

BUNDLED WIND POWER PROJECT BY KMSPL, BANGALORE



EPIC Sustainability Services Private Limited

Project Title	Bundled wind power project by KMSPL, Bangalore Project ID: 324
Version	1.0
Report ID	ESSPL/VCS/2015/014

Report Title	Bundled wind power project by KMSPL, Bangalore
Client	Kanaka Management Services Pvt. Ltd
Pages	34
Date of Issue	6 th April 2015
Prepared By	EPIC Sustainability Services Private Limited
Contact	41, Anugraha, 1st Cross, Sundarnagar, Near BEL Circle, Bangalore-560054, Karnataka, India
Approved By	Mr. K. Sudheendra (Head-Operations)
Work Carried Out By	Dr. R. Madhukar (Lead Auditor with technical expertise) Mr. A. Prabu Das (Technical reviewer)

Summary:

Kanaka Management Services Pvt. Ltd. (hereinafter KMS or PP) has appointed EPIC Sustainability Services Private Limited to perform the second periodic VCS verification of the emission reductions reported for the project titled “Bundled wind power project by KMSPL, Bangalore” (Project ID: 324) for the period from 1st January 2010 to 31st December 2014. The verification was based on the validated project design document (PD)^{/9/} version 2.2 dated 11th November, 2009, corresponding validation report, previous monitoring report and its corresponding verification reports and other supporting documents made available to the verification team by the client.

The project involves installation of 52 WTGs, with a total capacity of 38.275 MW in the state of Tamilnadu and Karnataka, India. The project activity results in the reduction of GHG emission by displacing the grid electricity from the southern grid, a fossil fuel dominated grid.

The verification team identified, through the verification process, 04 CARs and 02 CRs. The PP has taken actions and submitted to EPIC the revised monitoring report and supporting evidence. The verification team, through the verification process, confirmed that the emission reductions achieved by the project activity during the monitoring period are correctly calculated in the monitoring report, Version 2, dated 25/02/2015 based on the approved monitoring methodology, ACM 0002, version 10. Therefore, EPIC certifies the emission reductions amounting to 348,658 tCO₂e for the period 01/01/2010 to 31/12/2014 (both days inclusive).

Table of Contents

TABLE OF CONTENTS		PAGE
1.0	INTRODUCTION	4
1.1	Objective	4
1.2	Scope and Criteria	4
1.3	Level of Assurance	4
1.4	Summary of the Project Description	4
2.0	VERIFICATION PROCESS	5
2.1	Method and criteria	5
2.2	Document review	6
2.3	Interview	6
2.4	Site inspections	6
2.5	Resolution of Findings	7
2.5.1	Forward Action Requests	7
2.6	Eligibility of Validation activities	7
3.0	VALIDATION FINDINGS	7
3.1	Participation under Other GHG Programs	7
3.2	Methodology Deviations	7
3.3	Project description deviations	8
3.4	Grouped project	8
4.0	VERIFICATION FINDINGS	8
4.1	Project implementation status	8
4.2	Accuracy of GHG Emission Reductions and removal calculations	8
4.3	Quality of Evidences to determine GHG Emission Reductions and removals	12
4.4	Non-permanence Risk Analysis	12
5.0	VERIFICATION CONCLUSION	13
6.0	References	15
Appendix I:	Resolution of CAR/CRs	

1 INTRODUCTION

1.1 Objective

EPIC Sustainability Services Private Limited (EPIC) has been contracted by KMSPL to undertake the (second periodic) independent verification of the project activity titled “Bundled wind power project by KMSPL, Bangalore”.

- To verify that the actual monitoring system and procedures are in full compliance with the system and procedures described in the monitoring plan of validated PD, version 2.2 dated 11th November 2009 as well as with the applicable methodology;
- To verify that the data reported were accurate, complete, consistent, transparent and free of material error or omission by checking the monitoring records and the emissions reduction calculation; and
- To verify and certify GHG emission reduction reported for the project for the period from 1st January 2010 to 31st December 2014.

1.2 Scope and Criteria

The scope of the verification was the independent and objective review and ex-post determination of the monitored reductions in GHG emissions from ‘Bundled wind power project by KMSPL, Bangalore’. The verification of this VCS project was based on the validated project design document^{1/} (PD), validation report^{1/} and monitoring reports^{1/} and supporting documents made available to the verification team. These documents were reviewed against the requirements of the VCS standard^{2/} version 3.4, VCS guidelines, the CDM Modalities and Procedures, related rules and guidance, and the Validation and Verification standard^{2/} Version 7.0. The verification is not meant to provide any consulting towards the client. However, stated request for clarifications and/or corrective actions may provide input for improvement of the project design

1.3 Level of Assurance

In line with VCS requirements and as per ISO 14064-3:2006 para A.2.3.2, a reasonable level of assurance is defined for the verification of the project.

This implies that based on the process and procedures conducted EPIC should state whether the information in the PD is materially correct and is a fair representation of the of the actual project details, and is prepared in accordance with the VCS requirements and the applied CDM methodology for information pertaining to additionality, GHG quantification, monitoring and reporting.

1.4 Summary Description of the Project

The project activity is a grouped project, consisting of 52 Wind Turbine Generators (WTGs) installed in the State of Tamilnadu (49 WTGs, 34.675 MW) and Karnataka (3 WTGs, 3.6 MW), India. The total capacity of the project is 38.275 MW. The details of the WTGs are reported in Annexure 1. The intent of the project Activity is to reduce GHG emission and promote sustainable development by use of renewable energy (Wind) for generation of power by bringing together a number of investors with small power requirements to invest into wind turbines. In the absence of the project activity, the equivalent amount of electricity would have been generated by the power plants connected with the southern grid which is predominantly based on fossil fuel.

Project Scenario: The project activity involves the installation of WTGs which reduces the anthropogenic emissions of greenhouse gases (GHGs) in to the atmosphere associated with the equivalent amount of electricity generation from renewable and cleaner energy source i.e. Wind. The electricity thus generated is already being supplied to the Southern regional grid. All the 52 WTGs involved in this project have commissioned and connected with the southern regional grid. The electricity thus generated is being used either exported to the southern grid or wheeled for captive consumption using the same grid. The verification team has reviewed the commissioning certificates^{/3/} and power purchase agreements^{/4/} and energy wheeling agreements.

2 VERIFICATION PROCESS

The verification process consists of the following phases:

- i) a document review of the monitoring report and preparation of verification protocol;
- ii) on-site visit to the project activity and interviews with project developer and project consultant; and
- iii) resolution of outstanding issues and the issuance of final verification report and certification

In order to ensure transparency, a verification protocol was prepared for the project according to the VVS^{/2/} validation requirements. The verification protocol serves the following purposes:

- it organizes, details and clarifies the requirements that the project is expected to meet;
- it ensures a transparent verification process where the verifier will document how a particular requirement has been verified and the result of the verification.

The completed verification protocol is enclosed in Appendix A of this report.

