Voluntary Carbon Standard 2007.1

VALIDATION REPORT

33.9 MW Bundled Wind Power project in states of Karnataka and Tamil Nadu

Project No.: V-3-I-01-B-0101

Version No.: 01

Name of Validation company:	Date of issue:
Perry Johnson Registrars CDM Inc.	2010-03-29
Report Title:	**Approved by:**
VCS Validation report for "*33.9 MW Bundled Wind Power project in states of Karnataka and Tamil Nadu*".	S. V. Jamble
Client:	**Project Title:**
Simran Wind Projects Private Ltd. Super Wind Projects Private Limited	33.9 MW Bundled Wind Power project in states of Karnataka and Tamil Nadu

Summary:

Simran Wind Projects Private Ltd has commissioned Perry Johnson Registrars Clean Development Mechanism Inc. (PJRCDM) to perform validation of the project – "33.9 MW Bundled Wind Power project in states of Karnataka and Tamil Nadu" under Voluntary Carbon Standard (VCS) 2007.1. 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 project activity involves installation and operation of wind turbine generators (WTGs) of 19 x 1.5 MW and 9x.60 MW capacities at Karnataka and Tamil Nadu. The power generated from the project activity is sold to the Southern grid of the India.

The project activity has correctly applied the ACM0002 methodology version 10 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 representatives of the project proponent and carried out a review of relevant documents. A number of Clarification Requests (CLs) and Corrective Action Requests (CARs) were issued which were subsequently resolved by the project proponent.

Total GHG emission reduction achievable by the project activity has been estimated at be 78,669 tonnes of CO_2 equivalent per annum.

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.

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V-3-I-01-S-0101/ 01	37
Work carried out by:	**Work reviewed by**
Mathsy Kutty, Ajay Verma	Anjana Sharma

Abbreviations

CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEA	Central Electricity Authority, Ministry of Power, Government of India
CL	Clarification Request
FAR	Forward Action Request
GHG	Greenhouse gases
IPCC	Intergovernmental Panel on Climate Change
IRR	Internal Rate of Return
kWh	kilo watt-hour
KPTCL	Karnataka Power Transmission Corporation Limited
MW	Mega Watt
NEWNE	Northern Eastern Western North Eastern (NEWNE) Grid of India
PD	Project Description (VCS)
PJRCDM	Perry Johnson Registrars Clean Development Mechanism Inc.
PLF	Plant Load Factor
PP	Project Proponent
SWPPL	Simran Wind Projects Private Ltd
SUWPPL	Super Wind Projects Private Ltd
TNEB	Tamil Nadu Electricity Board
UNFCCC	United Nations Framework Convention on Climate Change
VCS	Voluntary Carbon Standard
VCU	Voluntary Carbon Unit
WTG	Wind Turbine Generator

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1 INTRODUCTION

Simran Wind Projects Private Limited (SWPPL) and Super Wind Projects Private Limited (SUWPPL), (hereinafter referred to as the "client" or "project proponent") have contracted Perry Johnson Registrars Clean Development Mechanism Inc. (PJRCDM) to perform validation of the project "*33.9 MW Bundled Wind Power project in states of Karnataka and Tamil Nadu*" (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 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.

1.2 Scope and Criteria

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 simplified baseline and monitoring CDM methodology ACM0002 version 10. 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.

1.3 VCS project Description

The project activity involves installation and operation of wind turbine generators (WTGs or machines) totalling 33.9 MW capacity in the state of Karnataka and Tamil Nadu in India. The power generated from the 12 x 1.5 MW WTGs in Karnataka is exported to the Karnataka Power Transmission Corporation Limited (KPTCL), while the power from the 9 x 0.60 MW and 7 x 1.5 MW WTGs in Tamil Nadu is exported Tamil Nadu Electricity Board (TNEB), state electricity grid operator to the Southern grid in India. Since, August 2006 the grid is operating in synchronised mode with the

integrated Northern Eastern Western and North Eastern (NEWNE) grid of India. The WTGs are expected to generate power with an average plant load factor (PLF) of 29.12% [09]. The unique identification details of the machines including the geographical coordinates are included below:

Company name	*WTG Location*	*Village / Town*	*District, State*	*State*	*Longitude*	*Latitude*
Super Wind Project Private Ltd	K-342	Mallikarjunpur	Gadag	Karnataka	75°45‘ 24.3’’N	14°5’ 20.5’’E
	K-345	Jalwadi	Gadag		75°47‘ 35.8’’N	15°5’ 7.8’’E
	K-346	Jalwadi	Gadag		75°47‘ 41.7’’N	15°5’ 1.9’’E
	K-347	Jalwadi	Gadag		75°47‘ 47.3’’N	15°4’ 55.1’’E
	K-350	Jalwadi	Gadag		75°48‘ 6.4’’N	15°4’ 31.9’’E
	K-69	Elkurnahalli	Chitradurga		76°27‘ 7.7’’N	14°5’ 12’’E
	K-70	Elkurnahalli	Chitradurga		76°27‘ 9.5’’N	14°5’ 4’’E
	K-71	Elkurnahalli	Chtitradurga		76°27‘ 10’’N	14°4’ 56.3’’E
Simran Wind Project Private Ltd	E-767	Kolumangondan	Dindigul	Tamil Nadu	77°27’ 25.4’’N	10°34’ 20.1’’E
	E-777	Kolumangondan	Dindigul		77°28’ 8.8’’N	10°34’ 24.7’’E
	E-778	Kovilammapalayam	Dindigul		77°27’ 59.7’’N	10°34’ 15.8’’E
	E-779	Kovilammapalayam	Dindigul		77°28’ .9’’N	10°33’ 43.3’’E
	E-780	Kovilammapalayam	Dindigul		77°27’ 36.8’’N	10°33’ 21.9’’E
	E-781	Kovilammapalayam	Dindigul		77°27’ 53.2’’N	10°34’ 32.8’’E
	E-782	Kovilammapalayam	Dindigul		77°27’ 40.3’’N	10°33’ 42.6’’E
	E-797	Kattur	Coimbatore		77°23’ 46.7’’N	10°55’ 41.8’’E
	E-86	Kattur	Coimbatore		77°22’ 21.4’’N	10°56’ 14.1’’E
	G-557	Midapadi	Dindigul		77°24’ 22.6’’N	10°33’ 10.5’’E
	G-970	Kannamanaickanur	Coimbatore		77°18’ 27.7’’N	10°33’ 0.7’’E
	Q-48	V.Kallipalayam	Coimbatore		77°20’ 21.3’’N	10°55’ 19.8’’E
	Q-51	V.Kallipalayam	Coimbatore		77°21’ 20.4’’N	10°55’ 27.6’’E
	Q-199	Kundadam	Erode		77°26’ 5.6’’N	10°49’ 48.7’’E
	Q-220	Kethairev	Erode		77°26’ 6.9’’N	10°48’ 15.3’’E
	Q-394	Kethairev	Erode	Karnataka	77°26’ 30.2’’N	10°48’ 5.2’’E
	H-29	Koppalahalli	Hassan		76°7’ 7.2’’N	13°11’ 6.8’’E
	H-34	Koppalahalli	Hassan		76°8’ 9.6’’N	13°12’ 3.99’’E
	K-75	Elkurnahalli	Chitradurga		76°9’ 21.96’’N	13°4’ 12.399’’E
	K-76	Elkurnahalli	Chitradurga		76°26’ 23.7’’N	14°05’ 20.5’’E

