

VERIFICATION REPORT

GRID CONNECTED WIND ENERGY PROJECT IN TAMIL NADU



Document Prepared By: URS Verification Private Limited (URS)

Project Title	Grid Connected Wind Energy Project in Tamil Nadu
Version	02
Report ID	CCMS003766

Report Title	Grid Connected Wind Energy Project in Tamil Nadu
Client	CLP Wind Farms (Theni – Project II) Private Limited
Pages	24
Date of Issue	29/03/2014
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Summary:

A brief description of the verification and the project

URS Verification Private Limited (URS), have been commissioned by CLP Wind Farms (Theni – Project II) Private Limited, has verified the greenhouse gas emission reductions reported for the project activity “Grid Connected Wind Energy Project in Tamil Nadu”, for the period 11-May-2012 to 03-Oct-2012, with regard to the relevant requirements for VCS and CDM activities. The verification shall ensure that reported emission reductions are complete and accurate in accordance with applicable VCS and CDM requirements in order to be certified.

The purpose and scope of verification:

The purpose of verification is to have an independent third party assessment of the monitoring period. In particular, the monitoring plan, and the project’s compliance with relevant VCS criteria are verified in order to confirm that the project implementation as documented, is sound and reasonable and meets the identified criteria. The project was verified by URS Verification Private Limited (URS) (Verification report No. CCMS003766 issued on 24/03/2014).

The contract was signed with client for verification of project activity for the monitoring period till the date of CDM registration and the project got registered under CDM on 4th October 2012. The monitoring period of earlier verification report was from 25/06/2010 to 10/05/2012. The present verification report, report ID CCMS003766, is in continuation with the earlier issued verification report (VCS Verification deed of representation dated 23/10/2012).

The method and criteria used for verification:

The verification consists of the following three phases:

- I) a desk review of the VCS PD, MR and ER spreadsheet
- II) on-site visit and follow-up interviews with project stakeholders
- III) the resolution of outstanding issues and the issuance of the final verification report and opinion.

Any findings, restrictions of uncertainties related to the verification:

There are no restrictions of uncertainties related to this verification. There were 02 CAR and 01 CL was raised which were closed satisfactorily. The details of the findings (CARs & CLs) are provided in section 3.5 below.

Summary of the verification conclusion:

The GHG emission reductions were calculated on the basis of the approved methodology ACM0002 version 13, “Consolidated baseline methodology for grid-connected electricity generation from renewable sources” and the monitoring plan included in the registered VCS PD, version 03 of 21/06/2012.

In conclusion, it is URS’s opinion that the project activity “Grid Connected Wind Energy Project in Tamil Nadu.” as described in the Monitoring Report version 03 of 28/03/2014, meets all relevant requirements for VCS/CDM activities and all relevant host Party criteria and correctly applies the baseline and monitoring methodology ACM0002 version 13, “Consolidated baseline methodology for grid-connected electricity generation from renewable sources”. Hence URS is able to certify that the emission reductions from the project during the monitoring period 11/05/2012 to 03/10/2012 amount to 101,981

tCO₂e.

Abbreviations

BE	Baseline Emissions
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER(s)	Certified Emission Reduction(s)
CL	Clarification Request
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
DoC	Date of Commissioning
EB	Executive Board
EF	Emission factor
ER	Emission Reductions
FAR	Forward Action Request
GHG(s)	Greenhouse gas(es)
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
kW	kilo Watt
kWh	kilo Watt hour
MoV	Means of Verification
MR	Monitoring Report
MW	Mega Watt
MWh	Mega Watt hour
NGO	Non-Governmental Organization
O & M	Operation and Maintenance
PE	Project Emission
PP(s)	Project Proponent(s)
QA/QC	Quality Assurance / Quality Control
Ref.	Document Reference
SEB	State Electricity Board
SS(s)	Sectoral Scope(s)
UNFCCC	United Nations Framework Convention on Climate Change
URS	URS Verification Private Limited
VCS	Voluntary Carbon Standard
VCS - PD	Voluntary Carbon Standard - Project Description
WEG	Wind Electric Generator

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1 INTRODUCTION

1.1 Objective

The purpose of this verification, to have an independent checking of objective evidence, is as follows:

- to verify that the project is implemented as described in the VCS PD;
- to confirm that the monitoring system is implemented and fully functional to generate Voluntary Emission Reductions (VERs) without any double counting, and
- to establish that the data reported are accurate, complete, consistent, transparent and free of material error or omission by checking the monitoring records and the emissions reduction calculation.

1.2 Scope and Criteria

The verification of this VCS project is based on the monitoring report, VCS PD and supporting documents made available to the verifier and information collected through performing interviews during the on-site assessment. Furthermore publicly available information was considered as far as available and required.

The URS has employed a risk-based approach in the verification, focusing on the identification of significant risks and reliability of project monitoring and generation of emission reductions. The

VCS criteria refers to VCS Standard: VCS Version 3.4, (8 October 2013, v3.4) and VCS Programme Guide: VCS Version 3, (8 October 2013, v3.5), VCS Validation Verification Manual, v3.1 (8 October 2013, v3.1), Program Definitions, v3.5.(8 October 2013, v3.5). Verification is not meant to provide any consultancy towards the project proponents. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the monitoring.

1.3 Level of Assurance

The level of assurance of this verification report is reasonable which is based on site visit, documents and evidences submitted to the verification team. The same was verified by the verification team and based on the review along with the opinion of technical expert, the assurance is found reasonable.

