

PERRY JOHNSON REGISTRARS



Carbon Emissions Services, Inc.

*Voluntary Carbon Standard 2007.1*

## **VERIFICATION REPORT**

M/s Indian Wind Power Association

**“11.60 MW Bundled grid-connected  
wind electricity generation project at  
Tirunelveli, Tamil Nadu, India**

**VERIFICATION PERIOD:  
28 March 2006 to 22 July 2009  
(both days included)**

**Project No/ Rev. No.: V-3-I-01-B-0079-Ve/01**



**Verification Report**

<b>Name of Verification company:</b>	<b>Date of issue:</b>
Perry Johnson Registrars Carbon Emissions Services, Inc.	2011-08-23
<b>Report Title:</b>	<b>Approved by:</b>
Verification report – “11.60 MW Bundled grid-connected wind electricity generation project at Tirunelveli, Tamil Nadu, India”	Anjana Sharma
<b>Client:</b>	<b>Project Title:</b>
M/s C.R.I. Pumps Private Limited M/s Annai Wind Farms India (P) Ltd. M/s Kovilpatti Lakshmi Roller Flour Mills Limited M/s Gomathy International M/s Gomathy Power Company M/s New Link Overseas Finance Limited M/s Sri Abiraami Agency M/s Leather Crafts India (P). Ltd. M/s A.B. Sale Corporation M/s Natesan Synchrocones Pvt. Ltd. M/s Sree Devi Chemicals M/s Lilly Whites M/s N.R.G. Tex M/s Sabare International Ltd. M/s Al-Lan Texknit Processors M/s Sree Karthik Traders  Co-ordinating entity: M/s. Indian Wind Power Association	Monitoring report of “11.60 MW Bundled grid-connected wind electricity generation project at Tirunelveli, Tamil Nadu, India”  Monitoring period: 28 March 2006 to 22 July 2009 (both days included) Version : 03 Date : 08 August 2011



**Summary:**

The clients as mentioned above, under the project activity has commissioned Perry Johnson Registrars Carbon Emissions Services, Inc. (PJRCES) for verification of their project – “11.60 MW Bundled grid-connected wind electricity generation project at Tirunelveli, Tamil Nadu, India” in India. The verification involves independent review of the implementation of project as per VCS PD, conformance to applicable methodology, VCS 2007.1 requirements and guidelines, its monitoring plan and the verification of reduction in GHG emissions achieved by the project activity.

The implementation of the project activity as per design has been verified by PJRCES. The WTGs in the project activity has been installed in different villages of Tamil Nadu state, India. These WTGs are connected to respective state electricity grid, which form part of the Southern Regional Grid in India.

In PJRCES’s opinion, the GHG emission reductions reported in the monitoring report version 03 dated 08 August 2011 are fairly stated. Based on the assessment, PJRCES was able to certify that implementation of the project has resulted in reduction of GHG emissions of **68,733 t CO<sub>2</sub> equivalent** during the period 28 March 2006 to 22 July 2009 (both days included).

PJRCES’s opinion regarding the reported emission reductions for the current period is based on the review of information sought and publicly available information, where applicable.

ISO-14064 guidelines have been applied in principle to assess the key issues like accuracy, completeness and conservativeness of the information. PJRCES’s verification and certification of GHG emission reductions is limited to this information evaluation.

Issuance and utilization of certified GHG-emission reductions is beyond the scope of PJRCES.

<b>Report Number/ Revision Number</b>	<b>Number of pages</b>
V-3-I-01-B-0079-Ve/01	40
<b>Work carried out by:</b>	<b>Work Reviewed by:</b>
Mathsy Kutty, Tushar Chaudhari	Anjana Sharma

**VCS VERIFICATION REPORT*****Abbreviations***

CAR	Corrective Action Request
CDM	Clean Development Mechanism
CL	Clarification Request
DOE	Designated Operational Entity
GHG	Greenhouse gas
IPCC	Intergovernmental Panel on Climate Change
kWh	Kilo Watt Hour
MWh	Mega Watt Hour
PD	Project Document
PJRCES	Perry Johnson Registrars Carbon Emissions Services, Inc.
PP	Project Proponent
TNEB	Tamil Nadu Electricity Board
UNFCCC	United Nations Framework Convention on Climate Change
VCS	Voluntary Carbon Standard



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## **1 INTRODUCTION**

The clients as mentioned above, under the project activity has commissioned Perry Johnson Registrars Carbon Emissions Services, Inc. (PJRCES) for verification of their project – “11.60 MW Bundled grid-connected wind electricity generation project at Tirunelveli, Tamil Nadu, India” under the Voluntary Carbon Standard (VCS) 2007.1 for the period 28 March 2006 to 22 July 2009 (both days included).

The project activity involves installations of twenty three (23) Wind Turbine Generators (WTGs) of varying capacities by 16 different PPs totalling an installed capacity of 11.60 MW in different villages of Tamil Nadu, India. The validation of the project activity was concluded and a separate validation report dated 18 November 2009 was issued. The current report describes the verification work undertaken.

### **1.1 Objective**

Verification under VCS is the independent ex-post quantification and certification of the greenhouse gas (GHG) emission reductions achieved by a project activity which has completed validation under VCS 2007.1 or registered under a VCS approved GHG program. The current project applies the methodologies and tools under CDM, which is one of the VCS approved GHG programs.

The above work is carried out through an independent assessment and a written assurance is provided on the GHG emission reductions achieved for the period specified.

### **1.2 Scope and Criteria**

The scope of the verification covers independent objective review and ex-post determination of the monitored GHG emission reductions by the project activity “11.60 MW Bundled grid-connected wind electricity generation project at Tirunelveli, Tamil Nadu, India”. The specific scope of the verification work involves:

- To verify that the project activity is implemented as per the project details of the project document (PD)
- To assess whether the emissions reductions determined are in conformance with the monitoring plan of the PD and the approved methodology
- To express a conclusion whether reported data are accurate, complete, consistent, and transparent with a reasonable level of assurance and free of omission or material error, based on the review of the reported data and emission reduction calculations.

The project is assessed against the verification requirements of VCS 2007.1 standard including the criteria that the emission reductions are real, measurable, transparent and conservative. The approach adopted by PJRCES verification team is risk-based, drawing on an understanding of the risks associated with reporting of GHG emissions data and the controls in place to mitigate the same.

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

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Request for issuance of Voluntary Carbon Units (VCUs), verified and certified by PJRCES, shall be made by the project proponent to the VCS registry in accordance with the most recent version of the “VCS guidance document: VCS project registration and VCU issuance process”. In view of the above, PJRCES’s responsibility is limited only to verification and certification of the GHG emission reductions achieved during the specified period.

**1.3 VCS project Description**

As per the validated VCS PD, dated 11 November 2009, version 02, the project activity is generation of electricity by twenty three (23) WTGs, two (2) each of 0.225 MW capacity, six (6) each of 0.250 MW capacity, eight (8) of 0.5 MW capacity, two (2) each of 0.6 MW, two (2) of 0.75 MW capacity, two (2) each of 0.85 MW capacity, and one (1) each of 1.25 MW capacity totaling an installed capacity of 11.60 MW to generate electricity at different villages in Tamil Nadu state, India. The location details are as given below.

