

VCS 2007.1 Validation Report of the GHG emission reduction project entitled "44 MW Bundled Wind Power Project in Maharashtra managed by Enercon India Limited."



Voluntary Carbon Standard 2007.1
Final Validation Report

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44 MW Bundled Wind Power Project in Maharashtra managed by Enercon India Limited.	Eric Krupp
Client:	Project Title:
M/s Enercon (India) Limited	44 MW Bundled Wind Power Project in Maharashtra managed by Enercon India Limited.
Summary:	

VCS 2007.1 Validation Report of the GHG emission reduction project entitled "44 MW Bundled Wind Power Project in Maharashtra managed by Enercon India Limited."

M/s Enercon (India) Limited has commissioned the TÜV NORD JI/CDM Certification Program to validate the project: "44 MW Bundled Wind Power Project in Maharashtra managed by Enercon India Limited." with regard to the relevant requirements of the VCS 2007.1 Program Guidelines, as well as criteria for consistent project operations, monitoring and reporting.

The purpose of this project activity is to generate electricity using renewable sources (wind) and export it to Maharashtra State Electricity and distribution company limited (MSEDCL) which is connected NEWNE grid, thereby displacing the grid generated electricity.

A risk-based approach has been followed to perform this validation. In the course of the validation 11 Corrective Action Requests (CARs) and 02 Clarification Requests (CRs) were raised and successfully closed.

Moreover, 01 FAR is raised which shall be checked during the verification.

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

In detail the conclusions can be summarised as follows:

- The project is in line with all relevant host country criteria (India) and all relevant VCS 2007.1 program guidelines requirements.
- The project additionality is sufficiently justified in the VCS PD.
- The monitoring plan is transparent and adequate and inline with applied baseline and monitoring methodology of ACM0002, version 10.
- The calculation of the project emission reductions is carried out in a transparent and conservative manner, so that the calculated emission reductions of 63,748t CO₂e/year is most likely to be achieved within the 10 years (fixed) crediting period.
- The conclusions of this report show, that the project, as it was described in the project documentation, is in line with all criteria applicable for the validation.

No restrictions or uncertainties were identified related to the validation.

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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 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 (ACM0002 Version 10 "Consolidated baseline 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

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

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- Monitoring Plan
 - Monitoring methodology
 - Indicators/data to be monitored and reported
 - 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 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.

1.3 VCS project Description

The project activity involves installation and operation of 55 machines of E-48 type with a capacity of 800KW each which is totaling to the capacity of 44 MW^{/VCS PD2/}. The project activity is located in districts of Satara, Sangli, Nasik, and Ahmednagar in the state of Maharashtra. The details of longitude and latitude have been furnished in the VCS PD^{/VCS PD2/}.

The main purpose of the project activity is to generate fuel free carbon neutral electricity through sustainable means using wind power resources & feed it to the MSEDCCL grid which is the part of NEWNE grid of India. The project activity considers harnessed renewable wind resources in the regions, thereby displacing non-renewable natural resources and thus ultimately leading to sustainable economic and environmental development in the region. The applied baseline methodology is ACM0002 Version10: "Consolidated baseline methodology for grid-connected electricity generation from renewable sources". The estimated GHG reductions through the project activity are 63,748 tCO₂e/year over the ten year fixed crediting period.

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1.4 Level of assurance

The validation report is based on VCS PD^{/VCS PD1/,/VCS PD2/}, supporting documents made available to the validation team and information collected through performing interviews. The validation opinion is assured provided the credibility of all above.

2 Methodology

The Validation of the project activity has been carried out from November 2008 to November 2009

Preparations : 10/06/2009 to 11/06/2009

Site Visit : 14/07/2009

(Draft) Reporting : 29/07/2009

(Final) Reporting : 13/11/2009

The entire validation has consisted of the following three phases.

2.1 Review of Document

The draft VCS PD^{/VCS PD1/} submitted by the M/s Enercon (India) Limited in June 2009 and supporting background documents related to the project design and baseline were reviewed from 10/06/2009 to 11/06/2009. 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 17/08/2009, TÜV NORD JI/CDM CP had meeting with EIL discussing the project details.

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.

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Interviewed persons and interview topics

Interviewed Persons / Entities	Interview topics
Project proponent representatives Project consultant	- Current status of plant design - Technical details of the project realization, project feasibility, designing, operational life time, monitoring of the project - Approval procedures and status - Monitoring and measurement equipment and system. - Financial aspects - Crediting period - Project activity starting date - VER allocation / ownership - Baseline study assumptions - Additionality - Sustainable development issues - Monitoring - Roles & responsibilities of the project participants w.r.t. project management, monitoring and reporting

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^{/VCS PD2/}; resolving the CARs & CRs raised and outstanding concerns, TÜV NORD JI/CDM CP issues this final validation report and opinion.

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3. Validation Findings

The findings of validation are summarised in table 3-1:

Table 3-1: Summary of CAR, FAR and CR issued

Validation topic	No. of CAR	No. of FAR	No. of CR
D- Project Design	01	-	-
B- Baseline and additionality	07	01	02
M- Monitoring plan	01	-	-
C- Calculation of GHG emissions	01	-	-
E- Environmental Impact	-	-	-
L- Local Stakeholder Comments	-	-	-
SUM	11	01	02

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

3.1 Project Design

The conclusions regarding:

- The technology used: Installation consists of 59 machines of E-48 type with an individual machine capacity of 800 KW each and totaling to the capacity of 47.2 MW which are located in districts of Satara, Sangli, Nasik, and Ahmednagar District in the state of Maharashtra. The total capacity of the project activity is 44 MW^{/VCS PD2/}. PP has provided VCS PD^{/VCS PD1/} with the bundling capacity of 47.2 MW, however, during the assessment it was found that 3.2 MW (1x 800 kW of Fashion Suitings P. Ltd., 2x 800 kW of Fashion Suitings P. Ltd, 1x 800 kW of Shah Construction) of the project activity is failed to prove the VCS 2007.1 requirements (refer CAR B6). Hence, the present project total capacity is 44 MW. The size of the individual project activity and technology implemented are cross checked with the Purchase order^{/PO/} and technical specifications^{/TS/} provided by the supplier respectively and are found to be OK.

