



Voluntary Carbon Standard 2007.1
Validation Report

19 November 2007

Validation Report:

Name of Verification company:	Date of the issue:
TÜV NORD CERT GmbH	2009-11-16
Report Title:	Approved by:
10 MW bundled wind power project by Era Infra Engineering Limited.	Eric Krupp
Client:	Project Title:
Era Infra Engineering Limited.	10 MW bundled wind power project by Era Infra Engineering Limited.
Summary:	

Era Infra Engineering Limited has commissioned the TÜV NORD JI/CDM Certification Program to carry out the Validation of the project - “10 MW bundled wind power project by Era Infra Engineering Limited”, with regard to the relevant requirements of VCS 2007.1 Standard.

The project is a renewable energy project. It has been implemented to produce electricity by using wind which is a renewable source of energy. Total installed capacity of the project is 10 MW comprising of 8 WTGs of 1.250 MW each 4 among which have been installed in Kutch district of Gujarat, 3 are in Sangli and one is in Dhule district of Maharashtra. It has been estimated to generate **16.15 GWh** of electricity from the project activity annually which will be supplied to the NEWNE of India. Through out whole of the crediting period of 10 years the project has been estimated to reduce **146300 tCO₂e**.

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 28 Corrective Action Requests (CAR) and 17 Clarification Requests (CR) were raised and successfully closed out.

The validation is based on the VCS PD, proof of title, proof of right, 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 fulfils criteria of VCS 2007.1 provided.

- The project is in line with all relevant VCS requirements.
- The project additionality is sufficiently justified in the PD.
- The monitoring plan is transparent, adequate and inline with applied baseline and monitoring methodology of AMS I.D, version-13.
- The calculation of the project emission reductions is carried out in a transparent and conservative manner, so that the calculated emission reductions of 146300 t CO₂e is most likely to be achieved within the 10 years (fixed) crediting period.
- No restrictions or uncertainties were identified related to the validation.

Work carried out by:	Number of pages:
Mr. Pankaj Patel Mr. Hemang Shah Mr. Saroj Sahoo	37

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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 monitoring plan (MP), and the project's compliance with the requirements of:

- The requirements of VCS 2007.1 program guidelines
- Requirements of the Approved methodology, AMS I.D version 13, EB-36
- To assess the project's compliance with other relevant rules, including the host country (India) legislation;
- 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).

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 which are included in the PD and other relevant supporting documents.

The items covered in the validation are described below:

- **VCS Criteria**
 - All relevant VCS requirements and subsequent amendments
- **VCS Project Description /PD/**
 - Project design
 - Project boundaries
 - Predicted project GHG emissions
- **Project Baseline**
 - Baseline methodology
 - Baseline GHG emissions
- **Project Additionality**
- **Monitoring Plan**
 - Monitoring methodology
 - Indicators/data to be monitored and reported
 - Responsibilities
- **Background investigation and follow up interviews**
- **Stakeholder Consultation**
 - Review of comments
- **Draft validation reporting with CARs & CRs, if any**
- **Final validation reporting.**

The information included in the PD and the supporting documents were reviewed against the requirements and criteria mentioned above. The TÜV NORD JI/CDM CP has, based on the recommendations in the Validation and Verification Manual/VVM/, 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 proponent. 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 envisages setting up a bundled wind power project of a capacity of 10 MW which includes a 5 MW (4 Nos. x 1.250 MW) located at Kutch in the state of Gujarat and 5 MW (3 Nos. x 1.25 MW at Sangli and 1 Nos. x 1.25 MW at Dhule) located in the state of Maharashtra.

Table 1: Geographical Location of Each District Where WTGs are installed

District	Latitude	Longitude
Sangli (Maharashtra)	17 ° 08'' N	74 ° .59'' E
Dhule (Maharashtra)	21 ° 10'' N	74 ° 12'' E
Kutch (Gujarat)	23 ° 09'' N	68° 47'' E

It has been estimated to generate **16.15 GWh** of electricity from the project activity annually which will be supplied to the NEWNE of India

Through out the whole crediting period of 10 year the project has been estimated to generate **146300 VERs**.

1.4 Level of assurance

The validation report is based on VCS PD^{/PD01/}, Monitoring plan^{/MP/}, supporting documents made available to the validator 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 in January- 2009 to November 2009.

Preparations	:	2009-02-01 to 2009-02-15
On-site validation	:	2009-03-12,19,21
(Draft) Reporting	:	2009-04-14
(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^{/PD01/} submitted by EIEL in January 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 annex: 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 12/03/2009 , 19/03/2009 and 21/03/2009 the TÜV NORD JI/CDM CP had performed Pre validation visit with the project proponent. During this visit, as well as earlier and after, interviews with the project proponent, the consultant, project stakeholders and with local authorities had been 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 3-1.

Table 2.1 Interviewed persons and interview topics

Interviewed Persons / Entities	Interview topics
1. Projects & Operations Personnel /IM01/ 2. Consultants /IM02/ 3. O & M Contractor /IM03/	<ul style="list-style-type: none"> - Chronological description of the project activity - Technical details of the project realisation - Equipment Performance data - Approval procedures and status - Monitoring and measurement - Project activity starting date and commissioning date - Crediting period - VER allocation /ownership - Sustainable development issues - Analysis of Environmental Impact - Analysis of local stake holder consultation - Roles & responsibilities, competency and training of

Interviewed Persons / Entities	Interview topics
	<p>the staff members w.r.t project management, monitoring and reporting</p> <ul style="list-style-type: none"> - Operational Data - technical specification, capacity, estimated life time of the project plant units - Editorial aspects of PD - Debundling aspects - Procedural aspects - Baseline study and additionality - Details of emissions reduction calculation - Estimation of net energy (Import / Export) - QA/QC Testing and calibration procedures - Monitored data management - Data quality, archiving and reporting procedures - Data uncertainty and residual risks - GHG calculation - Procedural aspects of the verification

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

In order to remedy any mistakes, problems or any other outstanding issues which needed to be clarified for positive conclusion on the project design, CARs and CRs were raised.

