹ 0.317 Crores; Mizoram: ₹ 0.898 Crores; Nagaland: ₹ 2.696 Crores; Tripura: ₹ 0.792 Crores.

In 74th Meeting of Techno-Economic Sub-Group (TESG) meeting held on 17th March 2023, it was deliberated and recorded in MoM that – ***"TESG recommended these proposals (Proposal nos. 388 to 394) as deemed returned and suggested entities to submit a comprehensive DPR consist of installation OPGW, FOTE after assessing the proper requirement and consider VSAT communication (up to 66kV) for only in exceptional terrains where OPGW laying is not feasible. Entities agreed for the same. NLDC is requested to communicate the above decision to the entities."***

The same matter was put up in Appraisal Committee meeting held on 19th June 2023 and it was recorded in MoM that – ***"Regarding NER proposals of VSAT (DPR 382 to 388), Appraisal Committee accepted the suggestion of TESG that instead of installation of VSAT communication having low bandwidth, the entities may submit a comprehensive DPR consisting of the implementation of reliable communication network through the installation of OPGW based fiber optic network. VSAT communication (up to 66kV) may only be considered for only in exceptional terrains where OPGW laying is not feasible. The Appraisal committee returned the present proposal for the installation of VSAT communication network (i.e. DPR 382 to 388)."***

The DPRs were rejected by TESG on the grounds of low bandwidth, exploring OPGW as the primary option, some 33kV stations were also included in DPRs, etc. It seems that the urgent need of VSAT communication in NER due to difficult terrain and long execution period (of the order of several years) has not been put up with clarity in front of TESG and Appraisal Committee leading to rejection of the associated DPRs. Moreover, the bandwidth of 128kbps is sufficient to cater real-time power system operational data transfer requirements of SLDCs. SLDCs are dependent upon establishment of VSAT to meet various deadlines given to CERC in reply to petitions Petition No. 197/MP/2020 (Arunachal Pradesh), Petition No. 201/MP/2020 (Tripura),

Petition No. 263/MP/2020 (Nagaland) and Petition No. 556/MP/2020 (Mizoram) against which an Order has also been issued by CERC on 04th August 2023 available on web-link https://cercind.gov.in/2023/orders/197_MP_2020-Ors.pdf. Hence, the forum may discuss and plan for putting up these DPRs again with more detailed justification.

Members may please discuss.

A.4 Cyber Security aspects in SCADA/IT systems at Load Despatch Centres in North Eastern Region:

State-Utilities may update the status with respect to CII Status by NCIIPC, ISO 27001:2013 implementation, VA-PT twice a year, Cyber Crisis Management Plan (CCMP), Cyber Management Team (CMT), patching of vulnerabilities and virus alerts from CERT-In/CERT-GO, etc, participation in various trainings and workshops on Cyber Security being conducted by CEA, Ministry of Power and Grid-India, etc.

During 25th NETeST meeting, MS NERPC advised Arunachal Pradesh to submit its compliance in a timely manner & Arunachal Pradesh has agreed to submit the same.

Member Secretary also emphasized that cyber security is to be ensured by all the state utilities. He requested NERLDC to monitor the status of work of all SLDCs in cyber security aspect and update the forum regularly. A summary of the present status of each SLDC is attached in as ***Annexure–A4.***

Members may please discuss.

A.5 Implementation of Guwahati Islanding Scheme:

During the 23rd TCC/RPC meeting, the Guwahati Islanding Scheme was referred back to the Sub-Committee for review as the forum felt that the cost estimate of ₹84.88Cr (including taxes) is exorbitant.

Subsequently, the Guwahati Islanding Scheme is being regularly reviewed in OCCM, NETeST and Special meetings.

NERLDC and Assam are requested to update on the latest status on progress of the Scheme and timeline for submission of DPR thereof.

Members may please discuss.

A.6 Periodic Auditing of Communication System:

Regulation 10 of Communication System for inter-state transmission of electricity Regulation, 2017 states "The RPC Secretariat shall conduct performance audit of

communication system annually as per the procedure finalized in the forum of the concerned RPC. Based on the audit report, RPC Secretariat shall issue necessary instructions to all stakeholders to comply with the audit requirements within the time stipulated by the RPC Secretariat. An Annual Report on the audit carried out by respective RPCs shall be submitted to the Commission within one month of closing of the financial year".

Accordingly, Audit plan has been made for FY 2023-24. In the 25th NETeST meeting it was also decided that states can also suggest additional names of substations to be audited and nomination for audit committee from states/ISTS shall be sought as and when required.

Members may kindly deliberate.

A.7 Standard Operating Procedure (SoP) for Communication Audit of Substations:

Regulation 10 of Communication System for inter-state transmission of electricity Regulation, 2017 states "The RPC Secretariat shall conduct performance audit of communication system annually as per the procedure finalized in the forum of the concerned RPC. Based on the audit report, RPC Secretariat shall issue necessary instructions to all stakeholders to comply with the audit requirements within the time stipulated by the RPC Secretariat. An Annual Report on the audit carried out by respective RPCs shall be submitted to the Commission within one month of closing of the financial year".

Accordingly, NPC has circulated a SoP for Communication (**Annexure-A.7**). Members may discuss and propose any changes, if required.

Members may please deliberate.

A.8 Non-availability of real-time data pertaining to POWERGRID-owned bays installed at AEGCL-owned stations:

It has been observed that the real-time data of POWERGRID-owned bays installed at AEGCL stations are not reporting to NERLDC. These bays have been identified as follows –

a. Nirjuli bay installed at Gohpur station since 16th Dec-2022
b. Silchar bays installed at Srikona station isolator data since 28th November - 2022.
c. Silchar bays installed at Hailakandi.

All these bays are ISTS elements, thus data availability is important for real-time drawl calculation and monitoring of ISTS element. During 24th NETeST meeting, it was decided that AEGCL and POWERGRID will jointly work to resolve the matter bilaterally at the earliest. During 25th NETeST meeting, it was decided that AEGCL and POWERGRID will jointly work to resolve the matter bilaterally within one month.

POWERGRID-NERTS and AEGCL may inform the status.

A.9 Connectivity of 132 kV Khupi S/s with ULDC network:

132 kV Khupi S/s will be connecting to Kameng HEP over 132 kV line. Thus, it is requested to connect 132 kV Khupi S/s with ULDC network by installing OPGW and associated end equipment.

In 22nd NETeST meeting, it was decided that OPGW as well as its associated end equipment will be laid by NERPSIP, which will be integrated with ULDC network at Kameng end before the charging of 132 kV Khupi – Kameng line.

During 24th NETeST meeting, GM (T&C), Comprehensive-PGCIL informed the forum that OPGW stringing is completed in 132 kV Khupi-Kameng (Kimi) line, FOTE installation is under progress which will be completed by 15th April 2023.

During 25th NETeST meeting, DD, NERPC informed the forum that Comprehensive-POWERGRID has assured to complete all the pending work by the end of May, 2023.

Comprehensive-POWERGRID may update the status.

A.10 OPGW Installation in 220kV Kohima- New Kohima line:

Related to commissioning of 220 kV downstream transmission line of DOP Nagaland at New Kohima (400/220kV) SS Concerns of KMTL: 1. OPGW wire for 220 KV downstream Transmission line has not been installed so it is very difficult to achieve the protection of 220 KV transmission line by using line differential relay. As line length is 10 KM (Approx.) for 220 kV Transmission line, therefore Line Differential Relay has been considered for both the end. 2. PLCC & SDH panel has not been installed at 400/220 KV GIS substation, New Kohima till date. 3. 220 KV downstream transmission line conductor parameters yet to receive from DOP, Nagaland for Relay setting at 400/220 KV GIS substation, New Kohima.

In 196th OCCM, Manager, KMTL requested the forum to ensure installation of OPGW, LDP, PLCC, SDH equipments in the 220kV downstream line. He also requested for providing parameters to KMTL for finalization of settings. Member Secretary, NERPC requested POWERGRID to include OPGW for the 220kV New Kohima – Zhadima D/C

under regional scheme – State Sector and proceed for early implementation as the line is in final stage of commissioning. NERTS agreed to the same.

In the 198th OCC meeting, DGM (AM), NERTS updated the forum that quantity margin of OPGW is available under reliable communication scheme. However, prior approval of RPC forum is required to install OPGW on intra state lines.

In the 25th NETeST Meeting, the forum recommended PGCIL to include the link under Reliable communication of ULDC as quantity variation.

The matter was deliberated in the 24th TCC/NERPC meeting as below:

Deliberation of the TCC : CTUIL representative stated that this line being intra-state line is not under their purview. Member Secretary, NERPC requested POWERGRID to find out a way to help them to lay OPGW for this line as a special case.

In response to this, CGM (i/c), NERTS stated that a special arrangement can be made bilaterally with Nagaland by devising a mutually agreed policy/philosophy of work including deposit work or other alternatives, AMC, O&M etc.

The TCC recommended the matter for discussion and approval of the RPC.

Deliberation of the RPC : In view of the constraints faced by Nagaland and urgency of the requirement of the OPGW link, the forum approved and advised PGCIL to execute the work by formulating a bilateral philosophy with Nagaland as decided by the TCC forum. Further, the work progress can be monitored in Sub-Committee of NERPC.

DoP, Nagaland & POWERGRID may update the status.

A.11 <u>Issues of SLDCs in SCADA AMC:</u>

<u>Assam, Meghalaya and other SLDCs:</u>

(a) Signing of LOA for Extension of AMC of SCADA-EMS system of Meghalaya:

The AMC of the existing SCADA-EMS system for Meghalaya had expired on 31st March 2023. However, GE is yet to sign the LOA which incorporates the GST related amendment made by POWERGRID besides other terms and conditions as in the Original Contract. Moreover, a request was made by GE for a consideration of the Maintenance component only (exclusive of Supply and Services) for the purpose of PBG.

In the 25th NETeST meeting M/s GE representative agreed to sign the LOA extension.

Members may please deliberate.

(b) Degraded performance of the UPS battery banks of Meghalaya SLDC:

During the 24th NETeST meeting, GE had assured that all issues relating to the inadequate performance of UPS battery banks would be resolved. However, subsequent to the last Preventive Maintenance Visit on the 20th March 2023 wherein it was observed that UPS-1 battery bank was giving a back up of less than 2 hours along with the detection of defective battery cells, there has seemingly been no effort on the part of GE to resolve the problems.

During the 25th NETeST meeting, SLDC Meghalaya requested M/s GE to ensure the availability UPS battery supply for at least 3.5 Hrs. In this regard, M/s GE had assured the same and informed that 30 battery cells shall be supplied to SLDC, Meghalaya and would be installed by June, 2023. However, till date, the same, though received at site, are yet to be installed.

Members may please deliberate.

(c) GST related amendment in AMC of the SCADA-EMS system:

Since the Contract was originally prepared by POWERGRID and signed by individual states with ALSTOM / GE, the matter relating to the amendment in GST and calculations thereof was requested during meeting dtd 29.12.2022 to POWERGRID.

A letter has been received from Powergrid on 31.03.2023. Point No. 3.0 states that "The rate is approved as 89% [Eighty Nine percentage] of the original rate of the AMC portion". Another email has been received from M/S GE T&D Ind. Ltd. on 12.05.2023, in which revised rate for AMC calculation has been shared. As per the calculation the existing contract value is Rs. 1,65,62,935 .00. And the Contract value after GST amendment is Rs. 1,73,94,394.00. While calculating the same M/S GE T&D Ind. Ltd. has taken 89% of the original contract value which is inclusive of service tax of 12.36%. So, there is no change in the base value after GST amendment. However, there is significant enhancement in the contract value.

In the 25th NETeST meeting, POWERGRID agreed to share the corresponding calculation sheet with the states. Further POWERGRID also informed the forum that if other state wants GST amendment calculation, they need to give details to POWERGRID and they will provide the separate GST amendment to each state.

In a special meeting held online on 30th August, 2023 POWERGRID informed that they had requested details from all the states & are waiting for details from the states to make amendment of GST for all state together. Member Secretary, NERPC advised POWERGRID to process & issue the amendment of GST state wise. He also advised POWERGRID to do the needful for Meghalaya & Tripura within 02 weeks enabling

them to sign the AMC of SCADA-EMS with M/s GE. POWERGRID requested M/s GE to depute a person to NERTS RHQ along with all relevant documents/details for swift processing and issuance of the amended GST. M/s GE has agreed to the same.

Till date, it is regretted that the GST Amendment Clause is yet to be conveyed to Assam/ Meghalaya/Tripura as resolved during the above meeting. It may be mentioned that quarterly payments to GE had been stalled on account of the above delay. POWERGRID / GE may please update on the status.

Members may please deliberate.

(d) AMC of existing RTUs

TSECL is requesting provision for inclusion of maintenance of existing RTUs to be incorporated under new SCADA upgradation project (ULDC Phase-III)

Members may please deliberate.

(e) Replacement of anti-virus installed in OT system of LDCs in NER:

M/s GE T&D India Limited has provided Microsoft System Center Endpoint Protection (SCEP) 2012 as antivirus solution for the SCADA system during the project implementation phase. The anti-virus installed has been declared end-of-life by the OEM i.e., Microsoft from 12-July-2022 onwards which means that all associated definitions, engine, and platform updates will not be available now. Non-availability of antivirus is a critical cyber security vulnerability to the system. Therefore, M/s GE T&D India Limited has to replace and maintain an updated antivirus solution in SCADA system at all LDCs of NER. Further, all SLDCs have to follow up with M/s GE T&D India Limited regarding implementation of the same on priority basis.

In 23rd NETeST meeting, M/s GE informed the forum that they will replace all the obsolete antivirus by a new eSCAN anti-virus solution till 10th August 2022 at NERLDC as well as NER-SLDCs.

In 24th NETeST meeting, M/s GE T&D Ind. Ltd. representative requested all SLDCs to inform this issue to the site engineer and M/s GE will resolve it expeditiously.

In 25th NETeST meeting, M/s GE representative informed that in view of cyber security, internet is not directly connected to the SCADA systems and therefore regular updates of antivirus software could not be undertaken. However, M/s GE requested all SLDCs to provide a dedicated workstation class computer system which shall be configured as Anti-virus management server. The computer should

have internet facility to download the patches and will be connected to SCADA external firewall to push the patches to respective systems.

In this connection it is to inform that SLDC, AEGCL is planning to have a dedicated system connecting the SCADA (IT-OT integration). The system is planned to be used for downloading reports (generated in SCADA), database. Therefore, in view of the above, M/S GE T&D Ind. Ltd. was requested to –

a) Share the necessary minimum specifications for the dedicated workstation.
b) Comment whether the same dedicated PC may be used as the IT interface PC for implementing the IT-OT integration work.

Comments are yet to be received from M/S GE T&D Ind. Ltd.

Members may please deliberate.

(f) Deployment of Suitable Manpower at LDCs in NER for AMC by M/s GE T&D India Limited:

SCADA/EMS project was awarded to M/s GE T & D Limited in the year 2014 and T&C extended during January 2017. Since then, the SCADA/EMS system is under Comprehensive-AMC with M/s GE T&D Limited. As per the contractual terms and conditions, two (02) manpower with "5 years of working experience in delivered SCADA/EMS system" has to be deployed at each SLDC of North-Eastern Region.

It has been observed that manpower deployed at various SLDCs are not as per the provision of the contract and due to this many-a-times, technical support through remote desktop needs to be extended from NERLDC. As a result, various works are getting hampered and delayed.

In 23rd NETeST meeting, M/s GE assured to the forum that all issues related to manpower will be resolved before next NETeST meeting. It was deliberated that M/s GE should not take this matter lightly and fulfil the requirements as per the provision of the contract which quotes that service engineer with minimum 5 years of working experience in delivered SCADA/EMS system should be deployed at all control centers.

In 24th NETeST meeting, M/s GE T&D Ind. Ltd representative informed that they will be sending experts from back office on quarterly basis to each SLDC, for resolving state issues as well as training each personnel deployed there. Further, online training will also be provided to all their deployed personnel. He assured the forum that man-power related issue at all SLDCs will be resolved by April 2023.

During 25th NETeST meeting, M/s GE informed that necessary training has been imparted to the site engineers and their performance are being monitored on a regular basis. They also requested all the SLDCs to inform any lagging of the site engineers for smooth execution of the contract. SLDC, Assam informed that the training imparted appears to be inadequate as the site engineers of M/s GE often seeks remote help for regular works. The forum advised M/s GE to look into and resolve the matter urgently. M/s GE agreed for the same

Members may please deliberate.

(g) Non-functioning of "Historian" system services at Mizoram SLDC and Arunachal Pradesh SLDC:

The historian system services in SCADA/EMS system of Mizoram SLDC and Arunachal Pradesh SLDC are not functioning since its inception. During 24th NETeST meeting, M/s GE T&D informed the forum that they will resolve the issue by 15th April 2023. Further, NERLDC also requested concerned constituents to calculate the availability according to contract clause if the issues are not resolved by 15th April 2023.

During 25th NETeST meeting, M/s GE informed that historian services have been restored at Mizoram SLDC on 15th May 2023 (Mizoram SLDC confirmed the same) and they will resolve the historian issue of Arunachal Pradesh by July 2023.

Members may please deliberate.

(h) Battery Bank issues of Tripura SLDC.

Regarding replacement of deteriorated batteries of 40 KVA UPS system in Tripura & Assam, it was already discussed in SCADA AMC meeting, however GE has not taken action till date.

In the 25th NETeST meeting, M/s GE informed that 30 nos. battery shall be supplied to SLDC, Tripura by June, 2023. TSECL has informed that the materials has been supplied, but installation/commissioning is yet to be done.

Members may please deliberate.

(i) **Reconciliation of the Spares for ASSAM SLDC.**

SLDC, AEGCL would like to inform the forum that the AMC for SCADA/EMS awarded to M/S GE T&D Ind. Ltd. has been extended for two years at the same rate and same terms and condition as per the provision in the existing AMC. As such SLDC, AEGCL would like to reconciliate the spares that the contractor needs to maintain at site in presence of the contractor.

In the 25th NETeST Meeting held on 25th May, 2023 SLDC, Assam & M/s GE agreed to reconcile by 1st Week of June, 2023.

At the request of SLDC, AEGCL, material reconciliation of the spares have been performed on 28.06.2023 in presence of representative of M/S GE T&D Ind. Ltd. Few items were found to be not available and M/S GE T&D Ind. Ltd. has been requested to replenish the same. One Item (Dust Filter) is yet to be replenish.

Members may please deliberate.

(j) Support for Fortinet Firewall during Extended AMC.

The license of the internal firewall of the SCADA/EMS system of SLDC, AEGCL has already expired. As per M/S GE T&D Ind. Ltd. the, OEM of the firewall does not support for any further extension in the service/ licence. The matter has already been discussed in several meetings. As per the minutes of the special meeting dated 13.02.2023 SLDC, AEGCL has written a letter to CERT-GO & CISO-MOP seeking clarification and guidance on this issue, however, no response has been received yet. Also, once the firewall issue is resolved, specific amendment in LOA may be made as per requirement.

In the special meeting held online on 30th August, 2023, M/s GE informed that they are suppling Firewall to SRLDC at around ₹ 9.75 Lakhs (exclusive of taxes) per Firewall and they will consider the same rate for NER SLDCs. SLDC, Meghalaya informed the forum that they have already initiated the process of procuring Firewall from M/s GE at the same rate. The forum opined that all the SLDCs may procure firewall for SCADA-EMS system to avoid/mitigate cyber security threats. In this regard M/S GE T&D Ind. Ltd. was asked to provide with the techno commercial offer for the same. But, SLDC, AEGCL is yet to receive any response for the same.

Members may please deliberate.

(k) UPS Tripping.

The UPS system which is a part of SCADA/EMS has tripped at multiple instances in recent past. Recently fault in the UPS system has been observed on 25.08.2023, 19.07.2023, 18.05.2023. There might be some issue with the UPS system. Regarding this M/S GE T&D Ind. Ltd. has been requested to investigate the issue and submit a detailed report with reason for the occurrences of the fault along with mitigation plan to prevent such occurrence in future. But, M/S GE T&D Ind. Ltd. has not submitted the same.

Members may please deliberate.

(l) EMS/DTS.

A 2 days training on EMS and DTS has been organised by M/S GE T&D Ind. Ltd. on 15.06.2023 and 16.06.2023. The training has been very helpful. SLDC, AEGCL would like to highly appreciate the training arranged by M/S GE T&D Ind. Ltd. The scope for improvement in the database has been pointed out by the instructor for improved result. However, the SLDC team has a little to no experience with the database of EMS/DTS. So, we are unable to mitigate some errors in the database. So, RPC, RLDC, M/S GE T&D Ind. Ltd. may extend their view in this matter.

Members may please deliberate.

(m) Delay in submission of Audit Report.

The cyber security audit of SCADA/EMS was performed in Feb'23 by M/s GE T&D India Ltd. The final report was received on 17.08.2023. Justification regarding vulnerabilities which had not been closed was requested from M/s GE T&D India Ltd on 29.08.2023. The same is yet to be received.

Members may please deliberate.

A.12 <u>Concerned regarding shifting of SLDC Arunachal Pradesh from Old building to new building.</u>

It is learnt that SLDC Arunachal Pradesh has completed its new control centre building, which is nearby to exiting SLDC building (Chimpu S/s). However, following are concerns from NERLDC:

a. Plan for shifting of SCADA/EMS system from old building to new building.
b. Plan for shifting VoIP exchange also.
c. Plan for shifting of various communication links of Comprehensive-AP, ULDC and Powertel links (fibre & FOTE) to new building.

In 25th NETeST meeting, DoP, Arunachal Pradesh informed that the discussion is being held with M/s GE T&D for shifting the SCADA/EMS system from old premises to new premises. NERLDC emphasized that along with SCADA/EMS, plan for shifting of VoIP exchange and communication links (POWERTEL, ULDC and Comprehensive-AP) should also be prepared well in advance. Member Secretary, NERPC advised DoP, Arunachal Pradesh to plan the activities with minimal outage. DoP, Arunachal Pradesh informed the forum that the matter is in initial discussion phase and further brainstorming would be done on it before presenting it to the forum.

