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Ref: POSOCO/NLDC/CERC/RE/ **Date:** 20th August 2020

To,

Sanoj Kumar Jha
Secretary,
Central Electricity Regulatory Commission
3rd & 4th Floor, Chanderlok Building,
36, Janpath, New Delhi- 110001

Sub: Comments of POSOCO on Draft Amendment to Detailed Procedure for "Grant of Connectivity to Projects Based on Renewable Sources to Inter-State Transmission System"- regarding

Sir,

Please find attached the comments/inputs of POSOCO on draft amendment to detailed procedure for "Grant of Connectivity to Projects Based on Renewable Sources to Inter-State Transmission System".

Thanking You,

Yours faithfully,

(Debasis De)
Executive Director, NLDC

Encl.: As above

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Observation/Comments of POSOCO on Detailed Procedure for "*Grant of Connectivity to projects based on Renewable Sources to Inter-state Transmission System*"

1. Clause 5.3.1: For the connectivity system, the dedicated transmission line including line bay(s) at generation pooling station shall be under the scope of the applicant and the terminal associated bay (s) at the ISTS sub-station shall be under the scope of transmission licensee owning the ISTS sub-station subject to compliance of relevant provision of tariff policy.

   POSOCO Comments: The proposed arrangement may be clarified through a suitable diagram showing various elements at ISTS station and dedicated transmission line. It is proposed that line bay (s) at ISTS sub-station shall also be in the scope of applicant for synergy in completion of line and substation construction and commissioning works. This will facilitate completion of bays matching with the completion of dedicated transmission line.

2. Clause 7.7 discusses about *Minimum Capacity of the Dedicated Transmission Line (per circuit)* where for a 400 kV line 900 MW minimum capacity is given.

   POSOCO Comments:

   As per CEA's existing manual on Transmission Planning Criteria, *"The 'N-1' criteria may not be applied to the immediate connectivity of wind/solar farms with the ISTS/Intra-STS grid i.e. the line connecting the farm to the grid and the step-up transformers at the grid station."*

   It is proposed that N-1 criteria may be applied in case the total connectivity granted is more than 1000 MW so as to avoid acute overloading of other lines as well as low frequency in case of any outage.

3. Clause 10: Processing of Applications and Grant of Stage-II Connectivity:

   POSOCO Comments: Following para may be added:

   "On receipt of the application, the CTU shall, in consultation and through coordination with other agencies involved in inter-state transmission system to be used, including State Transmission Utility, if the state network is likely to be used, process the application and carry out the necessary inter-connection study."

Further, sub synchronous control interaction studies may be carried out either at the time of granting stage-II connectivity or before granting LTA as any interaction between a large number of converters based devices in a complex may cause stability issues later on.

4. Clause 12 - Technical requirements of Dedicated Transmission Infrastructure

   POSOCO Comments: Following regulation may also be added in the list of applicable regulations

   "Central Electricity Authority (Technical Standards for Communication System in Power System Operation) Regulations, 2020"

5. Clause 12 - Technical requirements of Dedicated Transmission Infrastructure sub clause 12.2.1 Dedicated Transmission Line (DTL):

   POSOCO Comments: Following point may be added:

   "Depending on the length of dedicated transmission line, CTU shall also plan or indicate the requirement of appropriate reactive power compensation at both ends of the line."

6. Clause 12 - Technical requirements of Dedicated Transmission Infrastructure sub clause 12.2.2 Pooling Station of the renewable generation projects

   POSOCO Comment: Following point may be added:

   "The need for any augmentation at the pooling station shall be indicated by CTU in consultation with ISTS licensee, Regional and National Load Dispatch Centers and other concerned utilities at the time of granting stage-II connectivity."

7. Clause 12.2.1: The power transfer capability (MW) of the dedicated line from the pooling station of the renewable generating station to the ISTS sub-station shall not be less than the quantum as per Clause 7.7 of this Procedure.

   POSOCO Comments: The power transfer capability is Surge Impedance Loading, Thermal or Stability limit may be clarified.

8. Clause 12.2.2: The total capacity of the power transformers of the generator pooling station and the rating of associated equipment like Circuit Breaker, Current Transformer, Capacitive Voltage Transformer, bus duct etc. shall not be less than the planned capacity of the generator pooling station in case the entire power from the renewable generating station is being aggregated at the lower voltage side of the generator pooling station.

POSOCO Comments: A margin may be kept in the rating of transformers for chances of surplus generation due to high wind/solar, higher DC side capacity, providing primary response etc.

9. Clause 9.2.1.(b) An entity implementing the Renewable Hybrid Generating Station(s)including Round the Clock Hybrid Project, shall be eligible to apply for separate Stage-II Connectivity for each location based on the same LOA or PPA, for the capacity of the project not exceeding the quantum of power for which LOA has been awarded or PPA has been signed. For this purpose, the locations and capacity at each such location, duly certified by the Renewable Energy Implementing Agency or the distribution licensee, as the case may be, shall be submitted along with the Connectivity applications.