In this validation 28 CARs and 17 CRs were raised. The CARs / CRs are documented in the validation report

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

The results are shown in table 2-2:

Table 2-2: Summary of CAR and CR issued

Validation topic ¹⁾	No. of CAR	No. of CR
Project Design (3.1)	6	0
Baseline (3.2)	18	17
Monitoring plan (3.3)	2	0

Validation topic ¹⁾	No. of CAR	No. of CR
Calculations of GHG emissions (3.4)	1	0
Environmental Impact (3.5)	0	0
Local Stakeholder Comments (3.6)	1	0
SUM	28	17

1) The letters in brackets refer to the validation protocol

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 Validation Findings

3.1 Project Design

The project proponent, Era Infra Engineering Limited has envisioned to produce clean power from wind which is a renewable source of energy. For that purpose he has set up a bundled wind power project of a capacity of 10 MW which includes a 5 MW (4 Nos. x 1.250 MW) located at Kutch in the state of Gujarat and 5 MW (3 Nos. x 1.25 MW at Sangli and 1 Nos. x 1.25 MW at Dhule) located in the state of Maharashtra. Key parameters of the technology used are per the technical specification of the WTG' s is as follows:

Table No.3		
Sr. No.	Particulars	Specifications S-70 (1250 kW)
Rotor		
1.	Rotor diameter	69.1 m
2.	Hub height	74 m
3.	Installed electrical output	1250 kW
4.	Rotor swept area	3750 m ²
5.	Rotational speed	13.2/19.8
6.	Rotor material	GRP
7.	Regulation	Pitch
Operational Data		
8.	Cut-in wind speed	3 m/s
9.	Rated wind speed	12 m/s
10.	Cut-out wind speed	20 m/s
Generator		
11.	Type	Asynchronous Generator, 4/6 poles
12.	Rated output	250/1250 kW
13.	Rotational speed	1010/1515 rpm
14.	Operating voltage	690 V
15.	Frequency	50 Hz
16.	Insulation class	H
17.	Cooling system	Air cooled
18.	Enclosure class	IP 56

The project duration is: 20 years.
 Project start date is: 30/09/2006
 Crediting period is: Ten years starting from 30/09/2006.

The units installed in the Maharashtra region which are included in the bundle-I and bundle-II have been commissioned on 30th September 2006. So this has been considered as the start date of the project activity as this is the earliest date among the all.

From the documents provided by the project proponent including the share of electricity certificates, Power Purchase Agreement (PPA) Purchase orders Commissioning Certificates it was verified that the proposed project activity belongs to Era Infra Engineering Limited (EIEL).

As per VCS Program guidelines it was found that the proposed project activity is eligible under VCS.

The emission reduction was not double counted^{/DEC/}, and as the project has not applied for carbon benefits under any other mechanism^{/DEC/}, there is no rejection history for the project activity.

Nevertheless CAR 1.1-CAR 1.6 had be closed during the course of validation and are yet to be successfully closed. The same has been listed out in the following table.

CAR/CR	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
CAR 1.1 Total estimated reductions and annual average over the crediting period of estimated emission are wrongly written in the table under the section 1.3.	/PD01/ /section 1.3/	The same has been corrected in the VCS PD Ver 01.	/PD02/ /section 1.3/	Total estimated emission reductions and annual average over the entire crediting period is corrected in revised PD. OK
CAR 1.2 There are 3 locations of the project activity namely Sangli, Dhule and Kutch. This should be considered as 3 bundled projects in stead of 2. In table no.1 under section 1.4 of the VCS PD	/PD01/ /section 1.4/	The same has been corrected in the VCS PD Ver 01.	/PD02/ /section 1.4/	Necessary corrections made. OK

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CAR/CR	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
the representation of “Sub Bundle” is not appropriate. It should be only shown as “bundle-1, bundle-2...”				
CAR 1.3 In table No. 2 under section 1.5 of the VCS PD latitude and longitude should be represented in a proper format (X0 Y’ Z’).	/PD01/ /section 1.5/	The same has been corrected in the VCS PD Ver 01.	/PD02/ /section 1.5/	Corrected OK
CAR 1.4 Project Boundary should be described showing block diagram including the regional grid under section 1.5 of the VCS PD.	/PD01/ /section 1.5/	The same has been incorporated in the VCS PD Ver 01.	/PD02/ /section 1.5/	Project boundary is included. OK
CAR 1.5 Under section 1.6 of the VCS PD the project start date is written as 5th August 2006. This should be the commissioning date of the project which is 30th September 2006.	/PD01/ /section 1.6/	The same has been corrected in the VCS PD Ver 01.	/PD02/ /section 1.6/	Project start date is corrected as commissioning date i.e. 30/09/2006. OK
CAR 1.6 In section 2.5 of the	PD01/ /section	Necessary corrections made	PD02/ /section 2.5/	The correction has

CAR/CR	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
VCS PD under the head common practice analysis the data should pertain the period during which the decision had been taken. The installed wind capacity for Gujarat has been taken as on 31.03.2008 where as that of Maharashtra it is taken as on 31.03.2007.	2.5/	Please refer the newly added statistics in the VCS PD.		been and the newly added statistic is found to be correct and relevant.

