100 MW GRID CONNECTED WIND POWER PROJECT IN JAMNAGAR GUJARAT, INDIA

Document Prepared by Infinite Solutions

Project Title	100 MW grid connected Wind Power project in Jamnagar Gujarat, India
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1 PROJECT DETAILS

1.1 Summary Description of the Project

The project activity is developed by M/s Verdant Renewables Pvt Ltd (VRPL). VRPL is one of the group companies of SITAC RE.

The proposed project activity involves the establishment of a wind farm of 105[1] MW installed capacity enabling generation of electricity by state-of-art 2.1 MW capacity each (50 WTGs * 2.1) Wind Turbine Generators (WTGs) (One of the latest available technologies in the country developed by Vestas) in the state of Gujarat. The electricity generation from this wind farm contributes to annual GHG reductions estimated at 363,796 tonnes of carbon dioxide equivalent. The project activity is expected to evacuate approximately 388,340 MWh of renewable power annually to the Indian grid through regional GETCO grid substation of Jamnagar district.

In the absence of the project activity, the accordant amount of electricity would have been delivered through the grid connected power plants, which to a large extent is fed by fossil sources, leading to carbon dioxide emissions.

Sector- wise installed capacity (MW) given under the latest CEA[2] database version 14.

India							
Thermal				Other Source			
Coal	Gas	Diesel	Total	Nuclear	Hydro	RES	Total
197171.50	24897.46	837.63	222906.59	6780.00	45293.42	69022.39	344002.39

It is evident from above "Table-1" that the installed capacity is predominantly coal based and therefore, is a major source of carbon dioxide emissions in India. Hence, there exists scope for reducing the CO_2 emissions in the country by way of fuel substitution, increased use of **renewable energy sources**, and also by improving the thermal efficiency of power generation.

Demand for electricity in Gujarat is growing quickly, therefore the additional capacities are necessary. There is a deficit in energy supply and in peak power demand in Gujarat. This supply demand gap is likely to be met through the fossil fuelled power stations. PP do not have any prior experience of installation of similar wind mills.

Purpose ***& Salient Features of the project activity***
The main purpose of the project activity is to generate electrical energy through sustainable renewable energy means using wind power and feed the generated output to the local grid in Gujarat and contribute to climate change mitigation efforts.

Apart from generation of renewable energy-based electricity, the project has also been conceived for the following:

- To enhance the propagation of commercialisation of wind power generation in the region
- To contribute to the sustainable development of the region, socially, environmentally and economically
- To reduce the prevalent policy & regulatory risks for this wind park through revenues from the Carbon Mechanism.
- Technology details has been provided under section 1.8 of the VCS PD.

[1] As per commissioning certificate and PO. Commissioning Details provided under Appendix-1.

[2] http://www.cea.nic.in/reports/others/thermal/tpece/cdm_co2/user_guide_ver14.pdf

View of project participants on the contribution of the project to sustainable development has been discussed under section 1.13 of PD.

As the project developer is an Indian company using the wind power technology manufactured in India, there is no transfer of technology in the project activity.

1.2 Sectoral Scope and Project Type

The project activity falls under the following Sectoral scope and Project Type:

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

Project Type : I - Renewable Energy Projects

Methodology : ACM0002: Grid-connected electricity generation from renewable sources - Version 19[3]

The project is not a grouped project activity.

1.3 Project Proponent

Organization name	M/s Verdant Renewables Pvt Ltd
Contact person	Ms Shweta Singh
Title	Senior Manager - Corporate
Address	507-508, Ashok estate, 24 Barakhamba Road, New Delhi - 110001
Telephone	+ 91 8447677111
Email	shweta.singh@sitacre.com

1.4 Other Entities Involved in the Project

Organization name	Infinite Solutions
Role in the project	Project Consultant
Contact person	Mr Jimmy Sah
Title	Head-Sustainability
Address	611, Chetak Centre Main, 12/2 RNT Marg, Indore- 452001
Telephone	+91 9589804304
Email	jimmy@infisolutions.org

1.5 Project Start Date

Project Start Date: 21/06/2019;

[3] https://cdm.unfccc.int/UserManagement/FileStorage/58IAGB7SZUDEO2VN6LYM30K41HFPRQ

The project start date is the commissioning date of the first WTG.

1.6 Project Crediting Period

Total number of years: 10 years which shall be renewed twice.
Crediting Period Start date: 21/06/2019 (Commissioning date of first WTG).

Crediting Period End Date: 20/06/2029.

1.7 Project Scale and Estimated GHG Emission Reductions or Removals

Project Scale	
Project	
Large project	√

Year	Estimated GHG emission reductions or removals (tCO_2e)
Year 1	363,796
Year 2	363,796
Year 3	363,796
Year 4	363,796
Year 5	363,796
Year 6	363,796
Year 7	363,796
Year 8	363,796
Year 9	363,796
Year 10	363,796
Total estimated ERs	36,37,960
Total number of crediting years	10
Average annual ERs	363,796

1.8 Description of the Project Activity

Description of project activity
The project activity involves the installation of 50 WTGs of 2.1 MW capacity each at wind farm Keshiya and Tarana project site in Jamnagar district of Gujarat state, India.

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Description of technology/measure employed:
In wind energy generation, kinetic energy of wind is converted into mechanical energy and subsequently into electrical energy.

Wind has considerable amount of kinetic energy when blowing at high speeds. The kinetic energy passes through the blades of the wind turbines is converted into mechanical energy and rotates the turbine. When the wind blades rotate, the connected generator rotor also rotates, thereby producing electricity. The technology is a clean technology since there are no GHG emissions associated with the electricity generation.

The project installs Vestas V120 HH120 (WTGs of individual capacity 2.1 MW. The V120-2.1MW HH 120m power curve at air density 1.162kg/m3 was provided by Vestas for EYA calculation.

