

VERIFICATION REPORT OF WIND ENERGY PROJECT IN HARAPANAHALLI, KARNATAKA



BUREAU VERITAS CERTIFICATION HOLDING SAS
67/71 BOULEVARD DU CHATEAU, 92200 NEUILLY SUR SEINE CDX – FRANCE
climatechange.ops@uk.bureauveritas.com
www.bureauveritas.com

Project Title	Wind Energy Project in Harapanahalli, Karnataka
Version	01
Report ID	BVC/INDIA – VCS- VER/668.49/2016

Report Title	Wind Energy Project in Harapanahalli, Karnataka
Client	CLP Wind Farms (India) Private Limited
Pages	24
Date of Issue	03 August 2016
Prepared By	Bureau Veritas Certification Holding SAS
Contact	67/71 Boulevard du Château, 92200 Neuilly sur Seine, France Tél. : +33 (0)1 55 24 70 00 Fax : +33 (0)1 55 24 70 climatechange.ops@uk.bureauveritas.com www.bureauveritas.com
Approved By	Mr. Rajendra Sharma
Work Carried Out By	Ms. Sapana Pednekar (Team Leader) Mr. Sanjay Patankar (Internal Technical Review)

Summary:

Bureau Veritas Certification has performed the second verification of the “Wind Energy Project in Harapanahalli, Karnataka” project of CLP Wind Farms (India) Private Limited located across villages of Harakanalu, Arsanahalu, Hyarada, Dasanahalli of Taluka Harapanahalli in District Davangere of Karnataka State in India on the basis of Verified Carbon Standard Version 3, 25 March 2015, v3.5 as well as criteria given to provide for consistent project operations, monitoring and reporting.

The verification scope is defined as a periodic independent review and ex-post determination by the Validation Verification Body (VVB) of the monitored reductions in GHG emissions during defined verification period, and consisted of the following three phases:

- i) desk review of the project design and the baseline and monitoring plan;
- ii) follow-up interviews with project stakeholders;
- iii) Resolution of outstanding issues and the issuance of the final verification report and opinion. The overall verification, from Contract Review to Verification Report & Opinion, was conducted using Bureau Veritas Certification internal procedures.

The project activity is to generate power (electrical energy) from renewable energy (wind energy), which displaces power generation from fossil fuel that would have been the scenario in absence of the project activity, thus achieve GHG emission reduction due to utilization of renewable energy.

The verification is based on the documents like Monitoring Report, Project description (PD), Emission Reduction calculations and other supporting documents provided to the verification team. This verification is carried out in accordance with VCS Standard Version 3 dated 25 October 2015 v3.5 and VCS Program Guide Version3, dated 8 October 2013 v3.5.

During the current verification, the verification team raised findings in the form of corrective action requests (CARs) and Clarification requests (CLs).

In summary, Bureau Veritas Certification confirms that the project is implemented as planned and described in validated VCS-Project Description, registered CDM-PDD under CDM (UNFCCC no. 6390). Installed equipment being essential for generating emission reduction runs reliably and is calibrated appropriately. The monitoring system is in place and the project contributes towards GHG emission reductions. The GHG emission reduction is calculated without material mis-statements.

Table of Contents

1	Introduction	6
1.1	Objective	6
1.2	Scope and Criteria	6
1.3	Level of assurance	6
1.4	Summary Description of the Project.....	7
2	VERIFICATION PRocess	8
2.1	Method and Criteria.....	8
2.2	Document Review	9
2.3	Interviews.....	9
2.4	Site Inspections.....	9
2.5	Resolution of Findings	10
2.5.1	Forward Action Requests	10
2.6	Eligibility for Validation Activities.....	10
3	Validation Findings.....	10
3.1	Participation under Other GHG Programs.....	10
3.2	Methodology Deviations	10
3.3	Project Description Deviations	10
3.4	Grouped Project.....	12
4	Verification Findings.....	12
4.1	Project Implementation Status	12
4.2	Accuracy of GHG Emission Reduction and Removal Calculations	13
4.3	Quality of Evidence to Determine GHG Emission Reductions and Removals	15
4.4	Non-Permanence Risk Analysis	17
5	Verification conclusion.....	17

ANNEXURE I: Details of corrective actions and clarification requested	19
ANNEXURE II: Documents referred during Verification and Validation of the Project Activity.....	23
ANNEXURE III: List of Persons interviewed	23
ANNEXURE IV: Curricula Vitae of the Verification Team Members	24

Abbreviations:

VER	Verified Emission Reduction
VCS	Verified Carbon Standard
VCU	Verified Carbon Unit
BMS	Bureau Veritas Certification's Management System
CAR	Corrective Action Request
CL	Clarification Request
FAR	Forward Action Request
CO ₂	Carbon Dioxide
DOE	Designated Operational Entity
DR	Document Review
GHG	Green House Gases
I	Interview
IETA	International Emissions Trading Association
MV	Means of Verification
MP	Monitoring Plan
MR	Monitoring Report
NGO	Non Governmental Organization
PD	Project Description
PDD	Project Design Document
UNFCCC	United Nations Framework Convention for Climate Change
CDM	Clean Development Mechanism
MU	Million Units
KW	Kilowatt
KWh	Kilowatt-hour
MW	Megawatt
MWh	Megawatt-hour
EF	Emission factor
KPTCL	Karnataka Power Transmission Corporation Limited
BESCOM	Bangalore Electricity Supply Company Limited
PPA	Power Purchase agreement
JMR	Joint Meter Reading
CEA	Central Electricity Authority
PP	Project Proponent
WTG	Wind Turbine Generator

1 INTRODUCTION

1.1 Objective

Verification is the periodic independent review and ex-post determination by the verifier of the monitored reductions in GHG emissions during defined verification period. The objective of the verification is to verify that the project is implemented as planned, to confirm that the monitoring system is in place and fully functional, and to assure that the project has generated verifiable emission reductions. This is the second verification of the project activity under VCS for the vintage from 01/06/2013 to 31/05/2016 (inclusive of both the days). These emission reductions are verified as per the guidance provided by VCS standards version 3 dated 25 October 2015 v3.5.

