



Monitoring report form for CDM project activity
(Version 09.0)

MONITORING REPORT

Title of the project activity	9.6 MW Wind Energy Project at Jamvadi & Navagam & Kalavad, Jamnagar, Gujarat, India of Rohit Surfactants Pvt. Ltd.		
UNFCCC reference number of the project activity	4470 ¹		
Version number of the PDD applicable to this monitoring report	2.2		
Version number of this monitoring report	01		
Completion date of this monitoring report	18/10/2021		
Monitoring period number	03		
Duration of this monitoring period	01/09/2016 to 07/09/2021 (both days inclusive)		
Monitoring report number for this monitoring period	Not Applicable		
Project participants	Rohit Surfactants Pvt. Ltd.(India) EKI Energy Services Limited (Australia)		
Host Party	India		
Applied methodologies and standardized baselines	AMS I.D, "Grid connected renewable electricity generation" (Version 16 ²) Standardized Baseline: Not Applicable		
Sectoral scopes	1 : Energy industries (renewable - / non-renewable sources)		
Amount of GHG emission reductions or net anthropogenic GHG removals achieved by the project activity in this monitoring period	Amount achieved before 1 January 2013	Amount achieved from 1 January 2013 until 31 December 2020	Amount achieved from 1 January 2021
	0	61,243 tCO ₂ e	14,151 tCO ₂ e
Amount of GHG emission reductions or net anthropogenic GHG removals estimated ex ante for this monitoring period in the PDD	90,309 tCO ₂ e		

¹ <https://cdm.unfccc.int/Projects/DB/SIRIM1297157809.18/view>

² <https://cdm.unfccc.int/methodologies/DB/W3TINZ7KKWCK7L8WTXFQQOFQQH4SBK>

SECTION A. Description of project activity

A.1. General description of project activity

The project activity involves installation of 12 Wind Electric Generators (WTGs) with a total capacity of 9.6 MW located at Jamnagar District, Gujarat State, India by Rohit surfactants Private Ltd. The wind farm harnesses wind energy potential in the Jamnagar district and intends to promote renewable energy by addressing the causative factors of low utilisation of renewable energy resources. The project activity is in line with the sustainable development priority of the country.

All the WTGs are connected to the regional grid and as per the Power Purchase Agreement ("PPA") the generated electricity is being sold to Gujarat Urja Vikas Nigam Limited (GUVNL). Wind World (India) Ltd (Formerly known as Enercon India Ltd. (EIL)², the MR refers Enercon for being consistent with the PDD) is the equipment supplier and operations & maintenance contractor for the project activity. The principle of wind energy is the conversion of kinetic energy in the wind into mechanical power at the rotor shaft. The rotor shaft is then coupled to the generator where it would be converted to electrical energy. These Enercon make 800KW WTGs feature variable speed and active pitch control. The generator is flanged directly to the hub.

The project is replacing anthropogenic emissions of greenhouse gases (GHG's) estimated to be approximately 17,983 tCO₂e per year, thereon displacing 19,493.45 MWh/year amount of electricity from the generation-mix of power plants connected to the NEWNE grid³, which is mainly dominated by thermal/fossil fuel based power plant. Thus, it contributes towards reduction in the demand-supply gap during periods of electricity shortage and increase in the share of renewable energy in the grid mix.

WTG Identification Number	Village	Date of Commissioning
EIL/800/07-08/0927	Jamvadi	18/03/2008
EIL/800/07-08/0928	Jamvadi	18/03/2008
EIL/800/07-08/0929	Jamvadi	18/03/2008
EIL/800/07-08/0930	Jamvadi	18/03/2008
EIL/800/07-08/0931	Jamvadi	18/03/2008
EIL/800/07-08/0932	Jamvadi	18/03/2008
EIL/800/07-08/0933	Jamvadi	18/03/2008
EIL/800/07-08/01029	Navagam	26/03/2008
EIL/800/07-08/01030	Navagam	26/03/2008
EIL/800/07-08/01031	Navagam	26/03/2008
EIL/800/07-08/01032	Navagam	26/03/2008
EIL/800/07-08/01033	Navagam	26/03/2008

Technology specification of the product is further described in section B.1.

Details of actual implementation status are as mentioned in table above.

The estimation of GHG emission reductions by the present project activity is limited to carbon dioxide (CO₂) only and its primary source is the fossil fuels consumed in the NEWNE grid. The estimated annual average and estimated GHG emission reductions for the current monitoring period are 17,983 tCO₂e and 90,309 tCO₂e respectively. The project undergoes continued operation during current monitoring period, except for routine maintenance activities.

³ Now a part of unified Indian Grid.

During the current monitoring period the net GHG emission reductions by the sinks is 90,309 tCO₂e (as per the registered PDD) whereas the actual generation during the current monitoring period is found to be 81,728.44 MWh contributing to emission reductions of 75,394 tCO₂e.

During this monitoring period no major breakdown has taken place and the plant was operational throughout the current monitoring period.

During the current monitoring period, the project activity is being operated and monitored in accordance with the applicable baseline and monitoring methodology AMS I D, Version 16 and registered PDD.

