MONITORING REPORT OF

SATARA WIND POWER PROJECT IN MAHARASHTRA, INDIA

Document Prepared By NSL Wind Power Company (Satara) Pvt. Ltd.

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Project Title	Satara Wind Power Project in Maharashtra, India.
Version	02
Report ID	VCSMR01
Date of Issue	10/08/2017
Project ID	1519
Monitoring Period	06/03/2014 to 31/12/2015
Prepared By	NSL Wind Power Company (Satara) Pvt. Ltd.
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1 PROJECT DETAILS

1.1 Summary Description of the Implementation Status of the Project

The VCS registered[1] project activity is a Greenfield wind power generation activity. The project activity involves installation of 30 MW capacity wind power generation project by NSL Wind Power Company (Satara) Pvt. Ltd. (Project Participant). The project activity generates clean electricity, which is exported to the Maharashtra State Electricity Transmission Company Limited (MAHATRANSCO), which falls under the Northern, Eastern, Western and North-Eastern regional grids (NEWNE) grid of India. The spatial extent of the project boundary is the NEWNE grid. The key implementation features of the project activity are as follows:

- This activity involves installation and operations of 20 numbers of Wind turbine generators (WTGs) of rated capacity 1.5 MW. The WTGs are of Vensys V87 type, supplied by ReGen Power Tech Pvt. Ltd.
- The purchase order of the first WTG was placed on 09/07/2013 and start date of the project activity is 06/03/2014 which was the day of commercial production of the first machine. The entire project is in continuous operation since its date of commissioning of the respective machines.
- As per the Project Description, the project activity is expected to generate and export around 52,560 MWh of electricity per annum to the NEWNE Grid, which contributes to GHG emission reduction of about 51,335 tCO_2e annually and 513,350 tCO2e over ten years of the crediting period. In this current monitoring period, project has reduced around 89,514 tCO_2e.

1.2 Sectoral Scope and Project Type

Sectoral scope : 01, Energy Industries (renewable- /non-renewable sources)
Project Type : I, Renewable energy projects

The project is not a grouped project activity.

1.3 Project Proponent

Organization name	NSL Wind Power Company (Satara) Pvt. Ltd.
Contact person	Mr. A. Rajnikant
Title	DGM – Power Division
Address	#8-2-684/2/A, NSL ICON, Road No. 12, Banjara Hills, Town / City: Hyderabad, Andhra Pradesh, PIN: 500034, India.

[1] http://www.vcsprojectdatabase.org/#/project_details/1519

Telephone	+91 40 3051 4444
Email	rajnikant.a@nslpower.com

1.4 Other Entities Involved in the Project

Organization name	NA
Role in the project	NA
Contact person	NA
Title	NA
Address	NA
Telephone	NA
Email	NA

1.5 Project Start Date

06/03/2014[2]

1.6 Project Crediting Period

The crediting period under VCS is as follows:

First crediting period of : 10 years.
Start date of the crediting period : 06/03/2014
End date of the crediting period : 05/03/2024.

1.7 Project Location

Project activity is located in the Mann village, in the district Satara, state of Maharashtra. The location maps are included below. The spatial extent of this project activity includes the project site and all the power plants connected physically to the electricity system that the project is connected to, i.e. the NEWNE Grid. Thus the project boundary includes all the power plants physically connected to the NEWNE grid. The details of geo-coordinated shall be provided as below:

[2] The start date of the project activity has been considered as the date of commissioning of the first WTG, which is in accordance with the VCS standard.