1.4 Summary Description of the Project

The project activity involves the installation and operation of WEGs having total capacity of 49.5 MW, comprising of 30 nos. of WEGs with each WEG having an installed capacity of 1.65 MW, Vestas make of CLP in Tamil Nadu state of India. The Energy generated by the project activity to the regional grid (Tamil Nadu State Electricity Board) which is inter-connected with the Southern Regional Grid of India. The unique identification of the machines is as below:

Sr. No.	Loc No.	Village	Dist.	HTSC No.	DOC	Longitude	Latitude
1	35	G.Uslampatti	Theni	WEG T 117	2-Jul-2010	E77°33'53.78"	N9°57'02.06"
2	1131	Mottanuthu	Theni	WEG T 100	25-Jun-2010	E77°34'20.08"	N9°56'30.83"
3	526	Mottanuthu	Theni	WEG T 95	25-Jun-2010	E77°35'02.04"	N9°57'07.75"
4	63	Koththapatti	Theni	WEG T 97	25-Jun-2010	E77°35'26.08"	N9°56'46.16"
5	1050	Mottanuthu	Theni	WEG T 103	25-Jun-2010	E77°34'14.52"	N9°57'20.06"
6	1422	Shanmugasu ndarapuram	Theni	WEG T 106	25-Jun-2010	E77°33'04.40"	N9°59'00.59"
7	1202	Mottanuthu	Theni	WEG T 91	25-Jun-2010	E77°34'05.23"	N9°55'46.90"
8	763	Mottanuthu	Theni	WEG T 120	2-Jul-2010	E77°33'40.54"	N9°58'45.28"
9	1064	Mottanuthu	Theni	WEG T 102	25-Jun-2010	E77°34'34.83"	N9°56'58.04"
10	177	Marikundu	Theni	WEG T 108	25-Jun-2010	E77°33'20.37"	N9°57'39.66"
11	26	Mottanuthu	Theni	WEG T 122	2-Jul-2010	E77°35'19.41"	N9°58'53.99"
12	781	Mottanuthu	Theni	WEG T 104	25-Jun-2010	E77°34'06.37"	N9°58'33.47"
13	64	G.Uslampatti	Theni	WEG T 118	25-Jun-2010	E77°33'41.62"	N9°56'30.64"
14	185	Marikundu	Theni	WEG T 119	2-Jul-2010	E77°33'00.32"	N9°57'56.24"
15	645	Mottanuthu	Theni	WEG T 101	25-Jun-2010	E77°34'59.71"	N9°58'14.94"
16	1087	Mottanuthu	Theni	WEG T 116	2-Jul-2010	E77°34'11.23"	N9°56'45.05"
17	1143	Mottanuthu	Theni	WEG T 99	25-Jun-2010	E77°34'28.19"	N9°56'19.93"
18	488	Mottanuthu	Theni	WEG T 92	25-Jun-2010	E77°34'40.75"	N9°56'43.03"

Sr. No.	Loc No.	Village	Dist.	HTSC No.	DOC	Longitude	Latitude
19	473	Mottanuthu	Theni	WEG T 93	25-Jun-2010	E77°34'49.98"	N9°56'32.52"
20	293	Mottanuthu	Theni	WEG T 114	2-Jul-2010	E77°35'06.63"	N9°56'50.57"
21	274	Mottanuthu	Theni	WEG T 115	2-Jul-2010	E77°35'24.86"	N9°57'01.23"
22	542	Mottanuthu	Theni	WEG T 98	25-Jun-2010	E77°34'53.27"	N9°57'24.12"
23	443	Mottanuthu	Theni	WEG T 94	25-Jun-2010	E77°34'59.07"	N9°56'20.61"
24	694	Mottanuthu	Theni	WEG T 121	2-Jul-2010	E77°34'53.77"	N9°58'36.03"
25	1194	Mottanuthu	Theni	WEG T 113	2-Jul-2010	E77°34'03.96"	N9°56'04.90"
26	197	Mottanuthu	Theni	WEG T 96	25-Jun-2010	E77°35'29.19"	N9°57'27.12"
27	292	Marikundu	Theni	WEG T 109	25-Jun-2010	E77°32'53.88"	N9°57'21.68"
28	1165	Mottanuthu	Theni	WEG T 90	25-Jun-2010	E77°34'23.87"	N9°55'55.31"
29	1149	Shanmugasu ndarapuram	Theni	WEG T 105	25-Jun-2010	E77°33'35.52"	N9°59'27.51"
30	195	Marikundu	Theni	WEG T 107	25-Jun-2010	E77°32'41.36"	N9°57'57.56"

2 VERIFICATION PROCESS

2.1 Method and Criteria

The verification consists of the following steps:

- A desk review of the VCS PD , Validation report, Monitoring report and supporting documents with the use of the relevant sections of a customised protocol according to the VCS Standard version 3.4 ;
- A desk review of the Monitoring Report and additional supporting documents which were submitted by the client. The relevant sections of the above mentioned customised protocol according to the VCS Standard version 3.4 were used;
- Verification audit planning;
- On-Site assessment;

- Background investigation and follow-up interviews with personnel of the project developer; and
- Verification reporting (Draft Verification Report and Final Verification Report).

The criteria of this verification include the relevant rules and steps as set out in VCS criteria refers to VCS Standard: VCS Standard Version 3, (8 October 2013, v3.3) and VCS Programme Guide: VCS Version 3, (8 October 2013, v3.5), VCS Validation Verification Manual, v3.1 Program Definitions, v3.5. Full data has been verified as per Verification audit planning and hence no sampling is required.

2.2 Document Review

The monitoring report, version 03 of 28/03/2014, the emission reduction calculations provided in the form of a spreadsheet, Theni-II Emission Reduction Cal: VERs Calculation Excel Sheet /4/, were assessed as part of the verification along with the related documents. In addition the Project Description (VCS PD) in particular the baseline estimations and the monitoring plan, and the validation report dated 22/06/2012 for the project were reviewed.

