



Voluntary Carbon Standard 2007.1
Final Validation Report

Report No: 53609508-08/665

Validation Report:

Name of Validation company:	Date of the issue:
TÜV NORD CERT GmbH	2009-11-16
Report Title:	Approved by:
Grid connected bundled wind power project in Gujarat managed by Enercon (India) Limited	Mr. Eric Krupp
Client:	Project Title:
Enercon (India) Limited	Grid connected bundled wind power project in Gujarat managed by Enercon (India) Limited
Summary:	

Enercon (India) Limited has commissioned the TÜV NORD JI/CDM Certification Program to carry out the validation of the project – “Grid connected bundled wind power project in Gujarat managed by Enercon (India) Limited”, with regard to the relevant requirements of VCS 2007.1 Standard as well as criteria for consistent project operations, monitoring and reporting.

The project activity generates electricity which will be supplied to the NEWNE Grid of India and then distributed to connected end users.

The review of the VCS PD and additional documents related to baseline and monitoring methodology; the subsequent background investigation, follow-up interviews and review of comments by parties, stakeholders have provided TÜV NORD JI/CDM CP with sufficient evidence to validate the fulfilment of the stated criteria.

A risk based approach has been followed to perform this validation. In the course of the validation 8 Corrective Action Requests (CAR), 9 Clarification Requests (CR) and 1 Forward action request (FAR) were raised and successfully closed out. FAR has to be checked in every verification stage.

The validation is based on the VCS PD, proof of title, additional documents related to baseline and monitoring methodology; the subsequent background investigation, follow-up interviews and supporting documents made available to the validators by project proponent.

As a result of the validation, the validators confirm that:

- The project additionality is sufficiently justified in the PD.
- The monitoring plan is transparent, adequate and inline with applied baseline and monitoring methodology of ACM 0002 Version 9.
- The calculation of the project emission reductions is carried out in a transparent and conservative manner, so that the calculated emission reductions of 264168 t CO₂e (total) is most likely to be achieved in 10 years renewable crediting period.

No restrictions or uncertainties were identified related to the validation.

Work carried out by:	Number of pages:
Mr. Ma Paa Puratchikkanal Mr. K V Sudarshan Ms. C. Indumathi Ms. C A Sahana	35

[Table of Contents]

1	Introduction.....	4
1.1	Objective	4
1.2	Scope and Criteria	4
1.3	VCS project Description	5
1.4	Level of assurance	6
2	Methodology	6
2.1	Review of Document.....	6

Validation Report of the GHG emission reduction project entitled “Grid connected bundled wind power project in Gujarat managed by Enercon (India) Limited”

2.2	Follow-up Interviews	6
2.3	Resolution of any material discrepancy	7
3	Validation Findings.....	7
3.1	Project Design	8
3.2	Baseline	10
3.3	Monitoring Plan.....	24
3.4	Calculation of GHG Emissions	26
3.5	Environmental Impact	24
3.6	Comments by stakeholders.....	27
4	Validation conclusion	28
5	References.....	29

1 Introduction

1.1 Objective

The purpose of this validation is to have an independent third party assessment of the project design, in particular the project's baseline, the additionality, the monitoring plan (MP) and the project's compliance with

- The requirements of VCS 2007.1 program guidelines;
- Requirements of the CDM Approved methodology, ACM 0002/ version 9, which is approved by VCSA;
- To assess the project's compliance with other relevant rules, including the project country (India) legislation and
- Other relevant rules, of VCS sustainability criteria are validated in order to confirm that the project design as documented is sound and reasonable and meet the stated requirements and identified criteria. Validation is seen as necessary to provide assurance to stakeholders on the quality of the project and its intended generation of Verified emission reductions (VERs/VCUs¹) without any double counting.

1.2 Scope and Criteria

The validation scope is given as an independent and objective review of the project design, the project's baseline study and monitoring plan (based ACM0002. /Version 9: “Consolidated methodology for grid-connected electricity generation from renewable sources”) which are included in the VCS PD and other relevant supporting documents.

The items covered in the validation are described below:

- VCS 2007.1 & Host Country Criteria
 - To meet the requirements of VCS 2007.1 guidelines requirements, in particular,
 - Host country requirements / criteria
- VCS Project Description
 - Project design
 - Project boundaries and Predicted VCS project GHG emissions
- Project Baseline
 - Baseline methodology
 - Baseline GHG emissions
- Monitoring Plan
 - Monitoring methodology
 - Indicators/data to be monitored and reported
 - Roles and Responsibilities
- Project Additionality
- Background investigation and follow up interviews
- Draft validation reporting with CARs, CRs & FARs, if any
- Final validation reporting

The information included in the VCS PD^{/PD1/, /PD2/, /PD3/, /PD4/} and the supporting documents were reviewed against the requirements and criteria mentioned above. The TÜV NORD CERT GmbH JI/CDM CP has employed a risk-based approach in the validation, focusing on the identification of significant risks for project implementation and the generation of VERs. The validation is based on the information made available to TÜV NORD JI/CDM CP and on the contract conditions.

The validation is not meant to provide any consulting to the project participant. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the project design.

¹ As per VCS, Verified Emission Reductions (VERs) are considered to be VCUs only after successful registration in an approved VCU Registry

1.3 VCS project Description

The Project activity is spread across villages in Khirsara, Okhamadhi, Jodhpar, Methan, Bhupat Ambardi and Seth Vadala of Jamnagar District Gujarat, India. The project activity involves the installation of 19 wind mills of 0.8 MW capacity tuned to an aggregated capacity of 15.2 MW. The proposed project would generate energy from wind resources thereby displacing, electricity generated using existing fossil fuel dominant grid based power plants or future capacity additions in the State of Gujarat. Gujarat is a part of the country’s NEWNE Grid. The latitude and longitude² details are given in the below table,

WEG Identification	Owner	Latitude	Longitude	District
EIL/800/06-07/0265	Amar Builders	N21° 58' 23 "	E70° 15' 56"	Khirsara
EIL/800/06-07/0220	DP Power Pvt Ltd	N22° 04' 57"	E69° 07' 13"	Okha Madhi
EIL/800/06-07/0214	DP Wires Pvt Ltd	N22° 04' 55"	E69° 06' 56"	Okha Madhi
EIL/800/06-07/0215	DP Wires Pvt Ltd	N21° 59' 11"	E69° 18' 36 "	Jodhpar
EIL/800/06-07/0217	Kataria Wires Pvt. Ltd.	N22° 04' 43 "	E69° 07' 06"	Okha Madhi
EIL/800/06-07/0414	Mahanagar Developers	N21° 59' 02 "	E69° 18' 40"	Jodhpar
EIL/800/06-07/0415	Mahanagar Developers	N21° 59' 07"	E69° 18' 38"	Jodhpar
EIL/800/06-07/0219	PBM Polytex	N22° 01' 20"	E70° 14' 13"	Okha Madhi
EIL/800/07-08/0667	PBM Polytex	N22° 01' 04"	E70° 12' 05"	Methan
EIL/800/07-08/0668	PBM Polytex	N22° 05' 19"	E69° 07' 01"	Methan
EIL/800/07-08/0916	Powerica Limited	N22° 02' 48"	E70° 07' 29"	Bhupat Ambardi
EIL/800/07-08/0917	Powerica Limited	N22° 01' 31"	E70° 05' 46"	Bhupat Ambardi
EIL/800/07-08/01145	Powerica Limited	N22° 01' 24"	E70° 05' 47"	Bhupat Ambardi
EIL/800/07-08/0914	Powerica Limited	N22° 01' 20"	E70° 05' 59"	Bhupat Ambardi
EIL/800/07-08/0915	Powerica Limited	N22° 01' 14"	E70° 06' 00"	Bhupat Ambardi
EIL/800/07-08/0918	Powerica Limited	N22° 01' 08"	E70° 06' 03"	Seth Vadala
EIL/800/06-07/0216	Ratlam Wires Pvt Ltd.	N22° 04' 51"	E69° 07' 18"	Okhamadhi
EIL/800/06-07/0213	Tarak Chemicals	N21° 59' 18"	E69° 18' 33"	Jodhpar
EIL/800/06-07/0221	Zaveri & Company	N22° 05' 01"	E69° 06' 50"	Okhamadhi

The estimated electricity supplied to the grid from the project activity is 30.624 GWh per year. The estimated GHG emission reduction is 264168 tCO₂e to be achieved during the ten years crediting period which can be renewed once.

