Gold Standard for the Global Goals

TEMPLATE

MONITORING REPORT

PUBLICATION DATE **14.10.2020**

VERSION **v. 1.1**

RELATED SUPPORT – **TEMPLATE GUIDE Monitoring Report v. 1.1**

This document contains the following Sections

KEY PROJECT INFORMATION

Key Project Information

GS ID (s) of Project (s)	GS7755
Title of the project (s) covered by monitoring report	Wind Energy Project in Gujarat by Enn Enn Corp Limited
Version number of the PDD/VPA-DD (s) applicable to this monitoring report	05
Version number of the monitoring report	04
Completion date of the monitoring report	10/11/2022
Date of project design certification	14/04/2022
Date of Last Annual Report	NA
Monitoring period number	01
Duration of this monitoring period	01/09/2019 to 31/12/2020 (inclusive of both dates)
Project Representative	Enn Enn Corp Limited
Host Country	India
Activity Requirements applied	☐ Community Services Activities ☒ Renewable Energy Activities ☐ Land Use and Forestry Activities/Risks & Capacities ☐ N/A
Methodology (ies) applied and version number	AMS-I.D. "Grid connected renewable electricity generation" (, Version 17)
Product Requirements applied	☒ GHG Emissions Reduction & Sequestration ☐ Renewable Energy Label ☐ N/A

Table 1 - Sustainable Development Contributions Achieved

Sustainable Development Goals Targeted	SDG Impact	Amount Achieved	Units/ Products
SDG 7	**Affordable and Clean Energy:** Ensure access to affordable, reliable, sustainable and modern energy for all	23,133.65	MWh
SDG 8	**Decent Work and Economic Growth:** Promote inclusive and sustainable economic growth, employment and decent work for all	Employment opportunities provided to 15 people and 1 training conducted	Number

SDG 13	Take urgent action to combat climate change and its impacts	21,602	tCO_2e

Table 2 – Product Vintages

		Amount Achieved		
Start Dates	**End Dates**	**SDG 7**	**SDG 8**	**SDG 13**
01/09/2019	31/12/2019	5,297.72 MWh	15 people were employed and 1 trainings were conducted	4,947 tCO_2e
01/01/2020	31/12/2020	17,835.92 MWh	15 people were employed and 0 trainings were conducted[1]	16,655 tCO_2e

SECTION A. DESCRIPTION OF PROJECT

A.1. General description of project

The project activity involves the implementation of 12.6 MW capacity wind power project consisting of 6 Wind Turbine Generators (WTG's) of 2100 KW capacity each by Enn Enn Corp Limited. These wind mills are located at Rajkot and Surendranagar district in the state of Gujarat. The project has generated energy through renewable source i.e. wind. The kinetic energy of wind is converted into mechanical energy and subsequently into electrical energy. Kinetic energy which is carried by wind when passes through the blades of the WTG, is converted to mechanical energy which rotates the connected generator and which in turn produces the electricity.

The details of WTGs are furnished in the below table –

WTG Location No.	Capacity (MW)	Village; District	Date of Commissioning
JSD - 43	2.1	Dahisara,Rajkot	30/09/2011
JSD - 44	2.1	Dahisara,Rajkot	30/09/2011
JSD - 76	2.1	Pipaliyadhoro, Surendranagar	30/11/2011
JSD - 51	2.1	Barvada, Surendranagar	29/03/2012
JSD - 24	2.1	Pipaliyadhoro, Surendranagar	30/11/2011

[1] For the year 2020, no people were newly employed and no trainings were conducted due to Covi-19 pandemic situation.

JSD - 25	2.1	Khadvavdi, Rajkot	18/11/2011

Purpose of the project activity

The prime objective of the project involves the generation of electricity using wind potential and exports the same to the regional NEWNE grid (currently Indian grid), which is dominated by the use of fossil fuels[2]. The project activity helps in exploiting the wind energy potential leading to a cleaner environment by lowering greenhouse gas emissions and other pollutants and providing greater energy security to the nation through fossil fuel conservation. This is a step forward in the global mission of mitigating climate change.

Pre-project scenario

The Project activity involves installation of 6 no. of 2.1 MW Suzlon make WTG at the state of Rajasthan for the purpose of clean energy generation and export the same to NEWNE grid (currently Indian grid). In the absence of the project activity, same amount of electricity generated by the expansion of existing power plants and installation of new power plants in the regional NEWNE grid (currently Indian grid). Hence, the most plausible baseline scenario for the project activity is generation of equivalent amount of electricity by the NEWNE Grid (currently Indian grid).

Contribution to sustainable development

Ministry of Environment and Forest, Government of India has stipulated social well-being, economic well-being, environmental well-being and technological well-being as the four indicators for sustainable development in the interim approval guidelines for Clean Development Mechanism (CDM) projects. The view of the project participant on the contribution of the implemented CDM project to sustainable development is aligned with the sustainable development criteria of Ministry of Environment and Forest as follows:

Social well-being:

The implemented CDM project activity leads to development of infrastructure around the project activity in terms of road network. The project activity generates employment opportunities for the local person which improves their standard of living.

Economic well-being:

The project activity has resulted in generation of employment opportunities for professional, skilled and unskilled manpower for development, engineering, procurement, construction, operation and maintenance of wind turbine generator. In addition, various kinds of electromechanical work would generate employment

[2] https://cea.nic.in/executive-summary-report/?lang=en

opportunities for local contractors on regular and permanent basis. The deployment of the project activity has contributed towards employment of local personnel during the land development and erection phase of the project activity. The operation and maintenance of the project activity would generate business opportunities for local contractors. The setting up of electrical power supply system from project site to the nearest substation has resulted in business opportunities for electrical contractor and provide further scope for future business during the life of the project activity. Also local people work as security personnel for the wind project

Environment well-being:

The project activity resulting in generation of electricity through utilization of wind energy is reduce greenhouse gas emission associated with generation of electrical energy from combustion of fossil fuel in grid connected power plant. Such activity apart from reduction in greenhouse gas emission is also reduce emission intensity of different pollutant like SOx, NOx, and suspended particulate matter from the combustion of fossil fuel.