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- Project duration :
 - o Project Life time: The technical lifetime of the project activity is 20 years^{/TS/}
 - o Crediting period: 10 years fixed crediting period; the start date of the crediting period is 01/04/2006.
 - o Project start date: 07/02/2006, The earliest commissioning date among the installations of WECs is taken as the start date of the project activity which is cross-checked with the commissioning certificate^{/CR/} and found OK. Also, this is the date for which project started the reduction of GHG emissions.
- Ownership
 - o Proof of title : EIL has provided the contract between the Project participant and EIL which endorses the project title^{/PT/} which is found appropriate.
 - o The project has not participated and does not intend to participate in another emission trading program^{/RD/}. Hence no double counting applies for this project.
 - o This project is not rejected under other GHG programmes which was cross checked through the back ground investigation^{/unfccc/} as well the declaration given by the PP mentioning that project has not created any other environmental credits^{/RD/}.
 - o The project is eligible under the VCS 2007.1 standard^{/VCS STD/}

Nevertheless following CAR D1 was raised and closed successfully

Project Design	CAR D1			
Classification	☒ CAR	☐ FAR	☐ CR	☐ None
Findings	1. Section 1.3 of the VCS-PD should detailed out under which project size the project activity falls (i.e. Micro projects, Projects and Mega projects) (Cp VCS2007.1 standard) 2. PP should mention VCS project			

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	crediting period (i.e. Project can earn credit for a maximum of ten years which may be renewed atmost two times) in section 1.6 of the VCS-PD
Corrective Action	1. The project activity falls under category 'Projects'. Corrections have been made in the VCS PD. 2. The crediting period has been included in section 1.6 of the VCS PD. The crediting period is of 10 years i.e. from 1 April 2006 to 31 March 2016.
DOE Assessment	VCS PD is revised against the issues raised. CAR is closed
Conclusion	☐ To be checked during the next periodic verification ☒ PD was corrected correspondingly ☐ Spread sheets were corrected correspondingly ☐ Appropriate action was not taken ☒ The project complies with the requirements

3.2 Baseline & Additionality

Baseline:

- The selected baseline methodology is ACM0002/Version10:"Consolidated baseline methodology for grid-connected electricity generation from renewable sources"
- There is no deviation of applicable methodology.
- The selected baseline methodology, i.e., ACM0002/version 10 is correctly applied to this project activity. The baseline under the adopted methodology ACM0002/version 10 is calculated by multiplying the electricity baseline emission factor or grid emission factor (EF_y) and the net electricity exported to the NEWNE grid (EG_y). The grid emission factor (EF_y) is taken from CEA data base version 04 ^{/CEA/}. The grid boundary w.r.t the connected state grid is NEWNE Regional Grid of India. The combined margin of emission factors (CM) is taken as 0.90589 tCO_{2e}/GWh and is fixed ex-ante for the entire crediting period. The annual power generation from the project activity is estimated to be 77.088 GWh. The PLF considered to arrive the estimated electricity is 20% and sourced from MERC guidelines^{/XLS/}.

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- Altogether the project activity reduces emissions of 63,748tCO₂e/year over the chosen ten year fixed crediting period.

Nevertheless, CAR B1 and CAR B1.a had to be raised and were successfully closed.

Baseline & Additionality	CAR B1			
Classification	☒ CAR	☐ FAR	☐ CR	☐ None
Findings	PP should also furnish information relevant to methodology deviation and methodology revisions(if any) under section 2.1 of the VCS PD. (Cp VCS-PD template)			
Corrective Action	Corrections have been made in the VCS PD, methodology deviation and methodology revisions have been mentioned in section 2.1 of the VCS PD.			
DOE assessment	VCS PD is revised accordingly.			
Conclusion	☐ To be checked during the next periodic verification ☒ PD was corrected correspondingly ☐ Spread sheets were corrected correspondingly ☐ Appropriate action was not taken ☒ The project complies with the requirements			

Furthermore following CAR was raised as the validation progresses:

Baseline & Additionality	CAR B1.a			
Classification	☒ CAR	☐ FAR	☐ CR	☐ None
Findings	The version of the Methodology is revised by CDM EB from version 9 to version 10 during the course of validation. Hence, PP is requested to use the latest version of the applied Methodology and the relevant correction should be made in all the section of the VCS PD.			
Corrective Action	The latest version of the Methodology is used and the relevant section of the VCS PD.			
Additional Comment	The revised VCS PD/ ^{VCS PD2} found to be in line with ACM0002 version 10.			
Conclusion	☐ To be checked during the next			

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	periodic verification ☐ VCS PD was corrected correspondingly ☐ Spread sheets were corrected correspondingly ☐ Appropriate action was not taken ☒ The project complies with the requirements
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Demonstration and Assessment of additionality:

The additionality was demonstrated in PD according to the Additionality tool version 5.2 as required by the methodology ACM0002 Version 10 applied to the project activity.

The individual arguments presented in the VCS PD (section 2.5) to justify the additionality were summarised below. This table also includes the assessment of the validation team.

Table 3.2.1

Step as per Additionality tool Version 05.2	Argument	Assessment
Step 1: Identification of alternatives to the project activity consistent with current laws and regulations	There are no legal and regulatory requirements for this particular technology for power generation The baseline alternative for the project activity is pre-defined in ACM0002 as generation of equivalent amount of electricity by operation of grid-connected power plants and by addition of new generation sources. Accordingly, the realistic and credible alternatives to the project activity are: (a) The Project is not undertaken as a VCS project activity. (b) Equivalent amount of electricity being	Though there are no mandatory law or regulation which enforces project promoters to adopt the wind electricity generation; however the TUV checked clearances obtained by PP from the regulatory body as explained under section 1.10 of revised PD. The most plausible baseline scenarios assessed to be the following: Alternatives (a), (b) and (c) have been identified as realistic and credible

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Step as per Additionality tool Version 05.2	Argument	Assessment
	generated through operation of grid-connected power plants and addition of new generation sources (c) Continuation of the current situation where no project activity or any of the above Alternatives are undertaken would not be applicable as Western region under NEWNE Grid had maximum energy (MU) shortages of 38,945 mu or 15.8% and maximum peak shortages of 88,892 mw or 23.2%. (Source: http://www.financialexpress.com/news/cea-projects-8.8-power-shortage-in-200809/350803/0)	alternative scenario(s) to the project activity. ☒ Step passed ☐ Step not passed ☐ Not applicable
Step 2: Implementation Barriers: Investment Barrier	The project/equity IRR with out VER revenue is not financially attractive compared to the WACC as a benchmark (minimum required rate of return) during the time of investment making process. The project/equity IRR with VER revenue enables to alleviate financially barrier of the project.	Project developer has demonstrated through the investment analysis that the financial returns of the project activity are insufficient to justify the investment. TUV has adopted a six-pronged strategy to ascertain the veracity of the conclusion drawn by the project developer, viz. a) determining the suitability of the benchmark applied for the

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Step as per Additionality tool Version 05.2	Argument	Assessment
		type of financial indicator presented; b) conducting an assessment of parameters and assumptions used in calculating the financial indicator and determining the accuracy and suitability of parameters; c) cross-checking the parameters against third-party or publicly available sources; d) assessing the correctness of computations carried out and documented; and e) Subjecting the critical assumptions of the project activity to reasonable variations to determine under what conditions variations in the result would occur, and the likelihood of these conditions. Suitability of financial indicator and benchmark: Since the project is a bundled wind power project which

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Step as per Additionality tool Version 05.2	Argument	Assessment
		consist of 29 sub projects, hence different benchmark values computed to the respective projects depending upon the time of investment period. WACC benchmark has been chosen for the sub-projects which are funded more by debt portion in comparison to equity part to compare with project IRR. DOE is convinced of the appropriateness of the selected benchmark for the project. The bench mark and project IRR of respective PPs has been furnished in table 3.2.2 Using the benchmark, the project developer has demonstrated that the expected return from the project activity is lower than the benchmark WACC. ☒ Step passed ☐ Step not passed ☐ Not applicable
Step3: Barrier analysis	NA	NA
Step 4: Common practice Analysis	Wind power project development is insignificant when	The statistics furnished by the PP as well as

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Step as per Additionality tool Version 05.2	Argument	Assessment
	compared to the total installed generating capacity of the power sector as well as in terms of realization of the total wind potential.	independently collected by TUV, indicates that wind power projects are not business as usual in state of Maharashtra. ☒ Step passed ☐ Step not passed ☐ Not applicable

The individual arguments presented in the PD (section 2.5) to justify the additionality were summarised in table 3-2. This table also includes the assessment of the validation team.