² <http://www.satsig.net/maps/lat-long-finder.htm>

1.4 Level of assurance

The validation report is based on VCS PD^{/PD1/,PD2/,PD3/,PD4/} financial spreadsheet^{/XLS1/,XLS2/} supporting documents made available to the validation team and information collected through performing interviews and during the on-site assessment. The validation opinion is assured provided the credibility of all above.

2 Methodology

The validation of the project was carried out from November 2008 to November 2009.

Preparations: 2009-03-28 to 2009-04-05

On-site validation: 2009-07-06

(Draft) Reporting: 2009-09-07

(Final) Reporting: 2009-11-16

The validation consisted of the following three phases:

- A desk review of the project design and the baseline and monitoring methodology
- Follow-up interviews
- The resolution of outstanding issues and the issuance of the final validation report and opinion

2.1 Review of Document

The draft PD^{/PD1/} submitted by the Enercon (India) Limited in May 2009 and supporting background documents related to the project design and baseline were reviewed. Furthermore, the validation 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 documents that were considered during the validation process are given in chapter 5 of this report. They are listed as follows:

- Documents provided by the project proponent (Table 5-1)
- Background investigation and assessment documents (Table 5-2)
- Websites used (Table 5-3).

2.2 Follow-up Interviews

On 2009-07-06, the TÜV NORD JI/CDM CP performed validation site visit with the project proponent in Jamnagar district of Gujarat.

During this visit, as well as earlier and after, interviews with the project proponent, the consultant, project stakeholders and with local authorities were carried out to confirm selected information and to resolve issues identified in the document review.

The key interviewee and main topics of the interviews are summarised in Table 2-1.

Table 2-1 Interviewed persons and interview topics

Interviewed Persons / Entities	Interview topics
1. Projects & Operations Personnel /IM01/	<ul style="list-style-type: none"> - General aspects of the project - Project design, Commissioning and implementation - Technical equipment and operation of the project - Performance of the project - Involved personnel and responsibilities - Training and practice of the operational personnel - Implementation of the monitoring plan

Interviewed Persons / Entities	Interview topics
2. Consultants /IM02/	<ul style="list-style-type: none"> - Monitoring and measurement equipment - QA/QC Testing and calibration procedures - Monitored data management - Data quality, archiving and reporting procedures - Desk review findings - Bundling criteria - Applicability of chosen methodology - Data uncertainty and residual risks - GHG calculation - Procedural aspects of the validation

A detailed list including the functions or designations of the interviewed persons is given in chapter 5 (see Table 5-4). This table also includes reference codes to be used in the validation protocol.

2.3 Resolution of any material discrepancy

A few discrepancies were found during the validation and the validation report containing a set of CARs & CRs were submitted to the project proponent. The project design document was revised addressing the CARs & CRs issued by TÜV NORD JI/CDM CP.

After reviewing the revised and resubmitted project documentation^{/PD3/}; resolving the CARs & CRs raised and outstanding concerns, TÜV NORD JI/CDM CP issues this final validation report and opinion.

9 CARs, 8 CRs and 1 FAR were raised during the Validation. Please refer to Section 3, table 3.

3 Validation Findings

The findings of validation are summarised in table 3:

Table 3: Summary of CAR, CR and FAR issued

Validation topic	No. of CAR	No. of FAR	No. of CR
D- Project Design	-	01	03
B- Baseline and additionality	07	-	04
M- Monitoring plan	01	-	-
C- Calculation of GHG emissions	-	-	01
E- Environmental Impact	-	-	-
L- Local Stakeholder Comments	-	-	01
SUM	08	01	09

Validation Report of the GHG emission reduction project entitled “Grid connected bundled wind power project in Gujarat managed by Enercon (India) Limited”

For an in depth analysis/evaluation of all CARs and CRs, refer to the below sections from 3.1 to 3.6.

3.1 Project Design

The proposed project utilizes wind energy for electricity generation. Total installed capacity is 15.2 MW with estimated electricity supplied to the grid of about 30.624GWh per year. The calculation was assessed by the validation team and deemed as correct. The project activity consists of the 19 E-48 machines of Enercon make of 800 KW capacity each.

Supporting documents like purchase orders^{/PO1 to PO19/} of the 19 WTGs by every investor were made available to the TÜV NORD JI/CDM CP. It was found that the purchase order^{/PO1 to PO19/} issued by the suppliers of the WTGs specifies the technical details for the respective WTG. Information was also collected through performing interviews with the PP and during the on-site assessment.

Technical details and equipment specifications used in the project are as detailed below:

Table 3-1: Technical details of the wind turbines E-48, 800 KW capacity.

Details	Specification E-48
Turbine Model	Enercon E-48
Hub Height	74.85 m
Turbine Type	Gearless horizontal axis wind turbine with variable rotor speed.
Power Regulation	Independent electromechanical pitch system for each blade.
Design Lifetime	20 Years
Cut-in wind speed	2.5 m/s
Rated wind speed	12 m/s
Cut-out wind speed	28-34 m/s
Extreme wind speed	59.5 m/s
Rated rotational wind speed	31.5 rpm
Operating range rotational speed	16.0 – 31.5 rpm
Orientation	Upwind
No of blades	3
Blade material	Glass fibre reinforced Epoxy
Gear Box type	Gear less
Generator type	Synchronous generator
Braking	Aerodynamic

The project duration is: 20 years.

Start date of the project is 2007-02-01 (Date of Commissioning of first WEG in the bundle project activity).

Crediting period for the project activity: 2007-02-01 to 2017-01-31 (10 years) which can be renewed once.

There are thirteen individual investors in this bundled project activity. These investors have authorized Enercon (India) Limited for all carbon related activities and communication. Authorization letters^{/ALI/ to /AL10/} in this regard has been verified.

Proof of title was verified from the authorization of Enercon (India) Limited by Project Participants from Enercon (India) Limited^{/ALI/}. Refer to Table 5-1.

The emission reduction has not been double counted. The project has applied for CDM benefits. The process is under validation and not yet registered with UNFCCC. The VCS

Validation Report of the GHG emission reduction project entitled “Grid connected bundled wind power project in Gujarat managed by Enercon (India) Limited”

crediting period will end from the date on which it is registered as a CDM project with UNFCCC^{/UD-LET/}. Enercon (India) Limited is responsible for managing all carbon credits^{/AL1-AL10/}. There is no rejection history for the project activity.

However, CR D1 to CR D3 and FAR D1 were raised and successfully closed out.

CAR/CR	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
CR D1 Under section 1.11, no risks have been identified. Please include appropriate risks faced by the Project activity which mainly affects its GHG emission reductions.	/PD 1/ 1.11	The risk factors associated with the project activity have been included in the section 1.11 of VCS PD accordingly.	/PD 2/ /PD 3/	Variability in the wind speed, wind pattern and grid failure were the risk factors included in the PD .These are the key factors which affects the power generation from wind turbines as well as power transmission to the grid. Hence the above mentions risk factors are deemed to be acceptable as appropriate risks affecting the GHG emission reductions of the project activity. CR D1 is closed.
CR D2 In section 1.6, Please clarify with the crediting period. It is mentioned as April 1, 2007 to March 31, 2009.	/PD 1/	The crediting period has been revised.	/PD 2/ /PD 3/	The revised crediting period starting from 2007-02-01 up to ten years till to 2017-01-31 are found to be in line with VCS standards ^{/vcs/} and verified to be OK.CR D2 is closed.
CR D3 Please provide authorization letter from all the project investors stating Enercon (India) Limited is responsible for all communication related to this VCS Bundled project.	/PD 1/	The documents have been provided.	/PD 2/ /PD 3/	The authorization letters ^{/AL1-AL10/} from each investor authorizing Enercon (India) Limited as the Project proponent has been submitted for verification. It is verified and found to be OK. CR D3 is closed.
FAR D 1 The project has also applied for CDM benefits. The process	/PD 3/	---	---	During every VCS Verification the verification team has

CAR/CR	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
is still under validation. In future it has to be ensured that there will be no double counting regarding emission reductions between CDM and VCS.				to check the status of the project under CDM validation on the UNFCCC website and to ensure that is still not registered as a CDM Project. This is to avoid double counting and to be consistent with the Policy announcement from the VCS association: “Further Guidance for projects that are registered in two GHG programs”.