The verification shall consider both qualitative and quantitative information on emission reductions. Quantitative data comprises the monitoring report and emission reduction calculations submitted to the verifier by the project proponent and qualitative data comprises information on internal management controls, calculation procedures, and procedures for transfer, frequency of emission reduction reports, review and internal audit of calculations/data transfers.

1.2 Scope and Criteria

The verification scope is defined as an independent and objective review of monitoring report, VCS PD for supplementary validation of the project as the project activity is already registered under CDM with UNFCCC, the project's baseline study including the monitored data and other relevant documents made available to verifier and information collected through performing interviews with Project proponent during on-site assessment of the project activity. The verification follows VCS Standard version 3 dated 25 October 2015 v3.5.

The verification is not meant to provide any consultation towards the client. However, stated request for forward actions and/or corrective actions may provide input for improvement of the project monitoring towards reductions in the GHG emissions.

1.3 Level of assurance

The verification team was provided with a monitoring report, covering the period 01/06/2013 to 31/05/2016 (inclusive of both the days). Based on this documentation, a document review, on-site assessment of implementation of the project activity and interview with the project proponent was conducted. The Monitoring Report, version 5, dated 29/07/2016 (/2/) covering the period from 01/06/2013 to 31/05/2016 (inclusive of both the days) serves as the basis for the assessment presented herewith.

The verification report is based on the documents made available to verification team and information provided during interviews. Based on the process and procedures conducted, it can be concluded that the GHG assertion.

1. Is materially correct and is a fair representation of GHG data and information, and
2. Has been prepared in accordance with VCS Standard Version 3 dated 25 March 2015 v3.5.

The data used for the calculation of emission reductions were taken from CEA (Central Electricity Authority), Form B issued by BESCO and Invoice raised by the Project proponent for the net electricity exported to the grid by project activity. As per the validated VCS PD, revised VCS MR and the registered CDM-PDD with the UNFCCC (project ref. no. 6390); the calibration for the meters will be done every six months as per the deviation taken by the project proponent. During the current monitoring period, the calibration frequency was followed and the details of the same are discussed in the following sections of the report. There was no instance when meter were changed during the current verification period. During site visit and subsequent review of meter calibration reports it was confirmed that there was no meter change in the project activity during the current monitoring period. Verification is a requirement for all VCS projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of emission reductions.

Based on the process and procedure conducted, it can be concluded that the GHG assertion is materially correct and is a fair representation of GHG data and information which has been prepared in accordance with the VCS Standard 3 v3.5 for the current verification period.

The verification team considers the assurance level as '**reasonable**'. In accordance with the VCS Standard 3 dated 25 March 2015v3.5, the materiality threshold applied was five percent. The accrued emission reductions for the current monitoring period from the project activity are 270381 tCO₂e.

1.4 Summary Description of the Project

The project activity is owned by M/s CLP Wind Farms (India) Private Limited (hereafter referred to as "the Project Proponent"). It involves the installation of Vestas make 24 numbers Wind Turbine Generator's (WTG) of capacity 1650 KW each located in 4 villages - Harakanalu, Arsanahalu, Hyarada and Dasanahalli, in Harapanahalli Taluk of Davangere District in the state of Karnataka, India. The total capacity of the project activity is 39.6 MW and the entire power generated by the project activity is exported to the Southern region grid with a firm power purchase agreement with BESCO/KPTCL.

The project is registered with the UNFCCC on 22/06/2012 (UNFCCC ref no 6390) and can be viewed from the web link in the UNFCCC website (<http://cdm.unfccc.int/Projects/DB/LROA%20Ltd1339417262.04/view>). The project activity generates electricity using wind energy, which does not result in any greenhouse gas (GHG) emissions. Thus, this project activity leads to a reduction in GHG emissions that would otherwise have occurred when using electricity generated from conventional fossil fuel based sources in the Southern region grid.

The Project Start Date is 21/01/2011, when the first phase comprising of 8 WTGs in the Project activity was commissioned and started electricity generation. The 2nd monitoring period for the Project under the VCS is from 01/06/2013 to 31/05/2016.

Project Title	Wind Energy Project in Harapanahalli, Karnataka
Monitoring period	01/06/2013 to 31/05/2016 (inclusive of both the days)
Project proponent	CLP Wind Farms (India) Private Limited
Methodology used	ACM 0002 version 12.3
Location of the project	Harapanahalli Taluka in Davangere District in Karnataka State, India
Geo Coordinates	As provided in Section 1.5 of VCS PD and Appendix I of the monitoring report

The net electricity supplied to the grid is calculated by BESCO on the basis of main meter readings recorded at the main and check meter installed on Line 1 at 220kV Side at Haraknal Sub station in current scenario. There are additional meters installed on 2 separate feeders at 33kV side to which the project activity's 24 WTGs are connected at same substation. The meter reading is issued and certified by BESCO in the form of B-Form which are recorded jointly in presence of Project proponent's representative every month.