All the WTGs are in operation and no abnormal circumstance occurred during this monitoring period. Enercon operation and maintenance activities are ISO 9001:2008 certified and all the events are recorded in the log book available at the project site. As a part of regular maintenance the machines are stopped for mechanical and electrical maintenance.

The emission reductions achieved for the current monitoring period are 75,394 tCO₂e.

A.2. Location of project activity

Project activity is located at

Village: Jamvadi & Navagam

Taluka: Kalavad,

District: Jamnagar

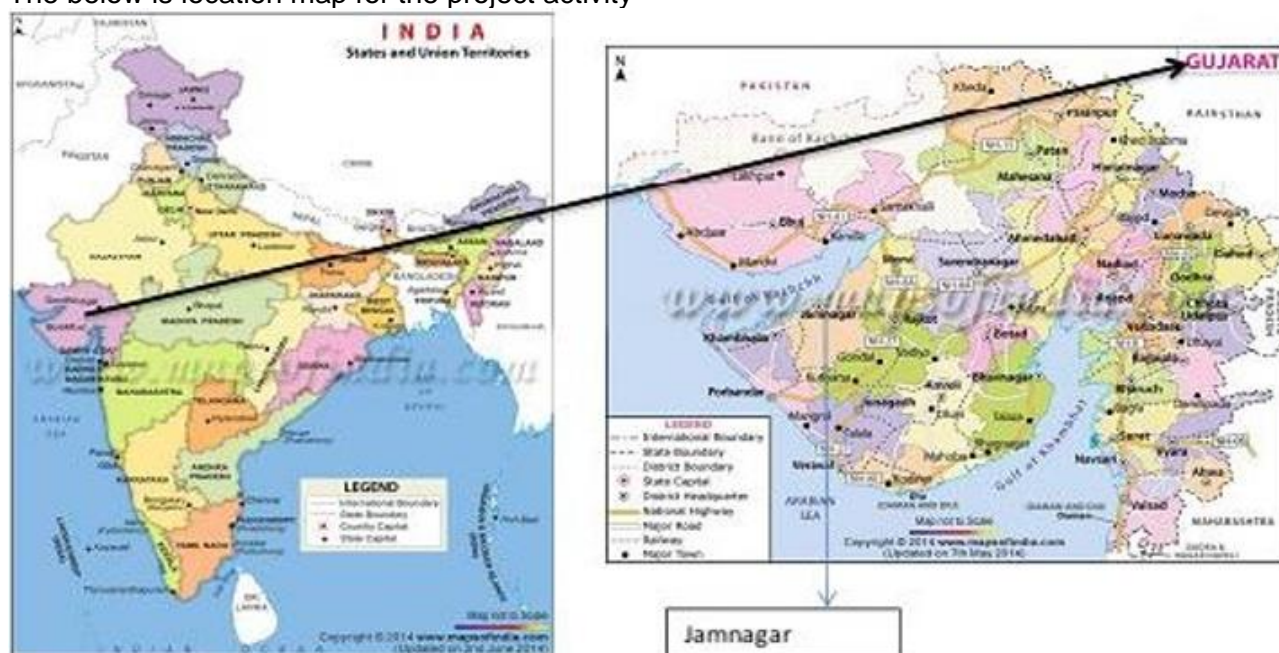
State: Gujarat

Country: India

Below table mentioned WTG wise location details:

Sr. No.	Details of site of installation			WTG ID commissioning	GPS Coordinates
	Name of village	Taluka	District		
1	Jamvadi	Kalavad	Jamnagar	EIL/800/07-08/0927	N22°07' 13.2" – E70°18' 39.3"
2	Jamvadi	Kalavad	Jamnagar	EIL/800/07-08/0928	N22° 07' 19.5" – E70°18' 39.5"
3	Jamvadi	Kalavad	Jamnagar	EIL/800/07-08/0929	N 22 ° 07' 25.8" E70° 18' 36.1"
4	Jamvadi	Kalavad	Jamnagar	EIL/800/07-08/0930	N22° 07' 32.3" – E70° 18' 36.2"
5	Jamvadi	Kalavad	Jamnagar	EIL/800/07-08/0931	N22° 08' 12.1" – E 70° 18' 20.2"
6	Jamvadi	Kalavad	Jamnagar	EIL/800/07-08/0932	N 22° 08' 18.1" E70 °18' 18.4"
7	Jamvadi	Kalavad	Jamnagar	EIL/800/07-08/0933	N22° 08' 25.2" – E70° 18' 16.1"
8	Navagam	Kalavad	Jamnagar	EIL/800/07-08/01029	N 22°03' 27.6" – E70° 16' 53.9"
9	Navagam	Kalavad	Jamnagar	EIL/800/07-08/01030	N22° 03' 22.4" – E70° 16' 54.0"
10	Navagam	Kalavad	Jamnagar	EIL/800/07-08/01031	N22° 03' 14.4" – E70 °17' 01.8"
11	Navagam	Kalavad	Jamnagar	EIL/800/07-08/01032	N22° 03' 08.4" – E70 °17' 03.9"
12	Navagam	Kalavad	Jamnagar	EIL/800/07-08/01033	N22° 03' 02.4" – E70° 17' 06.3"