**\*CPP: Captive Power Producer; STG: Sale To Grid**



Sl. No	Project Proponent	Installed Capacity (MW)	HTSC No	Make of Turbine	Village	District	Usage of generated electricity	Local Grid Station	Geographical Coordinates
1	C.R.I.Pumps Private Limited	0.6	1063	Enercon	Parivarisuriyan	Tirunelveli	CPP	Anna Nagar	N 8 <sup>0</sup> 20' 18.042'' E 77 <sup>0</sup> 33' 19.997''
		0.6	1115	Enercon	Panagudi	Tirunelveli	CPP	Anna Nagar	N 8 <sup>0</sup> 20' 24.647'' E 77 <sup>0</sup> 33' 4.753''
2	Annai Wind Farms India (P) Ltd.	0.75	1124	NEG Micon (India) Pvt. Ltd.	Panagudi	Tirunelveli	CPP	Anna Nagar	N 8 <sup>0</sup> 19' 24.9'' E 77 <sup>0</sup> 33' 03.8''
3	Kovilpatti Lakshmi Roller Flour Mills Limited	1.25	1245	Suzlon	Dhanakarkulam	Tirunelveli	CPP	Radhapuram	N 8 <sup>0</sup> 14' 21.0'' E 77 <sup>0</sup> 39' 20.8''
4	Gomathy International	0.5 (2*0.25)	1249	Shriram EPC Ltd.	Veppilankulam	Tirunelveli	STG	Vadakkankulam	N 8 <sup>0</sup> 16' 26.5'' E 77 <sup>0</sup> 37' 54.7'' N 8 <sup>0</sup> 16' 18.2'' E 77 <sup>0</sup> 37' 54.2''
5	Gomathy Power Company	0.5 (2*0.25)	1499	Shriram EPC Ltd.	Veppilankulam	Tirunelveli	STG	Vadakkankulam	N 8 <sup>0</sup> 16' 16.7'' E 77 <sup>0</sup> 38' 01.2'' N 8 <sup>0</sup> 16' 21.5'' E 77 <sup>0</sup> 38' 01.2''
		0.25	1509	Shriram EPC Ltd.	Veppilankulam	Tirunelveli	STG	Vadakkankulam	N 8 <sup>0</sup> 16' 16.3'' E 77 <sup>0</sup> 38' 07.8''
		0.25	1510	Shriram EPC Ltd.	Veppilankulam	Tirunelveli	STG	Vadakkankulam	N 8 <sup>0</sup> 16' 12.7'' E 77 <sup>0</sup> 37' 54.9''
6	New Link	0.5	1248	Vestas RRB	Keelaveeranam	Tirunelveli	STG	Keelaveeranam	N 8 <sup>0</sup> 56' 02.4''



	Overseas Finance Limited								E 77 <sup>0</sup> 30' 28.4''
7	Sri Abiraami Agency	0.5	1236	Vestas RRB	Panagudi	Tirunelveli	STG	Anna Nagar	N 8 <sup>0</sup> 24' 49.0'' E 77 <sup>0</sup> 34' 8.0''
8	Leather Crafts India (P). Ltd.	0.5	1260	Vestas RRB	Anaikulam	Tirunelveli	STG	Surandai	N 9 <sup>0</sup> 01' 13.26'' E 77 <sup>0</sup> 27' 41.11''
9	A.B.Sale Corporation	0.5	1254	Vestas RRB	Anaikulam	Tirunelveli	STG	Pazhavor	N 9 <sup>0</sup> 01' 03.34'' E 77 <sup>0</sup> 27' 32.57''
10	Natesan Synchrocones Pvt. Ltd.	0.5	1275	Vestas RRB	Radhapuram	Tirunelveli	STG	Kottaikarunkulam	N 8 <sup>0</sup> 14' 06.0'' E 77 <sup>0</sup> 43' 36.0''
11	Sree Devi Chemicals	0.225	1285	NEPC India Ltd.	Pazhavor	Tirunelveli	STG	Pazhavor	N 8 <sup>0</sup> 12' 36.36'' E 77 <sup>0</sup> 34' 44.48''
12	Lilly Whites	0.5	1311	Vestas RRB	Karunkulam	Tirunelveli	STG	Karunkulam	N 08 <sup>0</sup> 10' 40.4'' E 77 <sup>0</sup> 34' 20.6''
13	N.R.G.Tex	0.5	1366	Vestas RRB	Elathur	Tirunelveli	STG	Shencottai	N 9 <sup>0</sup> 00' 18.0'' E 77 <sup>0</sup> 17' 11.1''
14	Sabare International Ltd.	0.85	1392	Gamesa Eolica	Udayathoor	Tirunelveli	CPP	Koodankulam	N 08 <sup>0</sup> 14' 12.6'' E 77 <sup>0</sup> 44' 6.0''
		0.85	1393	Gamesa Eolica	Udayathoor	Tirunelveli	CPP	Koodankulam	N 08 <sup>0</sup> 14' 0.3'' E 77 <sup>0</sup> 44' 30.84''
15	Natesan Synchrocones Pvt. Ltd.	0.5	1434	Vestas RRB	Radhapuram	Tirunelveli	STG	Kottaikarunkulam	N 8 <sup>0</sup> 16' 54.6'' E 77 <sup>0</sup> 41' 52.7''
16	Al-Lan Texknit Processors	0.75	1462	NEG Micon (India) Pvt. Ltd.	Dhanakarkulam	Tirunelveli	CPP	Vadakkankulam	N 8 <sup>0</sup> 14' 33.4'' E 77 <sup>0</sup> 37' 30.0''
17	Sree Karthik Traders	0.225	1494	NEPC India Ltd.	Pazhavor	Tirunelveli	STG	Pazhavor	N 8 <sup>0</sup> 12' 55.29'' E 77 <sup>0</sup> 34' 40.45''



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The electricity generated by the WTGs is fed to the Tamil Nadu state electricity grid i.e. Tamil Nadu Electricity Board (TNEB) which is part of the Southern Regional Grid in India.

The generated electricity is replacing equivalent quantity of electricity from being produced by operation of existing grid connected power plants or addition of new generation sources in the grid mix.

The project qualifies the start date requirements under VCS 2007.1 as the first WTG was commissioned later than January 2002. Further, in line with VCS 2007.1 requirements and crediting period start date as defined in the validated VCS PD, the monitoring period start date has been considered as 28 March 2006.

By implementing the project activity, the following GHG sources of emissions are reduced/ avoided.

**Table 1: GHG emissions avoided by project activity**

Project Equipment - Purpose	Baseline	Baseline GHG emission source reduced/ avoided
Wind Turbine Generators – generation of electricity by renewable means and exporting to Southern Regional grid	Generation of electricity by fossil fuel dominated grid connected power plants	CO <sub>2</sub> emissions from fossil fuels and other fuel fired grid connected

### 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 verification of the project.

This implies that, based on the process and procedures conducted, PJRCES confirms that the GHG assertion in the monitoring report

- *is materially correct and is a fair representation of the GHG data and information, and*
- *is prepared in accordance with VCS requirements, the PD and the approved methodology for information pertaining to GHG quantification, monitoring and reporting.*

The verification work is carried out as per this requirement and details are presented in the verification statement in section 2 below.



## 2 METHODOLOGY

### 2.1 General Approach

The project activity is operation of twenty three WTGs, total an installed capacity of 11.60 MW at different villages in Tamil Nadu state, India. The project activity applies approved baseline and monitoring methodology AMS. I. D., version 14 categorized under sectoral scope 01 'Energy industries (renewable - / non-renewable sources)'.

For verification of emission reductions, PJRCES's approach involves broadly three steps:

- Completeness check and desktop review of the monitoring report
- Onsite inspection and issuance of findings from the audit
- Resolution of the findings and preparation of the verification report

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

**Table 2: Verification Team**

Name	Role	Areas covered
Tushar Chaudhari	Verifier	Completeness check of monitoring report, desktop review, site visit, issuance and closure of findings, report preparation
Mathsy Kutty	Team Leader	Supervision of the above verification activity.
Anjana Sharma	Technical Reviewer	Independent review of the verification assignment.

### 2.2 Means of Verification

#### 2.2.1 Review of Project Documentation

On receipt of the monitoring report from the client, the completeness of information made available as per VCS 2007.1 standard requirements was reviewed. A desktop review was further carried out to assess the following:

- the validated VCS 2007.1 PD with the monitoring plan
- the emission reduction calculation method used in the applied methodology and the PD
- the monitoring report, including frequency of monitoring and the calculation of emission reductions for the period
- the documented operation and maintenance manual furnished by the project participant (where applicable)
- other external documents like grid emission factor, IPCC emission factor, etc. applied

A complete list of all documents reviewed is attached in Appendix I of this report.



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### 2.2.2 Onsite Inspections

PJRCES team conducted site visit to the WTGs in project activity between August and September 2009 for physical inspection of the WTGs with representatives of project proponents and Operation & Maintenance personnel and follow up interviews and desk meetings with project participant. During these meetings, PJRCES verified the actual operation of the project as described in the PD; checked the monthly electricity generation report issued by TNEB as applicable for each PP, (hence onwards referred as electricity generation report), controller data at Central Monitoring Stations (CMS); the calibration records available with the PP; and discussed the issues identified during desk review of submitted documents and observation on site visit.