All the WTGs installed under the project activity have been supplied by M/s Suzlon (9 WTGs of the make S-52(0.60 MW) and 7 WTGs of make S-82 (1.50 MW) in Tamil Nadu and 12 WTGs of the make S-82 (1.50 MW) in Karnataka). The proposed project activity is a bundled wind power project with a total installed capacity of 33.9 MW [9] [12]. The net energy generation for the projects in Karnataka and Tamil Nadu were confirmed by PJRCDM (*Pls see section 3.1 of the report below)*

The lifetime of the machines stated is 20 years. PJR was able to confirm the same against the certificate provided by the manufacturer, Suzlon Energy Ltd **[20]**

1.4 Level of assurance

In line with VCS 2007.1 requirements and as per ISO 14064-3:2006 paragraph 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 ACM0002 (version 10) 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)
- 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
Mathsy Kutty	CDM validator	Desk review. Supervision of the resolution of issues, draft report and final report preparation.
Siddhartha N	GHG auditor	Site visit
Uma Shankar	GHG auditor	Site visit
Ajay Verma	GHG auditor - Trainee	Resolution of CLs and CARs, Draft report and final report preparation
Anjana Sharma	Technical reviewer	Technical review for the project activity.

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 carried out by PJRCDM, Inc. team Mr. Sidhartha N on 26th February 2010 to 1st March 2010 for the WTGs in Tamil Nadu and Mr. Uma Shankar, who carried out the site visit in Karnataka between 2nd to 4th March 2010, 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	***Interviewed on***
Mr Thamilarasu, Site incharge, Pushpathur, SISL Mr. Suthakaran, Customer relationship Manager, Coimbatore, Suzlon energy Ltd	• Project technical details, • Monitoring system, • Calibration practice, • Joint meter readings • Proof of title, • Baseline scenario • additionality and the assumptions used, emission reduction calculations, • stakeholder comments
Mr. Jitendra; Mr. Himakara Shiva Poojary Suzlon Energy Limited, O&M	
Mr. Shivananda Suzlon Enegry Limited , O&M	
Mr. M.K. Vijaykumar, Suzlon Energy Limited, O&M	

Furthermore, interactions with Mr. Sharique Ahmad and Mr. Phani from Pricewaterhouse Coopers, (the consultants for the project) were used to confirm selected information and to resolve issues identified in the document review.

During the site visit, PJRCDM verified the actual operation of the project as described in the PD. The system of controller energy meters and joint energy meters used for monitoring the sale of electricity sale to grid were examined. The monthly records for joint meter readings were reviewed.

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.

3 VALIDATION FINDINGS

3.1 Project Design

a) Project design/Technology used: The project activity includes a bundle of twenty eight (28) WTGs installed by two project developers - Simran Wind Projects Private Ltd and Super Wind Projects Private Ltd., (*as mentioned in section 1.3 of the report above).* The project activity involves installation of WTGs of capacity 0.60 MW and 1.5 MW, totalling to an installed capacity of 33.9 MW[9] [12]. All the WTGs installed under the project activity have been supplied by M/s Suzlon (9 WTGs of the make S-52 (0.60 MW) and 7 WTGs of make S-82 (1.50 MW) in Tamil Nadu and 12 WTGs of the make S-82 (1.50 MW) in Karnataka. The annual net energy generation for the projects in Tamil Nadu and Karnataka is estimated to be 83,265 MWh, which has been arrived at based on the PLFs of 28.92% for the WTG models S-82(1.50 MW) and 30.73% for the WTG models S-52 (0.60 MW) after adjusting the 95% machine availabilities factor. [9].

The net energy generation for all the WTGs installed in the states of Tamil Nadu and Karnataka has been arrived at, based on the guaranteed generation promised by the suppliers at 30.73%, and 28.92 % for the WTGs installed by SWPPL and SUWPPL. [9].

b) Project duration, crediting time and project start date:

The project proponent has considered 30th March 2008 as the project start date, being the date of commissioning of first turbine included in the bundle of all the 28 WTGs considered under the project activity. 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". PJR CDM verified the commissioning dates of all the 28 WTGs under the project activity from the commissioning certificates issued by the KPTCL and TNEB [12].

The project proponent has opted for a crediting period of 10 years starting from 1st April 2008, which can be renewed twice. The selected crediting period is reasonable keeping in view VCS 2007.1 guidance for such projects.

Operational lifetime of the proposed project has been defined as 20 years.

c) Ownership:

- Proof of title:

  The proposed project includes 28 WTGs installed by two different entities i.e. M/s Simran Wind Power Projects Limited and M/s Super Wind Power Projects Limited. The project activity includes each of these entities as project participants and hence, owns the emission reductions resulting from the bundled project under consideration. PJR was able to confirm the ownership of the emission reductions against the copies of the purchase order for the wind turbines in below table placed with Suzlon Energy Limited [9]. The same has been accepted by PJR CDM.

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

The proposed bundled project has not applied under CDM or any other GHG program. However, in the event the PP applies for any GHG program, it has been confirmed that the PP will claim emission reductions only under one GHG program at any given point of time (either VCUs or the other GHG program based ERs). PJRCDM was able to confirm the same against the letter of undertaking provided by the project participant [19]

As per the regulations announced by Central Electricity Regulatory Commission (CERC) dated 14th January 2010 Renewable Energy Certificates are not applicable to the project activity as PPA is already in place. However, in the event that such RECs are made available to the project activity, it has been confirmed by the PP that they would only claim either for the VCUs or the RECs. This would further be checked again during the verification period.

e) ***Project applicability to the VCS for projects rejected under other GHG programme (if applicable):*** The proposed project is not under CDM validation, however, is not rejected under the same scheme.

f) ***Whether the project is eligible under the VCS:***

- The proposed project is a renewable electricity project. The project activity will generate greenhouse gas (GHG) emission reductions by avoiding CO2 emissions from electricity generation by fossil fuel power plants connected to the grid. The project is also demonstrated to be additional compared with the business as usual scenario, hence, the project is anticipated to fulfil VCS 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 completed the validation activity within 2 years from the commissioning date. [12]

3.2 Baseline and demonstration of additionality

Assessment of applicability conditions of the methodology:

The project proponents have applied approved consolidated baseline methodology ACM0002, version 10, which has been approved under the CDM programme. The application of baseline methodology is justified:

- The project installs a new wind power project with a total capacity of 33.9MW, at a site where no renewable power plant was operated prior to the implementation of the project activity (Greenfield plant).
- The project is a green field project that represents electricity generation from a new wind generating machines and is not a capacity add-on or replacement/retrofit to an existing facility.
- The grid boundary selected for the project activity is the South 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.

