Voluntary Carbon Standard 2007.1

VALIDATION REPORT

M/s UIC Udyog Limited

Validation of Bundled grid-connected wind electricity generation project identified as Bundle E3 in Maharashtra and Gujarat in India

Project No. / Version No.: V-3-I-01-B-0008/01

Name of Validation company:	Date of issue:
Perry Johnson Registrars CDM Inc.	2009/11/06
Report Title:	**Approved by:**
VCS Validation Report for "Bundled grid-connected wind electricity generation project identified as Bundle E3 in Maharashtra and Gujarat, India"	S. V. Jamble
Client:	**Project Title:**
M/s UIC Udyog Limited.	Bundled grid-connected wind electricity generation project identified as Bundle E3 in Maharashtra and Gujarat, India.

Summary:

The project proponents contracted Perry Johnson Registrars Clean Development Mechanism Inc. (PJRCDM) to perform the validation of the project - "Bundled grid-connected wind electricity generation project identified as Bundle E3 in Maharashtra and Gujarat, India". The validation is an independent assessment to determine the conformance of the project activity to the requirements of VCS 2007.1, including applicable baseline methodology, demonstration of additionality, monitoring plan and the greenhouse gas (GHG) emission reduction potential.

The proposed VCS project is a bundled wind power project consisting of 6 wind turbine generators (WTG) belonging to different promoters. The total installed capacity of the bundle is 7.75 MW (5 WTGs are of 1.25 MW capacity each and remaining 1 is of 1.5 MW capacity). All the WTG owners have appointed M/s UIC Udyog Limited as the Focal point. WTGs are located in different villages of Dhule and Nandurbar district of Maharashtra and Kutchh district of Gujarat in India. The generated electricity from the bundle will be exported to the North East West North east (NEWNE) grid of India.

The project activity has correctly applied the AMS I D methodology version 14 and relevant tools from Clean Development Mechanism (CDM) to determine baseline, establish additionality and frame the monitoring plan.

PJRCDM conducted a physical verification of the WTGs, interviewed project proponents and concerned persons and carried out a review of submitted documents. A list of Clarification Requests (CLs), Corrective Action Requests (CARs) and Forward Action Requests (FARs) was issued which were subsequently closed by the project proponents.

Total annual average of GHG emission reductions achievable by the project activity have been estimated at be 11,922tonnes of CO_2 e.

Based on the documentation verified, it is PJRCDM's opinion that the emission reductions from the project activity would be real, measurable, additional and permanent.

Project No. / Version No.	Number of Pages:
V-3-I-01-B-0008/01	36
Work carried out by:	**Work reviewed by**
Anjana Sharma	Mathsy Kutty.

Abbreviations

BM	Build Margin
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEA	Central Electricity Authority
CL	Clarification Request
CM	Combined Margin
FAR	Forward Action Request
GHG	Greenhouse Gas
GEDA	Gujarat Energy Development Authority
GERC	Gujarat Electricity Regulatory commission.
GETCO	Gujarat Energy Transmission Corporation Limited.
GUVNL	Gujarat Urja Vikas Nigam Limited.
IRR	Internal Rate of Return
MERC	Maharashtra State Electricity Commission
OM	Operating Margin
PD	VCS Project Description
PJRCDM, Inc.	Perry Johnson Registrars CDM Incorporated
PLF	Plant Load Factor
PPA	Power Purchase Agreements
tCO_2e	Tonnes of Carbon Dioxide equivalent
UNFCCC	United Nation's Framework Convention on Climate Change
VCS	Voluntary Carbon Standard 2007.1
VCU	Voluntary Carbon Unit
WTG	Wind Turbine Generator

Table of Contents

1 INTRODUCTION

UIC Udyog Limited (hereinafter referred to as the "client" or "project proponent") has contracted Perry Johnson Registrars Clean Development Mechanism Inc. (PJRCDM) to perform validation of the project "Bundled grid-connected wind electricity generation project identified as Bundle E3 in Maharashtra and Gujarat",, (hereinafter referred to as the project/project activity) under the Voluntary Carbon Standard (VCS) 2007.1 standard. This report describes the validation work undertaken.

1.1 Objective

The validation scope includes an independent and objective review of the project's VCS project description (PD). In particular, the specific objectives of the validation work involve:

- To verify that the project activity meets the requirements of VCS 2007.1 standard including additionality, proof of title and compliance with local laws

- To assess whether the baseline and monitoring plan are in conformance with the methodology applied from the VCS approved GHG program.

- To certify that the information presented are complete, consistent, transparent and free of omission or material error.

The information in the PD is reviewed against the criteria of VCS 2007.1 standard, the VCS program guidelines, and the applied CDM methodology - AMS I D, version 14. PJRCDM has performed the validation based on a risk based approach focusing mainly on the significant risks to meet the qualification criteria and the ability to generate Voluntary Carbon Units (VCUs).

The work carried out by PJRCDM is free from any conflict of interest.

1.2 Scope and Criteria

The purpose of Validation is to perform an independent, third party assessment of whether the project activity conforms to the qualification criteria set out in the VCS 2007.1 standard to attain real, measurable, additional and permanent emission reductions.

The validation statement/opinion is a written assurance that the project complies with all the applicable VCS requirements and has the ability to generate the emission reductions stated over the project's crediting period.

1.3 VCS project Description

The project activity is generation of electricity by wind turbine generators and exporting the generated electricity to the North East West North east (NEWNE) grid of India. The project activity comprises of 6 WTGs owned by different promoters (details provided below) in different villages of Dhule and Nandurbar districts of Maharahstra and Kutchh district of Gujarat in India.

They are uniquely identified as below:

Client	WTG Location ID	Coordinates	Village	District	State

UIC Udyog Limited	K-537	21°21' 50.6''N, 74°20' 51.4''E	Akrale	Nadurbar	Maharashtra
	K-539	21°22' 35.4''N, 74°21' 19.8''E			
	K-542	21°22' 16.3''N 74°21' 41.3''E			
	K-543	21°22'26.0'' N 74°22' 05.9''E			
Khatau Narbheram & Co	W-55	23°05'00.3''N, 68°52'51.3''E	Arikhana	Kutchh	Gujarat
Hind Metals and Industries (P) Limited	J-43	21°10'24.5'' N, 74°24'18.6'' E	Dusane	Dhule	Maharashtra

The WTGs installed under the project activity have been supplied by M/s Suzlon Energy Ltd. The models used are S70 and S82. The proposed project activity is a bundled wind power project with a total installed capacity of 7.75 MW. Five out of 6 WTGs are of 1.25 MW each (4 belonging to UIC Udyog limited and one belonging to Hind Metals and Industries (P) Ltd.) and remaining one is of 1.5 MW (belonging to M/s Khatau Narbheram and Co.). The rated capacity of the individual wind turbines were verified from the purchase orders placed by the project proponents for the same. [6].