The project activity generates electricity using wind energy, which does not result in any greenhouse gas (GHG) emissions. Thus, this project activity leads to a reduction in GHG emissions that would otherwise have occurred when using electricity generated from conventional fossil fuel based sources in the Southern region grid.

2 VERIFICATION PROCESS

2.1 Method and Criteria

The overall verification, beginning from the Contract Review to Verification report & opinion, was conducted using Bureau Veritas Certification internal procedures.

The project is already registered with the UNFCCC on 22/06/2012 (UNFCCC ref no 6390) and can be viewed from the web link in the UNFCCC website (<http://cdm.unfccc.int/Projects/DB/LRQA%20Ltd1339417262.04/view>). The verification criteria followed by the project proponent is based on the VCS standards Version 3 dated 25 March 2015 v3.5. This is the second verification of the project activity under VCS for the vintage from 01/06/2013 till 31/05/2016 (inclusive of both the days). The verification process consists of following activities:

- i) Desk review of the registered project document including the baseline and the monitoring plan: This process consists of the review of the current and previously approved documents related to the project activity including revised VCS PD, previous verification documents. The current documents include the Monitoring report for the current verification period, emission reduction spreadsheet and other supporting documents (B-Form issued by BESCO, invoices raised by the Project proponent, calibration certificates, etc.) pertaining to the current verification period. Refer to Appendix II for the list of documents.
- ii) Interviews with project stakeholders and Document Review: The second step involves the Interviews and discussion with the Project Proponent and as well as review of documents provided under Annexure II to ensure the implementation and operation of the project activity in line with the registered CDM-PDD under UNFCCC and approved VCS documents;
- iii) Resolution of outstanding issues and the issuance of the final verification report including verification opinion: The third step involves the resolution of the CAR/CL raised. Verification process also includes raising the requests for corrective actions and clarification and any other outstanding issues that needed to be clarified for Bureau Veritas Certification before conclusion on the GHG emission reduction calculation.

To guarantee the transparency of the verification process, the concerns raised are documented in more detail in the verification protocol in Annexure I. The verification of the Project resulted in 02 Corrective Action Requests (CARs) and 03 Clarification Requests (CL).

All the CARs and CLs were closed based on adequate responses from the Project Proponent(s) which meets the applicable requirements. They have been reassessed before their formal acceptance and closure. The closure of all the CARs and CLs are discussed under Annexure I of the verification report.

The project activity involves 100% monitoring of data related to emission reduction calculation. No sampling plan has been envisaged.

2.2 Document Review

The verification team has assessed the accuracy of the project description including monitoring plan through a combination of steps consisting of site visit inspection, review of contract related to the project activity, Scrutiny of technical specification and interview of the project proponent and their representatives. Following supporting documents were reviewed for the current verification period:

- UNFCCC Registered CDM-PDD, CDM-Validation Report, Emission reduction spreadsheet submitted under CDM and VCS PD of the project activity;
- Monitoring report and emission reduction spreadsheet for the current verification period,
- Form B issued by BESCOM on monthly basis and corresponding monthly Invoices raised by the Project proponent for the current verification period, Meter Calibration certificates issued by the BESCOM, etc.

Based on this documentation, a document review and an on-site assessment of implementation and emission reduction was conducted. The Monitoring Report, version 5, dated 29/07/2016 covering the period 01/06/2013-31/05/2016 (inclusive of both the days), serves as the basis for the assessment presented herewith.

2.3 Interviews

During site visit conducted on 21/07/2016, Bureau Veritas Certification performed interviews with the representative of the project proponent and O & M Service provider to confirm selected information and to resolve issues identified in the document review.

Representatives of CLP Wind Farms (India) Private Limited and O & M Service providers were interviewed. The main topics of the interviews are summarized in Table below:

Interviewed organization	Interview topics
CLP Wind Farms (India) Private Limited (Project Proponent)	• Project implementation and changes; if any • Monitoring Plan • Monitored Data • Data recording and archiving • GHG calculation procedures • Resolution of CAR(s) and CL(s) • Change to the registered monitoring plan (if any)
Vestas Wind Technology India Private Limited(O & M Service providers)	• Metering System at the site, • Technical Equipment and operation • Monitoring • Data Recording and archiving • Calibration of measuring equipment • Data uncertainty and residual risks

2.4 Site Inspections

This is second verification of the project activity under VCS for the monitoring period starting from 01/06/2013 to 31/05/2016. The physical site visit for the verification period carried out by Team leader on 21/07/2016.

The verification team reviewed all the records of the sold electricity which are termed as Form B (issued by the BESCOM; state electricity utility which is a government entity) for the current verification period and confirms that there is no change in the project design with respect to the registered PDD under CDM or VCS validated PD.

2.5 Resolution of Findings

The verification team confirms that there are no remaining issues or any material discrepancy in the registered documents on VCSA website and supporting documents mentioned under Annexure II of this report. However, during current verification period there were 02 Corrective Action Requests and 03 Clarification Requests raised and were subsequently closed by the verification team on the basis of correct and appropriate response by the Project proponent. The closure of CAR(s) and CL are discussed under Annexure I of the verification report.

2.5.1 Forward Action Requests

There was no forward action request raised during previous verification. During current verification period, there was no outstanding discrepancy observed by the verification team. Hence, no Forward Action Request was raised.

2.6 Eligibility for Validation Activities

Not Applicable as it is second verification of the project which is validated and registered under CDM and VCS. BVCH holds accreditation for Validation and Verification of Sectoral Scope 1 in which this project qualifies.