The below is location map for the project activity



A.3. Parties and project participants

Parties involved	Project participants	Indicate if the Party involved wishes to be considered as project participant (Yes/No)
India (host)	Rohit Surfactants Pvt. Ltd. (RSPL) (Private entity)	No
Australia (Other)	EKI Energy Services Limited (Private entity)	No

A.4. References to applied methodologies and standardized baselines

Type I – Renewable Energy Projects
 AMS I.D – Grid connected renewable electricity generation, Version16⁴,
 Sectoral Scope 01- Energy Industries (Renewable -/ non-renewable sources)

The Tools used:

Tool to calculate the emission factor for an electricity system. Version 2/EB 50/Annex 14

A.5. Crediting period type and duration

Type - Fixed
 Monitoring Period - 03
 Start date of crediting period - 08/09/2011
 Length of Crediting period -10 Years
 Duration of Crediting Period - 08/09/2011 to 07/09/2021 (Fixed)
 Current Monitoring Period (Third and last) - 01/09/2016 to 07/09/2021 (both days included)

SECTION B. Implementation of project activity

B.1. Description of implemented project activity

Project activity is implemented and operated as per the registered PDD. The project activity proposes to install total 12 WTGs of 800 kW each leading to the total capacity of 9.6 MW.

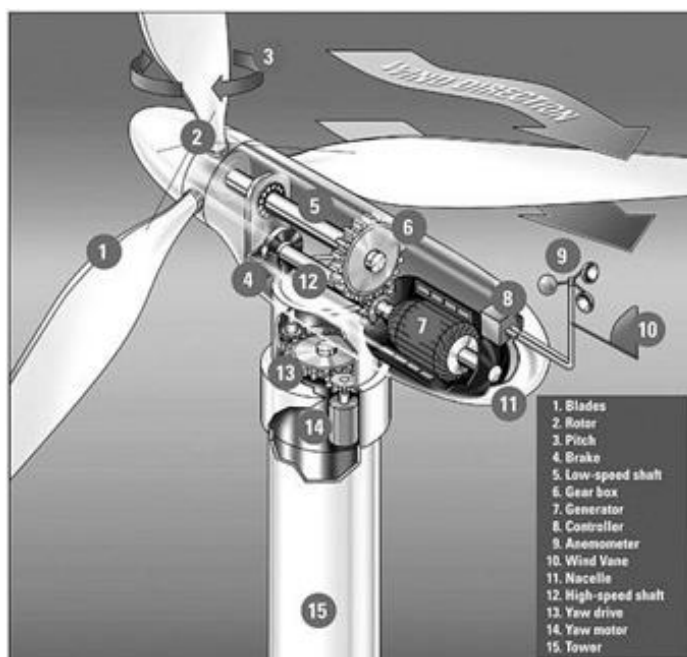
⁴<https://cdm.unfccc.int/methodologies/DB/W3TINZ7KKWCK7L8WTXFQQOFQQH4SBK>

The project participant uses proven technology for wind power generation. This technology was supplied by ENERCON India Ltd (EIL). All the WTGs are connected to the regional grid and as per the Power Purchase Agreement (“PPA”) the generated electricity is being sold to Gujarat Urja Vikas Nigam Limited (GUVNL). Enercon India Ltd. (EIL) is the equipment supplier and operations & maintenance contractor for the project activity.

Technical Specifications of turbines are as mentioned below:

Turbine	Enercon
Rated Power	800 kW
No. of Blades	3
Tower	Tubular
Turbine Type	Gearless horizontal
Power regulation	Independent electro-mechanical pitch system for each blade
Cut in wind speed	3 m/s
Rated wind speed	12 m/s
Cutout wind speed	28 – 34 m/s
Extreme wind speed	59.5 m/s
Rated rotational speed	31.5 rpm
Operating range rot. Speed	16 – 31.5 rpm
Orientation	Upwind
No. of blades	3
Blade Material	Glass Fiber reinforced Epoxy
Gear box type	Gear less
Generator type	Synchronous generator
Braking	Aerodynamics
Output voltage	400 V
Yaw system	Active yawing with 4 electric yaw drives with brake motor and friction bearing
Tower	Tubular

The schematic diagram of WTG depicting the major parts of a windmill is provided below



There are no changes that have happened in project activity which may impact the applicability of the methodology.

B.2. Post-registration changes

B.2.1. Temporary deviations from the registered monitoring plan, applied methodologies, standardized baselines or other methodological regulatory documents

There is no request for deviation applied during this monitoring period.

B.2.2. Corrections

Not Applicable

B.2.3. Changes to the start date of the crediting period

Not Applicable

B.2.4. Inclusion of monitoring plan

There has not been any change in the monitoring plan during the current monitoring period

B.2.5. Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other methodological regulatory documents

Not Applicable

B.2.6. Changes to project design

There has not been any change in the PDD during the current monitoring period

B.2.7. Changes specific to afforestation or reforestation project activity

Not applicable as this project activity is not afforestation or reforestation project activity.