3.2 Baseline

The selected baseline methodology is the approved baseline methodology “Grid connected renewable electricity generation” (AMS-I.D: Version 13: EB 36). The selected baseline methodology, i.e., AMS-I.D is correctly applied to this type of grid connected renewable energy generation project.

As per paragraph 9 of the approved methodology, baseline is the kWh produced by the renewable generation unit multiplied by an emission factor (measured in kg CO₂e/kWh) calculated in a transparent and conservative manner.

Project proponent has selected option (a) of paragraph 9 i.e. A combined margin (CM), consisting of the combination of operating margin (OM) and build margin (BM) according to the procedures prescribed in the ‘Tool to calculate the emission factor for an electricity system’ for calculating emission factor.

According to the CO₂ Baseline Database (Version – 4.0) published by CEA the combined margin grid emission factor for the NEWNE regional grid is 0.90589 tCO₂/MWh. The resultant figure of 0.90589 tCO₂/MWh is deemed to be adequate, transparent as well as conservative.

The combined margin of emission factors (Simple OM and BM) is calculated to be 0.90589 tCO₂/MWh and will fixed ex-ante for the entire crediting period.

Altogether the project activity reduces emissions of **146300** tCO₂e over the ten year fixed crediting period.

The baseline calculation as furnished in the VCS PD under section 3.2 was also reviewed by the validation team and found adequate.

The PP has used the approved methodology AMS ID: 'Grid connected renewable electricity generation' Version 13, Scope 1, EB 36. The applicability of the chosen baseline methodology has been adequately discussed in the VCS PD ^{/PD/}. The project envisages generation of renewable energy using wind power to generate electricity. The total installed capacity is less than 15 MW, which is the eligibility limit for small-scale project activity. The validation team has also investigated and satisfied itself that the project activity is not a debundled component of a larger project activity and the project proponents have not initiated any other similar project in the previous 2 years and within 1 km boundary.

ADDITIONALITY:

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.

Demonstration of additionality:

The project is a small-scale project activity for which the methodology approved under CDM has been used. Hence, in accordance with paragraph 28 of the simplified modalities and procedures for small scale CDM project activities, the additionality of the project activity has been demonstrated using Attachment A to Appendix B (additionality tool for small scale project activities). Also the demonstration of additionality of the project is in line with the Project test-1 of the VCS 2007.1.

- a) Regulatory Surplus;
- b) Implementation barrier; and
- c) Common practice.

Regulatory surplus:

Validation team is convinced that the power generation using wind is not mandated by any state or national law and also not bound by any legislative requirements. Validation team has verified Indian Electricity Act 2003 has is convinced that there is no regulatory requirement which compels the project proponent to opt for wind based power generation as the only mean of power generation.

Thus validation team is convinced that project passes this test.

Implementation Barrier:

Demonstration of additionality:

The project is a small-scale project activity. Hence, in accordance with paragraph 28 of the simplified modalities and procedures for small scale CDM project activities, the addi-

tionality of the project activity has been demonstrated using Attachment A to Appendix B (additionality tool for small scale project activities). As all requirements specified vide § 28 of the simplified modalities and procedures are complied with by the project activity, the adopted approach is assessed to be appropriate for the additionality assessment for this project activity.

The PP has demonstrated the additionality of the project through

- a) Institutional barrier;
- b) Investment Barrier
- c) Common practice

DOE is not convinced with the institutional barriers as the non-availability of skill-set within the organization or sharing of VCS benefits with the State Utility cannot be construed as barriers preventing the implementation of the project.

As regards common practice barrier, the statistics furnished by the PP as well as independently collected by DOE, reveal that wind power projects account for less than 5% of the total installed power generating capacity in the country and so far only about one tenth of the potential has been exploited. While setting up of wind power plant is not a common practice, DOE's considered opinion is that it is not barrier preventing the implementation of the project.

However, the project appears to face Investment barrier. PP has chosen project IRR as financial indicator and Government bond rate increased by a suitable risk premium as the benchmark to demonstrate the additionality. Additionality Tool permits the use of this benchmark and project IRR as financial indicator. Benchmark has been computed using CAPM. DOE verified the input values used in the computation of benchmark and convinced about the input values taken and the accuracy of calculation.

DOE checked the correctness of various financial parameters used with the documentary evidence submitted by the PP and also based on its sectoral and local expertise. 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.

The computations reveal that the project yields an IRR of 11.93% in contrast to the benchmark of 13.78%. Since the project IRR is less than the benchmark, Validation Team has arrived at the conclusion that the project is additional.

The robustness of this conclusion was checked by subjecting critical factors to reasonable variations. Two factors have been identified as critical, viz., saleable units and project cost. These factors have been subjected to 5% variation on either side. The results reveal that the project would become non-additional if the saleable units go up by 9% or the project cost goes down by 10%. Since the project has already been implemented and the cost considered in the analysis is based on the cost actually incurred, the question of reduction in the project does not arise. As regards the PLF, the PP has submitted that, the project

had achieved a PLF of 16.23% during the year ended March 31, 2008 and 18.36% for the year ended March 31, 2009 in the case of Maharashtra project and 20.12% and 23.82% in the case of Gujarat project for the corresponding years.

