

BUNDLED WIND POWER PROJECT IN TAMIL NADU MANAGED BY ENERCON INDIA LIMITED - II

Document Prepared By Wind World (India) Limited

Project Title	Bundled Wind Power Project in Tamil Nadu managed by Enercon India Limited - II
Version	4
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Monitoring Period	16-05-2015 to 31-03-2016 (both days inclusive)
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1 PROJECT DETAILS

1.1 Summary Description of the Implementation Status of the Project

The bundled project activity has been developed to produce clean power from the wind energy. The generated electricity is being wheeled using the state transmission system for captive consumption. The Project leads to reduction of greenhouse gas (GHG) emissions because it displaces electricity from fossil fuel based electricity generation plants.

Bundled wind power project of 24.8 MW ("Project") has been installed in the state of Tamil Nadu. The Project leads to reduction of greenhouse gas emissions because it displaces electricity from fossil fuel based electricity generation plants. The Project harnesses renewable resources in the region, and thereby displacing non-renewable natural resources thereby ultimately leading to sustainable economic and environmental development. Wind World (India) Limited (WWIL) is the equipment supplier and the operations and maintenance contractor for the Project.

This bundled wind power project was registered with VCSA having capacity of 36 MW which consists of six investors. Initially the project was designed to install a total of 45 nos. of WEGs of 800 kW each. However, the subproject of Bannari Amman Spinning Mills was registered as CDM project on 17-06-2011 (<http://cdm.unfccc.int/Projects/DB/SIRIM1306929016.84/view>). Hence, this subproject has not been monitored in this project activity. Thus project capacity has been reduced from 36 MW to 24.8 MW after omission of Wind Turbine Generators (WTGs) belonging to the investor Bannari Amman Spinning Mills. Presently, the project activity consists of the 31 number of E-48 machines of Wind World make of 800 kW each to the total capacity of 24.8 MW.

The first machine under the project activity was commissioned on 26-02-2007 and the last machine under the project activity was commissioned on 11-05-2007. The expected operational lifetime of the project is for 20 years.

The total emission reductions achieved under this monitoring period (16-05-2015 to 31-03-2016 (inclusive both days)) are 23,676 tCO₂.

1.2 Sectoral Scope and Project Type

Sectoral scope: 1 Energy Industries (renewable -/ non renewable sources)

Project Type: I, Renewable energy project

The project is not a grouped project

1.3 Project Proponent

Organization name	Wind World (India) Limited
Contact person	Yogesh Mehra
Title	Managing Director

Address	A-9, Veera Industrial Estate, Veera Desai Road, Andheri (W), Mumbai, Maharashtra
Telephone	+91-22 - 6692 4848
Email	yogesh.mehra@windworldindia.com

1.4 Other Entities Involved in the Project

Wind World (India) Limited is the project proponent for this activity and has been duly authorized by the individual investors to take up the said project activity for VCS development. Wind World (India) Limited will be responsible for all the communications and actions in relation to the project being validated in accordance with the VCS standard.

Organization name	Premier Spg & Wvg Mills Pvt Ltd
Role in the project	Project Investor
Contact person	Not Applicable
Title	Not Applicable
Address	Not Applicable
Telephone	Not Applicable
Email	Not Applicable

Organization name	Premier Fine Yarns Pvt Ltd
Role in the project	Project Investor
Contact person	Not Applicable
Title	Not Applicable
Address	Not Applicable
Telephone	Not Applicable
Email	Not Applicable

Organization name	Coimbatore Twisted (Premier Mills)
Role in the project	Project Investor
Contact person	Not Applicable
Title	Not Applicable
Address	Not Applicable
Telephone	Not Applicable

Email	Not Applicable
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Organization name	Coimbatore Polytex (Premier Mills)
Role in the project	Project Investor
Contact person	Not Applicable
Title	Not Applicable
Address	Not Applicable
Telephone	Not Applicable
Email	Not Applicable

1.5 Project Start Date

The project start date is 26-02-2007 which is the date of commissioning of the first wind turbine installed under the project activity.

1.6 Project Crediting Period

The length of the Crediting period of the project activity as per registered PD is 10 years (Renewable) starting from 01-04-2006 to 31-03-2016.

1.7 Project Location

The project is located at Pushpathur site in Dindigull district and Chinnakkampalayam in Erode district of Tamil Nadu that forms part of the Southern regional electricity grid of India.