Technological well-being:

The wind energy based power generation is not a commercially viable technology in our country. Incorporation of the project activity would act as the cornerstone towards promotion of such technology and help in enhancing the technical know how about the project activity. The project activity would thus encourage other entrepreneurs irrespective of the sectors to adopt this technology and invest in wind energy. The above initiative would help in increasing the penetration of renewable power consumption in fossil fuel predominant grid power.

During the current monitoring period 01/09/2019 to 31/12/2020 (inclusive of both the dates) the project resulted in emission reductions of 21,602 tCO_2e and underwent continued operation other than scheduled maintenance and breakdowns.

A.2. Location of project

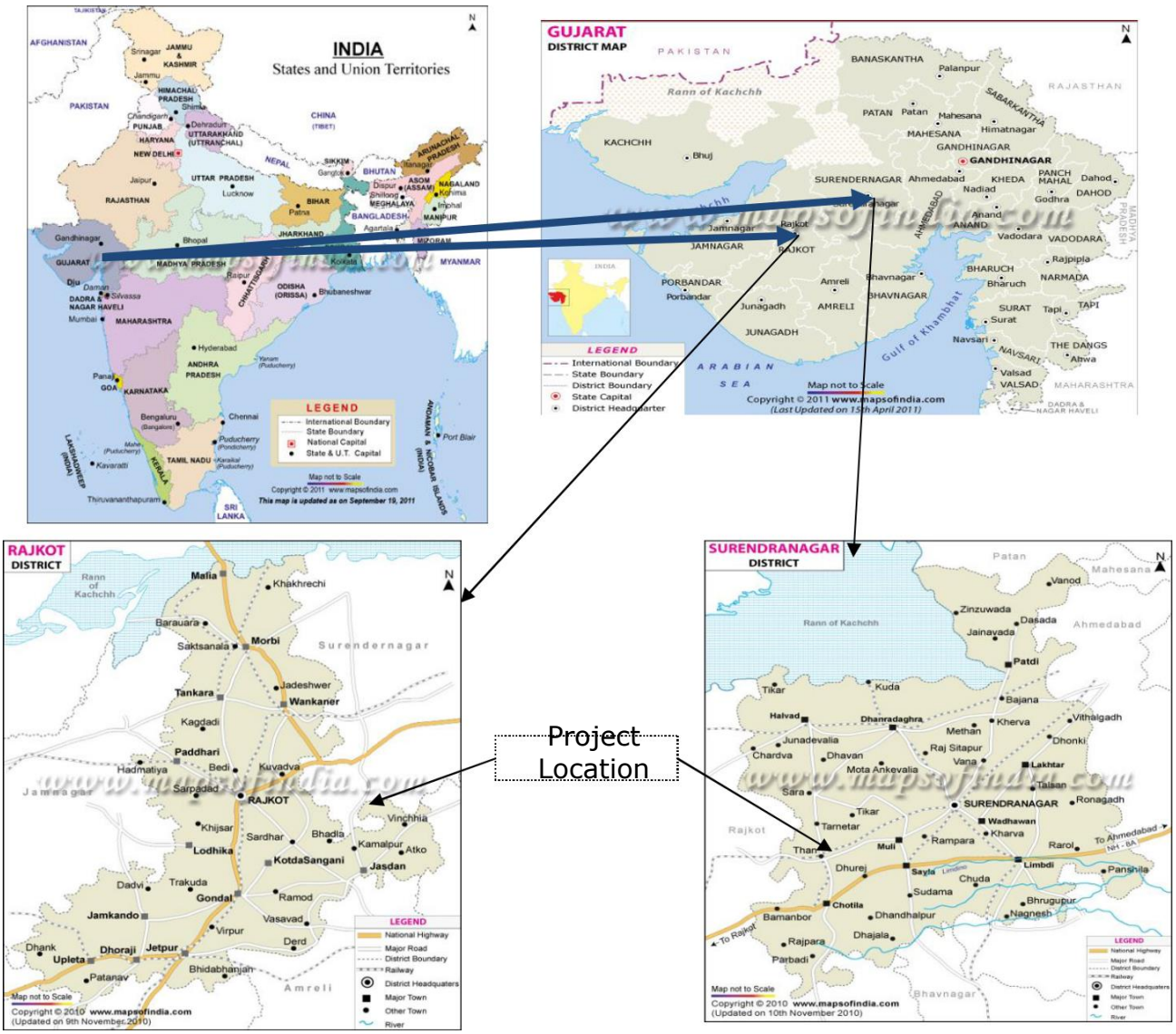
Host Country: India
State: Gujarat
District: Rajkot and Surenranagar
Village: Dahisara, Barvada, Khadvavdi and Pipaliyadhoro

Co-ordinates of the six WTGs are tabulated below:

WTG Location No.	Unique Identification No.	Geographical Co-ordinates	Village	Taluka	District
JSD - 43	SEL/2100/11-12/2349	$22^0$11'21.6" N $71^0$08'49.7" E	Dahisara	Jasdan	Rajkot
JSD - 44	SEL/2100/11-12/2350	$22^0$11'09.6" N $71^0$09'01.7" E	Dahisara	Jasdan	Rajkot
JSD - 76	SEL/2100/11-12/2346	$22^0$08'17.2" N $71^0$04'30.9" E	Pipaliyadhoro	Chotila	Surendra-nagar

WTG Location No.	Unique Identification No.	Geographical Co-ordinates	Village	Taluka	District
JSD - 51	SEL/2100/11-12/2326	22^{0}08’17.3” N 71^{0}10’55.8” E	Barvada	Jasdan	Rajkot
JSD - 24	SEL/2100/11-12/2347	22^{0}09’27.8” N 71^{0}09’34.3” E	Pipaliyadhoro	Chotila	Surendra-nagar
JSD - 25	SEL/2100/11-12/2348	22^{0}09’52.2” N 71^{0}09’29.2” E	Khadvavdi	Jasdan	Rajkot