The project promoters have assumed the plant load factor (PLF) of 20% based on the Maharashtra Electricity Regulation Commission (MERC) tariff order dated 24 November 2003 (Pg. 16/31) [9] to estimate the electricity generation from the WTGs installed in the state of Maharashtra and 23% has been considered for WTGs installed in the state of Gujarat based on the average annual PLF declared by Gujarat State Electricity commission's (GERC) tariff order dated 11 August 2006 [10]. Hence, the annual gross electricity generation (based on the above two parameters) from the entire bundle (considering WTGs installed in both the states) has been estimated to be 13,972 MWh. After considering the transmission and distribution losses of approximately 4% yearly, net annual electricity generation has been estimated to be 13,413 MWh. Though the project promoters had the supplier's guaranteed electricity generation figure at the project conceptualization stage, the project developer opted to use the standard PLF declared by state electricity regulatory commissions for the estimation of emission reductions. The main reason for using the PLF from the tariff orders of respective states are as follows:

- Supplier has guaranteed the generation for a period of one year only and that too at 100% grid availability. The estimates provided by the technology supplier are very idealistic estimates compared to actual scenario in the state of Maharashtra. Hence, considering the same generation for the entire lifetime of the project is, in PJRCDM's opinion, not reasonable. Keeping this in mind, supplier's guarantee has been considered only for the first year of operation and for the remaining years, PLF from the tariff orders has been considered.

The electricity thus generated is sold to Maharashtra State Electricity distribution Company and Gujarat Electricity Transmission Corporation Ltd. which is the part of NEWNE grid as per the power purchase agreements signed by the project proponents.

The dates of placing purchase orders and commissioning dates of the WTGs are tabulated below:

Client	WTG Location	Date of Purchase order	Date of commissioning	Installed Capacity (MW)	ESCOM
UIC Udyog Limited	K-537	13 July 2006	29 March 2007	1.25	Maharashtra State Electricity distribution Company
	K-539	13 July 2006	29 March 2007	1.25	
	K-542	13 July 2006	31 March 2007	1.25	
	K-543	13 July 2006	31 March 2007	1.25	
Khatau Narbheram and Co.	W-55	05 January 2007	31 March 2007	1.5	Gujarat Electricity Transmission Company (GETCO)
Hind Metals and Industries (P) Ltd.	J-43	10 June 2006	05 February 2007	1.25	Maharashtra State Electricity distribution Company

1.4 Level of assurance

In line with VCS 2007.1 requirements and as per ISO 14064-3:2006 para A.2.3.2, a reasonable level of assurance is defined for the validation of the project.

This implies that, based on the process and procedures conducted, PJRCDM should state whether the information in the PD

- is materially correct and is a fair representation of the actual project details, and
- is prepared in accordance with VCS requirements and the applied CDM methodology for information pertaining to additionality, GHG quantification, monitoring and reporting.

The validation work is carried out as per this requirement and details are presented in the Validation statement in section 4 below.

2 METHODOLOGY

The project activity applies approved small scale CDM methodology AMS-I.D, version 14 categorised under sectoral scope 1 'Energy Industries (renewable/non renewable sources)' for which PJRCDM has been accredited to carry out both validation and verification activities. For validation, PJRCDM's approach involves broadly three steps:

Completeness check and desktop review of the project description (PD) [01]

Onsite inspection, interview with project representatives and issuance of findings

Resolution of the findings followed by preparation of the validation report

The following team members from PJRCDM were involved in these steps:

Name	Role	Areas covered
Anjana Sharma	Validator	Completeness check, desk top review, issuance and closure of findings, report preparation
Subramaniam	GHG Auditor	Site visit
Mathsy Kutty	Technical	Technical review

	Reviewer	

2.1 Review of Document

On receipt of the project description from the client, the completeness of information made available as per VCS2007.1 standard requirements is reviewed. A desktop review is further carried out to assess the following:

- the project details as per VCS PD template

- appropriateness of methodology applied

- compliance with relevant laws and regulations

- correctness of application of baseline and monitoring methodology

- demonstration of additionality

- monitoring plan

- stakeholder comments

- proof of title

- other external documents like grid emission factor, IPCC emission factor, etc. where applicable

A complete list of all documents reviewed is attached in section 5 of this report.

2.2 Follow-up Interviews

A site visit was conducted by PJRCDM, Inc. team on 12 August 2009 to resolve the issues identified during the desktop review of the documents submitted by the project developer.

Following table provides the list of the personnel interviewed and issues discussed during the site visit:

Name / Designation / Company	Topics of Interview
Mr. Atul, Suzlon Energy ltd. .	- Ownership of WTGs by different project promoters, - Project design and unique location of WTGs. - frequency of calibration, procedures of QA/QC, - Project Operation & Maintenance Procedure, monitoring mechanism and practices, - Baseline determination, assessment of additionality. - Stakeholder consultation,
Mr. Harish Khodiar, O&M Engineer Suzlon Energy ltd.	
Mr. Rakesh Agarwal- Analyst, Deloitte	
Mr. Poulomy Bhattacharjee, Analyst, Deloitte	

2.3 Resolution of any material discrepancy

Based on the site inspection and review of documents and records including the monitoring plan, issues that need to be further elaborated upon, researched or added in order that the project activity meets the VCS 2007.1 requirements and can achieve credible emission

reductions is identified, discussed and to be resolved by the project proponent. A Corrective Action Request (CAR) is raised if one of the following occurs:

a. The project participants have made mistakes that will influence the ability of the project activity to achieve real, measurable additional emission reductions;

b. The VCS 2007.1 standard requirements, including the specific requirements of the methodology applied, have not been met;

c. There is a risk that emission reductions cannot be monitored or calculated

If information made available is insufficient or not clear/ transparent enough to determine whether the applicable VCS requirements have been met, a Clarification request (CL) is raised and communicated to the project proponent.

Observations may also be raised which are for the benefit of future verification period- called as Forward Action Requests (FARs). These, however, have no impact upon the completion of the current validation activity.

On receipt of response and revised PD from the project proponent, the adequacy of compliance with VCS and the methodology requirements is checked. Closure of comments raised occurs only if the response provided and corrections made fully comply with the stated requirements of the VCS2007.1 standard and the methodology applied.

The list of CARs/ CLs/ FARs raised and the response provided, the means of validation, reasons for their closure, and references to correction in the PD are provided Appendix-II to this report.

The revised PD with changes incorporated as per the issues raised were rechecked with the documentary evidences and found to be in order.

3 VALIDATION FINDINGS

3.1 Project Design

Project design/Technology used

The proposed bundled project activity comprises of 6 (six) Wind Turbine Generators (WTGs) with a total installed capacity of 7.75 MW. The WTGs are Suzlon make S70 and S82 models. Of these WTGs, 5 are 1250 kW while one (1) is of 1500 kW capacity. The plant load factor (PLF) for WTGs installed in the state of Maharashtra has been assumed to be 20% based on the Maharashtra Electricity regulatory commission (MERC) tariff order and for WTGs installed in the state of Gujarat, it has been assumed to be 23% in line with Gujarat State electricity regulatory commission (GERC) tariff order. Transmission and distribution losses has been assumed to be 4% in both the states i.e. Maharashtra and Gujarat. This is deemed conservative as MERC and GERC are Government authorities determining the applicable tariff for wind technology in the respective states and had considered various proposals from stakeholders for proposed PLF applicable to the state and had determined so after analyzing past data.

