WIND POWER PROJECT IN GUJARAT

Document Prepared by Infinite Solutions

Project Title	Wind Power Project in Gujarat
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Monitoring Period	01-June-2021 to 05-August-2021 (Inclusive both the days)
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1 PROJECT DETAILS

1.1 Summary Description of the Implementation Status of the Project

Mytrah Energy (India) Limited (formerly Caparo Energy (India) Limited) is entering into the renewable energy sector with an objective to build wind power assets in India. Mytrah Energy (India) Limited has completed 25.20 MW wind power project at in Rajkot District and Surendranagar District of Gujarat State. The project activity comprises of 12 WEGs (Wind Electric Generators) with a capacity of 2.1 MW each. The project activity involves WEGs having S88 model of make Suzlon Energy Limited (SEL). The objective of the VCS project activity is to generate electricity from environmentally benign sources of energy in the Indian state of Gujarat in order to use renewable and clean electricity to contribute towards combating global warming. The project reduces greenhouse gas emissions as it displaces electricity from the INDIAN Grid (earlier it was NEWNE grid) dominated by fossil fuel based electricity generation plants.

The project activity help to reduce the supply demand gap in the state and also helps in contributing to the sustainable development by using wind energy as the source of power generation and reduction of GHG Emissions. In the project site, there are other wind projects owned by other customers connected to the same substation. There is an apportioning procedure which is approved by the state nodal agency for apportioning the electricity to each and every customer. The project activity is a zero emissions wind based power generation project connected to INDIAN grid. The project is to export around 50,662.584 MWh to INDIAN Grid every year. Hence, the baseline for the project as per Version 12.3.0 of ACM0002 is defined as “Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources”. The project harnesses renewable resources in the region, thereby displacing non-renewable natural resources and leading to sustainable economic development of the locality. Suzlon Energy Limited (SEL) is the WEG supplier and the operations and maintenance contractor for the project. The electricity generated from the wind farm is being supplied to Bhojapuri (Mahidad) substation through local transmission lines duly metered and measured by Gujarat Urja Vikas Nigam Limited (GUVNL) on a monthly basis at the substation of the wind farm.

The commissioning details of project implementation is mentioned section 3.1 of MR. The plant is running smoothly since commissioning with scheduled maintenance. The total GHG emission reductions achieved during this monitoring period is 11,867 tCO2e.

1.2 Sectoral Scope and Project Type

. The project activity is a single project activity and falls under

Sectoral Scope: 01 - Energy industries (renewable / non-renewable sources)

Project Type : I - Renewable Energy Projects

Title: “Consolidated baseline methodology for grid-connected electricity generation from

renewable sources"

Methodology : The methodology applied for the project is ACM0002 of version 12.3.0

1.3 Project Proponent

Organization name	Mytrah Energy (India) Limited
Contact person	Mr. Ramesh Kure
Title	Assistant Manager
Address	1st Floor, 8001, 8th Floor, Q-City, Nanakramguda, Gachibowli, Hyderabad 500032, Telangana, INDIA
Telephone	+91 72888 75975
Email	cleancredits@mytrah.com

1.4 Other Entities Involved in the Project

Organization name	Infinite Solutions
Role in the Project	Carbon Consultant
Contact person	Richa Thakur
Title	Project Manager
Address	214-215 Milinda Manor, Opp. Next Treasure Island, 2 RNT Marg, Indore-452001
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1.5 Project Start Date

The start date considered for the project activity is 06-August-2011 which is the earliest commissioning date among project activity WEGs.

1.6 Project Crediting Period

VCS crediting period is from 06-August-2011 to 05-August-2021 (10 years fixed) as the earliest date of commissioning of the WEG is from 06-August-2011.