The figure representation of the project activity is shown in the figure below:



A.3. Reference of applied methodology

Methodology: AMS-I.D Grid Connected Renewable Electricity Generation (Version 17)[3]
Type I : Renewable Energy Project (Small Scale)

A.4. Crediting period of project

Start date of Crediting Period	01/09/2019
1st Crediting Period	01/09/2019 to 03/12/2024
Duration	5 Years 3 Months 3 days
Type of Crediting Period	Fixed

SECTION B. IMPLEMENTATION OF PROJECT

B.1. Description of implemented project

Project activity includes operation of six wind mills of capacity 2.1 MW each, of model S-88. Wind Turbine Generator (WTGs) are procured from M/s Suzlon Energy Limited and No transfer of technology from Annex 1 country took place.

The commissioning details of each WTG are as follows –

WTG No.	Unique Identification No.	Commissioning date	Metering location
JSD - 43	SEL/2100/11 -12/2349	30/09/2011	Connected by 33 KV grid line to 33/66 KV, 2 X 25 MVA capacity sub-station at Bhojapuri site.
JSD - 44	SEL/2100/11 -12/2350	30/09/2011	Connected by 33 KV grid line to 33/66 KV, 2 X 25 MVA capacity sub-station at Bhojapuri site.
JSD - 76	SEL/2100/11 -12/2346	30/11/2011	Connected by 33 KV grid line to 33/66 KV, 2 X 20 MVA capacity Halenda site sub-station at Halenda.

[3] https://cdm.unfccc.int/filestorage/V/9/L/V9LRSXKP24Q7YT6HZDUBO3C0ING8AJ.1/EB61_repan17_Revision_AMS-I.D_ver17.pdf?t=SWZ8cmwxMmt3fDAZpXgn4hwo0QkrQvGsK340

WTG No.	Unique Identification No.	Commissioning date	Metering location
JSD - 51	SEL/2100/11 -12/2326	29/03/2012	Connected by 33 KV grid line to 33/66 KV, 2 X 25 MVA capacity sub-station at Bhojapuri site.
JSD - 24	SEL/2100/11 -12/2347	30/11/2011	Connected by 33 KV grid line to 33/66 KV, 2 X 20 MVA capacity Halenda site sub-station at Halenda.
JSD - 25	SEL/2100/11 -12/2348	18/11/2011	Connected by 33 KV grid line to 33/66 KV, 2 X 20 MVA capacity Halenda site sub-station at Halenda.

PP has signed Power Purchase Agreement with DISCOM (i.e Gujarat Urja Vikas Nigam Ltd.), and sold entire generated energy to DISCOM so produced from commissioned project activity.

The technology is a clean and safe technology since there are no GHG emissions associated with the electricity generation.

In wind energy generation, kinetic energy of wind is converted into mechanical energy and subsequently into electrical energy. Wind blowing at high speeds has a considerable amount of kinetic energy. Wind blowing over the blades causes the blades (which are mounted over the rotor) to "lift" and rotate. The turbines sit high atop towers, taking advantage of the stronger and less turbulent wind as the wind blows through the blades of the windmill, a pocket of low-pressure forms on the downwind side of the blade. The low-pressure pocket then pulls the blade towards it, causing rotor to spin. This spins the shaft, which further drives the generator, thereby producing electricity.

The technical life time for the Wind Turbine Generator is 20 years 0 months.

Technical specifications of the WTGs are given in Table below:

S. No	Parameters	Specification
Operating data		
1.	Installed electrical output	2100 kW
2.	Cut in wind speed	4 m/s
3.	Rated wind speed	14 m/s
4.	Cut out wind speed	25 m/s
5.	Hub height	79m (Foundation top equal to ground level)
6.	Wind Class	IEC-IIA
7.	Rotational speed	15 to 17.6 rpm
Rotor		

S. No	Parameters	Specification
1.	Pitch System	Pitch regulated, electrical
2.	Rotor Diameter	88 m
3.	Rotor Swept Area	6082 m^2
4.	Material Type	Epoxy bounded fibre glass
Generator		
1.	Type	Single fed induction Generator with slip rings, variable rotor resistance with SUZLON-FLEXI-SLIP control system
2.	Rated Power	2100 kW
3.	Rated voltage	3 Phase- 690 V AC
4.	Frequency	50 Hz
5.	Protection	IP 54, IP2 3 for slip ring unit
6.	Insulation Class	Class H
7.	Cooling system	Air-cooled
8.	Slip control	Unique flexi slip providing slip up to 16.67%
Gear Box		
1.	Gear box type	3 stage (1 planetary and 2 helical)
2.	Gear ratio	1:98.8
3.	Nominal Load	2200 kW
Yaw system		
1.	Yaw drive system	3 electrical driven planetary drives
2.	Yaw bearing type	Slide bearing with gear ring & automatic greasing system
Braking system		
1.	Aerodynamic brake	3 independent systems with blade pitching mechanism
2.	Mechanical brake	Hydraulic disc brake, activated by hydraulic pressure + mechanical rotor lock, activated by hydraulic pressure
Certification		
1.	Design standards	GL 2003
2.	Quality	ISO 9001:2000, ISO 9001:2008, ISO 14001:2004 and OHSAS 18001:2007
Tower		
1.	Tower type	Tabular Tower (4 sections)
2.	Corrosion protection	Epoxy/ PU coated

Environmentally Safe technology:

The wind power technology is considered as one of the most environmental friendly technologies available. The operation of the wind turbine does not emit any harmful GHGs or any other harmful gases like conventional power plants during their operation. Thus the technology is a clean and environmentally safe technology.

B.1.1. Forward Action Requests

Not Applicable, as this is first verification.