3.2 Baseline

The proposed project adopts CDM approved methodology ACM 0002 / Version 9: Consolidated methodology for grid-connected electricity generation from renewable sources, which is approved under VCS 2007.1.

The project satisfies all criteria for ACM0002. The application of baseline methodology is assessed as correct. There is no methodology deviation or revision.

The project participant used ACM 0002 version 9 approach to determine the emission coefficient of the indicative simplified baseline and monitoring methodologies for selected large scale CDM project activity which states that the baseline scenario in case of installation of a new grid-connected renewable power plant/unit is “Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the “Tool to calculate the emission factor for an electricity system”. The selection of baseline scenario is assessed to be appropriate.

The project proponent has calculated the weighted average simple operating margin (OM) based on the latest three year statistics data (year of 2005-06, 2006-2007, 2007-08) as per Central Electricity Authority guidelines version 4.0 October 2008 and the Operating Margin Emission Factor for NWENE grid is 1.00862 tCO₂/MWh. The value for Build Margin (BM) for 2007-2008 is directly used, i.e., 0.59771 tCO₂/ MWh and a weightage factor of 75% & 25% is used for OM and BM to arrive at the Combined Margin value of 0.90589 tCO₂/MWh.

The additionality has been assessed using project test. The implementation barrier: investment barrier and common practice approach have been established to demonstrate the additionality.

Step as per VCS 2007.1	Argument	Assessment
Step 1: Regulatory Surplus	<ul style="list-style-type: none"> Local or National Legislation does not require the production of the underlying 	The Validation team has checked the National and Regional requirements

