Prayas (Energy Group)'s Comments and Suggestions on Amendment-I to the CEA (Manual on Transmission Planning Criteria), 2023

Central Electricity Authority (CEA) has issued the Manual on Transmission Planning Criteria, 2023 which was effective from 1st April, 2023. In order to cover the planning procedure, a new chapter (Chapter-7) is proposed to be added by CEA. CEA has invited comments on the draft amendment by 31st August, 2024.

We welcome the amendment as it is expected to further streamline transmission planning in the country and it clearly details out the role of CEA and CTU in preparation of transmission plans. We have some broad suggestions and comments on the draft proposal, which are discussed below. They are categorized under two categories, one dealing with transmission planning as a whole and other on certain specific provisions/aspects in the draft proposal.

General Suggestions on Transmission Planning

1. **Need for greater co-ordination among planning agencies/methodologies**

   Various agencies like STUs, CTU, CEA, SLDC and RPCs, are involved in transmission operation and planning. SERCs also review and approve multi-year transmission investment plans of State TRANSCOs. There is always a need for effective coordination amongst them so that planning process gets feedback from those involved in operation of transmission systems.

   Furthermore, STUs provide transmission related input data to CEA for planning and gets its transmission capitalization/investment plan approved by SERC. It is not clear whether any agency checks the information provided by STU to both the agencies. Any potential mismatch in such information (given the several ongoing policy and regulatory processes) will lead to sub-optimal planning and, as CEA is dependent on these agencies for data inputs, such a mismatch may disrupt the co-ordination between the central and state agencies for seamless planning of transmission network.

   We suggest that there should be public reporting of input data by CEA and CTU which will provide a platform for independently analysing data provided by various agencies. For optimal planning, STUs should prepare their transmission plans in close coordination with the ISTS transmission plan prepared by CTU and CEA and vice-versa.

2. **Need of more representative planning committees**

   The various planning committees headed by CEA and CTU involve representatives from generation, transmission, and distribution sector. We suggest to include a group of research-based power sector experts (either in individual capacity or institutional capacity) with experience in transmission sector as members of the planning committee. Adding a group of research experts having experience in transmission systems to the planning committee would contribute to more informed and reliable planning decisions.

3. **Publicly addressing stakeholder suggestions in transmission planning**

   The present planning process can have more transparency as the planning document does not provide the input data considered for planning and the draft plans are mostly not being published for stakeholder consultation. To strengthen more participation and implementation, we suggest that any draft transmission plan should be released in the public domain for comments and suggestions. This will encourage the interested stakeholders to provide their valuable feedback and suggestions to CEA for better planning in the country. Also, for making the process more transparent and inclusive, CEA may clearly identify and highlight the areas where stakeholder input

has been integrated. Likewise, CERC, CEA/CTU may also publish the suggestions/comments received in public domain. Furthermore, highlighting which suggestions were adopted and providing a detailed explanation of how these inputs have influenced the final draft through a clear, detailed statement of reasons would be very helpful. This will enhance the credibility of planning process and demonstrate responsiveness to stakeholder concerns.
We also suggest that all the data taken into consideration while planning shall be provided with the plan itself or may be attached in annexures.

4. Constitution of empowered committee at states for intra-state transmission projects

Like National Committee for Transmission, states should also constitute state empowered committees, which will play a critical role in overseeing and guiding the transmission sector, which may involve data appropriateness and sharing, investment needs, mode of bidding or other forms of transmission infrastructure. The committee can also aid the task of strategic planning, ensuring alignment with national policies and regulatory frameworks, and assess the performance and efficiency of transmission systems etc. Hence, the manual should suggest every state to constitute an empowered committee with clear mandate related to transmission sector.
The state empowered committees may have representatives from different sectors like Discoms, state energy development agencies, transmission, generation, SLDC, STU, transportation, railways or communications, regulatory commissions, professionals with expertise in transmission technology and infrastructure from industries or academic and research institutions, representatives from private sector companies involved in transmission, as well as consumer advocacy groups and legal and policy advisors. Some states like Andhra Pradesh and Karnataka have already included constitution of such committees in their respective regulations.

5. Monitoring and reporting of previous planning documents

While it is appreciable to have holistic transmission planning for future, the need to review the existing planning framework and its implementation on the ground can never be understated. In this regard, we suggest that CEA, along with other stakeholders, conduct regular review of planning. At present, NEP-Vol II (transmission) provides a brief review of previous or ongoing transmission plan instead of detailed assessment. We suggest that post the completion of planning period, a detailed assessment including scheme/project-wise progress shall be conducted to understand the strengths and shortcomings of prevalent planning framework and its implementation. This should be placed in the public domain post completion. While performing this, recommendations for future and undergoing planning process shall be made. Further recommendations can be made for regulatory and other measures for better transmission network in the country. Finally, such assessments shall be critically discussed by planning committees for further action.