The following team members are involved in identifying the following:

Name	Role	Components reviewed
Dr. R. Madhukar	Lead Auditor with technical expertise in TA 1.2	Completeness check, desk review, onsite inspection, Interview with project representatives, issuance of findings, report preparation
Mr. A. Prabu Das	Technical Reviewer with technical expertise in TA 1.2	Technical Issues related to project

2.1 Method and Criteria

During the verification, non-fulfillment of the verification protocol criteria or identified risks to the fulfillment of project objectives were raised as either CAR or CR. Corrective Action Requests (CAR) were issued, where:

- i) mistakes had been made that directly impacted on the project implementation and estimated CERS; or
- ii) CDM/VCS requirements had not been met; or
- iii) there was a risk that the project would not be accepted as a CDM project or that emission reductions will not be certified.

The Clarification Requests (CR) were issued where additional information was needed to clarify issues, and Forward Action Requests (FAR) for issues relating to project implementation that required review during the first verification of the project activity.

2.2 Document Review

The verification was performed primarily based on the review of the monitoring report and the supporting documentation. This process included review of data and information presented to verify their completeness and review of the Monitoring Plan and monitoring methodology, paying particular attention to the frequency of measurements, the quality of metering equipment including calibration requirements, and the QA/QC procedures, and an evaluation of data management and the QA/QC system in the context of their influence on the generation and reporting of ERs.

The first MR^{/5/} version 1.0 submitted by the project participant and additional background documents related to the emission reductions are reviewed as an initial step of the verification process. The subsequent step involved the identification of corrective action requests and clarification requests (CAR and CR) which are presented in Appendix A of this report. As a result of these findings, the MR is revised to MR version 2.0^{/5/}. A complete list of all documents and records reviewed is as attached in reference section of this report.

2.3 Interviews

After the review of the Project description and documents a site visit was carried out from 10th to 13th January 2015. The verification team has visited all the 52 WTGs and its substation. During the site visit physical inspection of the project components followed by interviews with the on-site personnel was carried out to verify the project details. A follow-up meeting was also conducted with the project representatives. The following persons were interviewed.

Name & Designation	Company	Details of Interview
Mr. P. Nandagopal Head – KMSPL	KMSPL	Technical Details, Monitoring system, calibration frequency, Grid connectivity & power evacuation system / Infrastructure. Power Purchase Agreement, Overall Project management.

2.4 Site Inspections

During the site visit, the actual on-site practices adopted and followed for the operation of the project were compared with the description given in the monitoring report. The grid-connectivity, metering practices, calibration and level of accuracy were examined. The archived data of the energy generated was also reviewed.

- 1) an assessment of the implementation and operation of the project activity as per the validated PD
- 2) a review of information flows for generating, aggregating and reporting of the monitoring parameters
- 3) interviews with relevant personnel to confirm that the operational and data collection procedures are implemented in accordance with the Monitoring Plan
- 4) a cross-check between information provided in the MR and data from other sources
- 5) a check of the monitoring equipment including calibration performance, and observations of monitoring practices against the requirements of the PD and the applied methodology

- 6) A review of calculations and assumptions made in determining the GHG data and ERs, and
- 7) An identification of QA/QC procedures in place to prevent, or identify and correct, any errors or omissions in the reported monitoring parameters.

2.5 Resolution of Findings

Resolution of Clarification and Corrective Action Requests

The objective of this phase of the verification was to resolve the corrective action requests and clarifications and any other outstanding issues which needed to be clarified prior to EPIC positive conclusion on the monitoring report and the project design. During the verification process four CARs, two CRs were raised.

All the CARs and CRs were resolved during this phase. In order to ensure the transparency of the verification process, the concerns raised and responses that were given are summarized in Appendix 1 of this report and documented in more detail in the Verification in Appendix 1. All the corrective actions have been incorporated into the monitoring report.

Internal quality control

After the completion of assessment by the verification team all the relevant documentation is submitted to a qualified, Independent Technical Reviewer team as part of EPIC's internal quality Control system. A Technical Reviewer team is appointed to review the draft final verification report (Draft FVR). The comments made by the Technical Reviewer team are taken into consideration and incorporated in the final FVR. The technical reviewer team assesses whether all the reporting requirements have been fulfilled and whether all the issues raised were closed satisfactorily by the verification team with appropriate justification. The technical review process can also raise issues in this regard which is resolved further by the verification team to the satisfaction of the Technical Reviewer. The Technical Reviewer team either accepts or rejects the report made by the verification team. The final report (after resolutions of all findings) is then submitted to the Head – Operations for review and approval.

2.5.1 Forward Action Requests

There is no FAR raised during this verification process.

2.6 Eligibility for Validation Activities

EPIC has accredited for validation and verification for the scopes 1-11 and 13-15 by CDM UNFCCC and as well as by the VCS board.

3 VALIDATION FINDINGS

3.1 Participation under Other GHG Programs

Not applicable

3.2 Methodology Deviations

There is no methodology deviation involved.

3.3 Project Description Deviations

The deviations observed are explained in section 4.2 of this report.

3.4 Grouped Project

The project activity is not a grouped project

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

The verification based on the onsite observation, found that there is no material discrepancies between the project implementation and the project description. The verification team checked the status of monitoring plan the completeness of monitoring system and found no discrepancies between the actual monitoring system and the monitoring plan set in the validated project description. The verification team was able to conclude the project has been implemented as described in the validated project description.

4.2 Accuracy of GHG Emission Reduction and Removal Calculations

The verification assessed whether the monitoring plan of the project activity is in accordance with the applied methodology including applicable tools. The verification team determined whether the monitoring of parameters related to the GHG emissions reductions in the project activity has been implemented in accordance with the monitoring plan contained in the validated PD^{1/}. The verification team determined whether the calibration of those measuring equipments that have an impact on the claimed emission reductions is conducted by the project participants at a frequency specified in the applied monitoring methodology and/or the monitoring plan. The verification team assessed the data and calculations of GHG emission reductions achieved in accordance with the selected validated methodology. The verification details are described below.