1.7 Project Location

The wind power project is located in Rajkot and Surendranagar district, Gujarat, India. The geo-coordinates of the project location are as follows:

Sr. No	Location No.	Village and Tehsil	District	Latitude	Longitude	Model	H
1	JSD 038	Bhadlai	Rajkot	22° 11' 41.9"	71° 05' 44.4"	S88	80 m
2	JSD 041	Dahisra	Rajkot	22° 11' 41.4"	71° 08' 7.5"	S88	80 m
3	JSD 042	Dahisra	Rajkot	22° 11' 31.3"	71° 08' 28.3"	S88	80 m
4	MAH013	Bhojpari	Surendranagar	22° 17' 48.5"	71° 10' 15.8"	S88	80 m
5	MAH014	Bhojpari	Surendranagar	22° 17' 1.3"	71° 10' 19.1"	S88	80 m
6	MAH015	Bhojpari	Surendranagar	22° 16' 46.2"	71° 10' 21.3"	S88	80 m
7	MAH016	Chobari	Surendranagar	22° 15' 39.8"	71° 11' 42.3"	S88	80 m
8	MAH018	Chobari	Surendranagar	22° 15' 29.2"	71° 11' 27.5"	S88	80 m
9	MAH021	Tajpar	Surendranagar	22° 14' 53.6"	71° 10' 39.8"	S88	80 m
10	MAH022	Sakhpar	Surendranagar	22° 14' 56.6"	71° 11' 13"	S88	80 m
11	MAH041	Bhojpari	Surendranagar	22° 17' 27.5"	71° 10' 9.9"	S88	80 m
12	MDW 021	Kabran	Surendranagar	22° 17' 48.0"	71° 08' 24.1"	S88	80 m

Figure 2. Map showing Rajkot and Surendranagar

Figure 3. Locations of WTGs

Figure 1. Map depicting Gujarat state of India

1.8 Title and Reference of Methodology

Title: Consolidated baseline methodology for grid-connected electricity generation from renewable sources.

Methodology: Version 12.3.0 of ACM0002[1]

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

- Tool to calculate the emission factor for an electricity system (Version 02.2.1, Approved in EB 63);
- Tool for the demonstration and assessment of additionality;
- Combined tool to identify the baseline scenario and demonstrate additionality;

[1] http://cdm.unfccc.int/methodologies/DB/C505BVV9P8VSNNV3LTK1BP3OR24Y5L

- Tool to calculate project or leakage CO2 emissions from fossil fuel combustion The tools used in the VCS Pare as follows:

"Tool to calculate emission factor for an electricity system" – Version 02.2.1, Approved in EB 63

"Tool for the demonstration and assessment of additionality" – Version 6.0.0, Approved in EB 65

"Guidance on assessment of investment analysis"- Version 5.0 approved in EB 62

1.9 Participation under other GHG Programs

Participation under Other GHG Programs: The PP has participated under CDM mechanism of UNFCCC. The UN reference id 8823[2] of program with this project activity. The PP would not consider the credit from any other mechanism for the current monitoring plan. The undertaking is provided to confirm that there is no any double accounting for current monitoring period.

1.10 Other Forms of Credit

- Emission Trading Programs and Other Binding Limits: The PP has not applied this project in any Emission Trading Programs and other Binding Limits.

- Other Forms of Environmental Credit: The project is registered in CDM mechanism having ID 8823 and has claimed CDM benefits for monitoring period of 26-December-2012 to 01-January-2014. The project will not claim in any GHG benefits for the present monitoring period. PP not participating for REC benefits can be verified from this link- https://www.recregistryindia.nic.in/index.php/publics/accredited_regens

1.11 Sustainable Development Contributions

As this section is not mandatory ,so PP does not want to claim Sustainable Development Contribution.12,455.23.

[2] http://cdm.unfccc.int/Projects/DB/SGS-UKL1355741006.12/view

2 SAFEGUARDS

2.1 No Net Harm

The project does not involve any potential negative environmental and socio economic impacts and hence this criteria is not applicable to this project activity.

The report on "Developmental Impacts and Sustainable Governance Aspects of Renewable Energy Projects" prepared by MNRE dated September 2013. This report clearly mentioned that wind project activity operations do not result in direct air pollution, noise pollution. Please refer below web link for the same[3].

Thus there are no any significant impacts due to implementation of project activity on air, water, soil quality and ambience are envisaged due to the project activity.