The net annual electricity generation from the proposed bundle (consisting of WTGs in both the states) is expected to be 13,413 MWh. The first year generation, and consequently emission reductions accruable, will be lower as all the WTGs were not commissioned at the same time.

Project duration, crediting time and project start date

The duration of the project activity is taken as 20 years which was cross-checked with the purchase order copies [6]. The project proponent has considered 05 February 2007 as the project start date which is the earliest amongst the commissioning dates of all the 6 WTGs considered under the bundled project activity [7]. The selected project start date is in line with the VCS policy guidance (VCS 2007.1) which says *"the project start date is identified as the date when the project activity began reducing or removing GHG emission"*. PJRCDM verified the commissioning dates of all the 6 WTGs under the project activity from the commissioning certificates [7]

The project activity has applied for carbon credits under UNFCCC's CDM. The crediting period being considered under VCS 2007.1 shall also start from 05 February 2007. The project proponent has opted for a fixed crediting period of 10 years. The selected crediting period is reasonable keeping in view VCS 2007.1 guidance for such projects.

Ownership

Proof of title: The proposed project includes a total of 6 WTGs installed by 3 different entities. All the 3 entities are the project owners and have been considered as project participants. Hence, all are entitled to the emission reductions resulting from the bundled project under consideration. All the WTG owners have provided the purchase order copies for the wind turbines K-537, K-539, K-542, K-543, W-55 and J-43 as the proof of title and the same has been verified by PJRCDM. [6].

Double counting and whether the project participated in another emission trading programme

All the WTGs considered under the bundle are already under CDM validation and as per the CDM procedures; the crediting period for the CDM project will start only from the date of registration of the project by UNFCCC Executive Board. Hence, the emission reductions prior to that date can be claimed only as the VCUs under the VCS programme.

Project applicability to the VCS for projects rejected under other GHG programme (if applicable)

The WTGs bundled under this VCS project belonging to M/s UIC Udyog Ltd, M/s Khatau Narbheram and Co.; and M/s Hind Metals and Industries (P) Ltd. are already under CDM validation. They have not been rejected till now by any other GHG program.

Whether the project is eligible under the VCS:

The proposed project is a renewable electricity project. It entails generation of power from wind and exporting it to the regional grid. A mix of fossil fuel and other fuels based power plants export power to this grid and hence power generation by this mix would contribute to anthropogenic CO_2 emissions. The project activity would displace equivalent amount of power being generated in the grid and thus equivalent amount of CO_2 emissions. The project is also demonstrated to be additional compared to the business as usual scenario, hence, the project is anticipated to fulfill VCS 2007.1 conditions and qualify for carbon finance.

In addition to above, the project meets the specific criteria set in 5.2.1 of VCS Standard and has contracted a validating entity before 19.11.2008. [12].

3.2 Baseline and demonstration of additionality

Discussion regarding the baseline determination: The project proponents have applied approved baseline methodology AMS-I.D., version 14 which has been approved under the CDM programme. The total installed capacity of the bundle is 7.75 MW which is less than

the qualifying limit of 15 MW for type I small scale project activities. The application of baseline methodology is justified:

- The proposed project generates electricity using the renewable source i.e. wind energy.
- The total installed capacity of the project is less than 15 MW. The installed capacity has been verified from the PO copies submitted [6].)
- The grid boundary selected for the project activity is the North East West North-East (NEWNE) regional grid of India to which the project exports generated power. The selection is appropriate for a large country like India and is in line with CDM guidelines. The project proponents have committed not to increase the capacity or to replace the technology during the crediting period.

Baseline scenario for the proposed project has been identified in line with the baseline methodology. In the absence of project activity, same amount of electricity would have been generated by the North East West North East regional grid as per the current grid mix and expected future capacity expansions.

Discussion regarding the assessment and demonstration of additionality

The project developer has used the guidance provided in Attachment A to Appendix B of the simplified M & P for small scale CDM project activities to demonstrate the additionality of the project.

The project proponent has argued that the proposed bundled project faces investment barrier and the income from the carbon benefits would help the individual project promoters to alleviate that barrier. To demonstrate the investment barrier, each of the individual project promoters has carried out the financial analysis for the WTGs belonging to them. The detailed discussion regarding the common approach followed by the project promoters is as presented below:

Approach selected:

Since the project activity generates revenue without sale of carbon credits, a benchmark analysis was selected to demonstrate the financial unattractiveness of installing the WTGs.

Discussion regarding the financial indicator: Post tax project IRR has been selected as the financial indicator.

Discussion regarding the benchmark: The project promoters have selected the commercial lending rate as the benchmark for the financial indicator selected. The selection of benchmark is line with para 11 the EB's guidance on investment analysis which states that "*Local commercial lending rates or weighted average cost of capital (WACC) are appropriate benchmarks for a project IRR*".

Discussion regarding input values used for the financial analysis:

- **Assessment period:** The assessment period for the financial calculation of IRR has been considered at 20 years (lifetime of WTG) for all the WTGs and is reasonable. The same has been verified from the purchase order signed between the project promoters and the technology supplier [6]. The same is in line with para 3 of the EB's investment guidance which states that the "*both project IRR and equity IRR shall as a preference reflect a period of expected operation of the underlying project activity (technical lifetime)*"

- **Salvage value:** A salvage value has been calculated as the difference between the cost of land and equipment and equipment total depreciation. Calculations of salvage value have been verified by PJRCDM [4]

- Electricity tariff:

a) For all the WTGs installed in the state of Maharashtra, electricity tariff (INR 3.50 per unit of electricity) and expected annual escalation (INR 0.15 per unit) has been sourced from the tariff order issues by the Maharashtra State electricity regulatory commission [9]. This has further been cross verified from the power purchase agreement signed between the individual project promoter and the Maharashtra state electricity distribution company (MSEDCL) [8]. The same has been verified by PJRCDM. However, respective PPAs also states that this tariff and annual escalation for the first 13 years of operation of the WTG and beyond that, the tariff will be based on the commission rulings. Hence, there is uncertainty in the tariff after 13th year of operation. To be conservative, the individual project promoters considered escalated tariff i.e. equivalent to the tariff in 13th year of operation, for the remaining lifetime of the equipment. In PJRCDM's opinion, the project proponent's selection is conservative.

b) Similarly, for WTGs installed in the state of Gujarat, electricity tariff (INR 3.37 per unit of electricity without any annual escalation) has been sourced from Gujarat State Electricity Regulatory Commission tariff order [10]. This has further been cross verified from power purchase agreements signed between the promoter and the Gujarat Urja Vikas Nigam Limited (GUVNL). [8]

- **Operation and Maintenance cost (O&M) and yearly %age** escalation has been sourced from the purchase order signed between the project promoters and technology supplier.[6]

- **Plant load factor (PLF):** This parameter, for WTGs installed in the state of Maharashtra and Gujarat, has been sourced from tariff orders issued by the electricity regulatory commissions (ERCs) of respective states i.e. Maharashtra State Electricity Regulatory Commission (MERC) tariff Order dated 24 November 2003 and Gujarat state Electricity Commission tariff order dated 11 August 2006. Supplier has provided the guaranteed electricity generation for the first year of operation only. Hence, the same has been used to estimate the annual generation for the first year and for the remaining years, average PLF as declared by the MERC and GERC in their tariff orders has been considered. [9] [10]. The project promoter's selection is reasonable in PJRCDM's opinion. The guaranteed figure by technology supplier is a very idealistic figure and is on 100% grid availability (which is never the case in practical). Hence, considering the same PLF for the entire lifetime of the project would not present the practical financial statistics. The PLF declared by MERC/GERC in its tariff order is more realistic as it is based on the study conducted by Maharashtra State Electricity Board (MSEB) and other relevant stakeholders for different type of actually operating WTGs at different locations in the state of Maharashtra. (for details, refer CL 3 in the table below).[9] and [10]

- **Project cost:** Total project cost has been verified from the purchase orders placed on the technology supplier for the supply and erection of the WTGs. [6]

Other parameters like depreciation, income tax, Minimum alternate Tax (MAT) etc have been taken in accordance with Income tax rules in India prevalent at the time of investment decision.