This methodology also refers to the latest approved versions of the following tools:

- CDM Tool for demonstration and assessment of additionality version 5.2.
- Tool to calculate the emission factor for an electricity system, version 02

Baseline:

Baseline scenario for the proposed project has been identified in line with the baseline methodology – ACM0002. In the absence of project activity, *same amount of electricity would have been generated by the Southern regional grid as per the current grid mix and expected future capacity expansions.* The current grid mix and the expected future capacity expansions are reflected as the emission factor which is arrived at as the combined margin (CM) calculations described in the "Tool to calculate the emission factor for an electricity system".

Furthermore, the baseline emission is estimated as a product of the CM and the electricity delivered to the grid by the project. As proposed project activity is

exporting the power to the Southern grid, this becomes the baseline of the project activity. Validation team has verified this is from PPAs [13] provided by PP.

Additionality:

Since the project activity applies the CDM approved methodology, ACM0002, the project proponent used the "*Tool for demonstration and assessment of additionality*", *version 5.* for the assessment and demonstration of additionality [08].

The project participant has provided the steps for identification of the baseline scenario and additionality in section 2.5 of the PD. The validation team confirms that these steps are in line with the provision of the methodology.

i. The PP identified 2 possible alternatives to the project activity, viz., "*Implementation of the project without carbon revenues*" and "*no project activity*" under step-1a. All of these alternatives are legally allowed in India under step-1b.

Implementation of the project without carbon revenues: Scenario 1, has been eliminated from being the baseline scenario, since the IRR for the project activity without carbon revenues is 6.59%, 8.80% and 10.20% for the project by SWPPL in Tamil Nadu and Karnataka and by SUWPPL in Karnataka respectively. This is below the benchmark of 13%. (See additionality section below for more details). The proposed project itself, if undertaken without carbon revenues, is unlikely to be the baseline scenario.

No project activity:

No project activity would include electricity import from the grid. PJRCDM has verified that the project proponent is an independent power producer, investing in wind power projects only. Therefore, the investment in an equivalent capacity of a coal fired, natural gas, biomass and hydro power based power generation is not an option for the project proponent. This is in line with the tools of additionality, step 1.a. Thus, it has been adequately demonstrated in PDD that the only realistic and credible alternative for the baseline scenario 2 that is the equivalent capacity imported/provided by the Southern regional grid.

ii. The project activity generates electricity, which is sold to the Southern regional grid. Thus the project generates economic benefits from the sale of power. Since the project activity generates revenue without sale of carbon credits and the alternative to the project does not involve investments, a benchmark analysis was selected to demonstrate the financial unattractiveness of the project compared to the benchmark.

iii. PP has chosen the financial indicator as "*post tax project IRR*".

iv. Applied benchmark is as per EB guideline "Guidelines on the assessment of investment analysis" – EB 51, para-12.

v. PP has chosen the Prime Lending Rate (PLR) of five major banks in India as published by RBI as the benchmark. This benchmark has been deemed conservative given that most of the banks in India lend at interest rates equal to or higher than the PLR. The PP has considered the PLR at the time of placing the purchase orders, viz.; May, August and September 2007. This

works out to be 13 %. PJRCDM has reviewed the PLRs at the time of project start date – in the months of March, July, August, September and December 2008. It was seen that the average PLR for these months is the same at 13.25% – 14.0%, which works out to be 13.625%, which is higher than the 13% considered by the PP. Hence, PJRCDM is of the opinion that the 13% PLR benchmark is conservative. The validation team has been verified the supported document from PP.

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 project activity) and is reasonable.

Salvage value: A salvage value of 10% of initial equipment cost in addition to the total land cost has been also considered for financial analysis at the end of the lifetime of project activity. This is deemed conservative.

Tariff: The average tariff with no yearly escalation of INR 3.40 is in line with the KERC tariff order [16], for the 12 WTGs installed in Karnataka under SUPPL and SWPPL. PJRCDM has further confirmed against the power purchase agreement signed between the PP and the KPTCL [11]

In case of Tamil Nadu, 16 WTGs under SWPPL sell the energy generated to the grid. The PP has considered an average tariff of INR 2.90 for the entire operational lifetime which is in line with TNERC [17]. PJRCDM was able to confirm the same against the tariff rates as approved by the TNERC with effect from 18th May 2006 [16]

The operation and maintenance cost (O&M), Plant load factor, machine availability, line losses have been sourced from the purchase order. PJRCDM was able to confirm the total equipment cost against the orders placed with M/s Suzlon Energy Ltd., and M/s Suzlon Infrastructure Ltd. for the supply and erection of the WTGs and other equipment [9, 10].

Other parameters like depreciation, income tax, Minimum alternate Tax (MAT) have been considered taking into account the laws prevalent at the time of investment decision like the Income tax rules in India.

Plant load factor (PLF): For the WTGs installed in the state of Karnataka and Tamil Nadu, PLF has been sourced from purchase orders of the WTGs. Suzlon Energy Limited has provided the guaranteed performance in terms of machine availability. In the sate of Tamil Nadu, WTG S82 and S52 has first year performance guarantee. While in Karnataka for the first two years for S82. Hence, PP has taken 95% machine availability to estimate the annual generation for the first year and/or second year and for the remaining years. The project promoter's selection is deemed reasonable in PJRCDM's opinion. The guaranteed figure by technology supplier is a very idealistic figure and is on 95% grid availability (which is never the case in practical). Hence, considering the same PLF for the entire crediting period is very conservative.

The calculations were provided in the spreadsheet and verified to be correct. The table below presents the results of the financial analysis for the project activity without revenues from carbon credits.

Type of Project	Capacity(MW)	IRR(%)
Simran – Karnataka	6	8.80
Super – Karnataka	12	10.20
Simran – Tamilnadu	15.9	6.59

It can be seen that the project IRR for the project activity is less than the benchmark PLR of 13%. PJRCDM was able to confirm the same against the RBI prime Lending rate. Source: RBI Bulletin year 2007-08 [18]

Sensitivity analysis: To further demonstrate the robustness of the financial analysis, the project developer has also carried out the sensitivity analysis. Project developer has justified the following key indicators for carrying out the sensitivity analysis:

Plant load factor (PLF): The project proponent has carried out the sensitivity analysis to check the value of PLF at which the project IRR touches the benchmark of 13%.

Project	**PLF (%)**	**Post tax project IRR without carbon revenues (%)**
Simran – Karnataka	28.92	8.80
	31.81(+10%)	10.32
	26.03(-10%)	7.18
Super – Karnataka	28.92	10.20
	31.81(+10%)	11.78
	26.03(-10%)	8.51
Simran – Tamil Nadu	29.53	6.59
	32.49(+10%)	8.00
	26.55(-10%)	5.06

From the analysis presented above, it can be noted that even on increasing the PLFs for each investor by 10% (i.e.: 31.81% for Simran- Karnataka and for Super-Karnataka and 32.49% for Simran- Tamil Nadu) the IRR for the project activity does not touch the benchmark IRR. In view of the evidences and justification presented, it is PJRCDM's opinion that the PP has already presented a very conservative base case (considering the guaranteed generation for financial analysis), hence, the increase of further 10% in the guaranteed generation/PLF is highly unlikely during the operational lifetime of the project activity.