Parameter	Conclusion by the verification team
Emission reductions (ER _y)	As per the applied methodology and the validated PD, Emission reductions due to project activity are calculated as follows. $ER_y = BE_y - PE_y - LE_y$ Where BE_y - Baseline emissions due to the project activity PE_y - Project emissions due to the project activity LE_y - Leakage emissions due to the project activity The calculation of each parameter is detailed below.
Baseline emissions due to the project activity (BE _y)	As per the applied methodology^{6/} (ACM 002 v10.0) and the validated PD, Baseline emissions due to displacement of grid electricity is calculated as the product of the Baseline Emissions Factor and the electricity supplied by the project to the grid over the period. $BE_y = EG_{PJ,y} \times EF_{Grid,CM,y}$ Where EG_{PJ,y} - Electricity supplied by the project to the grid EF_{Grid,CM,y} - Combined margin CO2 emission factor for grid connected power generation in year y calculated using the latest version of the "Tool to calculate the emission factor

Electricity supplied by the project to the grid ($EG_{PJ,y}$)	for an electricity system^{17/} v1.1 Out of the 52 WTGs, 49 WTGs are located in Tamilnadu and balance 3 WTGs is located in Karnataka. Energy supplied by the project to the grid is calculated as follows. $EG_{PJ,y} = EG_{PJ, TN,y} + EG_{PJ, KAR,y}$ Where $EG_{PJ, TN,y}$ - Electricity supplied by the WTGs located in Tamilnadu to the grid $EG_{PJ, KAR,y}$ - Electricity supplied by the WTGs located in Karnataka to the grid												
Electricity supplied by the WTGs located in Tamilnadu to the grid ($EG_{PJ, TN,y}$) <table border="1" data-bbox="289 594 602 789"> <thead> <tr> <th>Year</th><th>$EG_{PJ, TN,y}$</th></tr> </thead> <tbody> <tr> <td>y=2010</td><td>66,696 MWh</td></tr> <tr> <td>y=2011</td><td>62,504 MWh</td></tr> <tr> <td>y=2012</td><td>64,013 MWh</td></tr> <tr> <td>y=2013</td><td>71,712 MWh</td></tr> <tr> <td>y=2014</td><td>66,306 MWh</td></tr> </tbody> </table> (Rounded down)	Year	$EG_{PJ, TN,y}$	y=2010	66,696 MWh	y=2011	62,504 MWh	y=2012	64,013 MWh	y=2013	71,712 MWh	y=2014	66,306 MWh	Out of 49 WTGs located in Tamilnadu, electricity for 24 WTGs is sold to the southern grid and electricity of balance 25 WTGs are used for captive purposes. The details are reported in Annexure 1 of this report. For sale to grid wind mills: During the onsite visit to the WTGs located in Tamilnadu (hereinafter Tamilnadu WTGs), the verification team has observed that electricity supplied to the grid is measured directly from the bi-directional energy meter with accuracy class of 0.5s located at the secondary side of stepped up transformer. The point of sale is at the secondary side of the transformer. The energy meter continuously measures the export & import and is recorded every month. The readings are recorded in the presence of representatives of WTG owner and the TANGETCO (erstwhile TNEB). Net electricity thus calculated is used for invoicing. The same approach is followed for all the Tamilnadu WTGs. The verification team has reviewed the monthly invoices^{18/} covering the monitoring period for all the WTGs. For captive wind mills: For measuring the net electricity injected by the project activity, the bi-directional main meter (with accuracy of 0.5s) is used which is installed at the step up side of the transformer which records both the electricity injected and electricity imported. The net electricity supplied to grid by the project activity is the difference between the electricity injected and the electricity imported. In the case of captive wind mills, wheeling charges of 5% on the electricity injected will be accounted for calculating the net injection. The wheeling charges of 5% is also not accounted in the emission reduction calculations since captive investors are charged 5% of electricity injected for using the southern grid to wheel their electricity to their captive industrial units. The verification team has reviewed the monthly credit notes^{18/} for the captive WTGs. As per the validated PD, meters would be calibrated by the TNEB officials according to the frequency and the maintenance schedule as per the TNEB procedures and the PPA^{14/} signed with the PP or as per UNFCCC guidelines^{19/} (EB 41 Annex 20, para 12 c). The UNFCCC guideline^{19/} prescribes calibration every three years. The verification team has reviewed the calibration records^{10/}
Year	$EG_{PJ, TN,y}$												
y=2010	66,696 MWh												
y=2011	62,504 MWh												
y=2012	64,013 MWh												
y=2013	71,712 MWh												
y=2014	66,306 MWh												

	for the year 2009 and 2010 for all the Tamilnadu WTGs. After 2010, there was no calibration conducted for the WTGs. As per CEA guidelines^{/11/}, calibration frequency is 5 years. Hence the validity of calibration certificates conducted in 2009 and 2010 covers the monitoring period. Moreover, the verification team has accepted the PP's argument that since the electricity readings are used for invoicing and the accuracy of the readings is thus ensured. This deviation does not impact negatively either the additionality of the project activity or conservativeness of overall emission reductions. The verification team has checked this deviation and found it complies with the VCS requirements. The details of the latest calibration are reported in Annexure 3 of this report.												
Electricity supplied by the WTGs located in Karnataka to the grid ($EG_{PJ, KAR, y}$) <table border="1"> <thead> <tr> <th>Year</th><th>$EG_{PJ, KAR, y}$</th></tr> </thead> <tbody> <tr> <td>y=2010</td><td>7,718 MWh</td></tr> <tr> <td>y=2011</td><td>10,044 MWh</td></tr> <tr> <td>y=2012</td><td>9,007 MWh</td></tr> <tr> <td>y=2013</td><td>9,230 MWh</td></tr> <tr> <td>y=2014</td><td>8,927 MWh</td></tr> </tbody> </table> (Rounded down)	Year	$EG_{PJ, KAR, y}$	y=2010	7,718 MWh	y=2011	10,044 MWh	y=2012	9,007 MWh	y=2013	9,230 MWh	y=2014	8,927 MWh	For all the 3 WTGs that are installed in Karnataka, 100% electricity is sold to electricity purchaser through the southern grid. The details are reported in Annexure 1 of this report. As per the validated PD, Net electricity supplied to the electricity grid is calculated as below. $EG_{PJ, KAR, y} = TEG_y - EG_I - EG_{T-E} - EG_{T-I}$ Where TEG_y – Total electricity generated by the project activity (i.e export) EG_I – Electricity imported by the project activity EG_{T-E} – Transmission loss incurred by the project activity during export of electricity EG_{T-I} – Transmission loss incurred by the project activity during import of electricity Each WTG is connected to an electricity substation measuring system having a dedicated main meter (accuracy class of 0.5s) where a Joint metering reading is taken every month. The main meter records both total electricity generated by the project activity (TEG_y) and electricity imported by the project activity (EG_I). The verification team has reviewed the monthly JMR readings taken at the metering points for all the 3 WTGs. The metering points of the project activity (HTSC no PS 52) and metering points of other non-project activity is connected to two different substations namely Harogeri substation and Kappathguda substations. Similarly metering points of the project activity (HTSC no: H20 and H21) are connected to Hassan substations located at Hassan. The electricity is evacuated to the respective substations through feeder lines which are connected to the dedicated bulk meter. The bulk meters (with an accuracy class of 0.5s) are installed for the purpose of determining the transmission loss while exporting of electricity. It also records the total electricity exported by all the WTGs connected to the substation. The reading of total electricity supplied by all the WTGs connected to the substation and electricity reading taken at the bulk meter
Year	$EG_{PJ, KAR, y}$												
y=2010	7,718 MWh												
y=2011	10,044 MWh												
y=2012	9,007 MWh												
y=2013	9,230 MWh												
y=2014	8,927 MWh												