Common Practise:

As regards common practice barrier, the statistics furnished by the PP as well as independently collected by DOE, reveal that wind power projects account for less than 5% of the total installed power generating capacity in the country and so far only about one tenth of the potential has been exploited. The justification used by PP that installed capacity of the wind power generation is only 3.47% and 6.22% of the of its potential in the state of Gujarat and Maharashtra respectively to establish the fact that wind power generation is not a common practise is convincing. The sources referred in the VCS PD 02 have been verified by the validation team. Validation team has also verified through the independent publicly available and credible data sources that coal based power generation is the most dominant technology in Maharashtra and Gujarat¹..

Nevertheless, 18 CARs and 17 CRs had been raised and successfully closed. The list of the CARs and the CRs is as follows.

CAR/CR	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
CAR 2.1 Since GERC Order does not provide for T&D losses in its order, T&D losses of 5% assumed in worksheet is not acceptable.	/XLS1/	Losses for Gujarat WTGs removed	/XLS2/	Transmission losses have been removed. CAR is closed
CAR 2.2 The MERC Order does not provide for transmission losses in computing the tariff. Hence, the transmission losses in the case of Maharashtra projects are also not acceptable	/XLS1/	Transmission Charges for Maharashtra WTGs are removed.	/XLS2/	Transmission losses have been removed. CAR is closed
CAR 2.3 It is stated that	/PD01/ Section	Working corrected	/PD02/ Section 2.4/	Working has

¹ [http:// www.cea.nic.in/planning/c%20and%20e/Government%20of%20India%20website.htm](http://www.cea.nic.in/planning/c%20and%20e/Government%20of%20India%20website.htm)

CAR/CR	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
projection for the first year in the case of Gujarat projects has been prepared as per Cl. 6 EB 39 Ann 45. It may be clarified with evidence how the PP expected to start the generation on the last date of the FY, when the decision was taken in June 2006	2.4/	by considering 6 days in first year.		been modified to account for 6 days generation. CAR is closed
CAR 2.4 The escalation in reactive power charges as per MERC Order is not cumulative, but simple. This may be checked and necessary corrections may be carried out, if needed As regards Gujarat project, GERC Order does not provide for escalation and hence it is not acceptable	/XLS1/	Necessary correction is made	/XLS2/	Worksheet has been corrected. CAR is closed
CAR 2.5 Both the sections referred to in MERC order do not seem to contain any decision to the effect that the tariff from 13th year would be less by 15%. This may be clarified	/XLS1/	The arguments can be substantiated by referring to MERC order dtd. 20.11.2007 (case 33 of 2007) on group II projects. MSEDCL (Power purchasing company) had filed a petition on 23 July 07 demanding that it should be allowed to purchase wind power	/XLS2/	Argument is accepted. CAR is closed

CAR/CR	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
		<p>from wind power generating companies under group II (i.e. projects commissioned after 27 Dec 1999 and before 1 April 2003) at the rate of 90% of lowest HT Industrial Energy Tariff, i.e., at the fixed rate of Rs. 1.17 per kWh, with no variation. This implied reduction of rate from Rs. 3.50 to Rs. 1.17 . MERC has not refuted the claim of MSEDCL. It has only ruled that the rates can not be revised from 2007-08 as the EPA tenure for such project vary from 27 Dec 2007 to 31.3.2011. [Ref : http://www.mercindia.org.in/pdf/Ord_20_11_2007_CNo_33_of_2007.pdf]</p> <p>This petition and MERC order has sufficiently indicated that the power tariffs are sure to be revised downwards substantially. Hence the tariff rate applicable after the 13 year period of PPA is maintained at Rs. 3.50 only.</p>		
CAR 2.6 Escalation of O&M expenses by 10% in 11th and 16th year is not acceptable unless	/XLS1/	Escalation in O&M deleted.	/XLS2/	Escalation has been removed. CAR is closed

CAR/CR	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
evidence is furnished to that effect				
CAR 2.7 45 days receivables are not 2 months. Secondly, MERC Order provides an option to the developers to get LC opened by Utility. Thirdly, since the project developer will not be out of funds other than the expenditure incurred in O&M cost and insurance, computation of working capital based on receivables is not acceptable. As per GERC Order, working capital interest is included in O&M expenses. Hence, working capital interest is not acceptable in both the cases	/XLS1/	Working capital requirement is removed from cost of project	/XLS2/	Working capital has been removed CAR is closed
CAR 2.8 Neither MERC nor GERC order provide for administrative expenses and hence this expenditure is not acceptable	/XLS1/	CA certificate attached.	/XLS2/	Chartered Accountant's certificate has been furnished as evidence. CAR is closed
CAR 2.9 Interest calculation – interest rate, initial moratorium and repayment - should conform to the terms con-	/XLS1/	The loan agreements executed on 31st August 06 for Maharashtra and 31st Oct 06 for Gujarat contained specific	/XLS2/	Explanation is accepted. CAR is closed (29/08)

