



VOLUNTARY CARBON STANDARD 2007.1

VERIFICATION REPORT

**44 MW BUNDLED WIND POWER PROJECT IN
MAHARASHTRA MANAGED BY ENERCON INDIA
LIMITED.**

**Monitoring Period: 2009-06-01 to 2010-09-30
(incl. both days)**

Report No: 8107214023- 10/472

Date: 2011-04-05

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Name of Verification company:	Date of the issue:
TÜV NORD CERT GmbH	2011-04-05
Report Title:	Approved by:
44 MW Bundled Wind Power Project in Maharashtra managed by Enercon India Limited.	Rainer Winter
Client:	Project Title:
Enercon (India) Limited	44 MW Bundled Wind Power Project in Maharashtra managed by Enercon India Limited.
Summary:	
Enercon (India) Limited has commissioned the TÜV NORD JI / CDM Certification Program to carry out the verification of the Project "44 MW Bundled Wind Power Project in Maharashtra managed by Enercon India Limited" in Satara, Sangli, Nasik, and Ahmednagar District in the state of Maharashtra, India with regard to the requirements of VCS 2007.1 Standard. The purpose of this project activity is to generate electricity using renewable sources (wind) and export it to the connected state grid i.e. MSEDCL (Maharashtra state electricity Distribution Company Limited) which is a part of NEWNE grid of India^{/CEA/}, thereby displacing the grid that would have been generated predominantly from fossil fuel based power generation. In the course of the verification 5 Corrective Action Requests (CARs) and no Clarification request were raised which are successfully closed out. There are no FAR raised during the verification period. As per the registered VCS PD the online panel meter will be calibrated annually. However, the panel meter does not need any calibration as it is software based integrated system which has been specially designed for control of wind turbines, where control functions, data collection and storage, real time grid monitoring and storage function are integrated. The verification team has cross checked the same from the technological supplier manual and thus the deviation is accepted to the verification team. The verification is based on the draft monitoring report^{/MR1/},	

revised monitoring report^{/MR2/}, the monitoring plan as set out in the validated PD^{/VCS-PD/}, the validation report^{/VCS-VAL/}, emission reduction calculation spreadsheet^{/XLS1/,/XLS2/} and supporting documents made available to the TÜV NORD JI/CDM CP by the project participant.

As the result of the 2nd periodic verification, the verifier confirms that the GHG emission reductions are calculated without material misstatements in a conservative and appropriate manner. TÜV NORD JI/CDM CP herewith confirms that the project has achieved emission reductions in the above mentioned reporting period of 01-06-2009 to 30-09-2010 as follows:

Emission reductions 98,873t CO2 equivalents

Work carried out by:	Number of pages:
Mr. Manojkumar Borekar (TL) Mr. Prasad Jakkaraju (TE) Mr. Jimmy Sah (TM) Mr. Sukanta Das (TM) Mr. Ajay Singh Thakur (T)	38

Abbreviations

BAU	Business as usual
CA	Corrective Action / Clarification Action
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEA	Central Electricity Authority
CO₂	Carbon dioxide
CO_{2e}	Carbon dioxide equivalent
CP	Certification Program
CL	Clarification Request
DNA	Designated National Authority
EB	CDM Executive Board
EIA	Environmental Impact Assessment
ER	Emission Reduction
FAR	Forward Action Request
GHG	Greenhouse gas(es)
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
JMR	Joint Meter Reading
MP	Monitoring Plan
MR	Monitoring Report
MSEDCL	Maharashtra State Electricity Distribution Company Limited
NEWNE	North East West Northeast
O&M	Operation and Maintenance
PLF	Plant Load Factor
QC/QA	Quality control/Quality assurance
UNFCCC	United Nations Framework Convention on Climate Change
VCS	Voluntary Carbon Standard
VCS - PD	VCS - Project Description
VCU	Voluntary Carbon Unit
VVM	Validation and Verification Manual
WEC	Wind Energy Converter

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1 INTRODUCTION

The Enercon (India) Limited has commissioned the TÜV NORD JI/CDM Certification Program to carry out the verification of the project:

“44 MW Bundled Wind Power Project in Maharashtra managed by Enercon India Limited.”

with regard to the relevant requirements of the Voluntary Carbon Standard 2007.1^{/VCS/}. The verifiers have reviewed the implementation of the monitoring plan (MP) in the registered VCS project for the monitoring period 2009-06-01 to 2010-09-30,

The applied monitoring methodology is ACM0002 Version 10 “Consolidated baseline methodology for grid-connected electricity generation from renewable sources”.

1.1 Objective

The purpose of this verification, by independent checking of objective evidence, is as follows:

- to verify that the project is implemented as described in the project design document;
- to assess the implementation of the monitoring plan (MP) content in the VCS-PD;
- to assess the project's compliance with other relevant rules, including the host country (India) legislation;
- to confirm that the monitoring system is implemented and fully functional to generate voluntary emission reductions (VERs / VCUs) without any double counting; and
- to establish that the data reported are accurate, complete, consistent, transparent and free of material error or omission by checking the monitoring records and the emissions reduction calculation.

1.2 Scope and Criteria

The verification of this project is based on the validated project design document ^{/VCS-PD/}, the monitoring report Version 03^{/MR/}, emission reduction calculation spread sheet Version 03^{/XLS/}, supporting documents made available to the verifier and information collected through performing interviews and during the on-site assessment. Furthermore publicly available information was considered as far as available and required.

The TÜV NORD JI/CDM CP has employed a risk-based approach in the verification, focusing on the identification of significant risks and reliability of project monitoring and generation of emission reductions.

1.3 VCS Project Description

1.3.1 Project Characteristics

Essential data of the project is presented in the following Table 1-1.

Table 1-1: Project Characteristics

Item	Data
Project title	44 MW Bundled Wind Power Project in Maharashtra managed by Enercon India Limited.
Project owner	Enercon (India) Limited
Any specific project categories	☐ Mega project ($> 10^6$ t CO _{2eq} / a) ☒ Project (5,000-1,000,000 tCO _{2e} per year) ☐ Micro project (< 5000 t CO _{2eq} / a) ☐ AFOLU project ☐ Grouped project ☐ No specific project category
VCS PD dated	Draft: - Final: 2009-07-20
Applied Methodology	ACM0002 Version 10
Project starting date	2006-02-07
Crediting period	☐ Renewable Crediting Period (7 y) ☒ Fixed Crediting Period (10 y)
Start of crediting period	2006-04-01

1.3.2 Project Location

The details of the project location are given in table 1-2:

Table 1-2: Project Location

No.	Project Location
Host Country	India
Region:	Maharashtra
Project location address:	Satara, Sangli, Nasik, and Ahmednagar District
Latitude:	Described for each WEC under section 1.3.3
Longitude:	Described for each WEC under section 1.3.3

1.3.3 Technical Project Description

The project under consideration is set up to produce clean power from the wind electric converters. The generated electricity is being supplied to state electricity grid which is the part of NEWNE. The Project leads to reduced Greenhouse Gas (GHG) emissions because it displaces electricity from fossil fuel based electricity generation

plants. The project is helping in bridging the demand supply gap by using wind as a source of generating electrical energy.