The following table lists the documentation that was reviewed during the verification.

Ref. No	List of documents
1.	Monitoring report version 01 dated 15/11/2013.
2.	i.) Monitoring report version 02 dated 28/02/2014. ii.) Monitoring report version 03 dated 28/03/2014.
3.	Emission Reduction Calculation Excel sheet corresponding to /1/.
4.	Emission Reduction Calculation Excel sheet corresponding to /2/.
5.	Approved CDM Methodology ACM 0002, version 13: "Consolidated baseline methodology for grid-connected electricity generation from renewable sources".
6.	VCS PD version 03 dated 21/06/2012
7.	Validation report version 03 dated 22/06/2012
8.	Calibration certificates for all electricity meters used in the project activity covering the monitoring period.
9.	Copies of Monthly Joint Meter reading reports and statements of all Electricity Meters (with ref. HT SC no.) covering reported monitoring period.
10.	Copies of monthly invoices and energy bills covering the monitoring period raised by CLP.

11.	List of all Meters with their unique identification number of HTSC and make-serial number- meter standard of each meter.
12.	Commissioning Certificate indicating commercial operation date for all WEGs.
13.	Extract of operation and maintenance record of all WEGs along with O&M contract
14.	Photographic evidence of grid connectivity, i.e., electricity transmission and evacuation system including the photographs of all meters.
15.	Proof of training and competency of the O & M personnel.
16.	Extract of valid Energy Purchase Agreement signed between TNEB and CLP
17.	Technical specifications of all WEGs along with nameplate proof of rated capacities.
18.	Sample copies of Daily generation reports and daily generation log book covering this monitoring reports.
19.	Site layout plan for all the WEGs related to the project activity
20.	Single line diagram describing all the metering points for all the WEGs related to the project activity
21.	Valid ISO 9001:2008 certificate of Vestas
22.	Verified Carbon Standard version 3.4; Program Guidelines; VCSA Rules ;and VCS Guidance Document
23.	UNFCCC Validation and Verification Standard
24.	Websites referred 1) http://cdm.unfccc.int/index.html 2) http://www.cea.nic.in 3) http://www.cea.nic.in 4) http://www.itouchmap.com 5) http://www.tneb.org.in 6) http://www.v-c-s.org
25.	Notification on the installation and operation of meters published by Central Electricity Authority dated 17.03.2006

26.	VCS Validation and Verification Manual, version v3.1 dated 08 Oct. 2012
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2.3 Interviews

On 23/01/2014 the verification team interviewed the project proponent M/s *CLP Wind Farms (Theni – Project II) Private Limited* and the project developer (Vestas) for the cross verification and details of the project implementation and its activity.

2.4 Site Inspections

On 23/01/2014, URS Verification Team, visited Mottanuthu, G.Uslampatti and Koththapatti villages in Theni district of Tamil Nadu state in India. During the on-site assessment of the project URS assessed the implementation and operation of the proposed project activity, reviewed the information flows for generating, aggregating and reporting the monitoring parameters, interviewed key personnel of the plant to confirm the operational and data collection procedures, cross-checked between information provided in the monitoring report and data of the plant, checked the monitoring equipment including calibration performance, reviewed calculations and assumptions made in determining the GHG data and emission reductions, checked the quality control and quality assurance procedures in place to prevent or identify and correct any errors or omissions in the reported monitoring parameters.

The key personnel interviewed during the site inspection and the main topics of the interviews are summarized in the table below:

Sr. No.	Date	Name and Role	Organization	Topic
/a/	23/01/2014	G. Bharathidasan, Manager-Operations	CLP	O&M, Project implementation status, O&M status, Monitoring reports, Baseline emission reduction sheet, Monitoring parameters,
/b/	23/01/2014	T. Sarvana Kumar-Operator	Batliboi	O&M record, Daily Generation from the WEGs, Break down in the machines and maintenance
/c/	23/01/2014	E. Kanagaraj-Operator	Batliboi	QA/QC procedures, review of internal audit, Technical description, Project implementation status, O&M status, management review, Emergency preparedness plan
/d/	23/01/2014	P. Murali	Local	Project benefits to local and surrounding and on environment.
/e/		I. Peter - Operator	Batliboi	QA/QC procedures, review of internal audit, Technical

				description, Project implementation status, O&M status, management review, Emergency preparedness plan
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2.5 Resolution of Findings

Summary of Findings	CAR	CL	FAR
	02	01	0

<u>Date:</u>	12/2/14	<u>Raised by:</u>		Manoj Kumar Srivastava	
<u>Type of Finding</u>	CL	<u>S. No. of Finding</u>	01	Reference	MR
Details of the <u>Finding</u>:			12/2/14		
1. PP is requested to provide declaration for claiming carbon credit for this monitoring period from VCS and VCS only.					
2. PP is requested to provide declaration for its claim in section 2.1 of monitoring report that there has been no major breakdown or events during the present monitoring period.					
3. PP is requested to provide declaration for main meter not being faulty during present monitoring period.					
4. PP is requested to provide sales receipt for the month of May 2012.					
Project Participant Response			28/02/2014		
1. Declaration stating that Emission reductions will be claimed for this monitoring period from VCS and VCS only is attached					
2. Any major breakdown would result in a part / entire project to be unavailable, and this would subsequently reflect in the generation figures. There has been no major breakdown, and declaration confirming the same is attached					
3. Any fault in the meter will be recorded, and as specified by guidelines of the Transco will subsequently be factored into the JMRs / invoices issued. Declaration confirming that the meter is not faulty is attached					
4. JMR for the month of May 2012 is attached					
Documents/ information provided by the Project Participant:					
1. JMR for the month of May 2012 is attached					
Reasoning for acceptance or non-acceptance:			11/03/2014		

1. Declaration for claiming carbon credit for present monitoring period from VCS and VCS only was made available to verification team which was dully signed on company letter head by its representative. The document dated 3rd March 2014 was provided and the same has been verified by the verification team hence this part of CL is closed.