CAR/CR	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
tained in the loan sanction letter. Moreover, interest computation and assumption given in 'data' sheet differ. Reconcile Interest computation given is for one windmill. There are 4 windmills in each State		amounts of equated instalments which included the interest component. Interest rate in the worksheet 'Int' was adjusted slightly just to identify the component of principle repayment out of the equated installment. Hence interest rates differed slightly from sanction letters. Loan agreements dated 31 Aug 06 and 31 Oct 06 including the Annexure II and III. These annexures contain equated installments and another important details		
CAR 2.10 In project cost, evacuation cost seems to have been accounted twice. Rectify the mistake, if any	/XLS1/	Corrected	/XLS2/	Refund has been accounted properly. CAR is closed
CAR 2.11 Since windmills are in operation for 6 months only in 2006-07, expenditure – insurance and reactive power charges - should also be for 6 months only. Admn. expenses are not acceptable for the reasons stated above	/XLS1/	Necessary corrections are made.	/XLS2/	Depreciation has been corrected. CAR is closed
CAR 2.12 PP may explain the basis on which	/XLS1/	Depreciation considering 50% of	/XLS2/	Depn. has been corrected. CAR

CAR/CR	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
book depn. has been provided for 6 months in the case of Gujarat Projects, when they were in operation for only 1 or 5 days. If it is the policy of the company, it may be stated as such		evacuation charges In capitalized cost. : PI refer the comments provided earlier about refund		is closed .
CAR 2.13 Insurance has been accounted for only one windmill in the case of Gujarat projects. Rectify the mistake	/XLS1/	Necessary correction made.	/XLS2/	Insurance has been corrected. CAR is closed
CAR 2.14 In the case of Gujarat projects, since O&M is free for 2 years and the windmills commenced generation on the last week of March 2007, first payment of O&M charges should be accounted for in 2009-10. This may be checked and mistake rectified	/XLS1/	Necessary correction is made.	/XLS2/	O&M cost has been escalated properly. CAR is closed (29/08)
CAR 2.15 Book depreciation and WDV provided has been provided for only 1 windmill. There are 4 in each State. Power evacuation charges are not depreciable.	/XLS1/	Corrected	/XLS2/	Depreciation has been corrected; CAR is closed

CAR/CR	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
Though they may be included for book depreciation purposes in the case of Gujarat wind mills (In the case of Maharashtra windmills, the amount cannot be depreciated as it is refundable by State Utility), in IT depreciation computation, this amount cannot be included. It should be written off separately in the case of Gujarat projects				
CAR 2.16 Tax computation does not seem to be correct. MAT has not been accounted for.	/XLS1/	The tax working is modified	/XLS2/	Tax computation has been corrected. CAR is closed
CAR 2.17 IRR should be presented separately for Gujarat and Maharashtra projects IRR computation is incorrect because of the mistakes in the P&L account on which it is based.	/XLS1/	Since all the projects belong to the same promoter and the investment decision was taken for the projects put together, the additionality should be assessed for the project as a whole. While we have computed profitability separately as desired by you for both the locations separately, profitability has been combined for the purpose of demonstrating additionality.	/XLS2/	PP's response is accepted as the objective is to assess the additionality of the project and not individual locations, which is incidental. CAR is closed
CAR 2.18	/XLS1/		/XLS2/	

CAR/CR	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
a) Justify the selection of Sensex as proxy for Rm and its appropriateness for the CAPM		The working is modified by considering BSE 500 as appropriate measure of Return on Market. It represent over 90% of market capitalization (Ref : BSE website).		BSE 500 has been taken as proxy for Rm, which is in conformity with CAPM. CAR is closed
b) Power index beta has been computed with a cell, which does not contain any value. Moreover, the length of estimation period, return interval used and choice of market index chosen for regression - all seem to be not conforming to any accepted principle. That apart the advisability of using Power index as proxy also needs to be looked into with respect to its composition.	/XLS1/	Working is modified to exclude BSE Power Index.	/XLS2/	Power index has been removed. CAR is closed
c) The formula used to compute the beta does not appear to be the formula to be used for computing beta.	/XLS1/	Share price and Index values as pointed out are corrected	/XLS2/	Beta has been computed using the accepted formula based on two year data with monthly class interval. Can be accepted. Input values are correct. CAR is closed (29/08)
d) Reasons for restricting the beta calculations to	/XLS1/	The Board Resolution dated 27th June06 mentions	/XLS2/	All the 7 power generating companies

CAR/CR	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
only 5 companies may be explained		about giving authority to do all acts to avail CDM benefits. This does not mention any specific amounts of investments. The authority of such negotiations and deciding the terms was left to the official mentioned in the resolution. The first purchase orders were placed in August 06 after negotiating prices and other terms. Hence the decision was based on the working made just before placing the orders. As such the BSE 500 value of June 06 was considered for calculating Beta. However the working stands corrected to include 24 months till May 06.		listed and traded in BSE have been included for beta computation. This is acceptable. Since the data is taken upto May 2006, CAR is closed (29/08)
e) While the G-Sec yield figures are available, reasons for tasking approximate yield in the calculation may be explained	/XLS1/	PI search on these sequence > “ RBI - database - monthly - 1.1.06 to 31.7.06 - table 27C Monthly yields on Govt. Securities”. Same data on another format is available on site [http://www.rbi.org.in/scripts/BS_ViewBulletin.aspx?Id=7701] dated 28 July 06.	/XLS2/	G-sec yield has been taken. CAR is closed
f) As per the chronology of events presented in Sec.7,	/XLS1/	Calculation of Return is calculated for Maharashtra and Gu-	/XLS2/	Only one ROE has been computed. The