The project activity consists of the 55 machines of Enercon make of 800 KW each, aggregating to the capacity of 44 MW. The project considered harnessed renewable resources in the region, thereby displacing non-renewable natural resources thereby ultimately leading to sustainable economic and environmental development. Enercon (India) Ltd (“Enercon” or “EIL”) is the equipment supplier and the operations and maintenance contractor for the project

The emission reduction for the reported monitoring period is based on net electricity of 109,175.43 MWh supplied to state electricity grid which is connected to the NEWNE grid of India and the validated ex-ante grid emission factor (0.9058975CO_{2e}/MWh)^{/ceal/VCS-VAL} of NEWNE grid is in accordance with methodology ACM0002 version: 10^{/ACM0002/}. The Net electricity supplied from project activity was calculated as the difference between electricity exported to the grid and the electricity imported from the grid which are derived from the continuously measured export and import electricity meters respectively. The net electricity supplied to the grid is the basis of the emission reduction calculation.

Each meter is of two way tri-vector export-import meter installed by MSEDCL the generated power from the WECs will be measured at 22 KV bays. Metering system for the project activity consists of one main and one check meter. Both the meters are two-way trivector meters capable of recording import and export of electricity and provide output in the form of net electricity supplied to the grid. The metering equipment is maintained in accordance with electricity standards prevalent in Maharashtra. Furthermore, the electricity exported and imported values are recorded by taking a Joint Meter Reading (JMR) in the presence of officials from MSEDCL and Enercon as O&M contractor, on behalf of project owner.

None of the meters have been changed during the reported monitoring vintage. No abnormality was found in the metering system^{/cal/}.

The following table gives the detail description of the location of the WECs and respective latitude and longitude:

Serial No	Customer Name	WEC Capacity	Total Capacity	Date of Commissioning	Latitude	Longitude
1	G. B. Rubber Products	0.8	1.6	14-Feb-06	17°33'15" to	73°55'28" to
2	G. B. Rubber Products	0.8		14-Feb-06	17°33'56"	73°56'51"
3	Shah Lulla Estate Developers	0.8	0.8	14-Feb-06	17°33'15" to	73°55'28" to

					17°33'56"	73°56'51"
4	Liberty Oil Mills Ltd.	0.8	2.4	7-Feb-06	17°33'15" to	73°55'28" to
5	Liberty Oil Mills Ltd.	0.8		7-Feb-06	17°33'56"	73°56'51"
6	Liberty Oil Mills Ltd.	0.8		7-Feb-06		
7	Liberty Oil Mills Ltd.	0.8	1.6	8-Feb-06	17°11'47.6"	73°59'12.7"
8	Liberty Oil Mills Ltd.	0.8		8-Feb-06	17°11'51.2"	73°59'13.5"
9	Paceman Sales Promotion P. Ltd.	0.8	0.8	22-Mar-06	17°8'36.5"	73°55'14.3"
10	Delta Enterprises	0.8	1.6	15-Jun-06	17°7'11.3"	73°56'5.7"
11	Delta Enterprises	0.8		15-Jun-06	17°8'35.6"	73°55'2.8"
12	Delta Enterprises	0.8	0.8	22-Mar-06	17°8'28.5"	73°55'21.7"
13	Mahanagar Developers	0.8	7.2	5-Jan-07	17°9'7.6"	73°55'5.8"
14	Mahanagar Developers	0.8		5-Jan-07	17°9'14.7"	73°55'2.5"
15	Mahanagar Developers	0.8		5-Jan-07	17°9'19.1"	73°55'3.6"
16	Mahanagar Developers	0.8		5-Jan-07	17°9'24.6"	73°55'6"
17	Mahanagar Developers	0.8		5-Jan-07	17°9'28.2"	73°55'6.7"
18	Mahanagar Developers	0.8		5-Jan-07	17°9'14.5"	73°55'18.1"
19	Mahanagar Developers	0.8		5-Jan-07	17°9'10.8"	73°55'36.6"
20	Mahanagar Developers	0.8		5-Jan-07	17°9'10.9"	73°55'3.5"
21	Mahanagar Developers	0.8		6-Mar-07	17°8'10.9"	73°56'0.5"
22	Mahanagar Developers	0.8		6-Mar-07		
23	Kishor Food Products P. Ltd.	0.8	0.8	10-Dec-08	17°8'53.2"	73°54'57.7"
24	Mr. J. P. Patel	0.8	0.8	29-Mar-07	19°45'53.4"	73°50'32.8"
25	Mr. C. P. Patel	0.8	0.8	31-Mar-07	19°45'17.1"	73°50'31.4"
26	Mr. V. V. Patel	0.8	0.8	31-Mar-07	19°44'58"	73°50'13.1"
27	Mr. J. V. Patel	0.8	0.8	29-Mar-07	19°45'12.7"	73°50'29.2"
28	Mr. S. V. Patel	0.8	0.8	29-Mar-07	19°45'46.9"	73°50'34.1"
29	Mr. V. L. Patel	0.8	0.8	29-Mar-07	19°44'33.5"	73°50'29.2"
30	Laxmi Narayan Best Chiwda	0.8	0.8	29-Mar-07	19°45'2.9"	73°50'12.6"
31	New Sahyadri Industries Ltd.	0.8	1.6	27-Jan-07	19°44'24.3"	73°50'40.8"
32	New Sahyadri Industries Ltd.	0.8		27-Jan-07	19°44'28.2"	73°50'35.7"
33	Mr. P. L. Patel	0.8	0.8	6-Feb-07	19°41'7.2"	73°48'48.2"