	gives the transmission loss of the project activity while exporting of electricity. The monthly invoices^{/8/} are based on joint metering reading taken at each metering points and that taken at substation via the bulk meter. The electricity purchaser charge the project owner for the transmission loss incurred during import of electricity also (fixed 15%). Monthly invoices raised by the project owner give electricity export, electricity import, Transmission loss during export and transmission loss during import the net electricity supplied to the grid. The verification team has verified the monthly invoices^{/8/} raised by the project owner. As per the validated PD, meters would be calibrated by the KPTCL officials according to the frequency and the maintenance schedule as per the KPTCL procedures and the PPA^{/4/} signed with the PP or as per UNFCCC guidelines^{/9/} (EB 41 Annex 20, para 12 c). The UNFCCC guideline prescribes calibration every three years. The verification team has reviewed the calibration records^{/10/} for the year 2009 and 2010 for all the Karnataka WTGs. After 2010, there was no calibration conducted for the WTGs. As per CEA guidelines^{/11/}, calibration frequency is 5 years. Hence the validity of calibration certificates conducted in 2009 and 2010 covers the monitoring period. The verification team has accepted the PP's argument that since the electricity readings are used for invoicing and the accuracy of the readings is thus ensured. This temporary deviation does not impact negatively either the additionality of the project activity or conservativeness of overall emission reductions. The verification team has checked this deviation and found it complies with the VCS requirements. The details of the latest calibration are reported in Annexure 3 of this report.												
Electricity supplied by the project to the grid ($EG_{PJ,y}$) <table border="1" data-bbox="289 1386 602 1579"> <thead> <tr> <th>Year</th><th>$EG_{PJ,y}$</th></tr> </thead> <tbody> <tr> <td>y=2010</td><td>74,414 MWh</td></tr> <tr> <td>y=2011</td><td>72,548 MWh</td></tr> <tr> <td>y=2012</td><td>73,020 MWh</td></tr> <tr> <td>y=2013</td><td>80,942 MWh</td></tr> <tr> <td>y=2014</td><td>75,233 MWh</td></tr> </tbody> </table>	Year	$EG_{PJ,y}$	y=2010	74,414 MWh	y=2011	72,548 MWh	y=2012	73,020 MWh	y=2013	80,942 MWh	y=2014	75,233 MWh	Energy supplied by the project to the grid is calculated as follows. $EG_{PJ,y} = EG_{PJ, TN,y} + EG_{PJ, KAR,y}$
Year	$EG_{PJ,y}$												
y=2010	74,414 MWh												
y=2011	72,548 MWh												
y=2012	73,020 MWh												
y=2013	80,942 MWh												
y=2014	75,233 MWh												

Combined margin CO2 emission factor for grid connected power generation ($EF_{Grid,CM,y}$) = 0.9269 tCO2e/MWh (Ex-ante) Source: Validated PD^{/6/} and Corresponding Validation report^{/7/}	The verification team has checked the value and found that the value is fixed ex-ante for the entire crediting period and the value is considered for this monitoring period also which is sourced from the validated PD and accepted by the verification team. The value is used consistently across the monitoring report, VER sheet. Hence accepted by the verification team.														
Baseline emission (BE_y) <table border="1" data-bbox="188 472 581 661"> <thead> <tr> <th>Year</th><th>BE_y</th></tr> </thead> <tbody> <tr> <td>y=2010</td><td>68,974 tCO2e</td></tr> <tr> <td>y=2011</td><td>67,244 tCO2e</td></tr> <tr> <td>y=2012</td><td>67,682 tCO2e</td></tr> <tr> <td>y=2013</td><td>75,025 tCO2e</td></tr> <tr> <td>y=2014</td><td>69,733 tCO2e</td></tr> </tbody> </table>	Year	BE_y	y=2010	68,974 tCO2e	y=2011	67,244 tCO2e	y=2012	67,682 tCO2e	y=2013	75,025 tCO2e	y=2014	69,733 tCO2e	As per the validated PD, BE_y is calculated as follows. $BE_y = EG_{PJ,y} \times EF_{Grid,CM,y}$ which is accepted by the verification team.		
Year	BE_y														
y=2010	68,974 tCO2e														
y=2011	67,244 tCO2e														
y=2012	67,682 tCO2e														
y=2013	75,025 tCO2e														
y=2014	69,733 tCO2e														
Project emission (PE_y) <table border="1" data-bbox="188 766 581 955"> <thead> <tr> <th>Year</th><th>PE_y</th></tr> </thead> <tbody> <tr> <td>y=2010</td><td>0 tCO2e</td></tr> <tr> <td>y=2011</td><td>0 tCO2e</td></tr> <tr> <td>y=2012</td><td>0 tCO2e</td></tr> <tr> <td>y=2013</td><td>0 tCO2e</td></tr> <tr> <td>y=2014</td><td>0 tCO2e</td></tr> </tbody> </table>	Year	PE_y	y=2010	0 tCO2e	y=2011	0 tCO2e	y=2012	0 tCO2e	y=2013	0 tCO2e	y=2014	0 tCO2e	The electricity generation from the renewable energy source i.e. wind energy. Hence there is no project emission from the project activity which is accepted by the verification team.		
Year	PE_y														
y=2010	0 tCO2e														
y=2011	0 tCO2e														
y=2012	0 tCO2e														
y=2013	0 tCO2e														
y=2014	0 tCO2e														
Leakage (LE_y) <table border="1" data-bbox="188 1018 581 1207"> <thead> <tr> <th>Year</th><th>LE_y</th></tr> </thead> <tbody> <tr> <td>y=2010</td><td>0 tCO2e</td></tr> <tr> <td>y=2011</td><td>0 tCO2e</td></tr> <tr> <td>y=2012</td><td>0 tCO2e</td></tr> <tr> <td>y=2013</td><td>0 tCO2e</td></tr> <tr> <td>y=2014</td><td>0 tCO2e</td></tr> </tbody> </table>	Year	LE_y	y=2010	0 tCO2e	y=2011	0 tCO2e	y=2012	0 tCO2e	y=2013	0 tCO2e	y=2014	0 tCO2e	As per the validated PD, there is no leakage identified for this project activity.		
Year	LE_y														
y=2010	0 tCO2e														
y=2011	0 tCO2e														
y=2012	0 tCO2e														
y=2013	0 tCO2e														
y=2014	0 tCO2e														
Emission reductions (ER_y) <table border="1" data-bbox="188 1270 581 1493"> <thead> <tr> <th>Year</th><th>ER_y</th></tr> </thead> <tbody> <tr> <td>y=2010</td><td>68,974 tCO2e</td></tr> <tr> <td>y=2011</td><td>67,244 tCO2e</td></tr> <tr> <td>y=2012</td><td>67,682 tCO2e</td></tr> <tr> <td>y=2013</td><td>75,025 tCO2e</td></tr> <tr> <td>y=2014</td><td>69,733 tCO2e</td></tr> <tr> <td>Total</td><td>348,658 tCO2e</td></tr> </tbody> </table>	Year	ER_y	y=2010	68,974 tCO2e	y=2011	67,244 tCO2e	y=2012	67,682 tCO2e	y=2013	75,025 tCO2e	y=2014	69,733 tCO2e	Total	348,658 tCO2e	Emission reductions due to project activity are calculated as follows. $ER_y = BE_y - PE_y - LE_y$
Year	ER_y														
y=2010	68,974 tCO2e														
y=2011	67,244 tCO2e														
y=2012	67,682 tCO2e														
y=2013	75,025 tCO2e														
y=2014	69,733 tCO2e														
Total	348,658 tCO2e														

4.3 Quality of Evidence to Determine GHG Emission Reductions and Removals

Refer section 4.2 above for details

4.4 Non-Permanence Risk Analysis

Not applicable for a renewable energy project.