B.2. Post-Design Certification changes

Not Applicable during the current monitoring period. There are no post-design certification changes for this project.

B.2.1. Temporary deviations from the approved Monitoring & Reporting Plan, methodology or standardized baseline

Not Applicable during the current monitoring period. There are no temporary deviations in the monitoring & reporting plan, methodology or standardized baseline of the project.

B.2.2. Corrections

Not Applicable during the current monitoring period. There are no corrections.

B.2.3. Changes to start date of crediting period

Not Applicable during the current monitoring period. There is no change in start date of crediting period.

B.2.4. Permanent changes from the Design Certified monitoring plan, applied methodology or applied standardized baseline

Not Applicable during the current monitoring period. There are no permanent changes from the design certified monitoring plan, applied methodology or applied standardized baseline of this project.

B.2.5. Changes to project design of approved project

Not Applicable during the current monitoring period. There are no changes to project design of the approved project.

SECTION C. DESCRIPTION OF MONITORING SYSTEM APPLIED BY THE PROJECT

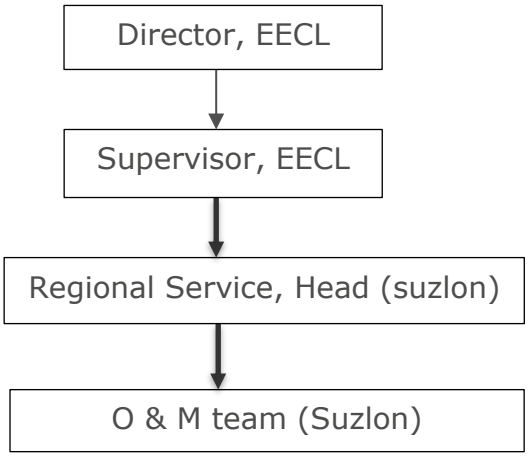
Aim of monitoring:

The monitoring plan of the project activity is formulated as per the approved methodology AMS I.D. version-17. As per the methodology, net electricity supplied to the grid is to be monitored.

The WTGs installed in the implemented CDM project activity have been supplied by Suzlon. The implemented CDM project activity is operated and managed by Suzlon only. Suzlon follows the documentation practices to ensure the reliability and availability of the data for all the activities as required from the identification of the site, wind resource assessment, logistics, finance, construction, commissioning and operation of the wind power project.

Structure of monitoring team:

Following diagram depicts the structure of the monitoring team:



Roles & responsibilities of the monitoring team:

Director, EECL – He is the ultimate authority for ensuring smooth and timely execution of all the monitoring and monitoring related activities for the project activity. He is reported by Supervisor, EECL.

Supervisor, EECL – He is ensure that all the required monitoring data is being monitored appropriately and being stored properly. He is also take any corrective actions (if required) at his level and co-ordinate with Regional Service head (Suzlon) and O & M team (Suzlon).

Regional Service Head (Suzlon) - He is ensure that the monitoring plan is adhered and operations are carried out as per standard procedures. He is also collect all the relevant data from O&M Team (Suzlon) and submit them to the supervisor, EECL.

O&M Team - The monitoring data related to the project activity is collected, reported, maintained and archived by O&M Team of Suzlon. The calibration of the meters associated to the project activity is done by GETCO or its representatives for which O&M Team of Suzlon would co-ordinate with them. The corrective actions (if required) would be taken by O&M Team of Suzlon to maintain the quality of data. The team is further submit the monitoring data to Regional Service Head (Suzlon).

Metering System:
The procedures for the metering of electricity is as discussed here. The net electricity exported to the grid by project activity WTGs are ascertained by government agency, GEDA (Gujarat Energy Development Agency) on the basis of substation meter reading (includes generation from project and non-project WTGs) and meter readings at various transformer yard meters (near each WTG) based upon an apportioning method. The ABT meters installed at the sub-stations continuously monitor the electricity generated. Continuous monitoring, hourly measurement and monthly recording is carried out.

Apportioning of net electricity supplied to grid by WTGs of project activity is being carried out by GEDA. Apportioning is being carried out based on reading of meters at substation and yard meter at each WTG. Apportioning is not under the control of PP and data is not shared with PP. State Load Dispatch Centre (SLDC) issues certificate of share of electricity generated which provides net electricity exported to grid by WTGs of PP and this forms basis of emission reduction calculations.

The net electricity supplied by the project activity is taken directly from the certificate of share issued on monthly basis. If the crediting period starts from the middle of the

month, since it would not be possible to determine the amount of energy generated from then on, following a conservative approach, the project participant would not be availing credits for that particular month; the same approach would be followed for the last monitoring period as well.

Net electricity exported to the grid by the project activity as per apportioning procedure followed by State utility:

The apportionment procedure for the project activity is done by State Utility based on the meter readings of the various yard meters of various project owners connected to substation and substation meter reading (ABT meter), connecting all the machines of the project activity and other project developers. PP does not have any role in the apportionment procedure.

The reading at yard meter and substation meter are directly monitored on continuous basis. Hence, the apportioning of the electricity is based on the meter reading that are directly monitored and measured. The meter recording at cluster meters of the project activity are done on monthly basis by the O & M personnel.

$EG_y = EG_{Export,y} - EG_{Import,y}$

Where:

$EG_{Export,y} = EG_{SS,\ Export} \times (EG_{yard,y} / EG_{yard,\ Project\ \&\ Non\ project\ WTGs})$

And

$EG_{Import,y} = EG_{SS,\ Import} \times (EG_{yard,y} / EG_{yard,\ Project\ \&\ Non\ project\ WTGs})$

Where:

EG_y	Net Electricity exported by the project activity to the grid, calculated
$EG_{Export,y}$	Electricity exported by the project activity to the grid, calculated
$EG_{Import,y}$	Electricity imported by the project activity to the grid, calculated
$EG_{SS,\ Export}$	Electricity exported by all WTGs connected to the substation (project activity WTGs and non-project activity WTGs), as recorded by the ABT meter at substation (MWh)
$EG_{SS,\ Import}$	Electricity imported by all WTGs connected to the substation (project activity WTGs and non-project activity WTGs), as recorded by the ABT meter at substation (MWh)
$EG_{yard,y}$	Net electricity exported by the project activity, as measured at yard meters (MWh)
$EG_{yard,\ Project\ \&\ Non\ project\ WTGs}$	Net electricity exported by all the project owners connected to the substation (MWh) measured at switchyard meters.