DoP-Arunachal Pradesh may update the status.

A.13 UFR Mapping of Arunachal Pradesh

SLDC Arunachal Pradesh has been requesting GE T&D India Ltd since August 2022 for mapping of existing UFRs of Arunachal Pradesh vide our letter No. SE/SO&PSC/W-30/ 20232-23/879-83, dated 25/08/2023. Many reminders were served in between through email and phone calls. As per clause 6.5 of the Price break-up of the AMC including manpower and spares, they are required to provide Integration of bays in RTUs including supply of MFT, CMRS etc at mutually agreed price as per AMC. UFR mapping is still pending as no one from GE has been deputed for the work. GE T&D India Pvt. Ltd may give dates for deputing man power for UFR Mapping.

DoP-Arunachal Pradesh & M/s GE may update the status.

A.14 Restoration of OPGW owned by Manipur

It has been noticed that seven stations i.e., 400 kV Thoubal, 132 kV Chandel, 132 Kv Churachandpur, 132 kV Hundung, 132 kV Kakching, 132 kV Kongba and 132 kV Yiangangpokpi of Manipur are not reporting due to outage of following OPGW links:

a) 132 kV Churachandpur – Ningthoukhong since 08th June 2023
b) 132 kV Yurembam (Imphal) – Yiangangpokpi since 16th September 2023

Manipur is requested to restore the OPGW for the mentioned links at the earliest.

Members may please deliberate.

A.15 Laying of new OPGW on existing MePTCL transmission lines by replacing the old ULDC fibers

During the Special NETeST Sub Group Meeting held on 31st May, 2023, CTU had informed the forum that as per latest recommendation by CEA, the first right to lay new OPGW in existing transmission lines is with the owner of the line itself. However, should the owner refuse this right, then CTU may give the work to other agencies.

MePTCL was advised to put up the matter as an agenda item in the next NETeST meeting for laying new OPGW by replacing the old ULDC fibers as they have completed its useful life (15 years as per CERC tariff order).

Members may please deliberate.

A.16 Request for details of payments arising from telecom business towards reduction in POC charges /transmission charges for Meghalaya through utilization of the ULDC OPGW link.

During the Special NETeST Sub Group Meeting held on 31st May, 2023, MePTCL had requested POWERGRID for providing the details of payments arising from telecom business towards reduction in POC charges / transmission charges for Meghalaya through utilization of the ULDC OPGW link. NERTS mentioned that the details would be requested from POWERGRID Corporate office and would be furnished to MePTCL. However, till date, the details are yet to be received.

Members may please deliberate.

A.17 Request for consideration for enhancement of fiber pairs for NEHU-Mawlyndep-Mustem-Khliehriat link up to tower location 25 covered under MW Vacation project.

During the Special NETeST Sub Group Meeting held on 31st May, 2023, MePTCL enquired if the NEHU-Mawlyndep-Mustem-Khliehriat link up to tower location 25 covered under MW Vacation project can be enhanced to 24 pairs (i.e. 48 Fibers) with 12 pairs (i.e. 24 Fibers) exclusively for MW Vacation project and 12 pairs (i.e. 24 Fibers) under MePTCL to cater to its requirements. The members had taken note of the request and accordingly, a separate meeting on this aspect had been convened subsequently. However, due to bad communication network encountered by MePTCL during the said meeting, no discussion could be taken up. As such, a request is once again made for a separate meeting with CTU/POWERGRID to discuss on the above request.

Members may please deliberate.

A.18 Planning for Transition from SDH-based technology to MPLS-based technology in Communication System of Power Sector

In the 25th NETeST meeting, CTUIL made a brief presentation on MPLS through VC to the forum. After detailed deliberation, the forum decided the all SLDCs shall study the pros & cons for implementing the MPLS technology in its state grid and update the forum in the next NETeST meeting.

Meanwhile, in minutes of 13th NPC meeting held on 5th July 2023 (refer https://cea.nic.in/wpcontent/uploads/nat_power_com/2023/08/Minutes_of_the_13th_Meeting_of_NPC_held_on_05.07.2023_at_Kolkata.pdf), it had been stated to

form a Joint Committee (JC) to discuss and recommend upon the MPLS technology for power sector. Some of the major points of 13th NPC meeting related to Joint Committee are as follows –

- Project Monitoring Group of PSDF has already been approved implementation of MPLS TP in place of SDH for Kerala and Tamil Nadu.
- CEA Technical Standards for Communication provides no limitations on usage of MPLS technology in power sector.
- CTUIL and STUs to ascertain the performance of MPLS-TP and IP-MPLS vis-à-vis SDH, particularly in respect of tele-protection requirement.
- Pilot project may be taken up for recommended technology.
- Deploying hybrid FOTE (SDH cum MPLS technology) can also be explored. The same has been incorporated by TANTRANSCO in its "Reliable communication scheme" tender at 38 nos. 230 KV sub stations.
- A draft framework for introduction of MPLS technology in ISTS Communication system may be provided by CTUIL.

At present, no representation is there from NER-States in the aforementioned Joint Committee; however, NERPC and NERLDC are part of it. As various DPRs are getting prepared by NER-states for 90% PSDF funding under State-Reliable communication schemes; hence, members may discuss about whether to include this technology for adoption at this stage or not.

CTUIL is requested to give a brief presentation on the roadmap for implementation of MPLS in PAN India.

Members may please deliberate.

A.19 <u>Congestion in ISTS communication network:</u>

The communication networks have STM16 link capacity at most of the places, however few links having STM4 or lesser capacity. There may be few links /nodes the capacity of whom may have been utilized more than 75 percent. The detail of such nodes/links may be intimated by POWERGRID/ Grid-India which are having congestion in terms of traffic/bandwidth so that planning for capacity enhancement of the node/link may be done.

This agenda was deliberated in 25th NETeST meeting held on 25.05.2023 wherein the forum noted the same and advised POWERGRID to identify and regularly update the forum if the capacity of any node/link has been utilized by more than 75%.

POWERGRID may update the links which has been utilized more than 75% capacity.

Members may please deliberate.

A.20 Compliance for Resource disjoint as per CEA manual of communication planning for power system operation dtd 31.03.2022:

As per CEA manual of communication planning for power system operation dtd 31.03.2022, to ensure redundancy with route diversity, the working path and protection path should be resource disjoint. There may exist Single Points of Failure (SPOF) in network where multiple links are aggregating to single node and failure of such node may result in failure of multiple nodes and thus the Grid visibility. Such nodes in ISTS communication network may be identified and intimated by POWERGID/Grid-India which are SPOF. The redundancy and resource disjoint of such links to be further ensured considering their criticality in system.

This agenda was deliberated in 25th NETeST meeting held on 25.05.2023 wherein the forum advised CTUIL to inform the critical node identified by PGCIL/CTU to the forum.

CTU has identified few SPOF nodes such as Bongaigaon, Melriat, Imphal and Dimapur. POWERGRID may confirm status of redundant FOTE and Power Supply at these nodes.

Further, any other SPOF nodes may be suggested by members.

Members may please deliberate.

A.21 Additional FOTE at AGC locations

Additional FOTE at all AGC operated generating stations in North Eastern region is required in view of resource disjoint and criticality of AGC operation for grid operation purpose as failure of single equipment may lead to disruption in AGC operation. Further, at many locations redundant ethernet port are not available as per NLDC requirement. The NLDC requirement is as follows:

- 1+1 Ethernet port for main NLDC
- 1+1 Ethernet ports are for backup NLDC

This is to be deliberated for additional FOTE and ports/cards at AGC locations.

Following AGC Locations may be considered for additional FOTE:

a) Kopili – AGC under implementation
b) Khandong – AGC under implementation
c) Kopili Stage 2 – AGC under implementation
d) Kathalguri – AGC under implementation

e) Doyang HEP – AGC under implementation

Deliberations in 4th CPM: GRID-INDIA informed the forum that five nos. of new AGC stations as stated above are planned for implementing the AGC in NE Region as per CERC order and these stations shall be operational for AGC in next three to four months tentatively. Accordingly, FOTE redundancy may also be planned.

POWERGRID shared the FOTE equipment requirement for redundancy as follows via email dated-04/08/23 as below:

- **Kopili** – No
- **Khandong** -No
- **Kopili stage 2** -No (In the said meeting, it is informed that Kopili stage 2 and Khandong are in same premises. Therefore, Kopili stage 2 is considered as Khandong).
- **Kathalguri** – No (At present only 1 SDH is PRESENT. However, 1 no. is upcoming under Kathalguri – Namsai (NERXV)
- **Doyang** – Yes

Accordingly, one FOTE for Doyang-HEP is required for AGC operation.

Members may please deliberate.

A.22 <u>Connectivity of STU node on fibre in view of AMR.</u>

The meter readings from several locations (mostly STU nodes) (list of location shall be provided by Grid-India) in each region are intermittent and having communication issues as the meters at the state nodes are not having secure & reliable communication links and are operational on public domain communication links like GPRS. It is proposed to provide the connectivity of such nodes on captive OPGW network for receiving the data successfully for AMR purpose.

Grid-India has identified a list of such nodes (list attached as **Annexure A.22**) for each region.

The line length (for the STU nodes as listed in **Annexure A.22**) from STU node to nearest ISTS node may be provided by Grid-India/STU/State constituent along with line name, line ownership so as to prepare a scheme for OPGW laying. Based on the inputs received, the scheme shall be made and put up for approval in NCT.

Deliberations in 4th CPM: CTU explained the requirement of connectivity of STU node with ISTS node on fiber for data reliability for AMR (Automated Meter Reading). POWERGRID informed that for Roing and Namsai stations, Roing - Teju, Teju - Namsai and Namsai - Pasighat are connected on OPGW links. POWERGRID informed

that Ziro - Pasighat section shall be completed by Dec'23. POWERGRID also informed that a direct link Kathalgudi - Namsai is also being implemented under TBCB by POWERGRID. Grid-India told that recently OPGW is laid under NERPSIP and OPGW is available on Roing(PG) – Chapakhowa – Rupai – Tinsukia - Mariani(Assam) - Mariani(PG) which can be utilised for the Roing – Teju - Namsai connectivity. POWERGRID told that they will check the said connectivity with their ULDC team and shall try to implement it. In case, POWERGRID faces any issue while implementing the connectivity, it shall put up the agenda in forthcoming NETeST and CTU-CPM meetings.

Grid-India/STU/State constituent to provide input along with line name, line ownership so as to prepare a scheme for OPGW laying as listed in **Annexure A.22.**

Members may please deliberate.

A.23 <u>Dual reporting of RTU, PMU, VOIP, AGC etc applications on dual channel to RLDC and Back up RLDC</u>

Presently, all the data channels and voice channels are reporting in main and backup mode with a main channel to RLDC and protection channel to Backup RLDC. It is suggested by ERLDC & WRLDC that for increase of redundancy in the system both main and protection channels should report to RLDCs as well as back up to RLDCs in dual mode considering the criticality of real grid operations by the ERLDC.

For discussing the same meetings were held among POWERGRID, Grid-India, CTU and CEA on dated 09/05/23 and 27/06/23. Now, as per discussion in meeting, POWERGRID has to provide the region wise data of additional requirement for equipment/card/port etc in respective FOTE/Gateway/RTU for the implementation of dual redundancy within 21 days.

POWERGRID has submitted the requirement of 3 nos. of FOTE for NTPC BgTPP,Ziro and Loktak as per **Annexure A.23(attached).** However, for Loktak and NTPC BgTPP, FOTE has already been approved by NERPC under redundant FOTE for AGC locations scheme. Hence, only one FOTE for Ziro is required.

For SAS/RTU requirement POWERGRID has to submit the data.

POWERGRID is requested to provide the remaining data.

Deliberations in the 4th CPM: POWERGRID has submitted the requirement of three equipment and one ethernet card for dual redundancy purpose. The list provided from POWERGRID is enclosed for reference. However, this data is only related to FOTE & ethernet cards. Regarding the expansion SAS gateways/ RTUs ports,

POWERGRID stated that they are compiling this data as SAS gateways upgradation which are upgradable and SAS gateway for replacement which are not upgradable. Similarly, new procurement of RTUs shall be done where the RTU have lived their life and addition procurement of RTUs where the RTU ports are insufficient. In case malfunctioning occurs in SAS gateways with expansion of ports, as suggested in another region, POWERGRID shall discuss with OEM to resolve the same. POWERGRID to submit the requisite data within a week.

POWERGRID may submit the remaining data along with cost estimate.

Members may please deliberate.

A.24 <u>Replacement of FO link for "NERLDC Shillong – NEHU", "132 kV Kahilipara – Sarusajai" and "132 kV Kahilipara – Umiam Stg. III – Umiam Stg. I – NEHU".</u>

Grid-India stated that in the 23rd TCC and NERPC meeting, TCC forum recommended for replacement of OPGW with 24 Fiber for NERLDC Shillong – NEHU", "132 kV Kahilipara – Sarusajai" and "132 kV Kahilipara – Umiam Stg. III – Umiam Stg. I – NEHU" after RPC and NCT approval. This proposal for replacement shall be substantiated with test report of fiber healthiness. But test report is not available with Meghalaya SLDC as the links have not been handed over to them by POWERGRID. POWERGRID stated that automatic handing over of the link ownership takes place after completion of fifteen years.

Further deliberations were held regarding ownership and maintenance of the said links.

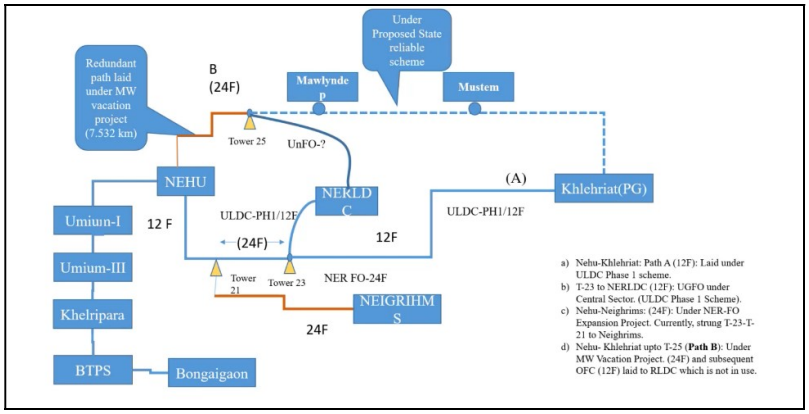
CTUIL stated that since these links are being used for ISTS data & voice communication and this communication shall be kept intact. In view of this CTU requested POWERGRID to clarify the entity who is maintaining the above said lines.

Deliberations in 4th CPM: POWERGRID told that this link contains critical ISTS data and this is the only path for NERLDC connectivity with only 12 Fibers. POWERGRID shared the connectivity diagram of NERLDC (as shown in figure below) and explained the criticality of these links. POWERGRID told that if Meghalaya is ready to maintain and takeover the link they have no issue in handing over these links.

However, GRID-INDIA informed that one of the above links i.e 132 kV Kahilipara – Sarusajai section belongs to Assam which is not vital for NERLDC connectivity and

replacement of OPGW on this link shall be considered separately in consultation with Assam. Further, GRID-INDIA stated that 132kV NEHU-Umium-I-Umium -III is critical for Grid operation as most of the NERLDC data and AGC data is being routed through this path. In view of this, GRID-INDIA requested CTU for approval for laying of OPGW on these lines to be obtained from NCT. CTU suggested OPGW replacement on all these links may be carried out by single party considering reliability of backbone connectivity to NERLDC. CTU clarified that for approval of OPGW replacement on these lines under ISTS scheme from NCT, the replacement of OPGW shall be substantiated with test report of fiber healthiness which was asked for in the 23rd TCC and NERPC meeting also.

POWERGRID also intimated that Meghalaya is also implementing OPGW on Khleiriat-NEHU section which provides path redundancy for NERLDC. CTU suggested POWERGRID to check whether 48 Fibers can be laid on the "NERLDC Shillong – NEHU" and "132 kV Kahilipara – Umiam Stg. III – Umiam Stg. I – NEHU" paths so that fibers can be shared for ISTS and STU purposes. CTU requested POWERGRID to provide test-report of fiber healthiness of these links so that further review/approval in NETeST/TCC/NERPC & subsequently NCT may be taken up.



Connectivity diagram of NERLDC

Accordingly, following issues need to be deliberated:

a) POWERGRID to provide test-report of fiber healthiness of above-mentioned links.
b) Whether OPGW on "NERLDC Shillong – NEHU" and "132 kV Kahilipara – Umiam Stg. III – Umiam Stg. I – NEHU" lines to be laid under ISTS by POWERGRID considering the importance of these links for GRID data.
c) Ownership and maintenance for OPGW on above mentioned lines to be clarified.

Members may please deliberate.

A.25 Signing of LOA for Extension of AMC of SCADA-EMS system:

The AMC of the existing SCADA-EMS system for Meghalaya & Tripura has expired on 31st March 2023. However, GE is yet to sign the LOA which incorporates the GST related amendment made by POWERGRID. In the 25th NETeST meeting, M/s GE had agreed to sign the LOA extension. However, the AMC is yet to be signed for Meghalaya & Tripura. The status of AMC is as summarized below:

SN	Constituents	2 Years AMC Signed	6 Years AMC end date
1	Assam	YES	11-11-2022
2	Meghalaya	NO	31-03-2023
3	Tripura	NO	31-03-2023
4	Manipur		07-11-2023
5	NERLDC		31-01-2024
6	Mizoram		26-04-2024
7	Nagaland		15-01-2025
8	Arunachal Pradesh		28-02-2025

Members may please deliberate.

A.26 Outstanding AMC charges of SCADA-EMS*:*

M/s GE has informed that ₹ 2,03,72,680.38 is pending as outstanding AMC charges of the existing SCADA-EMS system for NER constituents, summarized as follows:

SN	Constituents	Period	Outstanding Amount
1	Manipur	Y5Q1, Y5Q2, Y5Q3, Y5Q4, Y6Q1, Y6Q2	₹ 66,99,025.07
2	Tripura	Y6Q1, Y6Q2, Y6Q3, Y6Q4	₹ 45,05,884.13
3	Mizoram	Y5Q3, Y5Q4, Y6Q1	₹ 34,45,714.35
4	Nagaland	Y5Q1, Y5Q2	₹ 22,97,142.89
5	Assam	Y7Q1, Y7Q2	₹ 22,86,742.69
6	Meghalaya	Y6Q4	₹ 11,38,171.25
Total			₹ 2,03,72,680.38

In the special meeting held on 30-08-2023, SLDCs assured that the payment shall be cleared after the issuance of the amended LOA signing with the states. The forum had advised POWERGRID to prioritize and issue the amended GST calculation at the earliest.

Members may please deliberate.

A.27 Customer to maintain environmental condition for healthy and longer life of installed HW including APS/VPS.

A.28 Customer to prepare Database & Display, GE may assist.

A.29 Recovery of Unified Real Time Dynamic State Measurement" (URTDSM) project phase-II

CERC vide their order in Sept'2013 accorded In-Principle approval for implementation of URTDSM project. Further, vide order in Sept'2016 advised to take up Phase-2 after receiving feedback from POSOCO on Phase-I performance. POWERGRID implemented URTDSM Project Phase-I project with 1419 PMUs and 32 PDCs.

After feedback from POSOSCO in March'21, in the 10th NPC Meeting held in April 2021, a Sub-Committee was constituted under the chairmanship of Member Secretary, WRPC with representatives from POSOCO, CTU, POWERGRID, all RPCs/NPC to finalize the philosophy of PMU locations, new analytics, and requirement of up gradation of Control Centre under URTDSM project phase-II.

The report submitted by the sub-committee was discussed in the 12th NPC meeting held on 17.10.2022. In this meeting, Chairperson CEA suggested that the report be reviewed by all the RPCs for their comments and suggestions. Accordingly, a meeting was held on 15.12.2022 to review the report.

In the 13th NPC meeting held on 05.07.2023, The subcommittee report was accepted and POWERGRID was entrusted to prepare the DPR of URTDSM Phase-II. PSDF funding for URTDSM project phase-II may also be sought subsequently. RPCs were requested to provide full cooperation in preparation of DPR. (MoM attached herewith).

Vide POWERGRID letter ref. CC-GA&C-URTDSM-Phase-II-PMUs, dated 21.07.2023, all constituents were requested to provide inputs for estimating the quantity of PMUs for preparation of DPR for URTDSM Phase-II Project. (Letter attached as an **Annexure A.29.a**). Reminder was sent on 31.07.2023 via email.

Further, vide letter dated 17.08.2023, All RPCs were requested to issue necessary instructions to get the PMU requirement data. (Letter attached as an **Annexure-A.29.b**).

In the **North-Eastern Region**, till now, PMU quantity requirement is received from NERLDC, Assam and Arunachal Pradesh only. Remaining States are yet to submit their requirement.

List of PMUs given by NERLDC is attached herewith.

NER States are requested to check the same and submit the PMU requirement in the respective states (other than central sector portion) **as per the philosophy finalized by subcommittee for finalization of DPR of URTDSM Project- II**

Members may please deliberate.

A.30 UNMS:

For installation of UNMS equipment, required space has been allotted by TSECL at Tripura SLDC Control room by rearranging the existing equipment in the panel & server room on urgent basis for immediate commissioning along with supply as there is severe space constraints. This has been agreed by the Sterlite before delivery of materials.

However, Sterlite has dumped in insecure way the supplied UNMS materials in the middle of the panel room which is causing inconvenience to carry out day to day maintenance activities by TSECL & Powergrid Telecom.

In the 25th NETeST meeting POWERGRID informed that hardware/furniture has been supplied at site & installation team along with the project in charge shall be deployed at site by 1st week of June, 2023. However, commissioning activities are pending from Powergrid side and equipments are lying idle.