Step as per VCS 2007.1	Argument	Assessment												
	<p>service or product with the chosen technology.</p> <ul style="list-style-type: none"> - There is no legal requirement on the choice of a particular technology for power generation. - The applicable Environmental Regulations do not restrict the use of wind energy for power generation. • The implementation of project activity is a voluntary initiative and it is not mandatory or a legal requirement. For power generation, the Electricity Act 2003 does not restrict or empower any authority to restrict the fuel choice, the applicable environmental regulations do not restrict the use of wind energy and there is no legal requirement on the choice of a particular technology. • Project Proponents have been issued with all required regulatory clearances before commissioning. 	<p>and there are no local law that refrains from the establishing wind projects in India. Hence the argument is appropriate for this project activity.</p> <p> <input checked="" type="checkbox"/> Step passed <input type="checkbox"/> Step not passed <input type="checkbox"/> Not applicable </p>												
<p>Step 2: Investment Barrier</p>	<p>The project faces capital or investment return constraints that can be overcome by the additional revenues associated with the generation of VER/VCU. So the PP has chosen Benchmark Analysis to demonstrate the additionality of the projects in the bundle.</p> <p>Weighted average costs of capital (WACC) have been considered as the benchmark for the project activity.</p> <p>To arrive at this benchmark risk free rate from Indian Government bond rates published by the RBI for various years till the date of placement of first purchase order of the project have been analyzed. Sensex details for various years till the project start date was also evaluated to understand the market returns. The difference in this annual market return and the interest rate on Central Government Securities available from RBI has been used to arrive at the market risk premium for the project. Beta calculation for five power generating industries has been carried out to arrive at the average beta applicable to this project activity.</p> <p>Along with this, RBI PLR of average 11.00 % on the debt, cost of equity and applicable rate of tax have been added together to</p>	<p>Various elements have been checked during the additionality assessment. Validation team has checked the identified financial indicator (Project IRR), which is most suitable for the project type and decision context. In order to verify the relevant benchmark value of WACC, validation team has referred all necessary supportive data and found OK.</p> <p>Project proponents have demonstrated through the investment analysis that the financial returns of the project activity are below the requisite benchmark.</p> <p>TUV-Nord considers the benchmark chosen is appropriate for the project activity.</p> <p>Using the investment analysis, the project proponents have demonstrated that the Project IRR for all the 13 investors which are as follows</p> <table border="1" data-bbox="1050 1816 1497 2089"> <thead> <tr> <th>Sr . N O.</th> <th>Name of Customer</th> <th>Project IRR</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Amar Builders</td> <td>8.74%</td> </tr> <tr> <td>2</td> <td>DP Power Pvt Ltd.</td> <td>10.19%</td> </tr> <tr> <td>3</td> <td>DP Wires Pvt.</td> <td>10.05%</td> </tr> </tbody> </table>	Sr . N O.	Name of Customer	Project IRR	1	Amar Builders	8.74%	2	DP Power Pvt Ltd.	10.19%	3	DP Wires Pvt.	10.05%
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Step as per VCS 2007.1	Argument	Assessment																																																																																									
	<p>arrive at benchmark WACC of 12.63%.</p> <p>Since the Project IRR is chosen as the financial indicator to demonstrate the additionality; WACC is one of the appropriate benchmarks as per the Guidance on Investment Analysis EB 41, Annex 45, and version 2.</p> <p>A sensitivity analysis also has been carried out with +/-10% variation in PLF and Operation and maintenance cost and the same is provided as below:</p> <p>Sensitivity analysis with PLF</p> <table border="1" data-bbox="496 763 1023 2085"> <thead> <tr> <th>Investors</th> <th>10% increase in PLF</th> <th>Project IRR without VER Revenues for Base Case</th> <th>10% decrease in PLF (PLF = 18%)</th> </tr> </thead> <tbody> <tr><td>Amar Builders</td><td>10.15%</td><td>8.74%</td><td>7.26%</td></tr> <tr><td>DP Power Pvt Ltd.</td><td>11.68%</td><td>10.19%</td><td>8.63%</td></tr> <tr><td>DP Wires Pvt. Ltd.(Okhamadhi)</td><td>11.55%</td><td>10.05%</td><td>8.50%</td></tr> <tr><td>DP Wires Pvt. Ltd.(Jodhp ar)</td><td>11.33%</td><td>9.85%</td><td>8.32%</td></tr> <tr><td>Kataria Wires Pvt. Ltd.</td><td>11.52%</td><td>9.94%</td><td>8.33%</td></tr> <tr><td>Mahanagar Developers</td><td>10.58%</td><td>9.16%</td><td>7.69%</td></tr> <tr><td>PBM Polytex(ok hamadhi)</td><td>11.52%</td><td>10.18%</td><td>8.61%</td></tr> <tr><td>PBM Polytex (Jamjodhp ar)</td><td>11.58%</td><td>10.02%</td><td>8.39%</td></tr> <tr><td>Powerica Limited-I</td><td>12.28%</td><td>10.78 %</td><td>8.94%</td></tr> <tr><td>Powerica Limited-II</td><td>12.25%</td><td>10.75 %</td><td>8.92%</td></tr> <tr><td>Ratlam Wires Pvt. Ltd.</td><td>11.61%</td><td>10.12%</td><td>8.57%</td></tr> <tr><td>Tarak chemicals</td><td>11.38%</td><td>9.83%</td><td>8.21%</td></tr> <tr><td>Zaveri & Co. ltd</td><td>11.72%</td><td>10.13%</td><td>8.51%</td></tr> </tbody> </table>	Investors	10% increase in PLF	Project IRR without VER Revenues for Base Case	10% decrease in PLF (PLF = 18%)	Amar Builders	10.15%	8.74%	7.26%	DP Power Pvt Ltd.	11.68%	10.19%	8.63%	DP Wires Pvt. Ltd.(Okhamadhi)	11.55%	10.05%	8.50%	DP Wires Pvt. Ltd.(Jodhp ar)	11.33%	9.85%	8.32%	Kataria Wires Pvt. Ltd.	11.52%	9.94%	8.33%	Mahanagar Developers	10.58%	9.16%	7.69%	PBM Polytex(ok hamadhi)	11.52%	10.18%	8.61%	PBM Polytex (Jamjodhp ar)	11.58%	10.02%	8.39%	Powerica Limited-I	12.28%	10.78 %	8.94%	Powerica Limited-II	12.25%	10.75 %	8.92%	Ratlam Wires Pvt. Ltd.	11.61%	10.12%	8.57%	Tarak chemicals	11.38%	9.83%	8.21%	Zaveri & Co. ltd	11.72%	10.13%	8.51%	<table border="1" data-bbox="1046 259 1497 954"> <tbody> <tr><td></td><td>Ltd.(Okhamadhi)</td><td></td></tr> <tr><td>4</td><td>DP Wires Pvt. Ltd.(Jodhp ar)</td><td>9.85%</td></tr> <tr><td>5</td><td>Kataria Wires Pvt. Ltd.</td><td>9.94%</td></tr> <tr><td>6</td><td>Mahanagar Developers</td><td>9.16%</td></tr> <tr><td>7</td><td>PBM Polytex(okhamadhi)</td><td>10.18%</td></tr> <tr><td>8</td><td>PBM Polytex (Jamjodhp ar)</td><td>10.02%</td></tr> <tr><td>9</td><td>Powerica Limited-I</td><td>10.78 %</td></tr> <tr><td>10</td><td>Powerica Limited-II</td><td>10.75 %</td></tr> <tr><td>11</td><td>Ratlam Wires Pvt. Ltd.</td><td>10.12%</td></tr> <tr><td>12</td><td>Tarak chemicals</td><td>9.83%</td></tr> <tr><td>13</td><td>Zaveri & Co. ltd</td><td>10.13%</td></tr> </tbody> </table> <p>Above mentioned Project IRRs for all the investors including the one getting highest return i.e., 10.78% from the project activity are lower than the chosen benchmark WACC of 12.63%.</p> <p>Thus, the established investment barrier has been assessed to be acceptable. The arguments with supporting spreadsheets^{/XLS2/} provide proof for the non-viability of the project.</p> <p>The input data and assumptions for calculation of IRR like (profit after tax, project cost, net cash flow, additional depreciation, interest on term loan) were verified with references provided by PP. The considered benchmark is appropriate.</p> <p>The WACC calculations^{/WACC 1-WACC2/} were verified and deemed to be acceptable.</p> <p>In WACC calculation, the formula used for cost of equity calculation using CAPM has been verified to be correct. This has been checked from website^{/CAPM/}.</p> <p>More over , the website, http://rbidocs.rbi.org.in/rdocs/Bulletin/DOCs/71985.xls^{/rbi/} was checked in respect to risk free rate and found that</p>		Ltd.(Okhamadhi)		4	DP Wires Pvt. Ltd.(Jodhp ar)	9.85%	5	Kataria Wires Pvt. Ltd.	9.94%	6	Mahanagar Developers	9.16%	7	PBM Polytex(okhamadhi)	10.18%	8	PBM Polytex (Jamjodhp ar)	10.02%	9	Powerica Limited-I	10.78 %	10	Powerica Limited-II	10.75 %	11	Ratlam Wires Pvt. Ltd.	10.12%	12	Tarak chemicals	9.83%	13	Zaveri & Co. ltd	10.13%
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Ltd.	11.61%	10.12%	10.31%	Tarak chemicals	11.38%	9.83%	10.03%	Zaveri & Co. ltd	11.72%	10.13%	10.32%	<p>the average interest rate used in the WACC calculation has been verified to be OK.</p> <p>www.bseindia.com, web site was checked to verify BSE Sensex rates used in WACC calculation and rates have been found to have applied correctly.</p> <p>BETA snap shots provided by PP were verified from www.bloomberg.com website and found that the BETA value has been correctly applied.</p> <p>More over the average PLR used in cost of debt calculation is found to be OK which has been verified from the web site http://rbidocs.rbi.org.in/rdocs/Wss/DOCs/71884.xls.</p> <p>Thus, the overall WACC calculation is deemed to be acceptable.</p> <p>The estimated annual electricity generation is based on the PLF of 23% which is considered as per GERC order dated 11th August 2006^{/gerc/}, Hence the chosen PLF is acceptable.</p> <p>The PLF and the operation and maintenance costs are sensitive to the electricity generation. Hence the sensitivity analysis has been carried out by the PPs for the above variables. The calculation has been reviewed and it is concluded that the project activity IRR is less than the benchmark value, clearly indicating that the project is financially not feasible without carbon benefits.</p> <p>The sensitivity analysis has also been provided for individual developers with increase and decrease in the PLF and Operation and Maintenance cost to a tune of +/-10% and it has been verified that the Project IRR does not cross the bench mark.</p> <p>Thus from the investment analysis, it can be clearly understood that the project is financially un-attractive and hence it is additional.</p>
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Step as per VCS 2007.1	Argument	Assessment
		<input checked="" type="checkbox"/> Step passed <input type="checkbox"/> Step not passed <input type="checkbox"/> Not applicable
Step 3: Common Practice	<p>Common practice analysis has been carried out with the publicly available data.</p> <p>As per the wind power reference web site³ the state of Gujarat has the potential to generate 9,675 MW of power from wind energy but only 338.1 MW of wind power has been installed till 31st March 2006 which is just 3.4 % of the gross potential of wind power generation in the state. Though the state of Gujarat has the highest gross potential for wind power generation among all the states. The installed capacity for wind power generation in the state is much lesser when compared to other states like Tamil Nadu, Maharashtra and Karnataka.</p> <p>In the year 2004-05, out of the approximately 248 Million Units produced by wind power projects in the state, only 24 Million Units were purchased by the state utility, and the balance generation was used captively⁴.</p> <p>In the year 2005-06, the total power generated from all sources of power generation in Gujarat was 45070.44 Million Units⁵ whereas the power generated from wind power projects was only 1613.04 Million Units⁶ constituting only 3.6 % of the total power generated.</p> <p>As is evident from the above discussions, generation of power using wind energy and selling the generated power to the state utility as is being done under the proposed VCS project activity is not a common practice.</p>	<p>As a result of existence of the analysis of the barriers, the project activity has been concluded as not a common practice scenario in the region.</p> <p>The reference website ^{/WP/} showing the potential and installed capacity of wind power in Gujarat was checked and found that the installed capacity of wind mills as of 31st March 2006 was 338.1 MW which is much lesser when compared to other states. Thus it has been verified and acceptable that during the start date of the Project activity, wind power generation was not a common practice in the state.</p> <p>GETCO tariff order dated 6th May 2006 was checked and found that the majority of power units produced by wind projects in state were used for captive purpose. Thus it is deemed to be acceptable that the project activity with exporting power to the grid would have not been a common practice as only less Units were purchased by the state utility and major units were used for captive purpose before the start date of the Project activity.</p> <p>More over the reference web sites ^{/stat/} and ^{/IP/} were checked and found that during the start date of the project activity, wind power generation from the state was only 3.6 % of the total power generated in the state which was verified to be OK.</p> <p>Hence the arguments under common practice are concluded that wind energy generation was not a common practice in the state of Gujarat at the</p>

³ <http://windpowerindia.com/statstate.html>

⁴ GETCO tariff order dated 6th May 2006

⁵ www.indiastat.com

⁶ Indian Wind Power Directory 2006

Step as per VCS 2007.1	Argument	Assessment
		time of starting of this Project activity is not a common practice. Hence, OK. <input checked="" type="checkbox"/> Step passed <input type="checkbox"/> Step not passed <input type="checkbox"/> Not applicable

Thus the validation team arrived at the opinion that the project activity is assessed to be additional.

However, following CARs and CRs issues were raised and consequent upon the correct response received from the project promoter, the issues have been closed out.