5 VERIFICATION CONCLUSION

EPIC Sustainability Services Private Limited has been engaged by KMSPL to perform the second periodic verification of the VCS project “Bundled wind power project by KMSPL, Bangalore” for the period from 01/01/2010 to 31/12/2014.

The verification was based on the validated PD, the baseline and monitoring methodology (ACM 002 Version 10.0), validation report, previous monitoring report, corresponding verification report, current monitoring Report, emission reduction spread sheets and other supporting documents made available to EPIC verification team by the project participant. The management of KMSPL was responsible for the preparation and reporting of GHG emissions data, and the reported GHG emissions reduction on the basis set out within the project monitoring plan.

It is the responsibility of EPIC verification team to express an independent GHG verification opinion on the GHG emissions from the project for the monitoring period starting and on the calculation of GHG emission reductions from the project based on the verified emissions for the same period.

The verification was carried out in accordance with the requirements of the Validation and Verification standard Version 7.0 and VCS Standard 3.4. As a result of the verification, the verification team confirms that for the reporting period:

- all operations of the project were implemented as described in the registered PD, (project ID 324)
- the monitoring plan is in accordance with the approved monitoring methodology, ACM002 version 10 applied by the project activity.
- the monitoring has been carried out in accordance with the validated PD.
- the monitoring aspects (i.e. additional monitoring parameters, monitoring frequency and calibration frequency) were in place and functional, with the installed equipment essential for generating emission reduction operating appropriately
- the GHG emission reductions achieved were calculated correctly on the basis of approved monitoring methodology ACM002 version 10.0

We have verified that the information included in the final monitoring report (version 2.0, dated 25th February 2015 was correct and that the emission reductions achieved had been determined correctly. In our opinion, the GHG emission reductions for the monitoring period stated in the latest revised monitoring report for the project are fairly stated.

The verifier confirms that the GHG emission reductions were calculated without material misstatements for the whole monitoring period. The verification opinion is based on the project’s GHG emissions and resulting GHG emission reductions reported, and, to the valid and registered project baseline and monitoring documents. We confirm the following:

Verification period: From [01-January 2010] to [31-December-2014]

Verified GHG emission reductions and removals in the above verification period:

Year	Baseline emissions or removals	Project emissions or removals	Leakage emissions	Net GHG emission reductions or removals
Year 2010	68,974 tCO ₂ e	0 tCO ₂ e	0 tCO ₂ e	68,974 tCO ₂ e
Year 2011	67,244 tCO ₂ e	0 tCO ₂ e	0 tCO ₂ e	67,244 tCO ₂ e
Year 2012	67,682 tCO ₂ e	0 tCO ₂ e	0 tCO ₂ e	67,682 tCO ₂ e
Year 2013	75,025 tCO ₂ e	0 tCO ₂ e	0 tCO ₂ e	75,025 tCO ₂ e
Year 2014	69,733 tCO ₂ e	0 tCO ₂ e	0 tCO ₂ e	69,733 tCO ₂ e
Total	348,658 tCO₂e	0 tCO₂e	0 tCO₂e	348,658 tCO₂e

Prepared by :		Approved by:	
	(R. Madhukar) Verification Team Leader		(K. Sudheendra) Head-Operations

6 REFERENCES

1	Validated PD, Validation report, Previous Monitoring report, Previous verification report https://vcsprojectdatabase2.apx.com/myModule/Interactive.asp?Tab=Projects&a=2&i=324&lat=8%2E966669&lon=77%2E399997&bp=1
2	Validation and verification Standard version 7.0, https://cdm.unfccc.int/sunsetcms/storage/contents/stored-file-20140624190900246/accr_stan02.pdf VCS Standard version 3.4 http://www.v-c-s.org/sites/v-c-s.org/files/VCS%20Standard%2C%20v3.4.pdf
3	Commissioning Certificates
4	Power Purchase Agreements
5	Monitoring report Version 1.0 and its related documents Monitoring report Version 2.0 and its related documents
6	Consolidated methodology for grid-connected electricity generation from renewable sources --- ACM0002 Version 10 https://cdm.unfccc.int/UserManagement/FileStorage/NF9EDA0V5K382HW0JR14GS7XYQU_MCP
7	Tool to calculate the emission factor for an electricity system EB 35 Annex 12 version 1.1 https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v1.1.pdf
8	JMR records, Monthly Invoices covering the monitoring period
9	Indicative simplified baseline and monitoring methodologies for selected small-scale CDM project activity categories EB 41 Annex 20 version 12 https://cdm.unfccc.int/EB/041/eb41_repan20.pdf
10	Calibration certificates for the years 2009 and 2010
11	Central Electricity Authority (Installation and Operation of Meters) Regulations, 2006. http://www.aegcl.co.in/Metering_Regulations_Of_CEA_17_03_2006.pdf

Verification checklist

Project name: Bundled wind power project by KMSPL, Bangalore (Project ID: 324)

TABLE 1: VERIFICATION REQUIREMENTS BASED ON CDM VALIDATION AND VERIFICATION STANDARD VERSION 7.0

	Checklist Questions	Comments by verifier	Conclusion
	Compliance of the project implementation with the registered project design document		
1	Was an on-site visit conducted for this verification? If no, please justify the rationale of the decision. (Refer VVS 262)	The verification team visited physically to the sites and found that all the WTGs are commissioned as on date. The team also visited substations which are at the windmill site itself. The electricity supplied to respective discoms or used the grid for captive use.	OK
2	Are all physical features of the CDM project activity proposed in the registered PDD in place? (Refer 262)	The project activity is a grouped project, consisting of 52 Wind Turbine Generators (WTGs) installed in the State of Tamilnadu (49 WTGs, 34.675 MW) and Karnataka (3 WTGs, 3.6 MW), India. The total capacity of the project is 38.275 MW. The intent of the project Activity is to reduce GHG emission and promote sustainable development by use of renewable energy (Wind) for generation of power by bringing together a number of investors with small power requirements to invest into wind turbines. In the absence of the project activity, the equivalent amount of electricity would have been generated by the power plants connected with the southern grid which is predominantly based on fossil fuel. The physical features, as required by the validated PD, include power generation facility i.e. WTGs and energy meters. The verification team was able to confirm that all physical features of the proposed project activity matches with that mentioned in the validated PD. But the MR specifies total number of WTGs is 49 WTGs whereas actual no of sites is 52.	CAR-1
3	Have the project participants operated the proposed CDM project activity as per the registered PDD or any approved revised	It has implemented and operated the project as per the validated PD. This was also evident from the invoices and JMR reports available at substations provided by the PP.	OK