The following table lists the personnel interviewed and issues discussed during the site visit:

**Table 3: Personnel Interviewed**

Name / Designation / Company	Interviewed on
A. Vekata Naidu Deputy Manager – Customer Service Vestas Wind Technology India Private Ltd.	<ul style="list-style-type: none"> <li>• Site operations</li> <li>• Monitoring methodology and practices</li> <li>• Billing schedule and joint meter reading exercise</li> <li>• Calibration practices</li> <li>• Proof title</li> </ul>
Mr. R K S Pillai, Asst. Manager, CRM, Suzlon	
Mr. Vishwa K Mathad, Sr. Consultant Deloitte	
Ms. R Madhavi, Sr. Consultant, Deloitte	

### 2.2.3 Review of Monitoring Results and Correct Application of Monitoring Methodology

Based on the site inspection and review of records including the monitoring plan and other documentation submitted, a list of non conformities Corrective Action Requests (CARs) and Clarification Requests (CLs) were raised. The non conformities, inter-alia, were relate to lack of adherence to the VCS 2007.1 requirements, non-conformance to the monitoring plan of as defined in the PD or where evidence provided was found insufficient to prove conformity, mistakes in applying data/assumptions and in calculation of emission reductions.

If information made available was insufficient to transparently arrive at the stated conclusion, a Clarification request (CL) was raised and communicated to the project proponent.

Observations may also be raised which are for the benefit of future verification period. These, however, have no impact upon the completion of the current verification activity.



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On receipt of response from the project developer, the adequacy with compliance with VCS requirements was checked along with a revised monitoring report. Closure of comments raised occurred only when the response provided and correction made fully complied with the relevant requirements.

The list of CARs/ CLs raised and the response provided and reasons for closure are provided appendix-II.

### 2.2.4 Determinations of the reductions in GHG Emissions

As per the applicable methodology, AMS. I. D, version 14, the emission reductions achievable by the project activity are calculated as a difference of baseline emissions ( $BE_y$ ) project emissions ( $PE_y$ ) and emissions due to leakage ( $L_y$ ) determined as follows.

**Baseline emissions:** The baseline emissions include only CO<sub>2</sub> emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity. The project electricity generation above baseline levels would have been generated by existing grid-connected power plants and the addition of new grid-connected power plants.

The baseline emissions are determined as a multiple of net electricity generated and supplied to the grid by the renewable energy technology ( $E_{EXP,y}$  in MWh), and an electricity grid emission factor calculated as per CDM EB guidance.

As per the PD, the emission factor has been fixed ex-ante and for the current verification period, PJRCES was able to verify the VER calculations based on the grid emission factor for the Southern Regional Grid was 0.928 t CO<sub>2</sub>/MWh.

**Project emissions:** As the project activity is greenfield wind power project and it does not having any emission sources in project boundary. Furthermore, there are no anthropogenic emissions identified by sources outside the project boundary due to the project activity, hence project emissions have been considered as zero.

**Leakage:** The equipment's (WEGs) used by the project activity are newly procured and hence not transferred from another project. Thus, there are no leakage emissions attributable to the project activity.

Emission reductions:  $ER_y = BE_y - PE_y$

As  $PE_y$  is zero.

Thus,  $ER_y = BE_y$

During the current monitoring period, i.e. from 28 March 2006 to 22 July 2009 (both days included), the project activity has fed approximately 74,488.93 MWh of net electricity after applying correction factor to the Southern grid. This was checked against the electricity generation report issued by respective state electricity utility in line with the source of data defined in the VCS PD. The net reduction in GHG



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emissions achieved by the project activity during the said monitoring period is equivalent to 68,733 t CO<sub>2</sub>e, after rounding down corrections.

PP has estimated 29,586 t CO<sub>2</sub>e per annum ex-ante during the crediting period extending from 28 March 2006 till 27 March 2016 for the 11.60 MW project activity in the validated VCS PD. However, during the current verification period, the resulting actual emission reductions i.e. 21,404 t CO<sub>2</sub>e /year are lower than the annual estimate i.e. 29,586 t CO<sub>2</sub>e /year as presented in the validated PD. The actual emission reductions were lower during the year 2007 due to poor wind season.

Note: Calendar year 2007 has been considered for the comparison of monitored emission reductions with emission reductions based on ex-ante calculations.

The above value of GHG emission reductions is based on completely monitored data, transparently presented, accurately measured and calculated, conservatively estimated and independently verified by PJRCES.

### 2.2.5 Review of Additional Data from other Sources if appropriate

No pending issues that were to be considered during verification were identified in the validation report.

The other source of information was the CEA's CO<sub>2</sub> emission database version 04, available from the website, from which the emission factor for the grid was determined.

## 2.3 Internal Quality Control

On completion of the assessment by the GHG assessment team, the complete verification package including the verification report, monitoring report and supporting documents was sent to the technical reviewer. In this stage, the technical reviewer independently assessed the project with the VCS requirements before accepting/ rejecting the recommendation from the GHG assessment team.

# 3 VERIFICATION FINDINGS

## 3.1 Remaining issues, including any material discrepancy, from previous validation

No pending issues were identified from the discussion, findings and conclusions drawn from the VCS 2007.1 validation report (version 01) issued dated 18 November 2009 against the VCS PD version 02 dated 11 November 2009.



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### 3.2 Project Implementation

The bundled project activity involves the installation and operation of twenty three WTGs at different villages in Tamil Nadu state, India. These WTGs are manufactured by various manufactures. The WTGs under the bundled project activity were commissioned during 22 January 2005 to 06 October 2005.

The implementation of the project activity as described in the VCS PD was checked against supportive documents presented. PJRCES was able to verify that there was no change in project design compared to the design presented in the VCS PD.

Sabare International Ltd sold their WTG's (HTSC No's 1392 and 1393) to Arunachala Gounder Textile Mills Private Limited on 23-02-2009. Hence, it is not possible for the project proponent to obtain the delayed calibration certificate with the same name of PP.. Sabare International Limited is availing the credits from the start date of the crediting period till the date on which WTG's have been sold. For the period April 2009 to July 2009 Sabare International Limited/Arunachala Gounder Textile Mills Private Limited are not claiming the carbon credits under VCS or has not generated any other form of environmental credit. Arunachala Gounder Textile Mills Private Limited will not be a part of this verification. Sabare International Ltd has transferred the VCU rights to the Arunachala Gounder Textile Mills Private Limited for subsequent verifications.

### 3.3 Completeness of Monitoring

The GHG emission reductions are calculated based on the net electricity exported by the project activity to the connected grid system. The clients are monitoring the complete data and this is available with them in the form of monthly electricity generation report issued by respective state electricity utility.

The GHG emission reductions are calculated based on the net electricity exported by the project activity to the grid.

The generated electricity is measured by a pair of 0.5s accuracy class electronic tri-vector meters (energy meters) in Tamil Nadu state. These meters are installed at each WTG location, identified as main and check meters. Each WTG is equipped with dedicated tri vector TOD (Time of Day) meters at WTG's transformer yard. The main meter readings are the primary source while the check meter is used to determine the accuracy of meter readings, and the check meter readings serve as a back-up in the eventuality of main meter failing, if and when identified during yearly checks. However, this has not happened in the present case. The generated electricity has been evacuated then the same has been fed in to connected grid system after step up at connected feeder at the substation end. PP's those had opted to use generated electricity for captive purpose will get the set off for the generated electricity as per the monthly electricity generation report issued by state electricity utility.

The electricity generation report for all the WTGs were checked. The electricity generation reports are the primary source for estimating the net energy delivered by the project activity to the grid. As these also included the energy measurements, this



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data was used to cross check the net energy delivered to the grid by the project activity. These include the difference of energy meter readings from previous joint meter reading exercises.

Parameter Symbol	Description of parameter	Source of data	Completeness check
$E_{EXP,y}$	Net Electricity supplied by the project activity to grid in the year y	Monthly power export bills/ of the WTGs at regular intervals (monthly) /Monthly electricity generation report from electricity board for each WTGs under project activity	Yes, available for the entire monitoring period duration as per the monitoring plan of validated VCS PD.
$EF_{GRID}$	Emission factor of the grid to which the electricity generated by the project activity is exported (in t CO <sub>2</sub> /MWh)	Central Electricity Authority India CO <sub>2</sub> database version 4	Applied ex-ante emission factor defined during the validation under the validated VCS PD.