CAR/CR	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
CAR B1 The commencement date of generation given in the worksheet differs from the commencement date of generation given in the VER calculation worksheet in the case of following cases 1. D.P. Power (P) Ltd. 2. D.P. Wires (P) Ltd, Okhamadi 3. D.P. Wires (P) Ltd., Jodhpar 4. Kataria Wires (P) Ltd. 5. PBM Polytex, Jamjodhpar 6. Powerica Ltd. (3 WEGs)	/XLS1/	Necessary corrections have been made in worksheet and VER calculation sheet.	/XLS2/	The commissioning certificates / ^{CR 2-} CR 5/ and / ^{CR 7-} CR 8/ of wind turbines were checked in respect to the following investors 1. D.P. Power (P) Ltd. 2. D.P. Wires (P) Ltd, Okhamadi 3. D.P. Wires (P) Ltd., Jodhpar 4. Kataria Wires (P) Ltd. 5. PBM Polytex, Jamjodhpar 6. Powerica Ltd. (3 WEGs) It was found that the date of commencement of each turbines

CAR/CR	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
				have been mentioned correctly in accordance with the commissioning certificates. CAR B1 is closed.
<p>CAR B2</p> <p>The installed capacity given in the ‘Financial Structure’ worksheet and ‘Assumptions’ worksheet differs in the case of following projects resulting in the difference in project cost among others:</p> <p>a) Mahanagar Developers is (1.6 MW and 0.8 MW).</p> <p>b) PBM Polytex, Jamjodhpar (1.6 MW and 0.8 MW)</p> <p>c) Powerica Ltd. (4.8 MW and 0.8 MW)</p>	/XLS1/	Corrections have been made in financial work sheet and assumptions sheet.	/XLS2/	<p>The corrections in respect to the installed capacity have been correctly made in financial structure and assumption work sheet. The commissioning certificates of wind turbines /CR 6- CR 9/ were verified in respect to the installed capacity of the following investors</p> <ol style="list-style-type: none"> 1. Mahanagar Developers, 2. PBM Polytex, Jamjodhpar and 3. Powerica Ltd. <p>Thus the applied values are verified to be correct. More over Purchase orders /PO1-PO19/ were verified for above investors and thus the Project cost have been correctly mentioned as</p>

CAR/CR	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
				per purchase orders. CAR B2 is closed.
<p>CAR B3 The loan terms given in the ‘financial structure’ worksheet and ‘Assumptions’ worksheet differ in the case of following projects:</p> <ol style="list-style-type: none"> 1. Amar Builders – Tenure of loan 2. D.P. Power Pvt. Ltd. – Tenure of loan 3. D.P. Wires (P) Ltd., Okhamadi 4. D.P. Wires (P) Ltd., Jodhpar 5. Kataria Wires (P) Ltd. 6. Mahanagar Developers 	/XLS1/	Necessary corrections have been made in financial structure and assumptions sheet.	/XLS2/	<p>Loan sanction letters ^{/LSL/} stating the terms of loan have been checked in respect to following investors.</p> <ol style="list-style-type: none"> 1. Amar Builders 2. D.P. Power Pvt. Ltd 3. D.P. Wires (P) Ltd. Okhamandi 4. D.P. Wires (P) Ltd., Jodhpar 5. Kataria Wires (P) Ltd. 6. Mahanagar Developers <p>Thus the applied values in financial structure and assumptions sheet have been verified to be correct. CAR B3 is closed.</p>
<p>CAR B4 Interest computation in the case of following projects is not correct as loans remaining unpaid throughout the life of the project to the extent indicated</p>	/XLS1/	Necessary corrections have been made in financial calculation sheet.	/XLS2/	The interest rate applied across each investor is verified to be OK. The loans sanction letters ^{/LSC/} have been checked and the interest rates were found to have applied

CAR/CR	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
<p>below.</p> <ol style="list-style-type: none"> 1. Amar Builders 2. D.P. Power Pvt. Ltd. 3. D.P. Wires Pvt. Ltd., Okhamadi 4. D.P. Wires Pvt. Ltd., Jamjodhpar 5. Kataria Wires Pvt. Ltd. 6. Mahanagar Developers 7. PBM Polytex, Okhamadi 8. PBM Polytex, Jamjodhpar 9. Ratlam Wires Pvt. Ltd. 				<p>correctly. Thus the interest computation verified to be correct. CAR B4 is closed.</p>
<p>CAR B5</p> <p>1. Providing for O&M expenses right from the first year seems to indicate that the machinery suppliers do not provide even one year warranty, which is not acceptable.</p> <p>2. Moreover, providing escalation in O&M cost right from</p>	<p>/XLS1/</p>	<p>1. According to the DOE observation we have considered O & M cost from 2nd year consideration. Zero O & M cost for first year.</p> <p>2. Escalation in O & M has</p>	<p>/XLS2/</p>	<p>1. Operation and maintenance contracts ^{/O&M/} of each individual investors have been checked and found that there is one year warranty and thus the considering O&M cost from 2nd year has been verified to be correct.</p> <p>2. Escalation in O&M which has been considered from 3rd year is in line with O&M contract</p>

CAR/CR	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
second year irrespective of the commissioning date of the WEG, has resulted in providing for escalation in less than one year, which is not acceptable	/XLS1/	been considered from 3rd year in revised financial worksheet.	/XLS2/	and thus verified to be correct. CAR B5 is closed
<p>CAR B6</p> <p>1. Providing book depreciation for the full year, when the project has not been in operation for full year, is not in conformity with accepted accounting principles.</p> <p>2. In the case of PBM Polytex, the Board resolution (it appears to be a firm, in which case Board resolution will not be there) is stated to have been passed on 30.10.2007. The tax rate at the time of taking decision was 33.99%, whereas tax rate used in the financial calculation is 33.66%.</p> <p>3. In the case of Powerica Ltd., the Board resolution is stated to have been passed on 20.08.2007. The tax rate at the time of taking decision was 33.99%, whereas tax rate used in the financial calculation is</p>	<p>/XLS1/</p> <p>/XLS1/</p>	<p>1. Changes have been made in the financial sheet, now depreciation is applied in the calculations only for the time duration of WEG's working.</p> <p>2. Necessary modifications in tax rate have been done.</p> <p>3. Necessary modifications in</p>	<p>/XLS2/</p> <p>/XLS2/</p>	<p>1. Necessary modifications have been done in respect to depreciation calculations which were verified to be correct.</p> <p>2. Tax rate of 33.99% have been correctly applied which have been verified from the website http://www.surfindia.com/finance/budget-india/union-budget-2007-08.html and found to be OK.</p> <p>3. Tax rate of 33.99% have been correctly applied which have been verified from the website <a 485="" 511="" 937="" 954"="" data-label="Page-Footer" href="http://www.surfindia.com/finance/budget-india/union-</p> </td> </tr> </tbody> </table> </div> <div data-bbox="> <p>19</p> </p>

CAR/CR	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
<p>33.66%.</p> <p>4. Tax computation does not seem to conform to IT Act and ruling given on Sec. 80IA.</p>	<p>/XLS1/</p> <p>/XLS1/</p>	<p>tax rate have been done.</p> <p>4. Tax computation has been revised according to IT act and ruling of Sec 80IA.</p> <p>Under section 80IA project developer can avail tax holiday for 10 consecutive years for the first 15 years of operation. The period, in which there is no profit (or negative income)there is no such requirement of applicability of using sec.80 IA</p>	<p>/XLS2/</p> <p>/XLS2/</p>	<p>budget-2007-08.html and found to be OK.</p> <p>4. Required changes have been made. More over the clarifications given for tax computations are verified to be in accordance with IT act section 80-IA. Thus tax computation calculation is deemed to be acceptable. All the above 4 clarifications have been successfully addressed. CAR B6 is closed.</p>
<p>CAR B7</p> <p>From whatever information furnished (the conclusion could change on making available all the annexures referred to and the worksheet), the benchmark does not seem to be acceptable for the following reasons:</p> <p>a) Moreover, PLR as of February</p>	<p>/XLS1/</p>	<p>a. Corrections have been made in revised benchmark calculation sheet and</p>	<p>/XLS2/</p>	<p>a. The PLR used in the benchmark is</p>