34	Elpro International	0.8	0.8	30-Dec-07	19°41'41.8"	73°48'53.3"
35	Prachar Energy	0.8	1.6	3-Mar-07	19°39'17.8"	73°48'42.7"
36	Prachar Energy	0.8		3-Mar-07	19°39'22.7"	73°48'47.5"
37	Panama Wind Energy Pvt. Ltd.	0.8	1.6	30-Dec-06	19°41'16.6"	73°48'53"
38	Panama Wind Energy Pvt. Ltd.	0.8		30-Dec-06	19°41'20.6"	73°48'55.6"
39	International Conveyors Ltd.	0.8	0.8	30-Dec-06	19°41'37"	73°48'54.3"
40	Shreem Capacitors Pvt. Ltd.	0.8	3.2	10-Dec-08	17°8'52.1"	73°55'10.1"
41	Shreem Capacitors Pvt. Ltd.	0.8		10-Dec-08	17°8'58.2"	73°55'6"
42	Shreem Capacitors Pvt. Ltd.	0.8		10-Dec-08	17°9'2.8"	73°55'5.4"
43	Shreem Capacitors Pvt. Ltd.	0.8		10-Dec-08	17°9'34.8"	73°55'6.1"
44	Metalfab Hightech Private Limited	0.8	0.8	6-Feb-07	19°41'11.9"	73°48'51.6"
45	Atlas Tours & Travels Pvt. Ltd.	0.8	0.8	7-Feb-06	17°33'15" to 17°33'56"	73°55'28" to 73°56'51"
46	Om Shanti Wind Farms P. Ltd.	0.8	0.8	31-Mar-07	19°45'7.7"	73°50'12.8"
47	Gargi Construction Co. Pvt. Ltd.	0.8	1.6	30-Dec-06	19°41'26.1"	73°48'55.1"
48	Gargi Construction Co. Pvt. Ltd.	0.8		30-Dec-06	19°41'31.1"	73°48'54.5"
49	Mohite & Mohite	0.8	2.4	30-Dec-06	19°42'15.6"	73°49'6.4"
50	Mohite & Mohite	0.8		30-Dec-06	19°42'20.5"	73°49'15.9"
51	Mohite & Mohite	0.8		30-Dec-06	19°42'25.6"	73°49'15.3"
52	Indiana Engineering Works (Bombay) P. Ltd.	0.8	1.6	3-Mar-07	19°39'27.5"	73°48'49"
53	Indiana Engineering Works (Bombay) P. Ltd.	0.8		3-Mar-07	19°39'32.4"	73°48'49.8"
54	Welpack Industries Ltd.	0.8	0.8	28-Feb-07	19°39'7.9"	73°48'37"
55	Sunilkumar Ramanlal Shah	0.8	0.8	30-Mar-08	19°44'38.6"	73°50'22.5"

The key parameters of the project are given in table 1-3:

Table 1-3a: Technical data of the project

Parameter	Unit	Value
Turbine Model		Enercon E- 48,

Parameter	Unit	Value
Rated power	kW	800,
Cut-in wind speed	m/s	3
Rated wind speed	m/s	12
Cut-out wind speed	m/s	28-
Extreme wind speed	m/s	59.5
Rated rotational speed	rpm	18-
Operating range rotational speed	rpm	12-
Number of blades	-	3

Table 1-3b: Parameters confirmed during verification

Parameter	Name	Unit	Value
EG _{export}	Electricity exported to the grid by the project activity.	MWh	109272.8
EG _{import}	Electricity imported from the grid by the project activity.	MWh	97.34967
EG _y	Net electricity supplied to the grid by the project.	MWh	109175.43
EG _{Gross,y}	Total electricity generation by the wind mills during the year y	MWh	111523.14

1.3.4 Appointment of team members and technical reviewer

On the basis of a competence analysis and individual availabilities a verification team was appointed. Furthermore also the personnel for the technical review and the final approval was determined.

The list of involved personnel, the tasks assigned and the qualification status are summarized in the table 1-4 below.

Table 1-4: Involved Personnel

	Name	Company	Function ¹⁾	Qualification Status ²⁾	Scheme competence	Technical competence ⁴⁾	Host country Competence	Team Leading competence
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	Name	Company	Function ¹⁾	Qualification Status ²⁾	Scheme competence	Technical competence ⁴⁾	Host country Competence	Team Leading competence
☒ Mr. ☐ Ms.	Manojkumar Borekar	TUV India Pvt Ltd	TL	SA	☒	1:2	☒	☒
☒ Mr. ☐ Ms.	Prasad Jakkaraju	TUV India Pvt Ltd	TM/TE	LA	☒	-	☒	☒
☒ Mr. ☐ Ms.	Jimmy Sah	TUV India Pvt Ltd	TM	LA	☒	-	☒	☒
☒ Mr. ☐ Ms.	Sukanta Das	TUV India Pvt Ltd	TM	LA	☒	-	☒	☐
☒ Mr. ☐ Ms.	Ajay Singh Thakur	TUV India Pvt Ltd	OT ³⁾	-	☐	-	☒	☐
☒ Mr. ☐ Ms.	Kunal Rami	TN Cert	TR ³⁾	A	☐	-	☒	☒
☐ Mr. ☐ Ms.	S.Stalin	TN Cert	OR ³⁾	A	☒	-	☒	☐
☒ Mr. ☐ Ms.	Rainer Winter	TN Cert	FA	SA	☒	1.2	☐	☒

¹⁾ TL: Team Leader; TM: Team Member, TR: Technical review; OT: Observer-Team, OR: Observer-TR; FA: Final approval

²⁾ GHG Auditor Status: LA: Lead Assessor; A: Assessor; SA: Senior Assessor; T: Trainee; TE: Technical Expert

³⁾ No team member

⁴⁾ As per S01-MU03 or S01-VA070 A2 (such as TA 1.1, TA 1.2,...) According to Accreditation standard Version 2

1.4 Level of Assurance

The verification has been planned and organized to achieve a

☒ reasonable level of assurance

☐ limited level of assurance.

The verification report is based on VCS-PD^{/VCS-PD/}, Monitoring report^{/MR1/,/MR2/},
Emission reduction Calculation sheet^{/XLS1/ /XLS2/} and Final Validation Report^{/VCS-VAL/}
made available to the verifier and information collected through performing interviews
and during the on-site assessment. The verification opinion is assured provided the
credibility of all above.

2 METHODOLOGY

The verification of the project consisted of the following steps:

- Contract review
- Appointment of team members and technical reviewers
- Desk review of the Monitoring Report^{/MR/} submitted by the client and additional supporting documents.
- Verification planning,
- On-Site assessment,
- Background investigation and follow-up interviews with personnel of the project developer and its contractors,
- Draft verification reporting
- Resolution of corrective actions (if any)
- Final verification reporting
- Technical review
- Final approval of the verification.

The sequence of the verification is given in the table 2.1 below:

Table 2.1: Verification sequence

Topic	Time
Assignment of verification	2010-09-28
On-site visit	2010-10-21
Draft reporting finalised	2010-10-29
Final reporting finalised	2010-12-28
Technical review on final reporting finalised	2011-04-05
Final corrections	2011-04-05

The main verification steps are described below.

2.1 Review of Project Documentation

The VCS PD ^{/PD/} and supporting background documents related to the project design and baseline were reviewed.

Furthermore, the verification team used additional documentation by third parties like host party legislation, technical reports referring to the project design or to the basic conditions and technical data.

The references used in the course of this verification are summarized in section 5.

2.2 On-Site Assessment

2.2.1 Review of Performance Records

The present verification is 2nd periodic verification of the project activity. During the site visit It was found that the implementation of the project activity is as per the registered VCD PD. The verification team has also checked the 1st verification report of the project activity and found that there are no remaining issues from the previous verifications of project activity. The overall performance of the project activity is assessed to be correct.

2.2.2 Follow-up Interviews

The verification team has carried out interviews in order to assess the information included in the project documentation and to gain additional information regarding the compliance of the project with the relevant criteria applicable for the VCS.