The following table summarizes the net electricity delivered by the project to the Southern grid:

Year of Assessment	Net Electricity Export (MWh)	Emission Reduction (t CO <sub>2</sub> e)
2006	16931.4	15,639.00
2007	23195.24	21,404.00
2008	21333.66	19,671.00
2009	13028.64	12,019.00
Total	74488.93	68,733.00

The accuracy of the above data was checked by PJRCES and the analysis presented below.

### 3.4 Accuracy of Emission Reduction Calculations

**Net electricity supplied to the grid:** The energy meter readings were noted daily and compared to the controller data to check the accuracy in measurement. However monthly joint meter readings were taken and authorized by the representatives of PP and by representative of respective state electricity utility jointly which were then used to estimate the quantity of energy delivered by the WTGs to the grid. The electricity generation reports issued by TNEB were the source for the values used to determine the net electricity delivered by the project activity.

The transposition errors in the spreadsheet submitted were intimated and corrected by the PP. The formulae and conversions were correctly applied.

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**Metering accuracy:** The connected energy meter was tested and calibrated at the time of WTG commissioning.

The periodicity of calibration defined at the time of validation was once a year. The calibration of energy meters rests with the respective state authorities. The PP has not followed the energy meter calibration frequency as specified in the monitoring plan under registered VCS PD and hence, for the delayed calibration period has applied correction factor in line with EB 52, annex 60 guideline as conservative approach.

The emission reduction before the round down was 69,125.73 t CO<sub>2</sub> e, while after the round down, it was revised to 68,733.00 t CO<sub>2</sub> e. The resulting emission reductions, are therefore conservative.

**Value of grid emission factor:** PJRCES was able to confirm that this parameter was fixed ex-ante during the validation of the project and the same was used for ER calculations for the current monitoring period (MR version 03 dated 08 August 2011). The parameter was derived from officially published latest database\* by Central Electricity Authority (CEA), of India, a subsidiary of Ministry of Power, Government of India, which is the authentic source of such information, at the time of validation. The emission factor for the Southern grid to which the project activity exports power to is determined as 0.928 t CO<sub>2</sub>/MWh.

\*<http://www.cea.nic.in/planning/c%20and%20e/Government%20of%20India%20web%20site.htm>



Table 5: Calibration Details

Name of the Project Proponent	WTG HTSC Number	Meter Sl. Number	Meter Make	Calibration Details	Period for which correction factor has been applied as per EB 52, Annex 60 Guidance
C.R.I. Pumps Private Limited	1063	04681390 0267874	Elster L&T	22/01/2005; 13/09/2005; 24/11/2006 and 17/11/2008 Failed meter changed on 11/10/2010	13/09/2006-23/11/2006, 24/11/2007-16/11/2008
	1115	04681405	Elster	26/02/2005; 13/09/2005; 24/11/2006; 17/11/2008 and 05/03/2011	13/09/2006-23/11/2006, 24/11/2007-16/11/2008
Annai Wind Farms India (P) Ltd.	1124	04681337	Elster	01/03/2005; 24/01/2008 and 22/07/2010	10/04/2006-23/01/2008, 24/01/2009-15/07/2009
Kovilpatti Lakshmi Roller Flour Mills Limited	1245	04681349 04691357	Elster Elster	30/03/2005. New meter placed on 31/03/2005. Periodical tests done on 12/07/2005; 18/01/2008; 05/05/2011	12/07/2006-17/01/2008, 18/01/2009-15/07/2009
Gomathy International	1249	04691169	Elster	30/03/2005; 12/06/2008 and 02/04/2011	15/04/2006-11/06/2008, 12/06/2009-20/07/2009
Gomathy Power Company	1499	04721946	Elster	30/09/2005.	30/09/2006-13/11/2006, 14/11/2007-11/06/2008, 12/06/2009-15/07/2009
		04863799	Elster	New meter placed on 14/11/2006. Periodical test done on 12/06/2008	
		09593605	L&T	New meter placed on 23/02/2010 Periodical test done on 02/04/2011	
	1509	04721949	Elster	06/10/2005; 12/06/2008 and 02/04/2011	06/10/2006-11/06/2008, 12/06/2009-15/07/2009
	1510	04721945 09593355	Elster L&T	06/10/2005; 12/06/2008 Failed meter changed on 11/05/2010	06/10/2006-11/06/2008, 12/06/2009-15/07/2009
New Link Overseas Finance Limited	1248	02377843	Elster	30/03/2005; 01/11/2008 and 10/08/2010	17/04/2006-31/10/2008,



Sri Abiraami Agency	1236	04681532	Elster	30/03/2005; 18/05/2011	10/04/2006-20/07/2009
Leather Crafts India (P). Ltd.	1260	02377912	Elster	31/03/2005. New meter placed on 13/07/2007	17/04/2006-12/07/2007, 13/07/2008-15/07/2009
		04892631	Elster	Periodical test done on 17/09/2010	
A.B. Sale Corporation	1254	02377904	Elster	31/03/2005; 20/10/2008 and 17/09/2010	17/04/2006-19/10/2008
Natesan Synchrocones Pvt. Ltd.	1275	04691163	Elster	31/03/2005; 17/04/2008 and 09/08/2010	12/04/2006-16/04/2008, 17/04/2009-20/07/2009
Sree Devi Chemicals	1285	04691324	Elster	12/04/2005; 02/06/2008 and 18/05/2011	24/04/2006-01/06/2008, 02/06/2009-22/07/2009
Lilly Whites	1311	02377850	Elster	07/06/2005; 16/12/2008	07/06/2006-15/12/2008
N.R.G.Tex	1366	04691268	Elster	17/08/2005; 21/11/2008 and 27/07/2010	17/08/2006-20/11/2008
Sabare International Ltd.	1392	04719935 208320458	Elster Wallaby	19/09/2005; 17/04/2008 New meter placed on 19/02/2010	19/09/2006-15/07/2009
	1393	04719936	Elster	19/09/2005; 28/06/2008	19/09/2006-27/06/2008 28/06/2009-15/07/2009
Natesan Synchrocones Pvt. Ltd.	1434	04691267	Elster	28/09/2005; 01/02/2008 and 09/08/2010	28/09/2006-31/01/2008, 01/02/2009-20/07/2009
Al-Lan Texknit Processors	1462	04721880	Elster	29/09/2005; 09/01/2008 and 07/06/2011	29/09/2006-08/01/2008, 09/01/2009-15/07/2009
Sree Karthik Traders	1494	04721809	Elster	30/09/2005; 23/12/2008	30/09/2006-22/12/2008

\*: The situation where failed old meter has been replaced with new meter, PP has applied correction factor for period between previous calibration date to the new meter installation date or till end date of meter reading for the month of July 2009 as a conservative approach.

\*\* : The meters in Tamil Nadu are of accuracy class 0.5.



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### 3.5 Quality of Evidence to Determine Emission Reductions

The source of net energy generation, as reported in the PD is the electricity generation report issued by respective state electricity utility. The client used the electricity generation reports for all the months forming part of the monitored period to calculate  $E_{EXP,y}$ . PJRCES was able to check and verify the values. The annual value of the energy exported was the summation of these monthly readings. The electricity generation report issued by respective state electricity utility, these are Government state electricity utilities, are deemed to be the most appropriate source of data for net energy exported, as the values denoted were jointly measured by the representatives of the PP and Government representatives, and duly signed and acknowledged by both parties. The client also monitored the net generation using their own log sheets which were used to cross check the data presented in the electricity generation report.

The emission factor for the Southern grid to which the project activity exports power to is determined as 0.928 t CO<sub>2</sub>/MWh, a value fixed ex-ante during validation of the project activity and sourced from the official source for grid emission factors in India. These practices meet the requirements of the applied methodology and approved monitoring plan as registered in the VCS PD.

### 3.6 Management and Operational System

The client has established and implemented procedures to monitor the project activity and its operation. These procedures cover management responsibilities, data monitoring and reviewing procedures and have provided with reports.

All the daily and monthly records are archived in electronic copy and paper format.