Individual WEG location numbers and coordinates are detailed out in below table: -

Customer Name	UIN	HTSC No	Latitude (North)			Longitude (East)		
			Deg	Min	Sec	Deg	Min	Sec
Premier Spinnings and Weaving Mills Pvt .Ltd.	PSWMPLPU-02	D47	10.00	32.00	5.05	77.00	25.00	20.91
	PSWMPLPU-04	D49	10.00	32.00	9.20	77.00	25.00	35.41
	PSWMPLPU-05	D52	10.00	32.00	24.92	77.00	25.00	1.08
	PSWMPLPU-01	D54	10.00	34.00	22.31	77.00	25.00	37.47
	PSWMPLPU-07	D79	10.00	34.00	49.80	77.00	26.00	35.98
	PSWMPLPU-06	D80	10.00	34.00	57.15	77.00	26.00	52.68
	PSWMPLPU-03	D81	10.00	34.00	35.66	77.00	24.00	6.33
	PSWMPLPU-08	D82	10.00	34.00	58.52	77.00	24.00	3.72

Customer Name	UIN	HTSC No	Latitude (North)			Longitude (East)		
			Deg	Min	Sec	Deg	Min	Sec
	PSWMPLPU-09	D83	10.00	34.00	34.42	77.00	23.00	41.60
	PSWMPLPU-10	D84	10.00	34.00	29.82	77.00	24.00	38.05
Premier Fine Yarns P Ltd	PMPLPU-09	D26	10.00	33.00	23.98	77.00	24.00	45.82
	PMPLPU-07	D27	10.00	33.00	31.11	77.00	24.00	40.85
	PMPLPU-06	D28	10.00	33.00	6.07	77.00	25.00	30.66
	PMPLPU-05	D29	10.00	33.00	11.92	77.00	25.00	23.14
	PMPLPU-01	D30	10.00	33.00	43.81	77.00	25.00	35.03
	PMPLPU-02		10.00	33.00	56.76	77.00	25.00	39.05
	PMPLPU-03	D32	10.00	33.00	51.10	77.00	25.00	13.65
	PMPLPU-04		10.00	33.00	54.39	77.00	25.00	4.11
	PMPLPU-10	D33	10.00	33.00	55.90	77.00	24.00	49.46
	PMPLPU-08	D34	10.00	34.00	15.28	77.00	24.00	60.00
Coimbatore Twisters Pvt. Ltd.	CTPLPU-01	D37	10.00	34.00	32.85	77.00	25.00	45.31
Coimbatore Polytex Pvt.Ltd	CPPLPU-03	D38	10.00	34.00	35.89	77.00	25.00	26.63
	CPPLPU-01	D43	10.00	34.00	43.51	77.00	25.00	21.33
	CPPLPU-02		10.00	34.00	51.46	77.00	25.00	45.95
	CPPLPU-04	D44	10.00	35.00	3.85	77.00	25.00	45.85
	CPPLPU-05	D45	10.00	35.00	37.18	77.00	25.00	26.49
	CPPLPU-08	D68	10.00	35.00	44.64	77.00	25.00	33.42
	CPPLPU-09	D73	10.00	35.00	55.20	77.00	26.00	9.54
	CPPLPU-06	D74	10.00	36.00	2.31	77.00	25.00	32.83
	CPPLPU-07	D75	10.00	36.00	14.23	77.00	25.00	30.99
	CPPLPU-10	D78	10.00	34.00	8.51	77.00	25.00	33.48

1.8 Title and Reference of Methodology

Sectoral Scope: 1, Energy industries (renewable/ non-renewable sources)

Project Category: ACM0002, Version-10, "Consolidated baseline methodology for grid connected electricity generation from renewable sources".

The tools referenced in this methodology are:

1. Tool to calculate the emission factor for an electricity system, version 01.1
<http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v1.1.pdf>
2. Tool for the demonstrations and assessment of additionality, version 05.2
<http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v5.2.pdf>

1.9 Other Programs

- **Emission Trading Programs and Other Binding Limits:** The project has not participated in any Emissions Trading Programs other than VCS scheme. The related emission reductions have not and will not be claimed under any other GHG programs.
- **Other Forms of Environmental Credit:** The project has been exclusively taken up as VCS project and has not been applied for any other form of environmental credit.
- **Participation under Other GHG Programs:** The project has been exclusively taken up as VCS project and has not been applied for any other form of environmental credit.

2 IMPLEMENTATION STATUS

2.1 Implementation Status of the Project Activity

The first machine under the project activity was commissioned on 26-02-2007 and last machine under the project activity was commissioned on 11-05-2007. The project activity consists of 31 machines (800 kW) of WWIL make E-48. The commissioning date for all the machines included in the project activity is given in the table below.