The PP has used the approved methodology ACM0002: 'Grid connected renewable electricity generation' Version 10. The applicability of the chosen baseline methodology has been adequately discussed in the VCS PD ^{/VCS PD2/}. The project envisages generation of renewable energy using wind energy.

The project scenario is considered additional in comparison to the baseline scenario (grid connected power) and therefore eligible to receive Voluntary Emission Reductions (VERs) under the VCS program.

The project meets the additionality requirement of large scale CDM project as part of applied meth (ACM0002) and thus correctly applied additionality tool for large scale project which is described below:

Identification of alternatives: The project developer has considered three alternatives for the project activity, viz.

- (a) The Project is not undertaken as a CDM project activity.
- (b) Equivalent amount of electricity being generated through operation of grid-connected power plants and addition of new generation sources

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- (c) Continuation of the current situation where no project activity or any of the above Alternatives are undertaken

Having regard to the fact that the project activity under consideration is a wind power project, DOE is convinced that there are no other realistic and credible alternatives.

The alternatives are in compliance with all applicable legal and regulator requirements as

- The implementation of project activity is a voluntary initiative and is not mandatory or a legal requirement;
- The Electricity Act 2003 does not restrict or empower any authority to restrict the fuel choice for power generation;
- 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.

However, of the three alternatives identified, alternative (iii) "Continuation of the current situation where no project activity or any of the above Alternatives are undertaken would not be applicable as Western region under NEWNE Grid had maximum energy (MU) shortages of 38,945 mu or 15.8% and maximum peak shortages of 88,892 MW or 23.2%.

To overcome the shortages new power plant would have to be established, thus this alternative is ruled out.

Alternative considered for further analysis are;

- (a) The Project is not undertaken as a CDM project activity.
- (b) Equivalent amount of electricity being generated through operation of grid-connected power plants and addition of new generation sources

However, alternative (i) cannot be considered realistic as further Investment analysis in the following paragraph reveals that it faces barriers.

Hence, alternative (ii) alone could be justified as realistic, credible and plausible alternative to the PP. However, this alternative would result in higher GHG emissions.

The project is a large scale project. Hence, the Additionality Tool (Ver 05.2) applies to the project

VCS 2007.1 Validation Report of the GHG emission reduction project entitled "44 MW Bundled Wind Power Project in Maharashtra managed by Enercon India Limited." activity. Therefore, in accordance with ACM0002, the additionality was demonstrated based on the valid version of the "Tool for demonstration and assessment of additionality (Ver 05.2)".

The investment barrier faced by the project consists of barrier due to high capital cost and consequent impact on return.

The project activity generates revenue by selling electricity to the state electricity board (SEB). Thus simple cost analysis cannot be applied to the proposed VCS project activity.

The baseline to the project activity is the grid electricity system. This alternative will not require capital investment. Hence, investment comparison analysis cannot be applied and benchmark analysis is most appropriate.

Internal rate of return (IRR) is one of the known financial indicators used by banks, financial institutions and project developers for making investment decision. Hence to conduct the investment analysis of the project activity the post tax project internal rate of return (IRR) is selected as the financial indicator.

The Validation Team is convinced that the project faces Investment barrier. Since the project is a bundled wind power project which consists of 29 sub projects, hence different benchmark values are used for different sub projects depending upon the time of investment decision.

As per the guidance to the investment analysis issued in EB41, the weighted average cost of capital (WACC) can be considered as appropriate benchmark for project IRR. WACC benchmark has been chosen for the sub-projects which are funded more by debt portion in comparison to equity part to compare with project IRR.

DOE checked the various inputs used in the calculation, correctness of various financial parameters used with the documentary evidence^{/ADD/,/PO/,O&M/,/PPA/,/TS/} submitted by the PP and also based on its sectoral and local expertise^{/VVM/}. The calculations have been checked for arithmetical accuracy and the adoption of the accepted accounting principles. DOE verified the depreciation and tax rates used in the calculation. IRR computation conforms to the guidance given by the EB vide Annex 45 of EB 41.

VCS 2007.1 Validation Report of the GHG emission reduction project entitled "44 MW Bundled Wind Power Project in Maharashtra managed by Enercon India Limited." The computations reveal that the project yields an IRR of lower than the benchmark of WACC. Since the project IRR is less than the benchmark, Validation Team has arrived at the conclusion that the project is additional. The project IRR and bench mark of individual PPs are given in the below table:

S.No.	Customers Name	Benchmark	Project IRR
1	G. B. Rubber Products	13.43%	11.63%
2	Shah Lulla Estate Developers	13.43%	11.83%
3	Liberty Oil Mills Ltd.	13.43%	11.14%
4	Paceman Sales Promotion P. Ltd.	13.04%	11.28%
5	Delta Enterprises	13.04%	11.24%
6	Mahanagar Developers	12.91%	11.04%
7	Kishor Food Products P. Ltd.	13.60%	11.35%
8	Mr. J. P. Patel	12.91%	10.49%
9	Mr. C. P. Patel	12.91%	10.55%
10	Mr. V. V. Patel	12.91%	10.55%
11	Mr. J. V. Patel	12.91%	10.49%
12	Mr. S. V. Patel	12.91%	10.32%
13	Mr. V. L. Patel	12.91%	10.49%
14	Laxmi Narayan Best Chiwda	14.33%	10.46%
15	New Sahyadri Industries Ltd. 01 02	12.54%	10.59%
16	Mr. P. L. Patel	12.91%	10.71%
17	Elpro International	13.12%	11.21%
18	Prachar Energy	12.91%	10.93%
19	Panama Wind Energy Pvt. Ltd.	14.07%	11.32%
20	International Conveyors Ltd.	13.12%	11.06%
21	Shreem Capacitors Pvt. Ltd.	12.91%	11.37%
22	Metalfab Hightech Private Limited	13.12%	11.22%
23	Atlas Tours & Travels Pvt. Ltd.	13.43%	11.79%
24	Om Shanti Wind Farms P. Ltd.	14.33%	10.88%
25	Gargi Construction Co. Pvt. Ltd.	12.54%	10.98%

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26	Mohite & Mohite	14.33%	12.30%
27	Indiana Engineering Works (Bombay) P. Ltd.	14.33%	11.06%
28	Welpack Industries Ltd.	13.62%	10.64%
29	Sunilkumar Ramanlal Shah	13.62%	11.03%

Sensitivity Analysis:

The robustness of this conclusion was checked by subjecting critical factors to reasonable variations. Three factors have been identified as critical, viz., PLF, and O&M cost.