WTG Ref. No.	Date of Commissioning	Geo-Coordinates			
		UTM (Universal Transverse Mercator) format		DD-MM-SS (Degree/minutes/Seconds) format	
		Easting(m)	Northing (m)	Latitude (N)	Longitude (E)
NSL-1	06/03/2014	469336	1934816	17 ° 29 ' 57.52 "	74 ° 42 ' 40.12 "
NSL-2		469066	1934960	17 ° 30 ' 2.19 "	74 ° 42 ' 30.96 "
NSL-10		467591	1935712	17 ° 30 ' 26.58 "	74 ° 41 ' 40.90 "
NSL-11		467555	1935467	17 ° 30 ' 18.61 "	74 ° 41 ' 39.69 "
NSL-12		467395	1935210	17 ° 30 ' 10.24 "	74 ° 41 ' 34.28 "
NSL-13		467477	1935008	17 ° 30 ' 3.67 "	74 ° 41 ' 37.07 "
NSL-14		467616	1934769	17 ° 29 ' 55.90 "	74 ° 41 ' 41.80 "
NSL-15		467758	1934607	17 ° 29 ' 50.64 "	74 ° 41 ' 46.62 "
NSL-3	30/03/2014	468573	1934832	17 ° 29 ' 58.01 "	74 ° 42 ' 14.25 "
NSL-6		468893	1934421	17 ° 29 ' 44.64 "	74 ° 42 ' 25.13 "
NSL-7		468559	1934585	17 ° 29 ' 49.97 "	74 ° 42 ' 13.79 "
NSL-20		466692	1936734	17 ° 30 ' 59.79 "	74 ° 41 ' 10.36 "
NSL-22		466784	1937215	17 ° 31 ' 15.45 "	74 ° 41 ' 13.45 "
NSL-17	31/03/2014	467652	1937233	17 ° 31 ' 16.08 "	74 ° 41 ' 42.89 "
NSL-23		466388	1937239	17 ° 31 ' 16.21 "	74 ° 41 ' 0.02 "
NSL-26		465839	1937687	17 ° 31 ' 30.76 "	74 ° 40 ' 41.37 "
NSL-28		465767	1938105	17 ° 31 ' 44.36 "	74 ° 40 ' 38.91 "
NSL-34		464907	1938830	17 ° 32 ' 7.90 "	74 ° 40 ' 9.7 "
NSL-36		464416	1939096	17 ° 32 ' 16.53 "	74 ° 39 ' 53.02 "
NSL-37		464263	1939245	17 ° 32 ' 21.37 "	74 ° 39 ' 47.83 "

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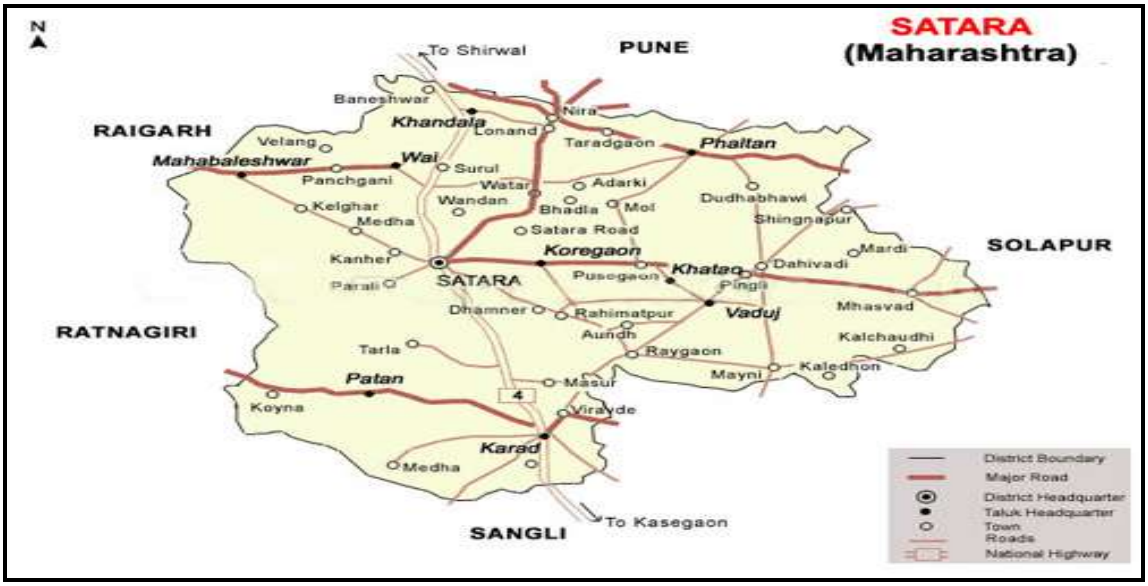