2.2 Local Stakeholder Consultation

As a part of continual improvement process, feedback from the associated stakeholders is vital, therefore a dedicated Visitor register cum grievance register has been placed at the project site which is accessible to stakeholders to provide their feedback on the project. It is at publicly accessible location at which local stakeholders can provide their feedback on the project. This location is also conducive to continuous and regular checks for stakeholder comments. For the global stakeholders, the suggestion and the grievance can be submitted to mail@mytrah.com

Stakeholder meetings were organized during project activity registration under CDM in order to identify the major challenges around the area, stakeholders were invited well in advance through printed invitation, calls, meeting and a notice is placed around the local common areas. Various CSR activities around site are carried out to support local stakeholder.

The stakeholders are also requested to share their experiences and grievances on continuous basis. Registers is used to records the grievances and feedback. During the current monitoring period, positive feedbacks had been received regarding site operation. No any grievances received during the current monitoring period, therefore, no any mitigation measures were required. In case of grievances, the nature of probable resolution is discussed with the plant head office and implemented by the site in charge. The grievance copies are submitted to DOE.

2.3 AFOLU-Specific Safeguards

This Section is not applicable here as the project activity is not an AFOLU project activity.

[3] https://smartnet.niua.org/sites/default/files/resources/report_-on-developmental-impacts-of-RE.pdf

3 IMPLEMENTATION STATUS

3.1 Implementation Status of the Project Activity

The project is of capacity 25.20 MW wind power and located at Rajkot District and Surendranagar District of Gujarat State. It comprises of 12 Wind Electric Generators (WEGs) with a capacity of 2.1 MW each. The S88 model WEG installed as part of project activity and WEGs are of Suzlon Energy Limited (SEL) make. The technology of electricity generation from renewable wind resource is environment friendly as it does not use any fossil fuel. The power (electricity) thus produced by the project activity is transmitted to the state electricity grid, thereby displacing equivalent amount of power in the grid which is dominated by emission intensive thermal power plants.

The technical specification of the WEG is as follows:

MODEL	S88 - 2.1MW
Operating Data	
Rated power	2.1MW
Cut-in wind speed	4 m/s
Rated wind speed	14 m/s
Cut-out wind speed	25 m/s
50 years gust wind speed	59.5 m.s
Hub height	79m (Foundation top equal to ground level)
Wind Class	IEC – IIA
Rotational Speed	15 to 17.7 rpm
Rotor	
Pitch system	Pitch regulated, electrical
Diameter	88 m
Swept area	6082 m^2
Blade material type	Epoxy bounded fibre glass
Generator	
Type	Induction generator with slip rings, variable
Rated power	2100 kW
Rated voltage	690/600 V
Frequency	50/60 Hz
Protection	IP 54, IP23 for slip ring unit
Cooling system	Air cooled
Braking System	
Aerodynamic brake	3 independent systems with blade pitching
Mechanical brake	Hydraulic fail-safe disc brake system
Gearbox	
Type	3 stages (One planetary & Two helical)
Ratio	1:98.8 (±0.5%)
Nominal load	2,310 kW
Yaw System	

Type	Electric motors with brake, gearbox & pinion
Bearings	Friction bearing with gear rim
Tower	
Type	Tubular Tower (4 sections)
Corrosion protection	Epoxy/ PU coated

The project has been under operation since commissioning i.e. 06-August-2011 which is the start date of the project activity, without any major breakdowns. Though normal breakdowns (as referred in appendix II) due to O&M measures are continuously being worked upon by the dedicated O&M contractor for the projects WEGs. The plant is running smoothly since commissioning with scheduled maintenance. No events or situations occurred during the reported monitoring period that can alter the applicability of the applied methodology.

The Commissioning dates of each WEGs are mentioned below:

Sr. No	Location No.	WEG No.	Village and Tehsil	Date of Commissioning
1	JSD 038	SEL/2100/11-12/2216	Bhadlai	01-October-2011
2	JSD 041	SEL/2100/11-12/2217	Dahisra	28-September-2011
3	JSD 042	SEL/2100/11-12/2218	Dahisra	28-September-2011
4	MAH013	SEL/2100/11-12/2211	Bhojpari	10-August-2011
5	MAH014	SEL/2100/11-12/2213	Bhojpari	06-August-2011
6	MAH015	SEL/2100/11-12/2214	Bhojpari	06-August-2011
7	MAH016	SEL/2100/11-12/2207	Chobari	12-August-2011
8	MAH018	SEL/2100/11-12/2208	Chobari	31-August-2011
9	MAH021	SEL/2100/11-12/2209	Tajpar	31-August-2011
10	MAH022	SEL/2100/11-12/2210	Sakhpar	31-August-2011
11	MAH041	SEL/2100/11-12/2212	Bhojpari	06-August-2011
12	MDW21	SEL/2100/11-12/2215	Kabran	06-August-2011

