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CDM Executive Board

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Our / Your Reference	Contact	Direct Dial	Date
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Request for Revision of Monitoring Plan
"15 MW Wind Energy Project in Maharashtra"

CDM Registration No: 1778

Dear Sir/Madam,

Please find below the validation opinion of TÜV NORD JI/CDM Certification Program to the revision of the monitoring plan for the above mentioned project no. 1778.

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

Yours sincerely,

TÜV NORD JI/CDM Certification Program

Rainer Winter

Validation opinion as per requirement of EB49, Annex 28, para 9
Level of accuracy or completeness
☒ *TÜV NORD herewith confirms that the proposed revision of the monitoring plan ensures that the level of accuracy or completeness in the monitoring and verification process is not reduced.* *Additional comment:* "15 MW Wind Energy Project in Maharashtra" (hereafter referred to as project activity) was registered on 24 October 2008 using "Grid connected renewable electricity generation" (AMS I.D, Version 11). The project activity involves the establishment of wind based power generation with WTGs, having capacity of 15 MW (12 Nos X 1.25 MW). Out of the total installed WTG's 6 (six) are located in Nandurbar district of Maharashtra and remaining six having capacity of 7.5 MW (6 Nos X 1.25 MW) located in Dhulia district of Maharashtra, India. The monitoring of all Wind Turbine Generators (WTGs) is done at Central Monitoring Station (CMS) maintained and operated by M/s Suzlon Energy Limited (hereafter referred to as O & M contractor) and the net export of electricity by the WTG's is determined by the MSEDCL with the help of O & M contractor. The PP during the validation stage mentioned detailed procedure of the apportioning logic applied by MSEDCL. In line with the paragraph 57 of the modalities and procedures for the CDM which allows project participants to revise monitoring plans to improve accuracy and completeness of information and also the requirements mentioned under paragraph 17 and 18 of Clean Development Mechanism Validation and Verification Manual (VVM) (EB-44, Annex-3) TÜV NORD is validating the appropriateness of inclusion of the additional monitoring parameters in line with the procedure of apportioning adopted by the Maharashtra State Electricity Distribution Company Limited (MSEDCL) to arrive at the monitoring parameter "Net Electricity exported to the grid by the Project Activity". Every month MESDCL is issuing joint meter reading reports (JMR) to the PP by applying apportioning logic with the help of parameters "Electricity generation by WTGs owned by DJM (either individual or group)", "Total electricity generation by all the WTGs connected to the common bulk meters", "Total net electricity supplied to the grid measured at the substation by common bulk meters (main and check meter)". To increase the transparency of the applied apportioning mechanism, the PP is including above mentioned parameters additional to the existing monitoring plan in the proposed revised monitoring plan and hence requesting revision in monitoring plan. Furthermore, the PP has updated/ corrected the monitoring plan under section B.7.2 and Annex-4 of the PDD and narrated the monitoring procedures with more clarity. The revised monitoring plan is validated by TÜV NORD in line with relevant procedures for Requesting a Revision in the monitoring plan. TÜV NORD assessed and found that initial monitoring plan is monitoring the net electricity exported to the grid and hence monitoring only the outcome of the apportioning logic applied by the MSEDCL. The inclusion of the additional monitoring parameters will attain completeness in monitoring plan and increases the transparency as the applied apportioning logic (by MSEDCL) can be readily demonstrated. The available documents and evidences in relation to monitoring requirements of electricity generated by installed WTG's and monitoring of net electricity delivered to the grid by WTGs were assessed by TÜV NORD. TÜV NORD verified and found that "Net Electricity exported to the grid by the Project Activity" is obtained from two measurements viz • The electricity generated by individual WTG's of all the project promoters with the help of integrated electronic meter (also referred as inbuilt control panel meter). This measurement is undertaken by the O & M contractor for DJM (at the CMS). • The import, export and net electricity exported to the MSEDCL measured by the main and check meters which is recorded by representative of MSEDCL in presence of O & M contractor The DOE also noted that it is not possible to calibrate the inbuilt control panel meters. This was verified from the letter submitted by the O & M contractor. Furthermore, the PP with the help of letter issued by O & M contractor has substantiated to TÜV NORD that the same applies for all other WTG's connected to the common bulk meter.