CAR/CR	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
<p>2007 has been used for interest rate to compute WACC. Since decision in respect of 10 out of 12 projects was taken before the end of 2006, use of this data is not appropriate.</p> <p>b) Use of interest rate as proxy for risk free return and the computation of average risk free return is theoretically fallacious and practically not possible and therefore no acceptable.</p> <p>c) Beta value does not seem to include all power companies listed and traded in stock exchange.</p>		<p>associated link has been mentioned in calculation sheet.</p> <p>b) Interest rate is revised to long term yield rate instead of the central bond rate in the revised worksheet.</p> <p>c) Beta of all the companies that were listed and have the data for the period of 3 years has been considered for computing the applicable</p>		<p>11% which has been verified from the website http://rbidocs.rbi.org.in/rdocs/Wss/DOCs/71884.xls and found to be correct. The PLR used was the rate prevailing during August 2006. Thus the PLR during investment decision has been correctly used.</p> <p>b. The revision of interest rate to long term yield rate has been verified to be OK from the web site http://rbidocs.rbi.org.in/rdocs/Bulletin/DOCs/71985.xls</p> <p>c. The clarifications given by PP are appropriate. www.bloomber.com was checked to verify the applied Beta values and found to be OK.</p> <p>d. The</p>

CAR/CR	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
<p>d) Moreover average beta does not seem to establish the conservativeness adopted in the approach.</p>		<p>beta.</p> <p>d) For arriving at the appropriate beta values, higher weightage is given to companies that have a closer resemblance to the project activity or the business.</p> <p>In case all the companies (considered in the beta group) are similar, hence a equal weighting is appropriate.</p> <p>In our case all are power generating companies and therefore equal weight has been applied to arrive at the applicable beta value. Hence average value is taken.</p>		<p>arguments made by PP for applying equal weightage for all power generating are found to be OK. The snapshots of beta value taken from www.bloomber g.com website were verified and found to have been applied correctly.</p> <p>The above 4 clarifications have been successfully addressed by PP. CAR B7 is closed.</p>
<p>CR B1</p> <p>Cash flow considered for IRR calculations is not acceptable for the following reasons:</p> <p>a. As all the projects except 3 WEGs of Powerica Ltd, commenced generation during the same year as the investment had taken place, the cash outflow should be netted out with cash</p>	<p>/XLS1/</p>	<p>a. We have divided Powerica into two groups, one which has commissioning in year 07-08 and other 3 which have commissioning in</p>	<p>/XLS2/</p>	<p>a. The changes made by dividing Powerica into 2 groups are</p>

CAR/CR	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
<p>inflow of the first year. In the case of 3 WEGs of Powerica Ltd. which commenced generation of 08.04.2008 (as per VER worksheet), investment must have been made in 2007-08;</p> <p>b. Tax shield has not been accounted for</p> <p>c. Salvage value has not been accounted for</p>		<p>year 08-09 and accordingly financial calculation has been done.</p> <p>b. According to DOE observation Tax shield has been added in revised worksheet.</p> <p>c. Book depreciation for the project activity has been considered as 90% and the balance value is added back as salvage value in the worksheet.</p>		<p>acceptable. The financial calculation and cash flow are verified to be OK.</p> <p>b. Tax shield has been included which is verified to be OK.</p> <p>c. salvage value has been included in the cash flow which has been verified to be OK. CR B1 is closed.</p>
<p>CR B2</p> <p>1. The basis for assuming book depreciation at 7.86% and restricting the book depreciation to 90% of the asset value should be explained</p>	<p>/XLS1/</p>	<p>1. We agree with DOE observation and accordingly correction has been made. In revised working book depreciation has been taken 4.5 % on SLM basis which is standard industry practice and can also be referred from GERC tariff order.</p>	<p>/XLS2/</p>	<p>1. The depreciation rate has been modified as per the requirement. The GERC order was verified and found that the book depreciation rate of 4.5 % on SLM basis</p>

CAR/CR	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
				is correct. CR B2 is closed.
CR B3 MAT has been provided in respect of both limited companies and firms. In this context, clarify, whether MAT is applicable to the project activities, not only in the case of firms, but also limited companies.	/XLS1/	Yes MAT is applicable because this project falls under section 80IA of IT act and as per the section all infrastructure projects enjoy tax holiday of 10 consecutive years out of first 15 years of commissioning. For this period of tax holiday regular tax is not applicable hence only MAT should be paid by the customer.	/XLS2/	Section 115JB of the IT Act, 1961 has been checked and the applied MAT rate is found to be correct. CR B3 is closed.
CR B4 Interest, loan repayment period, repayment instalment should conform to the loan sanction letter.	/XLS1/	Interest, loan repayment period, repayment instalment are according to loan sanction letter and proof of same being provide to DOE	/XLS2/	The loans sanction letters ^{/LSL/} were verified and the Interest, loan repayment period, repayment instalment are verified to be OK. CR B4 is closed.

3.3 Monitoring Plan

The proposed project uses CDM approved methodology ACM0002 /Version 9: Grid Connected Renewable electricity Generation, which is approved under VCS 2007.1.

The project satisfies all criteria for ACM0002. The application of monitoring methodology is assessed as correct.

The monitoring plan^{/PD3/} provides detailed information related to the collection and archiving of all relevant data needed to:

- Estimate or measure emissions occurring from GHG sources, sinks and reservoirs
- Determine the baseline emissions
- Estimate changes in emissions from the site

Validation Report of the GHG emission reduction project entitled “Grid connected bundled wind power project in Gujarat managed by Enercon (India) Limited”

The parameters to monitor are electricity exported to the grid, electricity imported from the grid and net electricity generated.

In the project activity total electricity generated is being measured by energy meter, which is jointly monitored by officials from GEDA and Enercon as O&M contractor, on behalf of project sponsor. Monthly tariff invoices raised by the customer were verified to cross check the electricity sold to the grid. Thus the project conforms to the requirement of ACM0002, version 9.

The Net electricity generated by individual customer of project activity (at individual meter location) ($E_{N,net}$) is calculated as the difference between Electricity export and electricity import of individual customer. Net electricity generated by other customer at wind farm (at individual meter location)($E_{M,net}$) is calculated as the difference between Electricity export and electricity import of individual customer. Net electricity exported to grid as per EB main meter at 132 KVsub-station (at common metering location at sub-station) ($E_{(M+N), net}$) is calculated by the difference between Electricity export to grid by EB main meter and electricity import as per EB main meter. So the net electricity supplied (billing unit as per GEDA certificate) to grid by individual customers ($E_{G,net}$) is calculated by the formula,

$$E_{G,net} = \frac{E_{N,net} * E_{(N+M), net}}{(E_{N,net} + E_{M,net})}$$

Thus the apportioning method for calculation of net electricity supplied to the grid was verified to be OK.

The transmission loss for this net electricity generated from the windfarms is calculated by taking the difference between electricity export and import with the sum of individual WTG generation or group generation by the WTGs every month.

Apportioning of transmission loss for the WTGs is done as the percentage of electricity generated by the WTG out of total generated electricity from the windfarms. The ‘Certificate for share of electricity by the windfarm’ i.e, joint meter reading report provided by GEDA every month gives details of electricity generated by the WTGs owned by every individual investor after accounting the transmission losses for the WTGs.

The on-site visit was carried out on 2009-04-08. One member of the Validation team attended the site visit.

Before and during the on-site visit the Validation team performed interviews with the project participants to confirm selected information and to resolve issues identified in the document review.

During the onsite-visit the information above was verified by the joint meter reading reports which have been duly signed by the representatives of GEDA submitted by the PP. This was found to be in line with the monitoring plan ^{/PD3/} & the PPA ^{/PPA1-PPA13/} signed for the project and deemed to be ok.

Calibration of meters shall be done annually by GEDA officials in presence of EIL officials.

Validation Report of the GHG emission reduction project entitled “Grid connected bundled wind power project in Gujarat managed by Enercon (India) Limited”

Responsibilities related to monitoring are clearly defined in the monitoring plan and were assessed and found to be OK.

However, following CAR was raised and successfully closed out.

CAR/CR	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
CAR M1 The Monitoring plan does not explain <ol style="list-style-type: none"> 1. Metering 2. Metering Equipment 3. Meter Test Checking 4. Monthly meter readings observation 5. calibration frequency 6. QA/QC Procedures 	/PD/ 3.4	Explanation about monitoring plan has been added in section 3.4 of revised VCS PD.	/PD/ 3.4	Monitoring plan is complete with the inclusion of required informations on metering, metering equipment, meter Test Checking, monthly meter readings observation, calibration frequency and QA/QC Procedures which were verified to be OK. CAR M1 is closed.