3.2 Deviations

3.2.1 Methodology Deviations

There is no request for deviation applied during this monitoring period

3.2.2 Project Description Deviations

Deviation 1-

The VCS registered PD mentioned three monitoring parameters like net electricity supplied to grid ($EG_{PJ,y}$), electricity export ($E_{,exp}$) by project and electricity import ($E_{,imp}$) by project and net electricity is difference of export and import.

Since PP have only one parameter data available i.e data of net electricity supplied to grid through share certificate issued by state electricity board. Hence only single parameter of net electricity supplied to grid ($EG_{PJ,y}$) is considered for this project activity. The other 2 parameters of electricity export ($E_{,exp}$) and electricity import ($E_{,imp}$) are not considered as a part of monitoring parameters due to non-availability of data to PP.

This does not have any impact on emission reductions. This deviation which is of permanent nature is been pre-approved during the verification period of 02-January-2014 to 31- May-2018.

There is no change in the present verification for the project activity,

Deviation 2-

PP is requested for deviation regarding some minor changes in technical specifications of WEGs
from the registered VCS PD. The details of the same is mentioned below-

MODEL	S88 - 2.1MW
Operating Data	
Rotational Speed	15 to 17.7 rpm
Generator	
Type	Induction generator with slip rings, variable rotor
Gearbox	
Type	3 stages (One planetary & Two helical)
Ratio	1:98.8 (±0.5%)
Nominal load	2,310 kW
Yaw System	
Type	Electric motors with brake, gearbox & pinion
Bearings	Friction bearing with gear rim

This deviation which is of permanent nature is been pre-approved during the verification period of 01-April-2020 to 31-May-2021.

There is no change in the present verification for the project activity,

Deviation 3

Data Adjustment in case of monitoring period different from billing period.

As the billing cycle differs from monitoring period, therefore In case the dates of a particular monitoring period do not match with the dates of the billing period, the net electricity exported to the grid would be calculated as follows:

$D = (A/B)*C$

Where:

A = Difference of number of days which are not matching of billing period and monitoring period.

B = Number of days of the billing period/ month which was not matched with the monitoring period.

C = Net Electricity supplied to the grid for that given billing period/ month.

The calculated value after apportioning would be used for calculation of emission reductions during that period. Based on the above procedure, the Monthly Certificate for Share of Electricity Generated shall be provided to the project participant. This is to be noted that the detail procedure of monitoring is illustrated here for the sake of understanding; for the preparation of monitoring report during periodic verifications, only the net electricity generation value mentioned in monthly wind energy certificates shall be directly used for emission reduction calculation. No other parameters as explained above shall be used and presented in the monitoring report.

For net electricity generation DGR value is not considered as the DGR value is measured at WEG end not at the substation, hence the value will be higher. The JMR value is used for apportioning for as per the above mentioned formula.

3.3 Grouped Projects

This project activity is not a grouped project activity.

4 DATA AND PARAMETERS

4.1 Data and Parameters Available at Validation

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 Baseline database Version 07[4]
Value applied	0.9842

[4] https://cea.nic.in/wp-content/uploads/baseline/2020/07/database_7.zip

Justification of choice of data or description of measurement methods and procedures applied	The operating margin emission factor data has been deduced from CO_2 database. CEA CO_2 Baseline database Version 07
Purpose of Data	Calculation of baseline emissions
Comments	The operating margin emission factor is a 3-year generation-weighted average (2008-11). Data calculated to be 0.9842. The operating Margin is calculated ex ante and fixed during the crediting period.