The salient Features of WTG are as Follows: -

1. Pitch regulated with variable speed
2. Unique Micro pitch system
3. Unmatched flexislip mechanism
4. Advanced control system
5. High quality power generation
6. well balanced design
7. ISO-certified vendors confirm high quality components
8. ISO 9001:2000 for Design, Development, Manufacture and Supply of Wind Turbines
9. ISO 9001:2000 certification for Installation, Commissioning, Operation and Maintenance

Wind energy presents various environmental benefits compared to other primary energy sources: wind energy does not result in emissions of pollutants into the atmosphere nor does it emit residuals that can have a negative impact on soil, water etc. As a renewable energy source wind energy can be used without putting the supply of primary energy sources into danger for future generations. The proposed project will also contribute to a reduction in other emissions than GHG related to conventional electricity generation, like emissions of sulphur dioxide, nitrogen oxides and particulates.

Scenario existing prior to the start of the project activity:
The project activity is a greenfield installation of 50 WTGs (New) of 2.1 MW each. The project activity installs the wind farm at a barren land. Thus, project activity is a new renewable energy power plant that is constructed and operated at a site where no renewable energy power plant was operated prior to the implementation of the project activity.

Scope of activities/measures that are being implemented within the project activity:
The project activity involves the establishment of a wind farm of 105 MW installed capacity at the project location. This involves installation of WTGs, transformers, laying down the transmission lines/cables, establishment of a control room, etc.

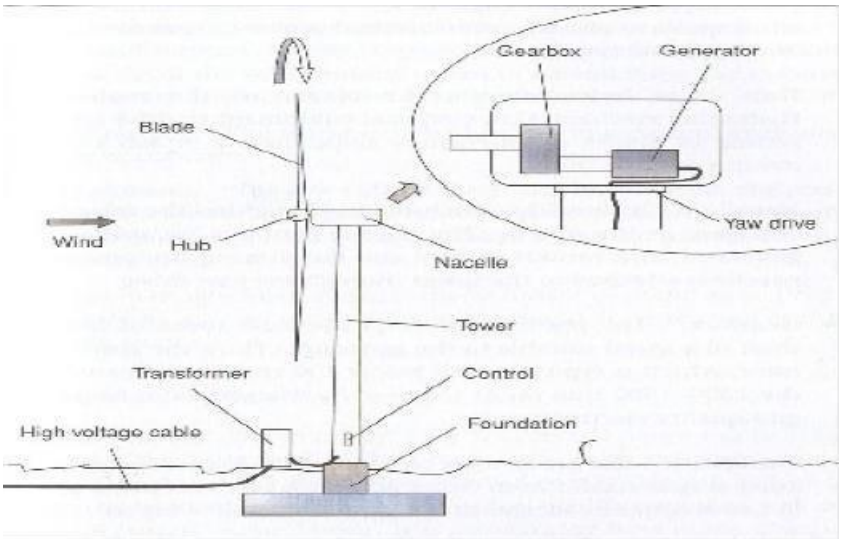
Baseline Scenario
The baseline scenario is electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of

new generation sources, as reflected in the combined margin (CM) calculations described in "TOOL07: Tool to calculate the emission factor for an electricity system"

The technical details of WTG are detailed below in the table:

Parameter	**Specifications**
Model Number:	**V120-2.1MW HH 120m**
Rotor	
Installed electrical output	2100 kW
Diameter	120 m
Cut-in wind speed	3 m/s
Rated wind speed	14 m/s
Cut-out wind speed	20 m/s
Rotor swept area	11310 m2
Regulation	Pitch regulated with variable speed
Generator	
Type	Asynchronous, 4 Poles, doubly fed generator, slip rings
Rated output	2100 kW
Frequency	50 Hz
Gear Box	
Type	One planetary stage and two helical stages
Yaw system	
Drive	Active electrical yaw motors
Bearing	Polyamide slide bearing
Safety system	
Aerodynamic brake	3 independent systems with blade pitching
Mechanical brake	Hydraulic disc brake
Technical Life	25 Years

Figure 1: Wind turbine setup overview diagram.



Wind energy presents various environmental benefits compared to other primary energy sources: wind energy does not result in emissions of pollutants into the atmosphere nor does it emit residuals that can have a negative impact on soil, water etc. As a renewable energy source wind energy, can be used without putting the supply of primary energy sources into danger for future generations. The project contributes to a reduction in other emissions than GHG related to conventional electricity generation, like emissions of sulphur dioxide, nitrogen oxides and particulates.

1.9 Project Location

The WTGs installed by the project proponent are distributed across the Jamnagar districts in the villages of Hajamchora, Bhensdad, Mota Garediya, Manekpar, Dudhai, Manamora, Mavapar, Bhadra, Lakhtar, Keshiya, Meghpar, Tarana, Balambha, taluk:Jodiya.

The project WTGs are getting commissioned since 21/06/2019 and so far, 46 WTGs out of 50 WTGs has been commissioned. All the WTGs are expected to be commissioned fully by the end of Dec 2019. The details of the commissioned WTGs have been furnished in Appendix 1.

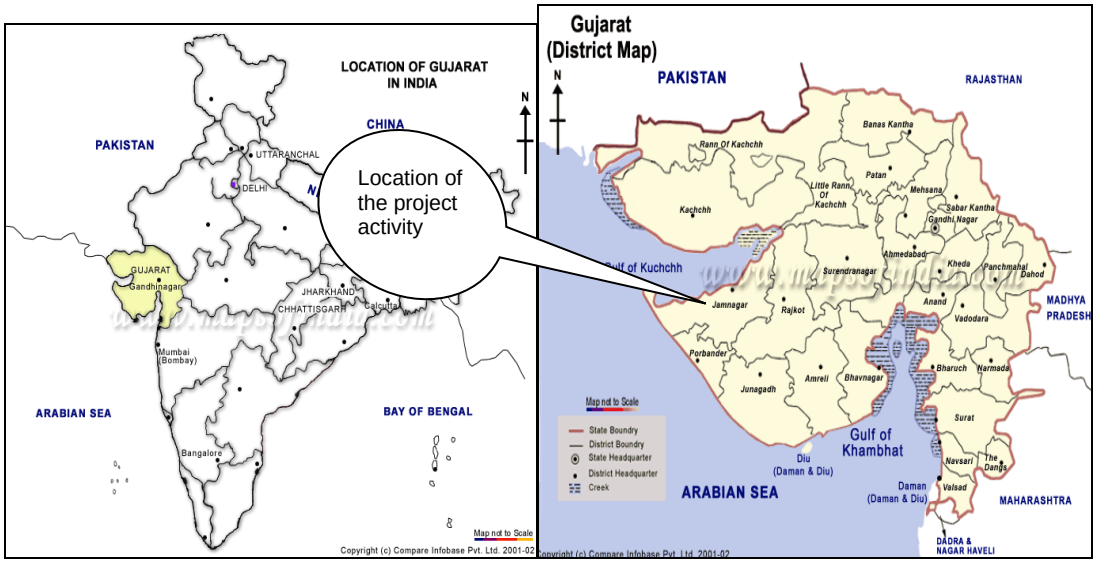
The coordinates for Jamnagar location are as follows;