1.8 Title and Reference of Methodology

Title: Grid-connected electricity generation from renewable sources[3]
Reference: Approved consolidated baseline and monitoring methodology ACM0002, Version 16.0

Tools referenced in this methodology:

- Tool for the demonstration and assessment of additionality, Version 07.0.0[4]
- Combined tool to identify the baseline scenario and demonstrate additionality, Version 05.0.0[5]

[3] http://cdm.unfccc.int/methodologies/DB/EY2CL7RTEHRC9V6YQHLAR6MJ6VEU83
[4] http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v7.0.0.pdf
[5] http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-02-v5.0.0.pdf

- Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion, Version 02.0.0[6]
- Tool to calculate the emission factor for an electricity system, Version 05.0.0[7]
- Tool to determine the remaining lifetime of equipment, Version 01[8]

1.9 Other Programs

Project has not been applied under any other GHG or any related programs.

1.10 Sustainable Development

Project's contribution to sustainable development:

The project primarily assists the region as a whole in stimulating and accelerating the commercialization of grid connected renewable energy technologies.

The project activity contributes to the sustainable development in the following way:

Social well being: Enhancing local employment in the rural area around the project. Capacity building and empowerment of vulnerable sections of the rural community dwelling in the project area.

Economical well being: During the construction and operation phases, the project activity would generate small business opportunities for local stakeholders such as bankers, suppliers, manufacturers and contractors.

Environmental well being: This project activity contributes to sustainable development through generation of eco-friendly power resulting in the increase of the share of renewable energy power generation in the regional and national grid. It would aid in strengthening India's rural electrification coverage. Wind power projects also aid in reducing GHG emissions and other pollutants (SOx, NOx, PM etc).

Technological well being: The project activity helps in increasing the share of renewable energy power generation in the regional and national grid. The project activity also, encourages clean, renewable and efficient technologies.

2 IMPLEMENTATION STATUS

2.1 Implementation Status of the Project Activity

The implementation status of the project activity(s), includes the following information:

- The project activity has been in operation since its date of commissioning. The first WTG in the bundle was commissioned on 06/03/2014 and the last WTG was commissioned on

[6] http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-03-v2.pdf
[7] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v5.0.pdf
[8] http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-10-v1.pdf

31/03/2014. There is no any event of break down or non-operational phase during the monitoring period.

- There are no any other changes related to the project proponent or project observed.
- Project is implemented and operational as per the VCS Project description submitted.

Technical Specification of WTGs:

ReGen Powertech	VENSYS 87
POWER	
Rated power	1500 kW
Cut-in wind speed (10 min. mean)	3 m/s
Rated Wind Speed (10 min. mean)	approx. 12 m/s
Cut-out wind speed (10 min. mean)	22 m/s
Survival wind speed	52.5 m/s
Generator	Variable Speed, Multi-pole Synchronous with Permanent Magnet Excitation
ROTOR	
Diameter	87
Swept area	5942 sq. m
Speed range (variable)	9 to 17.3 rpm
TOWER AND FOUNDATION	
Hub height	85 m
Design	Tubular, Four sections

Foundation type	Floating foundation
CONTROL AND SAFETY SYSTEMS	
Control of output	Pitch Regulation
Speed control	Variable, Micro-controller based
Low Voltage Ride Through (LVRT)	3 seconds
Primary brake system	Aerodynamic Brake, Single Pitch Control/triple redundant
Pitch System	Electromechanical, Maintenance Free Toothed Belt Drive (Patented)
Remote Monitoring	VPN, Visualization via web-browser
TYPE CLASSES	
Wind turbine type class	GL III B

2.2 Deviations

2.2.1 Methodology Deviations

Not Applicable

2.2.2 Project Description Deviations

Not Applicable

2.3 Grouped Project

Not Applicable (as the project is not a grouped project)

2.4 Safeguards

2.4.1 No Net Harm

This is simple bundle wind project, there is no net harm.