During verification the verification team has performed interviews to confirm selected information and to resolve issues identified in the document review. The main topics of the interviews are summarized in Table 2-2.

Table 2-2: Interviewed persons and interview topics

Interviewed Persons / Entities	Interview topics
Project proponent representatives 1. Mr. Rohit Joshi (Executive-EIL) 2. Mr. Rajesh Kadam (Dy. Manager Service) 3. Mr. Bhupendra Verma (Asst. Manager-CDM Enercon)	- General aspects of the project - Technical equipment and operation - Changes since validation - Monitoring and measurement equipment - Remaining issues from validation / previous verifications - Calibration procedures - Quality management system - Involved personnel and responsibilities - Training and practice of the operational personnel

Interviewed Persons / Entities	Interview topics
	- Implementation of the monitoring plan - Monitoring data management - Data uncertainty and residual risks - GHG calculation - Procedural aspects of the verification - Maintenance - Environmental aspects - Editorial issues of the Monitoring Report

A comprehensive list of all interviewed persons is part of section 5 'References'.#

2.2.3 Collection of Measurements

The project activity involves installation 44 MW of wind power project and the electricity generated from the project activity being supplied to state electricity board which is part of NEWNE grid. The monitoring parameters are recorded as per the monitoring plan. The monthly JMR (Joint Meter Reading) provides the net export and import and net electricity supplied to the grid (=Net export-Import) from the project activity. The gross generation from the each WEC is being measured by the panel meter installed at individual WEC and recording monthly basis from the online monitoring system by Enercon. The gross generation is the actual generation from the each WECs, this can be verified from the Enercon India Limited website. As per the technical manual WEC panel meter, this is an auto calibrated to ensure the accuracy of data.

2.2.4 Observation of established practices and testing of the accuracy of monitoring equipment

Each meter is of two way tri-vector export-import meter installed by MSEDCL. Determination of the reductions in GHG emissions the generated power from the WECs will be measured at 22 KV bays

Metering system for the project activity consists of one main and one check meter. Both the meters are two-way trivector meters capable of recording import and export of electricity and provide output in the form of net electricity supplied to the grid. The metering equipment is maintained in accordance with electricity standards prevalent in Maharashtra.

The meter is tested for accuracy with reference to a portable standard meter. The portable standard meter is owned by MSEDCL. The meter is deemed to be working

satisfactorily if the errors are within specifications for meters of 0.2% accuracy classes. The consumption registered by the meter alone holds good for the purpose of metering electricity supplied to the grid as long as the error in the meter is within the permissible limits. The meters are checked for accuracy and calibrated on a yearly basis as per the MSEDCL guidelines

2.3 Determination of the reductions in GHG emissions

The reduction in GHG emission is based on the product of net electricity supplied to grid by the project activity and the grid emission factor. The Net electricity supplied to the grid is recorded by taking a Joint Meter Reading (JMR) in the presence of Officials from off-taking Utility and Enercon (India) Limited. The Joint meter reading Contains the value of energy imported and exported. Moreover, net electricity supplied to grid is calculated value, the procedure to calculate net electricity supplied To grid is as mentioned in Power purchase agreement This Joint meter reading is certified by the Executive engineer of the utility and by Enercon Officials.

2.4 Review of additional data from other sources if appropriate

The reduction in GHG emission is based on the multiplication of net electricity supplied to grid by the project activity and the grid emission factor. Net electricity supplied to grid is the difference of apportioned value of electricity exported and apportioned value electricity imported. Detailed apportioning procedure to calculate the actual emission reduction is described in section 3.4 accuracy of emission reduction calculation.. Further, The JMR and the invoices raised by the PP to MSEDCL have been checked by the verification team to confirm the value of export and import electricity.

2.5 Review of monitoring results and verification of the correct application of monitoring methodologies

Not Applicable

2.6 Resolution of any material discrepancy

Material discrepancies identified in the course of the verification are addressed either as CARs, CLs or FARs.

A **Corrective Action Request (CAR)** is established where:

- mistakes have been made in assumptions, application of the methodology or the project documentation which will have a direct influence the project results,
- the requirements deemed relevant for verification of the project with certain characteristics have not been met or
- there is a risk that the project would not be registered or that emission reductions would not be able to be verified and certified.

A **Clarification Request (CL)** will be issued where information is insufficient, unclear or not transparent enough to establish whether a requirement is met.

A **Forward Action Request (FAR)** will be issued when certain issues related to project implementation should be reviewed during the first verification.

A detailed list of the CARs CLs and FAR raised and discussed in the course of this verification is included in the next section 3 of this report.

3 VERIFICATION FINDINGS

In this section the assessments and findings from the desk review of the VCS PD, site visit, interviews and supporting documents as well as the final assessments are summarised. Table 3-1 includes an overview of all raised CARs, CLs and FARs.

Table 3-1: Overview of CARs, CLs and FARs issued

No.	Topic / Chapter	CAR	CL	FAR
3.1	Remaining issues, including any material discrepancy	1	-	-
3.2	Project implementation	-	-	-
3.3	Completeness of monitoring	4	-	-
3.4	Accuracy of emission reduction calculations	-	-	-
3.5	Quality of evidence to determine emission reductions	-	-	-
3.6	Management and operational system	-	-	-
-	SUM	5	0	0

3.1 Remaining issues, including any material discrepancy, from previous validation

Description

All the issues raised during the validation process of the project activity had been closed during the validation process. There are no remaining issues from the validation stage. However, FAR B1 raised during the Validation mentions to compare ex ante estimated PLF (20%) which the PLF observed during the monitoring period. The value of PLF for few customers is crossing the higher limit of sensitivity analysis. The higher limit of sensitivity analysis is 22 %.

Related Findings

- ☐ No CARs, CLs or FARs have been identified in this context
- ☒ The following finding(s) have been addressed:

	CAR 3.1.1		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	The MR does not address the issues raised under FAR 1 of the VCS validation report for the project activity. If the PLF of the project activity exceeds the range sensitivity analysis the additionality of the project will be re-assessed during every crediting period, The VERs will be issued if the project is additional.” (Refer Annex 66,67 of EB48)		
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	The FAR has been addressed in Section E.6 of monitoring report, it has been clearly demonstrated that PLF for 25 customers do not exceed the limit of 22% PLF (higher side of sensitivity analysis), for remaining 4 customers the PLF is slightly higher than 22%, for those customers it has been demonstrated that project IRR is still below the benchmark value. Hence as per the Annex 66, 67 of EB-48 project activity is additional.		
DOE Assessment #1 <i>The assessment shall encompass all open issues. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	The computation of PLF work sheet provided by the PP has been crosschecked and found that PLF of the three customers is slightly higher than the 22 % which is higher range of sensitivity analysis, which is 22.10% for Shah Lulla Estate Developers, 23.12% for Liberty Oil Mills Ltd, 22.69% for Kishor Food Products P. Ltd. and 23.45 % for Sunilkumar Ramanlal Shah. However, with consideration of current PLF the additionality of the project has been re-assessed by the PP and consequently the IRR of the project activity is still below the benchmark as prescribed in the registered VCS PD. Thus, the project activity is still additional and the CAR is closed for this monitoring period. However, Compliance of the additionality should be checked during every subsequent verification		
Conclusion <i>Tick the appropriate checkbox</i>	☐ To be checked during the first periodic verification ☐ Appropriate action was taken ☐ Project documentation was corrected correspondingly ☐ Additional action should be taken ☒ The project complies with the requirements		