The project even after having a PLF of 10% higher along with a reduction of 10% in O&M is still not able to cross the benchmark value. The PP has argued that both the scenarios are hypothetical and far from reality. Assessment team found that PP has failed to submit the documents according to annex 11, of EB 48. However, assessment team restricted the PLF by raising the FAR that if PLF exceeds the limits of sensitivity analysis, additionality has to be re-assessed in subsequent verification (Refer FARB1).

Common Practise Analysis: The statistics furnished by the PP as well as independently collected by DOE, reveal that wind power projects account for less than 10% of the total installed power generating capacity of the country as a whole and Maharashtra in particular. Though validation team is convinced that contention of PP that wind power projects are not common practice in Maharashtra, considering the number of wind power projects being set up, DOE is of the opinion that common practice is a barrier to the project activity.

In the above background, the Validation Team is convinced that the project is not a business-as-usual-scenario and is additional. The VCS benefits would enable the project to overcome the investment barrier and hence, VCS benefits are imperative for the project activity and VCS revenue is must in this project activity to improve financial return up to some extent.

VCS 2007.1 Validation Report of the GHG emission reduction project entitled "44 MW Bundled Wind Power Project in Maharashtra managed by Enercon India Limited." Nevertheless following CARB2- CARB6, CR B1-CR B2 were raised and closed successfully during the validation. FAR1 has been raised and would be checked during all the periodic verifications.

Baseline & Additionality	CAR B2			
Classification	☒ CAR	☐ FAR	☐ CR	☐ None
Findings	Following discrepancies associated with Additionality determination are found: 1. Restricting the sensitivity analysis to optimistic scenario is not in conformity with Annex 45 of EB 41 2. Common practice analysis section is not in conformity with the guidance given vide Step 4 of Additionality Tool. 3. Projections are made for less than 20 years. Since the life of the project is 20 years, projections should be for a minimum period of 20 years. 4. PLF assumed should conform to Annex 11 of EB 48. 5. Tariff has been increased from the second year onwards irrespective of when the project commenced generation. All the projects commenced generation between December and March of the respective financial years. Clarify whether this is in conformity with PPA. If not, modify the tariff as per PPA. 6. Moreover, the tariff assumed from 13th year is not acceptable unless it is proved with documentary evidence.			

7. In all the cases, the repayment holiday has been uniformly taken at 6 months. Term loan amount, interest rate, tenure and repayment holiday should be in conformity with the loan sanction letter.

8. In the case of following projects, loan schedule contains arithmetical mistakes:

Sl no	Project	Amount	Mistake
1	Shah Lulla Estate Developers	0.98	Repayment in 3 rd quarter of 2012-13 not provided
2	Paceman Sales Promotions (P) Ltd.	0.13	Repayment in 4 th quarter of 2012-13 not provided
3	Delta Enterprises	0.05	Repayment in 4 th quarter of 2013-14 not provided
4	Mahanagar Developers	0.02	Repayment in 4 th quarter of 2013-14 not provided
5	Kishore Food Products (P) Ltd.	0.95	Repayment in 2 nd quarter of 2016-17 not provided
6	Mr. J.P. Patel	0.06	Repayment in 2 nd quarter of 2015-16 not provided
7	Mr. C.P.	0.06	Repayment

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			Patel		in 2 nd quarter of 2015-16 not provided
		8.	Mr. V.V. Patel	0.06	Repayment in 2 nd quarter of 2015-16 not provided
		9	Mr. J.V. Patel	0.06	Repayment in 2 nd quarter of 2015-16 not provided
		10	Mr. S.V. Patel	0.06	Repayment in 2 nd quarter of 2015-16 not provided
		11	Mr. V.L. Patel	0.06	Repayment in 2 nd quarter of 2015-16 not provided
		12	New Sahyadri Industries Ltd.	0.02	Repayment in 4th quarter of 2014-15 not provided
		13	Mr. P.L. Patel	0.06	Repayment in 2 nd quarter of 2015-16 not provided
		14	Elpro International	0.02	Repayment in 3 rd quarter of 2013-14 not provided
		15	Prachar Energy	0.10	Repayment in 4 th quarter of 2012-

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			13 not provided
16	Atlas Tours & Travels (P) Ltd.	0.98	Repayment in 3 rd quarter of 2012-13 not provided
17	Om Shanti Wind Farms (P) Ltd.	0.72	Repayment in 3 rd quarter of 2016-17 not provided
18	Gargi Constructions (P) Ltd.	0.03	Repayment in 3 rd quarter of 2013-14 not provided
19	Mohite & Mohite	0.05	Repayment in 3 rd quarter of 2016-17 not provided
20	Indiana Eng. Works (Bombay) Pvt. Ltd.	(0.10)	Formula mistake
21	Welpack Industries	0.80	Repayment in 3 rd quarter of 2011-12 not provided
22	Sunilkumar Ramanlal Shah	0.04	Repayment in 4 th quarter of 2014-15 not provided
Additionality of all projects, other than those at 3,4,12,14 and 18, has been affected by the arithmetical error 9. O&M cost has been assumed from the first year onwards. Invariably the			

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	machinery suppliers give atleast 1 year (if not 2 to 4 years) warranty. Hence, providing for O&M cost right from the first year is not acceptable. 10. O&M cost has been escalated from the second year onwards though all the windmills commenced generation between December and March of the respective financial years. This is not acceptable. 11. Though it does not affect additionality, providing for full year book depreciation, irrespective of the date of commencement of generation is not in conformity with accepted accounting principles.
Corrective Action	1. We agree with the observations of DOE hence sensitivity analysis is performed for both the scenarios i.e. for 10% increase in base PLF and also for 10% decrease in base PLF. Corrections have been made in the financial sheet and VCS PD 2. Corrections have been made in the VCS PD common practice analysis has been done as per additionality tool step 4. 3. We agree with the observations of DOE, and made necessary corrections in the financial sheet. 4. PLF has been assumed in accordance with MERC rulings @ 20%. The additionality of the project may be deemed as conditional subject to the actual PLF observed during the periodic verification of the project. 5. Corrections have been made in the financial sheet, however it is not possible to apply tariff on prorata basis, since all the machines have been commissioned in between December and March we have assumed the tariff for