Only the monitoring parameters $EG_{SSExport}$, $EG_{SS,Import}$ and $EG_{yard,y}$ are included as readings of $EG_{SS,Export}$ & $EG_{SS,Import}$ are recorded in JMR and JMR copies are available with State Utility and are provided to the PP as per official request and reading of $EG_{yard,y}$ is the reading of the WTGs of PP.

QA/QC Procedures:

The substation also has trivector meters (one main meter and one check meter) of 0.2s accuracy class. If some defect occurs to ABT meters, these trivector meters can be used to obtain the reading. All meters (ABT, main and check) meters are calibrated at least once in a three year by GETCO or its representatives.

The measurement results are cross checked with records of sold of electricity such as invoices.

During this monitoring period (01/09/2019 to 31/12/2020), the above mentioned monitoring system followed by the project proponent. Meter calibration done by concerned MRT division, PP has no control on calibration frequency.

Data Management and data archiving:

All data is archived for a period of 2 years after crediting period or last issuance whichever is later.'

Emergency preparedness plan:

Operation and Maintenance team is trained for emergency situations.

Training:

Operation and maintenance team has trained the staff on operation and maintenance aspects of the plant. The training is to ensure preventive maintenance and better operational control for the plant.

Data adjustments / uncertainties:

If there is any problem in ABT meter, main meter and check meters are used for monitoring.

If a situation appears that all meters are faulty then the meters are sent for maintenance and maintaining a conservative approach, CERs are not be counted for the duration when meter is under replacement.

In case yard meters are faulty, immediate replacement is done.

No major breakdown instances happened during this monitoring period (01/09/2019 to 31/12/2020).

SECTION D. DATA AND PARAMETERS

D.1. Data and parameters fixed ex ante or at renewal of crediting period

SDG 13 (Indicators 13.2.1)

Data/parameter	$\mathbf{EF_{grid,OM,y}}$
Unit	tCO_2/MWh

Description	Operating Margin CO_2 emission factor in year y
Source of data	CO_2 Baseline Database for the Indian Power Sector, Version 16.0, March'21 https://cea.nic.in/cdm-co2-baseline-database/?lang=en
Value(s) applied	0.9568
Choice of data or Measurement methods and procedures	Calculated as per "Tool to calculate the emission factor for an electricity system, version 04.0" as per the latest data available for the most recent year 2017-18, 2018-19 and 2019-20. The data is obtained from "CO_2 Baseline Database for Indian Power Sector" version 16.0, published by the Central Electricity Authority, Ministry of Power, Government of India.
Purpose of data	For the calculation of the Baseline Emission
Additional comment	This parameter is fixed ex-ante for the entire crediting period.

Data/parameter	$\mathbf{EF_{grid,BM,y}}$
Unit	tCO_2/MWh
Description	Build Margin CO_2 emission factor in year y
Source of data	Calculated from CEA database, Version 16.0, March'21 https://cea.nic.in/cdm-co2-baseline-database/?lang=en
Value(s) applied	0.8682
Choice of data or Measurement methods and procedures	Calculated as per "Tool to calculate the emission factor for an electricity system, version 04.0" as per the latest data available for the most recent year 2019-20. The data is obtained from "CO_2 Baseline Database for Indian Power Sector" version 16.0, March'21, published by the Central Electricity Authority, Ministry of Power, Government of India.
Purpose of data	For the calculation of the Baseline Emission
Additional comment	This parameter is fixed ex-ante for the entire crediting period

Data/parameter	$\mathbf{EF_{grid,CM,y}}$
Unit	tCO_2/MWh
Description	Combined Margin CO_2 emission factor in year y
Source of data	Calculated from CEA database, Version 16.0, March'21 http://www.cea.nic.in/reports/others/thermal/tpece/cdm_co2/user_guide_ver15.pdf
Value(s) applied	0.9346
Choice of data or Measurement methods and procedures	The combined margin emissions factor is calculated as follows: $\mathbf{EF_{grid,CM,y} = EF_{grid,OM,y} * W_{OM} + EF_{grid,BM,y} * W_{BM}}$ Where:

	$EF_{grid,BM,y}$= Build margin CO_2 emission factor in year y (tCO_2/MWh) $EF_{grid,OM,y}$= Operating margin CO_2 emission factor in year y (tCO_2/MWh) W_{OM} = Weighting of operating margin emissions factor (%) = 75% W_{BM}= Weighting of build margin emissions factor (%) = 25%
Purpose of data	For the calculation of the Baseline Emission
Additional comment	This parameter is fixed ex-ante for the entire crediting period

D.2. Data and parameters monitored

SDG 7 (Indicators 7.2.1)

Data / Parameter	$EG_{PJ,y}$
Unit	MWh/y
Description	Quantity of net electricity generation supplied by the project plant/unit in year y in MWh
Source of data	Monthly joint meter reading reports
Value(s) applied	23,133.65 MWh **Year** | **Net power generated** 2019 | 5,297.72 MWh 2020 | 17,835.92 MWh
Measurement methods and procedures	The electricity exported / supplied by the project activity is measured through meters (ABT Meters) having accuracy class of 0.2s. It is difference of export and import of project activity.
Monitoring frequency	Continuous measurement & monthly recording
QA/QC procedures	The frequency of calibration is once in 3 years.The monthly electricity supplied by the project activity in the JMR report is cross checked with other source of data. In the absence or delay in the meter calibration appropriate Guidelines will be applied appropriately to confirm the conservativeness of metering.
Purpose of data	To Monitor the SDG 7 Indicator
Additional comment	Data will be archived in paper & electronic form for two years after the end of crediting period or of the last issuance of GS-CERs for this project activity, whichever occurs later.