   Illustration:-
   a) Suppose a bidder is awarded LOA for 500 MW to supply round the clock and it has Renewable hybrid generation project with installed capacity of 500 MW Wind, 500 MW Solar and 200 MW storage at single location (for injection at same interconnection point). Such project shall be eligible for Stage-II Connectivity under Clause 9.2.1, for the capacity of the project not exceeding the quantum of LOA (500 MW in the instant case). If the said project intends to sell surplus power over and above LOA, it shall be required to apply for additional Connectivity under Clause 9.2.2.

   b) Suppose a bidder is awarded LOA for 500 MW under Round the Clock Hybrid Scheme with projects at multiple locations - 500 MW (Solar) in State 'A' and 700 MW (Wind) in State 'B'. Such project shall be eligible for Stage-II Connectivity under Clause 9.2.1, for the capacity of the project not exceeding the quantum of LOA (500 MW in the instant case) at each location on the basis of same LOA. If the said project intends to sell surplus power over and above the quantum for which Stage-II Connectivity has been granted under Clause 9.2.1, it shall be required to apply for additional Connectivity under Clause 9.2.2.

   POSOCO Comments:

   The grant of connectivity shall be delinked with LOA quantum. Individual capacity along with break up for each type of generation shall be given by the applicant for connectivity irrespective of LOA quantum. For e.g., in case of illustration (a) above, the bidder shall declare the capacity of total 1200 MW for connectivity and the same shall be considered as installed capacity. However, it shall be granted access for only 500 MW. There may also be requirement of testing the system for connectivity of full quantum.

Further, if the different sources are not collocated as in illustration (b), the scheduling, accounting and metering of each location shall be carried out separately and access has to be taken by the applicant accordingly.

In case of battery energy storage, whether net import will be allowed or not may be clarified.

10. Clause 14.4B: Two or more applicants may apply for Stage-II Connectivity at a common bay along with an agreement duly signed between such applicants for sharing the dedicated transmission line. The Stage-II Connectivity shall be granted to such applicants subject to availability of capacity in the dedicated transmission line.

    POSOCO Comments: The agreement between the applicants shall be holistic in all aspects. There shall be complete clarity regarding sharing of charges, losses and priority. Any commercial or operational issues arising due to sharing of transmission infrastructure shall not be taken up with system operator and transmission licensee later on.

11. Clause 16.5: CTU shall share the available capacity of the ISTS sub-station (including bay wise availability) with the designated agencies as notified by the Government who may take the same into consideration while inviting the bids.

    POSOCO Comments: As per latest amendment (Feb 2019) to CEA's "Technical Standards for Connectivity to the Grid, "*Short Circuit Ratio at the interconnection point where the generating resource is proposed to be connected shall not be less than 5."*

    In view of above, CTU shall also share the short circuit ratio of station along with the available capacity of the ISTS.

12. Annexure - FORMAT-RCON-IIA: Intimation for Grant of Stage -II Connectivity/ Enhancement of Stage-II Connectivity mentions the following:

    Applicant given intimation for Connectivity to the grid shall have to furnish additional details to CTU for signing of "Connection Agreement" as per format given at FORMAT-CON-4, The Applicants are advised to furnish such details as early as possible for enabling them have lead time for any type of access.

POSOCO Comments:

Some fixed timeline may be suggested for submission of details by the applicant. In sub-clause 5.3 of the Connectivity Regulations, the timeline is at least 2 (two) years prior to physical interconnection.

Further, applications for Hybrid Renewable Generating Stations including Battery Energy Storage etc. are also seen in recent times. At present, FORMAT – CON-4 of CTU has no mention of these type of generating sources and therefore, format may also be modified.

POSOCO has already shared the detailed procedure for integration of all types of generation sources including hybrid and battery energy storage in its "*Procedure for First Time Charging/Energization (FTC) and Integration of New or Modified Power System Element"*. The document may also be referred for inclusion of new sources. The link to access the same is given below.

https://posoco.in/wp-content/uploads/2020/06/Procedure_for_Integration_of_Power_System_Elements.pdf

13. Guidelines regarding grant of connectivity to offshore RE projects may also be specified in the procedure.

14. **Separate procedure for grant of Long-term Access in inter-state system to Renewable Energy projects:**

    Currently, there is no separate detailed procedure for grant of Long-term Access in inter-state system to Renewable Energy projects. Considering the low gestation period of RE vis-à-vis transmission, it is proposed that either a separate procedure for RE generating projects may be prepared or detailed studies for transmission planning may be carried out at time of granting stage-II connectivity only.

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