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The computation of PLF work sheet provided by the PP has been crosschecked and found that PLF of the three customers is slightly higher than the 22 % which is higher range of sensitivity analysis, which is 22.10% for Shah Lulla Estate Developers,

23.12% for Liberty Oil Mills Ltd, 22.69% for Kishor Food Products P. Ltd. and 23.45 % for Sunilkumar Ramanlal Shah. However, with consideration of current PLF the additionality of the project has been re-assessed by the PP and consequently the IRR of the project activity is still below the benchmark as prescribed in the registered VCS PD. Thus, the project activity is still additional.

3.2 Project implementation

Description

The project under consideration is set up to produce clean power from the wind electric converters. The generated electricity is being supplied to state electricity grid which is part of NEWNE. The Project leads to reduced Greenhouse Gas (GHG) emissions because it displaces electricity from fossil fuel based electricity generation plants. The project is helping in bridging the demand supply gap by using wind as a source of generating electrical energy.

The project activity consists of 55 machines of E-48 type with an individual machine capacity of 800 KW each and totaling to the capacity of 44 MW which are located in districts of Satara, Sangli, Nasik, and Ahmednagar District in the state of Maharashtra. The project considered harnessed renewable resources in the region, thereby displacing non-renewable natural resources thereby ultimately leading to sustainable economic and environmental development. Enercon (India) Ltd ("Enercon" or "EIL") is the equipment supplier and the operations and maintenance contractor for the project

Related Findings

- ☒ No CARs, CLs or FARs have been identified in this context
- ☐ The following finding(s) have been addressed:

Final Assessment

The 55 WECs belongs to project activity are distributed over Satara, Sangli, Nasik, and Ahmednagar District in the state of Maharashtra. The capacity of the each machine is of 0.8 MW and the total capacity of the project activity is 44 MW. All the machines involved in the project activity are located in different site and connected with different meters; same has been crosschecked from the commissioning certificates^{/CR/} for the WECs and site visit. The details of all the meters installed for the project activity have been described in section 3.3. During the site visit, it was found that no equipments related to WECs are neither exchanged nor replaced. Further, it is found that all the WECs are in operation since commissioning. No major

breakdowns are occurred other than machine shutdowns.

During the monitoring period the project activity has delivered a total of 109,175.430 kWh of electricity and thus the total baseline emission comes to 98,873.00 tCO₂e.

3.3 Completeness of monitoring

Description

The reporting ^{/MR2/ /XLS2/} is in line with the requirements of the validated monitoring plan as well as applied methodology ACM0002 version 10^{/ACM0002/}. The reporting procedures reflect the requirements of the monitoring plan ^{/VCS-PD/}. The monitoring parameters are recorded as per the monitoring plan. During the visit the verification team checked through interviews ^{/IM01, IM02/} and confirmed that the monthly Joint Meter Reading (JMR) provides the net export and import and net electricity supplied to the grid (=Net Export - Net Import) of each individual and grouped WECs. This data then forms the basis of emission reduction calculation. Each meter is of two ways tri-vector export-import meter installed by State electricity board (MSEDCL) the generated power from the WECs will be measured at 22 kV bays.

Metering system for the project activity consists of one main and one check meter. Both the meters are two-way tri-vector meters capable of recording import and export of electricity and provide output in terms of net electricity supplied to the grid. The metering equipment is maintained in accordance with the standards prevalent in Maharashtra. The electricity exported and imported values are recorded by Joint Meter Reading (JMR) in the presence of officials from MSEDCL and Enercon as O&M contractor on behalf of project sponsor. None of the meters have been changed during the reported monitoring period. No abnormality was found in the Monitoring Procedure.

The meter is tested for accuracy with reference to a portable standard meter. The portable standard meter is owned by MSEDCL. The meter is deemed to be working satisfactorily if the errors are within the specifications for meters of 0.2% accuracy class. The consumption registered by the meter along with the error is good for the purpose of metering electricity supplied to the grid as long as the error in the meter is within the permissible limits. The meters are checked for accuracy and calibrated on a yearly basis as per MSEDCL guidelines.

The calibration of meters for Panchpatta locations had been delayed by 4 months i.e. earlier the calibration of the meter was done on April 2009 and the next calibration was due on April 2010. However the calibration was carried out in July 2010 instead of April 2010 and the accuracy class of the meter was 0.2 % in last calibration report. Thus, the PP has applied the 0.2% as error correction factor in export and import value of electricity, which is in compliance of the guideline EB 52 annex 60. Same has been confirmed by the validation team and found correct.

Metering system^{/cal/}. Moreover, as mentioned in the VCS PD, control panel meters installed at wind turbine have to be calibrated annually. However, the same was not furnished by the PP due to the fact that the meters are self calibrated and equipped with intelligent software control system which does not require calibration. The panel meter needs no calibration as it is software based integrated system which has been specially designed for control of wind turbine where control functions, data collection and storage, real time

monitoring and storage function are integrated. The verification team has cross checked the same technological supplier manual annex 2, page number 64^{CAL1/}. Moreover, as per the section 5.3 Standard 2007.1, the deviations are acceptable where they don't impact negatively of the conservation of the VCS program approved methodology's criteria. Thus, verification team assessed that the significant impact on the project activity due to this deviation. Hence, it is in line and acceptable verification team.

The calibration details of the meters are described below:

Wind Farm Site	Meter Serial Number (Main Meter)	Meter Serial Number (Check Meter)	Accuracy Class	Make	Calibration Dates			
Kadvekhurd	04760188	04760187	0.2	Elster	22-May-09	23-Sep-09	7-Nov-09	14-Jan-10
Varekarvadi	04760189	04760190	0.2	Elster	19-May-09	21-Sep-09	12-Dec-09	30-Mar-10
Bhambarwadi (Feeder 1)	04862746	04865569	0.2	Elster	19-Mar-09	14-Dec-09	25-Mar-10	21-Jun-10
Bhambarwadi (Feeder 3)	04862747	04865571	0.2	Elster	19-Mar-09	14-Dec-09	25-Mar-10	21-Jun-10
Panchpatta (Feeder 1)	04862978	04862981	0.2	Elster	1-Apr-09	28-Jul-10		
Panchpatta (Feeder 4)	04862984	05031636	0.2	Elster	1-Apr-09	28-Jul-10		
Panchpatta (Feeder 5)	04862989	04862980	0.2	Elster	1-Apr-09	28-Jul-10		
Panchpatta (Feeder 6)	04862987	04862982	0.2	Elster	1-Apr-09	28-Jul-10		