The calculations were provided in the excel spreadsheet and verified to be correct. The project IRR for the WTGs belonging different promoters is as provided below:

Sl. No.	Company	Wind mill Capacity (MW)	Project IRR (Without GHG Benefits)
1	UIC Udyog Ltd.	5	8.75 %
2	Khatau Narbheram and Co.	1.25	5.47 %
3	Hind Metals and Industries (P)	1.5	8.60 %

Sl. No.	Company	Wind mill Capacity (MW)	Project IRR (Without GHG Benefits)
	Ltd.		

Discussion regarding sensitivity analysis: Project developer has also carried out the sensitivity analysis to demonstrate the robustness of the presented financial analysis. Project developer considered all important parameters which can affect the financial analysis of the project for example, project cost, O& M costs, plant load factor (PLF) and electricity tariff. However, since the project cost and O&M cost have been sourced from the purchase order placed by the project promoters, the possibility of variation in these parameters is very less. In addition to this, PJRCDM also analysed the possibility of variation in the tariff rates for the generated electricity in the state of Maharashtra and Gujarat. For the WTGs installed in the state of Gujarat, PJRCDM was able to verify from the Gujarat state electricity regulatory commission tariff order [10] that tariff for wind power projects in the state of Gujarat has been fixed at the rate of INR 3.37 per unit of electricity for the entire lifetime of the project. This has further been verified from the power purchase agreement signed between the state utility and the project promoter [8] Hence, the variation in the tariff rate for this particular project is very unlikely.

Furthermore, even in the state of Maharashtra, the electricity regulatory commission in its tariff order [9] has fixed the tariff for wind power projects at INR 3.50 per unit with INR 0.15 escalation per year till 13th year of operation of the project. After 13th year of operation, the tariff structure for wind power projects will be revised. Considering the current trends in the electricity market in India, tariff structures for wind power projects are likely to see a falling trend in coming future. Knowing this fact, Project promoters have still carried out the financial analysis of the projects with very conservative figure i.e. escalated figure in the 13th year of operation of the WTGs. Analysis of all these facts provides PJRCDM with sufficient evidence to confirm that the financial projections presented by the project promoters from the state of Maharashtra are based on conservative assumptions.

Variation in the plant load factor: Assuming constant tariff, plant load factor or the annual generation from the WTGs is an important factor that can affect the financial analysis of the projects. For all the WTGs in both states i.e. Maharashtra and Gujarat, technology supplier has provided the guaranteed generation figure only for the first year of operation and that too is at 100% grid availability. Hence, for the remaining years of operation, PP has used the average PLF declared by the respective state electricity regulatory commissions. Hence, all the project promoters considered the variation in this parameter till that value at which the project IRR touches the benchmark. The results of such analysis is as presented in the table below:

Project Proponent	Benchmark %	Sensitivity Analysis		
		PLF	Generation Lakh Units	IRR %
UIC Udyog	10.5	22.56%	98.81	10.5
Hind Metals	10.5	22.72	24.88	10.50%
Khatau Narbheram	11.25%	33.00%	43.36	11.25%

PJRCDM assessed the possibility of occurrence of such scenarios in both the states. It was observed that the average PLF in the state of Maharashtra during the last few years has been very low (www.mahaurja.com) and has not even reached 20% as declared by Maharashtra

state electricity regulatory commission in its tariff order [9]. This is further supported by the actual PLF achieved by the project WTGs in Maharashtra after their implementation.

Sl. No	Project Proponents	Actual PLF based on actual generation data from commission till Dec 2008
1	UIC Udyog	17.01%
2	Hind Metals	12.96%

For the WTGs installed in the state of Gujarat, PJRCDM was able to verify that project IRR was not able to cross the benchmark even after considering the guaranteed generation provided by the supplier. Hence, such type of variation in the PLF is highly unlikely.

The above analysis clearly demonstrates that the WTGs belonging to different promoters do not represent a financially attractive venture to them. The proposed project, though an environmental friendly project, involves higher costs compared to the returns from the same. Even then the promoters took the risk and went ahead with the implementation of the project. Hence, it is PJRCDM's opinion that the proposed project can not be considered as business-as-usual and is additional.

3.3 Monitoring Plan

The project proponents have applied approved baseline methodology AMS-I.D., version 14 which has been approved under the CDM programme. The total installed capacity of the bundle is 7.75MW which is less than the qualifying limit of 15 MW for type I small scale project activities.

The monitoring plan consists of monitoring the energy generated by the project activity as measured by the installed energy meters. External metering system consists of two electronic trivector energy meters designated as main and check meters which is located at the grid sub-station and the internal meters are located at the outlet of the individual wind turbine generators. Internal meters provide the gross electricity generation by the individual WTG while the external meters provide the cumulative electricity generation from "n" number of WTGs connected to the grid substation meter. Net electricity supply by individual wind turbine generator (WTG) is calculated based on the main meter reading (at the grid substation) and the internal meter located at the outlet of the individual WTG. The monthly bill raised by the individual WTG owner is based on this calculated value. For the project under consideration, the same calculated value (to be cross verified from the monthly bill) has been used for the emission reduction calculations.

The main meter reading is taken monthly in the presence of third party, State Electricity Board officials of the respective states i.e. Maharashtra and Gujarat as a Joint Meter Reading (JMR) exercise.

The responsibility of measuring parameters rests with the Operations & Maintenance contractor who is also the technology provider. The data is archived electronically and the retention time for keeping of records is defined in the PD as two years in addition to the crediting period.

The calibration frequency for the energy meters is defined as annual and the same will be carried out by the electricity authorities of the respective states. The accuracy class of the main and check meter connecting the WTGs installed in the state of Maharashtra to Maharashtra State Electricity Distribution Company ltd is 0.2 class. Similarly the accuracy of

the main and check meters connecting the WTGs installed in the state of Gujarat to Gujarat Electricity Transmission corporation ltd is 0.5 class.