SECTION C. Description of monitoring system

Monitoring of emission reductions is being carried out following the guidance provided in the applicable methodology for the project activity i.e. AMS-ID version 16, which requires monitoring of the following:

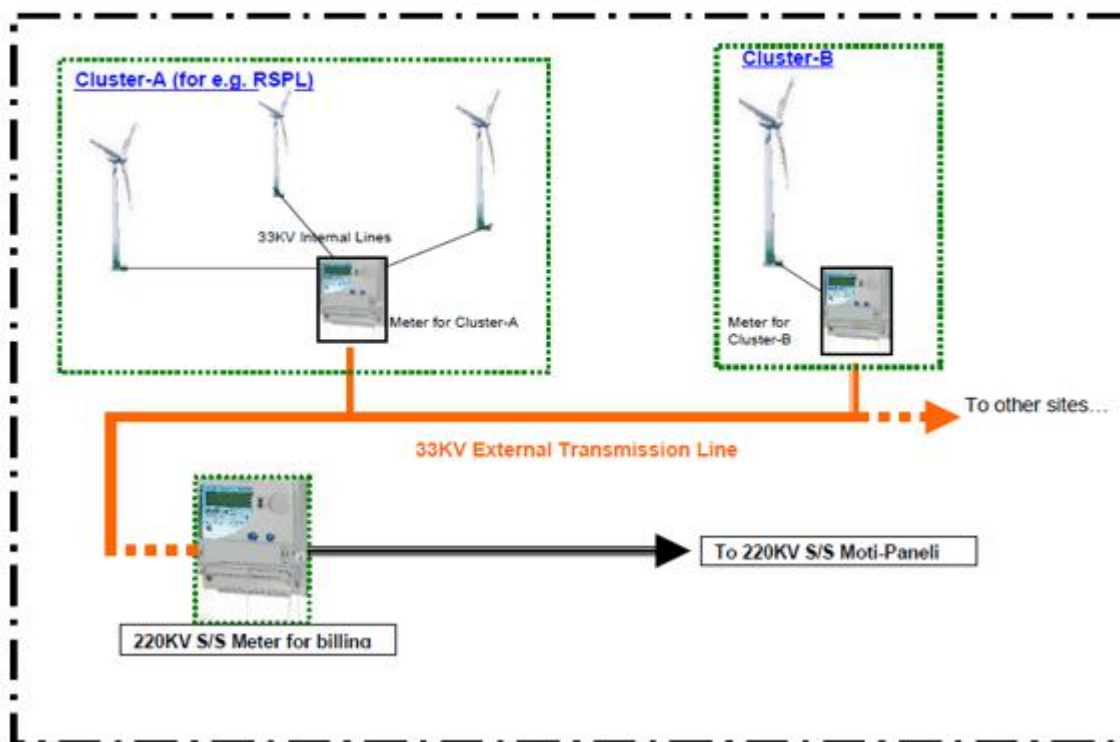
- Quantity of net electricity supplied to the grid from the project activity; and
- CO₂ emission factor of the grid electricity (Ex ante determination of grid emission factor has been chosen).

The general conditions set out for metering, recording, meter readings, meter inspections, Test & Checking and communication shall be as per the PPA (power purchase agreement) with GUVNL.

Reading and correction of meters:

- a) The WTGs of a single customer (RSPL in this case) at a particular site are connected to a 33 kV cluster meter which in turn connects to a feeder that ultimately leads to the shared main GETCO meter at the 220 kV substation. Data monitoring takes place at the 220 kV substation and at each WTG (through the SCADA system)
- b) Site technician collects the generation readings from the WTGs every day and then prepare the daily generation report. Through these collective reports of everyday, monthly generation figures are available.
- c) Cluster meter readings are also taken daily on the same day the WTG meter readings are taken to get the exact generation recording of these meter.
- d) On the billing day decided by GEDA/GETCO/EIL, the reading of the 220 kV substation meter is taken at the same time of daily WTG readings by calculating in the pro-rata basis, the generated units are being allocated to individual customers according to the generated units
- e) The emission reduction calculations are done on the basis of the GETCO Main meter reading (net electricity exported to the grid) after deducting imports from the grid as mentioned in the share certificate issued by GEDA on monthly basis. The following figure illustrates the metering arrangement for the RSPL project activity.

The WTGs of a single customer (RSPL in this case) at a particular site are connected to a 33 kV cluster meter which in turn connects to a feeder that ultimately leads to the shared main GETCO meter at the 220 kV substation. The individual WTGs at a particular site connect to a meter at the cluster meter (33 kV) where the secondary metering is done and reported in the daily generation report. Each cluster meter is connected to dedicate project WTG's. On cluster meter 1, total 3 WTG's of RSPL are connected, on cluster meter 2, total 4 WTG's of RSPL are connected and on cluster meter no 3, total 5 WTG's of RSPL are connected. Data monitoring takes place at the 220 kV substation and at each WTG (through the SCADA system). On the billing date decided by GETCO, the reading of 220 KV substation meter is taken at the same time of daily WTG readings by calculating in the pro rata basis, the generated units are being allocated to individual customers according to the generated units. Line diagram depicting the electricity generation and evacuation to the state electricity grid is depicted in below:

ELECTRICITY SHARE ALLOCATION PROCEDURE FOR WEC GENERATION

Note – The above schematic diagram is just representation of metering arrangement of cluster meters and substation meters. As discussed above, RSPL WTGs have 3 cluster meters and total 12 number of WTGs (3, 4 and 5 number of WTGs) are connected to these 3 cluster meters.

