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# ASSESSMENT OPINION ON POST-REGISTRATION CHANGES

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**M/s The Tata Power Company Limited**

**50.4 MW Tata Wind Farm - in  
Maharashtra**

**UNFCCC Ref. No. 2819**

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**SGS Climate Change Programme**

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<b>Date of Issue:</b>		<b>Project Number:</b>	
12/04/2013		CDM.VER 1184 RMP	
<b>Project Title:</b>			
50.4 MW Tata Wind Farm - in Maharashtra			
<b>Organisation:</b>		<b>Client:</b>	
SGS United Kingdom Limited		M/s The Tata Power Company Limited	
<b>Subject:</b>			
Assessment Opinion for Request for Approval of Changes:			
	Temporary Deviation from the Monitoring Plan	<b>Distribution/Document Control</b>	
[X]	Permanent changes to the monitoring plan as described in the registered PDD		
	Temporary Deviation from the monitoring plan and Permanent changes to the monitoring plan as described in the registered PDD		
<b>Validation Team:</b>			
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## Abbreviations

BEF	Baseline Emission Factor
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEA	Central Electricity Authority
CER	Certified Emission Reductions
CERC	Central Electricity Regulatory Commission
CL	Clarification Request
CMP	Conference of Parties Serving as Meeting of Parties
CO <sub>2</sub>	Carbon dioxide
DOE	Designated Operational Entity
DR	Document Review
EB	Executive Board
EPC	Engineering, Procurement and Construction
FAR	Forward Action Request
GHG	Green House Gas
ISO	International Organization of Standardization
JMR	Joint Meter Reading
kW	Kilowatt
kWh	Kilowatt hour
MoV	Means of Verification
MR	Monitoring Report
MSEDCL	Maharashtra State Electricity Distribution Company Limited
MW	Megawatt
MWh	Megawatt-hour
NEWNE	Northern Eastern Western Northern-Eastern
O&M	Operation and Maintenance
PDD	Project Design Document
PP	Project Participant
PPA	Power Purchase Agreement
QA/QC	Quality Assurance and Quality Control
RMP	Revision in Monitoring Plan
UNFCCC	United Nations Framework Convention on Climate Change
VVM	Validation and Verification Manual
VVS	Validation and Verification Standard
WTG/WEG	Wind Turbine Generator/Wind Energy Generator

## Table of Content

1. Assessment Opinion .....	5
2. Introduction .....	6
2.1 Objective .....	6
2.2 Scope.....	6
2.3 GHG Project Description.....	6
3. Methodology .....	7
3.1 Review of CDM-PDD and Additional Documentation.....	7
3.2 Use of the Validation Protocol.....	7
3.3 Findings.....	7
3.4 Internal Quality Control .....	8
4. Validation Findings.....	9
4.1 Application of Monitoring Methodology and Monitoring Plan.....	9
4.2 Findings of Previous Verification Reports.....	15
5. List of Persons Interviewed.....	17
6. Document References.....	18
Annex 1: Validation Protocols.....	20
Annex 2: Overview of Findings.....	27
Annex 3: Statement of Competence.....	32

## 1. Assessment Opinion

Paragraphs 247-256, 262-268 of the Clean Development Mechanism Validation and Verification Standard version 03.0 (EB 70 Annex 03), require the DOE to assess temporary and permanent changes from the registered monitoring plan and/or monitoring methodology and as per paragraphs 257-259 of Validation and Verification Standard version 3.0 require the DOE to assess corrections in the registered PDD.

Paragraph 130 of CDM Project Cycle Procedure, Version 3.2<sup>8/</sup> allows the project participants to change monitoring plans in order to improve accuracy and/or completeness of information, subject to the changes being validated by a Designated Operational Entity.

SGS United Kingdom Ltd has been contracted by M/s The Tata Power Company Limited to perform such a validation of the permanent changes to the registered monitoring plan according to the procedure detailed in paragraphs 133 to 139 of the CDM Project Cycle Procedure, Version 3.2<sup>8/</sup>; the registered monitoring plan is part of the PDD of registered CDM project "50.4 MW Tata Wind Farm - in Maharashtra" and UNFCCC Reference No. 2819. The purpose of a validation is to have an independent third party assessment of the permanent changes to the monitoring plan and also corrections in PDD. In particular, the level of accuracy and/or completeness in the proposed changes to the monitoring plan, and the conformity with approved monitoring methodology applicable to the project activity.

By applying the post registration changes which include the permanent changes to the monitoring plan as described in the registered PDD based on FAR #5 raised during the course of second verification for the project activity. The sole objective of the proposed revision in registered monitoring plan is to bring more transparency and clarity with respect to the actual monitoring system being followed at project site and the PP's control over the monitoring process being followed by the state utilities. The correction made in the PDD accurately reflects the correct project information and is therefore as per para 258 of VVS.

This change improves the accuracy of information provided and consistency in the registered PDD and the monitoring plan.

Furthermore, we confirm that:

- (a) The proposed changes have been described, and an assessment has been provided to substantiate the reasons for each of the proposed revision points of the registered monitoring plan, using objective evidence;
- (b) The proposed changes to the monitoring plan ensure that the level of accuracy or completeness in the monitoring and verification process is not reduced as a result of the revisions;
- (c) The proposed changes to the monitoring plan is in accordance with the approved monitoring methodology applicable to the project activity whilst ensuring the conservativeness of the emission reductions calculation.
- (d) The findings of the previous verification reports (i.e. FAR #5) have been taken into account.

**Signed on Behalf of the Validation Body by Authorized Signatory**

Signature:



Name: Siddharth Yadav

Date: 01/05/2013

## 2. Introduction

### 2.1 Objective

Paragraphs 247-256/262-268 of the Clean Development Mechanism Validation and Verification Standard version 3.0 require the DOE to assess temporary and permanent changes from the registered monitoring plan and/or monitoring methodology and as per paragraphs 257-259 of Validation and Verification Standard version 3.0 require the DOE to assess corrections in the registered PDD.

Paragraph 130 of CDM Project Cycle Procedure, Version 3.2 allows the project participants to change monitoring plans in order to improve accuracy and/or completeness of information, subject to the changes being validated by a Designated Operational Entity.

SGS United Kingdom Ltd has been contracted by M/s The Tata Power Company Limited to perform such a validation of the permanent changes to the registered monitoring plan according to the procedure detailed in paragraphs 133 to 139 of the CDM Project Cycle Procedure, Version 3.2; the registered monitoring plan is part of the PDD of registered CDM project "50.4 MW Tata Wind Farm - in Maharashtra" and UNFCCC Reference No. 2819. The purpose of the validation is to have an independent third party assessment of the corrections/revision of monitoring plan. In particular, the level of accuracy or completeness in the proposed permanent changes/temporary deviation of the monitoring plan, and the conformity with the approved monitoring methodology applicable to the project activity.

The Validation was performed in accordance with the UNFCCC criteria for the Clean Development Mechanism (CDM) i.e. CDM Validation and Verification standard version 03 and the host country criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

SGS reviewed the project design documentation (proposed post registration changes in the revised PDD), using a risk based approach and conducted follow-up interviews.

### 2.2 Scope

The scope of the validation is defined as an independent and objective review of corrections to the registered PDD and changes to the monitoring plan as described in the registered PDD. The information in these documents is reviewed against the Kyoto Protocol requirements, the UNFCCC rules and associated interpretations.

The validation is not meant to provide any consulting towards the Client/the project. However, SGS may issue requests for clarifications and/or corrective actions which may provide input for improvement of the project design.

### 2.3 GHG Project Description

Refer to <http://cdm.unfccc.int/Projects/DB/DNV-CUK1249024361.28/view>, the project web page. There is no change in the project activity description. The project was registered on 01<sup>st</sup> June 2010 under UNFCCC Reference No. 2819.

### 3. Methodology

#### 3.1 Review of CDM-PDD and Additional Documentation

The validation is performed primarily as a document review of the publicly available project documents and revised PDD with proposed changes to monitoring plan. The assessment is performed by trained assessors using a validation protocol.

A site visit was carried out to verify assumptions in the proposed revision of the monitoring plan.

#### 3.2 Use of the Validation Protocol

The validation protocol used for the assessment is partly based on the templates of the Clean Development Mechanism Validation and Verification Standard version 3.0<sup>6/</sup>:

- It organises, details and clarifies the requirements the project is expected to meet; and
- It documents both how a particular requirement has been validated and the result of the validation.

The validation protocol consists of several tables. The different columns in these tables are described below.

Checklist Question	Ref ID	Means of Verification (MoV)	Comment	Draft and/or Final Conclusion
The various requirements are linked to checklist questions the project should meet.	Lists any references and sources used in the validation process. Full details are provided in the table at the bottom of the checklist.	Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.	The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.	This is either acceptable based on evidence provided (Y/OK), or a Corrective Action Request (CAR) due to non-compliance with the checklist question (See below). A Clarification request (CL) is raised if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met.

The validation protocol is attached with the report as Annex 1.

#### 3.3 Findings

As an outcome of the validation process, the team can raise different types of findings.

In general, where insufficient or inaccurate information is available and clarification or new information is required the Assessor shall raise a **Clarification Request (CL)** specifying what additional information is required.