3 VALIDATION FINDINGS

3.1 Participation under Other GHG Programs

This is second periodic verification for the registered VCS project activity with project ID 1482. Hence this section is not applicable.

This project is already registered under CDM but, Project Proponent has provided a self-declaration in this regard which confirms that Project Proponent will not claim Emission reductions for current monitoring period 01/06/2013 - 31/05/2016 under any other GHG program except VCS.

3.2 Methodology Deviations

Not Applicable

3.3 Project Description Deviations

The Project proponent has proposed for two deviations in the current monitoring verification period. In the registered documents of the project activity, there are 03 metering locations where monthly recording takes place. Meters at HARA 02 and HARA 03 locations are at 33 kV side which are cluster meters having load of 11WEGs*1650kW and 13WEGs*1650kW respectively. They continuously measure the electricity exported and imported by the project activity. Further on, from these 2 locations, the electricity is stepped up to 220kV at Hara 01 and at this point there is a pair of bidirectional tri-vector meters where electricity export and import are continuously measured and monthly recorded by BESCOM.

Currently, there are only 24 WEGs connected to the Hara 01 metering locations. All these 24 WEGs are owned by Project proponent and are part of the current project. For the current monitoring period, the readings recorded at HARA 01 at the 220 kV side have been considered for the monitoring and billing purpose as no other, WEGs are connected to these meters except the 24 WEGs of the project activity. Hence, ER calculations are based on Electricity Export, Import recorded at meters connected at HARA 01 only, and not from the meters at HARA 02 and HARA 03, which are nowhere referred to by the Project proponent. This is the deviation in project description during the present monitoring period. Hence, readings recorded at HARA 01 are the only readings referred to for the calculation of Emission Reductions and are available in Form B which is issued by BESCOM.

This is likely to be a temporary deviation. If more WEGs (belonging to either the project proponent or any other WEG owner) get added to the wind farm and their output monitored at Hara 01, the monitoring arrangement will revert to the Hara 02 and Hara 03 locations as described in the VCS PD of the registered project. The verifier has accepted this deviation for the reasons below:

- There is no loss of accuracy as a result of the alteration in monitoring (the energy meter at Hara 01 is of the same accuracy class as the meters at Hara 02 & 03 locations)
- Secondly, electricity readings at HARA 01 are more conservative than those at Hara 02 & 03 as the line loss taking place due to the step up from 33 kV to 220 kV also gets accounted for, resulting in a more conservative value of the generation.

The second deviation is regarding calibration frequency of the meters. The Project Proponent has proposed for the change in the frequency of calibration from once every quarter to once every six months. Verifier agrees with Project Proponent that the calibration process is not in the purview of the Project Proponent and is under jurisdiction of the State Utility. During the current verification, the quarterly frequency of the meters was not found to be followed. So was the case during previous verification also. It was reported as a deviation during previous verification also. This issue is being faced by Project Proponent repeatedly due to reasons beyond their control.

A change in the calibration frequency does not affect the accuracy of the energy meters per se. Manufacturers of the meters are known to typically recommend a 3-5 year calibration frequency. Even with a change in frequency from “quarterly” to “half-yearly”, therefore, the calibration would be taking place much more frequently than the manufacturer’s own recommendation. The verifier has therefore accepted this deviation as it will not impact the accuracy of the electricity generation and consequently, that of the emission reductions claimed. The deviation also has no effect on the applicability of the methodology, additionality or the appropriateness of the baseline scenario as it is only related to the monitoring arrangements within the project.

The verification team is of the opinion therefore, that the deviation taken by Project proponent is acceptable and it will not affect computation of ER or impact the project activity performance.

3.4 Grouped Project

Not applicable as this is not a grouped project.

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

It has been observed by the verification team that the project involves the installation of 24 numbers of 1650 kW WTGs of Vestas make in Harakanalu, Arsanahalu, Hyarada and Dasanahalli Villages in Harapanahalli Taluk in Davangere district in the state of Karnataka, India. All the 24 WTG's are leading to a cumulative capacity of the project as 39.6 MW, which is same as described in the registered CDM PDD (Ref/4/) and VCS Validated PD (Ref/3/). The entire power generated by the project activity is exported to the southern regional grid of India with a firm energy purchase agreement with the BESCO.

During the site visit and document review of the CDM registered PDD and monitoring report, the verification team observed that the entire electricity generated from all these Wind Turbine Generator's is supplied to the grid, which is in line with the CDM registered PDD (/5/). The following table provides the details of implementation in detail.

Sr. No	WTG Location No	No of WTG	Commissioning Date	Capacity (MW)
1	H-28, H-29, H-30, H-31, H-32, H-33, H-34, H-35	08	21/01/2011	13.2
2	H-15, H-16, H-17, H-18, H-20, H-21, H-22, H-23, H-24, H-25, H-26, H-27, H-36, H-37, H-38	16	25/02/2011	26.4

The electricity exported and imported from the grid is recorded through metering points connected on Line 1 which is at 220kV side of grid interconnection point. At this metering point joint meter reading takes place every month in presence of KPTCL/BESCO personnel and project proponent's representative.

It was observed that till present scenario, the wind farm where the project activity is located has only 24 WTGs belonging to the project proponent and thus the energy exported is from the project activity WTGs only. Hence, Joint Meter Reading taking place at Line 1 meter is acceptable considering the current situation. However, in future, if some other WTGs get added to the wind farm, then the JMR at the Feeder meters(Hara 02 and HARA 03) where exclusively project activity WTGs are connected will have to be considered after accounting for the transmission losses that are calculated by KPTCL/BESCO. Based on this monthly recording, the KPTCL/BESCO issues 'Form B' based on which the Project Proponent raises an invoice for payments.