	first 2 year endings (financial year) as 3.50 and started the escalation from the starting of 3rd year. The tariff rate and escalation are as per the order of MERC. 6. As per the order of MERC the project activity falls under group III projects for which only 13-year tariff has been clearly defined. But in the same order in section 1.4.2, it describes to determine tariff on the basis of return on investment. Hence from 14th year in the present project activity we use tariff rates on the basis of return on investment; and as per the CERC order this return in investment should be 16%. As per the electricity act 2003 Section 61, the tariff should progressively reflect the cost of supply of electricity and return on investment only with an overall objective of reducing subsidies. The tariff determined from 14th year onwards has been taken in light of the above-mentioned rulings of MERC and Electricity Act 2003, and hence it is justified. 7. Corrections have been made in the financial sheet; actual moratorium period has been taken now in the calculations. Loan sanction letter is available for validation. 8. We agree with the observations of DOE, corrections have been made in the loan schedule of each customer. 9. We have made the corrections in the PD and financial sheet. No O&M expenses are considered for 2 years warranty period and for other years O&M expenses are applicable as per the MERC order i.e. 1.5% of capital cost for 3rd year and 2% of capital cost from 4th year onwards with 5% escalation each year.
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	10. Corrections have been made in the financial sheet; O&M has been escalated from 5th year onwards as per the order of MERC. 11. Corrections have been made in the financial sheet, book depreciation has been applied for actual days of operation in each year.
DOE Assessment	1. Sensitivity analysis has been conducted for variation on both the sides. However, there is no provision in the worksheet to verify the results. Suitable provision may be made in the worksheet to check the results. CAR is open 2. Common practice analysis has been redrafted. CAR is closed 3. Projections have been extended by one more year to account for full 20 years. CAR is closed 4. The response is acceptable However; FAR B1 will be raised addressing this issue. 5. The response is accepted. 6. The response is accepted. 7. OK 8. The loan schedule presented in the revised worksheets is incorrect. For a project, which commenced generation in March 2006, for example, repayment has been provided for all the 4 quarters of 2005-06! Consequently, the interest computation is incorrect. Interest calculation for the first year is uniformly incorrect in almost all the cases. Repayment is taken incorrectly in most of the cases all cases. The total repayment does not add upto total loan amount. CAR is open.

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	9. Corrections accepted 10. Escalation has been provided after one full year. CAR is closed 11. Depreciation has been provided on pro rata basis.
Corrective Action#2	1. Corrections have been made in the financial sheet, by changing the reference number in assumption sheet the IRR values corresponding to each sensitive parameter can be verified for each customer. 8. We agree with the observations of DOE and made necessary corrections in the IRR sheet.
DOE Assessment#2	Corrections made in the revised work sheet.
Conclusion	☐ To be checked during the next periodic verification ☐ PD was corrected correspondingly ☒ Spread sheets were corrected correspondingly ☐ Appropriate action was not taken ☒ The project complies with the requirements

Project Design	FAR B1
Classification	☐ CAR ☒ FAR ☐ CR ☐ None
Findings	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 11,66,67 of EB48)
Corrective Action	
Additional Comment	
Conclusion	☒ To be checked during the next periodic verification ☐ PD was corrected correspondingly ☐ Spread sheets were corrected

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	correspondingly ☐ Appropriate action was not taken ☐ The project complies with the requirements
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Baseline & Additionality	CAR B2.a
Classification	☒ CAR ☐ FAR ☐ CR ☐ None
Findings	Following changes have been made in the input parameters in the revised worksheet as compared to earlier submission: a) Cost of the project differs between earlier submission and revised submission in the case of project 2,7,15 and 27. While the variation is minor in the case of project 2 and 15, it is substantial in the case of 15 and 27; b) O&M cost has been modified to 2% from 4th year onwards as against 1.5% earlier; c) Term loan amount has changed in most of the cases; d) Interest rate has been brought down in the case of project 15; e) Loan tenure has been changed in the case of projects (8) to (13) and 16. Justification required for the same.
Corrective Action	Following corrections have been made: a. The variation in project cost is due to following reasons: For customer No. 2: In our earlier financial model we have not added the transportation charges of INR 0.5 Million, it was just a typological error. This is the reason of increase in project cost by INR 0.5 Million. For customer No. 7: We have removed the

	evacuation charges of INR 0.4 Million from the project cost hence the project cost reduced from INR 39 Million to INR 38.6 Million. For customer No. 15: We agree with DOE that there is deviation in values of project cost, but the project cost of INR 80 Million is as per the purchase order and purchase orders are available for validation. The older value of INR 86.85 Million was just a typological error. For customer NO. 27: In the initial financial model we have not included the cost of civil and electrical work of project activity; it was just a typological error hence we have added back this value in our financial model. The cost of civil and electrical work for project activity was INR 5.2 Million (INR 2.6 Million/Machine) hence our project cost is increased by the amount of INR 5.2 Million. b) The O&M cost has been taken as per the tariff order of MERC and as per the tariff order O&M for first three year is 1.5% of the capital cost and from 4th year onwards it is 2% of the capital cost with 5% escalation. At the time of taking project decision (issuing purchase orders) O&M agreement were not in existence and only the reference of MERC order was available with the customers of bundle. That's why we have taken O&M cost in the sensitivity analysis. c) The term loan amount has been calculated as per the margin money specified in the loan sanction letter. The percentage of margin money can be validated from the loan sanction letter available for validation.
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	d) The interest rate for the customer no. 15 is 9.5% and the proof of same is available for validation. The older value was just a typological error. e) In all the 7 cases the period of repayment is 102 month which includes 6 month of moratorium period. Hence actual period of repayment is 96 month i.e. 8 years. The loan sanction letters of all the customers are available for validation.
DOE Assessment	Justification is accepted. The corrections made in the revised work sheet are appropriate.
Conclusion	☐ To be checked during the next periodic verification ☐ PD was corrected correspondingly ☒ Spread sheets were corrected correspondingly ☐ Appropriate action was not taken ☒ The project complies with the requirements

Baseline & Additionality	CAR B3			
Classification	☒ CAR	☐ FAR	☐ CR	☐ None
Findings	1. Depreciating power evacuation charges is not acceptable, as the State Utility will repay the amount in 5 equal annual installments from the second year of operation. 2. IT depreciation computation based on the assumption of 90% of fixed assets cost is not acceptable. Details of project cost should be furnished and the IT depreciation should be provided on assets as per Appendix I of Income Tax Rules. 3. Moreover, depreciation has not been provided on other assets (other than power evacuation charges, which are refundable by the Utility), resulting in under estimation of profit after			

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	tax.
Corrective Action	1. We agree with the observations of DOE, but we have not taken the power evacuation cost in the total project cost, hence there is no depreciation applied on power evacuation charges. The project cost break up is provided in the financial sheet. 2. We agree with the observations of DOE, hence detail project cost break up is included in the financial calculations; calculations for IT depreciation has also been modified as per the rulings of IT act. 3. We have made necessary corrections in the calculations of IT depreciation; IT depreciation is provided on all assets relating to project activity except land cost and evacuation charges.
DOE Assessment	1. Accepted 2. Accepted 3. IT depreciation has been provided on the entire cost. CAR is closed
Conclusion	☐ To be checked during the next periodic verification ☐ PD was corrected correspondingly ☒ Spread sheets were corrected correspondingly ☐ Appropriate action was not taken ☒ The project complies with the requirements