Latitude 22° 28' 14.52" N, Longitude 70° 3' 27.83" E

The project WTGs geo coordinates has been provided under Appendix 1.

The geographical location of the projects can be depicted from the maps on the following page.

Figure 1: Location of Gujarat in India **Figure 2: State Map of Gujarat showing Districts**



1.10 Conditions Prior to Project Initiation

This is a Greenfield wind power generation project activity. The pre project scenario is same as baseline scenario. Please refer section 2.4 for the description of baseline scenario.

1.11 Compliance with Laws, Statutes and Other Regulatory Frameworks

Project complies with all relevant local, regional and national laws, statutes and regulatory frameworks and meets all local laws and regulation of India. All necessary NOCs, commissioning certificates, PO and other relevant confidential documents & agreements have been submitted to DOE.

The relevant national laws and regulations pertaining to generation of energy in India are:

• Electricity Act 2003
• National Electricity Policy 2005
• Tariff Policy 2006

The Project activity conforms to all the applicable laws and regulations in India:

- Power generation using Wind energy is not a legal requirement or a mandatory option.
- There are state and sectoral policies, framed primarily to encourage Wind power projects. These policies have also been drafted realizing the extent of risks involved in the projects and to attract private investments.
- The Indian Electricity Act, 2003 (May 2007 Amendment) does not influence the choice of fuel used for power generation.
- There is no legal requirement on the choice of a particular technology for power generation.

1.12 Ownership and Other Programs

1.12.1 Project Ownership

The ownership of the Project and its right to use is completely with the project proponent and the necessary approvals shall be submitted to the DOE.

- Power Purchase Agreements signed with the GETCO
- Purchase orders issued for the project WTGs.

1.12.2 Emissions Trading Programs and Other Binding Limits

The project is not participating in any other program. PP is submitting the declaration for the project activity to confirm that net GHG emission reductions or removals generated by the Project activity will not be used for compliance with any emissions trading program or to meet binding limits on GHG emissions in any Emission Trading program or other binding limits

1.12.3 Other Forms of Environmental Credit

Net GHG emission reductions or removals generated by the Project will not be used for compliance with an emissions trading program or to meet binding limits on GHG emissions in any Emission Trading program or other binding limits.

PP is submitting the declaration for project activity to confirm that net GHG emission reductions or removals generated by the Project is neither a part of any environmental credit program nor applied for any other forms of environmental credit.

1.12.4 Participation under Other GHG Programs

The Project has not participated in any other GHG programs.

PP is submitting a declaration for projects to confirm that net GHG emission reductions or removals generated by the Project has not been registered, or is seeking registration under any other GHG programs

1.12.5 Projects Rejected by Other GHG Programs

The Project is not rejected by other GHG programs. PP is submitting a declaration for project to confirm the same.

1.13 Additional Information Relevant to the Project

Eligibility Criteria

This is not a grouped project activity. Thus, this section is not applicable for this project

Leakage Management

Project does not involve any leakage emissions other than methodology requirement for Biomass power project. Hence there are no any extra Leakage Management Plan and risk mitigation measures are required.

Commercially Sensitive Information

No commercially sensitive information has been excluded from the public version of the project description

Sustainable Development

Legislative:

The project participants obtained all clearances from stakeholders hence no legal risks are anticipated.

Socio-economic well-being:

- Project activity has generated direct and indirect employment for skilled and unskilled manpower during construction phase as well as during operational stage and thus helped in controlling migration from the region and alleviation of poverty.
- The project activity's contribution of power supply towards the Indian grid is helping in the upliftment of the social life of the people by ensuring a sustainable and reliable source of power for the region.
- The Project activity has improved the infrastructural facilities like water availability, road, and medical facilities etc in the region.

Environmental well-being:

- The project activity generates clean and green power thus causing negligible emissions of greenhouse gases. By building and operating the power project, much pollution is avoided. In the absence of the project activity, equivalent power would have been generated based on the fossil fuels resulting in more Green House Gas emissions into the atmosphere.
- The project activity has reduced the dependence on fossil fuels for power generation thus conserving the natural reserves. The project has led to greenhouse gas emission reduction and hence contributed in mitigating climate change.

Technological well-being:

The project activity has increased awareness and interest among the private players to make investments in similar areas. The project activity envisages installation of high efficiency turbines and generators and the power will be transmitted at high voltage to ensure low losses. Moreover, the technology being used is well established, most updated and environmentally safe.

Further Information

There are no information or incidents that will have bearing on the eligibility of the project, the net GHG emission reductions or removals, or the quantification of the project's net GHG emission reductions or removals.