All meters are of bi-directional tri-vector type with an accuracy class of 0.2.

Hence, the verification team confirms that the project activity has been implemented as per the description provided in the registered CDM PDD (/4/) and validated VCS-PD (Ref/3/). The equipment necessary for GHG emission reductions are in place.

The inadequacies of Monitoring Report were reported in the CAR 1 in the protocol in Annexure I. The Project Proponent responded with the revised monitoring report (Version 5, dated 29/07/2016) (Ref/2/) addressing the findings of the Verification Team along with the relevant supporting documents. The verification team verified the responses and closed CAR 1. The revised Monitoring Report addresses the issues satisfactorily and is in line with the applicable guidelines.

The verification team confirms that no information about the project activity provided in the final monitoring report is different from that stated in the registered VCS-PD, and which could have caused or is likely to cause any increase in the estimates of emission reductions during the future monitoring periods.

Compliance of Monitoring with the Monitoring Plan

The monitoring plan is in accordance with the UNFCCC approved methodology applied by the registered VCS project activity viz; ACM 0002, version 12.3.

The primary monitoring in the project activity is that of the net electricity supplied to the state electricity grid. The verification team hereby confirms that the registered monitoring plan is in accordance with the UNFCCC approved methodology applied by the registered CDM project activity. The deviation as described in above section 3.3 was taken by the Project Proponent for the current verification period.

Corresponding to the Section 4 of VCS version 03 date 25 March 2015 v3.5, Bureau Veritas Certification can confirm that the monitoring plan is in accordance with the approved methodology including applicable tool(s) applied by the Project.

Thus, the verification team confirms that the actual operation of the project activity is in line with the description in the VCS registered PD. There was no other data or information provided in the monitoring report that was different from the description stated in the CDM-registered PDD and VCS registered PD and having caused or likely to cause any increase in the estimates of emission reductions in the future monitoring periods.

The Project proponent has confirmed that there are no GHG emission reductions or removals generated by the project have been included in any emissions trading program or any other mechanism that includes GHG allowance trading. Also, have not claimed any other form of environmental credits nor has participated or was rejected under any other GHG programs. The Project proponent has also provided undertaking (/15/) to support the same in response verification team's clarification sought.

4.2 Accuracy of GHG Emission Reduction and Removal Calculations

Monitoring of the project activity parameters has been carried out in accordance with the monitoring plan, contained in the CDM-registered PDD.

The parameters required by the registered monitoring plan and the manner in which the verification team has verified the information flow (from data generation, aggregation, to recording, calculation and reporting for these parameters) including the values in the monitoring reports are described below:

- (a) **Quantity of net Electricity generation supplied by the plant to the grid in the year y ($EG_{\text{facility},y}$)** – The electricity exported and imported by all 24 WTGs of the project activity are continuously measured and monthly recorded at the bulk meter by the representatives of BESCO and the Project Proponent (Ref/13/). The emission reduction calculation is based on the net electricity exported values as indicated in the Form B. Based on this Form B, the Project Proponent raises an invoice to the BESCO, subsequent to which, the payments are released. The electricity generation value in the Form B issued by KPTCL/BESCO has been compared with the invoices raised by the project proponent against KPTCL/BESCO¹ and a conservative value (among the value indicated in Form B and in Invoice) is considered for calculation of emission reduction.
- (b) **$EF_{\text{grid CM},y}$** , Combined CO₂ emission factor for southern grid - The emission factor considered for the current monitoring period is based on the CEA database version 10 which is latest version available to the project proponent. The emission factor value of 0.9817 tCO₂e/MWh used in the monitoring report has been verified against the latest CEA Database and was found to be consistent. CEA is the sole authority for the publication of such data in India. It is a part of the Ministry of Power of the Government of India and therefore, is a source of authentic and credible data for the purpose of the determination of the grid emission factor.

All records like monthly Form B (Ref/13/), Invoice raised by the Project proponent (Ref/14/), Calibration certificates (Ref/16/), etc. related to the project activity operations are also well maintained by the Project Proponent. The data was found to be recorded diligently.

As per the methodology ACM0002 Version 12.3 and the CDM registered PDD, the emission reductions for the Project are calculated as the baseline emissions minus the project emissions and leakage. Hence the emission reduction is determined by the following formula:

$$ER_y = BE_y - PE_y - LE_y$$

Where,

ER_y = Emission reductions

BE_y = Baseline emissions

PE_y = Project emissions

¹ The verification team noted that there is minor difference in the net electricity values mentioned in Form B statements and the invoices. This difference is due to the fact that for invoicing the Project participant considers 115 % of import, which is in accordance with the provisions of PPA.

Ley = Leakage Emissions

Baseline Emissions

It is calculated as the product of Net electricity supplied to the grid multiplied with Grid Emission Factor and is determined using the following formula:

$$BE_y = EG_y * EF_y$$

$$= 275423 * 0.9817 = 270381 \text{ tCO}_2\text{e}$$

Where,

EF_y = GHG emission factor of the southern Grid, 0.9817 tCO₂e/MWh

EG_y = Net electricity supplied to the grid (MWh)

Project Emissions

Project emission is considered to be nil which is in line with the applied methodology ACM 0002 version 12.3.