Baseline & Additionality	CAR B4			
Classification	☒ CAR	☐ FAR	☐ CR	☐ None
Findings	1. Tax rate has been assumed uniformly at 36.5925%, which does not appear to be the ruling tax rate either in 2005-06 or 2006-07 or 2007-08 - the three financial years in which investment decision for all the windmills seems to have been made. 2. Tax computation does not seem to be in conformity with the ruling given			

	on Sec 80IA, specifically in the years where the depreciation is fully absorbed. This may be checked 3. IRR computation is not acceptable for the following reasons: a) Cash inflow does not include salvage value; b) Power evacuation charges refund has not been accounted for; c) Cash inflows have been adjusted to current assets; and d) Since the investment has taken place in all the cases in the same year as the generation had commenced, the cash outflow should be netted out with cash inflow of first year. 4. Cash inflow should include only profit after tax, interest, depreciation & amortization, salvage value, power evacuation charges refund and tax shield as adjusted to cash outflow.
Corrective Action	1. We agree with the observations of DOE, corrections have been made in the financial sheet, tax rate have been modified as per the financial year of purchase order issuance. 2. Modifications have been made in the tax computation the financial sheet is modified as per the guidelines of 80IA and IT act. 3. Following corrections have been made for IRR calculations: a) Salvage value has been included in cash inflow. b) We have not taken power evacuation charges in the project cost and financial calculations since as per the rulings of MERC these charges are refundable, hence we have not taken these charges in cash inflow and it

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	seems to be justified. c) We agree with the observations of DOE and removed adjustment of current assets from the cash flow statement. d) As per the guidance of investment analysis (Annex 45, Version 02, EB 41) the financial model is based on the assumptions made at the time of investment decision (Date of issuing purchase order); it was not possible to preassume cash inflow and to net it with cash outflow. Hence we request the DOE to accept the cash flow without being netted out.
DOE Assessment	1. Tax rate has now been taken uniformly at 33.66%. 2. OK 3. Cash flow for IRR computation does not appear to be correct for the following reasons: a) Though salvage value has been provided (which is nothing but the residual value and hence does not conform to Annex 45 of EB 41 strictly), it has been accounted net of taxes. PP may clarify whether the sale of asset at book value attracts tax as per IT Act. CAR is open b) OK c) Current assets have been removed from the cash flow. CAR is closed d) OK
Corrective Action 2:	3. (a) We agree with the observations of DOE hence removed tax from the calculation of salvage value, corrections have been made in the financial sheet.
DOE Assessment#2	Corrections made in the revised work sheet are accepted.
Conclusion	☐ To be checked during the next periodic verification

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	☐ PD was corrected correspondingly ☒ Spread sheets were corrected correspondingly ☐ Appropriate action was not taken ☒ The project complies with the requirements
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Baseline & Additionality		CAR B5			
Classification	☒	CAR	☐ FAR	☐ CR	☐ None
Findings	Benchmark calculations seem to suffer from following inadequacies: a) Screen shots of beta values given pertain to March 2006 benchmark calculation only. Screen shots for other benchmark calculations have not been enclosed; b) In general, the beta values appear to be high; in a few cases, CESC beta is higher than BF Utilities data. This does not appear to be correct; c) Use of BSE Sensex (as proxy for Rm) does not seem to represent a fully diversified portfolio, one of the pre-requisites of CAPM; d) Taking levered beta of the company not only implies that the leverage of listed companies and the project activity is the same, but is also not conservative; e) Giving equal weight to all the companies to arrive at the proxy beta suffers from the disadvantages associated with arithmetic mean; f) MAT has been used to arrive at the post cost debt, which does not appear to be correct, as the bundle consists of not only firms but MAT is not applicable to even companies.				
Corrective	Following corrections have been made for				

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Action	benchmark calculations: a) Screen shots corresponding to each value of beta has been provided in the excel sheet of WACC calculations. b) The values of beta have been sourced from bloomberg.com. DOE can verify the values from the website or from the snapshots attached with excel sheets of WACC calculations. c) We agree with the observations of DOE hence now we use BSE 500 for computing market risk premium. d) We would like to submit to the DOE that the data pertaining to beta values has been sourced from Bloomberg.com, which is one of the most credible data bases for financial information. Since the screen shots are available in public domain, hence we deem it appropriate to submit the screen shots form Bloomberg for the purpose of computation of benchmark. DOE is requested to accept the same considering the widescale acceptability of Bloomberg data across the globe. e) 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. In case all the companies (considered in the beta group) are similar, hence a equal weighting is appropriate. 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. f) We agree with the observations of DOE and made necessary corrections in the WACC calculations, regular tax rate is used as marginal tax rate in the updated WACC calculations.
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DOE Assessment	a. Screen shots of beta value for different benchmarks have been furnished. In computing the beta, odd dates have been chosen as the start and end date - may be to strictly fall in line with purchase Order date. For example in case of Dec, 2005 benchmark, the period chosen is 3.11.2002 to 6.11.2005. Full 3 years period is not considered in all cases. For example in the case of Jul.2005, Aug. 2005, Jul.2006 and Aug 2006 benchmark the total duration is 35 months. Since arbitrary selection of the period can affect the beta, period should be taken from 1st of the starting month to 31st of the ending month for full 3 years to impart objectivity. The return interval in the case of Dec. 2005, Jul. 2006 and Aug. 2006 benchmark calculation is weekly and in all other cases it is monthly. Uniformity has not been maintained. CAR is open (14/09) b. OK c. BSE 500 has been used. CAR is closed d. OK e. OK f. Regular tax rate has been used. CAR is closed
Corrective Action#2	We agree with the observations of DOE and made corrections in the WACC sheet accordingly, now we take return interval monthly for all the beta values uniformly. As far as duration of beta is concerned we restrict ourselves to those interval for which beta of all the 6 companies made available to us, due to this reason the duration of beta is higher than 36

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	months in some cases and lower than 36 months in some other. In cases where 36 months beta values are available for all the 6 companies with monthly return interval we took them in WACC sheet.
DOE Assessment#2	Corrections are accepted.
Conclusion	☐ To be checked during the next periodic verification ☐ PD was corrected correspondingly ☒ Spread sheets were corrected correspondingly ☐ Appropriate action was not taken ☒ The project complies with the requirements