3.4 Calculation of GHG Emissions

The validation team checked and found out that GHG emission reduction achieved by the project activity is calculated as the difference between the baseline emission and the project emission as well as the leakage emission. There are no GHG emissions arising from the project being a green power project. Hence, the project emissions are zero. As the project activity does not involve power plant construction, fuel handling (extraction, processing, and transport), and land inundation, the leakage due to the project activity is not applicable as per ACM 0002.

Following the ACM 0002 methodology, the combined margin (CM) methodology calculated ex-ante was chosen to calculate the baseline emission factor.

Baseline emission is equal to Net Electricity export by the project to the grid by the project activity (EG_y) multiplied by the grid emission factor ($EF_{grid,y}$). Also refer section 3.2.

The baseline emission factor is equal to the CM, which is applying the default weights are as follows: $w_{OM} = 0.75$ and $w_{BM} = 0.25$ for operating margin emission factor ($EF_{OM,y}$) and the build margin emission factor ($EF_{BM,y}$).

The calculation method of the OM and BM is derived from the guide of OM and BM calculation issued by CO₂ Baseline Database for the Indian Power Sector, User Guide (Version 4, Date: October, 2008) issued by CEA.

The validation team has checked the underlying input values as well as the computation in the emission reduction spreadsheet^{ER 3/}. The estimation of the emission reduction was realized in

Validation Report of the GHG emission reduction project entitled “Grid connected bundled wind power project in Gujarat managed by Enercon (India) Limited”

a transparent and conservative manner and is well documented under section 4.2 - 4.4 of the PD.

As per the final PD^{/PD4/} this project is expected to reduce emissions of 264168 tCO₂e over 10 years crediting period which can be renewed once.

The following clarification was raised and closed out.

CAR/CR	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
CR E1 The weighted average operating margin and build margin values should be calculated as per CEA version 4 data base.	/PD1/	Necessary changes have been made in operating and build margin calculation.	/PD3/	The operating margin, build margin values are verified to be correct as per CEA database version 4. CR E1 is closed.

3.5 Environmental Impact

Wind projects of this scale do not require an Environment Impact Assessment study to be conducted as per existing laws. However, Enercon conducted the EIA to study impacts on the environment resulting from the project activity. It has been verified and concluded that the construction of wind power mills with pleasing architectural design that blends with the landscape will have a positive impact on the aesthetics of the present surrounding of the site. No CARs/CRs were raised.

3.6 Comments by stakeholders

A stakeholder consultation meeting of the project was conducted on 2007-10-25, in Hotel Vishal International, Jamnagar District.

Stakeholders’ meeting notification was given in a form of invitation and information local stakeholders which were sent on behalf of EIL for the stakeholder meeting.

A summary of the stakeholder comments have been submitted as a separate document^{/SHC/}. All comments were positive and it has been verified that all comments sufficiently have been addressed in the submitted document and it is verified and found to be OK.

Following CR was raised and successfully closed out.

CAR/CR	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
CR L1 Section 6, stakeholders meeting has to be elaborated. Pl mention in the PD the dates on which the meeting were conducted. More over provide necessary supporting documents like invitation notice	/PD 1/ 3.4	The stakeholder’s minutes of meeting and attendance sheet are submitted.	/PD 3/	The required documents ^{/SHC/} have been verified in respect to the stakeholders meeting conducted and found to be

CAR/CR	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
and attendance sheet.				OK. CR L1 is closed.

4 Validation conclusion

Enercon (India) Limited has commissioned the TÜV NORD JI/CDM Certification Program to carry out the validation of the project – “Grid connected bundled wind power project in Gujarat managed by Enercon (India) Limited”, with regard to the relevant requirements of VCS 2007.1 Standard as well as criteria for consistent project operations, monitoring and reporting.

The project activity generates electricity which will be supplied to the NEWNE Grid of India and then distributed to connected end users.

The review of the VCS PD and additional documents related to baseline and monitoring methodology; the subsequent background investigation, follow-up interviews and review of comments by parties, stakeholders have provided TÜV NORD JI/CDM CP with sufficient evidence to validate the fulfilment of the stated criteria.

A risk based approach has been followed to perform this validation. In the course of the validation 8 Corrective Action Requests (CAR), 9 Clarification Requests (CR) and 1 Forward

Validation Report of the GHG emission reduction project entitled “Grid connected bundled wind power project in Gujarat managed by Enercon (India) Limited”

action request (FAR) were raised and successfully closed out and FAR has to be checked in every verification stage.

The validation is based on the VCS PD, proof of title, additional documents related to baseline and monitoring methodology; the subsequent background investigation, follow-up interviews and supporting documents made available to the validators by project proponent.

As a result of the validation, the validators confirm that:

- The project additionality is sufficiently justified in the PD.
- The monitoring plan is transparent, adequate and inline with applied baseline and monitoring methodology of ACM 0002 Version 9.
- The calculation of the project emission reductions is carried out in a transparent and conservative manner, so that the calculated emission reductions of 264168 t CO₂e (total) is most likely to be achieved within the 10 years renewable crediting period.

No restrictions or uncertainties were identified related to the validation.



Ma. Paa. Puratchikkanal
Team Leader
Bangalore, 2009-10-12



Eric Krupp
Final approval
Essen, 2009-11-16

5 References

Table 5-1: Documents provided by the project proponent

Reference	Document
/PD1/	VCS PD for Enercon (India) Limited dated at 2009-05-04, Version 1
/PD2/	VCS PD for Enercon (India) Limited dated at 2009-10-03, Version 2
/PD3/	VCS PD for Enercon (India) Limited dated at 2009-10-08, Version 3
/PD4/	VCS PD for Enercon (India) Limited dated at 2009-11-14, Version 4
/PHT/	Photographs of the Project Site
/TD/	Technical specification of the WTGs (E-48)
/XLS1/	Financial calculation sheet corresponding to VCS /PD1, PD2/
/XLS2/	

Validation Report of the GHG emission reduction project entitled “Grid connected bundled wind power project in Gujarat managed by Enercon (India) Limited”

Reference	Document
	Financial calculation sheet corresponding to VCS/PD3/
/WACC 1/	Benchmark calculation corresponding to XLS 1
/WACC 2/	Benchmark calculation corresponding to XLS 2
/ER 1/ /ER 2/ /ER 3/	Emission reduction calculation sheet corresponding to VCS/PD2/ Emission reduction calculation sheet corresponding to VCS/PD3/ Emission reduction calculation sheet corresponding to VCS/PD4/
/CR1/	Commissioning certificate dated 2007-03-24 of EIL/800/06-07/0265 of 0.8 MW turbine by M/s. Amar Builders from Gujarat Energy Development Agency (GEDA).
/CR2/	Commissioning certificate dated 2007-02-12 of EIL/800/06-07/0220 of 0.8 MW capacity turbine by M/s. D P Power from GEDA Commissioning certificate dated 2007-02-01 of EIL/800/06-07/0214 of 0.8 MW turbine by M/s. D P Wires Pvt. Ltd from GEDA
/CR3/	Commissioning certificate dated 2007-03-19 of EIL/800/06-07/0215 of 0.8 MW turbine by M/s. D P Wires Pvt ltd from GEDA
/CR4/	Commissioning certificate dated 2007-02-01 of EIL/800/06-07/0217 of 0.8 MW turbine by M/s. Kataria Wires Pvt ltd from GEDA.
/CR5/	Commissioning certificates dated 2007-03-19 of EIL/800/06-07/0414 and EIL/800/06-07/0415 of 1.6 MW turbine by M/s. Mahanagar Developers from GEDA.
/CR6/	Commissioning certificate dated 2007-02-12 of EIL/800/06-07/0219 of 0.8MW turbine by M/s. PBM Polytex Ltd. from GEDA.
/CR7/	Commissioning certificate dated 2007-09-01 and 2007-09-28 of EIL/800/07-08/0667 and EIL/800/07-08/0668 of 1.6 MW turbine by M/s. PBM Polytex Ltd from GEDA.
/CR8/	Commissioning certificates dated 2008-04-08 of EIL/800/0708/0916 and EIL/800/07-08/0917 of 1.6 MW turbines by M/s. powerica Limited from GEDA. Commissioning certificates dated 2008-03-31 of EIL/800/07-08/0914, EIL/800/07-08/1145, EIL/800/07-08/0918 of 2.4 MW turbines by M/s. Powerica Limited from GEDA