Leakage Emissions

No leakage needs to be considered according to ACM0002 Version 12.3

Emission reductions

The emission reductions during the monitoring period from 01/06/2013 to 31/05/2016 are calculated as:

$$ER_y = BE_y - PE_y - LE_y$$

$$= 270381 - 0 - 0$$

$$= 270381 \text{ tCO}_2\text{e}$$

4.3 Quality of Evidence to Determine GHG Emission Reductions and Removals

The verification team confirms that all parameters stated in the registered monitoring plan were monitored throughout the current verification period and data on the same was available.

The following actions were taken to ensure that the most conservative assumption theoretically possible has been made:

1. Ensured that the data that directly affect emission reductions are from official sources.

2. The values of net electricity exported to the grid as indicated in the Form B (/13/) were also cross-checked with the invoices raised by the Project proponent on BESCOM/KPTCL (/14/). The verification team noted that there is minor difference in the net electricity values mentioned in Form B statements and the invoices. This difference is due to the fact that for invoicing the Project proponent considers 115% of import, which is in accordance with the provisions of PPA.
3. The registered monitoring plan indicates the frequency of accuracy testing/ calibration of the main and check meters as once in a quarter. However, during the current verification period, Project Proponent has sought for deviation and has considered frequency of meters to be once in six months considering the fact that calibration of meters is taken up by testing division of BESCOM/KPTCL and Project Proponent has no say on it. During previous verification, there was delay in calibration to which Project Proponent had taken deviation. Considering the frequency of calibration activity followed by BESCOM/KPTCL which is not always once in 3 every months, Project Proponent had proposed for change in meter calibration frequency from once in 3 months to once in 6 months. The verification team is of the opinion, that change in frequency from 3 months to 6 months will not have any effect on ER calculations accuracy looking at the intervals at which calibration of meters have taken place during current monitoring period. It has been within 3-4 months from the previous date of calibration. Following are the detail of the calibration of meters that took place during the current monitoring period.

Metering Location	Meter Serial No	Date of calibration	Expected date of calibration	Comment	Delay
Bulk Meter on Line 1@220kV (HARA 01)	11068937 (MM)	23/02/2013 ²	22/08/2013	Error within permissible limits of error	NIL
		09/07/2013	08/01/2014		NIL
		21/12/2013	20/06/2014		NIL
		14/03/2014	13/09/2014		NIL
		11/06/2014	10/12/2014		NIL
		16/10/2014	15/04/2015		NIL
	11068943 (CM)	13/02/2015	12/08/2015		NIL
		30/05/2015	29/11/2015		NIL
		28/08/2015	27/02/2016		NIL
		25/11/2015	24/05/2016		NIL
		24/02/2016	23/08/2016		NIL
		26/05/2016	25/11/2016		NIL

² Prior to current verification period

As evident from above, there was no delay in calibration during the current verification period. All the Calibration reports indicate that all the meters were within their permissible limits of error. In line with paragraph 3.6.2 of VCS Standard version 3, dated 25 March 2015 v3.5, verification team confirms that the deviation is appropriately described. Hence verification team was able to conclude that although there was a deviation taken during the current verification period, the project remains in compliance with the VCS rules.

Verification team further observed that there have been no case of meter failure or meter change during the current verification period and hence confirms there have been no instances of data uncertainty in the current verification period.

4. There were no major shutdown and/or emergencies situations during the current verification period. The verification team observed that there is no FAR raised during the validation of the project activity.

All the data was available and monitored in accordance with the registered monitoring plan. There is no instance of data not being available during the current verification period. The action taken to ensure that the most conservative assumption theoretically possible has been made by the project proponent was to ensure that the data that directly affect emission reductions are taken from official sources.

Appropriate methods and formulae for calculating baseline emissions, have been followed. There are no project emissions to be considered as per the applied methodology and also since there is no transfer of equipment involved, leakage also do not apply. Hence, the verification team confirms that the emission reductions claimed during the current monitoring period are conservative and reliable.

4.4 Non-Permanence Risk Analysis

Not Applicable

5 VERIFICATION CONCLUSION

The verification scope is an independent and objective review of the VCS Project description, the project's baseline study and monitoring plan and other relevant documents. The review is to verify the implementation of monitoring plan as defined in registered VCS PD. The period for verification is from 01/06/2013 to 31/05/2016 (inclusive of both the days).

The verification of the monitored data indicates the emission reductions and the amount for emission reductions for the monitoring period are provided below.

Monitoring Period		Total Emission Reductions Achieved (tCO ₂ e)
From	To	
01/06/2013	31/12/2013	68,404

01/01/2014	31/12/2014	92,540
01/01/2015	31/12/2015	85,077
01/01/2016	31/05/2016	24,360

The calculations of emission reductions are found to be correct. The baseline for the Southern regional grid has been taken for arriving at baseline emissions. The grid emission factor of 0.9817tCO₂e/MWh for Southern regional grid was found to be correct.

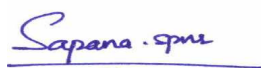
Appropriate procedures for maintaining the confidentiality and safe custody of the validation or verification documentation and for retaining them for a period sufficient to meet the needs of the client, the responsible parties, the GHG programmes to which they subscribe, and in accordance with legal and professional requirements of record retention have been established.

The verification team confirms that the project is implemented as planned and described in the Registered PDD with UNFCCC under CDM and validated VCSPD. The monitoring mechanism is effective and reliable. The reported data are accurate and correct based on all the records provided to the verification team during the verification as provided in annexure-II. The installed equipment being essential for generating the emission reductions run reliably and the measuring equipment/instruments are well within the frequency of calibration.