Other monitoring parameters require to calculate $EG_{PJ,y}$ as per registred CDM PDD.

Data / Parameter	$EG_{SS,\ Export}$
Unit	MWh
Description	Electricity export to the grid by the Project Activity and the other PPs connected to the same sub-station
Source of data	Jointly taken by the Suzlon and State Utility in the form of JMR (Joint Meter Reading) on monthly basis.
Value(s) applied	This data will not be directly used for the calculation of emission reduction. State Utility will use this value for the apportionment calculation and the PP does not have any role in the calculation.
Measurement methods and procedures	The meter reading at ABT meter at substation is taken jointly by the representatives of Suzlon and State Utility on monthly basis.
Monitoring frequency	Continuous monitoring, hourly measurement and monthly recording.
QA/QC procedures	The ABT meter at the substation is of 0.2s accuracy class and is maintained by GETCO (Gujarat Energy Transmission Corporation Limited).
Purpose of data	To Monitor the SDG 7 Indicator
Additional comment	Data will be archived in paper & electronic form for two years after the end of crediting period or of the last issuance of VERs for this project activity, whichever occurs later.

Data / Parameter	$EG_{SS,\ Import}$
Unit	MWh
Description	Electricity Import from the grid by the Project Activity and the other PPs connected to the same sub-station
Source of data	Jointly taken by the representatives of Suzlon and State Utility in the form of JMR on monthly basis.
Value(s) applied	This data will not be directly used for the calculation of emission reduction. State Utility will use this value for the apportionment calculation and the PP does not have any role in the calculation.
Measurement methods and procedures	The meter reading at ABT meter at the substation is taken jointly by the representatives of Suzlon and State Utility on monthly basis.

Monitoring frequency	Continuous monitoring, hourly measurement and monthly recording.
QA/QC procedures	The ABT meter at the substation is of 0.2S accuracy class and is maintained by GETCO (Gujarat Energy Transmission Corporation Limited).
Purpose of data	To Monitor the SDG 7 Indicator
Additional comment	Data will be archived in paper & electronic form for two years after the end of crediting period or of the last issuance of VERs for this project activity, whichever occurs later.

Data / Parameter	$EG_{yard,y}$
Unit	MWh
Description	The electricity generated by wind mills of the project activity, recorded by the yard meters near the wind mill.
Source of data	Reading taken by Suzlon
Value(s) applied	This data will not be directly used for the calculation of emission reduction. State Utility will use this value for the apportionment calculation and the PP does not have any role in the calculation.
Measurement methods and procedures	Each WTG is equipped with a yard meter. The generation data of individual WTG can be monitored through these meters.
Monitoring frequency	Continuous monitoring, hourly measurement and monthly recording
QA/QC procedures	Accuracy of these meters is also 0.2S.
Purpose of data	To Monitor the SDG 7 Indicator
Additional comment	Data will be archived in paper & electronic form for two years after the end of crediting period or of the last issuance of VERs for this project activity, whichever occurs later.

SDG 13 (Indicators 13.2.1)

Data / Parameter	**ER_y**
Unit	tCO_2e
Description	Emission reductions achieved per year
Source of data	As per Estimated ER sheet. During the verification, the results shall be obtained from the Actual ER sheet.

<table>
<tr><td>Value(s) applied</td><td>21,602 tCO_2e

<table><tr><th>Year</th><th>Emission Reductions achieved</th></tr><tr><td>2019</td><td>4,947 tCO_2e</td></tr><tr><td>2020</td><td>16,655 tCO_2e</td></tr></table></td></tr>
<tr><td>Measurement methods and procedures</td><td>The baseline emissions are the product of electrical energy baseline $EG_{PJ,y}$ expressed in MWh of electricity produced by the renewable generating unit multiplied by an emission factor.</td></tr>
<tr><td>Monitoring frequency</td><td>As per monitoring period</td></tr>
<tr><td>QA/QC procedures</td><td>Not Applicable</td></tr>
<tr><td>Purpose of data</td><td>To Monitor the SDG 13 Indicator</td></tr>
<tr><td>Additional comment</td><td>Data will be archived in paper & electronic form for two years after the end of crediting period or of the last issuance of GS-CERs for this project activity, whichever occurs later.</td></tr>
</table>

SDG 8 (Indicators 8.5.1)

<table>
<tr><td>Data / Parameter</td><td>Number of employment generation</td></tr>
<tr><td>Unit</td><td>Number and Rupees</td></tr>
<tr><td>Description</td><td>Number of people employed directly due to the project activity</td></tr>
<tr><td>Source of data</td><td>Plant records or The training records for all the employees/Letter from O&M contractor for employment generation/ DOE interview with employees, local stakeholders etc.</td></tr>
<tr><td>Value(s) applied</td><td>Total 15 people are employed

Further, below is the breakup of employment generated during the monitoring period.

<table><tr><th>Year</th><th>Skilled</th><th>Unskilled</th><th>Total</th></tr><tr><td>2019</td><td>12</td><td>3</td><td>15</td></tr><tr><td>2020</td><td>12</td><td>3</td><td>15[4]</td></tr></table>
Two unskilled female staff have been employed during the current monitoring period.</td></tr>
<tr><td>Measurement methods and procedures</td><td>The total number of persons working in the plant would be calculated based on the daily log available at site.

This parameter also monitor number of men/women employed by the project activity. The project activity ensures that “equal pay for work of equal value” for both men and women and there is no any discrimination against women.

"The employment covers number of men and number of women employed by the project activity. The job is of type temporary/permanent or skilled/unskilled, etc. Also it is ensued that peoples will get equal payment for equal work. The payment is based on work and no any gender inequality for payment for work of equal value”.