CAR/CR	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
only one Board decision seems to have been taken. In that case, the basis for computing Re separately for Maharashtra and Gujarat projects may be explained		jarat WTGs together.		computation appears appropriate CAR is closed
g) The beta used is equity beta which incorporates project risk as well as leverage risk. Hence, it does not seem to conform to the Additionality Tool Read with VVM. Asset beta, instead of equity beta should be used to arrive at the ROE.	/XLS1/	Necessary corrections made.		Asset beta has been computed and lowest of the asset beta has been used. CAR is closed (07/09)
CR 2.1 Statement made vide page 5 of VCS PDD, “Crediting period till the date of registration of CDM project with UNFCCC” Clarify whether it is a VCS or CDM project. Rectify the mistake, if any	/PD01/ /Section 1.6/	The same has been corrected in the VCS PD Ver 01.	/PD02/ /Section 1.6/	Corrected. CR is closed
CR 2.2 Furnish reference from a standard textbook or a research article published in a reputed finance journal advocating the use of Gordon model for computing the expected return on	/PD01/ /Section 2.4/	The benchmark comments about Gordon Model Approach are removed.	/PD02/ /Section 2.4/	The model has been removed. CR is closed

CAR/CR	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
equity in the manner in which it has been used in the VCS PDD. Pending the submission of evidence, comments have been reserved on the methodology adopted and the figures used.				
CR 2.3 PP is advised to check the ‘Rationale’ given under item 12 of Annex 45 of EB 41 with respect to the statement made vide page 14 of PDD, “The company has been in the existing business for last more than 17 years. Windmill power is diversification in unrelated area. Hence such investments need to generate at least a reasonably high return” and confirm the validity of the statement. If not the statement should be removed	/PD01/ /Section 2.4/	Necessary modification made.	/PD02/ /Section 2.4/	The sentence has been removed. CR is closed
CR 2.4 It has been stated in the footnote for Yes Bank, “Govt. approved commercial bank”. Clarify whether in any country and more particularly	/PD01/ /Section 2.4/	Prefix is removed	/PD02/ /Section 2.4/	The prefix has been removed. CR is closed

CAR/CR	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
in India any bank can conduct operations without the Central Bank's approval. If not what is the objective of this prefix.				
CR 2.5 Equity IRR has been stated to be 10.42% vide page 14 of VCS PDD, which is not in conformity with the IRR arrived at in the worksheet.	/XLS1/	Necessary corrections made.	/XLS2/	Corrected. CR is closed
CR 2.6 It may be explained as to how equity IRR is identified as a suitable financial indicator for this project	/XLS1/	In the revised in VCS PD version 02 equity IRR has been removed and Project IRR has now been used.	/XLS2/	Project IRR has been used as financial indicator. CAR is Closed.
CR 2.7 It is stated vide page 14 of VCS PDD that the Equity IRR has been computed for a period of 20 years. This is incorrect. In the case of Gujarat project, Equity IRR has been computed for 19 years.	/PD01/ /Section 2.4/	Calculations suitably modified.	/PD02/ /Section 2.4/	Projections have been made for full 20 years. CR is closed
CR 2.8 It is stated vide page 14 of VCS PDD that power generated from wind mills in Maharashtra would be for self use w.e.f. 20.06.2007. Clarify whether	/PD01/ /Section 2.4/	The power generated from wind mills in Maharashtra are not for self use. The same has been corrected in the VCS PD Ver 01.	/PD02/ /Section 2.4/	Correction made in the VCS PD 01. also Validation team has verified the power purchase agreement.

CAR/CR	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
<p>this statement is correct? Whether the date, 20-06-2007 is correct? If answer to the above two questions are 'Yes' then the tariff considered for computation of revenue should be tariff charged by State Utility to the Company and it should be evidenced by an electricity bill pertaining to the decision making period from the date it is wheeled for self consumption</p>				
<p>CR 2.9 The statement 'As per relevant Indian Tax' does not seem to be correct. Relevant sections of the Act may be furnished for verification</p>	/XLS1/	<p>Depreciation 5.28% : The reference is corrected as 'Companies Act'</p>	/XLS2/	<p>Companies Act depreciation has been adopted. CR is closed (29/08)</p>
<p>CR 2.10 Moreover, the sensitivity analysis presented does not conform to Annex 45 of EB 41</p>	/XLS1/	<p>Sensitivity analysis has been corrected.</p>	/XLS2/	<p>Sensitivity analysis has been corrected. CR is closed (07/09)</p>
<p>CR 2.11 Documentary evidence may be submitted to the effect that GEB deducts 10% of the wind units</p>	/PD01/ /Section 2.4/	<p>The same has been corrected in the VCS PD Ver 01.</p>	/PD02/ /Section 2.4/	<p>The sentence has been removed CR is closed</p>

CAR/CR	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
generated as transmission charges and losses (p.15 of VCS PDD), lest the sentence be removed				
CR 2.12 What is being sought to be derived from the statement, “Based on the above data it is clear that there has been a wind power capacity addition of about 1081.28 MW in the period 2002-2008 of which 604.3 MW are CDM project activities.” (p.16 of VCS PDD) is not clear.	/PD01/ /Section 2.4/	Necessary corrections made	/PD02/ /Section 2.4/	The sentence has been removed. CR is closed
CR 2.13 The sentence, “As the policies are different for the different states so the region under consideration is the state of Maharashtra, the location of the project activity, to ensure comparable environment with respect to regulatory framework” (p.16 of VCS PDD) is not self explanatory	/PD01/ /Section 2.4/	Corrected	/PD02/ /Section 2.4/	The sentence has been removed. CR is closed
CR 2.14 The sentence, “Thus based on the above it can be	/PD01/ /Section 2.4/	Corrected	/PD02/ /Section 2.4/	Necessary corrections made. CR is closed