Data / Parameter	$EF_{grid,BM,y}$
Data unit	tCO_2/MWh
Description	Build margin CO_2 emission factor of NEWNE grid
Source of data	Central Electricity Authority:CO_2 Emission Database CEA CO_2 Baseline database Version 07[5]
Value applied	0.8588
Justification of choice of data or description of measurement methods and procedures applied	The operating margin emission factor data has been deduced from CO_2 database. CEA CO_2 Baseline database Version 07
Purpose of Data	Calculation of baseline emissions
Comments	The build Margin would be calculated ex-ante and fixed during the crediting period. For ex-ante calculation the most recent data available has been used and the build margin thus calculated is 0.8588

Data / Parameter	$EF_{grid,CM,y}$
Data unit	tCO_2/MWh
Description	Combined margin CO_2 emission factor of NEWNE grid
Source of data	Central Electricity Authority: CO_2 Emission Database CEA CO_2 Baseline database Version 07

[5] https://cea.nic.in/wp-content/uploads/baseline/2020/07/database_7.zip

Value applied	0.9528
Justification of choice of data or description of measurement methods and procedures applied	Calculated as per the procedures in "Tool to calculate the emission factor for an electricity system" based on CEA data.
Purpose of Data	Calculation of baseline emissions
Comments	The combined margin would be calculated ex-ante and fixed for the entire crediting period.

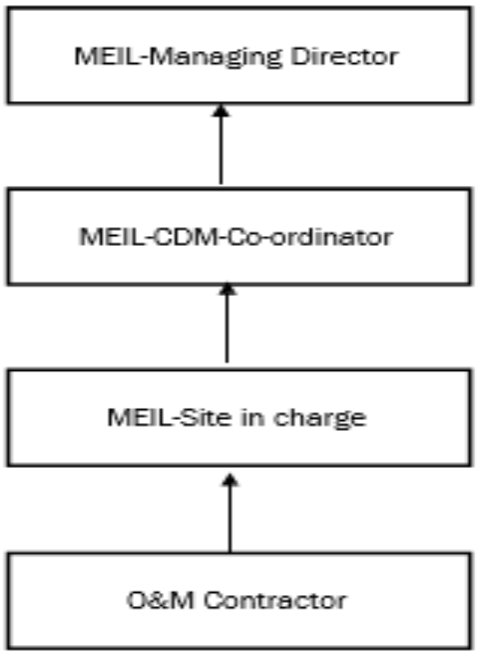
4.2 Data and Parameters Monitored

Data / Parameter	$EG_{PJ,y}$
Data unit	MWh
Description	Quantity of net electricity exported to the grid during the year y. Certificate for share of electricity generated by Wind Farm.
Source of data	Authorized state agency (GETCO) releases a monthly Share Certificate for the net energy exports. This certificate is used for determining the emission reductions and also for the billing and payment of net sale of electricity from the project.
Description of measurement methods and procedures to be applied	Calibration Frequency: Energy meters is calibrated atleast once in 3 years. Responsibility: Project Manager of MEIL will be responsible for maintain the records.
Frequency of monitoring/recording	Continuous measuring and at least monthly recording
Value monitored	12,455.23
Monitoring equipment	The machines of the project activity and machines of other project developers are connected to the Substation The common metering point comprises one main meter & check meter (jointly certified by "The Gujarat Urja Vikas Nigam Limited (GUVNL)" i.e. Gujarat Energy Transmission Corporation Limited (GETCO) and the service provider i.e. Suzlon/ its representative every month) and one ABT meter (ABT meter readings are not certified jointly, although GUVNL, Gujarat Energy Development Agency (GEDA) and GETCO consider this reading as the total energy for billing purpose and used for the calculation of sharing of the energy of the individual developers).

QA/QC procedures to be applied	All the meters of accuracy class 0.2s are under the purview of GETCO and will be calibrated by GETCO every 3 years as per section 7.2 (iv) of the PPA. The net electricity exported can be cross checked with the sales receipts. Also, the generation from each WEG in the wind farm is recorded by an energy meter installed near each machine. The energy meter provides monthly generation data from individual WEG and also records the power consumed by the individual WEG (as explained below). Thus, to cross check; the net electricity supplied to the grid by the project activity WEGs must be lesser than summation of net electricity generated by WEGs of project activity, as measured at the individual energy meter and controller (LCS) of each WEG due to the accounted transmission losses.
Purpose of the data	Calculation of baseline emissions
Calculation method	The ABT meter reading reflects the net electricity supplied by the wind farm (both export and import), including the project activity. The net electricity supplied by individual wind turbines is determined by a process of sharing the net electricity recorded at the ABT meter in proportion of the electricity generation recorded by the energy meters at the individual wind turbines. The Sharing of energy is done as per PPA by GETCO.
Comments	The data will be archived for two years after the end of the last crediting period or till the last issuance of VCUs for the project activity, whichever is later. The ABT meter readings at the substation are recorded by GETCO representative every month. These ABT meters are fully under the jurisdiction of GETCO. The readings of net electricity supplied to the grid by each customer are made available on the website of SLDC-Gujarat (GETCO)

4.3 Monitoring Plan

The organizational structure of this project activity is as follows.