Related Findings

- ☐ No CARs, CLs or FARs have been identified in this context
- ☒ The following finding(s) have been addressed:

Project implementation	CAR 3.3-1		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	The monitoring parameters are not as per the registered VCS PD, the parameter of Gross generation has not been monitored. Appropriate corrections are required.		
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	The value of gross generation has been added in the monitoring report Section D.2, all the monitoring parameters are now in line with the registered VCS PD.		
DOE Assessment #1 <i>The assessment shall encompass all open issues. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	The parameter of gross generation has been described under section D.2 of the revised MR. CAR is closed.		
Conclusion <i>Tick the appropriate checkbox</i>	☐ To be checked during the first periodic verification ☐ Appropriate action was taken ☒ Project documentation was corrected correspondingly ☐ Additional action should be taken ☐ The project complies with the requirements		

Monitoring Plan	3.3-2		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	PP is requested to mention the Calibration frequency and details of the calibration report covering the entire monitoring period. The details for location Panchpatta feeder no. 1, 4, 5 and 6 are missing. Also the details of Check meters are missing for all the locations.		
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	As per the registered VCS PD the calibration frequency is once in a year for all the meters of project activity, however in some locations (Varekarvadi, Kadvekhurd and Bhambarwadi) quarterly calibration has been done. The details of calibration are mentioned in section C of the monitoring report. For feeder 1, 4, 5 and 6 of Panchpatta calibration has been performed on 28 July 2010. The details of same are mentioned in Section C of monitoring report and the calibration certificates are provided to DOE for verification.		

	The details of check meters are incorporated in Section C of the monitoring report.
DOE Assessment #1 <i>The assessment shall encompass all open issues. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	The calibration for the location of Panchpatta has not been carried out annually, thus procedures for delayed calibration needs to be applied. Refer Annex 60 EB52.
Corrective Action #2 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	The calibration of meters for Panchpatta locations had been delayed by 4 months i.e. after April 2009 the calibration was done on July 2010 instead of April 2010, hence we have applied correction factor of 0.2% (0.2% is the meter accuracy class of installed meters) on the readings of export and import for the months of April, May, June and July 2010. The procedure is in accordance to Annex 60 EB 52.
DOE Assessment #2 <i>The assessment shall encompass all open issues. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	Calibration of the meters located at the Panchpatta site were delayed by 4 months and the accuracy class of the meters are 0.2% as per the latest calibration certificates which is same as the manufacturers specification. Thus, PP has applied the 0.2% as error correction factor in the electricity exported and electricity imported, which is in compliance of the guideline EB 52 annex 60. Same has been checked by the validation team and found correct. Further, as per the registered VCS PD the online panel meter will be calibrated annually. However, the panel meter needs no calibration as it is software based integrated system which has been specially designed for control of wind turbines, where control functions, data collection and storage, real time grid monitoring and storage function are integrated. The verification team has cross checked the same from the technological supplier manual /CAL1/and thus the deviation is accepted to the verification team. Moreover, during the site visit it was observed that the online SCADA system continuously shows the generation value on daily basis. The value is then consolidated in monthly basis which is cross checked by the assessment team and found correct Hence the CAR is closed.
Conclusion <i>Tick the appropriate checkbox</i>	☐ To be checked during the first periodic verification ☐ Appropriate action was taken ☐ Project documentation was corrected correspondingly ☐ Additional action should be taken ☒ The project complies with the requirements

Emission Reduction Calculations	3.3-3		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	During the cross-check of the data, the following mistakes were identified; Feeder no. 1: JMR is missing for the following • July and November 2009 • June, July and August 2010 Feeder no. 4&5: JMR is missing for the following • July and Nov 2009 • June, July and August 2010 Feeder no. 6: JMR is missing for the following • July and Nov 2009 • May, June, July and August 2010 Liberty Oil Mill: Location no. 1&2 • July 2010 – JMR is missing Mismatch with the invoices are for the following: • Indiana Engineering – Sep 2010 • Panama – Nov 09 • Welpack – July, September 2010-10-29 • Sunil kumar – Jul 2010 • Prachar energy- June 09 • C.P Patel – June: JMR and invoice values not matching • Liberty oil 2 machines: September 2010 invoice missing.		
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	• All the missing documents have been provided to DOE for verification. • • For customer C P Patel we have made corrections in the emission reductions sheet, there is no mismatch in JMR and Invoice but the mismatch is due to typological error in the VCU calculation sheet which is corrected.		

DOE Assessment #1 <i>The assessment shall encompass all open issues. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	The revised VCU calculation sheet is checked and the values are found matching. Thus CAR is closed.
Conclusion <i>Tick the appropriate checkbox</i>	☐ To be checked during the first periodic verification ☐ Appropriate action was taken ☒ Project documentation was corrected correspondingly ☐ Additional action should be taken ☐ The project complies with the requirements

Emission Reduction Calculations	3.5-4		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	The emission reductions for the monitoring period are higher than the estimates in the VCS PDD, the reason for the same detailing the exact PLF values estimated and achieved shall be described.		
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	The emission reductions from the project activity are 6.65% higher as compared to the estimated value in the VCS PD, which is primarily due to marginally higher PLF. However, the same has already been covered in the sensitivity range of 10%. Further the variation in the PLF is because of the seasonal cyclical pattern and infirm nature of wind and is beyond the control of PP. The details of PLF achieved by the individual customers for the said monitoring period are described in section E.6 of the monitoring report.		
DOE Assessment #1 <i>The assessment shall encompass all open issues. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	The PLF values are compared on an yearly basis to give a correct and appropriate picture of the PLF observed. The annual PLF is compared and the PLF is observed to be marginally higher than the estimated PLF in the VCS PD. Thus the emission reductions are marginally high. However the PLF variations are already considered in the sensitivity analysis in the VCS PD. The variation of the PLF for individual PPs is described under section E.6 of the monitoring report and found correct. CAR is closed.		
Conclusion <i>Tick the appropriate checkbox</i>	☐ To be checked during the first periodic verification ☒ Appropriate action was taken ☒ Project documentation was corrected correspondingly ☐ Additional action should be taken ☐ The project complies with the requirements		

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Project is connected to state electricity board which is part of NEWNE grid and has 8 metering points. The procedure was discussed with the Plant monitoring personnel and cross-checked with Power Purchase Agreement. During the site visit and subsequent interview with PP, it was found that none of the metering points have been changed during the reported monitoring vintage. No abnormality was found in the metering system^{/cal/}. The delay in calibration was addressed by taking the Error correction due to delayed calibration in the emission reduction calculation sheet^{/XLS2/} which is in-line with the requirements of Annex 60 of the

3.4 Accuracy of emission reduction calculations

Description

The value of the emission reductions depends on the net electricity Supplied by the project activity. GHG emission reduction is calculated as baseline emission minus project emission and leakage. The baseline emissions reductions are based on the net electricity Supplied to the grid by the WECs. The project emissions are zero as there is no auxiliary firing taking place. Also, as per the methodology the leakage emission need not to be calculated for this project activity. Therefore, the emission reductions for the project activity are equal to the baseline emission.