2. Declaration for no major break down was made available to verification team for the present monitoring period which is also evident from the sales receipt as any breakdown would have resulted in the reduced power generation and hence revised sales receipt. The declaration dated 3rd March 2014 made available to verification team and the same has been verified found correct hence this part of CL is closed.

3. Meter was operating properly and no fault was reported this is also evident from calibration report as well as JMR which would have accounted for any such situation. PP provided declaration as well for this and the same was verified by verification team found correct hence this part of CL is closed.

4. Copy of JMR provided the same has been verified by the verification team, found correct and hence this part of CL is closed.

Close out by Lead Assessor

11/03/2014

<u>Date:</u>	12/2/14	<u>Raised by:</u>		Manoj Kumar Srivastava	
<u>Type of Finding</u>	CAR	<u>S. No. of Finding</u>	02	<u>Reference</u>	MR
<u>Details of the Finding:</u>			12/2/14		
1. Report id is not mentioned in the MR report. 2. Section 1.4 of MR is left blank PP is requested to fill as appropriate. 3. Table on EF_{grid,CM,y} in section 3.1 of MR, purpose of data and comments are repeating. 4..In section 3.2 of MR the data unit is MWh and value applied for the monitored data is 110055236 which is incorrect 5.Under section 4.4 of the monitoring report in the table year for crediting period is identified as 11-May 2013 to 03 Oct-2013 this is incorrect. 6. Section 1.5 of MR name of source for date not provided. 7. Section 1.9 of MR does not contain complete information as per VCS-MR version03. 5. Export and import for the period for the period 11 sept 2012 to 3rd October 2012 is calculated by multiplying total export and import for the month by ratio of number of days which is incorrect. The procedure for calculating emission reduction if date of monitoring period does not coincide with JMR is not mentioned in the registered VCS PD.					

Project Participant Response	28/02/2014
1. There is no report ID for the report. Hence, the same has not been assigned. 2. Section 1.4 of MR has been updated with information (There are no Other Entities Involved in the Project) 3. Table on EF_{grid,CM,y} in section 3.1 of MR has been corrected 4. Value has been corrected and converted to MWh 5. Dates in the table in section 4.4 have been corrected to 2012 6. Section 1.5 of the MR is updated 7. Section 1.9 of the MR is updated 8. Apportioning procedure has been updated in MR, along with Export and import for the period for the period 10 sept 2012 to 3rd October 2012, as per this apportioning procedure. Furthermore, generation for September 2012 has been updated, in line with the JMR Sheets. ER details have been subsequently updated in the MR	
Documents/ information provided by the Project Participant:	
1. Updated ER and MR sheets	
Reasoning for acceptance or non-acceptance:	11/03/2014
1. Report id section was left blank the PP has still not mentioned report id however the section has been marked "--" and now it is not blank and PP does not wish to provide any specific id to report. Since the project is registered with CDM-UNFCCC with identification of its machines with it unique latitude/longitude and URS representative has visited each machine including LCS to verify the project hence this is acceptable and URS team accepts PP's choice not to assign any specific id to MR report. This part of CAR is closed. 2. Section 1.4 of MR was left blank which is not filled with information "NIL". Since there is no other entity involved and hence this is acceptable to verification team and this part of CAR is closed. 3. Table in section 3.1 has been updated with deletion of repeating information and hence this part of CAR is closed. 4. The electricity generated unit has been corrected in revised MR dated 28/02/2014 to MWh which is correct representation and hence this part of CAR is closed. 5. Correct date has been provided in the revised MR dated 28/02/2014 and hence this part of CAR is closed. 6. Source of data, date of commissioning, has been made available in the section 1.5 of revised MR dated 28/02/2014 and hence this part of CAR is closed. 7. Section 1.9 of MR has been updated with correct and complete information as per VCS MR version 3 and hence this part of CAR is closed. 8. Apportioning procedure has been now correctly described to account for correct calculation for emission reduction this will result in deviation in monitoring procedure however this does not requires prior approval and the same shall be reported in the verification report. This part of CAR is closed. .	
Close out by Lead Assessor	11/03/2014

<u>Date:</u>	26/03/2014	<u>Raised by:</u>		Manoj Kumar Srivastava	
<u>Type of Finding</u>	CAR	<u>S. No. of Finding</u>	03	Reference	MR
Details of the <u>Finding</u>:			26/03/2014		
1. The start date of monitoring period i.e. 10/05/2012 is overlapping with the end date of the previous verification of this project activity. Please correct the start date of the monitoring period for this project activity in the MR and the ER calculation sheet. 2. Please provide the controller data used for the apportioning of the electricity for the month of September- October, 2012 i.e. from 09/09/2012 to 03/10/2012. 3. The dates of the calibration of the energy meters as mentioned in section 3.3 of the MR are not in line with the provided calibration certificates. Please clarify. 4. The grid emission factor i. e. 0.8969 tCO₂/ MWh used for the calculation of the emission reductions in the ER sheet and the MR is not as per the registered VCS PD. The PP is requested to correct the same.					
Project Participant Response			28/03/2014		
1. The start date of monitoring period has been updated to 11 may 2012 in MR and ER sheets 2. This data is not required as the apportioning procedure has been revised and is based on the number of days in the MR for September i.e. from 09/09/2012 to 03/10/2012 3. Relevant calibration certificates have been re- checked and updated and are in line with the dates of the calibration of the energy meters (in section 3.3 of the MR) 4. The grid emission factor has been corrected to 0.8970 tCO₂e/ MWh as per the registered VCS PD.					
Documents/ information provided by the Project Participant:					
a. Meter Calibration certificates					
Reasoning for acceptance or non-acceptance:			29/03/2014		
1. OK, the starting date of the monitoring period has now been updated 11/05/2012 in place of 10/05/2012. As the energy generation readings are taken from the energy meters and the JMRs prepared on monthly basis based on the readings of the energy meters. So, there is no impact on the emissions reductions due to this change. Thus, the same is found to be correct.					