Tariff: It needs to be brought out that an increment in the tariff rate for electricity sale to the respective State Electricity Board (SEBs) is not a plausible option in view of the fact that the same is governed by the Karnataka Electricity Regulatory Commission's (KERC) Wind Tariff Order dated 18 January 2005 and the Tamil Nadu Electricity regulatory commission's (TNERC) tariff order dated 15th May 2006 and the amendment dated 18th May 2006 [16]. The PP has however, carried out a sensitivity analysis on the tariff and the results of the same are presented below:

Project	Tariff	Post tax project IRR without carbon revenues (%)
Simran – Karnataka	3.4	8.80
	3.74(10%)	**10.32**
	3.06(-10%)	7.19
Super – Karnataka	3.4	10.20
	3.74(10%)	**11.78**
	3.06(-10%)	8.51
Simran – Tamil Nadu	2.9	6.59
	3.19(+10%)	**8.00**
	2.61(-10%)	5.08
	4.32(+50%)	**13.02**

The Karnataka projects consider an average tariff rate of INR 3.40/kWh for the first 10 years of WTG operation and then from 11th year revised by KERC. Furthermore, the PPA signed by the project proponent with the KPTCL is also in the same lines. Furthermore, even on considering a 10% increase in the tariff, the IRR for the project does not cross the benchmark. Hence, it is reasonable to assume that it is highly unlikely for the project proponent to realise such tariffs through the project lifetime so as to make the project financially viable.

The Tamil Nadu project consider average tariff rate of INR 2.90/kWh for the operational lifetime. It was noticed that on increasing the tariffs by 10%, the IRR for the project still works out to be 8% which is below the benchmark of 13%. Furthermore, in view of the fact that the amendment to the TNERC order revised the tariff from INR 2.90 to INR 3.40, PJRCDM requested the PP to carry out a sensitivity analysis to see at what point the project will become viable. It was seen that when the tariff increases by about 50%, the IRR for the project touches the benchmark. However, a 50% increase in tariff is highly unlikely and hence the same has been justified.

Operation and Maintenance cost: The same does not contribute to more than 20% of the revenue or the cost and hence has not been considered for the sensitivity analysis.

Investment cost: Since the investment cost used for the IRR analysis has been sourced from the purchase orders placed by the project proponents with the equipment supplier, it is highly unlikely that the same can be subject to change.

Common Practice Analysis:

Common Practice analysis for Tamil Nadu Projects:

The geographical scope of the common practice is limited to wind energy investment in the state of Tamil Nadu. The validation team agrees with this because, the regulatory and tariff policies in India with respect to the windmills change from state to state and also the regulatory and tariff policy in Tamil Nadu has undergone significant change post 2001(explanation of the different regime has been presented in the PD). Therefore, the regulatory environment for the windmills would be comparable only at the state level and for investment in the post 2001 regime.

The project participant has provided the following key information for common practice analysis –

1. The project participant identified the regimes prior to 2001 wherein the tariff governance is with respect to MNES policy more favourable in terms of per MW capital cost investment than post September 2001 and also the tariff order from the TNERC and TNEB [16] is lesser than MNES policy. The Tariff has been fixed to Rs.2.90/kWh by an order dated 18th May 2006 by Tamil Nadu Electricity Board (TNEB) [16] which is before 2001. The electricity generation per MW capacity has started decreasing due to overcrowding of WTGs putting pressure beyond the capacity of evacuation infrastructure.

2. PP has chosen activities similar to the proposed activity i.e. having installed capacity more than 15 MW in Tamil Nadu. The list of chosen projects can be found in PD. It has been taken from public available data like: India Wind power directory, 2008 and VCS and CDM registry. This ensures that the comparison is done with projects of similar scale and nature. There were 27 such investors who have installed 15 MW or more capacity projects till March 2008.

3. The total installed capacity in Tamil Nadu, as on March 2008, was 3873.5 MW. The list of developers who have more than 15 MW installed capacity, out of the 3873.5 MW, is 764 MW.

4. The project participant has analyzed list of projects for CDM/VCS status (as listed in PD). With the exception of projects owned by manufacturers, or the projects commissioned before 2001, it was noticed that all the projects are covered under some GHG program like the CDM, VCS, etc.
The project participant has therefore demonstrated that the project activity (installation of is not a common practice in the state of Tamil Nadu. The validation team, therefore, is of the opinion that the project activity is proven to be additional.

Common Practice analysis for Karnataka Projects:

PP has chosen the state as region in which common practice has been done for the proposed project activity and analyzed similar projects operational in the region (Karnataka) that are similar in technology and scale (less than 15 MW) and were invested in a comparable regulatory and investment environment (time period when real action was taken towards the proposed project).

1. PP has been stated 4 different regimes in Karnataka state for the wind power projects.

i. The first tariff regime was implemented by the MNES (Ministry of Non conventional Energy Sources) as per its directive in 1994-95.

ii. The second tariff was applied by KERC to projects commissioned before August 2003.

iii. The third tariff regime applies to projects commissioned after August 2003 up to May 2004.

iv. The fourth tariff regime applies to projects commissioned after June 2004.

2. PP has shown that the different tariff regimes have progressively reduced the tariff applicable for wind energy suppliers for the first three regimes. The project activity was envisaged during the fourth tariff regime. PP has done the common practice analysis for the project activity analyzing projects that are installed during the second, third and fourth tariff regime because of similar tariffs.

3. There total potential of Karnataka is 6620 MW. As on March 2008, the total installed capacity was 1011.4 MW. Out of this 982.905 MW was installed in the regime 2,3 and 4; 366.4 MW was installed by developers in single projects exceeding 15 MW and 606.95 MW was installed in capacities less than 15 MW. As the project under consideration installs 12 MW and 6 MW in Karnataka, PP has analyzed all similar projects (less than 15 MW).

4. A total of 606.95 MW capacity was installed in the regime 2,3 and 4 out of which 470.8 MW is under various stages of CDM/VCS registration and are publicly available.

This clearly establishes that diffusion of similar project activities (without carbon revenues) in the relevant region is very less. The project participant has therefore demonstrated that the project activity is not a common practice.

The above analysis clearly demonstrates that the project activity does not represent a financially attractive venture to the promoters. In conclusion, the assessment of the arguments presented above is deemed to sufficiently demonstrate that the project is not a likely alternative, and that emission reductions resulting from the project are additional

3.3 Monitoring Plan

The project proponents have applied approved methodology ACM0002. version 10 – ***Consolidated baseline methodology for grid-connected electricity generation from renewable sources***, which has been approved under the CDM programme. The applicability of the same has been justified as already discussed under section 3.2 of the validation report.

The monitoring plan consists of monitoring the energy generated by the project activity as measured by the installed main energy meters and check meters at each WTGs.. These energy meters used for monitoring are electronic trivector meters, which measure both the amount of electricity imported from and exported to the grid

continuously. This data is measured monthly in the presence of third party, State Electricity Board officials as a Joint Meter Reading (JMR) exercise.