f) Whenever there is a major difference between the readings of the Main meter (220 kV substation meter and the 33kV cluster at Enercon Substation) at wind farm end, the following steps shall be taken.

i. Checking of CT and PT connections

ii. Testing of accuracy of meters at site and at GETCO meter (220 kV substation meter)

If the difference exists even after such checking or testing, then the defective meter shall be replaced with a correct meter.

g) In case of conspicuous failures like burning of meter and erratic display of metered parameters and when the error found in testing of meter is beyond the permissible limit of error provided in the relevant standard, the meter shall be immediately replaced with a correct meter.

h) Sealing and maintenance of meters:

i. The GETCO meter (220 kV substation meter) shall be sealed in the presence of representatives of RSPL / Enercon and GETCO.

ii. Any meter seal(s) shall be broken only by the GETCO representative in the presence of Enercon/RSPLs representative whenever the main metering system or the 33kV metering system is to be inspected, tested, adjusted, repaired or replaced.

iii. The GETCO meter at the substation is being calibrated once in a year. The calibration

of the meters installed in an individual WTG takes place on yearly basis in accordance with Enercon's operation & maintenance manual which is consistently followed at all Enercon sites across the world.

i) Records: Enercon maintains an accurate and up-to-date operating log at the project site with records of:

i. 24 Hours logs of real and reactive power generation, frequency, transformer tap position, bus voltage(s), Main meter and other meter readings and any other data mutually agreed.

ii. Any unusual conditions found during operation/inspections

iii. All the records is being preserved for 2 years after the end of the crediting period.

j) The billing is on monthly basis. Enercon/RSPL raises invoice and submit to GUVNL for payment based on joint meter reading as certified by GEDA at the end of each month for the energy supplied

k) Billing for the failure period:

i. In the event that any GETCO meter fails to register or upon being tested, is found not to be accurate within ± 0.2 class the energy injected in the grid, shall for the period be measured on the basis of the value registered by the corresponding meter at the feeder end.

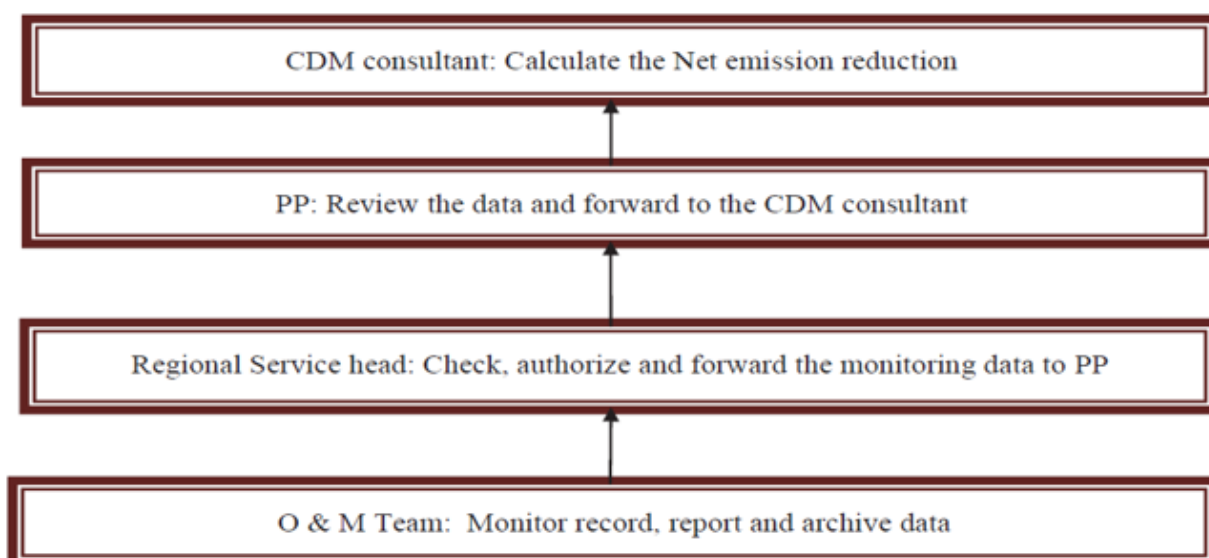
ii. In the event that both GETCO meter and the corresponding meter at the feeder end fail to register, or upon being tested, be found not to be accurate within ± 0.2 s the energy injected in the grid, shall for the period be adjusted by immediately restoring and recalibrating the GETCO meter and the corresponding cluster meter (33 kV substation) at the meter and the correction applied to the consumption registered by the GETCO meter.

iii. The period referred to in the two points above is the actual period during which inaccurate measurements were made if such period can be determined or, if not readily determinable, the shorter of:

i. The period since the immediately preceding test of the relevant Main meter; or

ii. One hundred and eighty (180) days immediately preceding the test at which the relevant Main meter was determined to be defective or inaccurate.

The project is operated and managed by Enercon (India) Ltd. The operational and management structure is as mentioned below.