## 4 VERIFICATION CONCLUSION AND CERTIFICATION STATEMENT

*Perry Johnson Registrars Carbon Emissions Services, Inc. (PJRCES) has carried out verification of the emission reductions achieved by the project “11.60 MW Bundled grid-connected wind electricity generation project at Tirunelveli, Tamil Nadu, India” against the guidelines of VCS 2007.1. The project activity is generation of electricity by twenty three (23) Wind Turbine Generators (WTGs) by different PPs, totaling an installed capacity of 11.60 MW at different villages of the Indian states of Tamil Nadu. The WTGs were commissioned during 22 January 2005 to 06 October 2005 and same has been considered for current verification. The generated electricity is being sold to respective state grid by few PPs while some PPs opted to use the generated electricity for captive consumption. Verification was sought for the emission reductions achieved by the project within the period 28 March 2006 to 22 July 2009 (both days included) under VCS 2007.1.*

*The project has applied the version 14 of the small scale CDM methodology AMS. I. D, “Grid connected renewable electricity generation” and the emission reductions are as reported in the version 03 of the monitoring report, dated 08 August 2011. The project activity is validated under VCS 2007.1 and the validation report version 01 was issued on 18 November 2009 against the VCS PD, version 02 dated 11 November 2009.*

*PJRCES’s approach is risk-based, drawing on an understanding of the risks associated with reporting GHG emissions data and the controls in place to mitigate them. The assessment was based on review of supporting evidences and information provided, including other explanations where necessary to enable PJRCES to provide reasonable assurance that the reported amount of GHG emission reductions for the specified period is materially correct and fairly stated.*

**Certification statement:**

*PJRCES confirms that the project activity has been implemented as per the VCS registered PD and that the emission reductions presented in the monitoring report version 03 dated 08 August 2011 are correctly determined as per the VCS 2007.1 standard and AMS. I. D methodology, version 14. Based on the above information, PJRCES confirms the following:*

<i>Name of the project</i>	<i>“11.60 MW Bundled grid-connected wind electricity generation project at Tirunelveli, Tamil Nadu, India”</i>
<i>VCS 2007.1 PD</i>	<i>Version 02 dated 11 November 2009</i>
<i>VCS 2007.1 Validation Report</i>	<i>Version 01 dated 18 November 2009</i>
<i>Methodology</i>	<i>AMS. I. D, version 14</i>
<i>Monitoring Report</i>	<i>Version 03 dated 08 August 2011</i>
<i>Reporting period</i>	<i>28 March 2006 to 22 July 2009 (both days included)</i>



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**Verified emission in the above reporting period**

<i>Project emissions</i>	:	0	<i>t CO<sub>2</sub> equivalents</i>
<i>Baseline emissions</i>	:	68,733	<i>t CO<sub>2</sub> equivalents</i>
<i>Emission reductions</i>	:	68,733	<i>t CO<sub>2</sub> equivalents</i>

**Year-wise emission reductions**

<i>28 March 2006 to 31 December 2006</i>	:	15,639	<i>t CO<sub>2</sub> equivalents</i>
<i>01 January 2007 to 31 December 2007</i>	:	21,404	<i>t CO<sub>2</sub> equivalents</i>
<i>01 January 2008 to 31 December 2008</i>	:	19,671	<i>t CO<sub>2</sub> equivalents</i>
<i>01 January 2009 to 22 July 2009</i>	:	12,019	<i>t CO<sub>2</sub> equivalents</i>

**Project Manager**  
PJRCS

**Site Program Manager**  
PJRCS



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### APPENDIX I: DOCUMENTS REVIEWED

Sl. No.	Document reference
[01]	Monitoring report: “11.60 MW Bundled grid-connected wind electricity generation project at Tirunelveli, Tamil Nadu, India”, version 03, dated 08 August 2011, and all previous versions
[02]	Emission reduction spreadsheet, version 03, dated 08 August 2011, and all previous versions
[03]	Project Document: “11.60 MW Bundled grid-connected wind electricity generation project at Tirunelveli, Tamil Nadu, India”, version 02, dated 11 November 2009.
[04]	VCS Validation Report: “11.60 MW Bundled grid-connected wind electricity generation project at Tirunelveli, Tamil Nadu, India”, version 01, dated 18 November 2009.
[05]	Approved small-scale methodology – Indicative baseline and monitoring methodology AMS. I. D, version 14: “Grid connected renewable electricity generation”
[06]	CDM Executive Board: Validation and Verification Manual, version 01.2
[07]	Calibration records for the energy meters used to measure the energy delivered by the WTGs for the period 28 March 2006 to 22 July 2009.
[08]	Electricity generation reports issued by respective state electricity utility for all the months between the period 28 March 2006 to 22 July 2009 for the project activity.
[09]	Version 01 of “Guidelines for assessing compliance with the calibration frequency requirements”, EB 52, annex 60.

**APPENDIX II : RESOLUTION OF CARs AND CLs**

Resolution of Corrective Action and Clarification Requests: - “11.60 MW Bundled grid-connected wind electricity generation project at Tirunelveli, Tamil Nadu, India”

<b>Draft report clarification requests and corrective action requests by verification team</b>	<b>Reference:</b>	<b>Summary of project owner response</b>	<b>Verification team’s conclusion</b>
<p><b>CAR 1</b>                      The project no. mentioned by PP is PJRCDM’s internal project no. PP is not allowed to use this no. on the report. PP is requested to mention the project ID no. as per VCS registry if any or should mention proper number.</p>	<p>Front page</p>	<p>The project no. given by PJRCDM has been deleted from the report. The VCS project ID as per VCS registry has been mentioned in the revised monitoring report.</p>	<p>Now, the PP had mentioned the project ID as per VCS registry which is checked and found ok. <b>CAR 1 has been closed.</b></p>
<p><b>CAR 2</b>                      PP is requested to mention the carbon mechanism &amp; standard referred for verification.                      Further more, PP is requested to incorporate, claimed emission reduction during monitoring period, name &amp; contact information of the person(s)/entity(ies) responsible for</p>	<p>Front page</p>	<p>Necessary corrections have been made on the front page of the monitoring report with respect to the carbon mechanism &amp; standard referred for verification, claimed emission reduction during monitoring period, name &amp; contact information of the person(s)/entity(ies) responsible for completing the monitoring report.</p>	<p>Now, the PP had mentioned the requested information on the front page of MR which is checked and found ok. <b>CAR 2 has been closed.</b></p>

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Draft report clarification requests and corrective action requests by verification team	Reference:	Summary of project owner response	Verification team’s conclusion
completing the monitoring report.			
<p><b>CAR 3</b> PP is requested to incorporate project VCS registration date, Total emission reductions achieved in this monitoring period, Include the complete reference of the methodology applied and tools whichever is applicable.</p>	Section 1	<p>Registration date of the VCS PD, Emission reductions achieved during the monitoring period, complete reference of the methodology applied and tools applied have been mentioned in the revised monitoring report.</p> <p>Response: The registration date of the VCS PD has been mentioned correctly in the revised monitoring report and the complete reference for the applied tool has been mentioned in the revised MR.</p> <p>Response: Date of completion of project validation has been mentioned correctly in the revised MR.</p>	<p>Not ok. PP has not mentioned the correct VCS registration (completion of VCS validation) date of project in the revised MR. Further, the complete reference for the tool referred was missing in the revised MR, PP needs to mention the same.</p> <p><b>CAR 3 is open.</b></p> <p><b>DOE dated 22/07/2011:</b> PP has not incorporated date of completion of validation for the project activity. <b>Thus, CAR 3 is still open.</b></p> <p><b>DOE dated 09/08/2011:</b> Ok, now PP has incorporated the date of completion of VCS validation for the project activity in the revised monitoring report. <b>Thus, CAR 3 has been closed.</b></p>
<p><b>CAR 4</b> PP is requested to incorporate the CPP (captive power project) or STG (Sold to Grid) information for each WTG under table 3.1 of MR.</p>	Section 3	Necessary information pertaining to the CPP or STG has been incorporated in table 3.1 of the revised monitoring report.	Ok, now PP has incorporated the information on each project’s agreement with respective state electricity utility which is checked with power purchase/wheeling agreement as applicable for each WTG and found ok. <b>CAR 4 has been closed.</b>