2. OK, the apportioning for the energy generation for the period from September 09, 2012 to 03/10/2012 has been done on the basis of the operating days. Thus, the controller data is not required now.
3. Ok, the PP has provided the calibration certificates of the energy meters and found to be appropriate. The calibration dates of some of the energy meters have been corrected in the MR. The list of all the energy meters and their calibration certificates are duly checked and provided in the revised MR. The calibration dates of the following energy meters have been corrected:

HTSC Number	Main Meter		Check Meter	
	Sr. No.	Calibration Dt.	Sr. No.	Calibration Dt.
T-90	TNB04329	13-Mar-10	TNB04333	13-Mar-10
T-97	TNB04328	13-Mar-10	TNB04332	13-Mar-10
T-99	TNB04331	13-Mar-10	TNB04335	13-Mar-10
T-104	--	--	TNB04091	12-Nov-09
T-113	TNB04330	13-Mar-10	TNB04334	13-Mar-10
T-118	--	--	TNB04092	12-Nov-09
T-121	TNB04368	3-Jun-10	--	--

4. OK, the grid emission factor has been corrected now as per the validated VCS PD and the validation report. The same is found to be correct and hence accepted.

Thus, the CAR#03 has been closed satisfactorily.

Close out by Lead Assessor	29/03/2014
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2.5.1 Forward Action Requests

There is no forward action request raised during this verification project.

2.6 Eligibility for Validation Activities

URS Verification Private Limited holds accreditation for both validation and verification for sectoral scope 1 (Energy industries (renewable - / non-renewable sources) under which present project falls.

3 VALIDATION FINDINGS

The project activity is a VCS validated project as per report ID URS/12/VCS/02 version 03 dated 22-June-2012 and no sampling was involved in the validation.

3.1 Participation under Other GHG Programs

The project activity is a VCS validated project as per report ID URS/12/VCS/02 version 03 dated 22-June-2012 and no sampling was involved in the validation. The project activity is also listed on VCS Project Database at the weblink (<https://vcsprojectdatabase2.apx.com/myModule/Interactive.asp?Tab=Projects&a=2&i=911&lat=9%2E950571&lon=77%2E564937&bp=1>) with project ID **911**.

Project is also a CDM registered project under Clean Development Mechanism of UNFCCC with project registration reference number 7416 and the project was registered on 4th October 2012. <http://cdm.unfccc.int/Projects/DB/RWTUV1348485861.38/view>

3.2 Methodology Deviations

Not applicable as the project is complying with the applied and approved methodology ACM 0002, version 13, that has been used in the registered VCS PD /03/.

3.3 Project Description Deviations

There is no deviation from the registered VCS PD requiring prior approval. However the JMR is issued from 9th day of present month to 9th day of next month where as present monitoring period completes on 3rd of the October 2012. Since JMR is issued for thirty days cycle (9th of present month to 9th of next month) and to accommodate emission reduction of period outside the cycle apportioning is required which was not described in registered VCS PD. The CAR was raised during the course of verification and PP has introduced apportioning of generated electricity. The apportioning is described in MR and the same has been verified during the course of verification with sales receipt and LCS data. The apportioning has been done on the prorated basis based on the number of days.

This deviation does not impact the baseline or additionality and hence does not required prior approval however this is deviation from registered monitoring plan and hence being reported here.

3.4 Grouped Project

Not applicable as this is not grouped project.

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

Implementation status of the project activity(s), including any material discrepancies between the project and the project description:

The project activity involves generation of electricity by using wind energy as a source. Thus the project activity avoids generation of CO₂ from fossil fuel that would have been used for Energy generation.

The verification team visited the site of the project activity and confirmed that the project proponent has installed 49.5 MW (30 x 1.65 MW rated), Make – Vestas Model V-82, Wind Turbine Generators (WEGs). These WEGs are installed in Mottanuthu, G.Uslampatti and Koththapatti villages in Theni district of Tamil Nadu state in India as mentioned in the registered VCS PD and the same is in operation.

The electricity generated through WEGs are supplied to the Southern regional grid. The WEGs are connected to TNEB substation. The first WEG was commissioned on 25/06/2010 for commercial operation and this has been confirmed by verifying the commissioning certificate issued by the TNEB /12/.

The crediting period for this project starts from 25/06/2010 as per the registered VCS PD /06/. The project boundary covers the physical, geographical site of the renewable energy generation source. This includes the WEGs installation, main transformer, sub-stations and the respective grid. The proposed project activity evacuates all the Energy generated by the WEGs in this project activity to the Southern grid. The same was confirmed by the verification team by checking "Joint meter reading report" /09/and "Generation report" of all the WEGs /18/.