	Checklist Questions	Comments by verifier	Conclusion
	PDD? (Refer VVS 262 and 265)		
4	For this monitoring period, what is the status of the implementation of the project? For project activities that consist of more than one site, the DOE shall describe the status of implementation and starting date of operation for each site. (Refer VVS 263 (a))	All the windmills are commissioned.	OK
5	For project activities with phased implementation, what is the progress of the proposed project activity achieved in each phase under verification. If the phased implementation is delayed, describe the reasons and present the expected implementation dates; (Refer VVS 263 (a))	All the windmills are commissioned.	
6	Describe the actual operation of the project activity. (Refer VVS 263 (b))	All the windmills are commissioned. The verification team based on the on-site visit confirmed that net electricity supplied to the grid by each WTG is measured through the meter readings of the energy meters installed by electricity board, which have facility to record export and import of energy. The team has checked the electronic archiving of all the monitored data.	
7	Any information (data and variables) provided in the monitoring report that is different from that stated in the registered PDD or any approved revised PDD? (that has caused an increase in estimates of the emission reductions in the current monitoring period or is highly likely to increase the estimates of emission reductions in the future monitoring) (Refer VVS 263 (c))	Calibration frequency is not as per validated PD which prescribes frequency of three years (which is referred by EB 41 Annex 20).	CAR-2
	Compliance of the monitoring plan with the monitoring methodology including applicable tool(s)		

	Checklist Questions	Comments by verifier	Conclusion
	The monitoring plan of the proposed CDM project activity shall comply with the applied methodology.		
8	For monitoring aspects that are not specified in the methodology and where applicable the standardized baseline, particularly in the case of small-scale methodologies (e.g. additional monitoring parameters, monitoring frequency and calibration frequency), these should be brought to the attention of the Board issues which may enhance the level of accuracy and completeness of the monitoring plan. (Refer VVS 266)	Not applicable	OK
	Compliance of monitoring activities with the registered monitoring plan.		
	Determine whether the monitoring of parameters related to the GHG emissions reductions in the project activity has been implemented in accordance with the monitoring plan contained in the registered PDD or any accepted revised monitoring plan.		
9	Is the monitoring plan of the CDM project activity complying with the methodology applied by the registered CDM project activity or an approved revised PDD? (Refer VVS 268)	Yes. Monitoring plan and applied methodology have been properly implemented and duly followed by PP. Net electricity export to the grid is calculated based on the export and import data available from the JMR and invoices.	OK
10	Has the monitoring plan been properly implemented and followed by the project participants? (Refer VVS 269 (a))	Yes. Monitoring plan and applied methodology have been properly implemented and duly followed by PP	OK

	Checklist Questions	Comments by verifier	Conclusion
11	Have all parameters stated in the monitoring plan, and relevant CDM Executive Board decisions been sufficiently monitored and updated as applicable, including: (Refer VVS 269 (b))		
	i) project emission parameters	For wind projects, there is no project emission. It is as per applied methodology.	OK
	ii) baseline emission parameters	Baseline emission is based on the net electricity exported to the grid. Monthly net electricity generation from the WTGs is calculated from the JMR and invoices. As per registered PDD, Emission factor was calculated ex ante and it remains the same for the entire crediting period. The values thus calculated are used for calculating the baseline emission. So, the verification team concludes that baseline emission is calculated as per CDM requirements. It is found that the JMR readings are dated 5th or 15th of each month. How the electricity exported is calculated for the month of December 2014 is not clear. From the report it is observed that there is a difference in actual ER and estimated ER. But reason for less net electricity generation which depends on wind speed, wind availability, machine availability and grid availability is not reflected in the monitoring report.	CAR-3 CR-1
	iii) leakage parameters	This parameter was adequately justified in the monitoring report.	OK
	iv) Management and operational system: the responsibilities and authorities for monitoring and reporting are in accordance with the responsibilities and authorities stated in the monitoring plan?	It is demonstrated that project management system procedures, including responsibility and authority of monitoring and reporting activities are comply with registered monitoring plan. The emergency preparedness mentioned in the monitoring report is complete.	OK

	Checklist Questions	Comments by verifier	Conclusion
12	Has the equipment used for monitoring is in accordance with section 4 below and is controlled and calibrated in accordance with the monitoring plan, the applied methodology, the applied standardized baseline, the Board guidance, local/national standards, or as per the manufacturer's specification? (Refer VVS 269 (c))	Refer CAR 2 above	
13	Are monitoring results consistently recorded as per approved frequency? (Refer VVS 269 (d))	Yes. But the frequency of calibration of Energy meters is mentioned explicitly in the monitoring report	OK
14	Have quality assurance and quality control procedures been applied in accordance with the monitoring plan or revised monitoring plan? (Refer VVS 269 (e))	The readings in these meters is taken by TNEB/KPTCL State Electricity Board (SEB) officials and used for billing purposes. But it is clearly indicated that in the monitoring report the activities related to the project, e.g. Measurement, calculation, reporting complies with the procedures defined in the registered PD and applied methodology	OK
	Compliance with the calibration frequency requirements for measuring instruments.		
	Determine whether the calibration of those measuring equipments that have an impact on the claimed emission reductions is conducted by the project participants at a frequency specified in the applied monitoring methodology, the applied standardized baseline and/or the monitoring plan.		
15	Identify if there is any monitoring equipment not calibrated in accordance with the monitoring plan, the applied monitoring methodology, the Board guidance, local/national standards, or as per the manufacturer's specification? (Refer VVS 272)	Refer CAR 2	OK

	Checklist Questions	Comments by verifier	Conclusion
16	If there is delayed and the calibration has been implemented after the monitoring period in consideration (i.e. the results of delayed calibration are available), has the following conservative approach adopted in the calculation of emission reductions: (a) Applying the maximum permissible error of the instrument to the measured values taken during the period between the scheduled date of calibration and the actual date of calibration, if the results of the delayed calibration do not show any errors in the measuring equipment, or if the error is smaller than the maximum permissible error; or	Refer CAR 2	OK
17	(b) Applying the error identified in the delayed calibration test, if the error is beyond the maximum permissible error of the measuring equipment. (Refer VVS 283)	Refer CAR 2	OK
18	Confirm that the error has been applied: (a) In a conservative manner, such that the adjusted measured values of the delayed calibration shall result in fewer claimed emission reductions;	Refer CAR 2	OK
	(b) For all measured values taken during the period between the scheduled date of calibration and the actual date of calibration. (Refer VVS 283)	Refer CAR 2	OK