SECTION D. Data and parameters

D.1. Data and parameters fixed ex ante

Data/Parameter	Operating margin CO ₂ emission factor in year y - $EF_{grid,OM, y}$
Unit	tCO ₂ /MWh
Description	Operating Margin Emission factor of the NEWNE grid
Source of data	CO ₂ Baseline Database for the Indian Power Sector, User Guide, Version 5.0 ⁵ dated November 2009 – from Central Electricity Authority (CEA). It is fixed ex-ante and is constant throughout the crediting period
Value(s) applied	1.0050
Choice of data or measurement methods and procedures	Operating Margin Emission Factor has been calculated by the Central Electricity Authority using the simple OM approach in accordance with "Tool to calculate the emission factor for an electricity system"
Purpose of data/parameter	Calculations of Baseline emissions
Additional comments	This data has been directly referred from the registered PDD.

Data/Parameter	Build margin CO ₂ emission factor in year y – $EF_{grid,BM, y}$
Unit	tCO ₂ /MWh
Description	Built Margin Emission factor of the NEWNE grid
Source of data	CO ₂ Baseline Database for the Indian Power Sector, User Guide, Version 5.0 ⁶ dated November 2009 – from Central Electricity Authority (CEA). It is fixed ex-ante and is constant throughout the crediting period
Value(s) applied	0.6752
Choice of data or measurement methods and procedures	The Build Margin Emission Factor has been calculated by the Central Electricity Authority in accordance with "Tool to calculate the emission factor for an electricity system".
Purpose of data/parameter	Calculations of Baseline emissions
Additional comments	This data has been directly referred from the registered PDD.

Data/Parameter	Combined margin CO ₂ emission factor in year y $EF_{CO2, grid, y}$
Unit	tCO ₂ /MWh

⁵ https://cea.nic.in/wp-content/uploads/baseline/2020/07/user_guide_ver5.pdf

⁶ https://cea.nic.in/wp-content/uploads/baseline/2020/07/user_guide_ver5.pdf

Description	The Emission factor of the NEWNE grid
Source of data	Calculated as the weighted average of the build margin emission factor (25%) and operating margin emission factor (75%). It is fixed ex-ante and is constant throughout the crediting period.
Value(s) applied	0.9225 (calculated)
Choice of data or measurement methods and procedures	The calculation has been done as per the Tool to calculate the emission factor for an electricity system, The fixed ex-ante combined margin emission factor from CEA database is used in the calculation of emission factor. This has been calculated as per the Tool to calculate the emission factor for an electricity system, version 2.2.1, based on 75% of OM and 25% of BM values approach.
Purpose of data/parameter	Calculations of Baseline emissions
Additional comments	This data has been directly referred from the registered PDD.

D.2. Data and parameters monitored

Data/Parameter	EG_{BL, y}
Unit	MWh
Description	Quantity of net electricity supplied to the grid as a result of the implementation of the CDM project activity in year <i>y</i>
Measured/calculated/default	Calculated from Measured value
Source of data	Electricity Share certificate issued by GETCO
Value(s) of monitored parameter	79,783.46
Monitoring equipment	Not applicable as this parameter is calculated
Measuring/reading/recording frequency	Monitoring continuous and Reported monthly. The data is recorded every day and monthly values are reported in the monthly share certificates issued by GETCO
Calculation method (if applicable)	Net electricity generated is being calculated from the readings of export and import indicated by the main meter (220 kV substation meter) connected to the incoming feeder of GUVNL. The procedures for metering is being followed as per the provisions of the power purchase agreement. The WTGs of a single customer (RSPL in this case) at a particular site are connected to a cluster meter (33 kV) which in turn connects to a feeder that ultimately leads to the shared main GETCO meter at the 220 kV substation maintained by Enercon India Limited. Data monitoring takes place at the cluster meter (33 kV) and GETCO meter (220 kV) at the substation. The electricity metered at the GETCO meter is proportionally divided among the customers connected to the meter on the basis of the pro-rata readings taken at the cluster meter (33 kV). The emission reduction calculations are done on the basis of the GETCO Main meter reading (net electricity exported to the grid) after deducting imports from the grid as mentioned in the share certificate issued by GETCO on monthly basis.
QA/QC procedures	As per the registered PDD the regular calibration of all the meters was to be undertaken yearly with an option of the faulty meters to be replaced immediately. While this could not happen during this monitoring period and delays were observed in the calibration of energy meters, due to which maximum permissible error factor has been applied as per accuracy class of the meters to retain conservativeness. Please refer to actual calibration information in Annexure 1 for the substation meters and Annexure 2 for the cluster meters. There was no change in any of the meters during this monitoring period.
Purpose of data/parameter	Baseline calculation
Additional comments	The data will be kept for two years after the end of the crediting period or the last issuance of CERs for this project activity, whichever occurs later

Data/Parameter	EG _{y, Export}
Unit	MWh
Description	Quantity of electricity exported to GUVNL facility
Measured/calculated/default	Measured
Source of data	Share certificate issued by GEDA monitored from the main GETCO meter
Value(s) of monitored parameter	
Monitoring equipment	Energy meters are used for this parameter. Please refer Annexure 1 for meter serial number, accuracy and calibration details etc.
Measuring/reading/recording frequency	Monitoring continuous and Reported monthly. The data is recorded everyday and monthly values are reported in the monthly share certificates issued by GETCO
Calculation method (if applicable)	87,316.82
QA/QC procedures	Annual calibration of all the meters is to be undertaken and faulty meters to be duly replaced immediately. Please refer to actual calibration information in Annexure 1 for the substation meters. There was no change in any of the meters during this monitoring period.
Purpose of data/parameter	Baseline calculation
Additional comments	Electricity exported to GUVNL is being measured at the main meter connected to the incoming feeder of GUVNL. The procedures for metering is being followed as per the provisions of the power purchase agreement. This value is based on GETCO substation meter reading for wind farm which includes project activity WTGs and non project activity WTGs those are connected to the substation. The data will be kept for two years after the end of the crediting period or the last issuance of CERs for this project activity, whichever occurs later.