Regarding the accuracy of the internal monitoring system, PJRCDM was able to verify that the controller meters installed on the individual WTGs are micro-processor based controllers and are reliable. It uses a Woodward Multi function Relay that have three current inputs from CT and three direct voltage inputs (690 Volts). The analog values of current / voltage are converted into digital signal internally using A/D Converters at very high sampling rate. Furthermore, PJR was also able to verify against the letter provider by the equipment supplier that the data provided is accurate and reliable. Given that the final emission reductions are based on the 3rd party data, sourced from the break up sheets and given that it is based on this data that the grid company makes payment to the individual proponents, PJR is of the opinion, it is reasonable to assume that the same will be correct.

The grid emission factor has been determined ex-ante and is not monitored.

3.4 Calculation of GHG Emissions

The GHG source for baseline of the project has been chosen as CO_2 and no other sinks and reservoirs for either the baseline or project activity have been identified. This is justified as per the applicable methodology.

The baseline of the project activity is kWh produced by the renewable generating unit multiplied by an emission coefficient (kg CO_2/kWh) calculated as a combination of operating margin and build margin according to the procedures prescribed in the 'Tool to calculate the emission factor for an electricity system'.

Emission reductions for the proposed project have been calculated as:

Emission reductions (ER) = Baseline emissions (BE) – Project emissions (PE) – Leakage (L)

$$ER = BE - PE - L$$

Since the proposed project is a renewable energy based project, hence, no project emissions and leakage have been considered in accordance with the baseline methodology AMS-I-D, version 14 [3].

Hence, the final emission reductions resulting from the proposed bundled project is equivalent to the baseline emissions.

Baseline emissions (BE) = Net amount of electricity generated by the project in a year (EG) X emission factor of the southern regional grid (EF)

$$BE_y = EG_y \times EF$$

The net annual generation of the project is a metered value. As the project activity is exporting electricity to a national grid which is contributed mainly by fossil fuel based power plants, the emission factor has been evaluated as a combination of build margin and operating margin as calculated by version 01.1 of "Tool to calculate the emission factor for an electricity system".

In India the data for determining the Build Margin (BM) and Combined Margin (CM) is determined by Central Electricity Authority (CEA), a Government body under the Ministry of Power, Government of India. This data is made available on the official website in the form of a database and is updated annually.

PJR CDM confirms that the database is an official publication of the Government of India for the purpose of CDM baselines. The OM in the CEA database is calculated *ex-ante* using the simple OM approach based on the generation weighted average emissions per electricity unit of all fossil-fuelled generating sources serving the system over a three year period of 2006-07

to 2008-09. BM is calculated *ex-ante* based on the 20% most recent capacity additions in the grid based on net generation for the year 2008-09 as described in tool to calculate the emission factor for an electricity system. The data has been sourced for Version 04 of the CO_2 database, which is the current version.

The ex-ante fixed combined margin emission factor for the North East West North east (NEWNE) regional electricity grid of India has been calculated to be 0.90 tCO_2e/MWh.

The net emission reductions accruable from the project activity have been estimated at an average of 11,922 tCO_2e per annum.

3.5 Environmental Impact

The project activity is a renewable energy bundled project with a cumulative capacity of 7.75 MW. This does not warrant any environmental impact assessment to be carried out as per the current law of India.

3.6 Comments by stakeholders

A stakeholders' meeting was organized by the project proponents in both the states i.e. Dhule, and Nandurbar district of Maharashtra state and Kutchh district of Gujarat. Stakeholder meeting in Gujarat was carried out on 20 April 2008 in village Arikhana and in Maharashtra, it was carried out on 19 June 2007. Various stakeholders, directly or indirectly involved in the project activity, were invited and participated in the meeting. Invitation letters sent to the identified stakeholders and the minutes of meeting with the stakeholder has been verified by PJRCDM. [11]. All the relevant stakeholders have provided positive opinion about the project.

4 VALIDATION CONCLUSION

Perry Johnson Registrars Clean Development Mechanism Inc. (PJRCDM Inc) has carried out the validation of the project "Bundled grid-connected wind electricity generation project identified as Bundle E3 in Maharashtra and Gujarat, India" in different villages of Dhule and Nandurbar districts in Maharashtra and Kutchh district in Gujarat state of India. The validation was carried out to independently assess whether the project conforms to the qualification criteria and requirements of Voluntary Carbon Standard (VCS) 2007.1, including the baseline and monitoring methodology applied. The VCS Program provides the standards and framework for independent validation based on ISO 14064-2:2006 and ISO14064-3:2006 standards.

PJRCDM's approach is risk-based, drawing on an understanding of the risks associated with the meeting of VCS 2007.1 standard requirements. The assessment was based on the review of project description (PD), supporting evidences, site interview, including other enable PJRCDM to provide reasonable assurance that the information reported in the PD is complete explanations where necessary to and materially correct. Our scope and conclusion is thus limited to the above evaluation.

The project activity has applied baseline and monitoring methodology, AMS-I.D., version 14 "Grid connected renewable electricity generation" which is an approved methodology under the CDM programme and is acceptable under VCS 2007.1. The baseline has been determined in accordance with the stated approved baseline methodology.

In our opinion, it is sufficiently demonstrated that the project is not the baseline scenario and emission reductions resulting from the project activity are real, permanent and are additional to what would have occurred in the absence of VCS project activity. Further, the monitoring plan makes adequate provision for ensuring transparency and accuracy during project monitoring.

The total emission reductions from the project are estimated to be 11, 922 ***tCO_2e*** *per year over the selected 10 year crediting period starting from 05 February 2007. This estimate is fair given that the underlying assumptions do not change.*

To summarise, it is PJRCDM's opinion that the project as described in the VCS PD Version 03 dated 05 November 2009 meets all relevant VCS 2007.1 requirements and correctly applies approved CDM simplified baseline and monitoring methodology AMS-I.D, version 14.

Project Manager
PJRCDM

(Site Program Manager)
PJRCDM

APPENDIX I: DOCUMENTS REVIEWED

Sl. No.	Document reference
[01]	VCS PD, version 03, dated 05 November 2009 and the previous versions of the same.
[02]	VCS 2007.1 Standard, Program Guidelines and Registration and Issuance Document.
[03]	CDM approved small scale methodology, AMS I D Version 14
[04]	Financial calculation excel sheets for all the WTGs belonging to different promoters.
[05]	Emission reduction calculation sheet.
[06]	Purchase order copies: M/s UIC Udyog Ltd :Issued to M/s Suzlon Energy Ltd dated 13 July 2006. M/s Hind Metals and Industries Ltd: Issued to M/s Suzlon Energy ltd dated 10 June 2006. M/s Khatau Narbheram: Issued to M/s Suzlon Energy Ltd dated 05 January 2007.
[07]	Commissioning certificates of all the WTGs belonging to different promoters: M/s UIC Udyog ltd: Issued by Maharashtra State Electricity distribution company ltd dated 02 April 2007 stating the commissioning date of the 2 WTGs (K-542 and K-543) as 31 March 2007. PJRCDM also reviewed another commissioning certificate issued by the same authority for WTGs (K-537 and K-539) stating the date of commissioning as 29 March 2007. M/s Hind Metals and Industries Ltd: Issued by Maharashtra State Electricity distribution company ltd dated 14 February 2007 stating the commissioning date of the WTG as 05 February 2007. M/s Khatau Narbheram: Issued by Gujarat Energy development Authority dated 17 April 2007 stating the commissioning date of the WTG (W-55) as 31 March 2007.
[08]	Power purchase agreements between the WTG owners and Maharashtra State Electricity distribution company ltd. for the sale of electricity. M/s UIC Udyog Ltd: between PP and Maharashtra State Electricity distribution company ltd dated 24 May 2007. M/s Hind Metals and Industries Ltd: between PP and Maharashtra State Electricity distribution company ltd dated 28 February 2007. M/s Khatau Narbheram: between PP and Gujarat Urja Vikas Nigam Limited (GUVNL) dated 06 December 2007.
[09]	Maharashtra Electricity Regulatory Commission (MERC) 24 November 2003 tariff order.
[10]	Gujarat Electricity regulatory commission (GERC) tariff order dated 11 August 2006.
[11]	Documents related to stakeholder consultation held on 20 April 2008 in the state of Gujarat and on 19 June 2007 in Maharashtra. Attendance sheet, invitations sent and minutes of meeting were verified by PJRCDM.
[12]	Validation and verification contract between PJRCDM and project promoters, dated 17 November 2008.