2 APPLICATION OF METHODOLOGY

2.1 Title and Reference of Methodology

The approved consolidated baseline and monitoring methodology ACM0002 Version 19[4] has been used. The title of the baseline and monitoring methodologies is "Grid-connected electricity generation from renewable sources". "

Methodology:
ACM0002: Grid-connected electricity generation from renewable sources --- Version 19.0, Sectoral Scope: 01, EB 100, Annex 6
https://cdm.unfccc.int/methodologies/DB/VJI9AX539D9MLOPXN2AY9UR1N4IYGD

The project activity also takes reference from following Tools from the tools prescribed by applied methodology:
1. Tool for the demonstration and assessment of additionality --- Version 07.0.0, EB 70, Annex 8
https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v7.0.0.pdf

2. Tool to calculate the emission factor for an electricity system --- Version 07.0, EB 100, Annex 4
https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v7.0.pdf

2.2 Applicability of Methodology

The following steps will show the applicability of the project under this methodology

Applicability Criterion (with Para number reference)		Project Case
1.	This methodology is applicable to grid-connected renewable energy power generation project activities that: (a) Install a Greenfield power plant; (b) Involve a capacity addition to (an) existing plant(s); (c) Involve a retrofit of (an) existing operating plants/units; (d) Involve a rehabilitation of (an) existing plant(s)/unit(s); or (e) Involve a replacement of (an) existing plant(s)/unit(s).	The Project activity is installation of Greenfield Wind Power Project. Hence the project activity satisfies this applicability criterion of the methodology.

[4] https://cdm.unfccc.int/filestorage/5/8/I/58IAGB7SZUDEO2VN6LYM30K41HFPRQ/EB100_repan06_ACM0002.pdf?t=S3F8cTJhbXAwfDD9g2fGgiHN0z1FoOPPMThA

2.	The methodology is applicable under the following conditions: (a) The project activity may include renewable energy power plant/unit of one of the following types: hydro power plant/unit with or without reservoir, wind power plant/unit, geothermal power plant/unit, solar power plant/unit, wave power plant/unit or tidal power plant/unit; (b) In the case of capacity additions, retrofits, rehabilitations or replacements (except for wind, solar, wave or tidal power capacity addition projects) the existing plant/unit started commercial operation prior to the start of a minimum historical reference period of five years, used for the calculation of baseline emissions and defined in the baseline emission section, and no capacity expansion, retrofit, or rehabilitation of the plant/unit has been undertaken between the start of this minimum historical reference period and the implementation of the project activity.	The option (a) of applicability criteria 1 is applicable as project activity is generation of electricity through Wind Power Plant which is renewable energy power plant. Hence the project activity satisfies this applicability criterion of the methodology
3.	In case of hydro power plants, one of the following conditions shall apply:[5] (a) The project activity is implemented in existing single or multiple reservoirs, with no change in the volume of any of the reservoirs; or (b) The project activity is implemented in existing single or multiple reservoirs, where the volume of the reservoir(s) is increased and the power density, calculated using equation (3), is greater than 4 W/m^2; or (c) The project activity results in new single or multiple reservoirs and the power density, calculated using equation (3), is greater than 4 W/m^2; or (d) The project activity is an integrated hydro power project involving multiple reservoirs, where the power density for any of the reservoirs, calculated using equation (3), is lower than or equal to 4 W/m^2,	The project activity is wind power project thus this condition is not applicable

[5] Project participants wishing to undertake a hydroelectric project activity that result in a new reservoir or an increase in the volume of an existing reservoir, in particular where reservoirs have no significant vegetative biomass in the catchments area, may request a revision to the approved consolidated methodology.

	all of the following conditions shall apply: (i) The power density calculated using the total installed capacity of the integrated project, as per equation (4), is greater than 4 W/m^2; (ii) Water flow between reservoirs is not used by any other hydropower unit which is not a part of the project activity; (iii) Installed capacity of the power plant(s) with power density lower than or equal to 4 W/m^2 shall be: a. Lower than or equal to 15 MW; and b. Less than 10 per cent of the total installed capacity of integrated hydro power project.	
4.	In the case of integrated hydro power projects, project proponent shall: (a) Demonstrate that water flow from upstream power plants/units spill directly to the downstream reservoir and that collectively constitute to the generation capacity of the integrated hydro power project; or (b) Provide an analysis of the water balance covering the water fed to power units, with all possible combinations of reservoirs and without the construction of reservoirs. The purpose of water balance is to demonstrate the requirement of specific combination of reservoirs constructed under CDM project activity for the optimization of power output. This demonstration has to be carried out in the specific scenario of water availability in different seasons to optimize the water flow at the inlet of power units. Therefore, this water balance will take into account seasonal flows from river, tributaries (if any), and rainfall for minimum five years prior to implementation of CDM project activity.	The project activity is wind power project thus this condition is not applicable
5.	The methodology is not applicable to: (a) Project activities that involve switching from fossil fuels to renewable energy sources at the site of the project activity, since in this	The project activity is wind power project thus this condition is not applicable

	case the baseline may be the continued use of fossil fuels at the site; (b) Biomass fired power plants/units.	
6.	In the case of retrofits, rehabilitations, replacements, or capacity additions, this methodology is only applicable if the most plausible baseline scenario, as a result of the identification of baseline scenario, is "the continuation of the current situation, that is to use the power generation equipment that was already in use prior to the implementation of the project activity and undertaking business as usual maintenance".	The proposed project activity is a Greenfield project; thus, this criterion is not applicable.
7.	In addition, the applicability conditions included in the tools referred to below apply.[6]	The project applies the following tools and is in compliance to the same; • "Tool to calculate the emission factor for an electricity system";

2.3 Project Boundary

According to the methodology, for emissions sources, only CO_2 emissions from electricity generation in fossil fuel fired power plants that is displaced due to the project activity has been considered.

ACM0002 Version 19, para 20: The spatial extent of the project boundary includes the project site and all power plants connected physically to the electricity system that the project power plant is connected to.

The project activity is feeding the generated electricity in the national Indian grid. The proposed project would have marginal impact on all the generation facilities in the grid. Thus, all the power generation facilities connected to this grid form the project boundary for the purpose of baseline estimation.