Sr. No.	Name of Customers	HTSC No.	Commissioning Date	No. of M/C under this HTSC	Capacity (MW)
1	Premier Spg & Wvg Mills Pvt Ltd	D47	21-03-2007	1 X 0.8 MW	8 (0.8*10)
2		D49	21-03-2007	1 X 0.8 MW	
3		D52	26-03-2007	1 X 0.8 MW	
4		D54	26-03-2007	1 X 0.8 MW	
5		D79	25-04-2007	1 X 0.8 MW	
6		D80	25-04-2007	1 X 0.8 MW	
7		D81	25-04-2007	1 X 0.8 MW	
8		D82	09-05-2007	1 X 0.8 MW	

Sr. No.	Name of Customers	HTSC No.	Commissioning Date	No. of M/C under this HTSC	Capacity (MW)
9		D83	09-05-2007	1 X 0.8 MW	
10		D84	11-05-2007	1 X 0.8 MW	
11	Premier Fine Yarns Pvt Ltd	D26	26-02-2007	1 X 0.8 MW	8 (0.8 * 10)
12		D27	26-02-2007	1 X 0.8 MW	
13		D28	26-02-2007	1 X 0.8 MW	
14		D29	26-02-2007	1 X 0.8 MW	
15		D30	27-02-2007	2 X 0.8 MW	
16		D32	07-03-2007	2 X 0.8 MW	
17		D33	07-03-2007	1 X 0.8 MW	
18		D34	07-03-2007	1 X 0.8 MW	
19	Coimbatore Twisted (Premier Mills)	D37	14-03-2007	1 X 0.8 MW	0.8
20	Coimbatore Polytex (Premier Mills)	D38	14-03-2007	1 X 0.8 MW	8 (0.8 * 10)
21		D43	21-03-2007	2 X 0.8 MW	
22		D44	21-03-2007	1 X 0.8 MW	
23		D45	21-03-2007	1 X 0.8 MW	
24		D68	29-03-2007	1 X 0.8 MW	
25		D73	30-03-2007	1 X 0.8 MW	
26		D74	30-03-2007	1 X 0.8 MW	
27		D75	30-03-2007	1 X 0.8 MW	
28		D78	16-04-2007	1 X 0.8 MW	
	Total			31	24.8

WWIL operation and maintenance activities are ISO certified and all the events are recorded in the log book available at the project site. Referring to the data available it can be inferred that there have not been any major special events for any of the machines that are included in the project activity. As a part of regular maintenance the machines are stopped for mechanical and electrical maintenance and also for visual inspection in quarterly basis.

No major breakdown occurred during this monitoring period. The WEGs were operating normally. As per the requirement of O & M activities, WEGs were shut down for some time.

2.2 Deviations

2.2.1 Methodology Deviations

There has not been any methodology deviation during the aforesaid monitoring period (16-05-2015 to 31-03-2016).

2.2.2 Project Description Deviations

PP has sought following deviation in respect to the monitoring plan. Same are mentioned below:

1. Panel meter or the controller meter does not require any calibration as the energy readings of electricity generated at the LCS meter is cross verified by the energy calculated by inverting system installed in the WEGs. In case there is any mismatch in the energy values recorded by the LCS meter and the energy values calculated by the inverting system; the machine will stop working and generate an error report. The interim generation shall not be recorded by the meter and therefore the approach avoids any reporting risk and therefore the approach is conservative. Therefore, Project Proponent (PP) has sought deviation from the Validated Project Document (PD) with respect to the calibration of the LCS panel meter.
2. In Tamil Nadu, individual metering system exist i.e. there is separate meter for individual wind turbine in order to calculate import & export value from the WEGs. These meters are installed at the side of each WEG and therefore no apportioning is required in Tamil Nadu. Hence deviation was taken in the second monitoring plan mentioned in the VCS validated PD. It is therefore stated that no apportioning will be required for future crediting period. Further, in the Validated VCS PD it is mentioned in Section 3.3 under "Any Comments" of EG, export and EG, import that "Apportioned values shall be calculated" which does not represent the correct monitoring procedure as no apportioning of either EG, export, EG, import or EGy is carried out. A deviation on this account was taken for the Project activity. This deviation will be applied for all the monitoring period.
3. In Third Monitoring Period, project capacity was reduced from 36 MW to 24.8 MW after omission of WTGs belonging to the investor Bannari Amman Spinning Mills. The subproject of Bannari Amman Spinning Mills was registered as CDM project on 17-06-2011 (<http://cdm.unfccc.int/Projects/DB/SIRIM1306929016.84/view>). Hence, this subproject has not been monitored.
4. As per the registered PD, the accuracy of the monitoring parameter is ensured by adhering to the calibration frequency and testing of metering equipment once each year and the calibration is done by the officials of the state utility. Hence calibration and testing of meters cannot be conducted by the PP, therefore meter calibration is not in control of PP. The PP can request the state utilities to conduct calibration of meters at the scheduled time but cannot by any means force the state utilities to conduct calibration. As per national regulations of installation and operation of meters in accordance with section 18 subsection 1 (b), calibration and periodical testing of meters by Central Electricity authority of India; the energy meters shall be calibrated and tested once in five years. Therefore, in last verification, PP has changed the frequency of calibration from once in year to once in five years.