Data/Parameter	EG _{y, Import}
Unit	MWh
Description	Quantity of electricity imported from GUVNL facility
Measured/calculated/default	Measured
Source of data	Share certificate issued by GETCO monitored from the main GETCO meter
Value(s) of monitored parameter	7633.36
Monitoring equipment	Energy meters are used for this parameter. Please refer Annexure 1 for meter serial number, accuracy and calibration details etc.
Measuring/reading/recording frequency	Monitoring continuous and Reported monthly. The data is recorded everyday and monthly values are reported in the monthly share certificates issued by GETCO
Calculation method (if applicable)	-
QA/QC procedures	Annual calibration of all the meters is to be undertaken and faulty meters to be duly replaced immediately. However this could not happen during this monitoring period and delays were observed in the calibration of energy meters. Since the above parameter has no role in calculation of emission reductions, and only constitute a part of monitoring plan as per the registered PDD, hence error factor has not been applied. Please refer to actual calibration information in Annexure 1 for the substation meters. There was no change in any of the meters during this monitoring period
Purpose of data/parameter	Baseline calculation
Additional comments	Electricity imported from GUVNL is being measured at the main meter connected to the incoming feeder of GUVNL. The procedures for metering

	<p>is being followed as per the provisions of the power purchase agreement. This value is based on GETCO substation meter reading for wind farm which includes project activity WTGs and non project activity WTGs those are connected to the substation.</p> <p>The data will be kept for two years after the end of the crediting period or the last issuance of CERs for this project activity, whichever occurs later</p>
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Data/Parameter	EG _{y, WTG}
Unit	MWh
Description	Electricity generated by each WTG
Measured/calculated/default	Measured
Source of data	Daily generation reports provided by Enercon India Limited
Value(s) of monitored parameter	82,213.44
Monitoring equipment	Monitored through inbuilt WTG integrated electronic meter
Measuring/reading/recording frequency	Monthly
Calculation method (if applicable)	WTG is equipped with an integrated electronic meter. These meters are connected to the Central Monitoring Station (CMS) of the entire wind farm through communication cables (SCADA system). The generation data of individual WTG can be monitored as a real-time entity at CMS. This data for each individual WTG is being recorded daily.
QA/QC procedures	The WTG integrated electronic meters are self calibrating type and the same do not need calibration, this has been a standard practice in the wind farm.
Purpose of data/parameter	This data is not used for the calculation of emission reductions per say but would act as a backup data for the net electricity generated. This data is being recorded daily.
Additional comments	The data will be kept for two years after the end of the crediting period or the last issuance of CERs for this project activity, whichever occurs later

Data/Parameter	EG _{CM}
Unit	MWh
Description	Electricity generated at the Cluster Meter (CM)
Measured/calculated/default	Calculated from Measured Values.
Source of data	Daily generation reports provided by Enercon India Limited
Value(s) of monitored parameter	80,906.57
Monitoring equipment	Energy meters are used for this parameter. Please refer Annexure 2 for meter serial number, accuracy and calibration details etc.
Measuring/reading/recording frequency	Measured & Recording Continuously and Reporting Daily
Calculation method (if applicable)	The individual WTGs at a particular site connect to a meter at the cluster meter (33 kV) where the secondary metering is done and reported in the daily generation report.
QA/QC procedures	As per the registered PDD the regular calibration of all the meters was to be undertaken yearly with an option of the faulty meters to be replaced immediately. However, this could not happen during this monitoring period and delays were observed in the calibration of energy meters. Since the above parameter has no role in calculation of emission reductions, and only constitute a part of monitoring plan as per the registered PDD, hence error factor has not been applied. There was no change in any of the meters during this monitoring period.
Purpose of data/parameter	This data is not used for the calculation of emission reductions per say but

	would act as a backup data for the net electricity generated. This data is also recorded daily.
Additional comments	The data will be kept for two years after the end of the crediting period or the last issuance of CERs for this project activity, whichever occurs later

D.3. Implementation of sampling plan

Not Applicable

SECTION E. Calculation of emission reductions or net anthropogenic removals**E.1. Calculation of baseline emissions or baseline net removals**