APPENDIX II

Resolution of Corrective Action and Clarification Requests: - **Bundled grid-connected wind electricity generation project identified as Bundle E3 in Maharashtra and Gujarat, India**

Draft report clarification requests and corrective action requests by validation team	Ref. To the section of the PD	Summary of project owner response	Validation team conclusion
CAR 1: PP is requested to clarify the period for which the monitored data and records will be archived.		The project proponents wish to clarify that the monitored data and relevant records will be archived for a period of two years beyond the crediting period of the project activity under consideration. The same has been provided in section 3.2 of the revised PD: version 02 submitted to the validator.	- The issue has been addressed in the revised version of the VCS PD. The same has been verified by PJRCDM. CAR 1 is closed.
CAR 2: PP is requested to provide the following: - Please provide the role responsibilities of PP for monitoring system - The uncertainties in data monitoring may arise on account of the defects in meters. The procedures to deal with defects in meters at interconnection points need to be substantiated in the PD. - Project participant has also not defined procedure for such adjustments and uncertainties on account of defects in other	3.3.	The queries have been addressed as under: - Roles and responsibilities of the project proponent and contracted agencies with respect to project monitoring have been further highlighted in section 3.4 of the revised PD: version 02 submitted to the validator. - Uncertainties in data monitoring on account of probable defects in energy meters have been addressed in the section 3.2 of the revised PD: version 02 submitted to the validator. - Procedures of adjustments in the event of meter failures have been addressed in the section 3.2 of the revised PD: version 02 submitted to the validator. - Procedure of cross-checking the data as per the prevalent monitoring practice on site has been detailed in section 3.2 of the revised PD: version 02 submitted to the validator. The calibration	Revised VCS PD has been reviewed by PJRCDM. CAR 2 is closed.

Draft report clarification requests and corrective action requests by validation team	Ref. To the section of the PD	Summary of project owner response	Validation team conclusion
meters. - VCS PD does not define method of cross checking the data. Additionally, the calibration frequency of the meter is to be defined. - Project participant has not defined the procedures for internal audits and procedures for performance reviews and corrective actions.		frequency of the energy meters has also been mentioned in section 3.2 of the document. - Procedures for internal audits and procedures for performance reviews and corrective actions has been highlighted in section 3.4 of the revised PD: version 02 submitted to the validator.	
CL 1: - Project developer is also requested to provide the geographical coordinates of the WTGs installed under the project activity in section 1.5 of the VCS PD.	1.5	The geographical coordinates of the WTGs installed under the project activity have been provided in section 1.5 of the revised PD: version 02 submitted to the validator.	Geographical coordinates have been included in the revised version of the VCS PD. CL 1 is closed.
CL 2: - Provide evidence for the operational lifetime of the WTGs installed under the project activity. - Please provide evidence for the commissioning certificates of all the WTGs considered under the project activity. - Since the commissioning dates of WTGs	1.6	- Evidence substantiating the operation lifetime of the WTGs installed under the project activity as 20 years have been submitted to the validator in the form of GL Test Certificates for WTGs issued by the equipment supplier Suzlon Energy Limited. - Commissioning certificates of the WTGs installed under the project activity have been submitted to the validator. - The emission reduction calculations for 1st year of operation have been revised in PD: version 02 submitted to the validator. - The emission reduction figures in the revised PD: version 02 have been computed on the basis of estimated value of annual generation	- Documents provided have been verified by PJRCDM. CL 2 is closed.

Draft report clarification requests and corrective action requests by validation team	Ref. To the section of the PD	Summary of project owner response	Validation team conclusion
are different, hence, emission reduction calculations for the 1st year of operation need to be revised keeping in view the number time. - Also, please include the estimated emission reduction figures based on the estimated value of annual generation and plant load factor (PLF) instead of basin		obtained by considering PLF as per the tariff orders of the respective states.	
CL 3: Under section 1.8 of the PD, please include description of expected annual generation and plant load factor (PLF) based on the estimated figures instead of using actual figures.	1.8.	The description of expected annual generation and PLF has been revised based on estimated figures instead of actual figures in section 1.8 of the revised PD: version 02 submitted to the validator.	VCS PD has been revised and the same has been reviewed by PJRCDM. CL 3 is closed.
CL 4: <u>Project technology and project description:</u> PJR CDM requests PP to clarify the following points and the relevant information be included in the VCS PD: - Please provide the evidence for the plant load factor of different WTGs installed under the project activity at different locations. At present, project developer has mentioned the actual PLF figures, PJRCDM requests PP to provide the evidence for the estimates PLF at the project conceptualisation stage and all calculations in the PD needs to be based on the estimated PLF.	1.9	The plant load factor in section 1.9 has been obtained from capacity utilization factor provided in tariff orders of the respective states.	- Emission reduction calculations have been revised in line with the PLF declared in the tariff orders of the respective states. The technology supplier has guaranteed generation only for the first year of operation, hence, the same has been used for the first year and for remaining years, PP has used the PLF as declared by the tariff orders in the respective

Draft report clarification requests and corrective action requests by validation team	Ref. To the section of the PD	Summary of project owner response	Validation team conclusion
			states. The assumption considered is reasonable in PJRCDM's opinion. CL 4 is closed.
CL 5: <u>Compliance with the relevant laws and regulations:</u> PP is requested to provide all the approvals, licenses, clearances, agreements, commissioning certificates etc for all the individual PPs to PJR CDM for verification. - Furthermore, PJRCDM also observed that the table provided in section 1.10 of the PD does not provide information about all the WTGs owned by UIC Udyog ltd. eg commissioning dates of only two WTGs are mentioned in the table. Please check and complete the information in the table.	1.10	- All approvals, licenses, clearances, agreements, commissioning certificates have been submitted to the validator. - The details of commissioning certificated for UIC Udyog Limited issued by Maharashtra State Electricity Distribution Company Limited are as follows: • SE/DHL/Tech/Wind/2733, dated 02/04/2007 for WTG No. K-542 and K-543 • SE/DHL/Tech/Wind/2702, dated 30/03/2007 for WTG No. K-537 and K-539. Since four WTGs promoted by UIC Udyog Limited are clubbed together in groups of two turbines each (K-542, K-543 and K-537, K-539), two sets of documents are available for the same.	- PJRCDM has reviewed the documentation provided by the project promoters. CL 5 is closed.
CL 6: <u>Demonstration that the project has not created any environment credits:</u> Project developers have stated that no mechanism of awarding the environmental credits is prevalent in the host country. PJR CDM requests PP to justify this statement for the WTGs installed in the state of Maharashtra keeping in view the MERC RPS order dated 16 August 2006. Please explain how and what benefits were	1.13	The MERC RPS Order dated August 16, 2006 imposes electricity purchase obligations upon electricity distribution and consumption companies in Maharashtra by means of a mandatory minimum quantum to be sourced from renewable energy sources, as quoted below from the Order (link: http://www.mahaurja.com/PDF/RPSFramework.pdf): "The "minimum percentage" as indicated above shall be applicable to all existing and future distribution licensees in Maharashtra as well as to open access and captive consumers" However, there are no additional benefits to be availed by the	- The issue has been addressed in the revised version of PD. PP has defined the procedures to deal with such a situation, if any, in future. CL 6 is closed.