CAR/CR	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
<p>inferred that the project activity is not a common practice and CDM revenues is the major contributor in promoting wind power” is based on the statistics furnished which reveals that potential has been tapped to the extent of 50%. IF 50% tapping does not make the project a common practice, what percentage would?</p>				
<p>CR 2.15 Since the date of the Purchase Order is 5.8.2006, start date of the project should be 5.8.2006. This may be checked and necessary corrections may be made</p>	/XLS1/	<p>As per the VCS guidelines Version 01 (Pg # 7 Point # 01.) the project start date should be the date on which the project began reducing or removing GHG emissions i.e. date Commissioning of WTGs.</p>	/XLS2/	<p>Accepted CR is closed</p>
<p>CR 2.16 Following documents/ documentary evidences should be submitted 1. Quotation/Purchase Order supporting each of the components of capital cost</p>		Attached Separately		<p>1.The purchase order have been submitted and the values taken in input data worksheet is in conformance with the Purchase order.</p>

CAR/CR	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
2. Bank appraisal charges of 0.5%				2.Sanction letter has been submitted which evidences the appraisal charges. OK
3. Consultancy charges and preliminary expenses				3.CA certificate has been submitted, which evidences the charges. OK
4. O&M Cost and yearly escalation				4. The O & M contract submitted is verified and it has been confirmed that the figure are in conformance with the values taken in work-sheet.
5. PPA				5. The PPA submitted has been verified and the tariff is in accordance with the input figures of the worksheet.
6. Insurance premium				6. Insurance premium receipts have been furnished. OK
7. Loan sanction letter with terms				7. Loan sanction letter has been furnished. OK
8. Service tax on O&M cost (accounted separately)				8. O & M contract submitted reviewed and it

CAR/CR	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
				is verified that service charges are specified as extra.
CR 2.17 Extracts of GERC and MERC order may be removed as they are available on the website	/PD01/	Removed.	/PD02/	Removed. CR is closed

3.3 Monitoring Plan

The project applies monitoring methodology AMS-I.D.:” Grid-connected renewable electricity generation” version 13, EB 36. The application of monitoring methodology is assessed as correct.

The methodology requires monitoring of electricity generation from the renewable technology installed by the project proponent. Parameter EG_y i.e. Net electricity supplied to the grid is measured by tri vector meters installed at each WTG on continuous basis. These meters are connected to Central monitoring station from where real time monitoring of the net energy generated from each WTG is monitored. In addition, export/import meters are installed by state transmission utility i.e. GETCO /MSEDCL at wind farm sub station and take monthly joint meter readings which form the basis of emission reduction.

During the site visit it is verified that meters are installed properly and are of 0.2S class accuracy. Also Monthly joint meters are verified at site.

Calibration, periodical testing and maintenance procedures of monitoring equipment are clearly mentioned in the section 3.3 of the VCS PD^{/PD01/PD02/}. The same is found to be adequate. During the site visit sample calibration certificate^{/CAL/} for energy meters were reviewed

Nevertheless CAR 3.1 and CAR 3.2 had to be raised and is yet to be successfully closed.

CAR/CR	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
CAR 3.1 In the 4 th point under	/PD01/	The same has been corrected in the	/PD02/ /section 3.2/	Corrected, OK

CAR/CR	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
section 3.2 of the VCS PD, different denomination for generation at the substation should be used. "G _n " has been used for both net generation at the substation and the n th individual WTG.	/section 3.2/	VCS PD Ver 01.		
CAR 3.2 The equation (Y ₁ +Y ₂ +.....+Y _n)= Zero(0) under section 3.2 (point no.4) is wrong. This should be 1 not zero.	/PD01/ /section 3.2/	The same has been corrected in the VCS PD Ver 01.	/PD02/ /section 3.2/	Equation is corrected base don the actual monitoring procedures followed and verified at site. OK

3.4 Calculation of GHG Emissions

As per the methodology, baseline emission are calculated by multiplying electricity supplied by the project activity (GEN) in kWh with Combined margin CO₂ emission factor of NEWNE grid taken from the public data available from database of Central Electricity Authority (CEA) version 4.0 and fixed ex-ante. As the project involves generation of electricity using renewable source of energy, there is no project emission from the project activity.

The validation team checked and found that the calculation of emission reductions is based on subtracting project emissions and leakage from the baseline emissions. As the plant runs exclusively with wind energy without any usage of fossil fuel, the project emissions is considered as zero. As the energy generating equipment is not transferred from another activity or the existing equipment is transferred to another activity, the leakages are not considered as per the guidelines of approved methodology. Leakage consideration as zero is deemed OK as per applied methodology.

The project intends to reduce GHG emissions to the extent of the difference of baseline emissions and project emissions.

The calculations of the project emission as well as baseline emission are documented in section 4 of the VCS PD. For assessment of baseline emission please refer to section 3.2

Nevertheless, CAR 4.1 had to be raised and are yet to be successfully closed. Those are listed out in the following table.

CAR/CR	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
CR 4.1 Under section 4.2 of the VCS PD (page 26) the denomination EGy is described as the net quantity of electricity supplied to the manufacturing facility by the project whereas the power will be supplied to the regional grid. This should be corrected.	/PD01/ /Section 4.2/	The same has been corrected in the VCS PD Ver 01.	/PD02/ /Section 4.2/	OK

3.5 Environmental Impact

As per the Schedule 1 of Ministry of Environment and Forests (Government of India) notification dated 27 January 1994 and further modified on 14 September, 2006 mention the Categories of project activities that are required to undertake environmental impact assessment studies.