The responsibility of measuring parameters rests with the operations and maintenance (O&M) 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 of the energy meters at the sub-station shall be carried out annually by the electricity authorities of the respective states (KPTCL and TNEB). The meters are of 0.2 accuracy class in Karnataka while it is 0.5 accuracy class in Tamil Nadu.

Further the Operations & Maintenance contractor responsible for measurement of parameters carries out internal audits which were verified.

In case of meter failures, and back up meter reading being unavailable, it has been confirmed that the PP shall not claim for VCUs during that respective period. In the event, both meters fail during the monitoring period, PP will claim zero VCUs for that period.

The grid emission factor has been determined and fixed *ex-ante*.

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. According to the approved methodology ACM0002, version 10, Emission Reductions are calculated using "Tool to calculate emission factor for the electricity system"

The baseline emissions for the project activity is estimated as the 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).

The project activity is a greenfield wind power project and it does not having any emission sources in project boundary hence the project emissions and leakage emissions for this project activity are nil.

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) * emission factor of the southern regional grid (EF).

While the net annual generation of the project is a metered value, the grid emission factor has been calculated using the data available on the official website of Central Electricity Authority (CEA) under the Ministry of Power, Govt of India. An ex-ante fixed combined margin emission factor has been calculated to be 0.9448 tCO_2e/MWh for the Southern grid of India. This has been sourced from Central Electricity Authority CO_2 Baseline Database version 05. Central electricity Authority (CEA)

(which is an official source of Ministry of Power, Government of India) have worked out baseline emission factor for various grids in India and made them publicly available ("Baseline CO2 Emission Database version 5.0) [17]. This database i.e. the CO_2 baseline database provides information about the OM and BM factors of the regional electricity grids in India. PJR CDM confirms that the database is an official publication of the Government of India for the purpose of CDM baselines and 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, 2007-08 and 2008-09. BM is calculated ex-ante based on the 25% 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 estimated emission reductions from the project activity have been estimated at an average of 78,669 tCO_2e per annum.

3.5 Environmental Impact

The project activity is a renewable energy project with a cumulative capacity of 33.9MW, with the WTGs being implemented in Karnataka and Tamil Nadu. Projects of such category and scale do not warrant any environmental impact assessment to be carried out as per the current law of India. However, PJR CDM was able to verify the projects compliance with the local laws and regulations.

3.6 Comments by stakeholders

VCS 2007.1 requires discussion on relevant outcomes from stakeholder consultations and mechanisms for on-going communication for the project activity. A stakeholders' meeting was organized by the project proponent as per below table:

Super Wind Projects Private Limited & Simran Wind Projects Private Limited	24th Feberuary,2010

The identified stakeholders included the local villagers, employees and the O&M contractor. The relevant stakeholders were invited for the meeting through public notices and local news paper [23].

No negative comments have been received for the project activity.

4. VALIDATION CONCLUSION

PJRCDM Inc. has performed the validation of the project "33.9 MW Bundled Wind Power project in states of Karnataka and Tamil Nadu". 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 explanations where necessary to enable PJRCDM to provide reasonable assurance that the information reported in the PD is complete and materially correct. Our scope and conclusion is thus limited to the above evaluation.

The project involves sale of electricity from wind turbine generators with total capacity of 33.9 MW to the grid, thereby displacing grid power. The VCS approved CDM baseline and monitoring methodology ACM0002, version 10 has been correctly applied to determine the baseline and the emission reductions.

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 GHG emission reduction achievable from the project is estimated at 78,669 tCO_2e per annum. This estimate is fair given that the underlying assumptions do not change.

To summarize, it is PJRCDM's opinion that the project as described in the version 02 of the VCS PD 33.9 MW Bundled Wind Power project in states of Karnataka and Tamil Nadu, India meets the VCS 2007.1 requirements and correctly applies the baseline and monitoring methodology ACM002, version 10.

Project Manager
PJRCDM

Site Program Manager
PJRCDM

APPENDIX I: DOCUMENTS REVIEWED

Sl. No.	*Document reference*
[01]	VCS PD: *"33.9 MW Bundled Wind Power project in states of Karnataka and Tamil Nadu"*, version 02, dated 29th March 2010
[02]	Financial Calculation for SWPPL and SUWPPL at Karnataka and Tamil Nadu projects.
[03]	ACM0002, Version 10, "Consolidated baseline methodology for grid-connected electricity generation from renewable sources", EB 47.
[04]	Voluntary Carbon Standard, Voluntary Carbon Standard 2007.1, 18th November 2008
[05]	Voluntary Carbon Standard, Voluntary Carbon Standard Program Guidelines, 18th November 2008
[06]	ISO 14064 part I, II and III : 2006
[07]	Version 01.1 of "Tool to calculate the emission factor for an electricity system"
[08]	Tool for the demonstration and assessment of additionality version 05.2, Annex 10, EB 39
[09]	**Purchase Order placed by** • Simran Wind Project Pvt. Ltd. with Suzlon Energy Ltd. on 7th August 2007 for model no. S82. (1.5MW) • Simran Wind Project Pvt. Ltd. with Suzlon Energy Ltd. on 7th August 2007 for model no. S52 (0.6MW) • Simran Wind Project Pvt. Ltd. with Suzlon Energy Ltd. on 18th May 2007 for model no. S82. (0.6MW) • Simran Wind Project Pvt. Ltd. with Suzlon Energy Ltd. on 25th August 2007 for model no. S82. (1.5MW) • Super Wind Project Pvt. Ltd. with Suzlon Energy Ltd. on 29th August 2007 for model no. S82. (1.5MW)
[10]	**Work Order for Civil & electrical work, and the Erection, Installation & Commissioning between** • Simran Wind Project Pvt. Ltd. and Suzlon Infrastructure Services Ltd. on 7th August 2007 • Simran Wind Project Pvt. Ltd. and Suzlon Infrastructure Services Ltd. on 18th May 2007. • Simran Wind Project Pvt. Ltd. and Suzlon Infrastructure Services Ltd. on 25th August 2007. • Super Wind Project Pvt. Ltd. and Suzlon Infrastructure Services Ltd. on 29th August 2007.