TSECL & Powergrid may update.

A.31 Revival of Non-reporting GPRS based Telemetry link:

Delay in the commissioning of OPGW communication links under NERPSIP is hampering real-time telemetry data availability.

Nodal Powergrid is requested to take up the matter with PMAS (Supplier, Installation & commissioning) agency for revival of Non-reporting RTU stations under the GPRS based RTU data telemetry scheme as the OPGW communication links under NERPSIP is getting much delayed. This is very essential to increase the telemetry data availability of Tripura.

In the 25th NETeST meeting the forum requested POWERGRID to take up the issue with the vendor.

Members may kindly deliberate.

A.32 Establishment of redundant fibre path between NERLDC and NEHU for reliability of power system communication link till RLDC.

On 05-01-2023 and 06-01-2023, there were two incident of fibre cut between NERLDC and NEHU, during the incident all communications links, such as internet,

all ULDC links of ICCP, URTDSM, VOIP, RTUs and all POWERTEL links catering the functionality of NERLDC real time system were affected. Consequently, NERLDC control room was not having any data of grid station which led RLDC to operate grid blindly. Due to outage of this link SLDC and NLDC were also not able to receive data from NERLDC. This 24 core fibre currently runs partially as OPGW on 132 kV NEHU-Kheliriat line and partially as UGFO cable. The fibre is under the ownership of POWERTEL & ULDC has been allotted some pair of fibres from it.

Considering the critical functions of LDCs, it is requested to ULDC-POWERGRID to lay 24 core FIBRE between NERLDC Shillong and NEHU, which should be in physically different path to that of POWERTEL fibre and complete ownership of new fibre should be with ULDC-POWERGRID.

During 24th NETeST Meeting, the forum requested NERTS to include this link in the reliable communication project as this is a very important link in the ULDC network under the head of central sector links. Further, Member Secretary, NERPC suggested the forum to carry out a separate meeting between MePTCL, POWERGRID-ULDC, POWERTEL, NERLDC and NERPC to discuss the issues raised by MePTCL regarding Powertel link.

During 25th NETeST meeting, as per request of the forum ULDC-POWERGRID agreed to lay 24 core UG FIBRE between NERLDC Shillong and 132kV NEHU-Kheliriat line-I Tower no.25 under Reliable Communication Scheme.

ULDC-POWERGRID may please update.

A.33 <u>Deployment of new Remote Terminal Units (RTUs) in selected substations of NER</u>

The Detailed Project Reports (DPRs) for deployment of RTUs in selected stations under ownership of state-utilities in NER were submitted for PSDF funding. The cost-details in respective DPRs are – Arunachal Pradesh: ₹ 34.55 Crores; Assam: ₹ 9.104 Crores; Manipur: ₹ 0.828 Crores; Meghalaya: ₹ 5.517 Crores; Mizoram: ₹ 3.862 Crores; Nagaland: ₹ 12.139 Crores.

SLDCs were requested to provide inputs such as requirements of MDEM, OLTC Transducers, Analog/Digital Cards, Multifunction transducers, Time Synchronization Units, DC to AC Convertors, etc. so that the quantity in BoQ can be finalized and budgetary quotation can be taken based on it. A template for populating these inputs was shared with SLDCs on 24th February 2022. All state-utilities are requested to

populate the data in the shared template so that BoQ and Cost-Estimate can be prepared for the DPR.

In 74th Techno-Economic Sub-Group Meeting held on 17th March 2023, various queries were raised on the DPRs and it was recorded in MoM that – ***"It was decided that the observations of TESG may be communicated to the entities for the proposals (382 to 387) and will be examined after receipt of the complete inputs. TESG also suggested entities not to include 33/11 kV substation and under construction Substation in the scope of work. Entities agreed for the same. NLDC is requested to communicate the above decision to the entities."***

State-Utilities may please confirm whether the reply to queries of TESG has been submitted from their side and in case of any issues, the same may be discussed in NETeST forum, if required.

An email dated 24-Feb-2022 was initially sent to all state utilities along with a template to fill the station-wise details required for RTUs. A reminder e-mail from NERLDC side was shared on 16-May-2023 to al state-utilities but till date, only some details from Meghalaya-SLDC (20th May 2022), Manipur-SLDC (07th November 2022), Nagaland-SLDC (10th November 2022) and Mizoram-SLDC (14th November 2022) have been received. Further, it is requested from all state to fill up details in coordination with Station In-Charges.

Members may kindly deliberate.

A.34 <u>Restoration of Channel 1 of PLCC for 400 kV Silchar-Palatana 1 line at Palatana end by PGCIL.</u>

400kV Line 1 tripped on 26.05.23 due to Phase B to Earth and line tripped on Z-II protection, however fault was cleared within 350 ms and AR should have been attempted on sensing carrier signal from SILCHAR, before tripping on Z-II protection. No AR attempt was observed. Further, No carrier signal was received at OTPC end as a result no carrier aided tripping/No AR attempt was made.

To check healthiness of 400kV Line 1 carrier signals, opportunity shutdown of 400kV Line 1 on 15.06.23 was utilized & OTPC with POWERGRID, Silchar checked healthiness of PLCC system of 400kV Line 1 at both ends.

The Areva Make PLCC Panel for CH 1, Silchar-Palatana Line 1 was checked visually. There is no alarm present & power supply is healthy. But all the counters are showing as "0" for both Receive and Send Signals. Subsequently, Level measurement

was done on 20.07.2023 and readings attached. PGCIL was to take action regarding rectification of 400kV Palatana-Silchar Line 1 PLCC Channel 1.

Members may kindly deliberate.

A.35 <u>SAMAST Review</u>

M/s PwC & M/s Genus will present a brief overview and work progress of the on-going SAMAST project. However, certain issues are highlighted below for further deliberation.

State	M/s PwC	M/s Genus
Assam	• Pending payments related to milestone#2 invoice	• Release pending 10% payment: work completed in Assam and Meghalaya and have received approval to go live. release of the remaining 10% balance payment is requested. • Extension: TE for Assam has been approved until March 2024, similar extension process for Meghalaya is requested. • Balance Meter Scope: request to Provide balance location regarding the scope of balance meter installation/ shutdown in both Assam and Meghalaya."
Meghalaya		
Arunachal Pradesh	• Milestone # 1 pending payment Status of first installment of PSDF fund transfer • Readiness of the datacenter site • Revised timeline for completion of the project	• Balance Meter Scope: We have installed 45 out of the 55 meters as per the project requirements. We request information about the location and necessary arrangements for the remaining 10 meters. • Data Center Readiness: We are still awaiting confirmation of data center readiness and prerequisites for deployment. • Time Extension: In order to complete our work, we request a time extension until December 2023.
Manipur	• Pending payment of milestone# 2 and milestone#3 • Timeline for meter data availability for completion of SAT • Revised timeline for completion of the project	• Time Extension: Due to ongoing law and order issues, work in Manipur has been halted for the past five months. We kindly request a time extension until March 2024, to complete the work.
Mizoram	• Pending payment of milestone# 2 and milestone#3 • Timeline for meter data availability for completion of SAT	• SSL Certificate: There is an issue with the SSL certificate in Mizoram that needs to be resolved. • Time Extension: In order to complete our work, we request a time extension until December 2023.

	• Revised timeline for completion of the project	
Nagaland	• Pending payment of milestone#2 and milestone#3 • Go-live date for the project	• Go Live: We have successfully completed all installation and communication work in Nagaland. We kindly request to provide the authorization to go live. • Time Extension: Due to unforeseen circumstances, we require an extension until December 2023.
Tripura	• Pending payment of milestone # 3 • Timeline for initiation of MDM and Energy Accounting SAT (at least 50%-meter data for SAT of MDM and EA) • Revised timeline for completion of the project	

B. ITEMS FOR STATUS

B.1 Project status of NERPSIP and Arunachal Pradesh Comprehensive Scheme:

POWERGRID is implementing two number of projects as follows –

a) **North Eastern Region Power System Improvement Project (NERPSIP)** for six (06) States (i.e. Assam, Manipur, Meghalaya, Mizoram, Tripura, and Nagaland) for strengthening of the Intra-State Transmission and Distribution Systems.

b) Comprehensive Scheme for strengthening of Transmission & Distribution in Arunachal Pradesh

POWERGRID-NERPSIP and POWERGRID-Comprehensive Arunachal may present the updated detailed status of communication links under the projects as per the annexure B1.A and B1.B.

B.2 Status of FO works under different projects.

Status as updated in the 25th NETeST meeting:

S. No.	Link name	Utilities which may respond	As per 25th NETeST
I. Fiber Optic Expansion Projects			
Meghalaya State Sector			
1	132kV NEHU - NEIGRIMS	POWERGRID-NERTS	MS, NERPC suggested to carry out a separate meeting probable next week between NERPC, NERLDC, SLDC Meghalaya, POWERGRID ULDC & POWERTEL to discuss the matter.
Central Sector			
2	400kV Bongaigaon (PG) - 220kV Salakati - 220kV BTPS	POWERGRID-NERTS	➢ New ROW issues have aroused. ➢ Target: August 2023.
3	400kV Mirza (Azara) – Byrnihat		
4	400kV Silchar – Palatana		➢ Stringing completed. ➢ Unhealthy stretch of 25-30 KM requires replacement. ➢ There are some contractual issues which POWERGRID will try to resolve at the earliest.

S. No.	Link name	Utilities which may respond	As per 25th NETeST
			➢ Target date is November 2023.
Manipur State Sector			
5	132kV Imphal (State) – Karong	MSPCL and POWERGRID	➢ MSPCL informed that diversion work is not completed due to RoW issue in the line. MSPCL requested NERTS to lay the OPGW on the existing line and gave permission to carry out the work. ➢ NERTS informed that work has been already completed upto the diversion portion. ➢ Target date for completion of link is September-2023.

Members may update the status.

B.3 <u>Status and details of OPGW projects approved in 17th TCC/RPC meeting:</u>

A. Additional Communication Scheme: During the 25th NETeST meeting, DD, NERPC instructed POWERGRID to expedite the installation of FOTE as materials are already delivered at site and installation of FOTE does not take much time. The commissioning of links is pending for more than three months for lack of installation of FOTE which could have been avoided. Status as per 25th NETeST meeting (attached as **Annexure B3_A**).

POWERGRID-NERTS may update the status.

B. Reliable Communication Scheme:

a. Replacement of existing fibre: Status as per 25th NETeST is attached as Annexure-***B3_B***.

POWERGRID-NERTS may update the status.

b. Fibre on new lines: Status as per 25th NETeST is attached as Annexure-***B3_B***.

POWERGRID-NERTS may update the status.

B.4 Selected cases of Sub-stations for rectification of corresponding data/communication related issues:

Status as per 25th NETeST.

Utility	Station	Requirement	Status as per 25th NETeST
NEEPCO	Ranganadi HEP	Second Channel via Pare-Chimpu	• NERLDC will share IP parameters to RHEP for early execution of the work. • NEEPCO has taken up the matter with OEM

NERLDC & NEEPCO may update the status

B.5 Integration of Dikshi HEP real time data and pending Voice communication:

M/s Devi Energies had earlier informed that due to bandwidth and some technical limitations in VSAT link availed by it, the alternate arrangement for PLCC system has been made which will have provision for speech/data/protection. It was mentioned that installation and commissioning of PLCC will be completed by May 2021.

As per 21st NETeST meeting, NERPC informed the forum that M/s Devi Energies has committed vide e-mail that it will complete the associated works by January-2022. Further, the forum decided that if M/s Devi Energies are not able to complete the work by January-2022, then DoP-Arunachal Pradesh should take strong action against M/s Devi Energies which may include restricting their generation till works are completed.

As per 22nd NETeST meeting, M/s Devi Energies intimated to the forum through e-mail that all associated works will be completed by June 2022.

As per 23rd NETeST meeting, DoP-Arunachal Pradesh informed that PLCC panel at Khupi for the erstwhile 132kV Balipara – Khupi will be shifted to Tenga and one (1) out of the two (2) new panels at Tenga will be shifted to Khupi. Thereafter, PLCC for 132kV Balipara-Tenga and 132kV Tenga-Khupi shall be operational. It was assured that the above works along with data reporting to respective SCADA system shall be completed by Aug'22.

During 24th NETeST meeting, forum requested DoP, Ar. Pradesh to take up the issue with M/s Devi energy and resolve at the earliest as this is very long pending issue.

During 25th NETeST meeting, DoP, Arunachal Pradesh informed that Devi Energies Pvt. Ltd. has purchased PLCC panel for locations Dikhsi, Khupi and Balipara, which

are delivered at sites but these PLCC panels are not compatible with PLCC panels present in Khupi and Balipara. Therefore, integration is held up at sites. The forum requested DoP, Arunachal Pradesh to resolve the matter bilaterally with M/s Devi Energies.

DoP AP may please update the status.

B.6 Automatic Generation Control (AGC) in Indian Grid

Station Nam	Background	Status as per 25th NETeST Meeting
BgTPP	Unit-2 needs to be integrated.	Configuration done in all units.
AGBPP (Kathalguri)	OEM visits was envisaged as per following – • Some units are of Mitsubishi make which require team from Japan to visit plant. • Other units are of GE-make and BHEL-make	**Four number of Mitsubishi-make GTs:** • NEEPCO informed the forum that Mitsubishi has submitted the offer for necessary works. NEEPCO has also issued LC to M/s Mitsubishi, which was expired and NEEPCO will extend the LC. Once Mitsubishi confirms the same, they will visit plant to carry out the work. Target for the same will be shared accordingly. **Two number of BHEL & GE-make GTs:** • NEEPCO informed the forum that software and hardware related work of DCS are completed. • Technical specification (TS) for RTU of AGC is under preparation and it will be put under procurement once TS is prepared. • **Target date:** March 2024.
Doyang		• NEEPCO informed that technical specification is under preparation for AGC implementation along with SCADA upgrade of station.
Kopili Stage -	25 MW	▪ AGC is installed at the plant. All software and hardware works are also completed. AGC can be taken into service after all small issues get resolved for re-commissioning. ▪ Action: NEEPCO may update the status.

Kopili	100W	▪ Under renovation AGC system is also getting installed. ▪ One Machine is expected to come into service by July 2023 ▪ Second Machine is expected to come into service by August 2023 ▪ Action: NEEPCO may update the status.
Khandong	As per new Ancillary Services Regulation 2022, all ISGS plant will be participating in AGC.	▪ Action: NEEPCO may update the status.
Kameng	As per new Ancillary Services Regulation 2022, all ISGS plant will be participating in AGC.	▪ Action: NEEPCO may update the status.
Ranganadi (Panyor)	As per new Ancillary Services Regulation 2022, all ISGS plant will be participating in AGC.	▪ Action: NEEPCO may update the status.
Pare	As per new Ancillary Services Regulation 2022, all ISGS plant will be participating in AGC.	▪ Action: NEEPCO may update the status.
RC Nagar	As per new Ancillary Services Regulation 2022, all ISGS plant will be participating in AGC.	▪ Action: NEEPCO may update the status.
Palatana	As per new Ancillary Services Regulation 2022, all ISGS plant	▪ **Action:** OTPC may update the status.

	will be participating in AGC.	

NEEPCO & OTPC may please update the status.

B.7 <u>Pending issues of State Utilities of NER:</u>

The presentation on telemetry status for the month of September 2023 is attached as ***Annexure-B7***.

The utility-wise discussion points for telemetry issues are listed in table below.

Utility	Pending issues	Remarks
Assam	SAS upgradation related works may be updated.	• NERLDC will share the format for compiling the data. • Assam-SLDC will submit the status by June'23 to NERPC and NERLDC. • **Assam-SLDC is requested to provide revise status.**
Tripura	Dhalabil, Dharmanagar	• TSECL requested PGCIL to extend support for restoration of systems over GPRS. NERTS agreed for the same. • Reporting Local RTU = 01 • Reporting under NERFO = 10 • Reporting under NERPSIP = 03 • Yet to report under NERPSIP = 10 (Kamalpur, Satchand, Ambassa, Dharmanagar, Gamaitilla, Belonia, Gournagar, Bagafa, Jirania, Sabroom) • TSECL also requested NERPSIP to complete the links at the earliest.
	Ambassa	
	Sabroom, Satchand	
	13 stations not covered under NER-FO expansion project	
Manipur	Churachandpur, Kongba and Kakching	• MSPCL informed that work is under progress to resolve the issues but the same is hampered due to law-and-order issue in the state. Work will be completed in due time. • **Action:** MSPCL may update the status.
	Elangkhangpokpi, Thanlon, 132kV Thoubal	• MSPCL has proposed the purchase of RTUs under PSDF. • **Action:** MSPCL may update the status.
Nagaland	Kiphire	• Meluri-Kohima line is still under diversion due to road construction work. PLCC is restored, DoP will visit the station to restore the data at the earliest. • **Action:** DoP-Nagaland may update the status.

Utility	Pending issues	Remarks
Mizoram	Luangmual Zuangtui Kolasib	• PE&D-Mizoram informed that survey for restoration of isolator data has been done and proposal to restore the data will be submitted sooner. • **Action:** DoP-Mizoram may update the status.
Arunachal Pradesh	VSAT installation and other issues	**UPS installation for VSAT equipment:** • Purchase order for procurement of UPS has been placed for following locations: Along, Daporijo, Deomali and Pasighat. Same will be installed in due time. **Long outage of VSAT nodes:** • Khupi, Deomali and Bhalukpong are not reporting since last three months. **Non-reporting RTU of Basar:** • 132 kV Basar is not reporting after its FTC since July-2023. **RTU failure at Daporijo:** • DoP, Arunachal Pradesh informed that joint visit with M/s GE is completed at 132 kV Daporijo S/s to investigate the extent of damage to RTU after fire incident. M/s GE is yet to submit the budgetary offer. • M/s GE T&D asked DoP-AR to confirm on submission of Techno-commercial offer. Accordingly, work will be started. • DCPS failure at 132 kV Daporijo S/s: In 25th NETeST meeting, DoP, Arunachal Pradesh informed that they are procuring the DCPS system for the substation. **Power Supply issue at Pasighat:** • 48V to 110V DC Converter is faulty, same has been purchased and issue will be resolved within June'23. DoP, Arunachal is formulating the proposal to buy UPS for each station to cater for the power supply to VSAT equipment. **Action:** DoP-Arunachal Pradesh may update the status.
Meghalaya	Non reporting of stations	• 132 kV Nongstoin, 132 kV Ampati and Ganol SHEP are not reporting. • 220 kV Mawngap is reporting inconsistently.

Members may please update the status.

B.8 Feasibility to connect Lekhi Substation over Fiber-Optic Network:

POWERGRID-NERTS had earlier requested the forum to divert material of 132kV Surjamani Nagar (TSECL) - Monarchak (NEEPCO) or 132kV Rokhia (GBPP) - Surjamani Nagar (TSECL) to Lekhi station, but NERPC informed that proposal may be kept on hold as NERPC will take up the matter with TSECL for completion of the above-mentioned links.

As per 22nd NETeST meeting, it was decided that due to delay in line construction of 132kV SM Nagar-Rokhia D/C and 132kV SM Nagar – Monarchak, the OPGW laying activities will be deleted from NER-Fiber Optic Expansion project scope and will be included in NER Reliable communication scheme after getting request-in-writing from TSECL. Thus, end equipment (i.e. FOTE) of 132kV Rokhia station (TSECL) will be diverted to 132kV Lekhi station for terminating the fiber-optic at 132kV Lekhi station subject to confirmation of NERPSIP as equipment are under its ownership.

As per 23rd NETeST meeting, TSECL informed the forum that FOTE installed during NER Fiber-Optic expansion at 132 kV Rokhia is being used for Rokhia – Udaipur direction; thus, FOTE installed at Rokhia cannot be shifted. NERLDC affirmed that FOTE installed under NER Fiber-Optic expansion project is not being used yet and can be shifted to Lekhi sub-station. As new FOTE will be installed during NER reliable communication scheme project. TSECL informed that they will confirm the shifting of Monarchak FOTE to forum by July'22.

During 24th NETeST meeting, PDH equipment is installed already at Lekhi S/s. SDH equipment will also be installed which will be diverted from Monarchak.

During 25th NETeST meeting, POWERGRID informed the forum that SDH equipment has been diverted from Monarchak and the same shall be installed by 15th June, 2023. POWERGRID requested DoP, Arunachal Pradesh to provide space for installation & they have agreed to provide the same. POWERGRID also informed that due to DCPS issue, presently they were using DC convertor. DoP, Arunachal Pradesh agreed to look into the matter.

DOP-Arunachal Pradesh and POWERGRID-NERTS may update the status.

B.9 Integration of INDIGRID owned OPGW with ULDC network:

Under NER strengthening scheme, Indigrid (erstwhile Sterlite) has constructed following lines along with OPGW –

1. **132 kV R C Nagar – PK Bari (TSECL) D/c:** Will provide additional path between Agartala and PK Bari

2. **400 kV Silchar – Misa D/c:** Will provide additional link between south NER and North NER.
3. **132 kV BNC – Chimpu D/c:** Will provide additional path between Arunachal Pradesh and rest of NER.
4. **132 kV PK Bari (TSECL) – PK Bari (IGT):** Will provide secondary path for Indigrid Stations.

Feasibility to connect the above links with existing ULDC network needs to be explored for which it was requested to POWERGRID-NERTS and Indigrid to explore the possibility of utilization of the link as alternate path.

The status as per 25th NETeST meeting is given in *table* below.

Sl. No.	Description	As per 25th NETeST Meeting
1.	132 kV RC Nagar – PK Bari (TSECL)	▪ Indigrid has integrated the link over GE equipment between PK Bari and RC Nagar. Further, at RC Nagar one attempt was made to integrate ULDC equipment (ECI make) with GE FOTE which was not successful. ▪ PGCIL informed that support of GE engineer is required to take second attempt in which Fibcom equipment will be integrated with GE. ▪ Indigrid and PGCIL are requested to take up the matter and close the matter at earliest.
2.	132 kV PK Bari (TSECL) - PK Bari (IGT)	▪ Link depend on integration of ULDC equipment with GE as described in Sl. No. 1

POWERGRID, INDIGRID & TSECL may update the status.