2.3 Grouped Project

The project activity is not a grouped project.

3 DATA AND PARAMETERS

3.1 Data and Parameters Available at Validation

Data / Parameter	EF _{OM,y}
Data unit	tCO ₂ e/MWh
Description	Operating Margin Emission Factor of Southern Regional Electricity Grid
Source of data	“CO ₂ Baseline Database for Indian Power Sector” version 4 published by the Central Electricity Authority, Ministry of Power, Government of India. The “CO ₂ Baseline Database for Indian Power Sector” version 4 is available at http://www.cea.nic.in/reports/planning/cdm_co2/cdm_co2.htm
Value applied:	0.998157
Justification of choice of data or description of measurement methods and procedures applied	The data has been sourced from CEA (CO ₂ Baseline Database) is an authentic source of data. The grid emission factor (EF _y) is taken from CEA data base, version 04. The grid boundary w.r.t the connected state grid is Southern Regional Grid of India. The operating margin of emission factors is taken as 0.998157 CO ₂ e/MWh and is fixed ex-ante for the entire crediting period.
Purpose of the data	Calculation of baseline emissions
Comments	The operating margin is fixed <i>ex-ante</i>

Data / Parameter	EF _{BM,y}
Data unit	tCO ₂ e/MWh
Description	Build Margin Emission Factor of Southern Regional Electricity Grid
Source of data	“CO ₂ Baseline Database for Indian Power Sector” version 4 published by the Central Electricity Authority, Ministry of Power, Government of India. The “CO ₂ Baseline Database for Indian Power Sector” version 4 is available at http://www.cea.nic.in/reports/planning/cdm_co2/cdm_co2.htm
Value applied:	0.7133
Justification of choice of data or description of measurement methods and procedures applied	The data has been sourced from CEA (CO ₂ Baseline Database) is an authentic source of data. The grid emission factor (EF _y) is taken from CEA data base, version 04. The grid boundary w.r.t the connected state grid is Southern Regional Grid of India. The build margin of emission factors is taken as 0.7133 CO ₂ e/MWh and is

	fixed ex-ante for the entire crediting period.
Purpose of the data	Calculation of baseline emissions
Comments	The build margin is fixed <i>ex-ante</i>

Data / Parameter	EF _{CM,y}
Data unit	tCO ₂ e/MWh
Description	Combined Margin Emission Factor of Southern Regional Electricity Grid
Source of data	"CO ₂ Baseline Database for Indian Power Sector" version 4 published by the Central Electricity Authority, Ministry of Power, Government of India. The "CO ₂ Baseline Database for Indian Power Sector" version 4 is available at http://www.cea.nic.in/reports/planning/cdm_co2/cdm_co2.htm
Value applied:	0.92694
Justification of choice of data or description of measurement methods and procedures applied	The data has been sourced from CEA (CO ₂ Baseline Database) is an authentic source of data. The grid emission factor (EF _y) is taken from CEA data base, version 04. The grid boundary w.r.t the connected state grid is Southern Regional Grid of India. The combined margin of emission factors is taken as 0.92694 CO ₂ e/MWh and is fixed ex-ante for the entire crediting period.
Purpose of the data	Calculation of baseline emissions
Comments	The combined margin is fixed <i>ex-ante</i>

3.2 Data and Parameters Monitored

Data / Parameter	EG, Export					
Data unit	MWh/year (Mega-watt hour/year)					
Description	Electricity exported to the grid by the project activity in year y					
Source of data	Electricity exported by the project activity to the grid as per JMR.					
Description of measurement methods and procedures to be applied	The Energy generated at the wind farm will be metered and measured by TNEB on monthly basis at the sending end sub-station of the Wind Farm. The monitoring of ‘electricity exported to the grid’ would be as per the details provided in wheeling and banking agreement.					
Frequency of monitoring/recording	Monthly: The reading is jointly noted by the representatives of TNEB and Wind World (India) Limited.					
Value monitored:	<table><tr><th>Vintage</th><th>Electricity Export (MWh)</th></tr><tr><td>2015 (16-May-2015 to 14-Dec-2015)</td><td>23,531.58</td></tr></table>		Vintage	Electricity Export (MWh)	2015 (16-May-2015 to 14-Dec-2015)	23,531.58
Vintage	Electricity Export (MWh)					
2015 (16-May-2015 to 14-Dec-2015)	23,531.58					