[11]	**Power Purchase Agreement between** • Super Wind Project Pvt. Ltd. and BESCOM on 25th July 2009 • Super Wind Project Pvt. Ltd. and HESCOM on 18th May 2009 & 30th May 2009 • Simran Wind Project Pvt. Ltd. and CESC on 12th August 2009 • Simran Wind Project Pvt. Ltd. and BESCOM on 25th July 2009 • Simran Wind Project Pvt. Ltd. and TNEB on 5th August 2008, 29th March 2008, 16th November 2009, 28th July 2008, 17th November 2009 & 15th September 2008
[12]	**Commissioning Certificates of the WTGs for SWPPL and SUWPPL.** • Simran Wind Project Pvt. Ltd., Location number: E 767 & E778 from the TNEB, vide letter dated 3rd October 2008, . • Simran Wind Project Pvt. Ltd., Location number: E777, E779, E780 & E781 from the TNEB, vide letter dated 31st July 2008. • Simran Wind Project Pvt. Ltd., Location number: E782 from the TNEB, vide letter dated 7th August 2008. • Simran Wind Project Pvt. Ltd., Location number: G970 from the TNEB, vide letter dated 30th April 2008. • Simran Wind Project Pvt. Ltd., Location number: Q48 & Q51 from the TNEB, vide letter dated 4th June 2008. • Simran Wind Project Pvt. Ltd., Location number: Q199, Q220 & Q394 from the TNEB, vide letter dated 29th April 2008. • Simran Wind Project Pvt. Ltd., Location number: E86 from the TNEB, vide letter dated 18th October 2008. • Simran Wind Project Pvt. Ltd., Location number: G557 from the TNEB, vide letter dated 31st March 2008. • Simran Wind Project Pvt. Ltd., Location number: E797 from the TNEB, vide letter dated 25th November 2008. • Simran Wind Project Pvt. Ltd., Location number: H29 & H34 from the KPTCL, vide letter dated 4th November 2008. • Simran Wind Project Pvt. Ltd., Location number: K75 from the KPTCL, vide letter dated 18th November 2009 (Revised). • Simran Wind Project Pvt. Ltd., Location number: K76 from the KPTCL, vide letter dated 16th February 2009. • Super Wind Project Pvt. Ltd., Location number: K70, K71 & K69 from the KPTCL, vide letter dated 5th November 2008. • Super Wind Project Pvt. Ltd., Location number: K342, K347 & K345 from the KPTCL, vide letter dated 1st January 2009. • Super Wind Project Pvt. Ltd., Location number: K350 & K346 from the KPTCL, vide letter dated 7th November 2008.
[13]	**Contract with Validator**, PJRCDM signed by • Simran Wind Project Pvt. Ltd. dated 6th January 2010
[14]	**Land sale deed between** • Shubh Realty (South) Pvt. Ltd. and Simran Wind Project Pvt. Ltd. dated 31st August 2007, 19th September 2007, 28th April 2008, 25th June 2008, 17th July

	2008, 10th June 2008, 28th April 2008, 18th September 2007, 24th August 2007, 26th June 2008, 14th May 2008. • Karnataka Forest Department and Super Wind Project Pvt. Ltd. dated 13th February 2008, 5th January 2007 • Karnataka Forest Department and Simran Wind Project Pvt. Ltd. dated 5th January 2007, 29th November 2006
[15]	**Minutes of Stakeholders meeting of** stakeholders at Tamil Nadu and Karnataka dated 24th February 2010.
[16]	• TNERC tariff order dated 15th May 2006 • Amendment to the TNERC tariff order dated 18th May 2006 • KERC tariff order dated 18 January 2005
[17]	Version 05 of the CO_2 database by the official website of Central Electricity Authority (CEA), Ministry of Power, Government of India. (www.cea.com)
[18]	Reserve Bank of India Annual Report http://rbidocs.rbi.org.in/rdocs/Publications/DOCs/89228.xls
[19]	Undertaking Letter from the PP to declare that PP will not claim another emission trading programme during crediting period of registered VCS project.
[20]	Certificate of Lifetime of WTGs issued by Suzlon infrastructure Private Lomited.
[21]	**Operation & Maintenance Agreement between** • Simran Wind Project Pvt. Ltd. and Suzlon Energy Ltd. on 7th August 2007 for model no. S82. (1.5MW) • Simran Wind Project Pvt. Ltd. and Suzlon Energy Ltd. on 7th August 2007 for model no. S52 (0.6MW) • Simran Wind Project Pvt. Ltd. and Suzlon Energy Ltd. on 18th May 2007 for model no. S82. (0.6MW) • Simran Wind Project Pvt. Ltd. and Suzlon Energy Ltd. on 25th August 2007 for model no. S82. (1.5MW) • Super Wind Project Pvt. Ltd. and Suzlon Energy Ltd. on 29th August 2007 for model no. S82. (1.5MW)
[22]	**Public notice of Local News Papers dated** 16th, 17th & 24th February, 2010.

APPENDIX II

Resolution of Corrective Action and Clarification Requests:

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 The title of the project is stated to be 39.9 MW while the entire description for the project is 33.9 MW. The same is to be corrected. Furthermore, the number of WTGs as per the Purchase order does not match with those listed in the calculations and commissioning certificates. The same is to be clarified and corrected accordingly. The dates of the purchase orders need to be checked and revised accordingly.	1.8 1.11 4.1 4.2 4.3	Title of the project has been corrected Few of the WTG's are sold and order was cancelled for few of the WTG's and hence the number of WTG's present in PO are not matching with the actual number of WTG's considered in the project activity PO dates mentioned in the PD are cross checked and they are found in line with the PO documents	Title of project activity has been corrected in revised PD. The cancellation certificates for the WTGs and hence PJRCDM was able to confirm that the WTGs considered in the project activity are correct. PO dates has been checked as per provided POs copies and it has been corrected in revised PD. CAR-1 is closed.
CAR 2: PP is requested to provide the following: a) Please include the HTSC numbers for	3.3.	a)HTSC numbers for all the WTG's installed by Simran in Tamilnadu have been incorporated in the	a) OK. The HTSC numbers have now been included into the list of WTGs installed.This issue is

	the WTGs installed by Simran in Tamil Nadu**.**	PD.HTSC number for E-797 is also included.
b)	The village names are to be corrected in Annex of the PD for the WTGs installed in Karnataka.	b)Village names are corrected as per actuals
c)	The commissioning dates are not correct for the WTG E767,E 778 & Q 48 . Pls correct the same.	The COD for the E767, E 778 & Q48 is updated as 30/09/08 Site locations for K69, K70, K71, K75, and K76 are corrected as per the actual.
d)	Project cost to be checked for all PPs	Project cost is cross checked for all the PPs
e)	NOC, Land, Insurance & Loan document are to be provided.	NOC, Land deed documents are submitted along with DVR & Loan documents have already been provided. The commissioning certificates provided by the KPTCL are the authenticated documents and the DOE should consider the same. The commissioning certificate should be considered authentic as it's an approval from the government. The date of painting could have been just mentioned for reference, it may please be ignored.

	closed.
b)	Village names have now been corrected. For the WTGs in Chitradurga (K69, K70, K71, K75, K76), the site and taluk names have been corrected to Elkurnahalli in Hiriyur taluk in from Yalakuranahalli in Hriyur. This issue is closed.
c)	CODs has been updated in revised PD. Furthermore, for the WTGs in Karnataka, it was brought out that the commissioning date for the WTG - K75, as per the site visit findings was 05 February 2009. However, PRCDM has reviewed the commissioning certificate issued by KPTCL which confirms the commissioning date to be 31 Dec 2008. This issue is closed.
d)	Project cost has been verified with Pos for each PPs.
e)	NOC, Land , Insurance and Loan documents has been

			provide and PD details has been verified. Car-2 is closed.
CL 1: a) Provide evidence for the operational lifetime of the WTGs installed under the project activity. b) The commissioning certificates for the WTGs E797, E86 & G557 by Simran in TN are to be provided.	1.6	Evidence for the operational lifetime of the WTG's is submitted along with the DVR Commissioning certificates are being submitted along with the DVR	Evidence for the operational lifetime of WTGs has been submitted and it has been verified as per VCS guidelines. Commissioning certificates has been submitted for E 797, E 86 & G 577 has been provided and it has been verified in PD details. CL-1 is closed.
CL 2: The PP is requested to provide all the approvals, licenses, clearances, power purchase agreements, commissioning certificates etc for each of the project activity to PJR.	1.10	All the necessary documentation related to the project have already been submitted and if any documents are not sent the same will be submitted along with the DVR	All the requested documents for approvals, licenses, clearances, PPA, commissioning certificates has been provided by PP and it has been identified correct. CL-2 is closed.