Thus, $ER_y = BE_y$

Baseline Emissions:

The baseline emissions (BE_y in tCO_2) are the product of the baseline emissions factor (EF_y in tCO_2/MWh) times the electricity exported by the project activity to the grid (EG_y in MWh)

$$BE_y = EF_y * EG_y$$

Net electricity Supplied to the grid is done based on apportioning method as described below Procedure for apportioning of electricity: The project activity is connected to the total eight numbers of metering points. It was checked during the site visit and the found correct.

Procedure for apportioning of electricity:

The net electricity supplied to the grid is calculated from the difference between Break up Exported and imported values of each customer for every month, the Break up imported and exported values are calculated as per the formulas described below.

Net Electricity supplied= (Break up Exported electricity)– (Break up Imported electricity)

Break up Exported electricity = (Exported EB meter reading X Panel generation)/
total Panel generation of all WECs connected on same feeder

Break up Imported electricity = (Imported EB meter reading X Panel generation)/ total
Panel generation of all WECs connected on same feeder

Apportioning for all the machine included in the project activity being done as per the registered VCS-PD, also described in the revised MR and the calculation incorporated in the excel sheet attached with MR. Furthermore, as per the comparison provided in the MR for the value of the VCU based on the credit note is lower than the apportioned value. However, the value based on the credit note is conservative so the PP has considered the value based on the credit notes. Thus, the conservative approach is acceptable to the verification team.

Example of apportioning for the month of September 10 for feeder 3 at Kadvekhurd for 8 machines is shown below :

S.No	Name of customers attached at Kadvekhurd	Number of WEGs	Export	Import	Panel Generation	Individual customers break up after apportioning calculation		
						Export (Di)=Ai*B/ Σ Ai	Import (Ei)=Ai*C/ Σ Ai	Net Export (Fi)= (Di)-(Ei)
1	M/s Liberty Oil Mill	1	138389 6.48	587.93	158865	156242.9 3	66.38	156176.56
2	M/s Liberty Oil Mill	1	138389 6.48	587.93	207372	203949.3 3	86.64	203862.68
3	M/s Liberty Oil Mill	1	138389 6.48	587.93	210836	207356.1 5	88.09	207268.06
4	M/s G.B.Rubber Products	1	138389 6.48	587.93	172835	169982.3 6	72.21	169910.15
5	M/s G.B.Rubber Products	1	138389 6.48	587.93	156372	153791.0 8	65.34	153725.75
6	M/s Atlas Tours &	1	138389 6.48	587.93	121041	119043.2 2	50.57	118992.65

	travels Pvt Ltd.							
7	M/s Shahlulla estate developer Ltd.	1	138389 6.48	587.93	207806	204376.1 6	86.83	204289.34
8	M/s Fashion suiting	1	138389 6.48	587.93	171994	169155.2 4	71.86	169083.38
					140712 1			

Related Findings

- ☒ No CARs, CLs or FARs have been identified in this context
- ☐ The following finding(s) have been addressed:

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The JMR sheet statements are checked by the verification team for the values of export and import of electricity which was found OK. The apportioning for the Bhambewadi, Kadvekhurd and Varekerwadi location has been carried out as per the procedure described in the registered VCS-PD and values from the apportioning calculation have been considered for final VCU calculation. Same has been crosschecked by the verification team and found correct.

The Emission reduction is product of net electricity supplied by the project and the grid emission factor (NEWNE Grid). The net electricity supplied is cross-checked for every month while the grid emission factor remains fixed, thus the total emission reductions by the project is accurate. The net electricity supplied to the grid by the WECs during the monitoring period is 109,175,430.504 kWh which is the conservation value after considering values based on the credit notes for the vintage 01/06/2009 to 30/09/2010. The baseline emission factor has been fixed ex-ante as 0.9059 tCO₂/MWh based on the CEA data for NEWNE Grid^{CEA}. Based on the net electricity supplied and the emission factor the baseline emissions are computed to be 98,873.00 tCO₂e. Furthermore, as per the comparison provided in the MR for the value of the VCU based on the credit note is lower than the apportioned value. However, the value based on the credit note is conservative so the PP has

considered the value based on the credit notes. Thus, the conservative approach is acceptable to the verification team. All the figures as per the monitoring plan were cross-checked by the verification team against basic monitored data and the calculations were found to be correct. All the figures as per the monitoring plan were cross checked by the assessment team against basic monitored data^{/XLS1/,/XLS2/} and the calculations were found to correct.

3.5 Quality of evidence to determine emission reductions

Proper data management inclusive of data acquisition and aggregation, data management system is being followed for the project activity.

All records needed for monitoring are archived in line with the requirements of the registered monitoring plan /VCS-PD/. No significant, lack of evidence and missing data were detected during on-site verification. All internal data are subjected to QA/QC measures. Enercon (India) Limited (EIL) is ISO 9001:2000^{/ISO/} certified. The monitoring personal at site are well trained to carry out the task onsite.

Related Findings

- ☒ No CARs, CLs or FARs have been identified in this context
- ☐ The following finding(s) have been addressed:

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All internal data are subjected to QA/QC measures. Enercon (India) Limited (EIL) is ISO 9001:2000/ISO/ certified and has specified procedures for data review in form of internal audits. The roles and responsibilities are identified for the personnel involved at the site. Daily report for each WEC is generated in the online monitoring system (SCADA system) which has the data stored since the commissioning of the WEC and has been verified to confirm the gross-generation and breakdown values. The data for VCS is complied and maintained by the corporate division of Enercon, the data w.r.t to VCS requirements are stored for whole crediting period and additional 2 years. Calibration of the meters used for the project activity is being scheduled annually as mentioned in the registered PD. However, during the monitoring period 1 Jun 2009 to 30 Sep 2010, calibration of the main and check meters at Panchpatta feeder was not conducted as per the stipulated frequency. As per the last va;libration certificate both the meters are working in their accuracy class. Thus, as per the

Annex 60, EB 52 PP has applied a correction factor of +0.2% for imports and -0.2% for exports for the entire monitoring period. That is a conservative approach adopted by the PP and acceptable to the verification team.

The training records^{/TR/} of the plant personals have been cross checked and found OK. Thus, they are competent to carry out the relevant tasks with sufficient accuracy. All necessary monitored and measured raw data were checked during on-site verification and document review... The Gross electricity generation from each WEC, electricity exported to the grid and imported from the grid are the basic monitoring parameters. The net electricity supplied is the difference between the export and import values which is cross checked by the verification team with JMR sheets and the commercial invoices^{/INV/}, found OK.