Where a non-conformance arises the Assessor shall raise a **Corrective Action Request (CAR)**. A CAR is issued, where:

- Non-conformities with the monitoring plan or methodology are found in monitoring and reporting, or if the evidence provided to prove conformity is insufficient;
- Mistakes have been made in applying assumptions, data or calculations of emission reductions which will impair the estimate of emission reductions;
- Issues identified in a FAR during validation to be verified during verification have not been resolved by the project participants.

A Forward Action Request (FAR) is raised during verification for actions if the monitoring and reporting require attention and/or adjustment for the next verification period.

The validation process may be halted until this information has been made available to the assessors' satisfaction. Failure to address a CL/FAR may result in a CAR. Information or clarifications provided as a result of a CL/FAR may also lead to a CAR.

Corrective Action Requests, Clarification Requests and Forward Action Requests are raised in the draft validation protocol and detailed in a separate form (Findings Overview). In this form, the Project Developer is given the opportunity to address and "close" outstanding CARs and respond to CLs and FARs. The detailed Finding Overview is attached with this document as Annex 2.

### **3.4 Internal Quality Control**

Following the completion of the assessment process and a recommendation by the Assessment team, all documentation will be forwarded to a Technical Reviewer. The task of the Technical Reviewer is to check that all procedures have been followed and all conclusions are justified. The Technical Reviewer will either accept or reject the recommendation made by the assessment team.

#### **Technical Review Team**

<b>Name</b>	<b>Role</b>
Ramkrishna Patil	Technical Reviewer and Technical Area Expert (TA 1.2 – Wind)



## 4. Validation Findings

### 4.1 Application of Monitoring Methodology and Monitoring Plan

#### Type of Permanent Changes

The permanent changes of monitoring plan is a result of a FAR raised by the DOE during the second periodic verification of the project activity as described in sections 3.4, 5 and 9 of the second verification report version 05 dated 18/01/2013<sup>/5/</sup>.

The revision in the monitoring plan has been proposed by the PP along with the revised PDD<sup>/1/,/1.1/</sup>; the types of proposed changes are summarized as below;

1. The monitoring plan in sections B.7.1, B.7.2 and Annex 4 of the revised PDD<sup>/1/,/1.1/</sup> are updated in line with the actual monitoring practice being followed at site.
2. Section B.7.1 of the revised PDD<sup>/1/,/1.1/</sup> is updated with the inclusion of the monitoring parameters required for calculations of parameter "Net electricity supplied to the grid by the Project activity in year y" which are in the control of the PP to monitor.
3. Section B.7.2 of the revised PDD<sup>/1/,/1.1/</sup> includes the diagram indicating monitoring locations involved for the project activity and detailed description on apportioning procedure being followed at site by MSEDCL to calculate "Net electricity supplied to the grid by the Project activity in year y".
4. Section B.7.2 of the revised PDD<sup>/1/,/1.1/</sup> is updated with procedures to be followed in case of monitoring equipment failure.
5. Annex 4 of the revised PDD<sup>/1/,/1.1/</sup> now includes transparent and accurate description on the actual metering and its inspection/testing/calibration arrangement in place at project site.

Hence, to improve the transparency and completeness of the monitoring procedure, while also keeping compliant with the applied Monitoring Methodology ACM0002 version 09<sup>/4/</sup>, the following parameters have been updated under section B.7.1 of the revised PDD<sup>/1/,/1.1/</sup>:

S/N	Parameters	Remarks/changes/revisions
1	Net electricity supplied to the grid by the Project activity in year y (EG <sub>y</sub> ) Unit: MWh (Mega-watt hour)	<p>The description of the parameter is changed to "<i>Net electricity supplied to the grid by the Project activity in year y</i>" which was earlier mentioned as "<i>Net electricity supplied to the grid by the Project</i>" in the registered PDD<sup>/2/</sup>.</p> <p>The source of data is described more correctly and transparently. No change in the source of data occurred as a result of this change and this was verified.</p> <p>Description of measurements methods and procedures to be applied is updated with brief description on calculation of Net electricity supplied to the grid by the Project activity and it refers to section B.7.2 of the revised PDD<sup>/1/,/1.1/</sup> for detailed procedure for calculating the net electricity supplied to the grid.</p> <p>QA/QC procedures to be applied are updated with brief description on QA/QC procedures to be implemented by MSEDCL pursuant to the provisions of the apportioning procedure calculations provided by MSEDCL<sup>/16/</sup>. It also mentions about credit reports<sup>/10/</sup> as cross-check source which will be used for further crosschecking the appropriateness and correctness of the values of Net electricity supplied to the grid by the Project activity considered for the emission reduction calculations for the project activity.</p>

2	<p>Summation of Electricity exported to the grid, as recorded by the main meter at each feeder meters at MSEDCL substation. (<math>\sum EG_{JMR, export}</math>)</p> <p>Unit: MWh (Mega-watt hour)</p>	<p>The revised PDD<sup>17,1.1.17</sup> includes “<i>Summation of Electricity exported to the grid, as recorded by the main meter at each feeder meters at MSEDCL substation.</i>” as separate monitoring parameter in section B.7.1 which was not there in the registered PDD<sup>2/</sup>. This parameter is being used for the calculation of “<i>Net electricity supplied to the grid by the Project activity in year y</i>”, though it is not being directly used in emission reduction calculations for the project activity.</p> <p>The section for measurement method in the parameter table in the revised PDD has been elaborated by mentioning involvement of the main and check meters (Energy meters with accuracy 0.2s) installed at MSEDCL substation and its monthly recording of the electricity exported data. The value of electricity export is jointly noted by officials of Enercon and MSEDCL from the main meter (and check meter) installed at the pooling substation which is managed by Enercon under the jurisdiction of MSEDCL. However it is verified that no change in the monitoring system of the parameter is involved.</p> <p>QA/QC procedures are provided transparently in the parameter tables which include the clarity on the annual calibration procedures and Annex 4 refers to the QA/QC procedures to be applied towards metering arrangements and equipments, inspection and testing of meters. Further, the possibility of the cross check of the main meter reading with the check meter reading was also included. Thus QA/QC procedures for this parameter are appropriately included</p>
3	<p>Summation of electricity imported from the grid, as recorded by the main meter at each feeder meter at MSEDCL substation. (<math>\sum EG_{JMR, import}</math>)</p> <p>Unit: MWh (Mega-watt hour)</p>	<p>The revised PDD<sup>17,1.1.17</sup> includes “<i>Summation of electricity imported from the grid, as recorded by the main meter at each feeder meter at MSEDCL substation.</i>” as a separate monitoring parameter in section B.7.1 which was not there in the registered PDD. This parameter is being used for the calculation of “<i>Net electricity supplied to the grid by the Project activity in year y</i>”, though it is not being directly used in the emission reduction calculations for the project activity.</p> <p>The section for the measurement method in the parameter table in the PDD is elaborated by mentioning involvement of main and check meters (Energy meters with accuracy 0.2s) installed at MSEDCL substation and its monthly recording of the electricity imported data. The value of electricity import is jointly noted by officials of Enercon and MSEDCL from the main meter (and the check meter) installed at the pooling substation which is managed by Enercon under the jurisdiction of MSEDCL. However it is verified that no change in the monitoring system of the parameter is involved.</p> <p>QA/QC procedures are provided transparently in the parameter tables which include the clarity on the annual calibration procedures and Annex 4 refers to the QA/QC procedures to be applied towards metering arrangements and equipments, inspection and testing of meters. Further, the possibility of cross check of main meter reading with check meter reading was also included. Thus QA/QC procedures for this parameter are appropriately included.</p>
4	<p>Summation of total electricity generated from WEGs of the project proponent from individual meters (i.e. WEG controller panel meter) attached to the each</p>	<p>The revised PDD<sup>17,1.1.17</sup> includes “<i>Summation of total electricity generated from WEGs of the project proponent from individual meters (i.e. WEG controller panel meter) attached to the each feeder meter connected to MSEDCL substation</i>” as separate monitoring parameter in section B.7.1 which was not there in the registered PDD. This parameter is being used for the calculation of “<i>Net electricity supplied to the grid by the Project activity in year y</i>”,</p>