	2016 (15-Dec-2015 to 31-Mar-2016)	2,231.27
	Total	25,762.85
Monitoring equipment	The electricity supplied by the project activity to the grid has been measured by export-import energy meter. Details of the energy meters are provided in section 3.3 below.	
QA/QC procedures to be applied	The calibration details of billing meters are provided in Section 3.3 below. QA/QC procedures has been implemented pursuant the wheeling and banking agreement	
Purpose of the data	Baseline Emissions calculation	
Calculation method	This is measured parameter hence not applicable.	
Comments	The data is archived on paper as well as on electronic media; however the data will be kept for two years after the end of the crediting period or the last issuance of VCUs for this project activity, whichever occurs later.	

Data / Parameter	EG, import									
Data unit	MWh/year (Mega-watt hour/year)									
Description	Electricity imported from the grid									
Source of data	Electricity imported by the project activity from the grid as per as per JMR.									
Description of measurement methods and procedures to be applied	The Energy imported by the wind farm will be metered and measured by TNEB on monthly basis at the sending end sub-station of the Wind Farm. The monitoring of this parameter would be as per the details provided in wheeling and banking agreement.									
Frequency of monitoring/recording	Monthly: The reading is jointly noted by the representatives of TNEB and Wind World (India) Limited									
Value monitored:	<table><tr><th>Vintage</th><th>Electricity Import (MWh)</th></tr><tr><td>2015 (16- May-2015 to 14-Dec-2015)</td><td>137.67</td></tr><tr><td>2016 (15-Dec-2015 to 31-Mar-2016)</td><td>82.01</td></tr><tr><td>Total</td><td>219.67</td></tr></table>		Vintage	Electricity Import (MWh)	2015 (16- May-2015 to 14-Dec-2015)	137.67	2016 (15-Dec-2015 to 31-Mar-2016)	82.01	Total	219.67
Vintage	Electricity Import (MWh)									
2015 (16- May-2015 to 14-Dec-2015)	137.67									
2016 (15-Dec-2015 to 31-Mar-2016)	82.01									
Total	219.67									
Monitoring equipment	The electricity imported by the project activity from the grid has been measured by export-import energy meter. Details of the energy meters are provided in section 3.3 below.									
QA/QC procedures to be applied	The calibration details of billing meters are provided in Section 3.3 below. QA/QC procedures has been implemented pursuant the									

	wheeling and banking agreement
Purpose of the data	Baseline Emissions calculation
Calculation method	This is measured parameter hence not applicable.
Comments	The data is archived on paper as well as on electronic media; however the data will be kept for two years after the end of the crediting period or the last issuance of VCUs for this project activity, whichever occurs later.

Data / Parameter	EG _y , net									
Data unit	MWh (Mega-watt hour)									
Description	Net electricity supplied to the grid by the Project									
Source of data	Calculated from EG,export and EG,import as (EG,export – EG,import)									
Description of measurement methods and procedures to be applied	Net electricity supplied to the grid will be calculated based on measured values. The Net electricity is recorded as following: EG _y , net = EG,export – EG,import The procedures for metering and meter reading will be as per the provisions of the wheeling and banking arrangement.									
Frequency of monitoring/recording	Monthly									
Value monitored:	<table><tr><th>Vintage</th><th>Net Electricity Export (MWh)</th></tr><tr><td>2015 (16-May-2015 to 14-Dec-2015)</td><td>23,393.92</td></tr><tr><td>2016 (15-Dec-2015 to 31-Mar-2016)</td><td>2,149.26</td></tr><tr><td>Total</td><td>25,543.18</td></tr></table>		Vintage	Net Electricity Export (MWh)	2015 (16-May-2015 to 14-Dec-2015)	23,393.92	2016 (15-Dec-2015 to 31-Mar-2016)	2,149.26	Total	25,543.18
Vintage	Net Electricity Export (MWh)									
2015 (16-May-2015 to 14-Dec-2015)	23,393.92									
2016 (15-Dec-2015 to 31-Mar-2016)	2,149.26									
Total	25,543.18									
Monitoring equipment	This parameter is calculated.									
QA/QC procedures to be applied	The calibration details of billing meters are provided in Section 3.3 below. QA/QC procedures has been implemented pursuant the wheeling and banking agreement									
Purpose of the data	Baseline Emissions calculation									
Calculation method	EG _y , net = EG,export – EG,import									
Comments	The data is archived on paper as well as on electronic media; however, the data will be kept for two years after the end of the crediting period or the last issuance of VCUs for this project activity, whichever occurs later.									