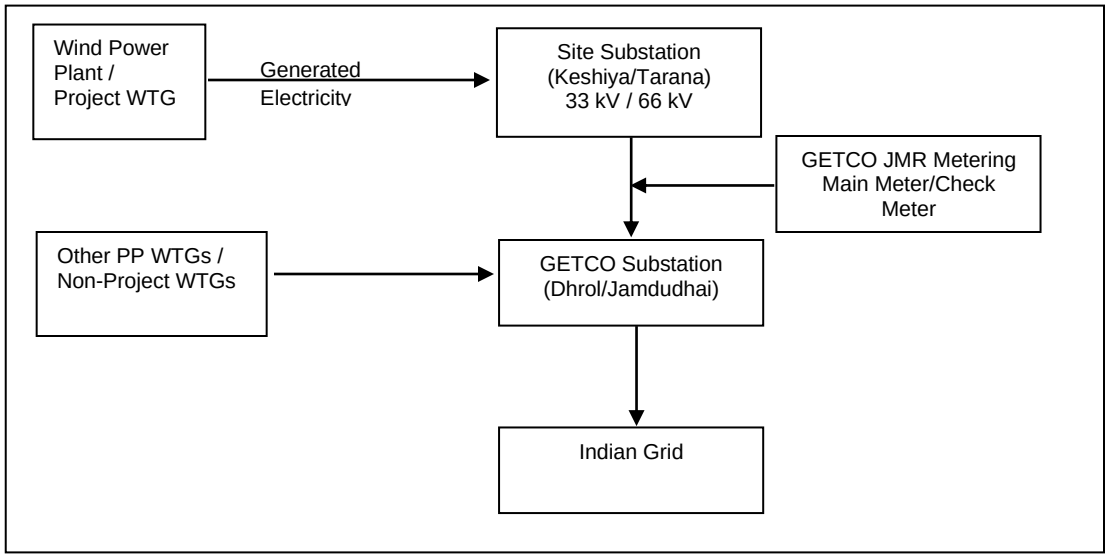
[6] The condition in "TOOL02: Combined tool to identify the baseline scenario and demonstrate additionality" that all potential alternative scenarios to the proposed project activity must be available options to project participants; does not apply to this methodology, as this methodology only refers to some steps of this tool.

Table: Baseline and project emission sources

	Source	Gas	Included?	Justification / Explanation
Baseline	CO_2 emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity	CO_2	Yes	Main emission source
		CH_4	No	Not applicable as per ACM0002
		N_2O	No	Not applicable as per ACM0002
Project Activity	On site fossil fuel consumption due to project activity	CO_2	No	Electricity generation through wind does not lead to emission of greenhouse gases. The CO_2 emission through fossil fuels are neglected.
		CH_4	No	Electricity generation through wind does not lead to emission of greenhouse gases.
		N_2O	No	Electricity generation through wind does not lead to emission of greenhouse gases.

The project boundary is composed of the Wind Energy Generators, main transformers, grid[7], transmission lines, sub-station and the metering equipment for each generator and substation, and the grid which is used to transmit the generated electricity.

The project boundary is shown in as below:



2.4 Baseline Scenario

As baseline for the project activity has been established according to ACM0002 version 19. Since the project activity was commissioned as a greenfield power project generating electricity through

[7]Please refer Appendix-2 for Electricity evacuation single line diagram for both (Keshiya & Tarana) Wind farm site substation connected to GETCO substations (Dhrol and Jamdudhai) respectively. JMR is prepared based on the GETCO Main Meter & Check Meter installed at Keshiya & Tarana substation dedicatedly for the project activity.

wind energy and supplying the same to the grid, it was demonstrated that the electricity delivered to the grid by the project would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations.

The baseline scenario is applicable in line with ACM0002 Version 19 para 22, i.e. "*the baseline scenario is 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, as reflected in the combined margin (CM) calculations described in "TOOL07: Tool to calculate the emission factor for an electricity system"."*.

The details of CM Emission Factor calculation are reported under the section 3.1 of this report.
The values of the parameters are also reported under the section 4.1

2.5 Additionality

In line with VCS Standard version 3.7, the additionality of the Project activity is ascertained in line with the applicable guidance from the UNFCCC. The demonstration of additionality for the proposed Project activity is being carried out in accordance with the additionality tool provided by the UNFCCC i.e. "Tool for demonstration and assessment of Additionality" Version 07.0.0. The tool provides a step-wise approach to demonstrate additionality which is displayed below:

Step 0: Demonstration whether the proposed project activity is the first-of-its-kind

The proposed project activity is not the first-of-its-kind. Hence not applicable.

Step 1: Identification of alternatives to the project activity consistent with current laws and regulations

As per the applied methodology ACM0002 version 19; Para 22, "*If the project activity is the installation of a Greenfield power plant, the baseline scenario is electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid connected power plant and by the addition of new generation sources*".

Outcome of Sub-step 1a: As the baseline scenario is prescribed by applied methodology for Greenfield Project, hence no further analysis is carried out to identify alternatives

Sub-step 1b: Consistency with mandatory laws and regulations:
The alternative(s) shall be in compliance with all applicable legal and regulatory requirements, even if these laws and regulations have objectives other than GHG reductions, e.g. to mitigate local air pollution. (This sub-step does not consider national and local policies that do not have legally-binding status.).

The relevant national laws and regulations pertaining to generation of energy in India are:

- Electricity Act 2003
- National Electricity Policy 2005
- Tariff Policy 2006

The Project activity conforms to all the applicable laws and regulations in India:

- Power generation using wind energy is not a legal requirement or a mandatory option.
- There are state and sectoral policies, framed primarily to encourage wind power projects. These policies have also been drafted realizing the extent of risks involved in the projects and to attract private investments.
- The Indian Electricity Act, 2003 (May 2007 Amendment) does not influence the choice of fuel used for power generation.
- There is no legal requirement on the choice of a particular technology for power generation.

Outcome of Sub-step 1b: Hence, both the alternatives discussed (i.e. continuation of electricity generation in the grid and project activity without carbon revenues) are found to comply with the mandatory laws and regulations taking into account the enforcement of the legislations in the region or country and EB decisions on national and/or sectoral policies and regulations. However, Alternative 1 (i.e. continuation of electricity generation in the grid) has been selected as the appropriate baseline alternative for this project activity.