During the site visit, the following equipments as addressed in the validated VCS PD were found operational:

WEGs of 49.5 MW of 30 x 1.65 MW rated capacities in Tamil Nadu, Control Panels of the respective WEGs, EB meters for measuring and monitoring the electricity supplied to the grid by WEGs.

A dedicated main meter and check meter is installed near to each WEG and these meters are in full control of TNEB (State Electricity Board) and the PP has got no control on the calibration and maintenance of the meters. In addition to that each WEGs is equipped with a LCS which measures electricity continuously.

During the site verification, the team cross checked the generation data through the " Joint Meter Reading report /9/ and Generation Report /18/ in Tamil Nadu and Invoices /10/ of the project activity to note that the generation is well within the stated capacity of 49.5 MW only. Thus it is confirmed that the project boundaries and all the equipments related to the project activity are in line with what is described in the registered VCS PD, version 03 dated 21/06/2012 /06/.

The project activity is reducing CO₂ emissions to the extent of electricity displaced from the regional grid. The achieved amount of emission reductions for the first verification that covers

from 11/05/2012 to 03/10/2012 is 101,981 tCO₂e as per the baseline emission reduction sheet, Joint Meter Reading report /09/. Verification team has checked the calculations provided in the ER sheet /02/ and confirms that PP has quantified the values accurately.

Based on the site observation and the documents assessed during the site visit, URS confirms that project is implemented fully and accurately as described in the registered VCS PD, version 03 dated 21/06/2012.

Implementation status of the monitoring plan and the completeness of monitoring, including any material discrepancies between the project and the project description:

Monitoring plan and the completeness of monitoring:

Monitoring plan is implemented as per the applied monitoring methodology ACM2 version 13 /05/.

As per the monitoring methodology, the following parameters are to be monitored:

- Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the project activity during the monitoring period

As per the registered VCS PD, there is provision for monitoring of the following parameter:

$EG_{PJ,y}$ = Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the project activity during the monitoring period

As discussed in the above section, a main and a check meter is installed near WEG to monitor the net electricity supplied to the grid from the connected windmills. These meters are sealed and are in custody of TNEB. The Energy exported and imported from the grid is monitored continuously by the main meter and recorded monthly by the state utility personnel in presence of representative from PP's side at a specific time mutually agreed by both the parties. The main meter at substation records total generation, total export, and total import by all the connected WEGs to the sub-station through a particular feeder.

PP raises invoice against the joint meter reading report for which payment is made by the state utility. Verification team conducted the site visit on 23/01/2014 confirms that the procedure mentioned above is the actual scenario, followed at site and is in compliance with the revised VCS PD, version 03 dated 21/06/2012.

The critical parameter for the determination of emission reductions is the net electricity exported by the project to grid. The net electricity exported to the grid by the project plant is determined as the difference of electricity exported and electricity imported by the project activity. A set of meters are installed at the high voltage side of the step up transformer installed at the Project Site at the common metering point i.e. substation (grid interconnection point), which are cumulative type online digital meters. The meters at the substation will be in custody of State Electricity Board (TNEB).

Each WEG is equipped with individual controller which controls all activities of WEG and also records electricity generation. The electricity generation value is transmitted through optical fibre conductive to Central Monitoring Station (CMS) where it is recorded in Supervisory Control and Data Acquisition (SCADA) system. The electricity generation data is monitored continuously and recorded at 24 hr frequency.

Each of these meters (being bidirectional meters) measures both export and import electricity in parallel. These meter readings are decisive for determining the electricity fed to the grid and emission reduction calculations. The electricity export and import readings are maintained at the plant site on daily basis in daily generation reports /18/. Depending on availability of officer of TNEB, Joint Meter Reading (JMR) /07/ is taken for both export and import electricity for all the meters and duly signed by the representatives of CLP, Vestas and TNEB for all main and check

meters. On the basis of these JMRs, TNEB issues monthly JMR statement to PP. PP is raising their invoice /10/ to TNEB on the basis of these JMR. The difference of final reading and initial reading of the meter determines the exported electricity (in kWh). Based on these JMRs, Energy Bills (Invoices) /10/ is raised by the PP every month. The monthly JMR readings are transposed in the ER calculation spread sheet and aggregated on annual basis to compute the Energy exported to the grid by the project activity and subsequently the emission reductions.

This project activity is supplying the electricity to the grid. The line loss and the transmission losses 690V/33kV/220kV) are already accounted in the joint monthly reading report for the reporting of net electricity supplied to the grid. The value of grid supplied electricity has been considered for the VER a calculation which has been sourced from Jointly Meter Reading Reports (JMR) and the same has been cross verified by the verification team from the corresponding invoices raised by the PP which is in line with the registered monitoring plan.

Daily import and export readings are noted by the site engineers of SEL for all 30 wind turbines at generation meter and prepare the daily generation reports /18/ which is being regularly verified by site-in-charge. On the basis of these daily reports, monthly reports will be prepared by site in charge and send to PP on regular basis.

Also, the verification team cross-checked the electricity exported figures in the JMRs with the figures of monthly Energy Bills (Invoices) /10/. The same value is considered for the calculation of emission reduction. Also the MP is in line with the applicable tool. The verification team hereby confirms that there was no material misstatement in the calculation of emission reductions.

Any remaining issues from previous validation or verification:

There are no remaining issues from validation. The same has been verified and confirmed by the verification team for the entire verification period from 11/05/2012 to 03/10/2012 found to be correct and in line with the registered VCS PD/06/.

There are no validated methodology deviations found to be in this project except as described in 3.3 above.

4.2 Accuracy of GHG Emission Reduction and Removal Calculations

Net electricity supplied to the grid: The energy meter readings are noted daily and compared to controller data to check for accuracy in measurement. Monthly joint meter readings are taken jointly by representatives of clients and TNEB and then it is used to estimate the quantity of energy exported by the WEGs to the grid.