The average hourly earnings of a person is calculated by considering 8 hours per day working as per Indian standards and is depicted below.</td></tr>
</table>

[4] For the year 2020, no people were newly employed and no trainings were conducted due to Covi-19 pandemic situation.

	For e.g, a person is getting a monthly salary of INR 18,566; then his hourly earnings will be calculated as follows: Hourly Income = 18,566/(30*8) = INR 77.36. The hourly wages can be checked from the notification from the order published by the Chief Labour Commissioner (Central)[5]. As per the notification from Chief Labour Commissioner, for semi-skilled workers working in C Category of cities, the daily wage is INR 403, and accordingly the average hourly earnings comes out to be INR 50.37. Thus, it can be justified that, PP is providing the employees/workers with salary/wages higher than the minimum wages as determined by the minimum wages order published by Chief Labour Commissioner (Central). The same can be checked from the salary slips provided.
Monitoring frequency	Monthly monitoring and annual compilation
QA/QC procedures	The number of persons employed would be mentioned in the plant register, which can be crossed checked with attendance register. Average hourly earnings of the employees/workers can be checked and calculated from the salary slips.
Purpose of data	To Monitor the SDG 8 Indicator
Additional comment	-

SDG 8 (Indicators 8.6.1)

Data / Parameter	Quality of Employment
Unit	-
Description	Training of Staff
Source of data	Plant records or the training records for all the employees / DOE interview with employees, etc.

[5] https://clc.gov.in/clc/min-wages

<table>
<tr><td>Value(s) applied</td><td>Below is the schedule of Trainings conducted during the current monitoring period

<table><tr><th>Sl. No</th><th>Topic</th><th>Date</th><th>Number of Participants</th><th>Duration</th></tr><tr><td>1.</td><td>Technical Training</td><td>28/06/2019</td><td>15</td><td>1 hours</td></tr><tr><td>2.</td><td>Technical Training</td><td>-</td><td>0[6]</td><td>0</td></tr></table>
The modules covered under annual training program by O & M contractor i.e. Suzlon were related to HT and power evacuation, WTG erection, commissioning, operation & maintenance along with safety and other functional and soft skills required for the job role at windfarm sites.</td></tr>
<tr><td>Measurement methods and procedures</td><td>Together with the technology supplier, the Project organize training for the staff on the technology and the monitoring of the plant operation, and the emergency and safety procedures.</td></tr>
<tr><td>Monitoring frequency</td><td>Annual</td></tr>
<tr><td>QA/QC procedures</td><td>The training records for all the employees</td></tr>
<tr><td>Purpose of data</td><td>To Monitor the SDG 8 Indicator</td></tr>
<tr><td>Additional comment</td><td>-</td></tr>
</table>

D.3. Comparison of monitored parameters with last monitoring period

Since this is a first monitoring period, this section is not applicable.

D.4. Implementation of sampling plan

Not Applicable

SECTION E. CALCULATION OF SDG IMPACTS

E.1. Calculation of baseline value or estimation of baseline situation of each SDG Impact

SDG 7: Affordable and Clean Energy

Net generation per year= 22,130 MWh/year

SDG 8: Decent Work and Economic Growth

[6] For the year 2020, no people were newly employed and no trainings were conducted due to Covi-19 pandemic situation

The project leads to employment opportunities which would not have been possible in the baseline scenario. The project provides employment at least 10 persons.

Also project activity improves the quality of employment by giving training to employee. Thus minimum 1 training per year will be conducted by the project activity.

SDG 13: Climate Action

The baseline emissions are the product of electrical energy baseline $EG_{PJ,y}$ expressed in MWh of electricity produced by the renewable generating unit multiplied by an emission factor.

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

Where,

$EG_{PJ,y}$ = Total quantity of net electricity delivered to the recipient facility
$EF_{grid,CM,y}$ = Baseline emission factor = 0.9346 tCO_2/MWh

BEy = 22,130 * 0.9346
= 20,682 tCO_2/year

Since $ER_y = BE_y$

Therefore, ER_y= 20,682 tCO_2/year

E.2. Calculation of project value or estimation of project situation of each SDG Impact

SDG 7: Affordable and Clean Energy

For the current monitoring period, the clean energy generation contributed by the project activity is 23,133.64 MWh.

SDG 8: Decent Work and Economic Growth

The project leads to employment opportunities which would not have been possible in the baseline scenario. During the current monitoring period, the project activity provided employment to 15 persons.

Also project activity improves the quality of employment by giving training to employee. During the current monitoring period, 1 training has been conducted.

SDG 13 Climate Action:

For the current monitoring period, the emission reductions contributed by the project activity (ER_y) is calculated as follows:

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

Where:

BE_y	=	Baseline emissions in year y (t CO_2)

$EG_{PJ,y}$	=	Quantity of net electricity generation supplied by the project plant/unit to the grid in year y in MWh
$EF_{grid,CM,y}$	=	Combined margin CO_2 emission factor for grid connected power generation in year y

BE_y = 23,133.65 MWh x 0.9346 tCO_2/MWh
= 21,602 tCO_2e (Round down value)

$ER_y = BE_y - PE_y$

Where:

ER_y = Emission reductions in year y (t CO_2e)
BE_y = Baseline emissions in year y (t CO_2e)
PE_y = Project emissions in year y (t CO_2e)

Therefore, ER_y = 21,602 – 0
= 21,602 tCO_2e

E.3. Calculation of leakage

Not Applicable

E.4. Calculation of net benefits or direct calculation for each SDG Impact

SDG	SDG Impact	Baseline estimate	Project estimate	Net benefit
7	Affordable and Clean Energy	-	23,133.65 MWh	23,133.65 MWh
8	Decent Work and Economic Growth	-	No. of Employment opportunities created: 15 No. of trainings conducted: 1	No. of Employment opportunities created: 15 No. of trainings conducted: 1
13	Climate Action		21,602 tCO_2e	21,602 tCO_2e