CL 3: It is stated in the PD that the project does not claim for any renewable energy credits. The same is to be substantiated to PJRCDM.	1.13	Proof of the same would be submitted to PJR. A paragraph referring to REC is included in Section 1.13.	An undertaking letter has been submitted by PP with declaration with not claiming any other environmental credits under any GHG programs (VERs/CERs). Furthermore, w.r.t the RECs in India, the PP has now confirmed in the PD that in case the same is made available in the future, the PP shall only claim for one form of credit at any given point; either the VERs or the RECs. CL-3 is closed.
CL 4: It needs to be clarified if the project has applied for or plans to apply for in future for any other GHG program like CDM, CCX, etc. If yes, PJRCDM requests the project proponents to explain the procedures to avoid double counting.	1.14	This has been clarified. Please refer to section 1.6 for the same. Please refer to the footnote 2 for the same. A Letter of Undertaking will be submitted by the PP for the same	The PD now clearly describes in the procedure followed in the event a program like CDM/CCX is applied for. Furthermore an undertaking has also been provided. CL-4 is closed.
CL 5: The additionality section (***step 1.a***) only discusses two alternatives – project without CDM and the continuation of current		CDM is replaced by carbon revenues	The PD has been revised and the word CDM has been replaced with 'carbon revenues'.

practice. The following are to be clarified: • The word CDM is to be suitably replaced. • It remains to be clarified as to why installation of fossil fuel based power generation like coal, natural gas, etc is not an alternative to the PP • The reason for not considering installation of same capacity of power plant using other renewable sources also needs to be justified.		This has been addressed in the PD (Refer Sec 2.5) under heading alternative 2 This has been addressed in the PD (Refer Sec 2.5) under heading alternative 2	PP has revised the PD with clarification that the Super and Simran Wind Power Projects Pvt Ltd are Independent Power Producers investing only in Wind Projects and thus coal fired power stations and hydro power projects are not the alternatives. CL-5 is closed.
CL 6: ***Financial Additionality:*** a) The benchmark is stated to be the commercial lending rate at the time of investment. The same is to be substantiated with evidences. Furthermore, it needs to be confirmed if the same takes into account the most conservative benchmark, given that the WTGs were commissioned at different time periods. b) Pls include the assumptions (the important) in the additionality section of the PD.	2.5	The reason for considering benchmark as 13 % is substantiated in the PD (refer section 2.5 benchmark analysis) and the link for the same is provided. As RBI website is not working we are providing the same data published by RBI. All the assumptions have been included in the PD .The tariff in the financials is updated as INR 3.4	a) The PLRs for the different periods (i.e.: the PO dates of May, August 2007) were reviewed by PJRCDM. It was found that all average PLR for each of the periods were 13%. Furthermore, PJRCDM has reviewed the PLR for the project at the commissioning dates of the WTGs and it was found that the average PLR for the commissioning dates was 13.625% which is higher than the PLR of 13% considered by the PP at the PO time. This is considered to be more

c) The PP is requested the documented evidences for the following assumptions used in the IRR made viz, PLF, PPA to confirm the tariff, interest rate. The tariff considered is INR 3.40 for all the WTGs (including Karnataka and Tamil Nadu). Pls clarify and correct if required.	Documentary evidences for all the assumptions have already been submitted and the tariff for Tamilnadu has been corrected as INR 2.9 (base year tariff) as per the TNERC tariff order dated 18/05/2006	conservative and hence the same is accepted by PJRCDM. This issue is closed. b) All the assumptions have now been included in the PD c) The PD and financials have now been revised to consider a tariff of INR 3.4. All above issues has been addressed in revised PD and calculations sheets. This issue is closed.
d) Substantiate the basis for considering insurance cost and O & M cost as a percent of capital cost in the financial analysis	Insurance cost is considered as part of O&M as per Karnataka tariff order dated 18/01/2005	d) It has been verified from KERC order dated 18/01/2005 that the insurance cost is part of O&M cost. This issue is closed.
e) Pls justify the consideration of increase/(decrease) in current assets in the IRR calculations	The working capital is not considered in the IRR calculations and thereby PP's are being conservative	e) PP has excluded the component related to the increase and decrease in current asset. The issue is closed.
f) Pls provide justification for not considering tax shield in the IRR calculations.	The profits of the companies are not substantial to absorb the accelerated depreciated and it is clearly visible from their annual reports hence tax shield is not considered in the IRR calculations. Depreciation on Land has been removed from the financial model. The land cost is non-refundable.	f) The annual reports for Simran and Super were reviewed and it was found that the PP is mainly into the business of wind power generation and hence it can be safely assumed that the profits of the respective companies are not high enough to set off the losses from accelerated

		depreciation. PJRCDM have reviewed the revised calculations sheet, to confirms that the land cost has been exclided in the depreciation. Same has been also revised in PD. CL-6 is closed.
CL 7:***Simran Wind Power Project-Karnataka***: 1. Substantiate for considering debt-equity ratio as 60:40. 2. Justify for not considering cost of land in the financial analysis	IRR has been calculated as per the KERC order dated 18/01/2005 i.e. 70:30 Debt to Equity ratio Cost of Land has been included for IRR calculations	PJRCDM has reviewed the revised calculations for each site. The IRR calculation has been revised as per KERC order dated 18/01/2005 with debt to equity ratio and land cost. This issue is closed.
Super Wind Power Project-Karnataka: 1. Substantiate for considering debt-equity ratio as 56:44. 2. The location of the WTG to be changes in the spreadsheet. 3. Justify for not considering cost of land in the financial analysis	IRR has been calculated as per the KERC order dated 18/01/2005 i.e. 70:30 Debt to Equity ratio Location of WTG's are updated as per actuals Cost of Land has been included for IRR calculations	PD has been revised with WTG location as per actual. This issue is closed.
Simran Wind Power Project-Tamil Nadu: 1. Substantiate for considering debt-	IRR has been calculated as per the TNERC order	CL-6 is closed.