<b>Draft report clarification requests and corrective action requests by verification team</b>	<b>Reference:</b>	<b>Summary of project owner response</b>	<b>Verification team's conclusion</b>
<p><b>CAR 5</b>                      As this sustainable development indicator were neither the monitoring parameter nor the part of monitoring plan and furthermore, they were checked during validation and not under scope of verification, PP is requested to delete this portion/information from MR.</p>	<p>Section 4</p>	<p>Since the sustainable development indicator is not a monitoring parameter and as it has been checked during the validation the same has been deleted from the revised monitoring report..</p>	<p>Ok, now PP has deleted the non-relevant information on sustainable development from MR. Hence, <b>CAR 5 has been closed.</b></p>
<p><b>CAR 6</b>                      PP is requested to incorporate in brief, the actual monitoring system (data measurement &amp; recording procedure, emergency preparedness, organogram for project monitoring with respect to roles &amp; responsibility, Line diagram showing relevant monitoring points, respective substation meter no., accuracy class etc. under section 6.2 of MR.</p>	<p>Section 6.2</p>	<p>Necessary information pertaining to the Data measurement, recording procedure, emergency preparedness has been provided in the revised monitoring report. The roles and responsibilities with respect to project monitoring have been already provided in the section 3.2 of the registered VCS PD. The substation details connected to the WEG has been already provided in the Table 1.1 of the monitoring report.</p> <p>Response: The organogram for project monitoring with respect to roles and responsibilities, line diagram showing</p>	<p>Not ok, PP has not mention the requested information on organogram for project monitoring with respect to roles and responsibility, line diagram showing relevant monitoring points, respective substation in relevant sections of the MR. PP needs to mention the required information in MR. <b>CAR 6 is open.</b></p> <p><b>DOE dated 22/07/2011:</b> ok, now PP has incorporated the requested information in the section 5.2 of revised MR. <b>Thus, CAR 6 has been closed.</b></p>

Draft report clarification requests and corrective action requests by verification team	Reference:	Summary of project owner response	Verification team’s conclusion
		relevant monitoring points has been mentioned in the section 5.2 of the revised monitoring report. The details of the substation to which WTG’s have been connected have been mentioned in the table 1.1 of the monitoring report.	
<p><b>CAR 7</b>                      PP is requested to mention information on project emission &amp; leakage emission in line with applied baseline and monitoring methodology under section 6.2 of MR.</p>	Section 6.2	Information pertaining to project emission and leakage emission has been mentioned in the section 5.2 of the revised monitoring report.	Ok, now PP has mention the required information on project emission and leakage emission in line with applied methodology and registered VCS PD in the section 5.2 of revised MR. <b>CAR 7 has been closed.</b>
<p><b>CAR 8</b>                      PP is requested to incorporate the calibration information (date of calibration, accuracy class, date &amp; result of calibration as per frequency mentioned in registered VCS PD covering the current monitoring period for each WTG. Further, in case of delayed calibration, PP is</p>	Section 6.2	<p>Necessary information related to the calibration of the WEGs has been mentioned in the revised monitoring report.</p> <p>Energy meters were installed by the project proponents, after conducting all the tests as specified by the State Electricity Board (SEB). The responsibility of periodical calibration rests with the SEB. However, the EB did not issue the calibration certificates to the project proponents though the same has been applied for. Since the calibration</p>	PP has now incorporated information on date of calibration accuracy class of energy meters. PP needs to mention information on result of calibration and specifically mention the period for with calibration has not been carried out for each WTG. Furthermore, PP needs to refer the paragraph 4 to 6 of “Guidelines for assessing compliance with the calibration frequency requirements”- version 01, annex 60 of EB 52. PP needs to submit the calibration certificate for following

Draft report clarification requests and corrective action requests by verification team	Reference:	Summary of project owner response	Verification team’s conclusion
<p>requested to state specifically the period for which calibration was not carried out &amp; justified how the emission reduction calculated are conservative.</p>		<p>certificates are not available with the project proponents for certain period during the chosen monitoring period the project proponents have considered the correction factor as per the Clause B of “Guidelines for Assessing Compliance with the Calibration Frequency Requirements”- Version 01, Annex 60 of EB 52 , Cases where calibration is not conducted at the frequency specified by the methodology, monitoring plan or the CDM Executive Board guidance and/or monitoring plan, maximum permissible error of the measuring instrument should be applied to the electricity export and electricity import to arrive at the net generation.</p> <p>However the available calibration certificates for all the WEG’s have been already provided to the validator.</p> <p>Response: The project proponents have followed the paragraph 4 to 6 of “Guidelines for assessing compliance with the calibration frequency requirements”- version 01, annex</p>	<p>participants covering the entire monitoring period.</p> <p>7.Kovilpatti Lakshmi Roller Flour Mills Limited                      8.Gomathy International                      9.Gomathy Power Company (HTSC No. 1509 and HTSC No.1510)                      10.Sri Abiraami Agency                      11.Sree Devi Chemicals                      12.Sabare International Ltd. (HTSC No. 1393)                      13.AI-Lan Texknit Processors</p> <p><b>CAR 8 is open.</b></p> <p><b>DOE dated 22/07/2011:</b> PP has now submitted the calibration certificate for the requested PPs and found ok.</p> <p>Furthermore, PP has submitted the VCU rights agreement dated 08 July 2011 which clearly states that Sabare International Ltd. has sold their both WTGs to Arunachala Gounder Textile Mills Private Limited on 23-02-2009. This supports the statement for</p>

Draft report clarification requests and corrective action requests by verification team	Reference:	Summary of project owner response	Verification team's conclusion
		<p>60 of EB 52. The latest calibration certificates for the following clients would be provided to the validator</p> <ol style="list-style-type: none"> <li>1.Kovilpatti Lakshmi Roller Flour Mills Limited</li> <li>2.Gomathy International</li> <li>3.Gomathy Power Company (HTSC No. 1509 and HTSC No.1510)</li> <li>4.Sri Abiraami Agency</li> <li>5.Sree Devi Chemicals</li> <li>6.Al-Lan Texknit Processors</li> </ol> <p>Sabare International Ltd.(HTSC No.1393):                      The project proponent sold their WTG's (HTSC No's 1392 and 1393) to Arunachala Gounder Textile Mills Private Limited on 23-02-2009. So it is not possible for Sabare International Ltd to obtain the delayed calibration certificate. So the generation details and the corresponding emission reductions have been considered as zero for the period April 2009 to July 2009.</p>	<p>delayed calibration. Furthermore, as PP is not claiming the emission reduction beyond period of validity of previous calibration certificate. The same is acceptable as conservative approach. <b>Thus, CAR 8 has been closed.</b></p>
<p><b>CAR 9</b>                      PP is requested to mention the parameters under section 6.3 more</p>	<p>Section 6.3</p>	<p>Necessary information has been provided in the revised monitoring report in line with VCS PD and applied methodology.</p>	<p>The information incorporated by PP is not correct; PP needs to correctly mention the description, notation and unit of data</p>

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Draft report clarification requests and corrective action requests by verification team	Reference:	Summary of project owner response	Verification team’s conclusion
<p>transparently, in line with the registered VCS PD &amp; applied baseline and monitoring methodology.</p> <p>Furthermore, PP is requested to mention the source of data for monitored parameter.</p>		<p>Response: Description, notation and unit of data variable has been mentioned in section 5.3 of the revised monitoring report which is in line with registered VCS PD.</p>	<p>variable in line with registered VCS PD. <b>CAR 9 is open.</b></p> <p><b>DOE dated 22/07/2011:</b> ok, PP has now corrected the monitoring parameter description, formula notation and unit of data variable in line with validated VCS PD. <b>Thus, CAR 9 has been closed.</b></p>
<p><b>CAR 10</b></p> <p>The information provided under section 7 on page no. 12 of MR is contradicting with section 3 of registered VCS PD. PP is requested to correct the same and check throughout the document for consistency.</p>	<p>Section 7</p>	<p>Necessary corrections have been made in the section 7 of the revised Monitoring report.</p>	<p>Ok, now PP has mentioned the requested information in line with registered VCS PD. <b>CAR 10 has been closed.</b></p>
<p><b>CAR 11</b></p> <p>In the registered VCS PD, the emission factor is calculated as ex-ante combined margin &amp; need not to monitor throughout the crediting period. Thus PP is requested to delete the non relevant information under</p>	<p>Section7</p>	<p>Calculation of combined margin emission factor has been removed from the revised monitoring report. Necessary corrections have been made in the revised monitoring report to bring more transparency.</p>	<p>Ok, now PP has mentioned the ex-ante combined margin baseline emission factor and removed the unnecessary information on its detail calculation approach for more transparency. <b>Thus, CAR 11 has been closed.</b></p>