E.5. Comparison of actual SDG Impacts with estimates in approved PDD

<table>
<tr><th>SDG</th><th>Values estimated in ex ante calculation of approved PDD for this monitoring period</th><th>Actual values[7] achieved during this monitoring period</th></tr>
<tr><td>7</td><td>29,587.51 MWh</td><td>23,133.65 MWh</td></tr>
<tr><td>8</td><td>1 training/annum and employment to 10 persons</td><td>No. of Employment opportunities created: 15
<table><tr><th>Year</th><th>Skilled</th><th>Unskilled</th><th>Total</th></tr><tr><td>2019</td><td>12</td><td>3</td><td>15</td></tr><tr><td>2020</td><td>12</td><td>3</td><td>15[8]</td></tr></table>
No. of trainings conducted: 1</td></tr>
<tr><td>13</td><td>27,652 tCO_2e</td><td>21,602 tCO_2e</td></tr>
</table>

E.5.1. Explanation of calculation of value estimated ex ante calculation of approved PDD for this monitoring period

SDG 7: Affordable and Clean Energy

The annual estimated power generation for the project activity is 22,130 MWh, thus considering number of days covered during present monitoring period to be 488, the estimated power generation will be 29,587.51 MWh.

SDG 8: Decent Work and Economic Growth

The project leads to employment opportunities which would not have been possible in the baseline scenario. The project will provide employment to at least 10 persons.

Also project activity improves the quality of employment by giving training to employee. Thus, minimum 1 training per year will be conducted by the project activity.

SDG 13: Climate Action

The annual estimated emission reduction for the project activity is 20,682 tCO_2e, thus considering number of days covered during present monitoring period to be 488, the estimated emission reduction contributing towards SDG 13 will be 27,652 tCO_2e.

[7] Whenever emission reductions are capped, both the original and capped values used for calculations must be transparently reported. Use brackets to denote original values.

[8] For the year 2020, no people were newly employed and no trainings were conducted due to Covi-19 pandemic situation

E.6. Remarks on increase in achieved SDG Impacts from estimated value in approved PDD

Not Applicable

SECTION F. SAFEGUARDS REPORTING

As per the safeguarding Principle Assessment in Appendix-1 of the GS4GG PDD, there are no safeguarding principles which are to be included in the monitoring plan or hold any relevance to the project activity. Also there are no any impact (positive/negative/slightly) for any mitigation measures, being applicable to any of the safeguarding principles. Hence, this section is not relevant.

SECTION G. STAKEHOLDER INPUTS AND LEGAL DISPUTES

G.1. List all Inputs and Grievances which have been received via the Continuous Input and Grievance Mechanism together with their respective responses/mitigations.

As a part of continuous feedback from stakeholders, the grievances register is placed at site and is being continuously monitored and if any comments are received, they are addressed through the grievance cell.

During the current monitoring period, there were no comments/feedbacks received in the grievance register.

G.2. Report on any stakeholder mitigations that were agreed to be monitored.

During the current monitoring period, there were no comments /feedback received in the grievance register.

G.3. Provide details of any legal contest that has arisen with the project during the monitoring period

During the current monitoring period, there were no legal challenges/ contest has arisen for the project activity.

Annex-1:

Meter details at 66 KV Rajpara are provided in the table below:

Meter Details	**Mahika Line -1**	**Mahika Line -2**
Meter Serial No	GJ-1003-A	GJ-1004-A
Meter Make	L & T	L & T
Accuracy Class	0.2S	0.2S

Meter details at 66 KV Halenda are provided in the table below:

Meter Details	**Mota Dadva Line -1**	**Mota Dadva Line -2**
Meter Serial No	GJ-0945-A	GJ-0946-A

Meter Make	L & T	L & T
Accuracy Class	0.2S	0.2S

Calibration details of energy meters at Substation are as follows:

WTG No. JSD – 43 & 44 (66 KV Bhojapuri, Mahidad)

Mahika Line – I (Meter Sr. No.)	**Mahika Line – II (Meter Sr. No.)**	**Date of Calibration**	**Due date of calibration**	**Remark**
GJ-1003-A	GJ-1004-A	28/12/2018	27/12/2021	Validity of Calibration covers the end date of monitoring period. Hence no delayed calibration factor applied.

WTG No. JSD – 76, 24, 25 & 51 (66 KV Halenda, Mahidad)

Mota Dadva Line – I (Meter Sr. No.)	**Mota Dadva Line – II (Meter Sr. No.)**	**Date of Calibration**	**Due date of calibration**	**Remark**
GJ-0945-A	GJ-0946-A	01/12/2018	30/11/2021	Validity of Calibration covers the end date of monitoring period. Hence no delayed calibration factor applied.

Calibration details of yard meters are as follows:

Sr. No.	**WTG No.**	**Meter Sr. No.**	**Date of Calibration**	**Due date of calibration**
1.	JSD 51	MSP33030	17/02/2019	16/02/2022
2	JSD 25	MSP33042	17/02/2019	16/02/2022
3	JSD 24	MSP33041	17/02/2019	16/02/2022
4	JSD 76	MSP33027	16/02/2019	15/02/2022
5	JSD 43	GJU62212	18/02/2019	17/02/2022
6	JSD 44	GJU62213	18/02/2019	17/02/2022

Considering the calibration dates, it can be concluded that validity of Calibration covers the end date of monitoring period. Hence no delayed calibration factor applied.

Revision History

Version	Date	Remarks

1.1	14 October 2020	Hyperlinked section summary to enable quick access to key sections Improved clarity on Key Project Information Section for POA monitoring Forward action request section Improved Clarity on SDG contribution/SDG Impact term used throughout Clarity on safeguard reporting Clarity on design changes Leakage section added for VER/CER projects Addition of Comparison of monitored parameters with last monitoring period Provision of an accompanying Guide to help the user understand detailed rules and requirements
1.0	10 July 2017	Initial adoption