2.4.2 Local Stakeholder Consultation

The Project is already registered[9] with VCS and registered VCS Project Description version 03 dated 08/02/2016, sections 6 describe the Local Stakeholder Consultation Process as in-line with VCS requirement.

3 DATA AND PARAMETERS

3.1 Data and Parameters Available at Validation

The relevant monitoring data and parameters have been determined for the project activity as per the requirements of applied methodology. The following table contains the available data & parameters.

Data / Parameter	$EF_{grid,OMsimple,y}$
Data unit	tCO_2/MWh
Description	Operating margin CO_2 emission factor of NEWNE grid
Source of data	Central Electricity Authority:CO_2 Emission Database CEA CO_2

[9] http://www.vcsprojectdatabase.org/#/project_details/1519

	Baseline database Version 10
Value applied	0.9857
Justification of choice of data or description of measurement methods and procedures applied	The operating margin emission factor is a 3-year generation-weighted average data, based on the most recent data available on CEA database at the time of submission of the VCS-PDD to the DOE for validation. Data compiled in CEA CO_2 CDM database is in line with the requirements Version 05.0.0 of "Tool to calculate the emission factor for an electricity system".
Purpose of the data	Calculation of baseline emissions
Comments	This parameter is calculated ex ante and remains fixed during the crediting period.

Data / Parameter	EFgrid,BM,y
Data unit	tCO2/MWh
Description	Build margin CO2 emission factor of NEWNE grid
Source of data	Central Electricity Authority:CO2 Emission Database CEA CO2 Baseline database Version 10
Value applied:	0.9495
Justification of choice of data or description of measurement methods and procedures applied	The build margin emission factor is the most recent data available from CEA CO2 Baseline database. Data compiled in CEA CO2 CDM database is in line with the requirements Version 05.0.0 of "Tool to calculate the emission factor for an electricity system".
Purpose of Data	Calculation of baseline emissions
Comments	The build Margin would be calculated ex ante and fixed during the crediting period.

Data / Parameter	EFgrid,CM,y
Data unit	tCO2/MWh
Description	Combined margin CO2 emission factor of NEWNE grid
Source of data	Central Electricity Authority:CO2 Emission Database CEA CO2 Baseline database Version 10
Value applied:	0.9767
Justification of choice of data or description of measurement methods	The combined margin emissions factor is calculated as follows: $EF_{grid,CM,y} = EF_{grid,OM,y} \times w_{OM} + EF_{grid,BM,y} \times w_{BM}$

and procedures applied	The following default values should be used for wOM and wBM: For Wind power generation project activities: wOM = 0.75 and wBM = 0.25 for the selected crediting period Data compiled in CEA CO2 CDM database is in line with the requirements Version 05.0.0 of "Tool to calculate the emission factor for an electricity system".
Purpose of Data	Calculation of baseline emissions
Comments	The Combined Margin would be calculated ex ante and fixed during the crediting period.

3.2 Data and Parameters Monitored

The information related to all data and parameters that will be monitored during the project crediting period shall be as per the following tables of data and parameters:

Data / Parameter	$EG_{facility, y}$
Unit	MWh
Description	Quantity of Net Electricity exported to the grid by the project WTGs to the grid during the year y.
Source of data	Calculated
Description of measurement methods and procedures to be applied	This parameter is calculated based on the measured parameters those are continuously measured and monthly recorded. **Metering at common metering point:** The electricity generated by the project activity WTGs along with non-project WTGs are metered at feeder-wise common metering point. The metering point consists of a main meter & check meter, having accuracy of 0.2s. The meters measures parameters like export & import for all the connected WTGs. The export reading for a given metering point for a given billing month is obtained by subtracting initial reading (taken in previous month) from the final reading (taken in billing month). The difference is multiplied by the applicable meter multiplication factor. Similar procedure is followed to arrive the import reading. The monitoring & measurement[10] of electricity at project metering