B.10 <u>Non-reporting of telemetry data of APGCL owned generating stations:</u>

The status of telemetry data of generating stations owned by Assam Power Generation Corporation Limited is summarised in the *table* given below.

Sl. No.	Name of Generating Station	Status of Telemetry data	Remarks
1.	NRPP (Namrup Replacement Power Project)	• All digital and analog data are not reporting for GTG.	For GTG all digital and analog data are not reporting because of the BCU (Bay Control Unit) of GTG bay is not Functioning. It would be attended in next cool shutdown of

Sl. No.	Name of Generating Station	Status of Telemetry data	Remarks
			GTG. Procurement of a new BCU for GTG Bay has already been Initiated. Expected completion on December 2022. **Action:** APGCL and SLDC-Assam may update the status
2.	NTPS (Namrup Thermal Power Station)	• All digital data (CB and Isolators) of units are not reporting reporting wrong status.	**Action:** APGCL and SLDC-Assam may update the status
		• Analog data of Unit 6 is not reporting.	Unit is under shut-down from 22-06-2022. Hence, analog data is not reporting. **Action:** APGCL and SLDC-Assam may update the status.
3.	Langpi Hydro Station	• CB associated with units are not reporting wrong status. • Analog data of unit-2 are not reporting. • CB of SST is reporting wrong value. • Isolators of Bus coupler and Sarusajai line 1 are not reporting. • Analog data of transmission lines and SST are not reporting.	Telemetry work will be completed after completion of the major overhauling work of #2. Target date is 15th May, 2023. **Action:** APGCL and SLDC-Assam may update the status.

In 25th NETeST meeting, SLDC-Assam informed that APGCL is restoring the analog data in phase-1 and will restore digital data in next phase.

APGCL and AEGCL may update the status.

C. ANY OTHER ITEM:

C.1 AMC of ADMS:

2nd subgroup meeting for procurement of collective AMC of ADMS for NER States was held on 22/08/2023 in Guwahati and the decision taken is reproduced below:

"*... the forum unanimously agreed that availing AMC services from original vendor would ensure smooth and efficient operation & maintenance of the ADMS considering the proprietary nature of the work. It will also save time and energy as opposed to a cumbersome and long tendering process. Hence the forum unanimously decided to consider AMC to Original vendor subject to reduced and competitive/reasonable rate. The forum further decided that States will take approval of the revised offer from their respective management and intimate NERPC so that collective AMC for all the States can be facilitated.*"

In the meeting, other issues including Terms & Conditions for the AMC were also discussed and based on the discussion, the final draft terms & conditions has been circulated by NERPC by email dated 03/10/2023 to all subgroup members for comments and observations (**Annexure-C.1**).

States are requested to intimate the status of their administrative approval for AMC of ADMS. Further, the Terms & Conditions for AMC may also be finalised.

Date and Venue of next NETeST Meeting

It is proposed to hold the 27th NETeST meeting of NERPC in the month of January 2024. The date & exact venue will be intimated in due course.

CYBER SECURITY MEASURES IMPLEMENTATION STATUS FOR NER SLDCs (AS ON 31.08.2023)

SN	Cyber Security Measures	Arunachal Pradesh	Assam	Manipur	Meghalaya	Mizoram	Nagaland	Tripura
1	Preparation and approval of Cyber Crisis Management Plan (CCMP) for SLDCs	Final CCMP approved by CERT-In. Rev-1 to be issued after incorporation of the comments from CERT-GO.	Final CCMP approved by CERT-In. 3rd Revised version of CCMP issued on 14-09-22 and approved by CERT-In.	Final CCMP approved by CERT-In.	Final CCMP approved by CERT-In. Revision under process.	Final CCMP approved by CERT-In. Revision under process.	Final CCMP approved by CERT-In.	Final CCMP approved by CERT-In.
2	Implementation status of Information Security Management System (ISMS) i.e., ISO 27001 and certification audit for ISO-27001	Contract awarded to a Certifying Agency. Visit planned in the 2nd week of August.	Implemented. Assam SLDC has received certification for ISMS (ISO 27001: 2013) on **09.07.22**. **1st Surveillance Audit** has been carried out in **4th July'23**. Report received and **Certificate of First Surveillance Audit** received on **08.07.2023**.	**LOA issued** to CDAC, Hyderabad on 3rd Nov'21 for Implementation of ISMS (ISO-27001). Work is going on for implementation of ISMS	Implemented. Meghalaya SLDC has received certification for **ISMS (ISO 27001: 2013)** on 08.07.22**. 1st Surveillance Audit** has been carried out in **June'23.** Reports on Internal Assessment and External Assessment audit awaited.	Letter of Intend (LoI) issued on 28/08/2023.	Implemented. Nagaland SLDC has received certification for **ISMS (ISO 27001: 2013)** on **01.06.23.**	Contract has been awarded to Certifying Agency and implementation is in progress. 50% work completed.
3	Status of VA-PT on OT systems	Done for FY 22-23.	Done for FY 22-23.	Done for FY 23-24.	Done for FY 22-23.	Done for FY 23-24.	Done for FY 22-23.	Done for FY 23-24.
	i) Date of Last VA-PT (OT):	24/03/2023- 28/03/2023	17/02/2023 - 21/02/2023	03/04/2023-05/04/2023	09/03/2023- 13/03/2023	04/04/2023- 11/04/2023	20/03/2023- 22/03/2023	19/04/2023- 20/04/2023.
	Submission of latest VA-PT report carried out on OT systems of SLDC for onward submission to MoP		Reports received; under discussion with GE; yet to be shared with MoP			Report not received yet		Please clarify regarding the submission of VAPT (OT) report to NERLDC or MoP
	ii) Due date for Next Audit / Plan for next audit (OT) :	24-03-2024	17-02-2024	03-04-2024	Jan-March 2024	04-04-2024	20-03-2024	19-04-2024
4	Status of VA-PT on IT systems (**to be done once in every six months**)	No IT infrastructure is present in the SLDC. Shall be carried out after implementation of SAMAST and the related IT infrastructure.	Last VAPT completed on **22.02.2023**; reports received. Next VAPT is being planned to be carried out shortly.	Phase -1 of VAPT for IT systems has been completed. Phase-2 was scheduled in June'23; which is still pending due to prevailing situation of unrest in Manipur.	Last VAPT completed in **March-2023**. Reports received and compliance is in process. *(A separate VAPT by CDAC for IT in addition to OT is being envisaged and would be put up to the management for approval)*	Letter of Intend (LoI) issued on 28/08/2023.	VAPT on IT systems for 2023 is ongoing at present.(started since 24 Aug 2023)	Last VAPT completed in **March-2023**; Reports received on 22/08/2023
5	Notification of identified systems at SLDCs as Critical Information Infrastructure (CII)	Final revised CII document has been submitted to NCIIPC after incorporation of comments on 19.05.2023.	**Identified Systems of SLDC, Assam had been declared as CII by NCIIPC on 10.06.2022.** Notification of CII as **Protected Systems** has been issued by State Govt. **on 11.08.2023**.	Final revised CII document has been submitted to NCIIPC after incorporation of comments on **20.02.2023. Latest clarifications sent to NCIIPC thru' email on 21.07.23.**	**Identified Systems of SLDC, Meghalaya had been declared as CII by NCIIPC on 31.12.2021.** Notification of CII as **Protected Systems** has been issued by State Govt. **on 18.04.2022**.	Final revised CII document had been submitted on **06.06.2022. Forwarded by East Zone and presently under approval at NCIIPC head office in New Delhi.**	**Identified Systems of SLDC, Nagaland had been declared as CII by NCIIPC on 31.12.21.** Notification of CII as **Protected Systems** still pending with the State Govt.	The CII is yet to be approved by NCIIPC. However, the comments given by NERLDC Grid India Limited (GCIL) has been incorporated and again submitted to NERLDC for clearance on 09.06.2023. It is under finalisation process. Once the clearance is given
6	Date of last Risk Assessment by NCIIPC (once in every 2 years):	Not done	Not done	Not done	Not done	Not done	Not done	Not done

CYBER SECURITY MEASURES IMPLEMENTATION STATUS FOR NER SLDCs (AS ON 31.08.2023)

SN	Cyber Security Measures	Arunachal Pradesh	Assam	Manipur	Meghalaya	Mizoram	Nagaland	Tripura
7	Compliance of advisories from CERT-In, NCIIPC & other statutory agencies.	Being complied for OT	Being complied	Being complied	Being complied	Being complied	Being complied	Being complied
i	To be updated in Portal for monthly complaince by 10th of every month.	Not updated in the portal	Being Updated in Portal	Being Updated in Portal	Being Updated in Portal	Being Updated in Portal	Being Updated in Portal	Being Updated in Portal
ii	For CERT-In weekly advisories to be complied within 5 days: To be uploaded in the portal after completion.	Being Updated in Portal	Being Updated in Portal	Being Updated in Portal	Being Updated in Portal	Being Updated in Portal	Being Updated in Portal	Being Updated in Portal
ii	Compliance of advisories from Cyber Swachhta Kendra (CSK)	Being Resolved. No new alerts.	Being Resolved. No new alerts.	Being Resolved. No new alerts.	Being Resolved. No new alerts.	Being Resolved. No new alerts.	Being Resolved. No new alerts.	Being Resolved. No new alerts.
8	Compliance of Recommendations of CERT-GO as per SLDC Maturity Model assessment:							
9	Status of Nomination of CISO:	Done	Done	Done	Done	Done	Done	Done
	Alternate CISO (if any):	Nomination of new Alt. CISO is in progress.	Yes	Yes	Yes	Yes	Yes	Yes
10	Cyber Security Certification: (Training attended)	No	Yes. Basic level training and certification on Cyber Security for Power Sector Professionals completed by officials (**2 Officials**) of IT/SCADA department.	Yes. (**2 Officials**)	Yes. (**10 officials** undergone Basic level certification course from NPTI)	Yes (**1 Official** trained in Two Weeks Basic Level Training and Certification Program on Cyber Security)	No	Yes. **1 Official** (Attended by Alternate CISO)
11	IT - OT Integration:	Not present	Present between SAMAST and SCADA	Not present	Not present	Not present	Not present	Not present
12	SOC Implementation status:		Under discussion with Management for consent.		Under discussion with Management. *(However, main concerns are regarding AMC funding and manpower.)*	Under cosideration		

Standard Operating Procedure (SoP) for Communication audit of Substations

1. This procedure has been prepared in compliance to Central Electricity Regulatory Commission (Communication System for inter-State transmission of electricity) Regulations, 2017. As per clause 10 of the Regulation, RPC shall conduct annual audit of the communication system annually as per the procedure finalized in the forum of the concerned RPC. It also mandates that RPC Secretariat shall issue necessary instructions to all stakeholders to comply with the audit requirements within the time stipulated by the RPC Secretariat based on the audit report. An Annual Report on the audit carried out by respective RPC is to be submitted to the Commission within one month of closing of the financial year.
2. The Audit would be conducted in two phases. In first phase scrutiny of the reports, documents etc. In the second phase physical verification shall be carried out.
3. Each User/entity, using inter-state transmission or the intra-state transmission incidental to inter-state, shall submit the detailed report to RPC Secretariat and RLDC, as per prescribed format on half yearly basis. The detailed report shall be submitted by 15th October for the period April-September and by 15th April for the period October-March of the respective year. This report shall be considered as self-certificate regarding availability and healthiness of the Communication system of respective user/entity.
4. In respect of intra-state users/entities, SLDC shall submit half yearly reports, to RPC Secretariat and RLDC, by 15th October for the period April-September and by 15th April for the period October-March of the respective year.
5. Outage report of all the channels (including Network Management System, PLCC etc) report for a month shall be submitted by the Users/entities to RLDC and respective SLDCs, on monthly basis, by 7th day of the next month. RLDC and SLDCs after verifying the NMS data shall submit report to RPC Secretariat by 15th day.
6. All users/entities and Control Centers shall get the third-party cyber security audits done from a Cert-in certified vendor in compliance to Regulation 13 (iii) of Central Electricity Regulatory Commission (Communication System for inter-State Transmission of electricity) Regulations, 2017. The detailed report of the Cyber Security Audit shall be submitted by 15th April for the previous financial Year.
7. RPC Secretariat may ask any other information required for Audit of the communication system in addition to these periodic reports.

Phase-I Audit: Scrutiny of the Information

8. A Communication System Audit Sub-Group comprising one member each from RPC, RLDC, PowerGrid and One of the respective Region SLDCs shall be constituted by RPC Secretariat with the approval of Member Secretary, RPC. The sub-group may co-opt any other member from any organization for facilitating the activities of the sub-group. Further, consultation from CEA may be taken, if required. The Audit team shall be formed excluding the member forthe Organization/Utility whose system is to be audited.
9. The Communication System Audit Sub-group shall scrutinize the information received in RPC Secretariat. The Sub-group may also ask any additional information necessary for its activities. All the users/entities, RLDC, SLDCs shall provide the information to the sub-group on priority within the stipulated time period.
10. The sub-group shall also identify the nodes for physical inspection based on the scrutiny of the information.
11. The Audit would include but not limited to following aspects:
    a. Availability of communication channels. The outage reason needs to be clearly specified whether it is on account of the concerned entity or on account of any other entity, force majeure etc. The list of communication channels would be finalized by Communication System Sub Group in consultation with other stakeholders.
    b. Availability of terminal equipment. The outage reason needs to be clearly specified whether it is on account of the concerned entity or on account of any other entity, force majeure etc. The list of terminal equipment would be finalized by Communication System Sub Group. Part outage like failure of specific cards etc. would also be furnished along-with reasons.
    c. Availability of Auxiliary System e.g. Battery Charger, Battery bank, sufficient cooling equipment etc.
    d. Compliance of CERC and CEA Regulations and the procedures under these Regulations.
    e. Completion of periodic testing of the communication system in accordance with procedure for maintenance and testing prepared by CTU.
    f. Audit of all newly commissioned communication equipment within six months of its commissioning.
    g. Completion of 3rd party Cyber Security Audits.
    h. Network traffic w.r.t capacity.
    i. Spare availability, replenishment etc.
    j. Any other parameters as agreed by the Communication Sub Group.

Phase-II Audit: Physical Verification

12. Based on the recommendations of the sub-group, Audit team shall be constituted and the physical inspection Audit plan shall be prepared by RPC Secretariat.
13. Audit team shall be formed on regional basis.
14. Audit shall be carried out in a planned manner as included in this document by a team of three members. The audit team shall comprise of one representative from the RPC Secretariat, one representative from RLDC and one representative from any of the Utilities or SLDCs of respective Region. The Audit team shall be formed excluding the member for the Organization/Utility whose system is to be Audited. The Audit team may co-opt any other member from any organization for facilitating the activities of the committee.
15. Once the plan is finalized, minimum 3 days advance notice shall be served to the concerned Auditee entity intimating the detailed plan so that availability of required testing equipment and the required documents is ensured by Auditee entity and is made available to the Audit team during the site visit.
16. The Scope of the physical verification shall include but not limited to thefollowing:
    a. Available communication Network for its redundancy
    b. Availability of channel redundancy for all the functions for which it is configured.
    c. Communication equipment (hardware and software configuration) of all thenodes including repeater stations for its recommended performance.
    d. Documentation of the configuration of the respective site and its updation.
    e. Fibre layout / usage of fibre / Availability of dark fibre and its healthiness.
    f. Cable Schedule and identification / tagging.
    g. Healthiness of Auxiliary supply including the healthiness of Battery backup.
    h. Healthiness of Earthing / Earth protection for communication system.
    i. Availability of sufficient cooling equipment at the User's premises to maintain the stipulated temperature for the communication equipment.

17. The format for collecting the details of Communication channels/links and Equipment is at **Annexure-I** and the same shall be furnished by the Auditee entity.
18. Communication Audit Checklist points are given in **Annexure-II** and the same are to be thoroughly verified by the Audit team.
19. Expenses towards Lodging, Boarding & Transportation between various places within the jurisdiction of Auditee entity shall be borne by respective Auditee entity. The Coordinating Officer(s) from the Auditee Utilities identified for each Team is (are) responsible for facilitating them to all the Members of respective Team.

20. Audit team shall submit report including recommendations for action on deficiencies, if any, found during the inspection, within 15 days from the date of inspection to Member Secretary, RPC. After approval of MS, RPC, the report would be communicated to the Auditee entity for compliance.

Audit Compliance Monitoring

21. RPC secretariat, Communication Sub Group, RLDC and SLDC would monitor the compliance of audit observations as applicable. The Audit outcome and the compliance of Audit recommendations shall be put up to TeST Sub-committee, TCC and RPC for deliberations and further monitoring.
22. The Annual Audit Report would be reviewed by a Communication System Sub Group at RPCs level. After considering the observations of Sub Group, RPC Secretariat shall issue necessary instructions to all stakeholders to comply with the audit requirements within the time stipulated by the RPC Secretariat based on the audit report. An Annual Report on the audit carried out by RPC would be submitted to the Commission within one month of closing of the financial year.

***

REGIONAL COMMUNICATION AUDIT REPORT			
General Information:			
1	Substation Name		
2	SS Voltage level		
3	Date of commissioning of the substation	XX.XX.XXXX	
4	Region & State / Auditee	/	
5	Audit Date		
6	Name of the Utility which owns the SS		
Details of Audit Team Members :			
SL	Name	Designation	Organization
1			
2			
3			
4			
Attached Documents, if any			
SL	Name of the document		Original / Signed / Copy
1			
2			
3			
4			
5			
6			
7			

8		
9		
10		
11		
12		
13		
14		
15		
16		
17		

Communication Channels and Equipments Audit Format

(A) List of channels in usage for data (64 kbps, 104, PMU, VC, 101) / Voice / Protection circuits / others:

Sl	Description (64 kbps, 104, PMU, VC, 101) / Voice / Protection circuits / Others)	Source	Destination	Channel Routing	Ownership details of terminal equipment / Links
1					
2					
3					
4					
5					
6					
7					
8					

(B) List of terminal communication equipments:

Sl	Name of Station	Equipment Type (SDH / PDH / Radio / VSAT / EPABX)	Make / Model	Ownership
1				
2				
3				
4				
5				
6				
7				
8				

(C) Communication System Details:

I. SDH Equipment

(1) Card Details:

Slot No	IP Address & Path / Direction Name	Card Details	Place a ✓mark if on usage, else Write as "Spare"	Whether Card is healthy / Faulty ? (H / F)	Cards Redundancy available (Yes / No)	Power Supply Card / Optical Card (Yes / No)	MSP configured? (Yes / No)	Action Plan for faulty cards	Other Information, if any
1									
2									
3									
And so on									

(2) Whether equipment is time synchronized : Yes / No

If Yes, how is it being done?

(3) Failures during last Fin. year / since last Audit :

Particulars	Number of failures of Card / Power Supply	Reason for failures	Measures taken for rectification
Card		**(i) (ii) (iii)**	**(i) (ii) (iii)**
Power Supply		**(i) (ii) (iii)**	**(i) (ii) (iii)**

(4) Configuration of the Node:

Name of Equipment	Number of Nodes	Number of directions	Name of Directions	Number of links down, with details	Details of corrective action, if any, taken

(5) Preventive maintenance schedule and its compliance:

Date of Last Preventive maintenance	Maintenance carried out as per schedule? (Yes / No)	Whether all the defects have been attended? (Yes / No) Give details

II. PDH Equipment

(1) Card Details :

Slot No	IP Address	Card Details	Place a ✓mark if on usage, else Write as "Spare"	Whether Card is healthy / Faulty ? (H / F)	Cards Redundancy available (Yes / No)	Power Supply Card / Optical Card (Yes / No)	MSP configured? (Yes / No)	Action Plan for faulty cards	Other Information, if any
1									
2									
3									
And so on									

(2) Whether equipment is time synchronized : Yes / No

If Yes, how is it being done?

(3) Failures during last Fin. year / since last Audit :

Particulars	Number of failures of Card / Power Supply	Reason for failures	Measures taken for rectification
Card		**(i)** **(ii)**	**(i)** **(ii)**

		(iii)	**(iii)**
Power Supply		**(i)** **(ii)** **(iii)**	**(i)** **(ii)** **(iii)**

(4) Configuration of the Node:

Name of Equipment	Number of Nodes	Number of directions	Name of Directions	Number of links down, with details	Details of corrective action, if any, taken

(5) Preventive maintenance schedule and its compliance:

Date of Last Preventive maintenance	Maintenance carried out as per schedule? (Yes / No)	Whether all the defects have been attended? (Yes / No) Give details

III. OPGW / Optical Fibre Details

Number of Directions	**Name of Direction**	**No. of Pairs**	**No. of Fibers used**	**No. of spare & healthy Fibers**	**Unarmoured cable laid within PVC/Hume duct pipe?**	**Fibre Count in OPGW? Whether matching with Approach cable to FODP?**	**Overall Optical Fibre Path Attenuation (dB/km)**	**Power Received**	**Conformation to Compliance of CEA Standards**

IV. Healthiness of Auxiliary System:

(1) Details of 2 independent Power Sources :

Source	Commissioning Date	Battery Back up (Hour)	Battery capacity (AH)	Supply Voltage (V)	Healthiness of Battery (Yes / No)	Make of Charger	Charger Capacity (A)	Periodicity of Maintenance Schedule	Date of Last 2 Actual Maintenance carried out	Remarks
1										
2										

(2) Conformation to Compliance of CEA Standards :

V. Healthiness of Earthing of each equipment:

Sl	Equipment	Status on Healthiness of Earthing

VI. Details of Voice communication available between Sub-station and Control Centre:

Sl	Voice communication (Sub-station - Control Centre)	Status on Healthiness of Voice communication	Healthiness of air-conditioning of communication room as per OEM recommendation

VII. PLCC Details:

Number of Panels	Make and Model	Direction	Frequency (Tx & Rx) KHz	Status on Healthiness	Last preventive maintenance		Details of defects, if any, attended	Status of Availability of Spares	Conformation to Compliance of CEA Standards
					Schedule	Actual			

VIII. Radio Communication Details:

Number of Equipments	Make and Model	Status on Healthiness	Last preventive maintenance		Details of defects, if any, attended	Status of Availability of Spares	Conformation to Compliance of CEA Standards
			Schedule	Actual			

IX. Data Retention :

(i) Earliest Date of availability of data: _____

(ii) Historical data availability : ____ days.