Step 2: Investment analysis

Determine whether the proposed project activity is economically or financially less attractive than at least one other alternative, identified in step 1, without the revenue from the sale of emission reductions credits. To conduct the investment analysis, use the following sub-steps:

Sub-step 2a: Determine appropriate analysis method

For financial analysis of the project, the following three options are available:

Option I: Simple Cost Analysis
Option II: Investment Comparison Analysis
Option III: Benchmark Analysis

The project activity generates revenues from sale of electricity, therefore Option I is not applicable. Option II also does not apply since there is no comparable investment alternative available to the project participant in line with para 32 of the Methodological tool: “Tool for the demonstration and assessment of additionality” (version 07.0.0).

The most appropriate financial analysis method is therefore option III: the benchmark analysis, where the returns on investment in the project activity are compared to benchmark returns that are available to any investors in the country.

Sub-step 2b (Option III): Apply benchmark analysis

The investment analysis using Benchmark analysis approach (Option III) has been chosen. Further, this method illustrates the evaluation of the Project by the PP before the decision to undertake the project was taken and management approval granted.

Choice of Financial Indicator:

Project proponents have considered Post-Tax Equity IRR for investment analysis at the time of decision-making. As Project proponent is only interested in the returns project is generating on the portion of investment costs, which is financed by them in the form of equity.

As per Para 15 of EB 105 annex 06 states that Required/expected returns on equity are appropriate benchmarks for an equity IRR. Therefore, the Expected return on equity is considered appropriate benchmark. Accordingly, the post-tax Equity IRR has been considered as the relevant financial indicator for Investment Analysis.

Benchmark estimation:

The Cost of Equity has been considered using the "Methodological tool: Investment analysis" available at the time of decision making as well as the latest available value. As a conservative approach, the minimum value of benchmark has been considered as calculated using these 2 approaches.

Default Value at the time of investment decision:
Table under Appendix in EB 92 annex 5specifies default value of expected return on equity in real terms for Energy Industries (Group 1) in India = **11.06%**[8]

Thus, Default Value available at the time of decision making has been considered for calculation of Benchmark = 11.06%

Inflation Forecast for India as per RBI website[9] and corresponding benchmark values:

Project Promoters' Name	**Inflation Forecast[10]**		**Benchmark**	
	5 Years	**10 Years**	**5 Years**	**10 Years**
VRPL	4.66%	4.36%	16.28%	15.90%

*As a conservative approach, benchmark of **15.90%** has been selected for this project activity.*

Sub-step 2c: Calculation and comparison of financial indicators

The Equity IRR is evaluated for the entire lifetime of the project activity, i.e. 25 years. It is calculated based on the cash outflows from and cash inflows into the project activity.

Key Assumptions supporting financial projections:

Details of the project	Input Values	Source
State where the project is situated	Jamnagar, Gujarat	
WTG Capacity (MW)	2.1	As per Project Assessment Report (PAR)
No. of WTGs	50	As per PAR
Capacity of Project	105.0	As per PAR
Date of Decision Making	17-Jul-17	As per BR
Expected Date of Commissioning	31-Mar-19	Assumed at the time of Investment Decision (PAR)
Life of the plant (Yrs.)	25	As per PAR
Generation and sale of electricity		

[8] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-27-v7.0.pdf

[9] https://www.rbi.org.in/Scripts/PublicationsView.aspx?id=17616

[10] Minimum of the two inflation forecasts has been considered.

PLF @ P75 (%)	42.22%	As per Third Party Report in accordance to EB 48 Annex 11
Total Annual generation (kWh)	388,339,560	Calculated Value
Tariff rate at the decision making (INR/kWh)	2.44	As per PAR
Operation and maintenance cost and Insurance		
O&M for WTG (INR/Mn.)	115.52	As per PAR
Escalation (%)	5.00%	As per PAR
O & M free for (Yr.)	2.00	As per PAR
O&M for BOP (INR/Mn.)	11.80	As per PAR
Escalation (%)	5.00%	As per PAR
O & M free for (Yr.)	-	As per PAR
Insurance (INR Mn.)	12.66	As per PAR
Financial parameters		
TOTAL COST (INR Mn.)	7,150.00	As per PAR
Equity Investment (INR Mn.)	2,145.00	As per PAR
Loan Amount (INR Mn.)	5,005.00	As per PAR
Term loan		
Margin (%)	30.00%	As per PAR
Loan Amount (INR Mn.)	5,005.00	As per PAR
Interest rate (%)	10.00%	As per PAR
Loan Tenure (Qtr.)	48	As per PAR
Moratorium Period (Qtr.)	4	As per PAR
Repayment Period (Qtr.)	44	Calculated Value
Repayment instalments value (INR Mn.)	113.750	Calculated Value
1st instalment from (Qtr. end)	31-Mar-20	Considered from the next Quarter End
Book Depreciation (SLM Method)		
Gross Depreciable Value (INR Mn.)	7,150.00	Calculated Value
Salvage Value (%)	10.00%	As per PAR
Salvage value (INR Mn.)	715.00	Calculated Value
Net Depreciable Value (INR Mn.)	6,435.00	Calculated Value
Residual Value (INR Mn.)	715.00	Calculated Value
IT Depreciation (SLM Method)		
IT Depreciation Rate (%)	7.69%	As Per Income Tax, Depreciation rates for power generating units

Considering the input values, Equity IRR has been evaluated and is given below:

Name of Project Developer	Project Capacity	Equity IRR	Benchmark
VRPL	105 MW	7.46%	15.90%

The project activity cannot be considered as financially attractive as the equity IRR for the project activity is less than the Benchmark

Sensitivity Analysis:
As per Guidance 27 & 28 of EB 105, Annex 06, the sensitivity analysis of the project parameters which may substantially influence the Post-tax Equity IRR is carried out to assess the robustness of the conclusion.