equity ratio as 60:40. 2. The commissioning dates of all the WTG to be changed in the spreadsheet. 3. The project capacity to be bifurcated into 0.6MW and 1.5MW machines in the spreadsheet. 4. The cost of installation of electrical line considered is exclusive of service tax whereas all other costs are considered inclusive of service tax. (PO dated 7th August 2007 for 1.5MW machines)	dated 18/05/2006 i.e. 70:30 Debt to Equity ratio Commissioning dates are crosschecked and have been updated accordingly IRR calculations doesn't get changed even though the project capacities are bifurcated as the weighted PLF is considered in the spreadsheet for the purpose of calculations Cost of electrical line inclusive of service tax as per the PO is updated in the Project cost	
CL 7: a) As per the guidelines for carrying out the investment analysis, a sensitivity analysis needs to be carried out for all 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 tariff, investment cost and the O&M costs from sensitivity analysis needs to be provided. b) Furthermore, the effects of variation in +/- 10% on the key indicators are to be included in the financial analysis and	2.5 **Sensitivity analysis for Tariff has been included in the Calculation sheet.** Sensitivity analysis is carried only on tariff as its revenues contribution is more than 20 % where as other parameters such as O&M is excluded as it is not a major cost contributor. Sensitivity analysis on generation is included in the PD	Sensitivity analysis has been revised in the PD. PP has revised the calculation sheet with sensitivity analysis. This issue is closed. CL-7 is closed

the PD.		
CL 8:		**Karnataka**:
The common practice analysis currently provides a list of project, mainly falling under the CDM stream. As per the additionality tool, the project proponent is required to discuss projects other than those that are already included in CDM (or other relevant schemes). The same is to be correctly	Common Practice analysis for all the similar project activities located in the states of Karnataka & Tamilnadu has been carried out and the same is included in the PD. It was found that in Karnataka state all the listed out project developers have considered carbon revenues for developing a wind power project for similar project capacities. The list of Wind farm developers has been cross checked and the same has been updated in the PD. The list is as per the Directory Indian Windpower 2008. Bhoruka Power Co Ltd details have been included and the list of developers who took their projects through VCS registration are also included in the PD.The list of developers has been taken from the Directory of Indian Windpower 2008 which contains the exhaustive list of wind project developers in India. Projects from Tamilnadu whose capacity is above 15 MW are only included in the list detailed in the PD. We are providing the	PP has chosen the state as region in which common practice has to be done for the proposed project activity and analyzed similar projects operational in the region (Karnataka) that are similar in technology and scale (less than 15 MW). PP has divided the total wind project installation in four regimes and analyses the all regimes with respect to proposed project activity and justified that proposed project activity falls under 4th regime. PP has show and justified that a total of 606.95 MW capacity was installed in the regime 2,3 and 4 out of which 470.8 MW is under various stages of CDM/VCS registration and are publicly available. With above justification ,PP has established that diffusion of similar project activities (without carbon revenues) in the relevant

link for the same.

region is unlikely to be happen. The project participant has therefore demonstrated that the project activity is not a common practice.

PJRCDM has reviewed the evidences and weblinks provided by PP and same has been also updated in PD.

This issue is closed.

Tamil Nadu:
PP has chosen the state as a common practice region. PRCDM validation team agrees with this because, the regulatory and tariff policies in India with respect to the windmills change from state to state and also the regulatory and tariff policy in Tamil Nadu has undergone significant change post 2001(explanation of the different regime has been presented in the PD). Therefore, the regulatory environment for the windmills would be comparable only at the state level and for investment in the post 2001 regime.

The PP has justified that tariff was more favorable for the project which has been installed before 2001 than the project of after 2001.

PP has also justified with chosen activities similar to the proposed activity are projects with installed capacity more than 15 MW in Tamil Nadu. From public available data like: India Wind power directory, 2008 and VCS and CDM registry.
PP has shown that The total installed capacity in Tamil Nadu, as on March 2008, was 3873.5 MW. The list of developers who have more than 15 MW installed capacity, out of the 3873.5 MW, is 764 MW.
The project participant has analyzed list of projects for CDM/VCS status show in PD. In case the project is implemented without CDM/VCS status, the project participant provided explanation that either it was owned by manufacturers or

			commissioned before 2001 and PP has justified that the proposed project activity is different from the other project. The project participant has therefore demonstrated that the project activity is not a common practice. PJRCDM has reviewed the provide details in PD. CL-8 is closed
CL 9: ***Monitoring plan:*** a) The monthly generation data is stated to be recorded in the form of JMR readings. However, these can only be used for cross checking of the monitored data. The parameters monitored need to be recorded either electronically or on logbooks for each month. b) The PD is not clear on the accuracy class of the meters used. It is stated that the project involves meters of accuracy class 0.2 and 0.5. Pls confirm and	3.3 3.4	a) Daily generation reports are sent by Suzlon through email. This will be electronically stored and compared with the JMRs. The same description has been added in the PD. b) Meters of 0.2% accuracy class are used in case of WTG's connected to Karnataka grid and meters of 0.5 % accuracy class are considered in case of Tamilnadu grid.	PD has been revised with statement saying that all the daily generation reports are sent by Suzlon through email. And it will be stored and compared with JMRs. This issue is closed. PP has clarified that 0.2 % accuracy class meters has been used in Karnataka grid and 0.5 % accuracy class meters has been used in Tamil Nadu grid as per their respective PPAs.

clarify the same. c) The PD currently speaks about the testing of meters annually. It needs to be confirmed if the frequency defined for calibration of the main and check meters is once in two years. d) Project participant has not defined the procedures for internal audits and procedures for performance reviews and corrective actions	c) Calibration of meters is done annually in case of Karnataka & once in two years in case of Tamilnadu d) Procedures for performance reviews and corrective actions are included in the PD(Please refer section 3.2 i.e. Meter reading). The same has been included in the section 1.15. The generation during which the main meter was non-functional, would be forfeited for emission reduction calculation. The same has been included in the PD.	Calibration frequencies have now been defined. The PD still does not speak about procedures for internal audits and corrective actions. PP has revised the section 1.15. This issue is closed. Furthermore, in section 3.2, it has been defined that in case of non-functional meters (for WTGs having single meter), the readings from the controller or average generation form surrounding WTGs would be taken. The same is not acceptable. During the period where no main meter/check meter readings are available will need to be considered as Zero energy generation in that given period. Same has been revised in PD.. CL-8 is closed.

CL 9: Please include in the PD, the details of the stakeholder identified for the project activity. Also provide documentary evidence for the stakeholder's consultations.	6	Documentary evidence for the stakeholder's consultation is submitted and details of the same is included in the PD	Documentary evidence has been reviewed and verified with PD details. CL-9 is closed.
CL 10: Please provide evidence for the proof of title.	8.1	Evidence for proof of title will be submitted	Evidence for proof of title as POs has been considered and verified against the PD details. CL-10 is closed.
CL 11: The annex 5, schedule of activities includes the details on the project site. For the Project developer – Simran Wind in Tamil Nadu, the site is mentioned to be Palladam for all the 3 districts (Dindugal, Erode and Coimbatore). Pls correct the same.		Site details are updated as per the actual.	Site details has been updated as per actual in the revised PD. CL-11 is closed.