Table-1: Nomenclature

Parameter	Description	Source
EGy	Net Electricity exported to the grid by the Project Activity.	Calculated from measured values
$\sum_{0}^{n} EG_{n,y}$	Electricity generation by WTG/s owned by DJM (either individual or group)	Wind Mill's Break-up Energy Report provided by O & M contractor. This value will be taken from JMR.
EG_{MSEDCL}	Total net electricity supplied to the grid measured at the substation by common bulk meters (main and check meter).	Monthly measurements undertaken by representative of MSEDCL in presence of representative of O & M contractor. This value will be taken from JMR.
$\sum_{0}^{m} EG_{m,y}$	Total electricity generation by all the WTGs connected to the common bulk meters	Monitoring of all wind turbines is done at CMS. This value will be taken from JMR.

Verification of Appropriateness of the Monitoring Parameters:

The apportioning protocol is similar for the windmills located at Dhulia and Nandurbar sites.

- The verification team verified the apportioning logic with the help of below correlation and confirms the validity of the proposed approach. Sample results as summarized under "Results of Apportioning logic Vs readings in Joint Meter Reading (JMR) Report issued by MSEDCL" shall provide further details in this regard. The verification team verified also the JMR values and found that the values obtained by applying the apportioning logic on the available monitored data and the issued JMR are in close agreement.

$$EGy = \left[\frac{\sum_{0}^{n} EG_{n,y}}{\sum_{0}^{m} EG_{m,y}} \right] X \; EG_{MSEDCL}$$

Results of Apportioning logic vs. Joint Meter Reading (JMR) Report issued by MSEDCL:

Sample demonstration for the month of June to August 2009 for WTG location number K401

Month	WEG Meter Readings		MSEDCL Meter Readings for all WEGS connected to the Common bulk meter(main meter & check meter)	MSEDCL JMR Report readings	Demonstration of apportioning logic by DJM	% difference
	Electricity generation by WTGs owned by DJM (either individual or group)	Total electricity generation by all the WTGs connected to the common bulk meters	Net export from all the WEGs	Net Electricity exported to the grid by the Project Activity (EG_Y)	Net Electricity exported to the grid by the Project Activity demonstrated with the help of application of Apportioning logic	
	$\sum_{0}^{n} EG_{n,y}$	$\sum_{0}^{m} EG_{m,y}$	EG_{MSEDCL}			
UNIT	(kWh)	(kWh)	(kWh)	(kWh)	(kWh)	
Jun-09	263587	5447127	5298000	256371	256371	0%
Jul-09	318607	5600970	5436000	309223	309223	0%
Aug-09	286773	4753341	4602000	277642	277642	0%

In light of above substantiation, TÜV NORD concludes that the inclusion of the additional monitoring parameters will provide increased level of accuracy and completeness in the monitoring. TÜV NORD also confirms that the below mentioned monitoring plan is adequate and meets the requirements stipulated under the monitoring methodology (AMS I.D Version 11).

TÜV NORD checked the updated/ corrected the monitoring plan under section B.7 and Annex-4 of the PDD and found the same accurate. TÜV NORD further confirms that the proposed revision in the monitoring plan does not impact the estimation of emission reductions for the proposed activity.

TÜV NORD therefore concludes that Revision in the Monitoring plan will effect real measurable and attributable emission reductions.

Accordance with approved monitoring methodology

☒ *TÜV NORD herewith confirms that the proposed revision of the monitoring plan is in accordance with the approved monitoring methodology applicable to the project activity.*

Additional comment:

The proposed revised monitoring plan correctly follows the applied methodology i.e. AMS I.D, version 11.

Previous verification findings

☐ *TÜV NORD herewith confirms that the findings of previous validation reports, if any, have been*

taken into account.

☒ *No findings from previous validation had to be considered.*

Additional comment:

Project participant has identified the need of revising of the monitoring plan to improve accuracy and completeness of the monitoring information (Cp para 57 of CDM M&P and Procedures for Revising Monitoring Plans in Accordance with Paragraph 57 of the Modalities and Procedures for the CDM, Version-2, EB-49, Annex-28) and requested DOE to validate the revision of the monitoring plan.

TÜV NORD confirms that the same have been taken into account for the proposed revision of monitoring plan.

List Supportive Documents:

- *Calibration certificate for main meter and check meter for Jamade feeder number-8 issued by MSETCL, EHV Testing Division Dhule on date 2009-07-08 for Main meter: 04862465 and Check meter: 04725796*
- *Letter issued by M/s Suzlon Infrastructure Services Limited regarding calibration of inbuilt control panel meter, Ref: CRM/Pune/09-10/005 on date 2009-11-20*