X. Control Command Delay :

(i) Time delay in seconds from Control Centre for SCADA : ____ Seconds

(ii) Time delay in seconds from Control Centre for WAMS : ____ Seconds

XI. Wide Band Network :

(i) Absolute channel delay in protection applications : _____ ms

(ii) Channel delay asymmetry in protection applications : _____ ms

(iii) Switching Time delay to alternate path/route during failure of one path : _____ ms

XII. Any other information :

Audit Team Member SRPC

Audit Team Member Co-Ordinator

Audit Team Member PGCIL (Internal / External)

Audit Team Member State (Internal / External)

Communication Audit Checklist

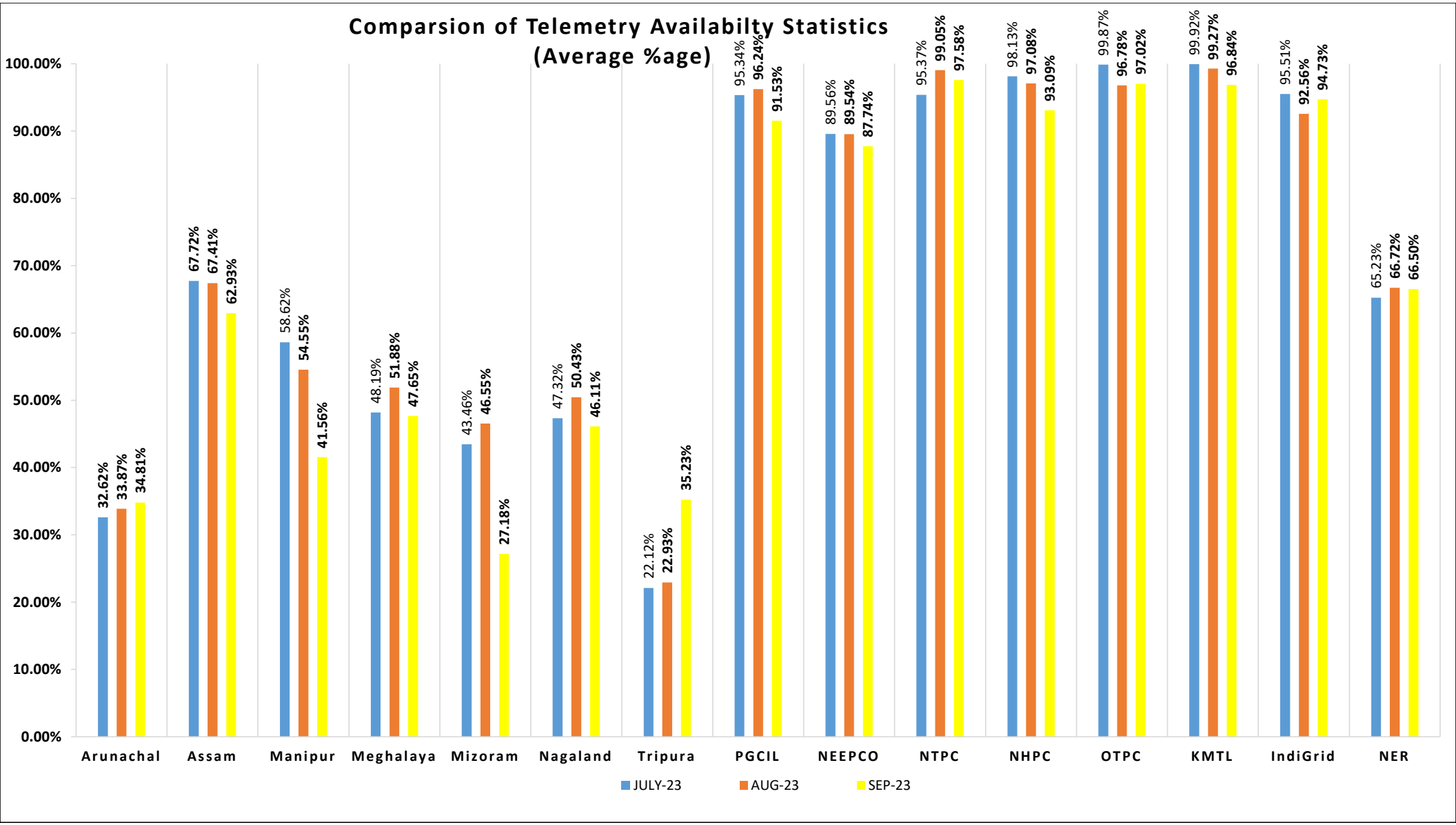
S.No	Check list points	Expected	Actual	Reference
1	Whether OPGW is terminated properly. Down lead shall be fixed property in sufficient locations. Metallic part shall be connected to earth mat riser.	Yes		
2	Distinct approach cable shall be laid 1 Protection & Communication 2 Fibers for commercial applications Item no 1 cable shall be terminated in communication room FODP One number FODP panel shall be available in communication room			
3	Fiber Identification shall be done in FODP properly			
4	Whether End to end tests were carried out during installation and records are available (both Optical Power Source/receiver testand OTDR Test results			
5	Whether patch chords 1 Cross labelled (source/ receive) 2 Tx – Rx Marking 3 Mechanical protection is provided for pach chords laid between panels			
6	Whether separate room for communication is available with following:- 1 Air conditioning with standby A/C Unit 2 AC Distribution board with ELCB 3 Single point earthing bar which shall be connected to substation Earth mat			
7	Two sets of 48 V (Positive Earthed) DC Systemshall be available with 1 Common DC Distribution board/ Panels with incoming MCB, coupler MCB , out doing MCBsetc 2. Minimum 200 Ah (2 sets of battery) VRLA batteries are preferred to keep chargers and battery in communication room. 3. Battery Charger shall be Thryristorised/SMPS			
8	Battery Charger alarms /measurements shallbe made available to SAS (if available) It can be achieved through MOD bus or connecting analogue/ digital signals to Common BCU of SAS. If such system is not available major			

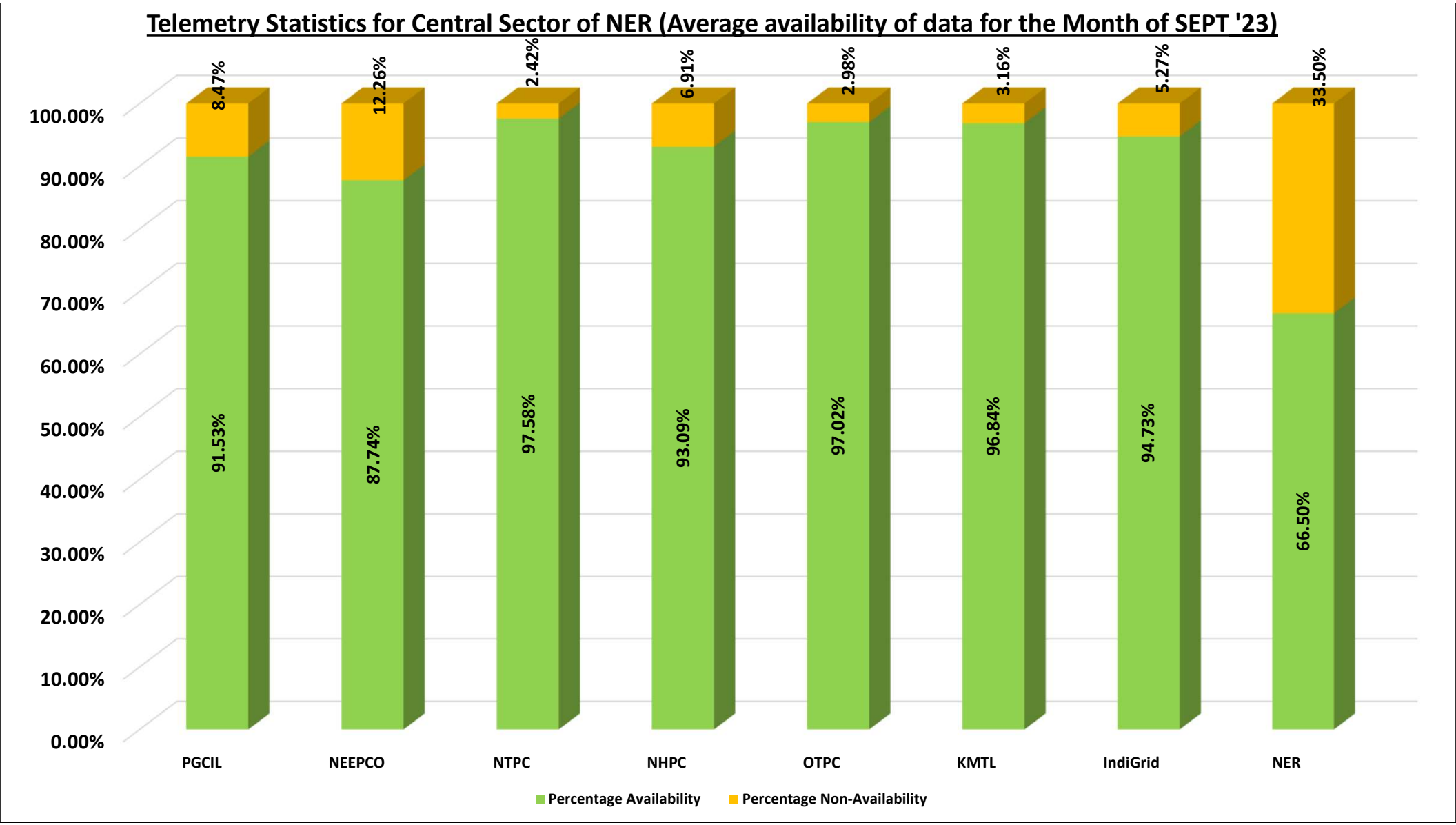
	alarms shall b alarmed in common substation annunciator			
9	2 nos of substation Data (From RTU or SAS Gateway)shall route in different roots to Main and Standby Load Dispatch centres			
10	Kindly assure proper protection is available for AC Distribution (ELCB, MCB, Backup fuse),			
11	Aux Transformer neutral Earthing shall be connected to Stations earth mat (Aux Transformers shall be installed in yard earth mat area only)			
12	Whether DG sets with AMF panels are provided for Aux AC Supply			
13	Whether 2 nos 11 kV (or 33kV) supplies are available for Each station aux Transformer			

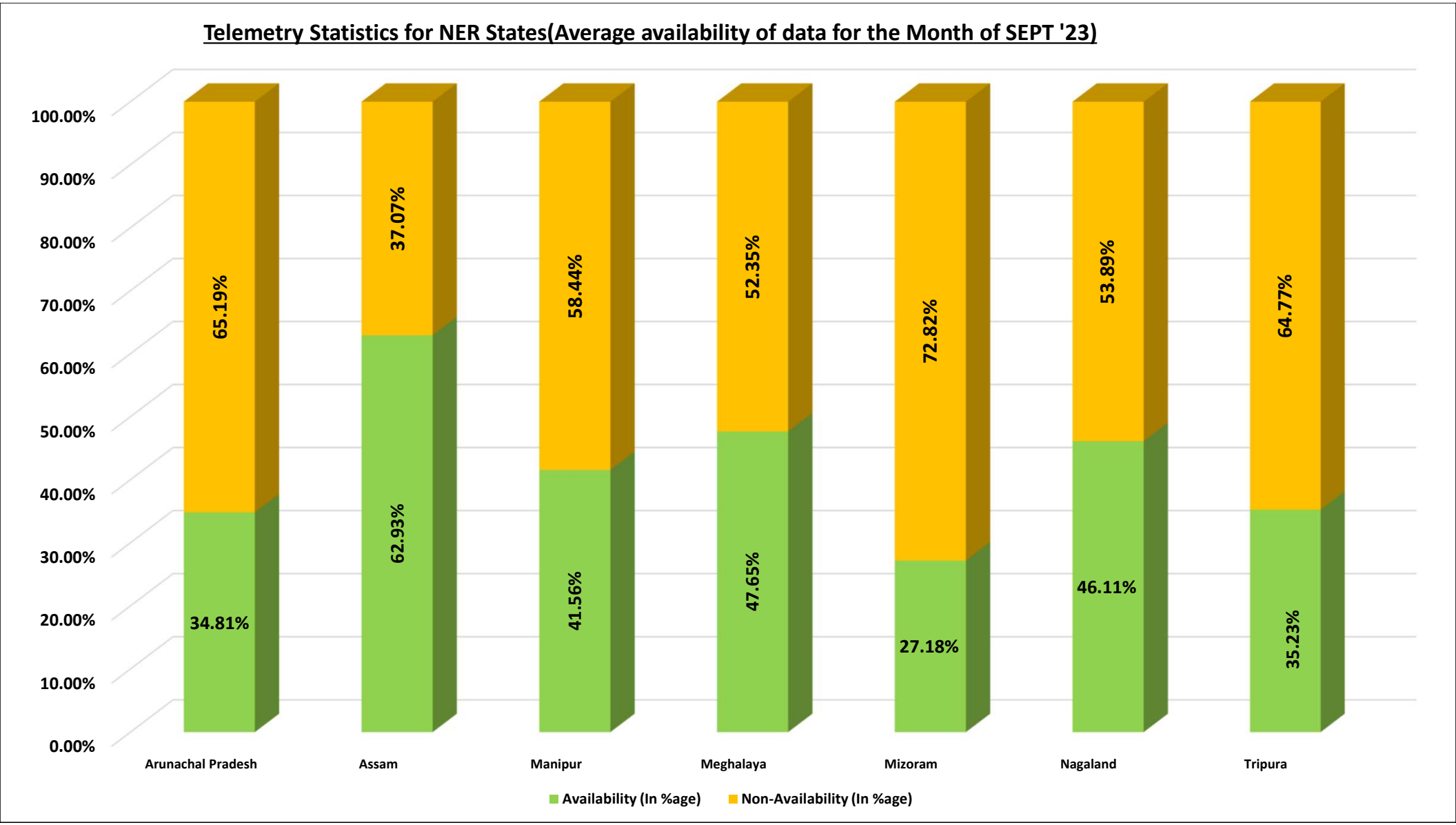
Sl. No.	Region	Utility	Substation/Generating plant	Nos. of meters	Fiber Optic Comunication available at substation (Yes-Dual Path; Yes-Single Path/ NA)	Remarks, if any	Automatic Meter Reading (AMR) Data Available (Yes/ No)	AMR Communication through Fiber Optic/ GPRS/ NA	Remark	Nearest ISTS node	Name of line available with voltage level between ISTS and STU node	Distance between ISTS and STU node (line length)	Ownership of line
4	North East	NEEPCO	Kameng	13	*NA*	Single path via Balipara is in progress. Second path via Khupi-Tenga-Balipara is under progress.	No	*NA*					
5	North East	NEEPCO	Khandong	18	NA	Path cannot be determined as plant is under rennovation after flooding incident	No	NA	***2 nos. of meters added***				
6	North East	NEEPCO	Kopili	15	*NA*	Path cannot be determined as plant is under rennovation after flooding incident	No	*NA*					
7	North East	NEEPCO	Kopili-2	4	*NA*	Path cannot be determined as plant is under rennovation after flooding incident	No	*NA*					
14	North East	Arunachal Pradesh	Deomali	1	*NA*	Single path via Kathalguri is in progress.	No	*NA*					
16	North East	Arunachal Pradesh	Tenga	2	*NA*	--	No	*NA*					
19	North East	Assam	Umrangshu	2	*NA*	--	No	*NA*					
20	North East	Assam	Pavoi	2	*NA*	--	No	*NA*					
22	North East	Assam	Karimganj	2	*NA*	Single path via Badarpur/Kumarghat is in progress.	No	*NA*					
23	North East	Assam	Haflong	1	*NA*	--	No	*NA*					
27	North East	Assam	Dullavcherra	1	*NA*	--	No	*NA*					
30	North East	Assam	Bokajan	1	*NA*	--	No	*NA*					
36	North East	Assam	Hailakandi	2	*NA*	--	No	*NA*					
37	North East	Assam	Golaghat	1	*NA*	--	No	*NA*					
41	North East	Manipur	Karong	1	*NA*	--	No	*NA*					
45	North East	Manipur	Tipaimukh	2	*NA*		No	NA	***New entry***				
51	North East	Meghalaya	Byrnihat	4	*NA*	--	No	*NA*					
63	North East	Tripura	Dharmanagar	1	*NA*	--	No	*NA*					
65	North East	Tripura	Ambassa	1	*NA*	--	No	*NA*					
82	North East	POWERGRID	Namsai	3	*NA*	VSAT Available	No	*NA*					
83	North East	POWERGRID	Roing	2	*NA*	VSAT Available	No	*NA*					

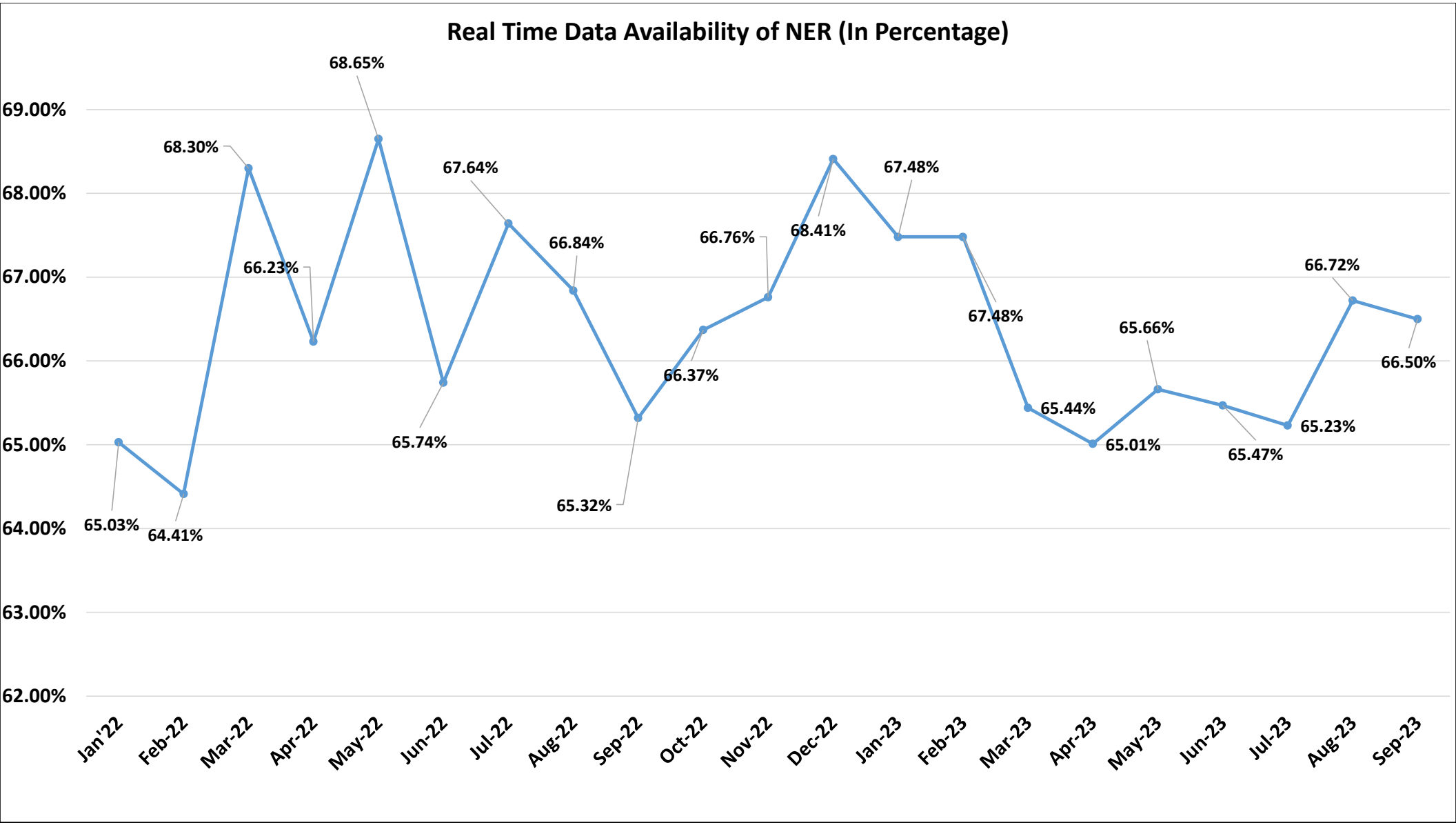
Telemetry Statistics for the Month of September 2023

Sl. No.	Utility	Average Total Percentage	Instantaneous Maximum of Total percentage	Average Analog Percentage	Average Digital Availability	Average RTU Availability
1	PGCIL	91.53	97.33	91.74	91.43	91.13
2	NEEPCO	87.74	92.56	87.44	87.63	87.51
3	NTPC	97.58	99.9	99.56	97.59	97.21
4	NHPC	93.09	98.25	94.8	92.16	92.29
5	OTPC	97.02	100	97.03	97.01	97.84
6	KMTL	96.84	100	94.64	97.86	97.88
7	IndiGrid	94.73	100	94.69	94.76	94.97
8	Arunachal Pradesh	34.81	53.86	37.71	32.81	32.22
9	Assam	62.93	70.29	62.82	63.01	63.39
10	Manipur	41.56	62.22	46.68	38.5	38.96
11	Meghalaya	47.65	57.17	64.13	35.26	35.76
12	Mizoram	27.18	41.72	44.47	12.84	33.31
13	Nagaland	46.11	56.85	38.53	51.55	45.09
14	Tripura	35.23	40.01	35.39	35.12	34.57
	NER	66.5	70.36	66.98	65.55	65.23