Draft report clarification requests and corrective action requests by verification team	Reference:	Summary of project owner response	Verification team’s conclusion
section 7 of MR & mention the required information in transparent manner.			
<p><b>CAR 12</b>                      The information under section 7, page no. 14 of MR is not as per registered VCS PD; PP is requested to correct the same.</p>	Section 7	Necessary corrections have been made in the revised monitoring report.	Ok, now PP has corrected the information on emission reduction calculation formula notation description in line with the registered VCS PD. <b>Thus, CAR 12 has been closed.</b>
<p><b>CAR 13</b>                      PP is requested to reframe the statement as PP was well aware about wheeling charges at the time of validation. PP is requested to elaborate on losses, PLF considered at time of validation &amp; actual PLF. Furthermore, PP needs to include a comparison of the actual emission reduction claimed in the monitoring period with the estimate in the registered VCS PD in the monitoring report, in line with the EB 48 annex</p>	Section 7	<p>The estimated emission reductions have been arrived at using the guaranteed generation that was provided in the equipment purchase orders. Project proponent has considered the PLF on the basis of guaranteed generation however there is a difference between the guaranteed PLF and the actual PLF due to availability of Wind. Moreover the WEG supplier has not considered the wheeling charges and losses due to grid availability while providing the guaranteed generation. Hence, there is a difference between the estimated amount of emission reductions and the actual emission reductions.</p> <p>Response: Emission reductions from the</p>	<p>Not ok, the PP has considered the wheeling charges and line losses to derive net electricity generation and considered the same for investment analysis and estimation of emission reductions. Furthermore, PP has not incorporated information on PLF considered during validation and PLF achieved during current monitoring period.</p> <p>The comparison of actual emission reduction claimed in the monitoring period with the estimated emission reductions in the registered VCS PD has not been mentioned in line with the EB 48 annex 68 requirement.  <b>CAR 13 is open.</b></p>

<b>Draft report clarification requests and corrective action requests by verification team</b>	<b>Reference:</b>	<b>Summary of project owner response</b>	<b>Verification team's conclusion</b>
68 requirements.		<p>project activity were estimated to be 29,586 tonnes of CO<sub>2</sub> equivalent per annum. However the actual emission reductions are 21,404 tonnes of CO<sub>2</sub> equivalent for the year 2007. The estimated emission reductions have been arrived at using the guaranteed generation that was provided in the equipment purchase orders. However the actual emission reductions have been calculated on the basis of actual net generation. As per the purchase orders of the WEGs the PLF of the project activity is 31.37%. This estimated PLF is compared against the actual PLF of the project activity achieved during the year 2007. The PLF on the basis of actual net generation is 22.83% and this is due to low availability of wind. Hence, there is a difference between the estimated amount of emission reductions and the actual emission reductions.</p>	<p><b>DOE dated 22/07/2011:</b> ok, now PP has incorporate the required description on difference in estimated emission reductions and actual emission reductions in line with EB 48, annex 68 guidelines under section 6 of revised monitoring report. <b>Thus, CAR 13 has been closed.</b></p>
<p><b>CAR 14</b>                      PP needs to mention the title of the parameter in line with the above identified parameter under table in the section 8 of MR. Further more; PP is</p>	Section 8	<p>Necessary corrections have been made with respect to title of parameter and rounding of emission reductions.</p> <p>To bring better transparency emission</p>	<p>Now, PP has incorporated the title to the parameter and round down the emission reduction calculation as conservative approach. Furthermore, PP has now mentioned the emission reduction more</p>

<b>Draft report clarification requests and corrective action requests by verification team</b>	<b>Reference:</b>	<b>Summary of project owner response</b>	<b>Verification team's conclusion</b>
<p>requested to round down the emission reduction for conservative estimation.</p> <p>Moreover, instead of mentioning separate table for emission reduction for each WTG separately, PP is requested to add one more column here &amp; incorporate the information for better transparency &amp; Traceability.</p>		<p>reductions are mentioned next to the column of Net Electricity exported to the grid.</p>	<p>transparently. <b>Thus, CAR 14 has been closed.</b></p>
<p><b>CAR 15</b></p> <p>The names of participants are incorrect. PP is requested to check for PPs &amp; correct the same throughout the document for consistency.</p>		<p>Necessary corrections have been made with respect to names of project proponent in the revised monitoring report.</p>	<p>Now, the name of PPs was checked and corrected for consistency. <b>CAR 15 has been closed.</b></p>
<p><b>CAR 16</b></p> <p>The electricity generation of HTSC no. 1494 for the month of June 2006 has been considered twice for reporting electricity generation. PP is requested to correct the same to avoid</p>	<p>Section 8</p>	<p>The electricity generation for the month of June 2006 for HTSC no. 1494 has been mentioned only once in the revised monitoring report.</p>	<p>Now, PP has made the requested correction in reporting electricity generation for HTSC no. 1494 to avoid double counting. <b>Hence, CAR 16 has been closed.</b></p>

Draft report clarification requests and corrective action requests by verification team	Reference:	Summary of project owner response	Verification team’s conclusion
double counting.			
<p><b>CAR 17</b>                      The net electricity generation &amp; respective emission reduction value of HTSC no. 1311 for October 2007 and December 2007 to June 2008 are incorrect. PP is requested to correct the same in MR &amp; emission reduction calculation sheet.</p>	Section8	<p>Necessary corrections have been made in the revised MR and emission reduction sheet with respect to net electricity generation and emission reductions for the months of October 2007 and December 2007 to June 2008.</p>	<p>Now, PP has corrected the electricity generation and respective emission reductions values of HTSC no. 1311 in the monitoring report and emission reduction calculation sheet for the month of October 2007 and December 2007 to June 2008. <b>Thus, CAR 17 has been closed.</b></p>
<p><b>CL 1</b>                      PP needs to clearly mention whether these both days (i.e. 6<sup>th</sup> April 2006 &amp; 22<sup>nd</sup> July 2009) are inclusive or exclusive. Further as per registered VCS PD, crediting period start date is 28<sup>th</sup> March 2006, PP is requested to clarify the difference.</p>		<p>The monitoring period is from 6<sup>th</sup> April 2006 &amp; 22<sup>nd</sup> July 2009 (inclusive of both days).</p> <p>The start date of the crediting period in the validation report i.e. 28th March 2006 has been considered as per the section 5.2.1 of VCS 2007. As the EB statement is not available on that particular date, the earliest meter reading date for the WTGs in the project activity is taken as the start date for the monitoring period. The earliest meter reading start date is on 6<sup>th</sup> April 2006. The same is taken as the start date of crediting period. End date of the Monitoring period is</p>	<p>Ok, now PP has clearly mention the monitoring period in the MR. Furthermore, the crediting period start date is after the date of crediting period start date as per registered VCS PD. The justification for start date and end date of current monitoring period is acceptable with respect to the monthly electricity generation report issued by SEBs. <b>Hence, CL 1 has been closed.</b></p>

<b>Draft report clarification requests and corrective action requests by verification team</b>	<b>Reference:</b>	<b>Summary of project owner response</b>	<b>Verification team's conclusion</b>
		also taken from the end date of the meter reading for the month of July 2009.	
<p><b>CL 2</b>                      As meter is located in transformer yard, PP is requested to clarify then the same can be said as integrated meter.</p>	Section 6.2	As the electronic tri vector meter is located in the transformer yard of the WTG PP used the word integrated meter for electronic tri vector meter.	Ok, now the clarification provided is acceptable. <b>Thus, CL 2 has been closed.</b>
<p><b>CL 3</b>                      As during the site visit is was confirmed that, each WTG has a dedicated electronic tri vector meter located at WTG's transformer yard &amp; the reading from the same is considered by SEB to derive monthly electricity generation for respective WTG. Thus PP is requested to clarify the current statement/information under section 7 of MR.</p>	Section 7	As confirmed during the site visit, each WEG has a dedicated electronic tri vector meter located at WEG's transformer yard & the reading from the same is considered for SEB to derive monthly electricity generation by respective WEG. Necessary correction has been made in the revised MR.	Ok, now PP has corrected the information in the MR. <b>Hence, CL 3 has been closed.</b>
<p><b>CL 4</b>                      The electricity generation for HTSC no. 1392 &amp; 1393 is considered as</p>	Section 8	The project proponent of the WTGs having HTSC No. 1392 and 1393 sold their WTGs during the month of April 2009. Hence the	PP needs to clarify and provide supporting evidences for following issues. 1.What is the motivation behind sale of