The JMR report is the source for the values used to determine the net electricity supplied by the WEGs to the grid which is in line with the requirement provided in the registered VCS PD. The formulas, summation and consistency of the data and parameters are correctly applied in ER spreadsheet.

The calculations and applied formulae and method for calculation of baseline emission are in accordance with the registered monitoring plan and are in line with the requirements of the applied methodology /05/. The formulae and the methods referred in the MR /2/ and the spread

sheets /4/ for estimation of GHG reduction comply with the corresponding formulae and methods in the registered PD /6/.

The calculation of emission reductions is based on subtracting project emissions and leakage from the baseline emissions. As the turbines run exclusively with wind energy without any usage of fossil fuel, the project emissions are considered as zero. Leakage is considered to be zero as per applied methodology and PD. For the calculation of baseline emissions the ex-ante and validated fixed value of baseline parameters, i.e. Southern Grid Emission Factor is taken into account which is a validated and registered value. The value of the emission reductions depends on the net electricity exported by the project activity.

The baseline emissions reductions are based on the net electricity supplied by the WEGs

Therefore the baseline emission equals the Emission Reductions.

Baseline Emissions:

The formula used for the determination of baseline emissions which is line with the PD:

Baseline Emissions (tCO₂/yr) = Net electricity supplied to the southern regional grid (EG_{PJ, y}) (MWh) X Baseline Emission factor (EF_{grid, CM, y}) (tCO₂/MWh)

Data fixed ex-ante:

Emission factor of the grid electricity is 0.8970 tCO₂/MWh. The ex-ante parameter has been derived from CO₂ Baseline Database for the Indian Energy Sector, User Guide (Version 7), and Gov. of India/24.3/. URS has verified the appropriateness of the value for the crediting period against the data source which is publicly available and found it to be correct and in line with the registered VCS PD /6/.

The net electricity exported to the grid for the period 11/05/2012 to 03/10/2012 (Both days included), is **113,691,369** kWh.

Based on this figure of net electricity exported to grid, emission reductions work out to be 101,981 tCO₂ (rounded down).

Project Emissions:

As the turbines run exclusively with wind potential without any usage of fossil fuel, the project emissions are considered as zero.

Leakage:

In accordance with ACM 0002 version 13, as no transfer of equipment has been carried out in the project, no leakage estimation is required.

An ER calculation was prepared by the PP and presented to the verification team. It is confirmed that the ER calculation is overall correct. The total emission reductions during the monitoring period are 101,981 tCO₂.

No significant reporting risks have been identified for the data reported. The operational procedures for training, emergency preparedness, maintenance and calibration of monitoring equipments, monitoring measurements and reporting, record handling and maintenance, reviewing monitored data, internal audit, project performance reviews and corrective actions are

available at the plant. All the monitored data are archived in electronic form. The data will be kept for the whole crediting period and additional 2 years thereby meeting the requirement of the PD.

4.3 Quality of Evidence to Determine GHG Emission Reductions and Removals

The source of net electricity generation, as reported in the registered VCS PD and the JMR sheets have been used by the project proponent to calculate $EG_{BL,y}$. URS has cross checked and verified the values against the JMR and invoices raised by PP to TNEB. The JMR sheet is deemed to be the most appropriate source of data for net electricity supplied to the grid as this is jointly measured by representative of PP and TNEB official (Government body) duly signed by both the parties. Emission factor of the grid electricity is 0.8970 tCO₂ /MWh. The ex-ante parameter has been derived from official source "CO₂ Baseline Database for the Indian Energy Sector, User Guide (Version 7), Government of India /24.3/.

Meter accuracy: the accuracy of measurement of electricity delivered is determined by the equipment accuracy and frequency of its calibration. The calibration frequency of meter is defined as once in a year as per the registered VCS PD. All the meters are of 0.5s accuracy class and were tested by TNEB prior to commissioning.

The following table indicates the date of calibration along with equipment no.

HTSC Number	Main Meter			Check Meter		
	Sr. No.	Calibration Dt.	Due Dt.	Sr. No.	Calibration Dt.	Due Dt.
T-90	TNB04329	13-Mar-10	12-Mar-13	TNB04333	13-Mar-10	12-Mar-13
T-91	TNB02959	15-Feb-10	14-Feb-13	TNB02958	15-Feb-10	14-Feb-13
T-92	TNB04384	1-Jun-10	31-May-13	TNB04383	1-Jun-10	31-May-13
T-93	TNB04389	1-Jun-10	31-May-13	TNB04390	1-Jun-10	31-May-13
T-94	TNB04385	1-Jun-10	31-May-13	TNB04386	1-Jun-10	31-May-13
T-95	TNB02951	16-Feb-10	15-Feb-13	TNB04056	15-Dec-09	14-Dec-12
T-96	TNB04326	25-May-10	24-May-13	TNB04327	25-May-10	24-May-13
T-97	TNB04328	13-Mar-10	14-Feb-13	TNB04332	13-Mar-10	14-Feb-13
T-98	TNB04387	1-Jun-10	31-May-13	TNB04388	1-Jun-10	31-May-13
T-99	TNB04331	13-Mar-10	12-Mar-13	TNB04335	13-Mar-10	12-Mar-13
T-100	TNB04077	6-Jan-10	5-Jan-13	TNB04063	31-Oct-09	30-Oct-12
T-101	TNB04318	25-May-10	24-May-13	TNB04319	25-May-10	24-May-13
T-102	TNB04047	6-Jan-10	5-Jan-13	TNB04062	31-Oct-09	30-Oct-12
T-103	TNB02950	17-Feb-10	16-Feb-13	TNB04055	15-Dec-09	14-Dec-12
T-104	TNB02947	17-Feb-10	16-Feb-13	TNB04091	12-Nov-09	11-Nov-13
T-105	TNB04420	3-Jun-10	2-Jun-13	TNB04448	3-Jun-10	2-Jun-13
T-106	TNB02952	16-Feb-10	15-Feb-13	TNB04057	15-Dec-09	14-Dec-12
T-107	TNB04320	25-May-10	24-May-13	TNB04321	25-May-10	24-May-13
T-108	TNB02949	17-Feb-10	16-Feb-13	TNB04054	15-Dec-09	14-Dec-12
T-109	TNB04325	25-May-10	24-May-13	TNB04324	25-May-10	24-May-13