Draft report clarification requests and corrective action requests by validation team	Ref. To the section of the PD	Summary of project owner response	Validation team conclusion
obtained by the project proponents according to RPS order effective from yr 2006. Please confirm with an undertaking from each of the developer that no such revenues have been availed by them		renewable electricity generation companies over and above the electricity sale tariff as determined and signed with the relevant authority(ies). Hence, no "benefits" were obtained by the project proponents under the said scheme.	
CL 7: <u>Clarification regarding the WTGs which are under CDM validation:</u> It is stated in the VCS PD, version 01 that some of the WTGs in the bundle have applied for CDM credits also and are still in the validation stage. PJRCDM requests the project proponents to explain the procedures to avoid double counting if those WTGs get registered under CDM.	1.14/1.13	The project proponents wish to clarify in this regard that the WTGs that have applied to the UNFCCC for registration under CDM intend to avail the retroactive GHG abatement credits under VCS. CERs would be claimed under CDM upon registration and commencement of the crediting period under the mechanism. Furthermore, in the event that the application under CDM is unsuccessful in the future, credits would be continued to be claimed under VCS. This procedure for avoidance of double-counting of credits in the event of CDM registration has also been explained in section 1.13 of the revised PD: version 02 submitted to the validator.	- Procedures to deal with such situation has been included in the revised version of the VCS PD. CL 7 is closed.
CL 8: <u>Determination of baseline scenario:</u> At present, PP has discussed only two alternatives i.e. continuation of current practice and project without CDM revenues. PJR CDM requests PPs to justify that the list of alternatives provided here is complete.	2.4	In line with the validator's observations, the baseline scenario has been revised and updated in section 2.4 of the revised PD as per the approved methodology AMS-I.D. version 14.	- Baseline has been defined in line with the baseline methodology AMS ID, version 14. CL 8 is closed.

Draft report clarification requests and corrective action requests by validation team	Ref. To the section of the PD	Summary of project owner response	Validation team conclusion
CL 9: <u>Clarification related to additionality of the project:</u> a) Investment barrier: PP is requested to provide the documented evidences for each input values assumptions made viz, plant load factor (PLF), tariff, annual escalation in tariff, interest rate, income tax, MAT, O & M costs, escalation etc. b) PP is also requested to provide evidence for the benchmark selected. Please also include discussion regarding the validity of the benchmark at the project conceptualisation stage and also the suitability of the applied benchmark to the financial indicator selected for the financial analysis. c) The sensitivity analysis also needs to include parameters that constitute more than 20% to the total revenue or costs of the project. Hence, justification for exclusion of the key indicators like the investment cost and the O&M costs from sensitivity analysis needs to be provided. - Further, project developer is also requested to substantiate the argument presented in financial sensitivity analysis with facts.	2.5	a) The relevant supporting documents have been submitted to the validator as under: -PLF as per MERC and GERC tariff order - Tariff and escalation in tariff as per PPA signed by the individual project promoters - Interest rates as per RBI prime lending rate Income tax and MAT rates as per financial budget of India for the year 2006-07 - O&M cost and annual escalation as per PO placed by the respective project proponents to the equipment supplier. - The validity of benchmark used has been justified in section 2.5 of the revised PD: version 02 submitted to the validator. b) Evidence for the benchmark(s) selected has been provided in the form of web-links to documents published by the Government of India available from public domain sources. At the time of project conception, the project proponent had conducted an investment analysis by comparing the internal rate of return against a suitable benchmark. For the project to be financially feasible, the returns should be enough to service the debt involved, i.e., greater than or at least equal to the prime lending rate (PLR). This is because the PLR is the benchmark interest rate at which commercial banks in India lend to their most credit worthy customers and hence companies borrow at a rates equal to or higher than the PLR. Hence, for any project to be financially attractive, the IRR of the project must be higher than the rate of borrowing on debt (i.e. higher than the PLR). Accordingly, if any project's IRR does not exceed the PLR, it could be considered a financially unattractive project. c) The parameters constituting more than 20% of the costs or	- Evidences for the input values have been verified by PJRCDM - Evidence for the benchmark selected has also been verified by PJRCDM. - VCS PD has been revised to include the discussion regarding the suitability of the benchmark and also the sensitivity analysis. The same has been reviewed by PJRCDM. CL 9 is closed.

Draft report clarification requests and corrective action requests by validation team	Ref. To the section of the PD	Summary of project owner response	Validation team conclusion
		revenues associated with the project activity are: - Total project cost: The project cost has been determined at the time of evaluation of project feasibility based on proposals/ offers obtained from equipment supplier for WTG supply and associated services. Purchase Orders have also placed to the equipment suppliers by the project proponents for the same amounts. Hence the supplier is bound to provide the WTG and associated services at the mutually agreed prices and rates as reflected by the above-mentioned documents, the same being considered for the IRR calculation. Thus sensitivity analysis need not be considered for the parameter: project cost appearing in the IRR calculation. - The sensitivity analysis for the revenue from sale from electricity generation has been explained in section 2.5 of the VCS PD: version 01 already submitted to the validator. This parameter is represented by: - Tariff for electricity sale - PLF	
CL 10: Monitoring plan : - Monitoring section needs to be revised keeping in view the calculations defined for net electricity export to the grid in the section below. From the discussion provided below, it seems that ER are, to a large extent, dependent on the monitored value of gross generation from the individual WTGs and also the monitored value	3.3	- The project proponents wish to clarify in this regard that readings of the individual meters at the WTG outlet would be used for determining the gross generation of that WTG. Furthermore, the main meter and check meter readings shall be used to determine the transmission losses attributable to that WTG for the purpose of determining its net generation. The method has been explained in section 4.2 of the PD: version 01 already submitted to the validator. It may also be noted that the net electricity generation for each WTG would be sourced from the electricity sale invoices for the purpose of GHG emission reduction calculation. The details of the grid sub-station for the WTGs have been included in section 1.5 of	- Discussion provided by PP is deemed reasonable. CL 10 is closed.