	Checklist Questions	Comments by verifier	Conclusion
19	In cases where the results of the delayed calibration are not available, or the calibration has not been conducted at the time of verification, the verification team, prior to finalizing verification, shall request the project participants to conduct the required calibration and shall determine whether the project participants have calculated the emission reductions conservatively using the approach mentioned in paragraph 4.2 above. (Refer VVS 275)	Refer CAR 2	OK
20	In cases where the verification team determines that it is not possible for the project participants to conduct the calibration at a frequency specified by either the applied methodology, the applied standardized baseline, guidance provided by the Board, and/or the registered monitoring plan due to reasons beyond the control of project participants (For example, due to the contractual terms between the project participant and purchasing/selling entities), the verification team, shall follow the requirements for post registration changes in section of E of the VVS. (Refer VVS 276)	Refer CAR 2	OK

	Checklist Questions	Comments by verifier	Conclusion
21	In cases where neither the applied monitoring methodology, where applicable, the applied standardized baseline nor the monitoring plan specify any requirements for calibration frequency for measuring equipments, the verification team shall determine whether the equipments are calibrated either in accordance with the specifications of the local/national standards, or as per the manufacturer's specification. If neither local/national standards nor the manufacturer's specification are available, international standards may be used. Refer to appendix 1 of the VVS for an illustrative example to apply the above requirements. (Refer VVS 277)	Not applicable as the registered PD mandates 3 year calibration frequency.	OK
	Assessment of data and calculation of emission reductions		
	Assess the data and calculations of GHG emission reductions achieved by/resulting from the project activity by the application of the selected methodology and, where applicable, the applied standardized baseline.		
22	If only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, the verification team shall raise a CAR for the project participants to comply with the requirements of Appendix 1 of the Project Standard or submit a request for deviation prior to submitting the request for issuance, if appropriate; (Refer VVS 280 a)	Not applicable	OK

	Checklist Questions	Comments by verifier	Conclusion
23	Has information provided in the monitoring report been crosschecked with other sources such as plant log books, inventories, purchase records, laboratory analysis? (Refer VVS 280 b)	It is crosschecked with the invoices.	OK
24	Have calculations of baseline emissions, proposed CDM project activity emissions and leakage, as appropriate, been carried out in accordance with the formulae and methods described in the monitoring plan, the applied methodology and where applicable, the applied standardized baseline? (Refer VVS 280 c)	Yes, the information in the report has been crosschecked with the JMR reading along with invoices raised by the PP to the State Electricity board TNEB/ KPTCL and the values used in the monitoring report are found to be correct.	OK
25	Any assumptions used in emission calculations? If yes, they been justified? (Refer VVS 280 d)	Yes. Emission factor which is relevant as far as this project is concerned. The emission factor is determined ex ante and fixed for the crediting period and is correctly applied by the PP. But VER sheet is not provided. The emission factor assumed is not correct. The emission reductions for every year are not mentioned in the MR.	CAR-4 CR-2
26	Have appropriate emission factors, IPCC default values and other reference values been correctly applied? (Refer VVS 280 e)	No. No other assumptions are followed.	OK
27	For a registered CDM project activity using an approved standardized baseline that standardizes baseline emissions, have the standardized value(s) of the parameter(s) are applied using the correct version of the applied standardized baseline in accordance with the Project standard. (Refer VVS 280 f)	Not applicable.	OK
	Post registration changes Temporary deviations from the registered monitoring plan, monitoring methodology and/or standardized baseline		

	Checklist Questions	Comments by verifier	Conclusion
28	Where the deviation is identified during verification, the DOE shall indicate in the verification report how the monitoring report reflects the application of the approved guidance from the Board regarding the deviation from the provisions of the registered monitoring plan, the applied methodology and /or the applied standardized baseline. (Refer VVS 290)	Not applicable	OK
29	Where the deviation is identified prior to verification, the DOE shall state its opinion on whether the deviation reflects the application of the approved guidance from the Board regarding the deviation from the provisions of the registered monitoring plan, the applied methodology and /or the applied standardized baseline and as per the applicable provisions of the Project Standard. (Refer VVS 291)	Not applicable.	OK
	Corrections		
30	If the DOE identifies that the project participants have made corrections to project information or parameters determined at validation, the DOE shall determine whether: (a) The corrected information is an accurate reflection of actual project information; and/or (Refer VVS 293 a)	Not applicable.	OK
31	The corrected parameters are in accordance with the applied methodology the monitoring plan and /or the applied standardized baseline. (Refer VVS 293 b)	Not applicable.	OK
	Changes to the start date of the crediting period		

	Checklist Questions	Comments by verifier	Conclusion
32	The DOE shall indicate if the requirements in the Project standard have been met and shall submit a request for post registration changes in accordance with the Project cycle procedure. (Refer VVS 296)	The start date of the crediting period is correctly mentioned.	OK
	Permanent changes from the registered monitoring plan or monitoring methodology		
33	The DOE shall determine whether the changes to the monitoring plan contained in the registered PDD proposed by the project participants are in compliance with the applied methodology and, where applicable, the applied standardized baseline and do not reduce the level of accuracy of the monitoring compared with the requirements contained in the registered monitoring plan. (Refer VVS 298)	Refer to CAR 2.	
34	In cases where the proposed changes refer to a later version of the applied methodology and /or the applied standardized baseline in the registered PDD, the DOE shall determine whether the application of any later version of the applied methodology any applicable tool(s) and/or the applied standardized baseline does not impact the conservativeness of the monitoring and verification process, including the related emission reduction calculations. (Refer VVS 299)	Refer to CAR 2.	

	Checklist Questions	Comments by verifier	Conclusion
35	If the DOE identifies that the project participants are unable to implement the monitoring plan contained in the registered PDD and it will not be possible to monitor the registered CDM project activity in accordance with a monitoring plan that would comply with the applied methodology any applicable tools, and, where applicable, the standardized baseline or the relevant provisions of appendix 1 of the Project standard, the DOE shall request guidance from the Board concerning the acceptability of the permanent changes in accordance with the section on post registration changes in the Project cycle procedure. (Refer VVS 300)	Refer to CAR 2.	
36	The DOE shall determine whether the permanent changes are likely to lead to a reduction in the accuracy of the calculation of emission reductions. In cases where the DOE considers that the permanent changes will lead to a reduction in the accuracy of the calculation of emission reductions, the DOE shall request the project participants to apply conservative assumptions or discount factors to the calculations to the extent required to ensure that emission reductions will not be over-estimated as a result of the permanent change. (Refer VVS 301)	Refer to CAR 2.	
	Changes to the project design of a registered project activity		