Comparsion of Telemetry Availabilty Statistics
(Average %age)
100.00%
90.00%
80.00%
70.00%
60.00%
50.00%
40.00%
30.00%
20.00%
10.00%
0.00%
32.62%
33.87%
34.81%
67.72%
67.41%
62.93%
58.62%
54.55%
41.56%
48.19%
51.88%
47.65%
43.46%
46.55%
27.18%
47.32%
50.43%
46.11%
22.12%
22.93%
35.23%
95.34%
96.24%
91.53%
89.56%
89.54%
87.74%
95.37%
99.05%
97.58%
98.13%
97.08%
93.09%
99.87%
96.78%
97.02%
99.92%
99.27%
96.84%
95.51%
92.56%
94.73%
65.23%
66.72%
66.50%
Arunachal
Assam
Manipur
Meghalaya
Mizoram
Nagaland
Tripura
PGCIL
NEEPCO
NTPC
NHPC
OTPC
KMTL
IndiGrid
NER
JULY-23
AUG-23
SEP-23


Telemetry Statistics for Central Sector of NER (Average availability of data for the Month of SEPT '23)
100.00%
90.00%
80.00%
70.00%
60.00%
50.00%
40.00%
30.00%
20.00%
10.00%
0.00%
8.47%
12.26%
2.42%
6.91%
2.98%
3.16%
5.27%
33.50%
91.53%
87.74%
97.58%
93.09%
97.02%
96.84%
94.73%
66.50%
PGCIL
NEEPCO
NTPC
NHPC
OTPC
KMTL
IndiGrid
NER
Percentage Availability
Percentage Non-Availability


Telemetry Statistics for NER States(Average availability of data for the Month of SEPT '23)
100.00%
90.00%
80.00%
70.00%
60.00%
50.00%
40.00%
30.00%
20.00%
10.00%
0.00%
65.19%
34.81%
37.07%
62.93%
58.44%
41.56%
52.35%
47.65%
72.82%
27.18%
53.89%
46.11%
64.77%
35.23%
Arunachal Pradesh
Assam
Manipur
Meghalaya
Mizoram
Nagaland
Tripura
Availability (In %age)
Non-Availability (In %age)


Real Time Data Availability of NER (In Percentage)
69.00%
68.00%
67.00%
66.00%
65.00%
64.00%
63.00%
62.00%
65.03%
64.41%
68.30%
66.23%
68.65%
65.74%
67.64%
66.84%
65.32%
66.37%
66.76%
68.41%
67.48%
67.48%
65.44%
65.01%
65.66%
65.47%
65.23%
66.72%
66.50%
Jan'22
Feb-22
Mar-22
Apr-22
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Jun-22
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Aug-22
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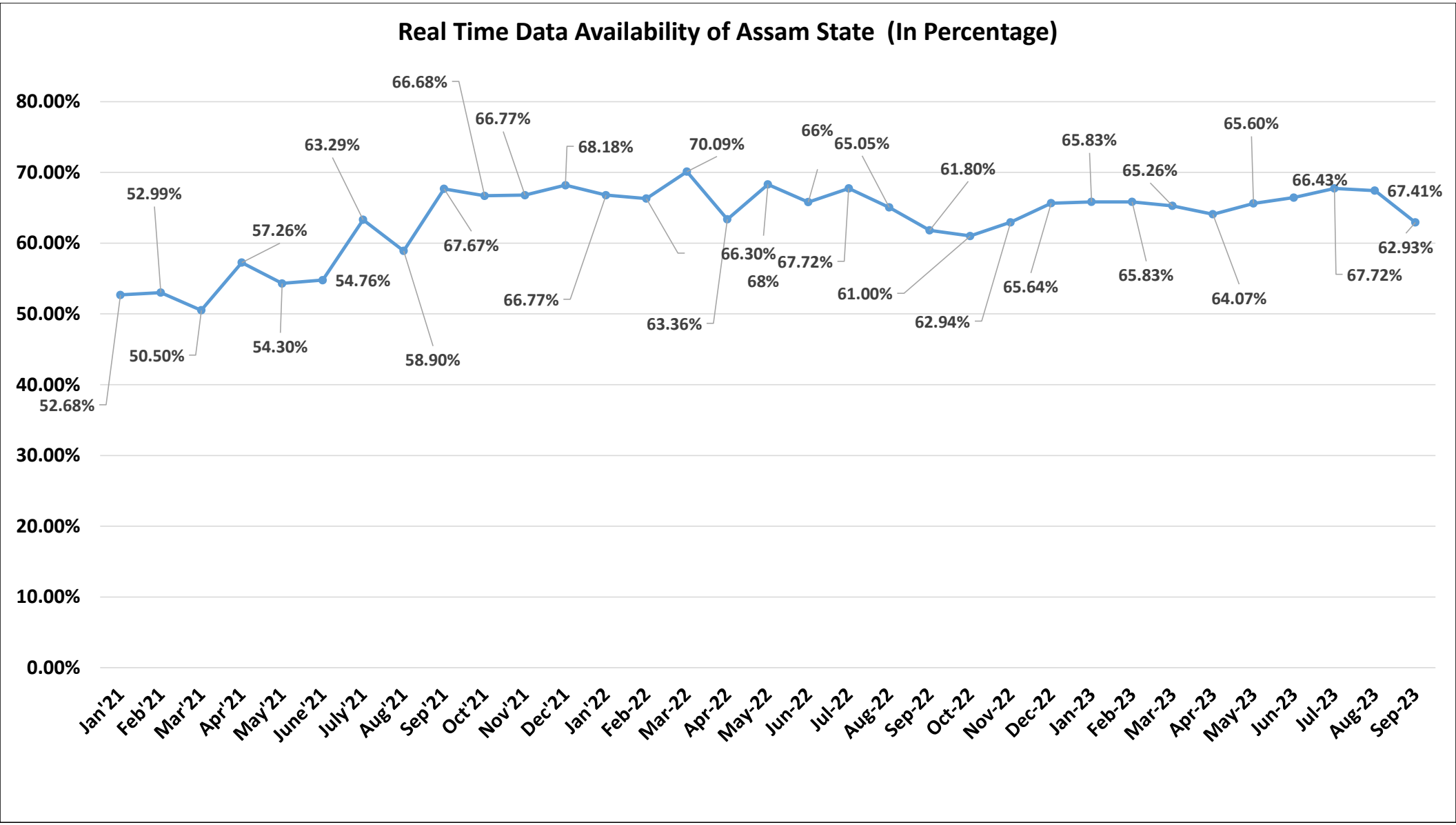
Real Time Data Availability of Assam State (In Percentage)
80.00%
70.00%
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20.00%
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54.76%
63.29%
58.90%
66.68%
67.67%
66.77%
66.77%
68.18%
63.36%
70.09%
66.30%
68%
67.72%
66%
61.00%
65.05%
62.94%
61.80%
65.64%
65.83%
65.83%
65.26%
64.07%
65.60%
67.72%
66.43%
62.93%
67.41%
Jan'21
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Mar'21
Apr'21
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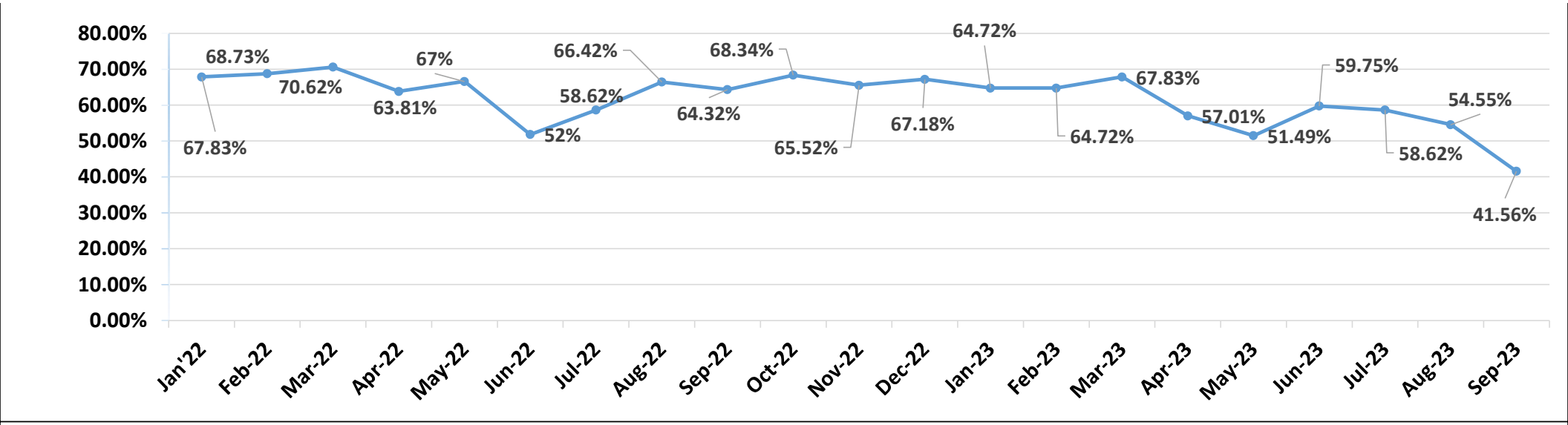
Sep-23