Following factors has been subjected to sensitivity analysis:

1. PLF
2. O&M Cost
3. Project Cost
4. Tariff

The ultimate objective of the sensitivity analysis is to determine the likelihood of the occurrence of a scenario other than the scenario presented, in order to provide a cross-check on the suitability of the assumptions used in the development of the investment analysis.

The results of the sensitivity analysis are presented below:

Variation %	-10%	Normal	10%	Breaching Value
PLF	5.00%	7.46%	9.98%	32.16%
O&M	7.89%	7.46%	7.02%	-234.90%
Project Cost	9.80%	7.46%	5.64%	-27.15%
Tariff Rate	5.00%	7.46%	9.98%	32.16%

The results of sensitivity analysis show that even with a variation of +10% & -10% in project cost, O&M cost, PLF and Tariff Rate, Equity IRR is significantly lower than the benchmark. And it is evident from the results given above; the project remains additional even under the most favourable conditions.

Probability to breach the benchmark:
Sensitivity Parameter 1 : PLF
PLF considered in financials is as per **"Guidelines for the reporting and validation of Plant load factors" stated in EB48 Annex11**[11]. Variation in PLF of more than 10% is unlikely to happen as the PLF has been reported as per the Third-Party Report based. The breaching point will come at a PLF of 55.80%, which represents 13.58% increase in the annualized PLF value from the considered PLF of 42.22%. This is highly unlikely scenario to happen.
Sensitivity Parameter 2 : O&M
The sensitivity analysis reveals that O&M will breach the benchmark at negative values and is hypothetical case. Since the O&M cost is subject to escalation (as evidence by the O&M agreement) and also subject to inflationary pressure, any reduction in the O&M costs is highly unlikely. Hence, the reduction in the O&M cost is highly unlikely.

[11] http://cdm.unfccc.int/EB/048/eb48_repan11.pdf

Sensitivity Parameter 3 : Project Cost
Estimated Project Cost for financial analysis is considered as available at the time of decision making. However, even if we consider the actual cost of the project even then the benchmark is not breached. Moreover, the Sensitivity is carried out for +/-10%. The breaching point will come at a Project Cost of INR 5201.66 Mn., which represents 27.15% decrease in Project Cost. This is highly unlikely scenario as actual PO cost is higher than the breaching point cost.
Sensitivity Parameter 4 : Tariff Rate
Tariff Rate is considered as per the Project Assessment Report at the time of investment decision and the Tariff Rate as per PPA is same as available at the time of investment decision and is fixed for the entire life of 25 years for the Project. However, Sensitivity is carried out for +/-10% variation in the tariff. Even then the benchmark is not breached. Hence, there is no probability of variation for the same.

Outcome of step 2: This substantiates that the investment is not financially attractive (Post-Tax Equity IRR for the project activity is less than the Benchmark) for the PP. Thus, it can be concluded that project activity is additional & is not business as usual scenario.

Step 3: Barrier analysis

Barrier analysis has not been used.

Step 4: Common practice Analysis

Sub-step 4a: Analyze other activities similar to the proposed Project activity:

The common practice analysis is carried out step by step as per "Methodological tool: Common Practice, version 03.1" para 5. Stepwise approach for common practice are as follows:

Step (1): *calculate applicable capacity or output range as +/-50% of the total design capacity or output of the proposed project activity.*

Range	Capacity	Unit
+50%	157.5	MW
Capacity of the proposed project activity	105	MW
-50%	52.5	MW

Step (2): identify similar projects (both CDM/VCS and non-CDM/VCS) which fulfil all of the following conditions:

(a) The projects are located in the applicable geographical area;

(b) The projects apply the same measure as the proposed project activity;

(c) The projects use the same energy source/fuel and feedstock as the proposed project activity, if a technology switch measure is implemented by the proposed project activity;

(d) The plants in which the projects are implemented produce goods or services with comparable quality, properties and applications areas (e.g. clinker) as the proposed project plant;

(e) The capacity or output of the projects is within the applicable capacity or output range calculated in Step 1;

(f) The projects started commercial operation before the project design document (CDM-PDD) is published for global stakeholder consultation or before the start date of proposed project activity, whichever is earlier for the proposed project activity.

Identification of the similar projects (CDM/VCS and non-CDM/VCS) is carried out as per sub-steps of Step (2) as follows:

a. Project is located in host country - India. Therefore, Project is located India have been chosen for analysis.
b. The project activity is a green-field wind power project and uses measure (b) *"Switch of technology with or without change of energy source including energy efficiency improvement as well as use of renewable energies"*.
   Therefore, all projects applying same measure (b) as the proposed project activity are candidates for similar projects.
c. The energy source used by the project activity is wind. Hence, only wind energy projects have been considered for analysis.
d. The project activity produces electricity; therefore, all power plants that produce electricity are candidates for similar projects.
e. The capacity range of the projects is within the applicable capacity range from 157.5 MW to 52.5 MW.
f. The start date of the project activity is 21-June-2019, therefore projects, which had started commercial operation between before Dec 2019, have been identified.

Numbers of Similar projects (CDM/VCS and non-CDM/VCS) identified, which fulfil above-mentioned conditioned are:

Particulars	No. of Projects	Source
N_{Wind}	17	Directory, India Wind Power 2017, 17th Edition

Refer Common Practice Analysis Excel Sheet for Project Details & Analysis

Step (3): *within the projects identified in Step 2, identify those that are neither registered CDM project activities, project activities submitted for registration, nor project activities undergoing validation. Note their number* N_{all}.

Out of the projects identified in step-2, 11 projects are either registered or project activities submitted for registration, or project activities undergoing validation.

Thus, $N_{all} = 6$

Step (4): *within similar projects identified in Step 3, identify those that apply technologies that are different to the technology applied in the proposed project activity. Note their number* N_{diff}.

From the projects identified above, those projects which employ "**different technologies**" have been excluded and the number of such projects has been identified as N_{diff}.