PP has assigned the responsibility of operation and maintenance of the plant to Suzlon Energy Limited.

Responsibilities of Head: Overall functioning and maintenance of the project activity.

Responsibilities of Plant In-charge: Responsibility to maintain the data records, ensures completeness of data, and reliability of data (calibration of equipments).

Responsibilities of Shift In-charge: Responsibility for day to day data collection and maintains day to day log book for monitored data.

QA/QC procedures

The energy meters at the feeders are maintained and owned by Discom. Neither the project proponent nor the site personnel have any control over it. The records are cross-checked with the records of sold electricity to Discom/third party. The meters are calibrated by Discom at- least once in three years

Data measurement

The Operation & Maintenance of the project is executed by Suzlon Energy Limited. The individual turbine electricity generation is recorded by the LCS meter (controller) at the individual wind turbine. Also, Every WEG has an individual energy meter connected to it. This meter can measure both import and export of electricity by the individual WEGs. This meter is under the purview of GETCO and is calibrated by GETCO officials at least once in 3 years.

Every month officials from Suzlon measures the electricity export and import from each WEG and issue the monthly generation report to the project proponent, which is also endorsed by the GEDA. There are 2 feeders to which all the 12 WEGs of MEIL are connected. These two feeders also contain WEGs of other customers. The two feeder meters are connected to a single Main and Check Meter at the substation. The Main meter can measure both electricity import and electricity export. Every month Joint Meter Reading is taken at the Main Meter, by GETCO officials in the presence of officials from Suzlon. There is an Availability Based tariff meter installed at the substation. The reading of ABT meter are not certified jointly although GUVNL/GEDA, SLDC consider this reading as the total energy for billing purpose.

Working model for sharing of energy (considered by GETCO)

The model evolved by the state utility (GEDA) and the generating company and the steps involved in this are as follows.

1. Each WEG have separate metering point which is read jointly by the representative of the company and the state utility personnel (Gujarat Energy Development Agency).Both import and export of electricity by each WEG will be measured by these meters. This is certified by both the representatives.
2. Considering the total No of WEG in the Project by various investors and the energy recorded in the each WEG meter is consolidated and considered as net energy generated from the Wind farm.
3. For calculating the net electricity supplied by the project to the grid the following formula may be considered for understanding.

Share of PP's Net Electricity supplied to grid = (C×Y) / (C+C1+C2+...Cn)

Where:

C = Net generation by 12 WEGs owned by Mytrah Energy (India) Limited

C+C1+C2+C3.....Cn= Total energy generated from the Wind farm from different companies including Mytrah Energy (India) Limited.

Y = The Meter reading by GETCO at the S/s metering point (ABT)

All the above calculations are in accordance with the PPA.

Using the above sharing approach, The SLDC-GETCO provides the certificate of generation through their web site. This is considered for raising invoice and accordingly payment is being received from GUVNL. This Certificate of Share forms the basis of billing and also emission reduction calculation. The value of net electricity delivered can be cross checked with the monthly invoices.

In case the ABT Meter is not functioning there is a Main and Check Meter located at the substation which also calculates electricity import and export by all customers (whole wind farm). In case the meter located at the individual WEGs fail, the controller readings (LCS) of each WEG that are recorded by the Central monitoring System of Suzlon, are used for measuring electricity generation by individual WEGs. No such emergency events occurred during current monitoring period. All the data items monitored under the monitoring plan will be kept for 2 years after the end of crediting period or till the last issuance of VCUs for this project activity whichever occurs later.