	<p>feeder meter connected to MSEDCL substation</p> <p><math>\sum EG_{\text{gross},y}</math> Unit: MWh (Mega-watt hour)</p>	<p>though it is not being directly used in emission reduction calculations for the project activity.</p> <p>The section for measurement method in the parameter table in the PDD is elaborated by mentioning involvement of Central Monitoring System and continuous measurement and monthly recording of the WTG controller data. The PP has mentioned the data recording and archiving procedure transparently, however it was verified that no change in the monitoring system of the parameter is involved.</p> <p>QA/QC procedures are provided transparently in the parameter tables which include the clarity on the calibration procedures regarding the level of control of the PP in the process and self calibrating nature of WTG microcontrollers<sup>/15/</sup>. Further, the PP also clarified that the microcontroller data is under the direct control of the O&amp;M supplier and is shared with the state utility for apportioning of electricity. Thus QA/QC procedures for this parameter are appropriately included.</p>
5	<p>Summation of Electricity exported by the project activity to the grid as recorded at JMR at each feeder at MSEDCL substation (<math>\sum EG_{\text{export}}</math>)</p> <p>Unit: MWh (Mega-watt hour)</p>	<p>The revised PDD<sup>/17/1.17/</sup> includes “<i>Summation of Electricity exported by the project activity to the grid as recorded at JMR at each feeder at MSEDCL substation</i>” as separate monitoring parameter in section B.7.1 which was not there in the registered PDD. This parameter is being used for the calculation of “<i>Net electricity supplied to the grid by the Project activity in year y</i>”, though it is not being directly used in emission reduction calculations for the project activity.</p> <p>This is being calculated for the shared feeder having a common metering system, and the section for the measurement method in the parameter table in the PDD is elaborated by mentioning that the apportioning procedure is involved in order to calculate the parameter “<i>Summation of Electricity exported by the project activity to the grid as recorded at JMR at each feeder at MSEDCL substation</i>” MSEDCL is responsible for this parameter as per the provisions of the apportioning procedure calculations provided by MSEDCL<sup>/16/</sup>. The PP doesn't have any role or control over this procedure as checked and confirmed on-site with Enercon Officials during site visit to the project. However, for dedicated feeders having dedicated meters for the project activity alone, (<math>\sum EG_{\text{export}} = \sum EG_{\text{JMR, export}}</math>).</p> <p>QA/QC procedures are provided more transparently in the parameter tables which include the clarity on the credit reports<sup>/10/</sup> as cross-checking source for the values reported for this parameter which is primarily being sourced from JMR reports<sup>/9/</sup>.</p>
6	<p>Summation of electricity imported by the project activity from the grid as recorded at JMR at each feeder at MSEDCL substation (<math>\sum EG_{\text{import}}</math>)</p> <p>Unit: MWh (Mega-watt hour)</p>	<p>The revised PDD<sup>/17/1.17/</sup> includes “<i>Summation of electricity imported by the project activity from the grid as recorded at JMR at each feeder at MSEDCL substation</i>” as separate monitoring parameter in section B.7.1 which was not there in the registered PDD. This parameter is being used for the calculation of “<i>Net electricity supplied to the grid by the Project activity in year y</i>”, though it is not being directly used in emission reduction calculations for the project activity.</p> <p>This is being calculated for shared feeder having common metering system and section for measurement method in the revised PDD is elaborated by mentioning that the apportioning procedure is involved in order to calculate parameter “<i>Summation of electricity imported by</i></p>

		<p>the project activity from the grid as recorded at JMR at each feeder at MSEDCL substation" and MSEDCL is responsible for the same as per provision of the apportioning procedure calculations provided by MSEDCL<sup>/16/</sup>. The PP doesn't have any role or control over this procedure as checked and confirmed with Enercon Officials during site visit to the project. However, for dedicated feeders having dedicated meters for the project activity alone, <math>(\sum EG_{import}) = \sum EG_{JMR,import}</math>.</p> <p>QA/QC procedures are provided more transparently in the parameter tables which include the clarity on the credit reports<sup>/10/</sup> as cross-checking source for the values reported for this parameter which is primarily being sourced from JMR reports<sup>/9/</sup>.</p>
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### Discussion on CAR/CL:

**CAR #1** was raised to ask the PP to clarify below points;

1. Ex-ante estimated value of net electricity supplied to grid by the project was not mentioned.
2. Recording/measuring frequency is not specified for all monitoring parameters included in section B.7.1 of the revised PDD.
3. Description of measurement methods for parameters  $EG_{JMR,export}$  and  $EG_{JMR,import}$  was found to be ambiguous.
4. Symbols used in section B.7.1 of the PDD for the project is found to be same symbols are used in section B.7.2 where apportioning procedure is explained.
5. For parameter  $EG_{gross,y}$  (n), description of measurement methods mentions "Panel meter (LCS controller) measures the net electricity generation (Gross Export - Gross Import) on continuous basis...".

In response, the PP submitted a revised PDD (version 10 dated 12/04/2013) with ex-ante estimated value of net electricity supplied to grid by the project mentioned and recording/measuring frequency specified for all monitoring parameters included in section B.7.1 of the revised PDD. Also the PP provided an unambiguous description on the measurement method for monitoring parameters  $EG_{JMR,export}$  and  $EG_{JMR,import}$  consistent with the actual monitoring practice being followed at site. The PP used distinct symbols of monitoring parameters in sections B.7.1 and B.7.2 of the PDD as symbols of monitoring parameters used in section B.7.2 of the PDD are specifically used for common meters. Also revised PDD<sup>/17, /1.1/</sup> now clearly indicates that the controllers are capable of measuring only export and not the import. This is found to be appropriate and it is accepted; hence **CAR #1** was closed out.

**CL #2** was raised to ask the PP to clarify the appropriateness of the inclusion of parameter  $\sum EG_{gross,y}$  (m) in section B.7.1 of the revised PDD when it is not in control of the PP to monitor. In response, the PP submitted the revised PDD version 10 dated 12/04/2013 excluding parameter  $\sum EG_{gross,y}$  (m) from section B.7.1 of the revised PDD as data for parameter  $\sum EG_{gross,y}$  (m) is not available to the PP. This is found to be appropriate and it is accepted; hence **CL #2** is closed out.

Detailed discussion on above CAR/CL can be referred in Annex 2 of this validation opinion.

**The proposed changes to the monitoring plan ensures that the level of accuracy and completeness in the monitoring compared with the requirements contained in the registered monitoring plan and it is not reduced as a result of the proposed permanent changes in line with paragraph 263 of VVS version 3.0 (details below).**

The RMP<sup>/17, /1.1/</sup> has been proposed by the PP to provide transparency towards monitoring system and procedures involved in the determination of the parameter "Net electricity supplied to the grid by the Project activity in year y ( $EG_y$ )". It does not involve any alteration of project monitoring equipment nor emission reduction calculation approach in comparison to the registered monitoring plan. The assessment of the changes is discussed below;

1. The monitoring plan of the project activity is updated in line with the actual situation on site by including the schematic metering diagram and consistent units and minor corrections to improve the clarity of the

description under sections B.7.1 and B.7.2 of RMP<sup>/1/,1.1/</sup>. The parameter-wise updates are already covered in the table above under section 4.1.

As verified onsite the proposed change is in accordance to the actual situation on site and summarizes the process involved to arrive at the values of “*Net electricity supplied to the grid by the Project activity in year y (EG<sub>y</sub>)*” for the project activity. The monitoring system is not under the direct control of the PP as the monitoring system is being followed and controlled by state utility (MSEDCL). The source of data for all the relevant parameters still remains the same. Thus, there is no effect on the accuracy of the measurements however; the transparency and completeness of the monitoring system will improve due to the proposed RMP.

2. The PP clarified in the RMP<sup>/1/,1.1/</sup> the level of involvement in the selection of accuracy class & type of meter and the calibration procedures onsite. It was verified that the PP has no control over the process and the same is managed by state utility (MSEDCL).

As verified onsite, the monitoring system is not under the direct control of the PP as the monitoring system is uniform throughout the state and controlled by state utility (MSEDCL). During the site visit assessment, it was observed that energy meters (main and check) were used to measure electricity with a 0.2 accuracy class. The source of data for all the related parameters still remains the same. The state utilities use the available meters with accuracy class of 0.2-0.5% depending upon the availability during any new feeder installations and/or replacements due to any reasons. The above accuracy limits are in compliance to the grid standards which are set by The Gazette of India (Registered NO. DL (N) – 04/0007/2003 – 15) dated 26/07/2010<sup>/11/</sup> and the PPA signed by the PP with the state utility. Also calibration frequency is mentioned as annual and appropriateness of the same is further crosschecked with CEA Notification No. 502/70/CEA/DP&D dated 17/03/2006<sup>/14/</sup> which is considered as national standard mentions that “*All interface meters shall be tested at least once in five years.*” Hence annual calibration frequency considered for the project activity is found to be conservative. Keeping in view of the transparency and completeness of the monitoring system, this is why RMP is proposed.