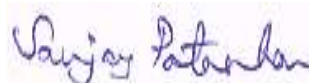
Verification period: From 01 June 2013 to 31 May 2016

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

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
2013	68,404	0	0	68,404
2014	92,540	0	0	92,540
2015	85,077			85,077
2016	24,360	0	0	24,360
Total	2,70,381	0	0	2,70,381



Ms. Sapana Pednekar
(Team Leader)
03/08/2016
Mumbai, India



Mr. Sanjay Patankar
(Internal Technical Review)
03/08/2016
Mumbai, India

ANNEXURE I: DETAILS OF CORRECTIVE ACTIONS AND CLARIFICATION REQUESTED

Draft report clarifications and corrective action requests by validation team	Reference/ Section	Summary of project owner response	Validation team conclusion
CAR 1 In section 1.1 of the MR, the description provided reflects that project plans to utilise electricity generated from the project activity to be supplied to the Southern Regional Grid when in actual the project is already commissioned and in operation since then exporting electricity generated from 24 WTGs to the grid. The description is required to be revised to present the current scenario.	1.1 MR	Section 1.1 is updated with corrected details.	The description is revised to provide correct scenario of the project. Hence, CAR 01 is closed.
CL 1: In section 1.9, the Project Proponent claims that although the project activity is registered under CDM, the carbon credits generated from the project activity will not be claimed under 2 GHG programmes for same monitoring period. However, Project Proponent to provide an authentic declaration for the same to substantiate the claim for the current monitoring period (01.06.2013 - 31.05.2016).	1.9 MR	Official declaration letter on this matter is submitted to DOE	The undertaking provided by the Project Proponent dated 26/07/2016 confirms that emission reductions under current monitoring period will not be claimed under any other GHG program. This project activity is also registered under CDM. In view of same, the Project Proponent has also confirmed that although the monitoring report representing the same monitoring period gets published on the UNFCCC platform in the near future, the Emission Reductions verified under VCS only stands valid for the current verification period. Based on the valid declaration submitted CL 01 is vacated.

Draft report clarifications and corrective action requests by validation team	Reference/ Section	Summary of project owner response	Validation team conclusion
CL 2 : 1. The main and check meter details provided in the MR and ER sheet for HARA 01 metering point do not match with the details provided in the MR and calibration certificates provided. Please clarify. 2. Also, it is not clear why calibration details for 2011 and 2012 are also provided considering its irrelevance with current monitoring period.	Section 3.3 of MR, ER sheet - Calibration details	1. Documents are updated with the correct meter details 2. Non-relevant calibration details are removed from the ER sheet and the calibration reports covering the entire monitoring period are now incorporated in the revised monitoring report.	1. The current meter details are now provided in the revised MR. The meters details were also checked during the site visit and are the same as provided in the revised MR. Hence point 01 is closed. 2. The irrelevant calibration dates not applicable to current verification period are now removed by the Project Proponent and the revision is acceptable. Hence, point 02 is closed. Based on satisfactory response provided by the Project Proponent, CL02 is closed.
CL 3 : 1. During review of Calibration Certificates, it was observed that quarterly calibration/meter testing frequency was not followed during year 2013, 2014 and start months of 2015 in the current monitoring period. However, this delay was not found to be considered in the calculation of corresponding months Emission Reductions?	Appendix 01-MR, ER Sheet- Calibration Details	1. In line with the registered PD, proposed calibration frequency was once three months and state regulatory body is responsible to conduct the calibration in stipulated frequency. However, as the calibration of energy meters is beyond the control of PP and there are instances when state regulatory body has not performed the calibration checks within the due date of the next calibration. Thus, deviation in calibration frequency has been considered and revised calibration frequency would be once in six months instead of	1. The Project Proponent has proposed for couple of deviations in the current monitoring period. Meters at HARA 02 and HARA 03 locations are at 33 kV side which are cluster meters having load of 11WEGs*1650kW and 13WEGs*1650kW respectively, which is later stepped up to 220kV at Hara 01. As currently, there are only 24 WEGs connected to these meters. All these WEGs are owned by Project Proponent and are part of the current project. In the current situation, the readings recorded at HARA 01 connected at 220 kV side are considered for billing purpose as there are no other Investors WEGs connected to these meters except project activity's 24 WEGs. Hence, ER calculations are based on Electricity

Draft report clarifications and corrective action requests by validation team	Reference/ Section	Summary of project owner response	Validation team conclusion
2. Also latest calibration details post Feb 2016 for HARA 02 and HARA 03 are not provided in the monitoring report, ER sheet.		once in three months. Since all meters were calibrated before the due date (as per deviation) error factor is not applicable. ER working and MR have been updated in line with this deviation. In actual project scenario, the Haraknal sub-station monitors only 24 WTGs which are belongs the PP only. Thus, the energy exported and imported monitored by Hara-1 energy meter represent the energy exported and imported by the entire project activity only and invoice has been raised considering the meter reading monitored by Hara-1 energy meter. Thus, PP has considered a deviation to use only Hara-1 main and check meter for monitoring of energy exported or imported by Project activity instead of three energy meter (Hara-1, HARA-2 and HARA-3) in registered monitoring plan of the project, until new capacity addition takes place at this site. Same deviation has been incorporated in the revised monitoring report.	Exported and Imported at meters connected at HARA 01 only. Readings recorded at HARA 02 and HARA 03 are nowhere referred by Project Proponent in Billing purpose. Further readings measured at HARA 01 are more conservative as they are after accounting Transmission line loss after stepping up from 33kV to 220kV. This is a temporary deviation till addition of more WEGs in the project location belonging to Project Proponent or some other investor. So the verification team is of the opinion that deviation requested by Project Proponent will not affect computation of ER or impact the applicability of the methodology, additionality or the appropriateness of the baseline scenario. 2. The second deviation regarding calibration frequency of the meters. The Project Proponent has proposed for the change in the frequency from once every quarter to once every six months. Verification agrees with Project Proponent that the calibration process is not in the purview of the Project Proponent and it is under jurisdiction of State Utility. During current verification, the quarterly frequency of the meters was not found to be followed. So was the case during previous verification also. It was reported as deviation during previous verification also. As the same problem is faced by Project Proponent repeatedly without any of