[10] The meters are capable of measuring the electricity parameters (export, import etc.) on real time basis. It complies the hourly measurement requirement as per the monitoring methodology

	point is being done on continuous basis; while recording is being done on monthly basis as Joint Meter Reading by the representatives of State Utility & PP. **Calculation of net electricity export to the grid by project activity WTG:** The export & import by the project activity WTG connected to the metering point is calculated by apportioning of the electricity at feeder level by the state utility. The apportioning of the electricity is based on the controller reading of project activity WTG, controller reading for all WTGs connected at the given metering point and the electricity reading (export, import etc) recorded by the main meter at the given metering point on monthly basis. It gives monthly values of export & import for project activity WTG. The net export for any given month by the project activity WTG to the grid is then obtained by subtracting import from export. Thus: $\mathbf{EG_{facility,y} = EG_{JMR, NSL, export} - EG_{JMR, NSL, import}}$ The value of the monthly net electricity delivered to the Grid by the project activity WTG is aggregated annually to get quantity of net electricity supplied by the project plant/unit to the grid in year y i.e. ($EG_{PJ\ y}$). Note: The apportioning of the electricity is the responsibility of the state utility & same is beyond the control of the PP.
Frequency of monitoring/recording	Monthly recording.
Value(s) applied	91,650
Monitoring equipment	Energy Meter
QA/QC procedures	The quantity of net electricity supplied can be cross-verified from the invoices raised on MSEDCL by the project proponent. The main and check meters are calibrated and maintained by the state utility as the frequency of meter testing is once in 3 years. Data Recording: Electronic/ Paper Energy Meter accuracy Class: 0.2s.
Purpose of data	Used to calculate baseline emissions
Calculation method	Same as mentioned under the description of measurement methods
Comments	Date will be archived for crediting period plus two years after the end of Crediting period.

Data / Parameter	$\mathbf{EG_{JMR, NSL, export,y}}$
Unit	MWh

Description	Quantity of Electricity exported by the Project WTGs connected to the feeder i to the grid during the year y.
Source of data	Monthly statements/credit notes issued by Maharashtra State Electricity Distribution Co. Ltd. (MSEDCL).
Description of measurement methods and procedures to be applied	Quantity of electricity export would be calculated using the apportioning procedure as described in section 4.3 of Registered VCS PD version 03 dated 08/02/2016.
Frequency of monitoring/recording	Continuous measurement and monthly recording
Value(s) applied	91,712 (value rounded down)
Monitoring equipment	Calculated parameter, hence no monitoring equipment is required.
QA/QC procedures	The value is calculated and can be cross checked from the invoices raised on the state utility. The monitoring frequency of the data parameter is monthly basis.
Purpose of data	Used to calculate baseline emissions
Calculation method	Calculation method is described in section 4.3 of Registered VCS PD version 03 dated 08/02/2016.
Comments	Date will be archived for crediting period plus two years after the end of Crediting period

Data / Parameter	$EG_{JMR, NSL, import,y}$
Unit	MWh
Description	Quantity electricity imported by the Project WTGs connected to the feeder i from the grid during the year y.
Source of data	Monthly statements/credit notes issued by Maharashtra State Electricity Distribution Co. Ltd. (MSEDCL).
Description of measurement methods and procedures to be applied	Quantity of electricity import would be calculated using the apportioning procedure as described in section 4.3 of Registered VCS PD version 03 dated 08/02/2016.
Frequency of monitoring/recording	Continuous measurement and monthly recording
Value(s) applied	62 (value rounded up)
Monitoring equipment	Calculated parameter, hence no monitoring equipment is required.
QA/QC procedures	The value is calculated and can be cross checked from the invoices raised on the state utility. The monitoring frequency of the data parameter is monthly basis.
Purpose of data	Used to calculate baseline emissions