3.6 Management and operational system

Description

The allocation of responsibilities is documented in a written form and is followed as described in the^{/VCS-PD/}. Routines for the archiving of data are defined and documented. Calculations laid down in the monitoring report are in line with VCS-PD. The overall authority of the project site belongs to EPC contractor EIL. The Joint meter readings are noted in presence of officials from plant personnel and the MSEDCL officials. The data archiving of gross generation is directly measured from SCADA system. The monthly export and import values are maintained in monthly JMR sheets, which are signed by the both the parties and documented which are subjected to QA/QC measures. All monitored data are archived in physical and electronic form. The data will be kept for the whole crediting period and additional two years as given in the VCS-PD.

Related Findings

- ☒ No CARs, CLs or FARs have been identified in this context
- ☐ The following finding(s) have been addressed:

Final Assessment

All the management operational procedures are in place as per the registered VCS PD. Enercon is an ISO certified organization and thus all the QA/QC procedures are as per the standard. The archiving of the data is both in electronic and paper format and is in line with the VCS PD.

4 VERIFICATION STATEMENT

Enercon (India) Limited has commissioned the TÜV NORD JI / CDM Certification Program to carry out the verification of the Project “44 MW Bundled Wind Power Project in Maharashtra managed by Enercon India Limited” in Satara, Sangli, Nasik, and Ahmednagar District in the state of Maharashtra, India with regard to the requirements of VCS 2007.1 Standard.

The purpose of this project activity is to generate electricity using renewable sources (wind) and export it to the connected state grid i.e. MSEDCL (Maharashtra State Electricity Distribution company Limited) which is a part of NEWNE grid of India^{/CEA/}, thereby displacing the grid that would have been generated predominantly from fossil fuel based power generation.

A risk-based approach has been followed to perform this verification. In the course of the verification 5 Corrective Action Requests (CARs) and no Clarification request were raised which are successfully closed out. There are no FAR raised during the verification period.

The verification is based on the draft monitoring report^{/MR1/}, revised monitoring report^{/MR2/}, the monitoring plan as set out in the validated PD^{/VCSPD/}, the validation report^{/FvalR/}, emission reduction calculation spreadsheet^{/XLS1/} and supporting documents made available to the TÜV NORD JI/CDM CP by the project participant.

In detail the conclusions can be summarised as follows:

- all operations of the project are implemented and installed as planned and described in the validated project description.
- the monitoring plan is in accordance with the applied approved methodology, ie, ACM002 version 10
- the installed equipment essential for measuring parameters required for calculating emission reductions is calibrated appropriately.
- the monitoring system is in place and functional. The project has generated GHG emission reductions.
-

As the result of the 2nd periodic verification, the verifier confirms that the GHG emission reductions are calculated without material misstatements in a conservative and appropriate manner. TÜV NORD JI/CDM CP herewith confirms that the project has achieved emission reductions in the above mentioned reporting period 01-06-2009 to 30-09-2010 as follows:

Project emissions 0 t CO2 equivalents
Baseline emissions 98,873.00 t CO2 equivalents
Emission reductions 98,873.00 t CO2 equivalents

The Break-up of emission reduction for the present monitoring period is as follows:

Vintage	Net Electricity Exported (kWh)	Emission Factor	VCUs
2009	53,604,053.75	0.9058975	48,545.00
2010	55,571,376.76	0.9058975	50,328.00
Total	109,175,430.504		98,873

Mumbai, 2011-04-05



TÜV NORD JI/CDM Certification
Program

Mr. Manojkumar Borekar
Verification Team Leader

Essen, 2011-04-05



TÜV NORD JI/CDM Certification
Program

Mr. Rainer Winter
Final Approval

5 REFERENCES

Table 5-1: Documents provided by the project participant

Reference	Document																																													
/BR/	Breakdown/Annual maintenance records during the monitoring period.																																													
/CAL/	Calibration certificates of electricity meters installed at the project site.																																													
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/CAL1/	Technological supplier manual annex 2, page number 64.																																													
/CRI/	Commissioning certificates issued by MSEDCL of all the WECs located at site. 1. Panchpatta dated 28/02/2007, 29/03/2007, 31/03/2007, 27/01/2007, 03/03/2007, 06/02/2007, 30/12/2006 and 30/03/2008 2. Kadvekhurd dated 14/02/2006 and 07/02/2006 3. Varekarwadi dated 08/02/2006 4. Bhambarwadi dated 22/03/2006, 15/06/2006, 05/01/2007, 06/03/2007 and 10/12/2008 5. Aundhewadi dated 31/03/2007																																													

Reference	Document
/GEN/	Gross electricity generation (Panel meter reading which is recorded online on monthly basis by Enercon India Limited)
/INV/	Invoices raised to the Electricity Board during the complete monitoring period.
/ISO/	Copy of ISO certificate confirming the ISO Standard Dated 09/02/2010
/JMR/	Copy of JMR sheets covering the entire monitoring period.
/LA/	Layout of the project site, describing the metering positions.
/MR1/	Draft MR version 1 Dated 20/10/2010
/MR2/	Final MR version 2 Dated 07/12/2010
/O&M/	Operation and Maintenance contract
/PPA/	Power Purchase Agreement for the project activity WECs
/RD/	Declarations by the project proponents stating no intention of creating and trading of another form of environmental credits out of VERs would be created from this given project (Cp para 1.13 of VCS PD template) dated 20/10/2010
/SLD/	Single line diagram covering all the WECs and metering system.
/TS/	Technical specifications of the online meters installed along with the serial number.
/TR/	Training requirements of the personnel working onsite (Certificate dated 09/02/2010
/XLS1/	ER calculation spreadsheet dated 20/10/2010
/XLS2/	Revised ER calculation spreadsheet dated 07/12/2010

Table 5-2: Background investigation and assessment documents

Reference	Document
/ACM0002/	Approved consolidated baseline and monitoring methodology ACM0002

Reference	Document
	version 10 - "Consolidated baseline methodology for grid connected electricity generation from renewable sources".
/VCS-PDI/	Final Project Document for the project activity dated 20/07/2009
/VCS-VAL/	Final VCS Validation report for the project activity dated 13/11/2009
/VCS/	Voluntary Carbon Standard 2007.1
/TA/	Tool to calculate the emissions factor for an electricity system version 01.1
/VVM/	Verification and Validation Manual (Version 1.2 as per EB 55)

Table 5-3: Websites used

Reference	Link	Organisation
/ceal/	www.cea.nic.in	Central Electricity Authority
/vcs/	www.v-c-s.org	VCSA
/unfccc/	http://cdm.unfccc.int	UNFCCC

Table 5-4: List of interviewed persons

Reference	Moi ¹		Name	Organisation / Function
/IM01/	V	☒ Mr. ☐ Ms	Mr. Rajesh Kadam	EIL, Dy. Manager Service
/IM01/	V	☒ Mr. ☐ Ms	Mr. Bhupendra Verma	EIL, Asst. Manager-CDM
/IM01/	V	☒ Mr. ☐ Ms	Mr. Rohit Joshi	EIL, CDM Executive

¹⁾ Means of Interview: (Telephone, E-Mail, Visit)