Draft report clarifications and corrective action requests by validation team	Reference/ Section	Summary of project owner response	Validation team conclusion
			their fault. Verification team agrees with the deviation sought by the Project Proponent. Hence, CL 3 is closed.
CAR 2 1. The start date of monitoring period stated in the ER sheet is incorrect. 2. Import value for month of June 2013 do not match with the value in corresponding Form B/ Invoice. 3. Net export value for month of Nov 2013 is incorrect.	ER Sheet	1. Correction are done in updated ER sheet 2. Import value for Jun 2013 is updated 3. Net export value for Nov 2013 is updated	1. The correct date of current monitoring period i.e., 01/06/2013- 31/05/2016 is now provided in the revised ER calculation sheet. Hence, point 01 is closed. 2. The import value for June 2013 is now corrected in the revised ER sheet as well as revised MR. Hence, point 2 is closed. 3. The Net export value is now corrected in the revised ER sheet and revised MR. Hence point 03 is closed. Based on all appropriate corrections made by the Project Proponent, CAR 02 is closed.

ANNEXURE II: DOCUMENTS REFERRED DURING VERIFICATION AND VALIDATION OF THE PROJECT ACTIVITY

- /1/ VCS Monitoring Report, version 03, dated 30/06/2016
- /2/ Final VCS MR version 5 dated 29/07/2016
- /3/ Final VCS PD version 03 dated 26/07/2015
- /4/ CDM PDD registered with UNFCCC project reference no. 6390
- /5/ Validation report vide ref no CDM-MUM-0061741 (revision 4.1) dated 11/06/2012 registered with UNFCCC under CDM with reference no. 6390
- /6/ Estimated Emission Reduction Calculation Sheet as per registered project UNFCCC reference no 6390
- /7/ Proof of registration as CDM Project activity (<http://cdm.unfccc.int/Projects/DB/LRQA%20Ltd1339417262.04/view>)
- /8/ VCS Monitoring report template Current Version: v3.3 dated on 8 October 2013
- /9/ Blank VCS PD Format with Guidelines for completion of VCS Project description template Version: v3.3 dated 8 October 2013
- /10/ Verified Carbon Standard Version 3, v3.5 dated 25 March 2015 v.3.5
- /11/ VCS Program Guide Version 3 v3.5 dated 8 October 2013
- /12/ Emission Reduction Calculation Sheet
- /13/ Monthly Form B issued by BESCOM/KPTCL for the current verification period
- /14/ Copy of all invoices raised to BESCOM by Project proponent for net electricity exported to the grid for the current verification period
- /15/ Declaration from CLP Wind Farms (India) Private Limited that the project shall not claim credits for the same period under any other GHG program dated 26/07/2016
- /16/ Calibration certificates for year issued by BESCOM for the current monitoring period

ANNEXURE III: LIST OF PERSONS INTERVIEWED

List persons interviewed during the verification process or persons that contributed with other information that are not included in the documents listed above.

/1/	Mr. Dipjay Sanchania	CLP Wind Farms (India) Private Limited
/2/	Mr. Sandip Saha	CLP Wind Farms (India) Private Limited
/3/	Mr. P Srinivas	Manager- Operation, CLP Wind Farms (India) Private Limited
/4/	Mr. Prashant. S	Area Service Manager, Vestas Wind Technology India Private Limited
/5/	Mr. Mohammad Rafi	S/s Engineer, Vestas Wind Technology India Private Limited

ANNEXURE IV: Curricula Vitae of the Verification Team Members**Ms. Sapana Pednekar - Team Leader****Bureau Veritas Certification, Lead Verifier - Climate change**

She is a Post Graduate in Environmental Science from University of Pune, India and holds a PGDBA in Financial Management from Welingkars School of Management. She has total Industrial work experience of 10 years in the field of environmental studies of which more than 8 years' experience is in the field of CDM and VCS. She is working in Bureau Veritas Certification (India) Pvt. Ltd. for last more than 6 years and has undergone training related to Clean Development Mechanism and is currently involved in validation and verification of more than 60 CDM/ VCS project activities. She has undergone and successfully completed ISO 14001:2004 standard, ISO 50001:2011 standard Lead Auditor Courses and ISO 14064:2006 Standard Lead verifier course.

Sanjay Patankar, Internal Technical Reviewer**Bureau Veritas Certification, Lead verifier – Climate Change**

Educational qualifications: B.E. (Mech.) M.E. (Mech.)

He has over 20 years of experience in engineering manufacturing industry covering various functions like enterprise management, product design, engineering, tool & die design, improvements in the production shop, quality assurance & control and systems planning and implementation, including ISO 9001 based quality management systems. Working for the last 9 years in Bureau Veritas Certification (India) Pvt. Ltd. as Lead Auditor for ISO 9001, 14001 and OHSAS 18001 standards/specifications.