The proposed project doesn't fall under the list of activities requiring EIA as it will not involve any negative environmental impacts, as the WEGs installed for generation of power use wind

3.6 Comments by stakeholders

Comments, suggestions were invited from one and all on the project activity. The PP had organized stake holder meeting at each of the three site of the project activity individually .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 under section 6 of the VCS PD.The opinion raised by the stake holders which were kept in a recorded vedio also to be to the validation team during site visit.

Nevertheless, CAR 6.1 had to be raised and are yet to be successfully closed. Those are listed out in the following table.

CAR/CR	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
CAR 6.1 Description of the procedure to conduct the stakeholder meeting is not provided under section 6 of the VCS PD. Also the summary of the comments received with the response should be included in the section.	/PD01/	Kindly refer Annex # 01 for the procedures for conducting Stakeholders Consultations and Minutes of meeting.	/PD02/	OK

4 Validation conclusion

Era Infra Engineering Limited has commissioned the TÜV NORD JI/CDM Certification Program to carry out the Validation of the project - “10 MW bundled wind power project by Era Infra Engineering Limited”, with regard to the relevant requirements of VCS 2007.1 Standard.

The project is a renewable energy project. It has been implemented to produce electricity by using wind which is a renewable source of energy. Total installed capacity of the project is 10 MW comprising of 8 WTGs of 1.250 MW each 4 among which have been installed in Kutch district of Gujarat, 3 are in Sangli and one is in Dhule district of Maharashtra. It has been estimated to generate **16.15 GWh** of electricity from the project activity annually which will be supplied to the NEWNE of India. Through out whole of the crediting period of 10 years the project has been estimated to reduce **146300 tCO₂e**.

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 28 Corrective Action Requests (CAR) and 17 Clarification Requests (CR) were raised and successfully closed out.

The validation is based on the VCS PD, proof of title, proof of right, 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 fulfils criteria of VCS 2007.1 provided.

- The project is in line with all relevant VCS requirements.
- The project additionality is sufficiently justified in the PD.
- The monitoring plan is transparent, adequate and inline with applied baseline and monitoring methodology of AMS I.D, version-13.
- The calculation of the project emission reductions is carried out in a transparent and conservative manner, so that the calculated emission reductions of 146300 t CO₂e is most likely to be achieved within the 10 years (fixed) crediting period.

No restrictions or uncertainties were identified related to the validation.

Vadodara, 2009-09-09



Pankaj Patel
TÜV NORD JI/CDM Certification
Program

Essen, 2009-11-16



Eric Krupp
TÜV NORD JI/CDM Certification
Program

Chapter 5 : Annexure :

Table 5.1: Documents provided by the project proponent

Reference	Document
/CP/	Proof of capacity:- Wind energy generators
/CR/	Commissioning reports
/DEC/	Declaration letter that the “the project has not created another form of environmental credit”
/HGA/	Host Government Approval from Ministry of Environment & Forests, Government of India,
/LSHC/	Proof of local stake holders consultation process
/MD/	Management decision dated
/O&M/	Operation and maintenance contract/order
/PD01/	Initial VCS PD
/PD02/	Final VCS PD
/PO/	Purchase orders:
/PPA/	Power purchase agreements
/SC/	Statutory Clearances:
/SD/	Proof of starting date of the project activity- Purchase order
/SLP/	Site layout plan
/XCS/	Baseline and emission reduction calculation spread sheet.
/XLS01/	Initial Financial calculation for the project Activity.

Reference	Document
/XLS02/	Final Financial calculation for the project Activity

Table 5.2: Background investigation and assessment documents

Reference	Document
/ACM0002/	Consolidated baseline methodology for grid-connected electricity generation from renewable sources (Version 07: 19 May 2006)
/AMS-I.D./	Grid connected renewable electricity Generation (Version 13: EB 36)
/AT/	Tool for the demonstration and assessment of additionality (Ver 5.2)
/CEA/	CO ₂ Baseline Database for Indian Power Sector -User Guide, published by CEA.
/CPM/	TÜV NORD JI / CDM CP Manual (incl. CP procedures and forms)
/GHG/	The Greenhouse Gas Protocol, The GHG Protocol for Project Accounting
/KP/	Kyoto Protocol (1997)
/MA/	Decision 17/CP.7 (Marrakesh – Accords)
/TOOL/	“Tool to calculate the emission factor for an electricity system” version 1.1
/VCS/	Voluntary Carbon Standard 2007.1
/VVM/	IETA, PCF Validation and Verification Manual

Table 5.3: Websites used

Reference	Link	Organisation
/UNFCCC/	http://cdm.unfccc.int	UNFCCC
/VCS/	http://www.v-c-s.org	VCS
/IPCC/	www.ipcc-nggip.iges.or.jp	IPCC publications

Table 5.4: List of interviewed persons

Reference		Name	Organisation / Function
/IM01/	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Joy Saxena	Group - Chief Financial Officer
/IM01/	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Jitendra Kumar	Manager- Finance - corporate
/IM01/	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Dwijal Mamtora	Suzlon Infrastructure Services Ltd. (SISL)
/IM01/	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms	Vivek Rajmani	Suzlon Infrastructure Services Ltd. (SISL)
/IM01/	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms	Jagannath Mali	Suzlon Infrastructure Services Ltd. (SISL)
/IM02/	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Chirag Gajjar	Deloitte Touche Tohmatsu India Private Limited.
/IM02/	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Sumit Shrivastava	Deloitte Touche Tohmatsu India Private Limited.

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