3. Also in general, QA/QC procedures are provided more transparently in the parameter tables which include clarity on the calibration procedures regarding the level of control of the PP in the calibration process, and the state utility. Further, the data reporting procedures were described more transparently so that the electricity data can be traced from various sources.
4. Section B.7.2 of the revised PDD<sup>/1/,1.1/</sup> proposing the revised monitoring plan includes a detailed description of the monitoring system and apportioning procedure to be followed at site to calculate “*Net electricity supplied to the grid by the Project activity in year y, EG<sub>y</sub>*” along with diagram indicating monitoring locations involved for the project activity. Electricity exported and imported by the project activity is being measured “hourly” at two numbers of 33 kV feeders (bays) specifically for feeders 5 and 6. As feeder 4 is being shared between the WTGs owned by the PP of CDM project activity (2819) and other project promoters, the electricity exported and imported by the project activity is being apportioned based on the measured electricity generation by the project activity (being measured at WTGs controllers) and the electricity generation by WTGs owned by other project promoters connected to feeder 4. The metering system for the project activity consists of one main meter and one check meter each at all three 33 kV feeders (bays) located at a metering yard owned by MSEDCL. Out of the three feeders (i.e. feeder 4, 5 and 6), feeder 4 meter is shared between the Project Participant and another customer; hence the apportioning procedure is being carried out for the determination of electricity exported and electricity imported by the project activity through feeder 4. This is found to be as per procedure being followed by MSEDCL (power purchasing utility) and the same (electricity exported and electricity imported) is being recorded monthly in the JMRs. The apportioning procedure is a two step measurement procedure; the first metering is at the controller of the WTG and second at the metering system in the 33 kV yard (i.e. feeder 4 meter). The value of the total export and total import of feeder 4 meter in the 33 kV yard is apportioned based on the fraction of electricity generated at the controller by the project activity WTGs connected to feeder 4 meter with respect to the total electricity generated at the controller by all WTGs connected to feeder 4 meter (includes WTGs of project activity and WTGs of another customer connected to feeder 4). The formulae of the apportioning have been clearly mentioned in section B.7.2 of the revised PDD<sup>/1/,1.1/</sup>. This was checked and verified during the verification site visit to the project activity and it is found to be appropriate. Further, it is noted that the sharing of any feeder among various WTGs is a power evacuation arrangement being done with MSEDCL based on the load carrying capacity of the transmission lines and the combination may change in the future as well. The



feeder 5 meter and feeder 6 meter involves only the project activity WTGs, hence apportioning is not required for WTGs connected feeder 5 and feeder 6 in current situation. All meters involved in the project activity monitors electricity continuously and same is recorded monthly. Section B.7.2 of the revised PDD<sup>/1/,1.1/</sup> includes above detailed description on the actual monitoring system for the purpose of more transparency.

5. Also it is understood that in order to demonstrate the apportioning procedure, the parameter *"The summation of total Electricity generated (recorded at controller panel meter) from the non-project activity WEGs (total number of WEGs = m) attached to the common MSEDCL feeder meter connected to substation"* needs to be monitored which is not in control of the PP; hence the PP is unable to calculate E<sub>G</sub> using the apportioning procedure. However, the values of Net electricity supplied to the grid by the Project are directly being sourced from the JMR Report along with break-up reports prepared and issued by the state utility i.e. MSEDCL which can be further crosschecked with the credit reports; hence accuracy and conservativeness can be assured.
6. Also section B.7.2 of the revised PDD<sup>/1/,1.1/</sup> includes the description on procedures to be followed in case the monitoring equipment fails. Annex 4 of the revised PDD<sup>/1/,1.1/</sup> includes information on the self calibrating nature of the WTG controllers as well as metering arrangements. This is again to bring more transparency in the proposed monitoring plan and it has no impact on the accuracy of emission reductions being calculated for the project activity.

#### Discussion on CAR/CL:

**CAR #3** was raised to ask the PP to clarify below points;

1. The meter serial numbers mentioned in the diagram for monitoring locations included in section B.7.2 of the revised PDD were found to be inconsistent with the serial numbers noted during the site visit to the project activity.
2. Section B.7.2 and Annex 4 of the revised PDD mention meter accuracy class as 0.4%.
3. Section B.7.2 of the PDD mentions *"Since the baseline methodology is based on ex ante determination of the baseline, the monitoring of operating margin emission factor and build margin emission factor is not required."* Sentence is found ambiguous.
4. Section B.7.2 of the revised PDD doesn't indicate the relation between  $EG_{JMR,export}$  and  $EG_{JMR,import}$  with  $EG_{export}$  and  $EG_{import}$  for feeders where dedicated meters are involved.

In response, the PP submitted the revised PDD version 10 dated 12/04/2013 with correct accuracy class mentioned as 0.2s and the meter serial numbers removed from diagram as serial numbers can change anytime. Also the PP revised ambiguous sentence in section B.7.2 as *"Emission factor for the project activity as mentioned in registered PDD was determined ex-ante, which is fixed throughout the crediting period of project activity"* and sentence is now quite clear. Also section B.7.2 of the PDD clearly indicates that for dedicated feeders,  $EG_{JMR,export} = EG_{export}$  and  $EG_{JMR,import} = EG_{import}$ . This is found to be appropriate and it is accepted; hence **CAR #3** was closed out.

**CL #4** was raised to ask the PP to check validity of the web-link provided for CEA database version 1.1 used for determination of combined margin emission factor at the time of validation<sup>/4/</sup> of the project activity. In response, the PP provided the valid web-link for CEA database version 1.1; hence this is accepted. Thus **CL #4** is closed out.

Detailed discussion on above CAR/CL can be referred in Annex 2 of this validation opinion.

#### The proposed changes to the monitoring plan are in accordance with the approved monitoring methodology applicable to the project activity (details below).

This permanent change to registered monitoring plan improves the accuracy of information provided and consistency in the registered PDD<sup>/2/</sup> and the monitoring plan<sup>/2/</sup>.

The proposed revision of the monitoring plan<sup>/1/,1.1/</sup> is verified to be in accordance with the approved monitoring methodology applicable to the project activity. Section III of the applied methodology ACM0002 version 09<sup>/4/</sup> applies which requires the *"Electricity supplied by the project activity to the grid"*. The project activity generates electricity using wind turbines and the proposed RMP is making the monitoring approach of this parameter transparent and simple to understand for a reader. It has been further ensured that there

will be no effect by the revision in monitoring plan on the original chosen baseline mentioned in the registered PDD<sup>/2/</sup> and it will remain same.

### **Possible impacts on emission reduction calculations due to change in monitoring plan:**

The “*net electricity supplied to the grid by the Project activity in year y (EG<sub>y</sub>)*” which is fed to the grid represents the realistic quantity of carbon intensive electricity being displaced from the grid system generation mix. Thus the accounting of EG<sub>y</sub> provides the most accurate and conservative determination of emission reduction calculation for a grid connected renewable energy power plant like as in the current project activity. The meters installed to measure electricity generated/exported/imported and hence determine EG<sub>y</sub> are sealed and maintained (tested & calibrated) by the grid authorities only and the project participant does not have any intervention on that procedure.

As per the electricity monitoring system observed in grid connected renewable energy projects the entire generated electricity is being evacuated to the grid after deducting import from the grid. The electricity monitoring is governed by the Terms and Conditions as mentioned in the PPA, signed with the respective state utilities. As commonly observed, the parameter EG<sub>y</sub> is being monitored through a set of energy meters installed at the grid interface in different arrangements depending upon the state where the WTGs are installed. These energy meters are owned and under control of state electricity authority. As per the conditions of the PPA project participants can not intervene into this metering process. The value of EG<sub>y</sub> is verified from the JMR Reports<sup>/9/</sup> issued by the state utilities (which is as per the registered PDD) and can be cross checked with credit reports<sup>/10/</sup> issued to the PP by the state utility towards the values of EG<sub>y</sub>. Thus, the determination approach of EG<sub>y</sub> is found to be correct, authentic and conservative; hence it is accepted.

It is clear from the above description that the baseline of the project activity would still remain the same. Hence there will be no change in emission reduction calculation due to change in monitoring plan.

The rest of the project details remain the same as mentioned in the registered PDD available at the UNFCCC website <http://cdm.unfccc.int/Projects/DB/DNV-CUK1249024361.28/view>. The revised monitoring plan is being submitted with the revised validation opinion.

Thus, the proposed revision improves the transparency of information provided in the registered PDD and makes the monitoring plan consistent with the actual situation on site.

### **Corrections in the registered PDD:**

During the assessment of proposed changes to registered monitoring plan, the validation assessment team found a number of corrections required in the registered PDD. **CL #5** was raised in this regard to ask the PP to clarify the appropriateness of the range of co-ordinates mentioned in section A.4.1.4 of the registered PDD. Also the format of the geo-coordinates was not clear. In response, the PP submitted the revised PDD version 10 dated 12/04/2013 with a corrected range of geo-coordinates mentioned and format of geo-coordinates as Deg Min Sec. Also the PP corrected font type in Annex 1 of the PDD to be in line with PDD template requirements. Also “-“sign removed from the value of combined margin emission factor which was mistakenly mentioned in section B.6.3 of the registered PDD. These corrections are found to be in line with types of corrections specified in paragraph 1 of Appendix 1 of the Project Standard version 2.1<sup>/7/</sup> that do not affect the design of the project activity and they do not require prior approval by the Board. Also as per paragraph 258 of VVS version 3.0<sup>/6/</sup>, the corrected information is an accurate reflection of actual project information. Hence, this is in line with the requirements of paragraphs 257-259 of VVS version 3.0 hence, it is accepted. Thus **CL #5** is closed out.

## **4.2 Findings of Previous Verification Reports**

As already stated above in section 4.1 of this validation opinion, the revised monitoring plan proposed by the PP is a result of FAR #5 raised during the second periodic verification<sup>/5/</sup> of the project activity. The sole objective of the proposed revision in registered monitoring plan is to bring more transparency and clarity with respect to the actual monitoring system being followed at project site and the PP's control over the monitoring process with that of the state utilities.

However, as already explained above in section 4.1 of this validation opinion, the PP will source the values of parameters *“Net electricity supplied to the grid by the Project activity in year y ( $EG_y$ )”* from JMR Reports as the PP does not have control of the monitoring of all parameters required for the apportioning procedure. The values of  $EG_y$  will be further crosschecked with the credit reports. This approach has been followed during the previous two verifications of the project activity; hence there is no impact of proposed revised monitoring plan on CERs being issued during earlier verifications of the project activity.