6. Devising framework for assessing transmission network reliability and utilisation

Transmission network is a backbone for power system operation. However, significant over- or under-development of transmission network can be detrimental to the power system. This calls for devising a framework which can assess transmission network reliability and network utilisation. This aspect shall also be considered while planning the network in the country. Such framework is important as the sector is evolving with formulation of ancillary service regulation (and market) and resource adequacy framework at state and central level. At present a very limited reporting of reliability parameters (like transmission losses, network availability and grid disturbance events at individual element level) is available in public domain. However, a network wide reliability matrix including network adequacy and congestion is required. Further, a framework to assess transmission network utilisation (like line loading, power flow through element at peak demand period etc.) need to be formulated and both these should be put in the public domain.

7. Plans under MoP Transmission Rules to be made public

Rule 3 of Electricity (Transmission System Planning, Development and Recovery of Inter-State Transmission Charges) Rules, 2021 issued by Ministry of Power has mandated CEA and CTU to draw rolling plan for ISTS network every year (for a period of up to next 5 years). Also, CEA shall draw up perspective plan every alternate year on rolling basis for next ten years. However, as per our knowledge, these plans are not present in public domain, despite the rules coming into force since 1st October 2021. We suggest CEA and CTU put these plans in public domain. Further, it is suggested that this manual shall be applicable to these plans.

Manual Specific Suggestions

1. Utilization of energy storage in Transmission, ensuring reliability and optimised use of the grid

Renewable energy systems like solar and wind, operate at a CUF of around 20% to 35%, resulting in under-utilization of some elements the transmission system. Also, due to variable & intermittent nature of these energy sources, grid disturbances may increase as noted in a recent POSOCO report. Both these issues can be resolved by implementation of energy storage, more specifically BESS (which is location independent), which is co-located with RE rich pooling stations or RE generation projects. With decline in BESS costs, use of BESS should be critically evaluated for the purpose. A similar framework has been recently proposed by Ministry of Power where they have suggested to utilise the existing transmission network developed for solar and wind projects in the country with new co-located storage projects. The co-located BESS can significantly improve the utilization of the valuable transmission assets by charging during solar peak hours and discharging during non-solar hours. This can bridge the gap between renewable energy generation and peak electricity demand, reducing reliance on traditional, often fossil-fuel based, peak power plants. Further, it can also defer transmission investment in short term and enhance transmission reliability in long term. Considering these benefits, we suggest that transmission planning shall consider BESS as a supplementary element / alternative and, the modelling studies should be performed to assess the benefits of BESS, its utilisation and optimal location in the network.

2. Need for alignment of transmission planning with long term vision of planned RE capacity additions and emergence of solar parks/wind parks, RE growth centres to avoid future bottlenecks/curtailments.

CEA had constituted a committee to identify transmission projects required for installation of 500 GW RE by 2030. The committee report provided a list of substation and transmission schemes needed for offtake of such a capacity. The same was also incorporated in draft NEP Vol II issued by CEA recently. Despite this planning, RE generators are facing ISTS connectivity crunch in RE rich states like Gujarat and Rajasthan as has been substantiated during our informal conversation with RE developers. Further, it was noted that availing additional connectivity at any existing or new substation is possible only by FY 28/29. Also, India having a large Green Energy Corridor Program to evacuate RE, the pace of expansion of the transmission infrastructure may not be in sync with the pace of tenders for RE capacity addition. Capacity addition of various RE generation projects can be accelerated with faster transmission build out.

Further, we could not find any transmission plan dedicated for future renewable capacity addition in any state which might indicate lack of integrated transmission planning for RE. Improved coordination among RE generators, DISCOMs, SNAs and planning agencies can lead to better planning of evacuation infrastructure for RE.

3. Planning of inter-state transmission & communication system

The planning of transmission and communication systems for inter-state electricity transmission should adhere to the regulations set forth by the Central Electricity Regulatory Commission (CERC)

which include *CERC-Planning, Coordination and Development of economic and efficient Inter-State Transmission System by Central Transmission Utility and other related matters Regulations*[1] and *CERC-Communication System for inter-State transmission of electricity Regulations*[2]. These regulations, which may be updated periodically, should be followed alongside the guidelines issued by the Central Electricity Authority (CEA), as the effective planning of inter-state electricity transmission systems requires adherence to both CERC regulations and CEA guidelines, with a need to regularly review and incorporate any updates to these regulations.

4. Transmission Planning timeline

We welcome the provision of timelines for planning studies by CEA and CTU. However, the current timeline proposed for data collection, plan execution, and implementation is somewhat unclear to us. The specific years for which data collection and plan execution are to be prepared as per the manual are not indicated in the proposed manual. For example, if the plan is intended for FY-26, and the timeline suggests that the plan will be finalized by December 2025. This would leave only three months for implementation of the plan, which will be practically unrealistic. To improve clarity, we suggest to specify the year for data collection and the year the plan will be executed.

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[1] https://cercind.gov.in/2018/regulation/Transmission.pdf
[2] https://www.cercind.gov.in/2017/regulation/134-Gaz.pdf