80.00%
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66.42%
64.32%
68.34%
65.52%
67.18%
64.72%
64.72%
67.83%
57.01%
51.49%
59.75%
58.62%
54.55%
41.56%
67.83%
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Jul-22
Aug-22
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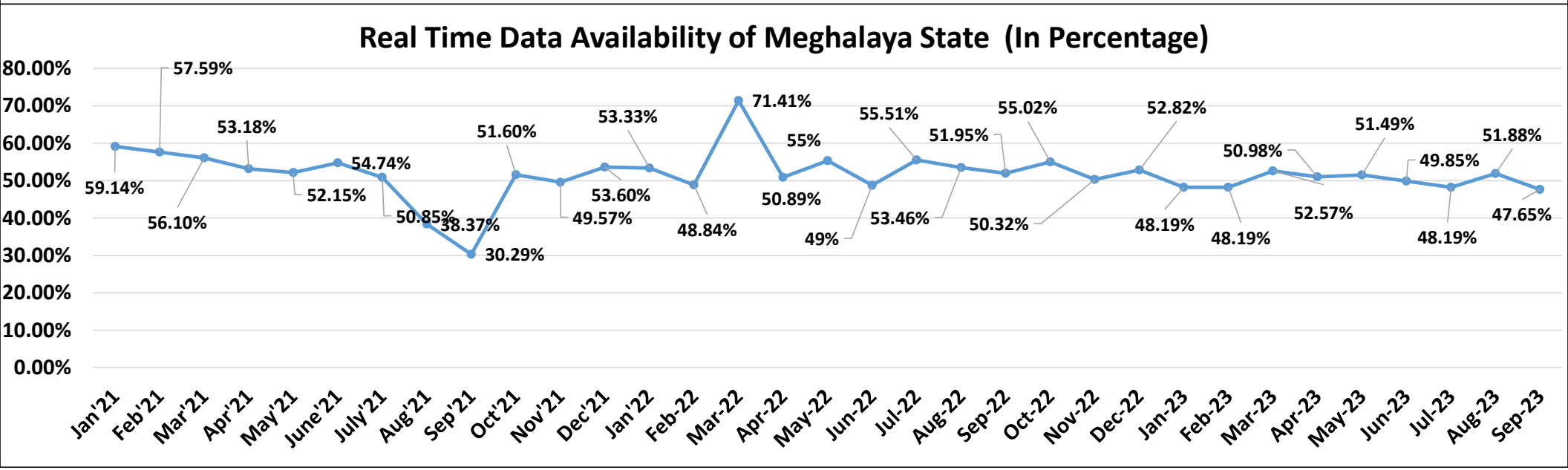
Real Time Data Availability of Meghalaya State (In Percentage)
80.00%
70.00%
60.00%
50.00%
40.00%
30.00%
20.00%
10.00%
0.00%
59.14%
57.59%
56.10%
53.18%
52.15%
54.74%
50.85%
38.37%
30.29%
51.60%
49.57%
53.33%
53.60%
48.84%
71.41%
50.89%
55%
49%
55.51%
53.46%
51.95%
50.32%
55.02%
48.19%
52.82%
48.19%
50.98%
52.57%
51.49%
48.19%
49.85%
51.88%
47.65%
Jan'21
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Apr'21
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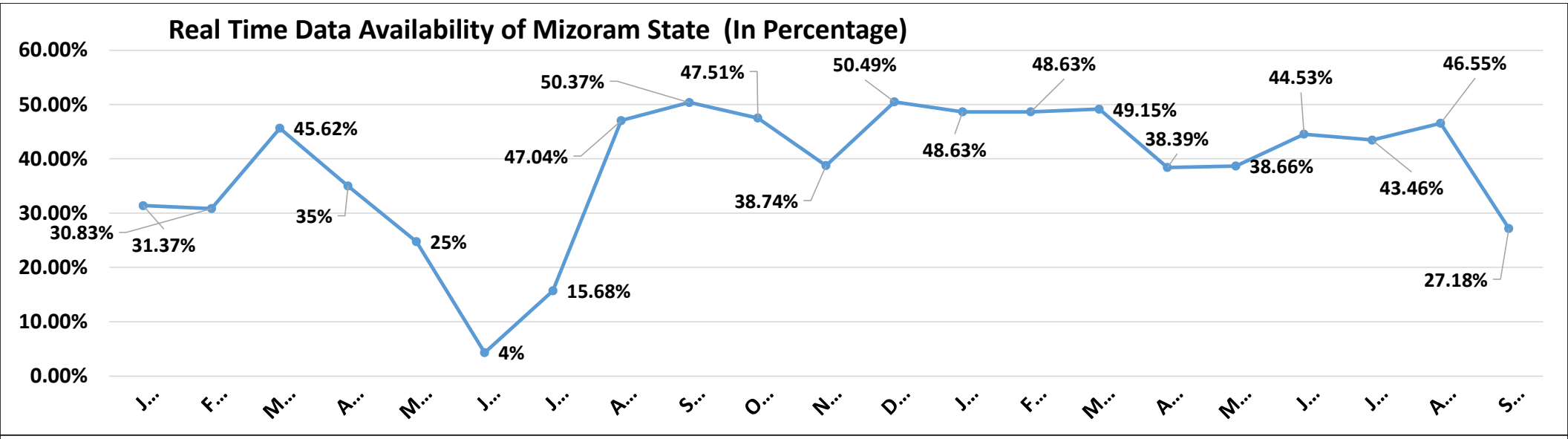
Real Time Data Availability of Mizoram State (In Percentage)
60.00%
50.00%
40.00%
30.00%
20.00%
10.00%
0.00%
30.83%
31.37%
45.62%
35%
25%
4%
15.68%
47.04%
50.37%
47.51%
38.74%
50.49%
48.63%
48.63%
49.15%
38.39%
38.66%
44.53%
43.46%
46.55%
27.18%
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J...
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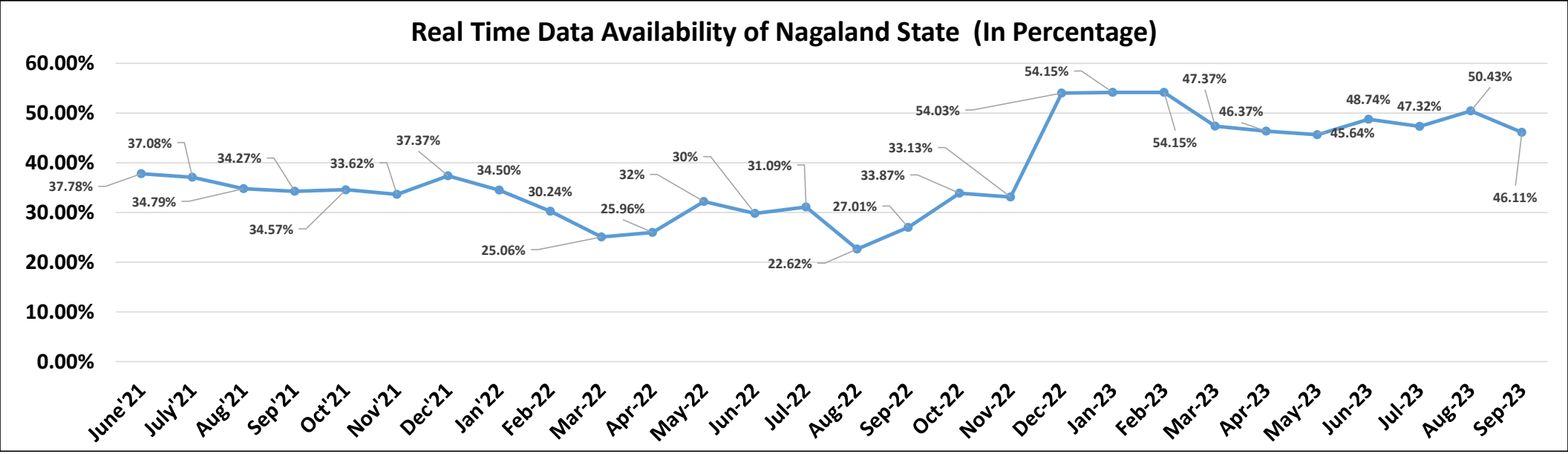
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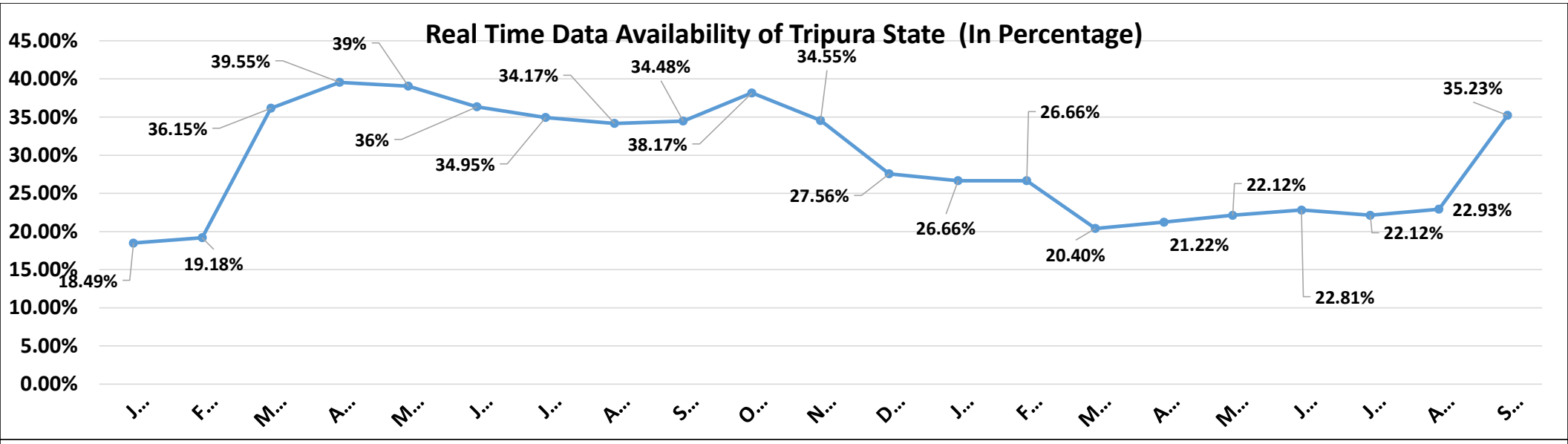
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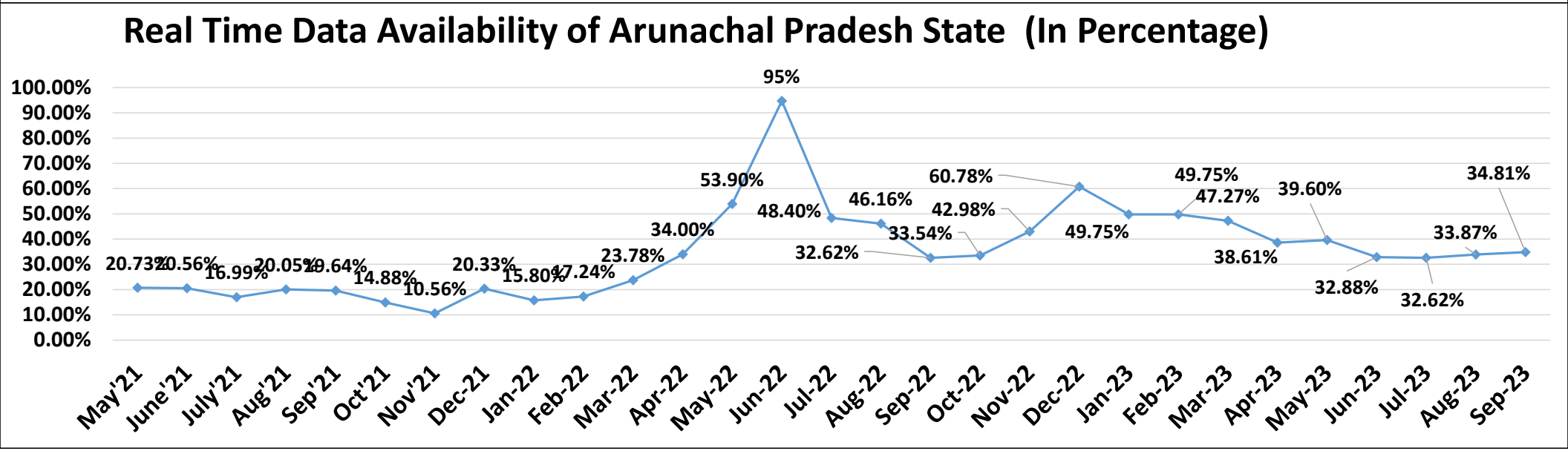
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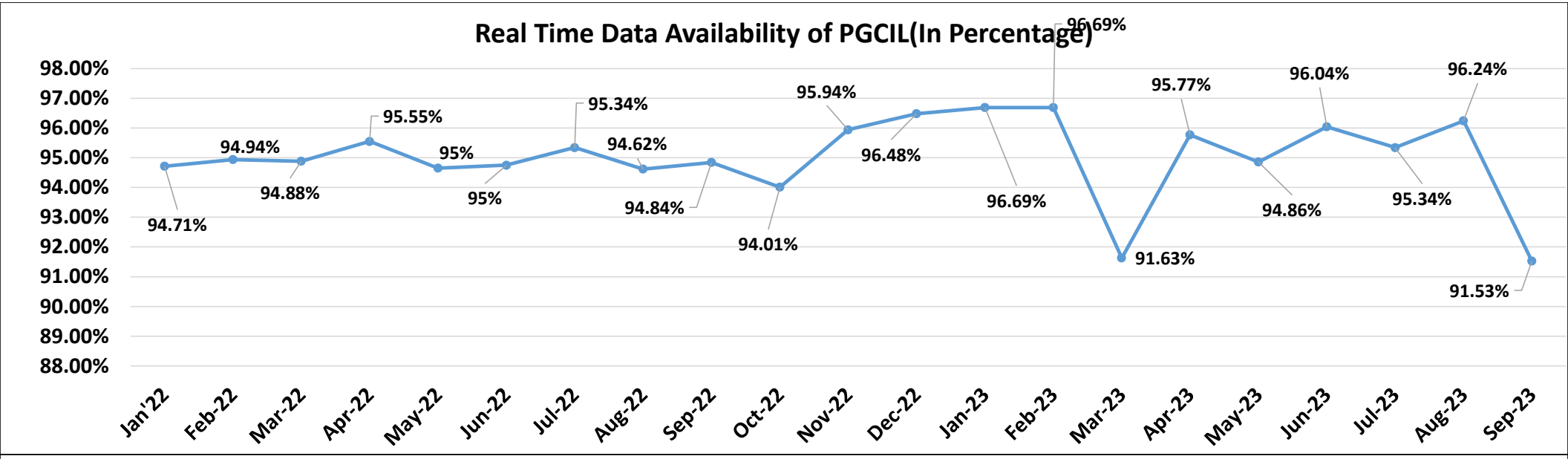
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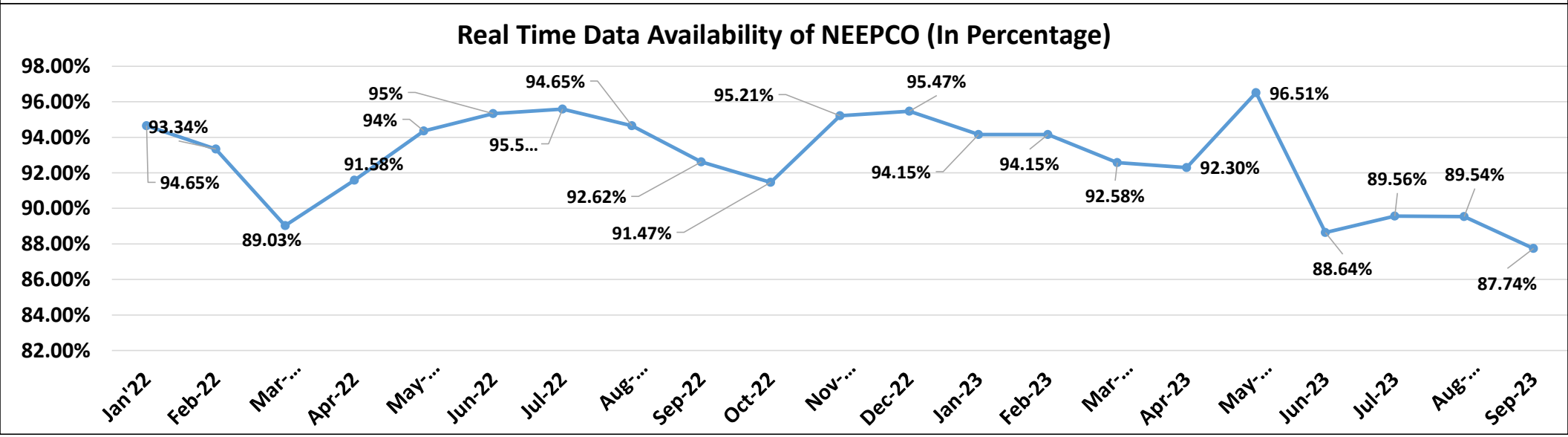
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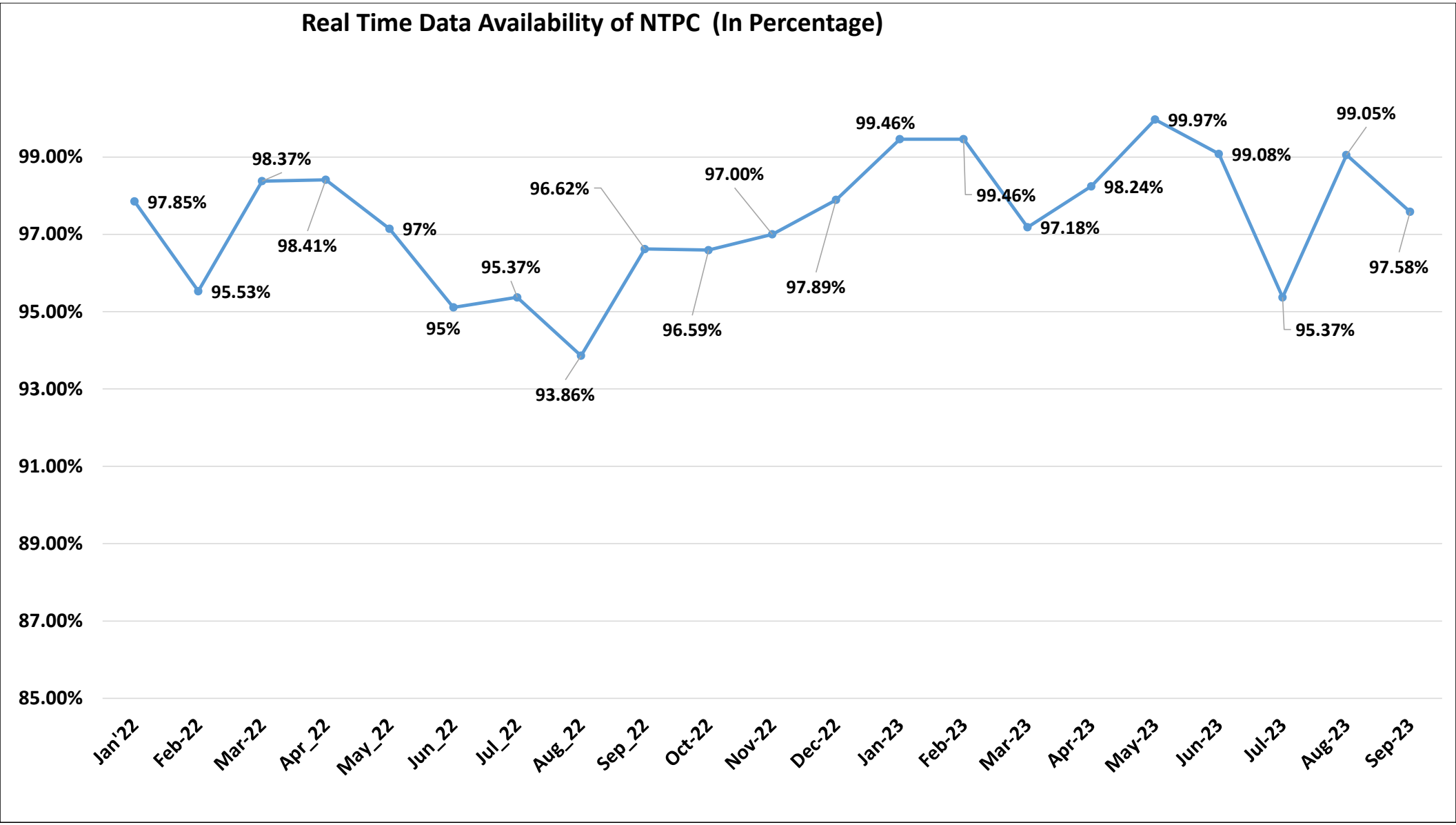
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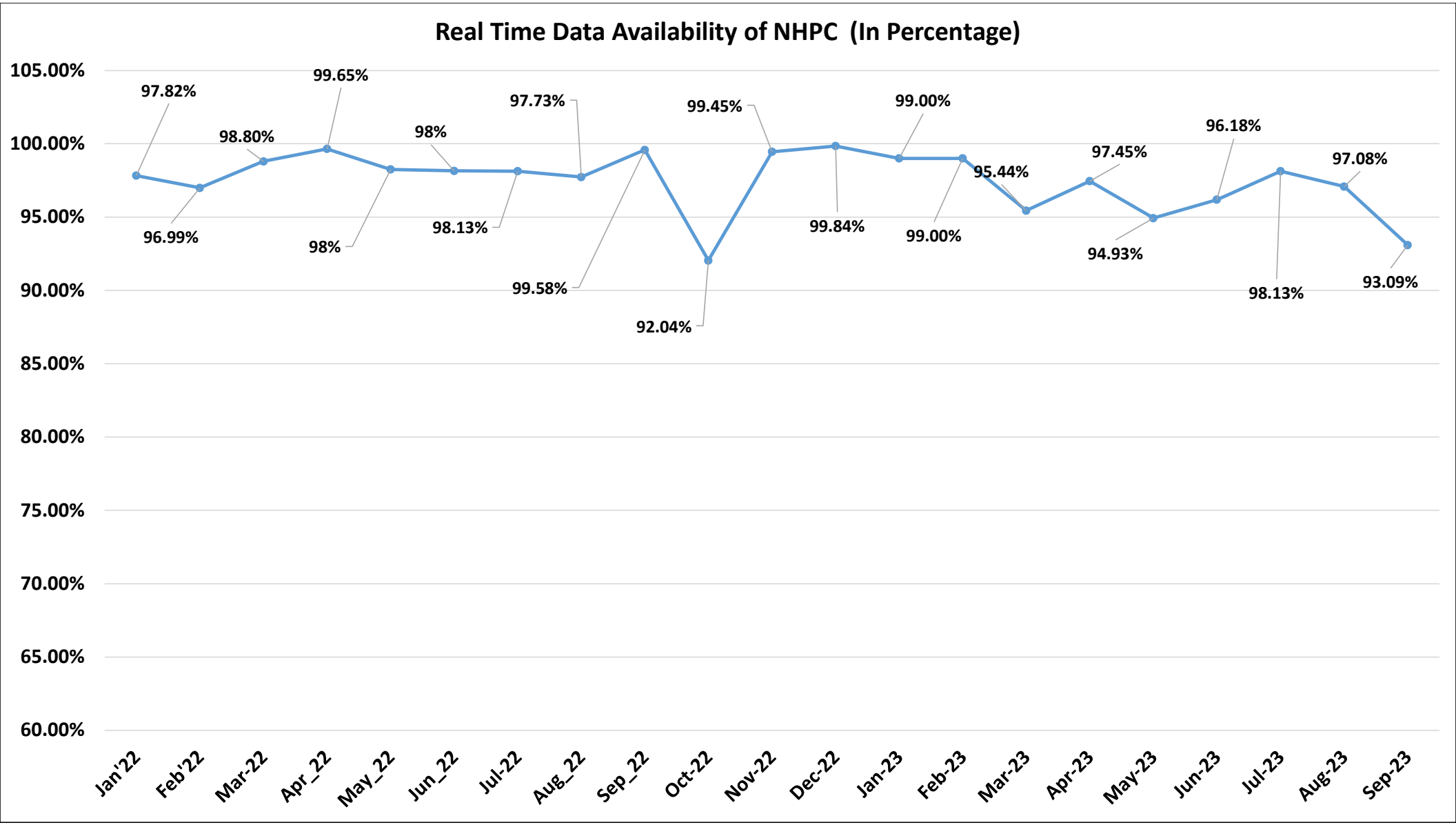
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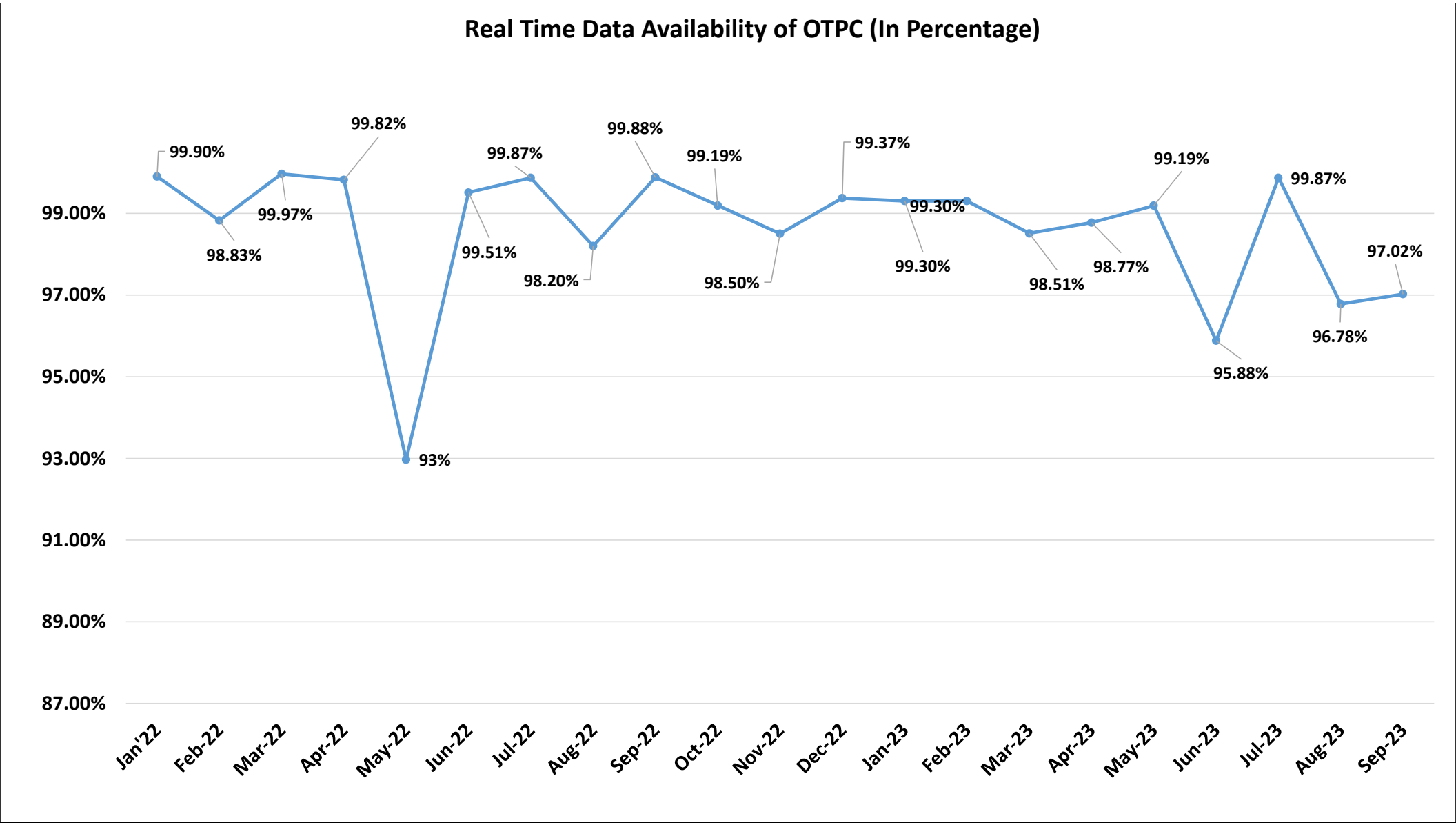
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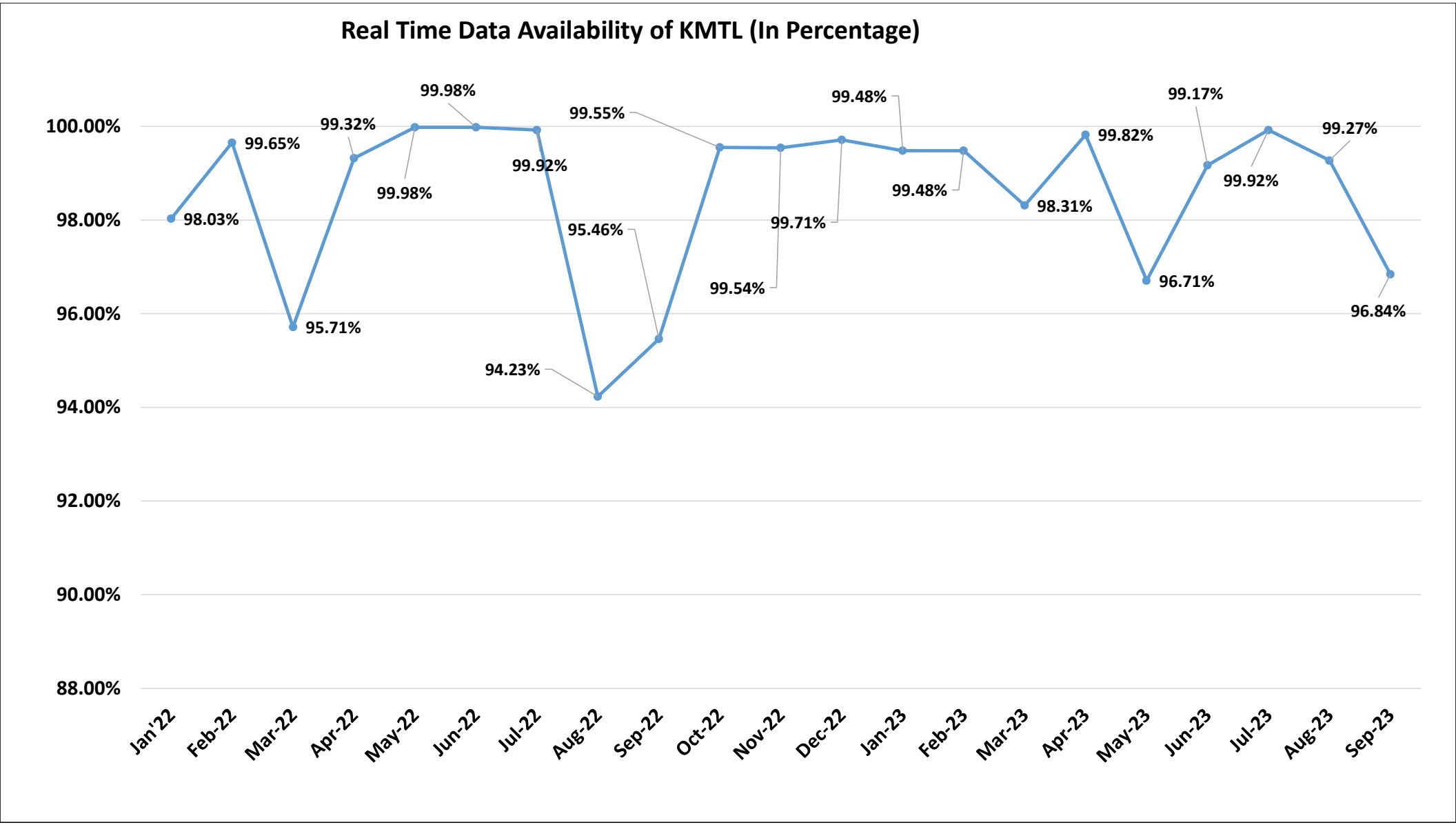
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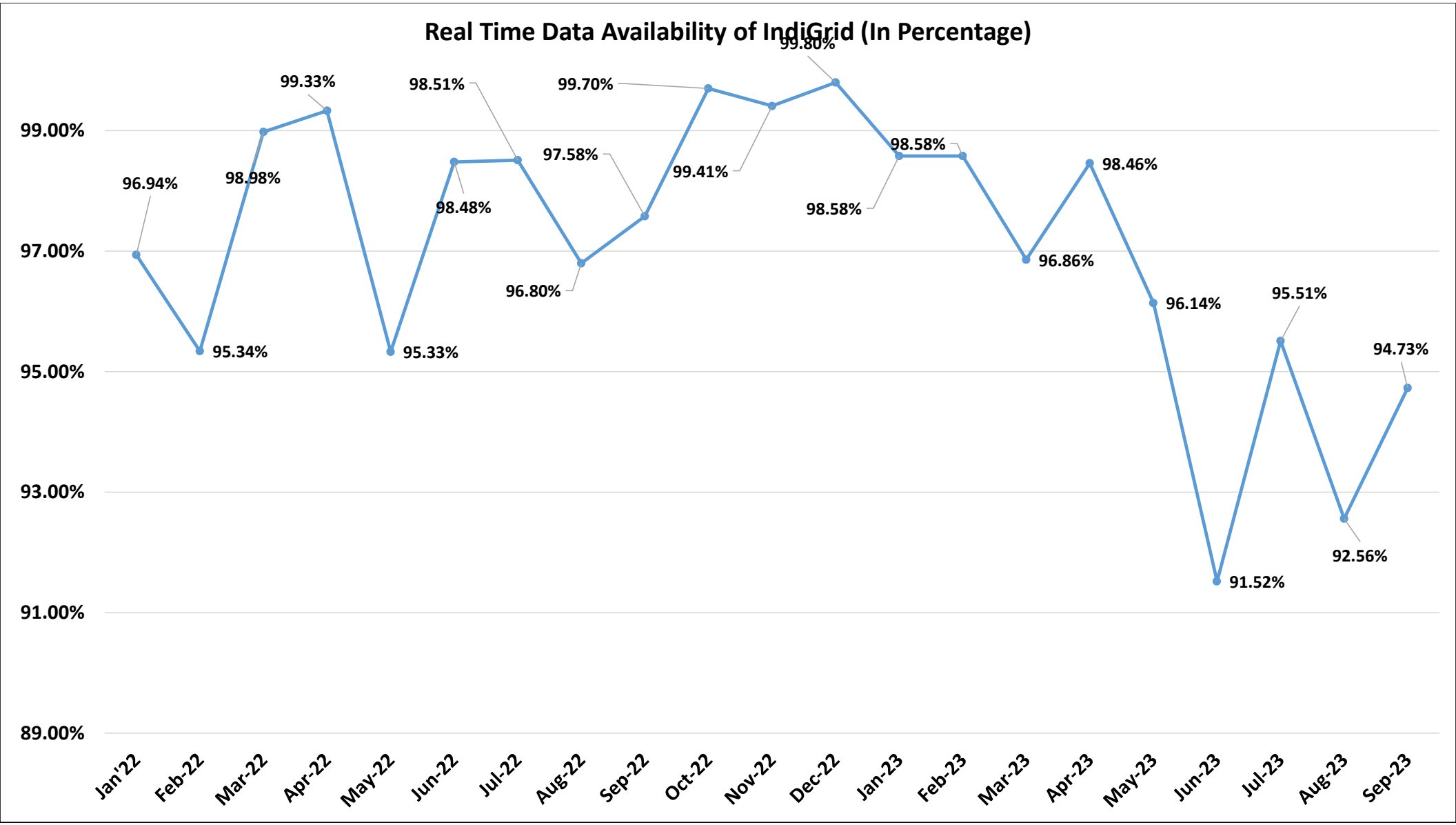
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TERMS & CONDITIONS FOR

MAINTENANCE

AND

SUPPORT SERVICES
OF

AUTOMATIC DEMAND MANAGEMENT SYSTEM

(ADMS) OF NER STATES

Section 1: Maintenance & Support services

1.0 Introduction

The scope of work shall include a comprehensive maintenance of all the software and hardware provided by the contractor for the various systems viz ADMS, Router cum Firewall, FRTUs along with the future integration and support services for meeting any expansion requirement envisaged. The maintenance practices to be followed shall be as per ISO 20000 Standard. The essence of the maintenance and support services is to provide maintenance support for the designated hardware and software, with the goal of meeting the availability as set forth herein.