Validation Report of the GHG emission reduction project entitled “Grid connected bundled wind power project in Gujarat managed by Enercon (India) Limited”

Reference	Document
/CR9/	Commissioning certificates dated 2007-02-12 of EIL/800/06-07/0216 of 0.8 MW turbine by M/s. Ratlam Wires Pvt Ltd from GEDA.
/CR10/	Commissioning certificates dated 2007-03-19 of EIL/800/06-07/0213 of 0.8 MW turbine by M/s. tarak Chemicals Pvt Ltd from GEDA
/CR11/	Commissioning certificates dated 2007-02-01 of EIL/800/06-07/0221 of 0.8 MW turbine by M/s. Zaveri & Company Pvt Ltd from GEDA
/CR12/	
/CR13/	
/PPA1/	Power Purchase Agreements between Amar Builders and Gujarat Urja Vikas Nigam Limited dated 2007-04-11 for EIL/800/06-07/0265.
/PPA2 /	Power Purchase Agreements between D P Power and Gujarat Urja Vikas Nigam Limited dated 2007-04-03 for EIL/800/06-07/0220.
/PPA3/	Power Purchase Agreements between D P Wires Pvt Ltd and Gujarat Urja Vikas Nigam Limited dated 2007-04-03 for EIL/800/06-07/0214.
/PPA4/	Power Purchase Agreements between Kataria Wires Pvt Ltd and Gujarat Urja Vikas Nigam Limited dated 2007-04-03 for EIL/800/06-07/0215.
/PPA5/	Power Purchase Agreements between Kataria Wires Pvt Ltd and Gujarat Urja Vikas Nigam Limited dated 2007-04-03 for EIL/800/06-07/0217.

Validation Report of the GHG emission reduction project entitled “Grid connected bundled wind power project in Gujarat managed by Enercon (India) Limited”

Reference	Document
/PPA6/	Power Purchase Agreements between Mahanagar Developers and Gujarat Urja Vikas Nigam Limited dated 2007-04-10 for EIL/800/06-07/0414 & 0415.
/PPA7/	Power Purchase Agreements between PBM Polytex and Gujarat Urja Vikas Nigam Limited dated 2007-09-07 for EIL/800/07-08/0667 & 0668.
/PPA8/	Power Purchase Agreements between PBM Polytex and Gujarat Urja Vikas Nigam Limited dated 2007-03-21 for EIL/800/06-07/0219
/PPA9/	Power Purchase Agreements between M/s. Powerica Ltd and Gujarat Urja Vikas Nigam Limited dated 2008-08-27 for EIL/800/07-08/0914, 0918 & 1145.
/PPA10/	Power Purchase Agreements between M/s Ratlam Wires Pvt Ltd and Gujarat Urja Vikas Nigam Limited dated 2007-04-03 for EIL/800/06-07/0216
/PPA11/	Power Purchase Agreements between M/s. Tarak Chemicals Pvt Ltd and Gujarat Urja Vikas Nigam Limited dated 2007-03-23 for EIL/800/06-07/0213.
/PPA12/	Power Purchase Agreements between M/s. Zaveri & Company Pvt Ltd and Gujarat Urja Vikas Nigam Limited dated 2007-04-05 for EIL/800/06-07/0221.
/PPA13/	
/AL1/	Letter from Amar Builders authorizing Enercon (India) Limited to carry out all carbon related activities and communication dated 2007-18-08.
/AL2/	Letter from DP Power authorizing Enercon (India) Limited to carry out all carbon related activities and communication dated 2008-09-24.
/AL3/	Letter from DP Wires Pvt Ltd authorizing Enercon (India) Limited to carry out all carbon related activities and communication dated 2008-09-23.
/AL4/	Letter from Kataria Wires Pvt Ltd authorizing Enercon (India) Limited to carry out all carbon related activities and communication dated 2008-09-23.
	Letter from Mahanagar Developers authorizing Enercon (India) Limited to carry out all carbon related activities and communication dated 2007-08-24.

Validation Report of the GHG emission reduction project entitled “Grid connected bundled wind power project in Gujarat managed by Enercon (India) Limited”

Reference	Document
/AL5/	Letter from PBM Polytex authorizing Enercon (India) Limited to carry out all carbon related activities and communication dated 2008-02-15.
/AL6/	Letter from Powerica Limited authorizing Enercon (India) Limited to carry out all carbon related activities and communication dated 2007-10-12.
/AL7/	Letter from Ratlam Wires authorizing Enercon (India) Limited to carry out all carbon related activities and communication dated 2008-09-24.
/AL8/	Letter from Tarak Chemicals pvt Ltd authorizing Enercon (India) Limited to carry out all carbon related activities and communication dated 2007-08-23.
/AL9/	Letter from Zaveri & Company Pvt Ltd authorizing Enercon (India) Limited to carry out all carbon related activities and communication dated 2007-08-23.
/AL10/	
/PO1 to PO19/	Purchase orders for all the 19 WTGs by all the 13 investors
/AL/	Authorization of Enercon (India) Limited by Project Participants from Enercon (India) Limited
/LSL/	Loan sanction letters from the respective banks for 11 investors except Powerica Limited (100% equity, so no loan sanctioned letter is required)
/O&M/	Operation & Maintenance agreement for all the 19 WTGs between all the investors and the WTG suppliers M/s. Enercon (India) Limited.
/SHC/	Stake holder meeting conducted at Jamnagar- Minutes of Meeting, Attendance sheet
/UD-LET/	Undertaking letter from Enercon (Private) Limited, the project participant of “Grid connected bundled wind power project in Gujarat managed by Enercon (India) Limited” regarding claim for VER/VCU under VCS standard.

Table 5-2: Background investigation and assessment documents

Reference	Document
/ACM 0002/	Indicative simplified baseline and monitoring methodologies for selected large-scale CDM project activity categories (Version 10)
/Tool 1/	Tool for the demonstration and assessment of additionality (Version 05.2)
/Tool 2/	Tool to calculate the emission factor for an electricity system (Version 01.1)
/IPPC-RM/	1996 IPCC Guidelines for National Greenhouse Gas Inventories: work book 2006 IPCC Guidelines for National Greenhouse Gas Inventories: work book

Table 5-3: Websites used

Reference	Link	Organisation
/vcs/	www.v-c-s.org	VCS website
/unfccc/	www.unfccc.int	UNFCCC website
/cea/	http://www.cea.nic.in/planning/c%20and%20e/Government%20of%20India%20website.htm	Central Electricity Authority
/rbi /	http://rbidocs.rbi.org.in/rdocs/Publications	Reserve Bank of India
/rbi 1/	http://rbidocs.rbi.org.in/rdocs/Bulletin/DOCs/71985.xls	Reserve Bank of India
/rbi 2/	http://rbidocs.rbi.org.in/rdocs/Wss/DOCs/71884.xls	Reserve Bank of India
/bse/	www.bseindia.com	BSE
/wp/	http://windpowerindia.com/statstate.html	Wind Power India.com
/enfor/	http://envfor.nic.in/divisions/ccd/cdm_iac.html	Ministry of Environment and Forests, GoI, India

Reference	Link	Organisation
/gerc/	http://www.gercin.org/docs/Orders/Nonconv%20orders/Year%202006/wind%20enrrgy%20tariff.pdf	Gujarat Electricity Regulatory Commission
/wpi/	http://www.windpowerindia.com/statstate.html	Wind Power India
/IT/	http://www.incometaxindiapr.gov.in/incometaxindiacr/contents/taxrates/taxrates_2008_09_cos.htm	Income Tax, India
/CAPM/	http://www.investopedia.com/articles/06/CAPM.asp	Investopedia.inc
/satsig/	http://www.satsig.net/maps/lat-long-finder.htm	Satellite Signal

Table 5-4: Interviewed Persons

Reference		Name	Organisation / Function
/IM01/	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Mr. Puneet Katyal	M/s. Enercon India Limited
/IM01/	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Mr. Himanshu	M/s. Enercon India Limited