Calculation method	Calculation method is described in section 4.3 of Registered VCS PD version 03 dated 08/02/2016.
Comments	Date will be archived for crediting period plus two years after the end of Crediting period

Data / Parameter	**$EG_{Controller,gen}$**
Unit	MWh
Description	Quantity electricity generated by the project activity WTGs recorded at respective controller meters
Source of data	Monthly operating logs recorded in electronic format by O&M contractor
Description of measurement methods and procedures to be applied	The value is recorded continuously by the online monitoring station. This reading can also be seen in the electronic panel installed inside the WTG tower. The LCS meter(Controller meter) do not require 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 Panel meter and the energy values calculated by the inverting system; the machine will stop working and generate the error report. The operations and maintenance staff will attend to the problem immediately in order to identify and correct the error.
Frequency of monitoring/recording	Continuous measurement and monthly recording
Value(s) applied	94,422
Monitoring equipment	LCS meter (Controller Meter)
QA/QC procedures	This data parameter will be logged electronically on a monthly basis by O&M contractor on its online portal. The value of this parameter shall be compared with the value of **$EG_{facility,y}$** and the conservative approach would be taken by the PP for estimating the net electricity supplied value for the calculation of emission reduction.
Purpose of data	Used to calculate baseline emissions
Calculation method	Not applicable
Comments	Date will be archived for crediting period plus two years after the end of Crediting period

3.3 Monitoring Plan

As per approved monitoring methodology ACM0002 / Version 16.0, 'Net electricity generation from the project activity' is required to be monitored.

As the emission reductions from the project are determined by the number of units exported to the grid by the project activity it is mandatory to have a monitoring system in place and ensure that the project activity produces and supplies the rated power at the stipulated norms.

The purpose of the monitoring plan, is to define the organizational structure of the monitoring team, monitoring practices, QA and QC procedures and archiving procedures. The monitoring plan will ensure that the emission reductions from the project activity are reported accurately and transparently.

Since the baseline methodology is based on ex ante determination of the baseline, the monitoring of operating margin emission factor and build margin emission factor is not required. Further, wind based electricity generation is not associated with any kind of leakages. Hence, the sole parameter for monitoring is the electricity generated by the project and supplied to the grid.

Monitoring at common metering point:

Quantity of electricity generated and supplied to the grid by the all the WTGs (project activity WTGs and non-project WTGs) connected to the particular feeder will be measured through the energy meters (Main Meter and Check Meter) installed at the substation. The meter readings at the substations are taken jointly by the representatives of Project participant representative and Maharashtra State Electricity Distribution Company Limited (MSEDCL) representative and recorded in the JMR.

The metering equipment is duly approved, tested and sealed by MSEDCL. The metering equipment (consisting of the Main Meter and the Check Meter) is identical in make and technical standards and is of 0.2% accuracy class. They comply with the requirements of the Electricity Rules.

The MSEDCL carries out the calibration, periodical testing, sealing and maintenance of meters in the presence of PPs representative. The frequency of meter testing is once in 3 years. All meters are tested only at the Metering Point.

Metering Equipment and Metering Arrangement Information and Emergency preparedness:

- The meters are two-way meter and measure the electricity import and export and give the net electricity.
- As per the Power Purchase Agreement entered into with the electricity distribution utility, there will be two meters, one main meter and one backup meter. Both meters would be two-way export import meters that measure both export and import of electricity and provide net electricity exported to the grid.
- In case the meters are found to operate outside the permissible limits, the meters will be either replaced immediately or calibrated. Whenever a main meter goes defective, the consumption recorded by the backup meter will be referred.
- If main as well as back up metering system becomes defective, the details of the malfunctioning along with date and time and snaps shot parameters along with load survey will be retrieved from the main meter. The exact nature of the malfunctioning will be determined after analysing the data so retrieved and the consumption recorded by the main meter will be adjusted accordingly.