3.3 Monitoring Plan

Monitoring system of the project activity:

Monitoring Information:

The general conditions set out for metering, recording, meter readings, meter inspections, Test & Checking and communication are as per the agreement with state electricity board.

Metering: Net electricity supplied to grid is calculated based on measured values of electricity export and import. Electricity exported and imported by project are measured through meter readings of the two-way export meter installed by TNEB. The installed meters measure the electricity export and electricity import for each WEG or group of WEGs of the project which are designated by unique identification no. i.e. HT SC No. Project activity has the dedicated metering system and there are no other WEGs connected to the joint meters of the project activity.

Meter Readings: The monthly meter reading is taken jointly by the parties (WWIL personals and personals of TNEB) for the last month. At the conclusion of each meter reading an appointed representative of TNEB and WWIL sign a document indicating the number of Kilowatt-hours (kWh) indicated by the meter.

Inspection of Energy Meters: The two-way export meter and all associated instruments, transformers installed at the project are of accuracy classes as mentioned below in table. The meters are jointly inspected and sealed on behalf of the parties and are not to be interfered with by either party except in the presence of the other party or its accredited representatives.

Meter Test Checking: The meter is tested for accuracy with reference to a portable standard meter. The portable standard meter is also owned by TNEB. The meter is deemed to be working satisfactorily if the errors are within specifications of accuracy classes. The consumption registered by the meter alone holds good for the purpose of metering electricity supplied to the grid as long as the error in the meter is within the permissible limits.

If during the meter test checking, the meter is found to be beyond permissible limits of error, the meter shall be immediately calibrated and the correction applied to the reading registered by the meter to arrive the correct reading of energy supplied for metering electricity supplied to the grid for the period from the last month's meter reading up to the current test. Meter reading for the period thereafter till the next monthly reading shall be as per the calibrated meter.

Meter change details are provided below.

Archiving of data: Data shall be archived for crediting period + 2 years.

Metering System:

A metering equipment is provided besides each location (HT SC No.) although other project proponents are also connected to the substation but individual metering of WEG's help in projecting accurate values of electricity exported. Since each HT SC No. has unique billing meter which is installed and owned by TNEB, hence there is no need of apportioning.

Metering Equipment:

Metering equipment is electronic trivector meter of accuracy class as mentioned below in table. Dedicated core of both CT's and PT's of required accuracy is made available by the EIL to TNEB. The meters are calibrated annually to ensure accuracy of data.

Training and maintenance:

Training on the machine is an essential pre-requisite, to ensure necessary safety of man and machine. Further, in order to maximize the output from the Wind Energy Converters (WECs), it is extremely essential, that the engineers and technicians understand the machines and keep them in good health. In order to ensure, that WWIL's service staff is deft at handling technical snags on top of the turbine, the necessity of ensuring that they are capable of climbing the tower with absolute ease and comfort has been established. The WWIL Training Academy provides need-based training to meet the training requirements of WWIL projects. The training is contemporary, which results in imparting focused knowledge leading to value addition to the attitude and skills of all trainees. This ultimately leads to creativity in problem solving.

Calibration Details:

The metering equipments were inspected & calibrated by state utility. The meters installed at the wind farm are as per TNEB guidelines and accuracy level. The meters are checked for accuracy once in 5 years as per CEA metering code. TNEB meter testing is done by a separate division of electricity board, which takes care of meter testing in the event of any abnormality observed.

The meter calibration details are presented below:

SI No.	Name of Customers	HTSC No.	Type	Meter No.	Recent Calibration date	Accuracy Class	Validity
1	Premier Spg & Wvg Mills Pvt Ltd	D47	SECURE	TN905549	13-11-2013	0.2s	5 Years
2	Premier Spg & Wvg Mills Pvt Ltd	D49	ELSTER	04890022	12-11-2013	0.5s	5 Years
			L&T	16195788	30-03-2016	0.2s	5 Years
3	Premier Spg & Wvg Mills Pvt Ltd	D52	SECURE	TN902732	13-11-2013	0.2s	5 Years
4	Premier Spg & Wvg Mills Pvt Ltd	D54	ELSTER	04865534	13-11-2013	0.5s	5 Years
			L&T	16195773	30-03-2016	0.2s	5 Years
5	Premier Spg & Wvg Mills Pvt Ltd	D79	ELSTER	04865507	13-11-2013	0.5s	5 Years
			L&T	16194566	26-03-2016	0.2s	5 Years
6	Premier Spg & Wvg Mills Pvt Ltd	D80	SECURE	TNB02400	13-11-2013	0.5s	5 Years
			L&T	16194561	26-03-2016	0.2s	5 Years
7	Premier Spg & Wvg Mills Pvt Ltd	D81	ELSTER	04865535	13-11-2013	0.5s	5 Years