Calculation of GHG emissions	CAR B6			
Classification	☒ CAR	☐ FAR	☐ CR	☐ None
Findings	The return of equity i.e. bench mark considered for the following projects i.e. ▪ 1x 800 kW of Fashion Suitings P. Ltd. ▪ 2x 800 kW of Fashion Suitings P. Ltd ▪ 1x 800 kW of Shah Construction are much higher (3 times) than equity IRR. Moreover, it is approximately 2 times than ROE of MERC order, which is not conservative and not acceptable to assessment team. The projects do not seem to be additional to assessment team. Justifications and corrections required for the same.			
Corrective Action	We agree with DOE's findings and the above mentioned projects have been deleted from the bundled.			
DOE Assessment	PP has deleted the above mentioned projects from bundled as they are not additional.			
Conclusion	☐ To be checked during the next periodic verification ☒ PD was corrected correspondingly ☒ Spread sheets were corrected correspondingly ☐ Appropriate action was not taken ☒ The project complies with the			

	requirements
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Calculation of GHG emissions	CR B1			
Classification	☐ CAR	☐ FAR	☒ CR	☐ None
Findings	1. By stressing on Mohite & Mohite project, the VCS PD has ignored all other projects. VCS PD is not only for one project, but for all projects in the bundle. Besides giving benchmark calculations of Mohite & Mohite, benchmark, IRR and results of sensitivity analysis of all the projects in bundle should be given in the VCS PD. 2. It has been stated vide P.20 of VCS PD, "The values of capital investment in WEC are almost fix hence not be taken as sensitive hence sensitive analysis is carried out by changing the value of WEC by $\pm 10\%$". This does not seem to be correct as the sensitivity analysis is deemed to have been done at the time of making investment decision. At the time of making investment decision, all parameters should have been variable. Clarify whether the sensitivity analysis was done at the time of decision making or afterwards. 3. All power generating companies listed in the stock exchange have been sourced does not appear to be correct as the list, for example, does not include NTPC, Jayprakash Hydro. The reasons for the omissions should be explained.			
Corrective Action	1. We agree with the observation of DOE and made necessary corrections in the VCS PD. The benchmark, IRR and sensitivity analysis for all the customers have been shown in the updated VCS PD.			

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	2. We have taken the project cost as per the purchase order hence project cost is fix and there is no need to show sensitivity on fixed cost. The only variable parameter in the project activity is PLF and O&M hence sensitivity analysis is performed only by varying PLF and O&M in both positive and negative directions. 3. At the time of project decision, the power generating companies that were listed with a sufficient history (>3 years) of share prices are used to arrive at reliable beta values. Therefore, the beta values of these companies only have been considered.
DOE Assessment	1. VCS PD has been corrected. 2. Since sensitivity analysis has been conducted for O&M and PLF, CR is closed (14/09) 3. Explanation is accepted.
Conclusion	☐ To be checked during the next periodic verification ☐ PD was corrected correspondingly ☒ Spread sheets were corrected correspondingly ☐ Appropriate action was not taken ☒ The project complies with the requirements

Calculation of GHG emissions	CR B2			
Classification	☐ CAR	☐ FAR	☒ CR	☐ None
Findings	1. Clarify whether the project activities are subject to MAT as per Income Tax Act; some of them are firms.			
Corrective Action	1. We agree with the observations of DOE that MAT is not applicable on firms, some of the customers in the bundle represent firms (proprietors and			

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	partnership) and are not subject to MAT hence MAT has not been applied on them, corrections have been made in the financial sheet.
Additional Comment	Spread sheet is corrected accordingly.
Conclusion	☐ To be checked during the next periodic verification ☐ PD was corrected correspondingly ☒ Spread sheets were corrected correspondingly ☐ Appropriate action was not taken ☒ The project complies with the requirements

3.3 Monitoring Plan

The project applies the monitoring methodology ACM0002/Version10: "Consolidated baseline methodology for grid-connected electricity generation from renewable sources".

- This methodology stipulates that monitoring shall consist of electricity exported from the project activity and operating margin emission factor and build margin emission factor of the grid, where ex post determination of grid emission factor has been chosen. Since the baseline methodology is based on ex ante determination of the baseline, the monitoring of operating margin emission factor and build margin emission factor is not required. This methodology stipulates that monitoring shall consist of metering the net electricity exported to the grid by the renewable technology. However, due to the absence of dedicated meter for net export and presence of shared meter (connected with other WECs outside of this project boundary), the net electricity would be calculated out of metered sub parameters. The detailed procedure to calculate the net electricity generated by the project activity WECs is explained in section 3.2 of the VCS PD and was assessed to be appropriate.
- The monitoring plan provides detailed information in the VCS-PD related to the collection and archiving of all relevant data needed to:
 - Estimate or measure emissions occurring from GHG sources, sinks and reservoirs

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- Determine the baseline emissions
- Estimate changes in emissions from the site

Monitoring : Two-way export Trivector meter will be used for monitoring.

Accuracy : Class 0.5s

Data type : Measured

Frequency : Hourly Measured

Recording : Monthly from Joint meter

Archiving : Paper & Electronic

Calibration Frequency : Once in a year, Project Head would be responsible for regular calibration of the meter.

Nevertheless following CARM1 was raised and closed successfully during the validation.

Monitoring	CAR M1
Classification	☒ CAR ☐ FAR ☐ CR ☐ None
Findings	- o The total (gross) electricity supplied to the grid from the project activity should also be measured (refer ACM0002) Correction is required regarding the same in section 3.3 of the VCS PD. - o EF_{grid CM,Y} should also be monitored as per ACM0002. If the value is fixed ex-ante then the same should be reflected in section 3.3 of the VCS PD.
Corrective Action	- o The gross electricity supplied from the project activity has been included in the section 3.3 of the VCS PD. - o The value of emission factor has been fixed ex-ante hence has not been monitored in section 3.3 of the VCS PD.
Additional Comment	VCS PD is modified accordingly.
Conclusion	☐ To be checked during the next periodic verification ☒ PD was corrected correspondingly ☐ Spread sheets were corrected correspondingly ☐ Appropriate action was not taken ☒ The project complies with the requirements

3.4 Calculation of GHG Emissions

- The applied methodology is correctly applied for the calculation of emission reductions calculation.
- The project intends to reduce carbon dioxide (CO₂) emissions by generating electricity from a renewable energy and export the electricity to deficient MSEDCL.
- There are no GHG emissions arising from the project it being a wind project. Hence, the project emissions are zero. As the project

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activity does not involve transfer of energy generating equipment from another activity or the existing equipment is transferred to another activity, the leakage due to the project activity is not applicable.

- The emission reduction is calculated based on the difference of baseline emission, project emission and leakage. For this project activity project emission and leakage is zero. So, emission reduction is equal to baseline emission. The baseline emission is calculated based on net electricity exported (=Electricity export-Electricity import) to the MSEDCL regional grid (which is part of NEWNE grid) multiplied by the grid emission factor for the MSEDCL grid which is correctly documented and as per the requirement of ACM0002.
- Calculation Methodology for Data recorded/useful/used for Net electricity export and subsequently to the reduction in GHG emission figure.
 - **Energy Export:** Energy export is a measured parameter
 - **Energy Import:** Energy imported from the grid for start-up of WECs is calculated by energy import reading of main meter
 - **Net Energy Exported to grid:** Net Energy Exported to grid is calculated as per PPA

Net Energy Exported to grid = (Energy Export to grid - Energy imported from the grid for start up.

However, due to the absence of dedicated meter for net export and presence of shared meter (connected with other WECs outside of this project boundary), the net electricity would be calculated out of metered sub parameters. The calculation provided in VCS PD was assessed to be OK.