NOTE: The net electricity supplied to the grid by the project activity is a calculated value which is arrived by using the value of electricity generation by project WEGs, non-project WEGs at individual energy meters and the cumulative value of electricity import and export of the entire number of WEGs connected to substation (i.e. including project and non-project WEGs) as measured at the pooling substation. Since the measurement of electricity generation of non- project WEGs at energy meter is non- feasible for PP and The main meter & check meter reading at the substation and ABT meter are under the jurisdiction of GETCO only and are not shared with the individual project developers, hence, these parameter have not been included as the monitoring parameters in section B.7.1 of the registeredVCS PD.

Data Adjustment in case of monitoring period different from billing period.

As the billing cycle differs from monitoring period, therefore In case the dates of a particular monitoring period do not match with the dates of the billing period, the net electricity exported to the grid would be calculated as follows:

$D = (A/B)*C$

Where:

A = Difference of number of days which are not matching of billing period and monitoring period.

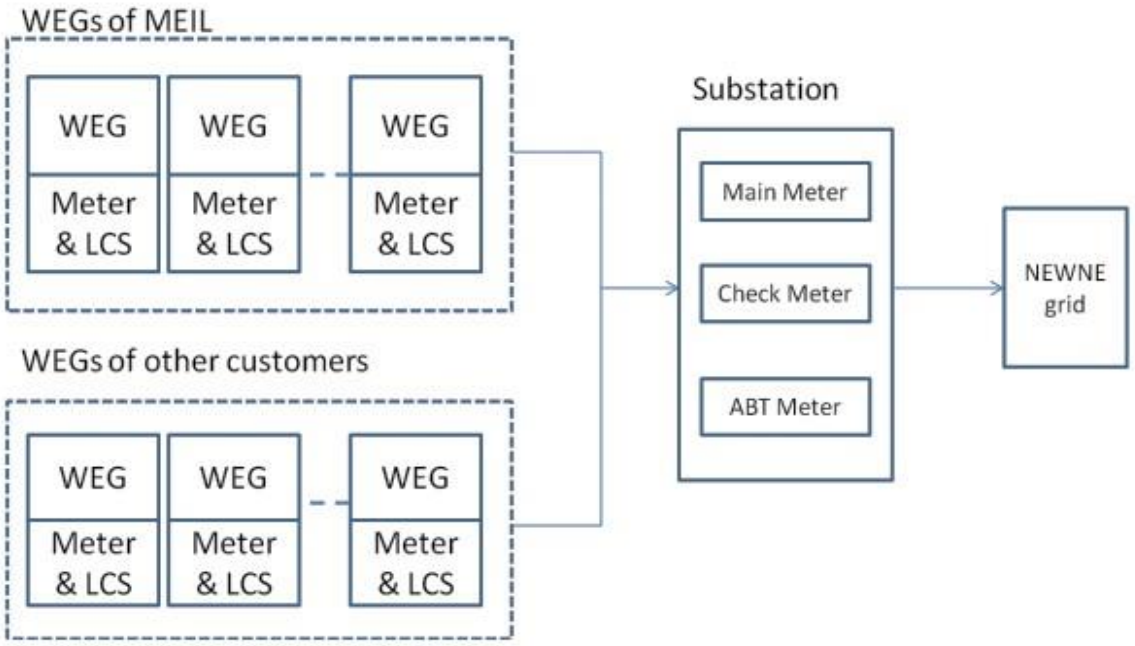
B = Number of days of the billing period/ month which was not matched with the monitoring period.

C = Net Electricity supplied to the grid for that given billing period/ month.

The calculated value after apportioning would be used for calculation of emission reductions during that period. Based on the above procedure, the Monthly Certificate for Share of Electricity Generated shall be provided to the project participant. This is to be noted that the detail procedure of monitoring is illustrated here for the sake of understanding; for the preparation of monitoring report during periodic verifications, only the net electricity generation value mentioned in monthly wind energy certificates shall be directly used for emission reduction calculation. No other parameters as explained above shall be used and presented in the monitoring report.

For net electricity generation DGR value is not considered as the DGR value is measured at WEG end not at the substation, hence the value will be higher. The JMR value is used for apportioning for as per the above mentioned formula.