The proposed revised monitoring plan (after EB approval) will apply to project from third monitoring period onwards.



## 5. List of Persons Interviewed

Date of site visit	Name	Position	Short description of subject discussed
07/03/2013	Mr. Sandeep Pipaliya	Tata Power Company Limited (Representative of Project Participant)	CDM monitoring & reporting documentation Quality Assurance – Management and operating system. Verification of monitoring and data handling procedure (reporting, recording and data archiving)
07/03/2013	Mr. Liagi Tabyo  Mr. Bhushan Jagtap	Tata Power Company Limited (Representative of Project Participant)  Wind World Indian Limited (Representative of EPC Contractor)	<ul style="list-style-type: none"> <li>Monitoring and measuring system</li> <li>Collection of measurements</li> <li>Observations of established practices</li> <li>Data Verification of monitoring parameters</li> </ul>
07/03/2013	Mr. Liagi Tabyo  Mr. Bhushan Jagtap	Tata Power Company Limited (Representative of Project Participant)  Wind World Indian Limited (Representative of EPC Contractor)	Confirmation on data collection and handling procedures. Revision in Monitoring Plan. CDM monitoring & reporting documentation Quality Assurance – Management and operating system. Verification of monitoring and data handling procedure (reporting, recording and data archiving)

## 6. Document References

Category 1 Documents (documents provided by the Client that relate directly to the GHG components of the project, (i.e. the CDM Project Design Document, confirmation by the host Party on contribution to sustainable development and written approval of voluntary participation from the designated national authority):

- /1/ Revised PDD version 10 dated 12/04/2013- Clean mode
- /1.1/ Revised PDD version 10 dated 12/04/2013 – track change mode
- /1.2/ Revised PDD version 09 dated 25/03/2013 – track change mode
- /1.3/ Revised PDD version 08 dated 07/03/2013 – track change mode

Category 2 Documents (background documents used to check project assumptions and confirm the validity of information given in the Category 1 documents and in validation interviews):

- /2/ Registered PDD Version 07 dated 03/03/2010,  
<http://cdm.unfccc.int/Projects/DB/DNV-CUK1249024361.28/view>
- /3/ Project Webpage: Validation Report (Report No. 2007-1053, revision 5 dated 06/07/2006  
<http://cdm.unfccc.int/Projects/DB/DNV-CUK1249024361.28/view>
- /4/ Applied Methodology, ACM0002, version 09 valid from 27/02/2009  
<http://cdm.unfccc.int/methodologies/DB/C505BVV9P8VSNNV3LTK1BP3OR24Y5L>
- /5/ Project Webpage: <http://cdm.unfccc.int/Projects/DB/DNV-CUK1249024361.28/view>  
First Verification Report version 01 dated 13/10/2011  
Second Verification Report version 05 dated 18/01/2013
- /6/ Clean Development Mechanism Validation and Verification Standard version 03.0  
[http://cdm.unfccc.int/Reference/Standards/accr\\_stan02.pdf](http://cdm.unfccc.int/Reference/Standards/accr_stan02.pdf)
- /7/ Clean Development Mechanism Project Standard version 02.1  
[http://cdm.unfccc.int/Reference/Standards/pp/pp\\_stan01.pdf](http://cdm.unfccc.int/Reference/Standards/pp/pp_stan01.pdf)
- /8/ Clean Development Mechanism Project Cycle Procedure version 03.2  
[http://cdm.unfccc.int/Reference/Procedures/index.html#proj\\_cycle](http://cdm.unfccc.int/Reference/Procedures/index.html#proj_cycle)
- /9/ Sample Joint Meter Readings Reports for the month of Jan 2012
- /10/ Sample Credit Reports issued by MSEDCL to project participant for the month of Jan 2012
- /11/ The Gazette of India (Registered NO. DL (N) – 04/0007/2003 – 15) dated 26/07/2010 (page 10)
- /12/ Commissioning Certificates for the project activity for all WTGs involved in the project activity commissioning on dated 10/03/2007, 22/03/2007, 29/03/2007, 31/03/2007, 10/04/2007, 07/05/2007, 30/11/2007 and 15/12/2007
- /13/ ISO 9001: 2008 Certificate (Ref. QS-898HH) dated 08/02/2010
- /14/ CEA Notification No. 502/70/CEA/DP&D dated 17/03/2006  
[http://www.cea.nic.in/reports/regulation/meter\\_reg.pdf](http://www.cea.nic.in/reports/regulation/meter_reg.pdf)
- /15/ Letter of declaration from Enercon (India) Limited dated 10/08/2010 mentioning about self calibrating nature of the WTG controllers
- /16/ Apportioning Procedure calculations provided by MSEDCL

Sr. No.	PDD Revision	Date of Revision	Main Changes reason of Revision
1	Revised PDD version 08	07/03/2013	First version of revised PDD with proposed changes to monitoring plan submitted for the project activity by project participant.
2	Revised PDD version 09	25/03/2013	<ul style="list-style-type: none"> <li>• Ex-ante estimated value of Net electricity supplied to grid by the project is mentioned through CAR #1.</li> <li>• Recording/measuring frequency is specified for all monitoring parameters included in section B.7.1 of the revised PDD through CAR #1.</li> <li>• Section B.7.1 of the revised PDD excluded the parameter <math>\sum EG_{gross,y}</math> which is electricity generation by all WTGs of other customers connected at common MSEDCL meter at feeder measured at respective WTG controllers through CL #2.</li> <li>• Meter serial numbers removed from diagram indicating monitoring locations included in section B.7.2 through CAR #3.</li> <li>• Accuracy class is correctly mentioned as 0.2s throughout PDD through CAR #3.</li> </ul>
3	Revised PDD version 10	12/04/2013	<ul style="list-style-type: none"> <li>• Description of measurement method mentioned for parameter <math>EG_{JMR,export}</math> and <math>EG_{JMR,import}</math> has been revised to provide more clarity through CAR #1.</li> <li>• Symbols used in section B.7.1 of PDD has been corrected to remove inconsistency with the symbols used in section B.7.2 where apportioning procedure is explained through CAR #1.</li> <li>• LCS meter records only export values, accordingly correction has been made for the parameter <math>EG_{gross,y} (n)</math> through CAR #1.</li> <li>• Section B.7.2 of the PDD clearly indicates that for dedicated feeders, <math>EG_{JMR,export} = EG_{export}</math> and <math>EG_{JMR,import} = EG_{import}</math> through CAR #3.</li> <li>• CEA web-link is corrected in throughout the PDD through CL #4.</li> <li>• The PP corrected the range of geo-coordinates in section A.4.1.4. Also format of geo-coordinates is mentioned as Deg Min Sec. This is found to be appropriate and it is accepted through CL #5.</li> <li>• Font type of contact information of 'Other Party Involved' under Annex 1 is changed to Times New Roman 11 through CL #5.</li> <li>• Under section B.6.3, minus sign has been removed which was mentioned mistakenly prior to the value of Baseline Emission Factor (940.22 tCO<sub>2</sub>e/GWh) through CL #5.</li> </ul>



## Annex 1: Validation Protocols

Checklist Question	Reference	MoV*	Comments	Conclusion/ CARs/CLs
<b>A.1. General Requirements</b>				
A.1.1. Is the deviation/revision in the monitoring plan based on a decision by the CDM EB	Project Cycle Procedure Version 3.2	DR	No, The revision in the monitoring plan is not based on a decision by the CDM EB.	OK
A.1.2. Is the deviation/revision based on a decision by CDM EB but also additional revisions are proposed by the PP/DOE	Project Cycle Procedure Version 3.2	DR	The revision in the monitoring plan is not based on a decision by the CDM EB. It is proposed by the PP/DOE based on the gap in the registered PDD with respect to actual monitoring system implemented on site.	OK
A.1.3. Is the need for deviation/revision in monitoring plan spotted during the first monitoring period?	Project Cycle Procedure Version 3.2 Project page on UNFCCC website	DR	NO, the RMP was identified during second verification of the project by the PP/DOE.	OK
A.1.4. Is the revised monitoring plan complete and does the revised monitoring plan follow the registered PDD template?	Registered PDD, Revised monitoring plan in the form of revised PDD	DR	The revised monitoring plan follows the registered PDD template i.e. F-CDM-PDD version 3.0.	OK