	Checklist Questions	Comments by verifier	Conclusion
37	If the DOE identifies that the project design in the implementation or operation of the project activity does not conform with the description contained in the registered PDD or the relevant provisions of appendix 1 of the Project standard, the DOE shall request guidance from the Board concerning the acceptability of the proposed or actual changes in accordance with the section on post registration changes in the Project cycle procedure. (Refer VVS 305)	Not applicable.	OK
38	In case of actual changes, the DOE shall, by means of an on-site visit and review of the submitted revised PDD by the project participants, which describes the nature and extent of the actual changes, determine whether this description accurately reflects the implementation, operation and monitoring of the modified project activity. (Refer VVS 306)	Not applicable.	OK
39	The DOE shall conduct an on-site inspection to assess the impacts of the actual changes on the compliance of the monitoring plan, the level of accuracy of the monitoring activity, the applied monitoring methodology and including applicable tool(s) and/or, where applicable, the applied standardized baseline. (Refer VVS 307)	Not applicable.	OK

	Checklist Questions	Comments by verifier	Conclusion
40	The DOE shall, by means of reviewing the revised PDD against applicable additionality and methodological requirements, determine whether the proposed or actual changes would adversely affect the conclusions of the validation report of the registered PDD with regard to: (a) Additionality of the project activity; (b) Scale of the project activity; (c) Applicability and application of the approved baseline methodology and, where applicable, the approved standardized baseline under which the project activity has been registered; or (d) The compliance of the monitoring plan with the applied monitoring methodology and, where applicable, the applied standardized baseline (Refer VVS 308)	Not applicable.	OK
41	If the proposed or actual changes affect the additionality of the project activity then the DOE shall confirm that: (a) In the case of investment analysis, project participants have only modified the key parameters in the original spreadsheet calculations affected by the proposed or actual changes to the project activity; (b) In the case where only barriers have been claimed to demonstrate additionality, project participants have demonstrated that the barriers are still valid under the new circumstances. (Refer VVS 309)	Not applicable.	OK

	Checklist Questions	Comments by verifier	Conclusion
42	For registered CDM project activity using an approved standardized baseline that standardizes additionality:- If the proposed or actual changes affect the additionality of the project activity then the DOE shall confirm that the project activity complies with the positive list of the applied standardized baseline in the registered PDD. (Refer VVS 309)	Not applicable.	OK
43	The DOE shall confirm that the applied methodology including applied tools and/or the applied standardized baseline do not impact the conservativeness of the monitoring and verification process and the related emission reduction calculations in cases where: (a) The proposed or actual changes impact the implementation of the project activity; (b) The original methodology and/or the original standardized baseline would no longer be applicable; and (c) The project participant applies: (i) A later version of the methodology and/or the standardized baseline; or (ii) Another methodology and/or another standardized baseline that is(are) applicable to the project activity. (Refer VVS 310)	Not applicable.	OK

	Checklist Questions	Comments by verifier	Conclusion
44	The DOE shall assess whether the revised PDD complies with: (a) The applied methodology, tools and/or standardized baseline; (b) Any later version of the methodology and/or the standardized baseline; or (c) The requirements of another methodology and/or another standardized baseline that is(are) applicable to the project activity. (Refer VVS 311)	Not applicable.	OK

TABLE 2: RESOLUTION OF CORRECTIVE ACTION AND CLARIFICATION REQUESTS

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1	Summary of project owner response	Verification team conclusion
CAR 1 Actual number of WTGs for this project is 52. But the MR specifies total number of WTGs is 49 WTGs.	S. No 2	MR is corrected now.	The verification team has reviewed the monitoring report and accepted the same as correct. Conclusion: CAR 1 is closed.
CAR 2 Calibration frequency is not as per validated PD which prescribes frequency of three years (which is referred by EB 41 Annex 20).	S. No 7	PP providing calibration certificates for 2009 and 2010. As per CEA norms, calibration frequency is 5 years. Hence the validity of calibration certificates conducted in 2009 and 2010 covers the monitoring period. Moreover, the electricity readings are used for invoicing and the accuracy of the readings can be confirmed.	As per the validated PD, meters would be calibrated by the TNEB officials according to the frequency and the maintenance schedule as per the TNEB/KPTCL procedures and the PPA signed with the PP or as per UNFCCC guidelines (EB 41 Annex 20, para 12 c). The UNFCCC guideline prescribes calibration every three years. The verification team has reviewed the calibration records for the year 2009 and 2010 for all the WTGs. After 2010, there was no calibration conducted for the WTGs. As per CEA guidelines, calibration frequency is 5 years. Hence the validity of calibration certificates conducted in 2009 and 2010 covers the monitoring period. The verification team has accepted the PP's argument that since the electricity readings are

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1	Summary of project owner response	Verification team conclusion
			used for invoicing and the accuracy of the readings is thus ensured. This temporary deviation does not impact negatively either the additionality of the project activity or conservativeness of overall emission reductions. The verification team has checked this deviation and found it complies with the VCS requirements. The details of the latest calibration are reported in Annexure 3 of this report
CAR 3 It is found that the JMR readings are dated 5th or 15th of each month. How the electricity exported is calculated for the month of December 2014 is not clear.	S. No 11	The calculation of electricity exported for the balance period up to 31st Dec 2014 is done by following apportioning procedure. <u>For 5th:</u> End date as per JMR = 05.12.2014 End date as per monitoring period = 31.12.2014 End date of the next month = 05.01.2015 The daily readings are also noted in the log sheets. So, the net electricity exported to the grid is calculated from 6th December 2014 to 31st December 2014 is calculated as follows. Apportioned Generation for balance period for Dec 14 = Daily electricity summation for 6th December 2014 to 31st December 2014. It is also crosschecked with the Jan 2015 invoice. Similar way it is calculated for JMRs having end	The verification team has reviewed the apportioning mechanism used for this project and checked the log sheets and accepted the same as correct. Conclusion: CAR 3 is closed.

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1	Summary of project owner response	Verification team conclusion
		date on 15 th . Same approach was followed during the calculation of first month of this monitoring period also.	
CAR 4 The emission factor is determined ex ante and fixed for the crediting period and is correctly applied by the PP. However, VER sheet is not provided.	S. No 25	VER sheet is submitted for verification.	The verification team has reviewed the VER sheet and all the data are mentioned and hence accepted. Conclusion: CAR 4 is closed.
CR 1 It is observed that there is a difference in actual ER and estimated ER. But reason for difference is not reflected in the monitoring report.	S. No 11	The reasons which are mainly attributable for the difference in electricity generation are as follows; 1. Wind availability 2. Wind speed 3. Machine availability 4. Grid availability	The verification accepted the attribution factor for the deviation in the actual generation which is reasonable. Conclusion: CR 1 is closed
CR 2 The emission reductions for every year (data vintages) are not mentioned in the MR.	S. No 25	The emission reductions for every year (data vintages) are now mentioned in the MR	The verification team has reviewed the monitoring report and now the ER for each data vintage is now mentioned. Conclusion: CR 2 is closed