The monitoring arrangement, metering system under project boundary has been illustrated in schematic diagram below:



5 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

5.1 Baseline Emissions

According to the approved methodology ACM0002 (Version 12.3.0) Emission Reductions are calculated as:

$ER_y = BE_y - PE_y$

Where,

ER_y = Emission reductions in year y (tCO_2e)

BE_y = Baseline emissions in year y (tCO_2e)

PE_y = Project emissions in year y (tCO_2e)

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 (tCO2)

$EG_{PJ,y}$ = 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 CO2 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)

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

Where,

$EG_{PJ,y}$ = Quantity of net electricity generation that is produced and fed into the grid as a resultof 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)

As the project activity is wind power project, project emissions are zero and the resulting emission reduction is as follows.

$ER_y = BE_y$

Baseline emission factor (Combined Margin) is found to be 0.9528 tCO_2e.

BEy = $EG_{PJ,y}$ x $EF_{grid,CM,y}$

BE_y = 12,455.23x 0.9528

BE_y = 11,867 (Rounded down value) tCO_2e

5.2 Project Emissions

The project activity involves in harnessing wind power. So the emissions from the project are zero.

5.3 Leakage

The project activity is a Greenfield wind power project and there is no technology transfer with respect to this project activity. Hence the Leakage emissions for the project are zero

5.4 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)
01-June-2021 to 05-August-2021	11,867	0	0	11,867
Total	11,867	0	0	11,867

The actual GHG avoided during the current monitoring plan is 11,867 tCO_2e. The estimated GHG for the current monitoring period is 8,727 tCO_2e. The actual VCUs is 35.98% higher than the estimated VCUs. This variation is due to high PLF i.e 31.20% achieved during the current monitoring period as compared to the PLF (22.95%) in the registered project description. The higher plf of the project breaches benchmark. During this season the north region of Gujarat is arid and semi-arid, the southern region is humid. The seasonal cycle leads to strong winds from March to August and relatively weak winds from November through March. Because Gujarat has a long coast line, sea breezes also influence the wind characteristics in this region. The El Niño Southern Oscillation plays an important role in India. El Niño affects the monsoon. El Niño years are typically characterized by week monsoons and droughts, but the wind in Gujarat is strong during this season.

APPENDIX 1: CALIBRATION DETAILS

Location No.	Name of Feeder	EB Meter No	Calibration date	Calibration due date
MDW-21	Feeder-1	GJU62221	16-January-2021	15-January-2022
MAH-13	Feeder-1	GJU62216	16-January-2021	15-January-2022
MAH-14	Feeder-1	GJU62223	16-January-2021	15-January-2022
MAH-15	Feeder-1	GJU62222	16-January-2021	15-January-2022
MAH-41	Feeder-1	GJU62220	16-January-2021	15-January-2022
MAH-16	Feeder-2	GJB01930	15-January-2021	14-January-2022
MAH-18	Feeder-2	GJU62225	15-January-2021	14-January-2022
MAH-22	Feeder-2	GJU62218	15-January-2021	14-January-2022
MAH-21	Feeder-2	GJU62217	15-January-2021	14-January-2022
JSD-41	Feeder-2	GJU62227	13-January-2021	12-January-2022
JSD-42	Feeder-2	GJU62226	13-January-2021	12-January-2022
JSD38	Feeder-2	GJU62215	17-January-2021	16-January-2022

APPENDIX 2: BREAKDOWN DETAILS

Date	Location	Duration	Remarks
29-June-2021	JSD38	24.00	HSS Shaft Failure
30-June-2021	JSD38	24.00	HSS Shaft Failure
1-July-2021	JSD38	24.00	HSS Shaft Failure
2-July-2021	JSD38	19.70	HSS Shaft Failure
3-July-2021	JSD38	12.00	HSS Shaft Failure
4-July-2021	JSD38	24.00	HSS Shaft Failure
5-July-2021	JSD38	24.00	HSS Shaft Failure
6-July-2021	JSD38	24.00	HSS Shaft Failure
7-July-2021	JSD38	24.00	HSS Shaft Failure
8-July-2021	JSD38	24.00	HSS Shaft Failure
9-July-2021	JSD38	24.00	HSS Shaft Failure
10-Jul-2021	JSD38	17.90	HSS Shaft Failure
11-July-2021	JSD38	24.00	HSS Shaft Failure