T-113	TNB04330	13-Mar-10	12-Mar-13	TNB04334	13-Mar-10	12-Mar-13
T-114	TNB04417	3-Jun-10	2-Jun-13	TNB04416	3-Jun-10	2-Jun-13
T-115	TNB04391	1-Jun-10	31-May-13	TNB04392	3-Jun-10	2-Jun-13
T-116	TNB04418	3-Jun-10	2-Jun-13	TNB04419	3-Jun-10	2-Jun-13
T-117	TNB04058	15-Dec-09	14-Dec-12	TNB02953	16-Feb-10	15-Feb-13
T-118	TNB02948	17-Feb-10	16-Feb-13	TNB04092	12-Nov-09	11-Nov-13
T-119	TNB04322	25-May-10	24-May-13	TNB04323	25-May-10	24-May-13
T-120	TNB02954	16-Feb-10	15-Feb-13	TNB02955	16-Feb-10	15-Feb-13
T-121	TNB04368	3-Jun-10	2-Jun-13	TNB04369	3-Jun-10	2-Jun-13
T-122	TNB02956	15-Feb-10	14-Feb-13	TNB02957	15-Feb-10	14-Feb-13

The calibration documents /08/ provided by the Project proponent indicate that the energy meters were calibrated during this monitoring period. All the calibration report clearly indicates that the energy meters were performing satisfactorily and are within the permissible limit of error. It was found that the delivered electricity and the consequently emission reductions are found to be conservative.

These practices meet the requirements of the applied methodology and approved monitoring plan as in the registered VCS PD.

URS verified that the emission calculations are based on the authentic data from the joint meter reading sheets issued by the state electricity board. The source and reliability of the baseline ER sheet used to calculate the monthly emission reduction was checked and found to be consistent

4.4 Non-Permanence Risk Analysis

The URS has employed a risk-based approach in the verification, focusing on the identification of significant risks and reliability of project monitoring and generation of emission reductions. The machines are owned by CLP and PPA is signed for the life of project and there is no evidence to suggest that machined will be withdrawn hence non-permanence risk analysis is not applicable.

5 VERIFICATION CONCLUSION

URS Verification Private Limited (URS) has performed verification of the emission reductions reported for the project activity “Grid Connected Wind Energy Project in Tamil Nadu “ VCS PD /06/ for the period 11/05/2012 to 03/10/2012, with regard to the relevant requirements for CDM and VCS activities.

The project proponent of the project entitled “Grid Connected Wind Energy Project in Tamil Nadu “is responsible for:

- the preparation of greenhouses gas emissions data and the reported greenhouse gas emission reductions from the project on the basis set out in the monitoring plan contained in the registered VCS project description version 03 of 21/06/2012
- The development and maintenance of records and reporting procedures in accordance with that plan, including the calculation and determination of greenhouse gas emission reductions of the project.

It is the responsibility of URS to express an independent verification opinion about the project's conformity with the requirements of VCS and CDM and on the reported greenhouse gas emission reductions from the project.

Based on documented evidence and corroborated by an on-site assessment URS can confirm that:

- the project has been implemented and operated as per the validated VCS-PD;
- the monitoring report and other supporting documents provided are complete and verifiable and in accordance with the applicable VCS and CDM requirements/22//23//26/;
- the monitoring is in place as per the applied baseline and monitoring methodology;
- the monitoring complies with the monitoring plan in the revised VCS-PD;
- the monitoring plan in the registered VCS-PD is as per the applied baseline and monitoring methodology.

It is URS's opinion that the GHG emission reduction stated in the monitoring report version 03 of 28/03/2014 for the "Grid Connected Wind Energy Project in Tamil Nadu" for the period 11/05/2012 to 03/10/2012 are fairly stated. The GHG emission reductions were calculated correctly on the basis of the approved monitoring methodology "ACM 0002", "Consolidated baseline methodology for grid-connected electricity generation from renewable sources", version 13 and the monitoring plan contained in the registered VCD PD version 3 of 21/06/2012.

Hence URS is able to certify that the emission reductions from the project during the monitoring period 11/05/2012 to 03/10/2012 amount to 101,981 tCO₂e, the split up of which is as follows:

Reporting period: From 11/05/2012 to 03/10/2012

Verified GHG emission reductions or removals in the above reporting period:

Year	Months considered in year	"EG _{PJ,y} " (Net Generation in MWh)	Baseline emissions (tCO ₂ e)	Project emissions (tCO ₂ e)	Leakage (tCO ₂ e)	Emission reductions (tCO ₂ e)
2012	11 th May 2012 to 3 rd October 2012	113,691.369	101,981	00	00	101,981
Total		113,691.369	101,981	00	00	101,981

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
11 th May 2012 to 3 rd October 2012	101,981	00	00	101,981
Total	101,981	00	00	101,981