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**Initial Comments to Clarifications Requested for Revision of the Monitoring Plan of
“Enercon Wind Farm (Hindustan) Ltd in Karnataka” (Ref. no. 1259)**

Dear Honorable Members of the CDM Executive Board,

Please find below the response of the TÜV NORD JI/CDM Certification Program to the request for review for the above mentioned project No. 1259.

If you have any questions do not hesitate to contact us.

Yours sincerely,

TÜV NORD JI/CDM Certification Program


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	<p align="center">S01-F041</p> <p align="center">Initial Comments to Request for Review</p>	<p align="center">Rev. 0</p> <p align="center">Page 2 of 5</p>
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Question Raised by the EB	
<p>1</p>	<p>The revision proposes, among other issues, that the transmission losses will be calculated based on monitoring of energy-meters installed at 33kV metering point (Xi) and on the records from the bulk meter, which monitors the electricity from the project activity and other projects (Y), as described by the formula in Item B.7.2.</p> <ol style="list-style-type: none"> 1. The PP/DOE is required to further substantiate the rationale of this approach, as the electricity generated by other projects was not clearly identified in the formula. 2. Additionally, the PP/DOE are required to clarify which is the calibration frequency of these electricity-meters and whether they will be calibrated by KPTCL.
Changes Made in/ Reference	
<p><input checked="" type="checkbox"/> Revised Monitoring Plan</p>	<p>B.7.2, Annex 4 and Appendix-I of the revised monitoring plan.</p>
<input checked="" type="checkbox"/> Additional Comment by PP	
<p>Calculation of Transmission Loss</p> <p>We will like to submit that the electricity is recorded at two levels for calculation of transmission loss:</p> <ol style="list-style-type: none"> a) 33kV metering points (Xi): Energy Export Reading (Xi) noted at energy meter installed at 33kV metering point where i vary from 1 to n which represents the meters connected to project activity and other project developers. X1, X2, X3,...Xn are the meters that are installed at 33kV metering point (including the machines of the project activity and other project developers) and further connected to the receiving substation at 220 kV by internally connected lines. Refer Appendix 1 for schematic of the flow diagram b) 220KV metering point (Y): Energy Export Reading at bulk meter installed at high voltage side of transformer of the receiving sub-station at 220 kV connecting machines of the project activity and other project developers. Refer Appendix 1 for schematic of the flow diagram. <p>Summation of meter readings at 33 kV metering point for all the project developers</p>	

connected to receiving substation (including the machines of the project activity and other project developers)= $(X1 + X2 + X3 \dots + Xn)$

Using the data above noted at 33 kV metering points and 220kV metering point, the transmission loss percentage (Z) is calculated as:

$$Z = \frac{(X1+X2+X3\dots+Xn)-Y}{(X1+X2+X3\dots+Xn)} \times 100$$

Z = Percentage transmission loss for export incurred in transmission line between the meters located at 33 kV metering point (including the machines of the project activity and other project developers) and the meters located at 220kV metering point (bulk meter: main and check) at high voltage side of receiving sub-station. Refer Appendix 1 for schematic of the flow diagram.

Calibration frequency and its Responsibility

All main & check meters connected at metering points with RR. No. KBCWP 01 (220kV metering point), KBCWP 02 (33kV metering point) & KBCWP03 (33kV metering point) (please refer project layout Appendix 1) will be tested / calibrated for accuracy annually by either of KPTCL or BESCOM based on the availability of EB officials. KPTCL is a transmission utility and BESCOM is distribution licensee in the state of Karnataka.

The revision in monitoring plan is also revised to transparently and clearly represent the calculation of transmission loss and calibration frequency and its responsibility.

☒ Additional Comment by DOE

1. Transmission Loss calculation:

In the state of Karnataka, as a normal practice the state utility will carry out the percentage transmission loss for the monthly energy supplied by all the WEGS connected to the substation by means of apportioning mechanism. It is to be noted that the apportioning calculation will be done considering energy delivered at bulk meter at 220 kV point which was installed at substation and project site meters installed at 33 kV point of individual project investors.

Metering arrangement:

- Here in this case, the substation was owned and maintained by Enercon (India) Limited which is under the control of state utility (i.e., Bulk meter under control of KPTCL and project site meter under control of BESCOM).
- The bulk meter at 220 kV point (i.e., KBCWP-01) and one set of project activity meters of Enercon (India) limited for 71 WEGS at 33 kV point (i.e., KBCWP-02) are installed in the substation.
- The second set of project activity meters of Enercon (India) Limited for remaining 15 WEGs at 33 kV point (i.e., KBCWP-03) were installed near the project site area.
- Other than the above mentioned project site meters of Enercon (India) Limited, there are other project investors, not involved in this CDM project activity, have their own project site meters installed at 33 kV point for their

monthly energy generation calculation.

Formula for transmission loss percentage calculation:

As explained in the response by the project proponent,

- X1 and X2 refers to project site meters of Enercon (India) Limited.
- X3, X4 . . .Xn refers the other project site energy meters developed by non project participants.
- Based on the total energy exported by all the WEGs at 33 kV point, the following formula is used to calculate Xi

$$X_i = X_1 + X_2 + X_3 + X_4 + \dots + X_n.$$

All these 33 kV lines are further connected to bulk meter installed at 220 kV which again provides the total exported energy delivered at 220 kV point.

Thus the percentage transmission loss will be calculated based on the difference between energy exported metering at 33 kV point and 220 kV point divided by energy exported metering at 33 kV point both by the project participants and non project participants. The formula is as follows,

$$Z = ((X_i - Y) / X_i) \times 100.$$

Whereas,

- Z= Percentage transmission loss
- Xi= Energy exported by all WEGs at 33 kV point (Includes project participant and non project participants WEGs as mentioned in above formula) and
- Y= Energy exported by all WEGs at 220 kV point (Includes project participant and non project participants WEGs)

The same has been cross verified with the 'line loss calculation sheet' provided by BESCOM.


2. Calibration frequency:

All the energy meters will be calibrated annually as per the requirements of national standards.

Responsibility:

The calibration of all the energy meters belong to the project activity (i.e., KBCWP-02 and KBCWP-03) and the bulk meter installed at sub-station (KBCWP-01) will be done by state utility (either by KPTCL or BESCOM) depending on the availability of state utility personnel. In addition the calibration of energy meters will be under the purview of state utility (either KPTCL or BESCOM) and the project proponent has no control over the calibration agency. The project proponent has signed a PPA with BESCOM.

☒ **Other/Additional documents**

	<p>S01-F041</p> <p>Initial Comments to Request for Review</p>	<p>Rev. 0</p> <p>Page 5 of 5</p>
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