- The main meter readings are apportioned based upon the LCS meter readings from the individual WTGs to compute net electricity supplied from individual WTGs. The LCS meter readings of project activity WTGs are archived electronically on continuous basis. Joint meter reading at the DISCOM substation is noted each month. Therefore cumulative LCS meter reading for each month is used for purpose of allocation of net electricity supplied to the grid from the project activity.
- Both main and check meters will be calibrated once in 3 years.

Project proponent has signed an „Operation and Maintenance" contract with the supplier, ReGen Power Tech Private Limited to operate the wind mills for a period of ten years from the date of commissioning of each WTG. The performance of the mills, safety in operation and scheduled /breakdown maintenances are organized and monitored by the contractor. ReGen will monitor the generation of the WTG daily on a regular basis and will maintain a log book recording daily generation details for each WTG comprising the project, as metered at the wind farm.

Apportioning Procedure followed:

The allocation of the net electricity supplied to the grid by the project activity is done based on the joint meter readings taken at the DISCOM substation & LCS meter readings of individual WTGs. Apportioning procedure is applied is explained in below:

$EG_{JMR, Export}$ = Electricity exported by all the WTGs (project WTGs & non-project WTGs), as recorded by the main meter at the substation

$EG_{JMR, Import}$ = Electricity imported by all the WTGs (project WTGs & non-project WTGs), as recorded by the main meter at the substation

$EG_{Controller, gen}$ = Electricity exported by a project WTG, as measured at the controller

$EG_{Controller, gen, total}$ = Electricity exported by all the WTGs (project activity & non project activity) connected to the main meter at the substation, measured at the controller of each WTG

$\sum EG_{Controller, gen}$ = Summation of electricity generated by the project activity WTGs recorded at respective LCS meters.

$EG_{JMR, NSL, export}$ = Electricity exported by a WTG to the grid, calculated

$EG_{JMR, NSL, import}$ = Electricity imported by a WEC from the grid, calculated.

Electricity exported by each WTG is apportioned on the basis of electricity exported recorded at the controller of each WTG and the electricity exported at the main meter and mentioned in the JMR. The export multiplication factor is calculated as follows-

Export Multiplication Factor = $EG_{JMR, Export} \div EG_{Controller, gen, total}$ …….. (1)

Thus the energy exported by a WTG to the grid is given by the equation-

$EG_{JMR, NSL, export}$ = Export Multiplication factor X $\sum EG_{Controller, gen}$…….. (2)

As the controller meter doesn't record import, the apportioning of energy imported by each WTG is also done on the basis of electricity exported recorded at the controller of each WTG and the electricity imported at the main meter and mentioned in the JMR. The import multiplication factor is calculated as follows-

Import Multiplication Factor = $EG_{JMR, Import} \div EG_{Controller, gen, total}$ ..... (3)

Thus the energy imported by a WTG to the grid is given by the equation-

$\mathbf{EG_{JMR, NSL, import}}$ = Import Multiplication factor X $\sum EG_{Controller, gen}$ ..... (4)

The net electricity exported by the WTGs of the project is given by the equation-

$\mathbf{EG_{facility,y} = \sum EG_{JMR, NSL, export} - \sum EG_{JMR, NSL, import}}$ ..... (5)

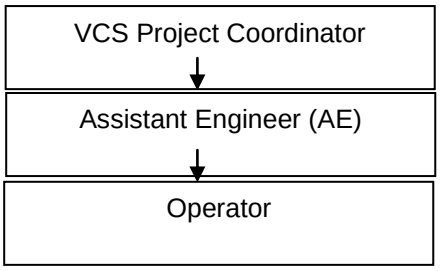
$\sum EG_{JMR, NSL, export} = \mathbf{EG_{JMR, NSL, export, y}}$

$\sum EG_{JMR, NSL, import} = \mathbf{EG_{JMR, NSL, import, y}}$

Based on the above calculation, a monthly statement/credit note is prepared and signed by the representatives of PP and endorsed by the state utility (MSEDCL) . The statement mentions the total electricity exported to grid, total electricity imported from the grid and the net electricity supplied. The net electricity supplied is calculated as the difference of the total electricity exported to grid and total electricity imported from the grid by the project activity.