1.1 Maintenance support

The period of maintenance support shall be three (3) years. The nature of maintenance support required for the different type of systems and components are described in the **Table 1-1** below:

Table 1-1 Maintenance support and Availability requirements

Sl.no.	System	Scope	System Availability requirements
1	ADMS Servers, Router cum Firewall and licence extension, extension of ADMS software license for different applications, LCD screen & FRTUs	Hardware and software in Control Centre and FRTU locations	99.99%

The system availability shall be measured equipment wise. For all third-party equipment (Hardware & Software), Contractor shall have back-to-back support along with supply of spare with appropriate response time from OEM or OEM Authorised representatives. Contractor shall be responsible for coordination with the OEM in all matters related to that equipment. The Contractor shall also be responsible for meeting the overall response times and availability requirements specified in the Specification.

The maintenance of the System shall be comprehensive and shall comprise of the following category of works which is further elaborated for each of the different subsystems:

(a) Preventive Maintenance Activity (performance monitoring, system backup, patch management, updates, emergency response and troubleshooting)

(b) Maintaining a minimum no. of specified spares.

(c) Maintenance of existing FRTUs and integration of new FRTUs at new locations other than currently integrated Sub-Stations on chargeable basis

1.2 Preventive Maintenance Activity

The preventive maintenance activity would involve activities to be performed by the Contractor to keep the system running at optimum level by diagnosis and rectification of all hardware and software failures and would broadly include

- Repair / replacement of defective equipment. The Contractor shall be responsible for repair/replacement of all the hardware required for the various systems.

- Configuration of the replaced hardware and software, periodic routine checking as part of a preventive maintenance program (as described in further detail in this document) which would include checking of functionality of hardware and software,
- Monitoring of the performance of the system and doing necessary tuning for optimum performance to accommodate any changes such as addition of new components.
- Providing all necessary assistance to Owner for addition and modification of database and displays, Database sizing activities including Backup and restoration of the system
- Restoration of the systems upon its failure and to restore the functioning of the various systems at the different Control Centres.

1.2.1 Hours of Cover

The Contractor shall provide engineers who have an experience and skill to maintain ADMS to the desired level of availability. The contractor's on-site support for the Control centre shall be standard hours of service i.e. Monday to Friday- 9:00 am to 5:00 pm local time (IST), excluding Public and Owner Company holidays, throughout a year. At least one Engineer having expertise in ADMS/SCADA System shall be available during the standard hours of service at each Main Control Centre. For any emergency arising out of the stipulated standard hours of service, the contractor shall resolve the same as per timelines given in Table 1.4.

The support personnel so deployed shall be qualified personnel in the delivered system or similar systems. The Owner can ask the Contractor to replace the personnel deployed for maintenance support if his performance is not found to be satisfactory.

Contractor and associated personnel will have to follow all rules and regulations of owner's office premises in view of owner's certifications of ISO-9001and ISO-27001 including any other future certification.

1.2.2 Service Response requirements

The severity levels are defined in coming sections and the requirement of response time for various severity levels is defined below:

Emergency Support for Severity 1 issues are to be provided as and when they occur, and resolution should be within stipulated timelines during normal working hours. The on-call support team shall include all key technical competencies so that any aspect of a system failure can be attended. The team shall comprise of experienced technical staff that are skilled in troubleshooting of the various systems covered under AMC. Severity 1 problems shall be reported by telephone for rapid response; target response times are defined in para 1.6 of this section. The bidder shall submit the process details to meet the above requirements along with the offer. For severity 1 problems, the key objective is to restore the system to an operational state as quickly as possible, including by a temporary workaround. Resolution of problems shall also be provided by an individual fix that will be installed by the contractor at no extra cost to Owner.

Severity 2, 3, and 4 problems shall be reported by Owner through a call tracking system to be provided by the contractor or any other mechanism to be specified by the contractor.

1.2.3 Monitoring

The operation and performance of the various systems under AMC shall be monitored on a fortnightly basis. The contractor shall review the following, analyse the results, and communicate to Owner. The contractor shall conduct at least the following monitoring, for the all the Control centres.

1.2.3.1 Log Monitoring

- System logs for a selected day
- System history log
- Aggregate data collection
- Events Collection

During monitoring, if any defect/ abnormality is found, the contractor shall undertake corrective maintenance for the same. The bidder shall submit the process details to meet the above along with the bid.

1.2.3.2 Resource Monitoring

Resource Monitoring services comprises checking the system's major node resources, gather log data, analyse results, and advise Owner on the appropriate actions to be taken and undertake any agreed upon actions.

- CPU loading (Peak and Average)
- Memory utilisation (Peak and Average)
- Disk utilization (Peak and Average)
- Operating system resource utilisation reports
- System error log

The bidder shall submit the procedures details to meet the above along with the offer.

1.2.3.3 Cyber security System monitoring

The Contractor shall also be responsible for monitoring of the cyber security system. Moreover, the contractor will block all malicious IPs, URLs etc provided as IOCs to the Owner by CERT-In and NCIIPC or any other government agency.

The monitoring shall encompass the various cyber security devices installed at Control Centres such as firewalls, Intrusion prevention system (both network based and host based), routers etc.

The Owner shall carry out the Annual Security Audit from CERT-In Certified auditors at his own cost for the complete systems under this project and it will be the responsibility of the contractor to implement the recommendations given by auditor in consultation with the owner.

1.2.4 Patch Management

The contractor shall also be responsible for providing updates/patches for the software products supplied under the project. All other patches of third-party products like Operating System and Anti-virus shall be tested for cyber security compliance as per CEA (Cyber Security for Power Sector) Guidelines, 2021 by the Contractor prior to installing in the supplied system. Firewalls shall be provided with secure patch management. All the patches shall be downloaded through this single point of connection.

The Contractor shall provide a mechanism for patch management so that it is known that what patches have been applied and what all patches are pending but available with System.

1.2.5 Physical maintenance

The contractor shall undertake physical maintenance of all Equipment and modules under the scope of this contract in accordance with this section. The physical maintenance shall include cleaning, dusting, inspection of equipment for loose connections, damage to insulation, pest infections etc. as follows:

Activities shall include but not limited to:

(a) Online diagnostics for servers and workstations - once every 3 months.

(b) Connection test of LAN cables for identifying potential loose contacts in machines and routers - once every 3 months.

(c) Physical hardware checks to ensure proper working of cooling fans etc. - Once every 3 months.

(d) Physical inspection to check the machines and the panels for rat droppings, lizards or other vermin - once every 3 months.

(e) Cleaning and blowing for removal of dust from Servers and Workstations and router cum firewall panels - once every 3 months.

Exclusions:

a) Interfacing panels cleaning etc. are excluded from the scope above.

b) Maintaining dust free environment and protection from rodents and vermin is the responsibility of Owner.

c) Regular cleaning of computer furniture and surroundings is the responsibility of Owner.

Equipment shutdown during preventive maintenance shall be deemed as available.

1.3 Spares inventory

The Contractor shall maintain a spares inventory at his own cost to meet the spare availability requirements of the system. The spares shall be used as and when required and no separate charges are payable except the maintenance charges. The Contractor shall decide the items and components to be maintained as spares but a minimum number of spares as listed below in Table 1.2 shall be kept at the respective control centers. This shall be periodically verified by the Owner and unavailability of spares shall be treated as non-availability as per severity 2. If spares have been used in the system, then the replenishment of the spare should be done within 45 calendar days, otherwise it will be considered as non-availability as per **Severity-2.**

Table - 1.2 Mandatory Spares inventory at each Control Centre and FRTU location

Sl.no.	Item description	Unit	Control Centre
1	ADMS Servers including main and auxiliary memory, interface cards (one of each type)		To be in the Owner's scope since these spares were not procured during the project stage
2	LAN switch		
3	Router cum Firewall		
Sl.no.	Item description	Unit	FRTU location
1	Modem, CMRs, HDRs, MFTs	Lot	1 (for each FRTU location)

1.4 Integration of new equipment

All future services and configuration support for integration of FRTUs & Control Centre Integration on ICCP shall be the responsibility of contractor and shall be part of the maintenance Services.
Support at Control centre for these integrations shall be treated as severirty-3 support as defined below.

1.5 Problem/Defect Reporting

The bidder shall submit an appropriate problem/defect reporting procedure to meet the requirement of all severity level cases to get the approval of the same from Employer/Owner. The problems will be categorized as follows:

Category	Definition
Severity 1 – Urgent	Complete system failure, severe system instability, loss or failure of any major subsystem or system component so as to cause a significant adverse impact to system availability, performance, or operational capability (as described at 1.5.1.1)
Severity 2 – Serious	Degradation of services or critical functions such as to negatively impact system operation. Failure of any redundant system component such that the normal redundancy is lost (as described at 1.5.1.2) Non-availability of Manpower at control centre during working hours, non-availability of spares
Severity 3 – Minor	Any other system defect, failure, or unexpected operation (as described at 1.5.1.3)
Severity 4 – General/Technical Help	Request for information, technical configuration assistance, "how to" guidance, and enhancement requests (as described at 1.5.1.4

1.5.1 Severity levels

The detail of the systems under different severity levels is as below:

1.5.1.1 Severity-1 (Urgent support)

This support is required when there is a complete system failure, severe system instability, the loss/ failure of any major sub-system / system or its components, which may significantly impact the system availability, performance, or operational capability at Control centre.

Following outages/disruptions will be considered under Serverity-1:

- Loss of Critical functionality as envisaged in specification due to any problem software/Hardware-related in ADMS servers and applications.
- Cyber Security issues
- Outage of both Routers or LAN Switches
- Loss of data exchange with FRTUs due to a crash in the ADMS application
- The failure of a FRTU shall be considered as Severity-1 level if it is established that the problem is inherently due to the FRTU module/database or modems. However, a minimum time of 24 hrs for resolution of the problem shall be provided in the worst case.

1.5.1.2 Severity-2

The support services not defined under Severity-1 are included under this category. Coverage under this severity would be outages that do not immediately cause on line data loss but subsequently could result into Severity-1 category outage, loss of an important subsystem that may affect the day-to-day works and loss of archived data.

Following outages/disruptions will be considered under Serverity-2:

- Failure of one ADMS server, stoppage of data collections for archiving and outage of other applications not covered under severity-1 are included in this category. However, the critical functionality loss due to loss of only one component as defined here shall be treated as Severity-1.
- Failure of any redundant system component affecting the critical redundancy like loss of any one Application Processor, Router would also be included in this category.
- The telemetry failure of a FRTU if it is established that the failure is not due to a break in the communication media or power supply in the premises where the FRTU is installed. However, a maximum time of Organization and travelling of 48 hrs shall be provided in the worst case for FRTUs in a city or town away from the capital cities where the control centres are.
- Non-availability of designated contractor's Man-power at control centre as well as required inventory of spares specified here.
- Non-compliance of Monitoring functions as specified in 1.2.3.

1.5.1.3 Severity-3 (Standard support)

The support services included under this category are when the outage or loss of functionality is neither of an emergency nor priority functionalities as indicated in severity level 1 or 2 above. Problems like database reworking, failure of any one application not included in Severity 1 or 2 and integration services as defined in 1.4 would be covered under this Severity.

1.5.1.4 Severity-4 (General Technical Help)

Request for information, technical configuration assistance, "how to" guidance, and enhancement requests are included under this category.

1.6 Response and Resolution Time

This section describes the target times within which the contractor should respond to support requests for each category of severity. The *Initial Response Time* is defined as the period from the initial receipt of the support request (through approved communications channels) and the acknowledgment of the contractor subject to the Maximum time defined in **Table 1.4**. The *Action Resolution Time* is the from the acknowledgement of support request to the contractor delivering a solution subject to the Maximum time defined in **Table1.4**. This period includes investigation time and consideration of alternative courses of action to remedy the situation. The *Action* is defined as a direct solution or a workaround.

All response and resolution times (hours and days) specified below are during working hours of the Week only.

Table 1.4: Emergency Support Response/Resolution Time

Severity	Initial Response Time	Action Resolution Time	Action
1	1 hour	4 hours	An urgent or emergency situation requiring continuous attention from necessary support staff until system is restored may be by a workaround
2	2 hours	12 hours	Attempt to find a solution acceptable to the Owner as quickly as possible
3	1 day	2 days	Evaluation and action plan. Resolution time is dependent on reproducibility, ability to gather data and Owner's prioritisation. Resolution may be by workaround
4	2 days	5 days	Report on the problem / query is to be furnished

The bidder shall submit the detailed format and procedure for all the activities such as Reporting time, Resolution time, Downtime etc. along with the bid proposal**.**

1.7 Availability and Payment charges Calculation

It is the endeavour of both the contractor and Owner to maximize system availability to the extent possible. The contractor shall provide guaranteed availability for various types of Systems as specified in Table 1.1.

The non-availability hours for availability calculation shall be counted from the end of the allowed Action Resolution time in Table 1.4. A standardized register shall be maintained at each site containing full details of each outage, actions taken by Owner to correct the problem, applicable Severity level, time of reporting to the contractor support engineer/support centres pursuant to the appropriate methods in the Agreement, allowed Response time as per the Response times defined in above section, actual Resolution time and signature of Engineer-in-charge as well as the contractor's support engineer of the site. For the incidents resolved within specified Resolution time as per Table 1.4, the same shall not be considered as part of non-availability calculation.

Duration of outages over and above the Action Resolution time, as defined in Table 1.4 in each of the Severity levels shall be counted for the non- availability computation and shall be clearly brought out in the register. The resolution may be accomplished by a work around, and such solution shall mark the end of non-availability.

In the event of frequent failures at a site, due to a common cause, the first FPR (Field Problem Report) logged shall be used for the purpose of availability calculation.

However, simultaneous multiple outages due to unrelated cause would be counted separately.

1.7.1 Availability computation for ADMS System

Availability would be on per quarter per site basis. The formula to be used for availability computation would be as under:

Availability per quarter yearly (per site) = $\frac{\text{THQ- (S1 x 1+S2 x0.8+S3 x 0.5)}}{\text{THQ}}$ x 100%

Where THQ is total hours in the quarter

S1 is the total non-available hours in Severity Level-1 in the quarter.

S2 is the total non-available hours in Severity Level-2 in the quarter.

S3 is the total non-available hours in Severity Level -3 in the quarter.

The above calculations shall be same for FRTUs.

1.7.2 Payment of maintenance charges (based on ADMS availability)

In the event of availability below a certain level, the maintenance charges would be proportionately reduced as follows:

For System:

Availability for each control centre per quarter	Deduction as % of the apportioned price of total AMC for ADMS portion of the contract applicable for that site (software price)
Greater than or equal to 99.99 %	NIL
Less than 99.99%	Deduction of 2% of the apportioned price of the apportioned quarterly AMC for every 0.5% or part thereof decrease in availability under 99.99%.

1.7.3 Computation of Availability / Non-availability

The computation of Availability / Non-availability would be rounded up to 2 decimal places at each Control Centre on quarterly basis and any deduction in the maintenance charges thereof would be calculated as stated above in Section 1.7.2 on pro-rata basis.

1.8 Contractor's Obligations

The contractor shall guarantee continuous availability of the system as indicated in Table 1.1 for the AMC period from the date of operational acceptance. The system availability shall be calculated as indicated above on monthly basis. During this period, the contractor shall take continuous actions to ensure the guaranteed availability. In case the actual availability falls short of the guaranteed availability, it would be considered as contractor's default and deductions would be made as per Section 1.7.2 above.

In order to optimise and improve the response of the system, the contractor may re-install the program modules after making the Owner engineer aware of the consequence (like data loss, database rebuild etc).

1.9 Responsibilities of Owner

The responsibilities of the owner during the maintenance period are as follows:

(a) Owner shall ensure that proper Environmental conditions and uninterrupted Power Supply for Equipment's are maintained for the system.

(b) Owner shall ensure that the System is kept and operated in a proper and prudent manner as described in the system documentation provided by the Contractor and only trained Owner representatives (or persons under their supervision) are allowed to operate the system.

(c) Owner shall provide access to the sites of installation for purposes of providing Support Services.

(d) Owner shall provide the contractor with Space for Office and storage space for their maintenance staff and spares.

(e) Owner shall ensure healthy communication medium from FRTU to ADMS System at SLDC i.e. charged 4G Data SIM (Dual Service Provider) for GPRS communication from Sub-Station to ADMS System at SLDC. Availability of dedicated Broadband connection with Static IP for ADMS Servers at SLDC.

(f) Any eventuality requiring replacement of any Hardware /Software to meet the new Guidelines of Cyber Security Compliance shall be on Owner's Account.

(g) Procurement of new FRTUs for integration with the ADMS servers.

1.10 Responsibility Matrix

The table in this section provides a summary definition of the roles and responsibilities of the contractor and Owner.

Legend	●	This indicates who has primary responsibility to perform this function
	A	This indicates who will provide assistance

Table 1-3 Responsibility Matrix

Sl.no.	Task	Owner	Contractor
1.0	PROBLEM IDENTIFICATION		
1.1	Root cause analysis to determine whether the fault is attributable to Hardware or Software	---	●
2.0	SOFTWARE PROBLEM RESOLUTION		
2.1	Report problem and assist with problem identification	---	●
2.2	Provide or recommend corrections, temporary patches, workarounds or other fixes to system problems	---	●
2.3	Install and test corrections, temporary patches, workarounds or other fixes to system problems	---	●
3.0	ROUTINE SOFTWARE SUPPORT		

3.1	Build and maintain database, displays and reports	---	●
3.2	Perform system back-ups	---	●
3.3	Restore or reinstall software from back-ups	---	●
3.4	Monitor system logs (part of remote monitoring service)	---	●
3.5	Maintain system logs	---	●
3.6	Maintain user accounts	●	A
4.0	HARDWARE PROBLEM RESOLUTION		
4.1	Report problem and assist with defining problem	●	A
4.2	Troubleshoot problem to diagnose if it is software related or hardware related	---	●
4.3	Identify failed component, replace failed components in online system using parts from spares inventory	---	●
4.4	Restore operation of repaired/replaced equipment	---	●
5.0	HARDWARE SPARE PARTS		
5.1	Manage* local spares inventory	●	●
5.2	Replenish local spares inventory	---	●
6.0	INTEGRATION AND DATABASE WORK AT SLDC		
6.1	New FRTU Integration	---	●
6.2	New ICCP Integration with upgraded SCADA-EMS system	---	●
7.0	CYBER SECURITY MONITORING		
7.1	Patch Updates	---	●
7.2	Cyber Security Monitoring	●	●
7.3	Annual Audits	---	●
7.4	Implementation of Recommendations during Audit	---	●
7.5	Maintenance of Spares	---	●
8.0	FRTU MAINTENANCE	---	●

1.11 Cancellation of Contract in Full or in Part:

This clause will apply if the Contractor

(a) makes any default in proceeding with the works with due diligence and continues to do so even after a seven (7) days' notice of writing from the Engineer-in-Charge or,

(b) commits default in complying with any of the terms and conditions of the Contract and does not remedy it or take effective steps to remedy it within seven (7) days after a notice in writing has been given pertaining to the above by the Engineer-in-Charge or,

(c) fails to complete the works or items of work or before the stipulated date of completion and does not complete the work / remaining items of work within the period specified in a notice given in writing by the Engineer-in-Charge,

(d) defaults in any of the terms and conditions of the Contract as mentioned in this Letter of Award.

2.0 Service Level Agreement and Non-Disclosure Agreement

The Service Level Agreement during the three (3) year AMC period would be in line with the specifications outlined in this document.

The bidder, by virtue of him being exposed to data of SLDCs, will be bound to execute a Non-Disclosure Agreement which would be documented and signed at the time of award of LOA.