The validation team has checked the underlying input values as well as the computation in the spreadsheet^{/XLS/}. The estimation of the baseline emission was realized in a transparent and conservative manner and is well documented under section 4.2-4.4 of the VCS PD.

- As per the final VCS PD^{/VCS PD2/} the project is expected to reduce emissions of 637480 tCO₂e over a 10 year crediting period.

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Nevertheless following CARC1 was raised and closed successfully during the validation.

Monitoring	CAR C1
Classification	☒ CAR ☐ FAR ☐ CR ☐ None
Findings	Emission factor used in calculation of Emission Reduction calculation is not correct. Correction required for the same.
Corrective Action	Emission factor has been revised from 0.9061735 to 0.90589.
Additional Comment	Corrections has been made wherever applicable.
Conclusion	☐ To be checked during the next periodic verification ☒ PD was corrected correspondingly ☐ Spread sheets were corrected correspondingly ☐ Appropriate action was not taken ☒ The project complies with the requirements

3.5 Environmental Impact

Environmental Impact Assessment (EIA) of this project is not an essential regulatory requirement, as it is not covered under the categories as described in EIA Notification of 1994 or the Amended Notification of 2006.

However, Enercon appointed Care sustainability to conduct a Rapid EIA in the Districts of Satara, Sangli, Nashik and Ahmadnagar where the project is located, to assess the impact of the project on the local environment. The environmental impact assessment reveals that there no negative impact/^{EIA} on environment due to the project activity. The brief description of the EIA has been furnished in section 5 of VCD PD.

3.6 Comments by stakeholders

Stakeholders have been directly asked to comment on the project through an open meeting among local stakeholders, project proponent (Enercon); stakeholder meetings conducted on 13- November-2006 at Satara District, 14- November-2006 at Sangli

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District, 15-November-2006 at Ahmednagar District and 16- November-2006 at Nashik District^{LSHC/}.

A summary of the comments received and a note (through meeting and feed back questionnaire) on how due account was taken of the concerns raised in the above public consultation are included in VCS PD. All comments are positive in nature. No adverse comments were received and this is addressed in the VCS PD^{/VCS PD2/}.

4. Validation Opinion

The M/s Enercon (India) Limited has commissioned the TÜV NORD JI/CDM Certification Program to validate the project: "44 MW Bundled Wind Power Project in Maharashtra managed by Enercon India Limited." with regard to the relevant requirements of the VCS 2007.1 Program Guidelines, as well as criteria for consistent project operations, monitoring and reporting.

The purpose of this project activity is to generate electricity using renewable sources (wind) and export it to Maharashtra State Electricity and distribution company limited (MSEDCL) which is connected NEWNE grid, thereby displacing the grid generated electricity.

A risk-based approach has been followed to perform this validation. In the course of the validation 11 Corrective Action Requests (CARs) and 02 Clarification Requests (CRs) were raised and successfully closed.

Moreover, 01 FAR is raised which shall be checked during the verification.

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

In detail the conclusions can be summarised as follows:

- The project is in line with all relevant host country criteria (India) and all relevant VCS 2007.1 program guidelines requirements.
- The project additionality is sufficiently justified in the VCS PD.

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- The monitoring plan is transparent and adequate and inline with applied baseline and monitoring methodology of ACM0002, version 10.
- The calculation of the project emission reductions is carried out in a transparent and conservative manner, so that the calculated emission reductions of 63,748t CO2e/year is most likely to be achieved within the 10 years (fixed) crediting period.
- The conclusions of this report show, that the project, as it was described in the project documentation, is in line with all criteria applicable for the validation.

No restrictions or uncertainties were identified related to the validation.



Monojkumar Borekar
Validation Team Leader
Mumbai, 2009-09-24



Eric Krupp
Final approval
Essen, 2009-11-13

References

Table 5-1: Documents provided by the project proponent

Reference	Document
/ADD/	Following documents are provided related to additionality a) Quotation/Purchase Order supporting each of the components of capital cost b) O&M Cost and yearly escalation c) Insurance premium d) Loan sanction letter with terms
/CR/	Commissioning report of all the wind energy generators connected to the state grid to the project activity (= starting date of the Project).
/GEN/	Spreadsheet for historical electricity generation from the project activity.
/EIA/	Environmental Impact Assessment study report
/IRR/	Financial calculation sheet for the project activity.
/LSHC/	Proof of local stake holders consultation process • Minutes of Public hearing • List of Participants • Extract of feedback from local stakeholders.
/O&M/	Operation and maintenance contract
/VCS STD/	VCS Standard 2007.1
/VCS PD1/	Draft VCS PD version 1 which forms the basis for validation.

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Reference	Document
/VCS PD2/	Final VCS PD version 1 which forms the basis for validation opinion.
/PLF/	Proof of Plant Load Factor Calculation for all the WEGs
/PO/	Purchase order for Wind turbine generators (WEG), Electrical items, Erection and Commissioning of WEGs and Civil work
/PPA/	Power Purchase Agreement
/RD/	Declarations by project proponents stating no intention of creating and trading of another from of environmental credits out of VERs would be created from this given project (Cp Para 1.13 of VCS PD template)
/PT/	Proof of title for the project activity (Cp section 8.1 of the VCS PD template)
/SLP/	Site layout plan for all the WEGs related to the project activity
/TS/	Technical specification of wind energy generators from manufacturer and electricity meters.
/XLS/	1.Baseline and emission reduction calculation spread sheet 2. Revised Baseline and emission reduction calculation spread sheet

Table 5-2: Background investigation and assessment documents

Reference	Document
/ACM0002/	Consolidated baseline methodology for grid-connected electricity generation from renewable sources
/CPM/	TÜV Nord JI / CDM CP Manual (incl. CP procedures and forms)

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/CEA/	CO2 Baseline Database for Indian Power Sector – User Guide, Ver4 published by CEA. The same was assessed by TUV NORD in accordance with Tool to determine emission factor.
/KP/	Kyoto Protocol (1997)
/MA/	Decision 17/CP.7 (Marrakesh – Accords)
/VCS STD/	Voluntary Carbon Standard 2007.1
/VVM/	IETA, PCF Validation and Verification Manual (V.4)
/ISO/	ISO 14064-2; ISO 14064-3, ISO 14065

Table 5-3: Websites used

Reference	Link	Organisation
/cea/	www.cea.nic.in	Central Electricity Authority
/dna-i/	http://cdmindia.nic.in/	The Designated National Authority of India
/moef/	http://envfor.nic.in/	Ministry of Environment and Forests.
/unfccc/	http://cdm.unfccc.int	UNFCCC
/vcs/	www.v-c-s.org	VCS website

Table 5-4: List of interviewed persons

Reference	MoI1		Name	Organisation / Function
/IM01/	V	☒ Mr. ☐ Ms.	Himanshu Bhatnagar	Enercon (India) Limited
/IM01/	V	☒	Rohit Joshi	Enercon (India)

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Reference	MoI1		Name	Organisation / Function
		Mr. ☐ Ms.		Limited

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