A.1.5. Has the revised monitoring plan been submitted in track change mode for each of the revision point (issue)?	Revised monitoring plan in the form of revised PDD	DR	Yes. The revised monitoring plan has been submitted by the PP in track change mode for each of the revision point (issue).	OK
A.1.6. is there an objective evidence for each of the proposed revision/deviation points (issue)?	Document review		The RMP is based on the monthly JMR provided by SEB, data available with the O & M supplier as well as onsite verification of the actual monitoring system implemented onsite.	OK
A.1.7. Does the revised monitoring plan also include the Annex 4 (Annex 5 (VVS)) ?	Registered PDD	DR	Yes, the Annex 4 from the PDD was revised and is updated in the RMP in accordance to revised section B.7.	OK
A.1.8. Does the revised monitoring plan lead/associate to any kind of change in the project registered design?	Project Cycle Procedure Version 3.2, Registered PDD	DR	The proposed revision in the monitoring plan was checked against EB 70 annex 04. The revised monitoring plan does not lead to any kind of change in the project registered design while revising the monitoring plan of the registered PDD.	OK
<b>A.2. Data and Parameters Monitored</b>				
A.2.1. Does the revised monitoring plan in the PDD comply with the approved methodology provided for the collection and archiving of all relevant data necessary for estimation or measuring the emission reductions within the project boundary during the crediting period?	VVS version 3.0 para 132 Revised PDD Section B.7	DR	<p>The revised monitoring plan has been found to be in compliance with the approved methodology ACM0002 Version 09 used for the project. The monitoring plan now includes transparently all necessary parameters and has been clearly described.</p> <p>Implementation of the revised monitoring plan will make the monitoring process more transparent and accurate. This has been confirmed by reviewing the revised monitoring plan and interviewing relevant site personnel during the site visit. The arrangements described in the monitoring plan are found to be feasible within the project design. The process of collection and archiving of all relevant data necessary for estimation or measuring the emission reductions within the project boundary are found to be satisfactory. The parameters introduced as a part of the revised monitoring plan have been described in detail in revised section B.7 of the revised PDD.</p>	OK

A.2.2. Are the changes in the monitoring plan inline to the applied methodology and tool?	ACM0002 Version 09	DR	The changes in the monitoring plan are in line with the approved monitoring methodology ACM0002 Version 09 which was used in the registered PDD. As per the applied methodology ACM0002 Version 09 "Baseline emissions include only CO2 emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity". The requirement is duly fulfilled. Thus the RMP is in line with the methodology requirement.	OK
A.2.3. Are the changes affecting the ER calculation (directly/indirectly)?	Revised PDD	DR	As in the registered PDD, the amount of emission reductions will depend on the electricity values on the monthly JMR issued by the respective SEBs where the WTGs are located. The RMP was undertaken to transparently describe the procedures describing how these values are determined.  The addition of the new parameter to calculate the parameter <b>EG<sub>y</sub></b> which is also used for the ER calculations makes the monitoring plan transparent; complete and reflects the actual procedure being followed on the site. Changes do not affect the ER calculation in anyway.	OK
A.2.4. Is the information given for each monitoring variable by the presented table sufficient to ensure the verification of a proper implementation of the monitoring plan?	PDD (VVM) Section-B.7 PDD (VVS) Section B.7	DR	The proposed revisions in monitoring plan are reflected in table under section B.7.2, the parameters related to this revision are in compliance with the sufficiency of information describing the intentions of the project participants and is detailed enough to assess the appropriateness. The revision is aimed to make the parameter <b>EG<sub>y</sub></b> more transparent and clear. An Ex-ante value is not mentioned for Net electricity supplied to grid by the project. Also recording/measuring frequency isn't specified for all monitoring parameters; thus CAR #1 was raised. In response, the PP submitted revised PDD and it is accepted. Parameter $\sum EG_{gross,y}$ (m) is included in section B.7.1 of the PDD when it is not in control of the project proponent. Thus CL #2 is raised. In response, the PP submitted revised PDD with exclusion of this parameter from section B.7.1; hence accepted.	CAR #1 Y CAR #1 is closed out.  CL #2 Y CL #2 is closed out.
A.2.5. Has there been an issuance with the original monitoring plan of the registered PDD in the past?  A.2.6. if so how did the identified gaps effect the ER calculations for the monitoring periods in the past?	Project page on UNFCCC website	DR	Yes, during first verification 86,957 CERs are issued from the project activity and in second verification 77,682 CERs are issued.  Emission reduction is calculated based on the <b>EG<sub>y</sub></b> and RMP is sought for transparency in calculation of <b>EG<sub>y</sub></b> . In registered PDD parameter used for calculation are not mentioned hence RMP is sought to add parameter which will add more transparency for the emission reduction calculation. However, there is no impact on the emission reduction.	OK

A.2.7. Is the information given for each monitoring variable by the presented table sufficient to ensure the delivery of high quality data free of potential for biases or intended or unintended changes in data records?	PDD (VVM) Section-B.7 PDD (VVS) Section B.7	DR	All the information like the type of meters, accuracy class of the meters and frequency of calibration are clearly mentioned in the revised monitoring plan. Same has been checked by the assessment team and found correct. Diagram included in section B.7.2 of the PDD is indicating wrong serial numbers, thus CAR #3 is raised. In response, the PP submitted revised PDD ; hence accepted.	CAR #3 Y CAR #3 is closed out.
A.2.8. Is the monitoring approach in line with current good practice, i.e. will it deliver data in a reliable and reasonably acceptable accuracy?	PDD (VVM) Section-B.7 PDD (VVS) Section B.7	DR	Yes, the monitoring approach in line with current good practice, i.e. will it deliver data in a reliable and reasonably acceptable accuracy. All the information like the type of meters, accuracy class of the meters and frequency of calibration are clearly mentioned in the revised monitoring plan. Same has been checked by the assessment team and found correct.	OK
A.2.9. Are all formulae used to determine project emission clearly indicated and in compliance with the monitoring methodology.	PDD (VVM) Section-B.7 PDD (VVS) Section B.7	DR	No project emissions are envisaged in the project activity and this component is not included in the registered PDD.	OK
<b>A.3. Quality Control (QC) and Quality Assurance (QA) Procedures</b>				
A.3.1. Is the selection of data undergoing quality control and quality assurance procedures complete?	VVS version 3.0 para 94/132	DR	Yes the selection of data undergoing quality control and quality assurance procedures as described in section B.7 of the RMP. The means of implementation of the proposed monitoring plan, including the data management and quality assurance, are sufficient to ensure that the emission reductions achieved by/resulting from the registered CDM project activity can be reported ex post and verified. This can also be verified from the multiple meters involved in the monitoring also involving multiple parties involved in the monitoring and billing process.	OK

A.3.2. in case, post registration changes are proposed, the impact of the changes should be assessed and it not result in reduced level of accuracy and completeness in the monitoring and verification process	VVS version 3.0 para 253, 259, 266, 280 (a)		Possible impacts of changes are assessed and described in section 4.1 of the report.	OK
A.3.3. Are quality control procedures and quality assurance procedures sufficiently described to ensure the delivery of high quality data?	VVS version 3.0 para 132	DR	Yes quality control procedures and quality assurance procedures sufficiently described in RMP.	OK
A.3.4. Is it ensured that data will be bound to national or internal reference standards?	VVS version 3.0 para 94	DR	The monitoring data will be clearly reproducible and comparable and will not be dependent on site-specific adjustments.	OK
<b>A.4. Operational and Management Structure</b>				
A.4.1. Is the authority and responsibility of project management clearly described?	PDD (VVM) Section B.7.2/Annex 4 PDD (VVS) Section B.7 and Annex 5	DR	Yes. The responsibility of the project management remains unchanged as compared to the registered PDD.	OK
A.4.2. Is the authority and responsibility for registration, monitoring, measurement and reporting clearly described?	PDD (VVM) Section B.7.2/Annex 4 PDD (VVS) Section B.7 and Annex 5	DR	Authority and responsibility for registration, monitoring, measurement and reporting clearly described in section A.4.1 above.	OK
<b>A.5. Monitoring Plan (Annex 4) (Annex 5 (VVS))</b>				



A.5.1. Does the monitoring plan completely describe all measures to be implemented for monitoring all parameter required, including measures to be implemented for ensuring data quality?	VVS version 3.0 para 133 b	DR	The monitoring plan has been completely described in the section B.7 and information for all monitoring parameters have been explained in the revised monitoring plan.	OK
A.5.2. Does the monitoring plan provide information on monitoring equipment and respective positioning in order to safeguard a proper installation?	VVS version 3.0 para 133 b	DR	The PP has provided a line diagram indicating the metering points in section B.7.2 of the RMP which is consistent with the actual situation at the site.	OK
A.5.3. Is there any change proposed in the specifications of the monitoring equipment or their positioning or installation then the impact of the change due to revision should be assessed and it not result in reduced level of accuracy and completeness in the monitoring and verification process	VVS version 3.0 para 253, 259 ,266, 280 (a)		There are the below changes proposed in the specifications of the monitoring equipment or their positioning or installation.  The meter accuracy class is corrected to 0.2 % from 0.5% as the meter selection is completely dependent on the state utility and the meter availability from time to time. This was verified onsite from the O & M personnel as well as the state utility personnel onsite.  The meter positions were not appropriately covered in the registered PDD and was not in line with the actual site scenario, the same was made consistent in the RMP with the actual site visit scenario. This was verified onsite by the assessment team.	OK
A.5.4. Are procedures identified for calibration of monitoring equipment?	VVS version 3.0 para 133 a-c	DR	Yes. Procedures for calibration of monitoring equipment have been identified and the calibration is kept as annual for all the sub-bundles, however, as described in the RMP is also under the purview of the state utilities. This was verified onsite from the O & M personnel as well as the state utility personnel onsite.	OK