SI No.	Name of Customers	HTSC No.	Type	Meter No.	Recent Calibration date	Accuracy Class	Validity
8	Premier Spg & Wvg Mills Pvt Ltd	D82	SECURE	TN905507	12-11-2013	0.2s	5 Years
9	Premier Spg & Wvg Mills Pvt Ltd	D83	ELSTER	04865503	12-11-2013	0.5s	5 Years
			L&T	16194525	26-03-2016	0.2s	5 Years
10	Premier Spg & Wvg Mills Pvt Ltd	D84	SECURE	TN903448	12-11-2013	0.2s	5 Years
11	Premier Fine Yarns Pvt Ltd	D26	SECURE	TN902742	12-11-2013	0.2s	5 Years
12	Premier Fine Yarns Pvt Ltd	D27	SECURE	TN905284	12-11-2013	0.2s	5 Years
13	Premier Fine Yarns Pvt Ltd	D28	L&T	10287910	12-11-2013	0.5s	5 Years
			L&T	16194534	27-03-2016	0.2s	5 Years
14	Premier Fine Yarns Pvt Ltd	D29	WALLABY	HT5100083	12-11-2013	0.5s	5 Years
			L&T	16195782	30-03-2016	0.2s	5 Years
15	Premier Fine Yarns Pvt Ltd	D30	WALLABY	HT5110137	12-11-2013	0.5s	5 Years
			L&T	16190059	24-03-2016	0.2s	5 Years
16	Premier Fine Yarns Pvt Ltd	D32	SECURE	TN903995	12-11-2013	0.2s	5 Years
17	Premier Fine Yarns Pvt Ltd	D33	ELSTER	04863762	12-11-2013	0.5s	5 Years
			L&T	16190080	24-03-2016	0.2s	5 Years
18	Premier Fine Yarns Pvt Ltd	D34	SECURE	TN904584	12-11-2013	0.2s	5 Years
19	Coimbatore Twisted (Premier Mills)	D37	SECURE	TN904565	12-11-2013	0.2s	5 Years
20	Coimbatore Polytex (Premier Mills)	D38	ELSTER	04865383	13-11-2013	0.5s	5 Years
			L&T	16194479	26-03-2016	0.2s	5 Years

SI No.	Name of Customers	HTSC No.	Type	Meter No.	Recent Calibration date	Accuracy Class	Validity
21	Coimbatore Polytex (Premier Mills)	D43	ELSTER	04865533	12-11-2013	0.5s	5 Years
			L&T	16194507	26-03-2016	0.2s	5 Years
22	Coimbatore Polytex (Premier Mills)	D44	SECURE	14197108	17-03-2015	0.2s	5 Years
23	Coimbatore Polytex (Premier Mills)	D45	SECURE	TN903117	13-11-2013	0.2s	5 Years
24	Coimbatore Polytex (Premier Mills)	D68	SECURE	TN905537	13-11-2013	0.2s	5 Years
25	Coimbatore Polytex (Premier Mills)	D73	ELSTER	04959599	13-11-2013	0.5s	5 Years
26	Coimbatore Polytex (Premier Mills)	D74	ELSTER	04865530	13-11-2013	0.5s	5 Years
			L&T	16194505	27-03-2016	0.2s	5 Years
27	Coimbatore Polytex (Premier Mills)	D75	SECURE	TN901783	13-11-2013	0.2s	5 Years
28	Coimbatore Polytex (Premier Mills)	D78	WALLABY	208320441	13-11-2013	0.5s	5 Years
			L&T	16194552	27-03-2016	0.2s	5 Years

Roles and Responsibilities:

The Project is operated and managed by Wind World (India) Limited. The operational and management structure implemented by WWIL is as follows:

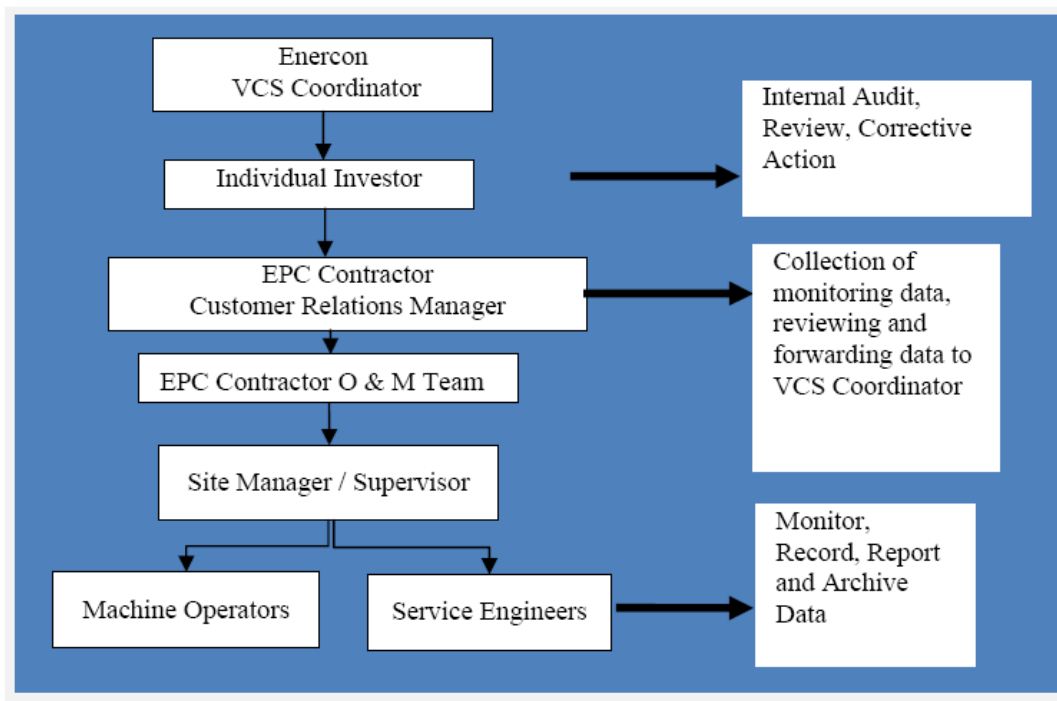
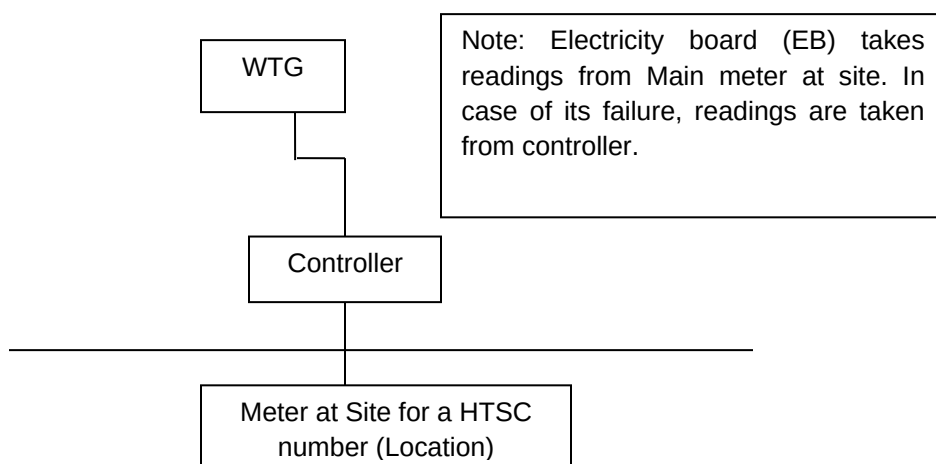


Diagram indicating Data collection leading to GHG calculation



4 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

4.1 Baseline Emissions

In line with ACM0002 ver 10, "The baseline is the kWh produced by the renewable generating unit multiplied by an emission coefficient (measured in kg CO_{2e}/kWh) calculated in a transparent and conservative manner as the weighted average emissions (in kg CO_{2e}/kWh) as described in validated VCS PD.

$$BE_y = EG_y * EF_y$$

Where,

BE_y is baseline emissions in year y, tCO₂e

EG_y is the net electricity supplied to the grid in year y and is applied directly from JMR certified by state utility.

EF_y is the CO₂ emission factor of the grid (0.92694 tCO₂e/MWh fixed ex-ante).

The baseline Emission reduction calculation for the current monitoring period is

$$\begin{aligned}\text{Baseline Emissions} &= 25,543.18 \text{ MWh} * 0.92694 \text{ tCO}_2/\text{MWh} \\ &= 23,676.00 \text{ tCO}_2 \text{ (after rounding down)}\end{aligned}$$

4.2 Project Emissions

Since the project activity is a renewable energy project which generates electricity using wind power and hence does not result in project emissions as per the applicable methodology ACM0002, version 10.

$$\text{PE}_y = 0$$

4.3 Leakage

No leakage is considered from the project activity as per approved methodology ACM0002

4.4 Net GHG Emission Reductions and Removals

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)
2015 (16-May-2015 to 14-Dec-2015)	21,684.00	0.00	0.00	21,684.00
2016 (15-Dec-2015 to 31-Mar-2016)	1,992.00	0.00	0.00	1,992.00
Total	23,676.00	0.00	0.00	23,676.00