Draft report clarification requests and corrective action requests by validation team	Ref. To the section of the PD	Summary of project owner response	Validation team conclusion
of export at the grid substation. Further, also clarify whether the WTG located in the Gujarat will also follow the same monitoring procedure. Please add the location of grid substation for WTGs located in both the states i.e. Maharashtra and Gujarat. - Please explain the procedures to ensure the accuracy of monitored data. Please include the accuracy class of the monitoring equipments, calibration frequency, and procedures to be followed in case both i.e. main meter and check meter are not working. - In the table for the parameter net electricity exported to the grid, $E_{EXP,NET,i,y}$, PP has stated that "*EEXP,NET,,i,y will be calculated from data measured by the generation meters at the outlet of the generator of each WTG by means of measurements from the main meter (check-meter also present) at the grid sub-station.(Joint meter reading)*". Please check and correct this		the revised PD: version 02. - The WTG operating in Gujarat would also follow similar monitoring procedure. - The relevant details sought by the validator have been provided in section 3.2 of the revised PD: version 02 submitted to the validator. - Please refer to the clarification provided above pertaining to used of generation meters at the outlet of each WTG for calculating $E_{EXP,NET,i,y}$ - The frequency of monitoring of the parameters have been included in section 3.2 of the revised PD: version 02.	

Draft report clarification requests and corrective action requests by validation team	Ref. To the section of the PD	Summary of project owner response	Validation team conclusion
statement because VCS PD also states that main meter (and check meter) gives cumulative electricity generation of all the WTGs connected to it. - The frequency of the monitoring for each of the parameters is to be included in the PD.			
CL 11: <u>GHG emission reduction calculations:</u> - PP is also requested to provide the estimated emission reduction figure (based on the rated capacity of the turbines, plant load factor and emission factor) instead of emission reductions based on actual annual yearly electricity generation.	3.3/4.1/ 4.2/4.3/4.4	- Relevant changes have been made in the revised PD: version 02 submitted to the validator. - The ex-ante GHG emission reductions have been calculated on the basis of the rated WTG capacity and PLF as per the tariff orders of the respective states. The same has been provided in an excel-sheet titled Bundle 3_ex-ante ER.	Revised ER calculation sheet has been verified by PJRCDM. CL 11 is closed.
CL 12: <u>Environmental clearance</u>: Please demonstrate how the proposed project is in compliance with the local environmental regulations/policies.	5	The compliance of the project activity with relevant local and national regulations/ policies has been explained in the section 5 on the PD: version 01 already submitted to the validator. Furthermore, the project proponents wish to highlight that relevant regulatory approvals and clearances have been obtained for the WTGs installed in the project activity in the form of infrastructure clearance, and commissioning certificates.	- Relevant documentation like commissioning clearance, power purchase agreement and infrastructure clearance have been verified by PJRCDM. CL 12 is closed.

Draft report clarification requests and corrective action requests by validation team	Ref. To the section of the PD	Summary of project owner response	Validation team conclusion
CL 13: Please provide evidence for the stakeholders consultations.	6	The mode of invitation of stakeholders for the stakeholders' meeting and the summary of discussions in the same in the form of minutes of the meeting has been submitted to the validator. The same has also been briefly explained in the revised PD: version 02 submitted to the validator.	Minutes of meeting with the stakeholders has been verified by PJRCDM. CL 13 is closed.
CL 14: Please provide evidence for all the events from the project initiation till date.	7	Evidence for the major milestones achieved for the WTGs in the project activity have been submitted to the validator in the form of the following documents: - Purchase order placed to equipment supplier - Commissioning Certificate	- Evidences have been verified by PJRCDM. CL 14 is closed.
CL 15: Please provide evidence for the proof of title.	8.1.	The following documents have been submitted to the validator as evidences of proof of title for the WTGs constituting the project activity: - Power Purchase Agreement - Land sale/lease deed - Commissioning Certificate	Power purchase agreement, commissioning certificatea and land sale/lease deed have been verified as the proof of title. CL 15 is closed.

Draft report clarification requests and corrective action requests by validation team	Ref. To the section of the PD	Summary of project owner response	Validation team conclusion
CL 16: ➢ The reactive energy withdrawal charges are not considered in the profitability statement. Justify ➢ The sensitivity analysis should be presented in Excel sheet. ➢ Justify why depreciation as per Income tax and as per Companies Act is considered only on the cost of equipment. ➢ Justify why cost of erection, processing charges and substation charges are neither depreciated nor written off but these costs are considered as an outflow for calculating project IRR.		• The relevant change has been incorporated in section 2.5 of the revised PD: version 03 submitted to the validator. • The relevant change has been incorporated in the revised document submitted to the validator. • The relevant change has been incorporated in the revised document submitted to the validator. • The relevant change has been incorporated in the revised document submitted to the validator. • The relevant change has been incorporated in the revised document submitted to the validator.	- Revised IRR sheet has been reviewed by PJRCDM. CL 16 is closed.

Draft report clarification requests and corrective action requests by validation team	Ref. To the section of the PD	Summary of project owner response	Validation team conclusion
CL 17: 1.Hindmetals and UIC Udyog ltd: • Substantiate with evidence for considering tariff at Rs.5.30 per unit from the 14th year onwards. • Provide bank loan sanction documents.		• The Maharashtra Electricity Regulatory Commission (MERC) order dated November 24, 2003 mentions a tariff rate of Rs. 3.50 per unit with an annual escalation of Rs. 0.15 per unit up-to 13th year for Group III wind power projects in Maharashtra. Rate From the 14th year is not clear. For the present case, tariff rate applicable for 13th year i.e. Rs. 5.30 has been taken for 14th to 20th year for carrying out investment analysis, which yields projection of a conservative return. This is because the State Electricity Commission has hinted at reduction in this tariff rate after the 13th year. This fact is further substantiated by MERC Order dated November 20, 2007 (Case No. 33 of 2007) on Group II projects where the tariff has been frozen at 90% of lowest HT Industrial Energy Tariff. Similar treatment has been anticipated for Group III projects. http://www.mercindia.org.in/pdf/Ord_20_11_2007_CNo_33_of_2007.pdf • The relevant document substantiating the project proponent's intention of availing/application for loan to finance the project activity under consideration has been submitted to the validator.	- Explanation provided by the project developer is deemed reasonable. CL 17 is closed.

Draft report clarification requests and corrective action requests by validation team	Ref. To the section of the PD	Summary of project owner response	Validation team conclusion
CL 18: • The O & M cost is Rs.14.50 lakhs. • Provide bank loan sanction documents. • Justify for considering O & M cost on power evacuation facility in the profitability statement. • MAT is not applicable for partnership firms. Justify for considering the same in the financial statements. • Justify how the depreciation rate as per Companies Act is applicable to partnersh**ip firms**		• The relevant change has been incorporated in revised document submitted to the validator. • The relevant document substantiating the project proponent's intention of availing/application for loan to finance the project activity under consideration has been submitted to the validator. • The relevant change has been incorporated in revised document submitted to the validator. • The relevant change has been incorporated in revised document submitted to the validator. • The relevant change has been incorporated in revised document submitted to the validator.	- Revised IRR calculations have been reviewed by PJRCDM. CL 18 is closed.