A.5.5. Is there any change proposed in the calibration procedures, if yes then the impact of the change due to post registration changes should not result in reduced level of accuracy and completeness in the monitoring and verification process	VVS version 3.0 para 253, 259 ,266, 280 (a)		Please refer to section A.5.4 above.	OK
A.5.6. Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)	VVS version 3.0 para 133 a-c	DR	The procedures for day-to-day records handling have been identified and covered under section B.7 of the RMP.	OK
A.5.7. Are procedures identified for project performance reviews before data is submitted for verification, internally or externally?	VVS version 3.0 para 133 a-c	DR	Organizational structure and roles and responsibilities are clearly described in section B.7.2 of the PDD.	OK

## Annex 2: Overview of Findings

### Findings Overview Summary

	CARs	CLs	FARs
Total Number raised	02	03	-

Date:	09/03/2013	Raised by:	Assessment Team		
Type:	CAR	Number:	01	Reference:	Section B.7.1
Lead Assessor Comment:			Date: 09/03/2013		
The PP is requested to clarify why ex-ante estimated value of Net electricity supplied to grid by the project is not mentioned.					
The PP needs to clarify why recording/measuring frequency is not specified for all monitoring parameters included in section B.7.1 of the revised PDD.					
Project Participant Response:			Date: 15/03/2013		
Ex-ante estimated value of Net electricity supplied to grid by the project has been mentioned.					
Further recording/ measuring frequency has been specified for all monitoring parameters included in section B.7.1 of revised PDD.					
Documentation Provided as Evidence by Project Participant:					
Revised PDD.					
Information Verified by Lead Assessor:					
Revised PDD version 09 dated 25/03/2013 is checked for appropriateness of ex-ante estimated values mentioned in section B.7.1 of the revised PDD. Also revised PDD version 09 dated 25/03/2013 is checked for appropriateness of recording/measuring frequency is specified for all monitoring parameters included in section B.7.1.					
Reasoning for not Acceptance or Acceptance and Close Out:			Date: 02/04/2013 Reopen: 10/04/2013		
Section B.7.1 of the revised PDD version 09 dated 25/03/2013 now mentions ex-ante estimated value for monitoring parameter “Net electricity supplied to grid by the project activity in year y”. This is found to be appropriate and it is accepted.					
Section B.7.1 of the revised PDD version 09 dated 25/03/2013 now includes recording/measuring frequency for all monitoring parameters. This is found to be appropriate and it is accepted.					
The PP is requested to clarify the appropriateness of description of measurement method mentioned for parameter EG <sub>JMR,export</sub> and EG <sub>JMR,import</sub> .					
The PP is requested clarify the inconsistency observed in symbols used in section B.7.1 of the PDD for the project whereas it is found that same symbols are used in section B.7.2 where apportioning procedure is explained.					
Also for parameter EG <sub>gross,y</sub> (n), description of measurement methods mentions “Panel meter (LCS controller) measures the net electricity generation (Gross Export - Gross Import) on continuous basis.....”. Please clarify if controllers of the WTGs are capable of measuring import as well.					
Thus CAR #1 is open.					
Project Participant Response:			Date: 12/04/2013		
Description of measurement method mentioned for parameter EG <sub>JMR,export</sub> and EG <sub>JMR,import</sub> has been revised to provide more clarity.					
Symbols used in section B.7.1 of PDD has been corrected to remove inconsistency with the symbols used in section B.7.2 where apportioning procedure is explained.					
We would like to submit to DOE that Since LCS meter records only export values, accordingly correction has been made for the parameter EG <sub>gross,y</sub> (n)					

<b>Documentation Provided as Evidence by Project Participant:</b>					
Revised PDD version 10.0.					
<b>Information Verified by Lead Assessor:</b>					
Revised PDD version 10 dated 12/04/2013 is checked for appropriateness of correction made in line with above raised queries.					
<b>Reasoning for not Acceptance or Acceptance and Close Out:</b>				<b>Date:</b> 12/04/2013	
Revised PDD version 10 dated 12/04/2013 now includes more transparent description on measurement method for parameters $EG_{JMR,export}$ and $EG_{JMR,import}$ consistent with actual practice being followed on site. This is found to be appropriate and it is accepted.					
The PP now used distinct symbols of the monitoring parameters in section B.7.1 and B.7.2 of the PDD as symbols being used in section B.7.2 of the PDD is specifically shared feeders where common metering system is in place. This is found to be appropriate and it is accepted.					
For parameter $EG_{gross,y}$ (n), description of measurement methods, sentence revised to mention only export and not import. This is accepted based on the fact that controllers are capable of measuring export and not the import by WTGs.					
Thus CAR #1 is closed out.					
<b>Acceptance and Close out by Lead Assessor:</b>				<b>Date:</b> 12/04/2013	

<b>Date:</b>	09/03/2013		<b>Raised by:</b>	Assessment Team		
<b>Type:</b>	CL	<b>Number:</b>	02	<b>Reference:</b>	Section B.7.1	
<b>Lead Assessor Comment:</b>				<b>Date:</b> 09/03/2013		
Section B.7.2 of the revised PDD mentions that the monitoring of parameter $\sum EG_{gross,y}$ (m) is not in control of the project proponent. Then the PP is requested to clarify why it is included in section B.7.1 of the revised PDD.						
<b>Project Participant Response:</b>				<b>Date:</b> 15/03/2013		
Since the parameter $\sum EG_{gross,y}$ is not in control of project proponent, same has been removed from the section B.7.1 of revised PDD.						
<b>Documentation Provided as Evidence by Project Participant:</b>						
Revised PDD.						
<b>Information Verified by Lead Assessor:</b>						
Revised PDD version 09 dated 25/03/2013 is checked for appropriateness of inclusion of parameter $\sum EG_{gross,y}$ in section B.7.1.						
<b>Reasoning for not Acceptance or Acceptance and Close Out:</b>				<b>Date:</b> 02/04/2013		
Section B.7.1 of the revised PDD now excludes the parameter $\sum EG_{gross,y}$ which is electricity generation by all WTGs of other customers connected at common MSEDCL meter at feeder measured at respective WTG controllers. The PP do not have any access or control on this data; hence it is concluded that the PP is unable to monitor this parameter, thus excluded. This is found to be appropriate and it is accepted.						
Thus CL #2 is closed out.						
<b>Acceptance and Close out by Lead Assessor:</b>				<b>Date:</b> 02/04/2013		

Date:	09/03/2013	Raised by:	Assessment Team		
Type:	CAR	Number:	03	Reference:	Section B.7.2
Lead Assessor Comment:			Date: 09/03/2013		
Section B.7.2 of the revised PDD includes meter serial numbers of main and check meters for all three feeders 4, 5 and 6 which are found to be inconsistent with the serial numbers noted during site visit to the project activity.					
Section B.7.2 and Annex 4 of the revised PDD mention meter accuracy class as 0.4%. Please clarify the appropriate of the same.					
Project Participant Response:			Date: 15/03/2013		
Meter Serial of newly installed main and check meters for three feeders 4,5 & 6 has been corrected in revised PDD					
Documentation Provided as Evidence by Project Participant:					
Revised PDD.					
Information Verified by Lead Assessor:					
Revised PDD version 09 dated 25/03/2013 is checked for appropriateness of serial numbers included in diagram indicating monitoring locations for the project activity in section B.7.2.					
Reasoning for not Acceptance or Acceptance and Close Out:			Date: 02/04/2013 Reopen: 10/04/2013		
Diagram indicating monitoring locations included in section B.7.2 of the revised PDD version 09 dated 25/03/2013 doesn't includes specific serial numbers, but it indicates all monitoring location through single line diagram. This is accepted as meters can be replaced anytime in future due to meter failure or any other regulatory requirement.					
Section B.7.2 and Annex 4 of the revised PDD version 09 dated 25/03/2013 now correctly mentions accuracy class as 0.2. This is found to be appropriate and consistent with the site visit observations made; hence accepted.					
Section B.7.2 of the revised PDD mentions "Since the baseline methodology is based on ex ante determination of the baseline, the monitoring of operating margin emission factor and build margin emission factor is not required." Please clarify the appropriateness of the sentence mentioned.					
Section B.7.2 of the revised PDD doesn't indicate the relation between $EG_{JMR,export}$ and $EG_{JMR,import}$ with $EG_{export}$ and $EG_{import}$ for feeders where dedicated meters are involved.					
Thus CAR #3 is open.					
Project Participant Response:			Date: 12/04/2013		
As per DOE comment sentence under section B.7.2 has been corrected to provide more clarity.					
Documentation Provided as Evidence by Project Participant:					
Revised PDD version 10.0.					
Information Verified by Lead Assessor:					
Revised PDD version 10 dated 12/04/2013 is checked for appropriateness of sentence revised in section B.7.2 of the PDD.					
Reasoning for not Acceptance or Acceptance and Close Out:			Date: 10/04/2013		
Sentence is revised as "Emission factor for the project activity as mentioned in registered PDD was determined ex-ante, which is fixed throughout the crediting period of project activity" in section B.7.2 of the PDD. Revised sentence is quite clear and hence this is accepted.					
Also section B.7.2 of the PDD clearly indicates that for dedicated feeders, $EG_{JMR,export} = EG_{export}$ and $EG_{JMR,import} = EG_{import}$ . This is found to be appropriate and it is accepted.					
Thus CAR #3 is closed out.					
Acceptance and Close out by Lead Assessor:			Date: 10/04/2013		