Draft report clarification requests and corrective action requests by verification team	Reference:	Summary of project owner response	Verification team’s conclusion
<p>zero during period April 2009 to July 2009. PP is requested to clarify why the generation is considered zero for this period. Further, PP needs to submit electricity generation report for this period.</p>		<p>generation has been considered as zero from April 2009.</p> <ol style="list-style-type: none"> <li>1)The project proponent is not getting the payment from SEB on time. The delay in getting the payment from the SEB have made the project proponent to go for the sale of WTGs.</li> <li>2)PP has transferred the VCU rights to the new party i.e. <b>Arunachala Gounder Textile Mills Private Ltd.</b> from the date on which WTG’s have been sold.</li> <li>3)As proof of Title new party will submit the name transfer letter from TNEB, power purchase agreement made by the new party with TNEB for the WTG’s and the monthly electricity generation statements received from TNEB.</li> <li>4)These WTG’s will be part of the future verifications with the PP name as <b>Arunachala Gounder Textile Mills Private Ltd.</b></li> <li>5)The emission reductions for the period April 2009 to July 2009 has not been claimed by new party in VCS or has not</li> </ol>	<p>WTGs.</p> <ol style="list-style-type: none"> <li>2. Whether PP has also transfer VCU rights to new party.</li> <li>3. PP needs to submit the WTG sale deed.</li> <li>4. PP needs to confirm whether these WTGs will be the part of current project activity during future verifications.</li> <li>5. PP needs to confirm that the emission reductions during the period from April 2009 to July 2009 has not been claimed by new party in VCS or generate any another form of environmental credit.</li> </ol> <p><b>DOE dated 22/07/2011:</b>                  Ok, now PP has provided the sought clarification along with supportive documents for proof of title. The same has been checked and found ok. However, DOE has sought the clarification from VCS secretariat on point no. 4 based on the same can be concluded. Furthermore, PP has submitted the VCU rights agreement dated 08 July 2011 signed between both the parties, confirms the response provided for point no. 5. <b>Thus, for point no. 4 CL 4 has been kept open.</b></p>

Draft report clarification requests and corrective action requests by verification team	Reference:	Summary of project owner response	Verification team's conclusion
		<p>generated any another form of environmental credit. Declaration given by the new party will be submitted.</p> <p>Response:                      4) As per clarification provided by VCS secretariat, PP need to comply with the procedure for releasing/acceding project proponents as per Section 6.5 of the Registration and Issuance Process document and has to follow section 3.6 for the deviation in the monitoring plan available on the VCS website when a new project proponent is entering the project.</p> <p>The new party i.e. Arunachala Gounder Textile Mills Private Ltd. is not part of current verification. The supporting document for the same has been already provided to the validator. The new party will be part of future verifications. The requirements as per VCS registry will be complied at the next verification.</p>	<p><b>DOE dated 09/08/2011:</b> Ok, PP has now made corrections in line with requirement under <i>Registration and Issuance Process</i> of VCS registry. <b>Thus, CL 4 has been closed.</b></p>
CL 5	Section 1	The precise geographical co-ordinates for the	<b>DOE dated 09/08/2011:</b> Ok, PP has now

Draft report clarification requests and corrective action requests by verification team	Reference:	Summary of project owner response	Verification team’s conclusion
<p>PP is requested to correct and incorporate the precise geographical co-ordinates for the following WTGs in the monitoring report.</p> <ol style="list-style-type: none"> <li>1. Annai Wind Farms India (P) Ltd. (HT.SC. no. 1124)</li> <li>2. Kovilpatti Lakshmi Roller Flour Mills Limited (HT.SC. no. 1245)</li> <li>3. Leather Crafts India (P). Ltd. (HT.SC. no. 1260)</li> <li>4. A. B. Sale Corporation (HT.SC. no. 1254)</li> <li>5. Natesan Synchrocones Pvt. Ltd. (HT.SC. no. 1275)</li> <li>6. Sree Devi Chemicals (HT.SC. no. 1285)</li> <li>7. Lilly Whites (HT.SC. no. 1311)</li> <li>8. Sabare International Ltd. (HT.SC. no. 1392, HT. SC. No. 1393)</li> </ol>		<p>following clients have been mentioned in the revised monitoring report.</p> <ol style="list-style-type: none"> <li>1. Annai Wind Farms India (P) Ltd. (HT.SC. no. 1124)</li> <li>2. Kovilpatti Lakshmi Roller Flour Mills Limited (HT.SC. no. 1245)</li> <li>3. Leather Crafts India (P). Ltd. (HT.SC. no. 1260)</li> <li>4. A. B. Sale Corporation (HT.SC. no. 1254)</li> <li>5. Natesan Synchrocones Pvt. Ltd. (HT.SC. no. 1275):</li> <li>6. Sree Devi Chemicals (HT.SC. no. 1285)</li> <li>7. Lilly Whites (HT.SC. no. 1311)</li> <li>8. Sabare International Ltd. (HT.SC. no. 1392, HT. SC. No. 1393):</li> <li>9. Sree Karthik Traders (HT.SC. no. 1494)</li> </ol> <p>For Natesan Synchrocones Pvt. Ltd. (HTSC No: 1275) and Sabare International Ltd. (HTSC No: 1392 and 1393): Co-ordinates provided are precise but since the images available in Google earth are old it is not possible to locate the wind mill on Google earth and updation of google is beyond the</p>	<p>incorporated the corrected and precise geographical co-ordinates for the required WTGs which were checked and found ok. Furthermore, for Natesan Synchrocones Pvt. Ltd. (HTSC No: 1275) and Sabare International Ltd. (HTSC No: 1392 and 1393) DOE has checked the co-ordinates in Google map and found the uploaded imagery was dated 20/07/2003 and i.e. much before the commissioning of these WTGs and hence referred WTG’s coordinates could not be traced out. <b>Thus, CL 5 has been closed.</b></p>

**VCS VERIFICATION REPORT**

<b>Draft report clarification requests and corrective action requests by verification team</b>	<b>Reference:</b>	<b>Summary of project owner response</b>	<b>Verification team's conclusion</b>
9.Sree Karthik Traders (HT.SC. no. 1494)		scope of PP or technology supplier.	

## APPENDIX III: LIST OF PARAMETERS

List of parameters covered during the verification period under consideration (28 March 2006 to 22 July 2009, both days included) and details regarding the monitoring and reporting practices.

Sr. No.	Monitoring and reporting practice/Parameter	$E_{EXP,y}$
1.	Monitoring and reporting frequency as verified during the site visit.	Net Electricity supplied by the project activity to grid in the year $y$ . The few WTGs in the project activity supply net generated electricity to respective connected state electricity utility and some has opted to use the generated electricity for captive use. $E_{EXP,y}$ is continuously measured and recorded/reported monthly
2.	Monitoring equipment verified during the site visit.	Tri-vector energy meters Accuracy of 0.5 class in Tamil Nadu
3	Calibration frequency and other details verified during the site visit.	Calibration frequency as defined in PD: once in a year. As consolidated in table 5 of the verification report. The reference standard meters are of 0.1 accuracy class. PP has provided the calibration frequency as per the frequency mentioned in the monitored plan under registered VCS PD. Therefore, the energy delivered values are correct. Furthermore, PP has round down the final emission reduction for it's conservative estimation.
4.	The above parameters are in line with the MP agreed in the PD.	Yes, the monitored parameters were monitored in line with the monitoring plan as in the registered VCS PD.
5	The above parameters are in line with the monitoring methodology applied for the proposed project.	Yes, the monitoring parameters are in line with the applied baseline and monitoring methodology AMS. I. D, version 14.
6	Calibration entity and if the same is in line with the monitoring plan as agreed in the registered PDD.	The energy meters calibration has been carried out by respective state electricity board. PP has identified the same entity for calibration in the monitoring plan under registered VCS PD.