Upon receipt of the "Monthly Statement/credit note", Project participant generates invoices on sale of electricity and sends to respective district level MSEDCL office and MSEDCL makes payments against the invoices. The value of net electricity supplied can be cross checked with the monthly invoices.

The operational and management structure implemented for data monitoring is as follows:



The day to day operation of the WTGs at the ground level is looked after by the operator. The operator reports to the Assistant Engineer (AE) - Wind Farm, who is responsible for collecting the required information from the operator. The AE – Wind Farm records the generation on a daily basis for each service connection point and reports the cumulative generation to the Management. VCS Project coordinator will be responsible for assessment of emission reduction achieved every year and documentation of the same.

Personnel training: The training for operating and maintaining the plant will be provided by the technology supplier.

Data collection and archiving:

The daily data at the site is collected in electronic form. Monthly data is collected and maintained in hard copies. The project proponent shall keep complete and accurate records of all the data as a part of monitoring for at least a period of 2 years after the end of the crediting period or the last issuance of VERs for the project activity, whichever occurs later.

NOTE:

As per the monitoring plan, the monitoring parameters $EG_{JMR, NSL, export, y}$, $EG_{JMR, NSL, import, y}$ and $EG_{facility,y}$ to be calculated based on the generation data of other project activities connected to the same substation. Since the generation data of other project activities is only available with the O&M contractor, apportioning cannot be done by PP and hence the other parameters $EG_{JMR, Export}$, $EG_{JMR, Import}$ and $EG_{Controller, gen, total}$ are not included in section 4.2 of the PD.

The revised monitoring plan is complete, accurate and in line with actual metering and monitoring arrangement finalized by DISCOM in consultation with State Electricity Regulatory Commission.

4 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

4.1 Baseline Emissions

According to the methodology and VCS PD, Emission reductions are calculated as follows:

$ER_y = BE_y - PE_y$

Where:

ER_y	=	Emission reductions in year y (tCO_{2e})
BE_y	=	Baseline emissions in year y (tCO_2)
PE_y	=	Project emissions in year y (tCO_{2e})

Baseline Emissions:

Baseline emissions include only CO_2 emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity. The methodology assumes that all 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 to be calculated as follows

$BE_y = EG_{PJ,y} * EF_{grid,CM,y}$

Where:

BE_y	=	Baseline emissions in year y (tCO_2)
$EG_{PJ,y}$	=	Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the project activity in year y (MWh)
$EF_{grid,CM,y}$	=	Combined margin CO_2 emission factor for grid connected power generation in year y calculated using the latest version

of the "Tool to calculate the emission factor for an electricity system" (tCO_2/MWh)

If the project activity is the installation of a new grid-connected renewable power plant/unit at a site where no renewable power plant was operated prior to the implementation of the project activity, then:

$$EG_{PJ,y} = EG_{facility,y}$$

Where:

$EG_{PJ,y}$	=	Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the project activity in year *y* (MWh/yr)
$EG_{facility,y}$	=	Quantity of net electricity generation supplied by the project plant/unit to the grid in year *y* (MWh/yr)

4.2 Project Emissions

As the project activity is wind power project, project emissions are zero and there is no leakage emission. $PE_y = 0$

4.3 Leakage

As per the applicable methodology ACM0002, Version 16.0, no leakage emissions are considered.

4.4 Net GHG Emission Reductions and Removals

Year	Baseline emissions or removals (tCO_2e)	Project emissions or removals (tCO_2e)	Leakage emissions (tCO_2e)	Net GHG emission reductions or removals (tCO_2e)
Year 2014	39,161	0	0	39,161
Year 2015	50,353	0	0	50,353
Total	**89,514**	**0**	**0**	**89,514**

APPENDIX X: <TITLE OF APPENDIX>

NA