Date:	10/04/2013	Raised by:	Assessment Team		
Type:	CL	Number:	04	Reference:	Section B.6.1, B.6.2
<b>Lead Assessor Comment:</b>		<b>Date:</b> 10/04/2013			
The PP is requested to clarify the appropriateness of web-link provided for CEA database version 1.1 in sections B.6.1 and B.6.2 of the PDD.					
<b>Project Participant Response:</b>		<b>Date:</b> 12/04/2013			
Web-link for CEA database version 1.1 has been corrected under sections B.6.1 & B.6.2 of PDD					
<b>Documentation Provided as Evidence by Project Participant:</b>					
Revised PDD version 10.0.					
<b>Information Verified by Lead Assessor:</b>					
Revised PDD version 10 dated 12/04/2013 is checked for appropriateness of web-link provided for CEA database used at the time of validation of the project activity.					
<b>Reasoning for not Acceptance or Acceptance and Close Out:</b>		<b>Date:</b> 10/04/2013			
The PP is now mentioned valid and applicable web-link for CEA database version 1.1 used for determination of combined margin grid emission factor at the time of CDM registration of the project activity. Web link is also corrected in Annex 3 of PDD. This is found to be appropriate and it is accepted.  Thus CL #4 is closed out.					
<b>Acceptance and Close out by Lead Assessor:</b>		<b>Date:</b> 10/04/2013			

Date:	10/04/2013	Raised by:	Assessment Team		
Type:	CL	Number:	05	Reference:	Section A.4.1.4
<b>Lead Assessor Comment:</b>		<b>Date:</b> 10/04/2013			
The PP is requested to clarify the appropriateness of range of geo-coordinates provided in section A.4.1.4 of the registered PDD. Also please specify the format of the geo-coordinates mentioned.					
<b>Project Participant Response:</b>		<b>Date:</b> 12/04/2013			
Range of geo-coordinates as provided in section A.4.1.4 has been corrected. Further format of the geo-coordinates (Deg Min Sec) has been mentioned.  Further in addition to above, format of table of contact information of 'Other Party Involved' under Annex 1 has been corrected in revised PDD.  In addition to above, under section B.6.3 minus sign as mentioned prior to the value of Baseline Emission Factor (940.22 tCO <sub>2</sub> e/GWh) has been removed from revised PDD (Minus sign was typo error in registered PDD).					
<b>Documentation Provided as Evidence by Project Participant:</b>					
Revised PDD version 10.0.					
<b>Information Verified by Lead Assessor:</b>					
Revised PDD version 10 dated 12/04/2013 is checked for appropriateness of correction made against above queries raised.					
<b>Reasoning for not Acceptance or Acceptance and Close Out:</b>		<b>Date:</b> 10/04/2013			

The PP corrected the range of geo-coordinates in section A.4.1.4. Also format of geo-coordinates is mentioned as Deg Min Sec. This is found to be appropriate and it is accepted.

Font type of contact information of 'Other Party Involved' under Annex 1 is changed to Times New Roman, 11. This is found to be in line with the PDD template requirements; hence it is accepted.

Also under section B.6.3, minus sign has been removed which was mentioned mistakenly prior to the value of Baseline Emission Factor (940.22 tCO<sub>2</sub>e/GWh). This is considered as typographical error and same is removed by the PP. This is found to be appropriate and it is accepted.

Thus CL #5 is closed out.

**Acceptance and Close out by Lead Assessor:**

**Date:** 10/04/2013

## Annex 3: Statement of Competence

### Statement of Competence

Name: **Vikas Bankar**

#### Status

- Lead Assessor	<b>x</b>	- Expert	<b>x</b>
- Assessor	<b>x</b>	- Financial Expert	
- Local Assessor	<b>India</b>	- Technical Reviewer	<b>x</b>

#### Scopes of Expertise

##### 1. Energy Industries (renewable / non-renewable)

**x**

Technical Area(s): TA 1.2 Energy generation from renewable energy  
Sources

##### 2. Energy Distribution

**x**

Technical Area(s): TA 2.1 Electricity distribution  
TA 2.2 Heat distribution

##### 3. Energy Demand

**x**

Technical Area(s): TA 3.1 Energy Demand

##### 4. Manufacturing

Technical Area(s):

##### 5. Chemical Industry

Technical Area(s):

##### 6. Construction

Technical Area(s):

##### 7. Transport

Technical Area(s):

##### 8. Mining/Mineral Production

Technical Area(s):

##### 9. Metal Production

Technical Area(s):

##### 10. Fugitive Emissions from Fuels (solid, oil and gas)

Technical Area(s):

##### 11. Fugitive Emissions from Production and

Consumption of Halocarbons and Sulphur Hexafluoride

Technical Area(s):

##### 12. Solvent Use

Technical Area(s):

##### 13. Waste Handling and Disposal

Technical Area(s):

##### 14. Afforestation and Reforestation

Technical Area(s):

##### 15. Agriculture

Technical Area(s):

Approved Member of Staff  
by:

**Siddharth Yadav**

Date: **17/07/2012**



## Statement of Competence

Name: Vijaybhai  
Shankarbhai  
Patel

### Status

- Lead Assessor		- Expert	
- Assessor	x	- Financial Expert	
- Local Assessor	India	- Technical Reviewer	

### Scopes of Expertise

<b>1. Energy Industries (renewable / non-renewable)</b>	
Technical Area(s):	
<b>2. Energy Distribution</b>	
Technical Area(s):	
<b>3. Energy Demand</b>	
Technical Area(s):	
<b>4. Manufacturing</b>	
Technical Area(s):	
<b>5. Chemical Industry</b>	
Technical Area(s):	
<b>6. Construction</b>	
Technical Area(s):	
<b>7. Transport</b>	
Technical Area(s):	
<b>8. Mining/Mineral Production</b>	
Technical Area(s):	
<b>9. Metal Production</b>	
Technical Area(s):	
<b>10. Fugitive Emissions from Fuels (solid, oil and gas)</b>	
Technical Area(s):	
<b>11. Fugitive Emissions from Production and Consumption of Halocarbons and Sulphur Hexafluoride</b>	
Technical Area(s):	
<b>12. Solvent Use</b>	
Technical Area(s):	
<b>13. Waste Handling and Disposal</b>	
Technical Area(s):	
<b>14. Afforestation and Reforestation</b>	
Technical Area(s):	
<b>15. Agriculture</b>	
Technical Area(s):	

Approved Member of Staff by: Siddharth Yadav Date: 08/11/2012

## Statement of Competence

Name: Ramkrishna Patil

### Status

- Lead Assessor	x	- Expert	x
- Assessor	x	- Financial Expert	
- Local Assessor	India	- Technical Reviewer	x

### Scopes of Expertise

<b>1. Energy Industries (renewable / non-renewable)</b>	<b>x</b>
Technical Area(s): TA 1.2 Energy generation from renewable energy sources	
<b>2. Energy Distribution</b>	<b>x</b>
Technical Area(s): TA 2.1 Electricity distribution TA 2.2 Heat distribution	
<b>3. Energy Demand</b>	<b>x</b>
Technical Area(s): TA 3.1 Energy Demand	
<b>4. Manufacturing</b>	
Technical Area(s):	
<b>5. Chemical Industry</b>	
Technical Area(s):	
<b>6. Construction</b>	
Technical Area(s):	
<b>7. Transport</b>	
Technical Area(s):	
<b>8. Mining/Mineral Production</b>	
Technical Area(s):	
<b>9. Metal Production</b>	
Technical Area(s):	
<b>10. Fugitive Emissions from Fuels (solid, oil and gas)</b>	
Technical Area(s):	
<b>11. Fugitive Emissions from Production and Consumption of Halocarbons and Sulphur Hexafluoride</b>	
Technical Area(s):	
<b>12. Solvent Use</b>	
Technical Area(s):	
<b>13. Waste Handling and Disposal</b>	
Technical Area(s):	
<b>14. Afforestation and Reforestation</b>	
Technical Area(s):	
<b>15. Agriculture</b>	
Technical Area(s):	

Approved Member of Staff by: Siddharth Yadav Date: 02/07/2012

## History

Version	EB Requirement	Nature of revision	Validity
Issue 3.2	SGS internal update	Application of relevant guidelines as governed by PCP and VVS standard for post registration changes	17 <sup>th</sup> October 2012
Issue 3.1	EB 66 Report Annex 64 version 2 para 138(b)	Change name on document to Assessment opinion for revision of registered monitoring plan.	01 <sup>st</sup> October 2012
Issue 3	EB65 Annex 4 VVS Version 02.0	Update to include VVS procedures Inclusion of Request for Deviation into the combined (Request for Approval of Changes) document.	25 <sup>th</sup> May 2012
Issue 2.1	SGS UK Ltd Internal procedure	Annex 3 "Statement of Competence" added to Validation Opinion report.	27 <sup>th</sup> June 2011
Issue 2	EB 55 Annex 1 VVM 1.2 30 July 2010	Update	30 <sup>th</sup> September 2009