BE_y is calculated by multiplying the net quantity of electricity supplied to the grid by this project activity ($EG_{BL,y}$) with the CO₂ emission factor for the grid ($EF_{CO_2, grid, y}$) as follows:

$$BE_y = EG_{BL,y} * EF_{CO_2, grid, y}$$

Where:

$$EF_{CO_2, grid, y} = \text{Baseline emission factor in tCO}_2/\text{MWh} = 0.9225 \text{ tCO}_2/\text{MWh}^4$$

$$EG_{BL,y} = \text{Net electricity supplied to the regional grid in year } y$$

$$\begin{aligned} BE_y &= 81,728.44 \text{ MWh} \times 0.9225 \text{ tCO}_2/\text{MWh} \\ &= 75,394 \text{ tonnes of CO}_2 \text{ (Rounded down value)} \end{aligned}$$

E.2. Calculation of project emissions or actual net removals

As per methodology and registered PDD, it is zero

E.3. Calculation of leakage emissions

As per methodology and registered PDD, it is zero

E.4. Calculation of emission reductions or net anthropogenic removals

	Baseline GHG emissions or baseline net GHG removals (t CO ₂ e)	Project GHG emissions or actual net GHG removals (t CO ₂ e)	Leakage GHG emissions (t CO ₂ e)	GHG emission reductions or net anthropogenic GHG removals (t CO ₂ e)			
				Before 01/01/2013	From 01/01/2013 until 31/12/2020	From 01/01/2021	Total amount
Total	75,394	0	0	0	61,243	14,151	75,394

E.5. Comparison of emission reductions or net anthropogenic removals achieved with estimates in the registered PDD

Amount achieved during this monitoring period (t CO ₂ e)	Amount estimated ex ante for this monitoring period in the PDD (t CO ₂ e)
75,394	90,309

E.5.1. Explanation of calculation of “amount estimated ex ante for this monitoring period in the PDD”

As per registered PDD, the estimated amount of ex ante emission reduction for a year, that is 365 days, is 17,983 tCO₂e. The no. of days in current monitoring period from 01 Sep 2016 to 07 Sept 2021 comes out to be 1833 days. Thus, applying unitary method, the amount of emission reductions estimated ex ante may be determined as below: -

$$= (17,983 \times 1833) / 365$$

$$= 90,309 \text{ tCO}_2\text{e (Rounded down figure)}$$

Hence, the amount of emission reductions estimated ex ante for this monitoring period is 90,309 tCO₂e.

E.6. Remarks on increase in achieved emission reductions

During the present monitoring period, actual emission reductions achieved are 75,394 tCO₂e whereas estimated emission reductions was 90,309. The project witnessed 16% reduction in emission reductions as compared to ex-ante emissions, which is due to natural phenomena and nature dependent.

E.7. Remarks on scale of small-scale project activity

The project activity involves implementation of total 12 WTGs of 800 kW each leading to the total capacity of 9.6 MW. This is less than threshold capacity of 15 MW so the project activity qualifies as a Type I - small scale project activity.

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Document information

<i>Version</i>	<i>Date</i>	<i>Description</i>
09.0	8 October 2021	Revision to: <ul style="list-style-type: none"> • Ensure consistency with version 03.0 of the “CDM project standard for project activities” (CDM-EB93-A04-STAN).
08.0	6 April 2021	Revision to: <ul style="list-style-type: none"> • Reflect the “Clarification: Regulatory requirements under temporary measures for post-2020 cases” (CDM-EB109-A01-CLAR).
07.0	31 May 2019	Revision to: <ul style="list-style-type: none"> • Ensure consistency with version 02.0 of the “CDM project standard for project activities” (CDM-EB93-A04-STAN); • Add a section on remarks on the observance of the scale limit of small-scale project activity during the crediting period; • Add "changes specific to afforestation or reforestation project activity" as a possible post-registration changes; • Clarify the reporting of net anthropogenic GHG removals for A/R project activities between two commitment periods; • Make editorial improvements.
06.0	7 June 2017	Revision to: <ul style="list-style-type: none"> • Ensure consistency with version 01.0 of the “CDM project standard for project activities” (CDM-EB93-A04-STAN); • Make editorial improvements.
05.1	4 May 2015	Editorial revision to correct version numbering.
05.0	1 April 2015	Revisions to: <ul style="list-style-type: none"> • Include provisions related to delayed submission of a monitoring plan; • Provisions related to the Host Party; • Remove reference to programme of activities; • Overall editorial improvement.
04.0	25 June 2014	Revisions to: <ul style="list-style-type: none"> • Include the Attachment: Instructions for filling out the monitoring report form (these instructions supersede the "Guideline: Completing the monitoring report form" (Version 04.0)); • Include provisions related to standardized baselines; • Add contact information on a responsible person(s)/ entity(ies) for completing the CDM-MR-FORM in A.6 and Appendix 1; • Change the reference number from <i>F-CDM-MR</i> to <i>CDM-MR-FORM</i>; • Editorial improvement.
03.2	5 November 2013	Editorial revision to correct table in page 1.

<i>Version</i>	<i>Date</i>	<i>Description</i>
03.1	2 January 2013	Editorial revision to correct table in section E.5.
03.0	3 December 2012	Revision required to introduce a provision on reporting actual emission reductions or net GHG removals by sinks for the period up to 31 December 2012 and the period from 1 January 2013 onwards (EB 70, Annex 11).
02.0	13 March 2012	Revision required to ensure consistency with the "Guidelines for completing the monitoring report form" (EB 66, Annex 20).
01.0	28 May 2010	EB 54, Annex 34. Initial adoption.
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