With reference to Methodological tool: Common Practice, version 03.1 para 12 (d) (iv); Investment climate has been considered for identifying Different technologies, as each state in India has different set of policies and legal regulations. The project activity is located in the state of Gujarat of India and the policies and legal regulations applicable for the project is regulated by Gujarat Government. Therefore, it can be assumed that the policies and legal regulations are different in different states and hence projects installed in other states have been considered in N_{diff}.

From the identified projects in N_{all} (step 3) located in states other than Gujarat come under different investment climate and have been considered under N_{diff}.

As N_{all} = 6; thus N_{diff} = 5

Step (5): *calculate factor* $F=1-N_{diff}/N_{all}$ *representing the share of similar projects (penetration rate of the measure/technology) using a measure/technology similar to the measure/technology used in the proposed project activity that deliver the same output or capacity as the proposed project activity*
Calculate $F=1-N_{diff}/N_{all}$

As N_{all} =6 thus, N_{all}-N_{diff} = 1; is less than 3

Outcome of Step 5:

As,

i. F = 0.17; is less than 0.2
ii. N_{all}-N_{diff} = 1; is less than 3

Thus, the proposed project activity is not a "common practice" within a sector in the applicable geographical area.

The above discussions show that wind power development is not a common practice and the project activity is not financially attractive; hence the project activity is additional.

2.6 Methodology Deviations

There is no methodology deviation.

3 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

3.1 Baseline Emissions

As per the various baseline scenarios identified in approved methodology ACM0002 version 19, the emission reductions have been identified using the following steps:

Baseline emissions include only CO_2 emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity. The methodology assumes that all project electricity generation above baseline levels would have been generated by existing grid-connected power plants and the addition of new grid-connected power plants. The baseline emissions are to be calculated as follows:

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

Where:

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

Calculation of $EG_{PJ,y}$

If the project activity is the installation of a Greenfield power plant, then:

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

Where:

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

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

Calculation of $EF_{grid,CM,y}$

The methodology ACM0002 (Version 19.0) requires that the combined margin for the grid be calculated in accordance with the procedure provided in the *"Tool to calculate the emission factor for an electricity system".*

As per "Tool to calculate the emission factor for an electricity system, Version 7.0.0";

The baseline emission factor ($EF_{grid,y}$) is calculated as a combined margin (CM), consisting of the combination of operating margin (OM) and build margin (BM) factors.

The methodology provides following approaches for emission factor calculations:

(a) *Combined margin (CM), consisting of the combination of operating margin (OM) and build margin (BM) according to the procedures prescribed in the approved methodology "Tool to calculate the emission factor for an electricity system".*

OR

(b) *The weighted average emissions (in t CO_2/MWh) of the current generation mix. The data of the year in which project generation occurs must be used.*

Option (a) has been considered to calculate the grid emission factor as per the 'Tool to calculate the emission factor for an electricity system' since data is available from an official source i.e.

CO_2 Baseline Database for the Indian Power Sector, Version 14, December 2018[12], published by Central Electricity Authority (CEA), Government of India has been used for the calculation of emission reduction.

As per the "Tool to calculate the emission factor for an electricity system" Version 07.0, EB 100, Annex 4, the following steps have been followed.

STEP 1: Identify the relevant electricity systems;
STEP 2: Choose whether to include off-grid power plants in the project electricity system (optional);
STEP 3: Select a method to determine the operating margin (OM);
STEP 4: Calculate the operating margin emission factor according to the selected method;
STEP 5: Calculate the build margin (BM) emission factor;
STEP 6: Calculate the combined margin (CM) emission factor.

STEP 1: Identify the relevant electricity power systems

The tool defines that "*for determining the electricity emission factors, identify the relevant electricity system. Similarly, identify any connected electricity systems".* It also states that *"If the DNA of the host country has published a delineation of the project electricity system and connected electricity systems, these delineations should be used".* Keeping this into consideration, the Central Electricity Authority (CEA), Government of India has divided the Indian Power Sector into five regional grids viz. Northern, Eastern, Western, North-eastern and Southern. However, all the 5 zones have now been synchronized and called as Indian Grid.

STEP 2: Choose whether to include off-grid power plants in the project electricity system (optional)

[12] http://cea.nic.in/reports/others/thermal/tpece/cdm_co2/user_guide_ver14.pdf

Project participants have the option of choosing between the following two options to calculate the operating margin and build margin emission factor:

Option I: Only grid power plants are included in the calculation.
Option II: Both grid power plants and off-grid power plants are included in the calculation.

The Project Participant has chosen only grid power plants in the calculation.

STEP 3: Select a method to determine the operating margin (OM) method

The calculation of the operating margin emission factor ($EF_{grid,OM,y}$) is based on one of the following methods, which are described under Step 4:

(a) Simple OM, or
(b) Simple adjusted OM, or
(c) Dispatch data analysis OM, or
(d) Average OM.

The data required to calculate simple adjusted OM or Dispatch data analysis is not possible due to lack of availability of this activity data to the project developers. The choice of other two options for calculating the operating margin emission factor depends on the generation of electricity from low cost/must run sources. In the context of the methodology low cost/must run resources typically include hydro, geothermal, wind, low cost biomass, nuclear and solar generation.

Share of Must-Run (Hydro/Nuclear) (% of Net Generation)

	2013-14	2014-15	2015-16	2016-17	2017-18
India	18.6%	16.8%	15.1%	14.6%	14.3%

Data Source: Central Electricity Authority (CEA) database Version 14, Dec'2018

The above data clearly shows that the percentage of total grid generation by low cost/must run plants (on the basis of average of three most recent years) for the Indian grids is less than 50 % of the total generation. Thus, the average emission rate method cannot be applied, as low cost/must run resources constitute less than 50% of total grid generation.

The simple OM emission factor is calculated as the generation-weighted average CO_2 emissions per unit net electricity generation (t CO_2/MWh) of all generating power plants serving the system, not including low-cost/must-run power plants/units.

For the simple OM, the simple adjusted OM and the average OM, the emissions factor can be calculated using either of the two following data vintages:

- **Ex ante option:** If the ex-ante option is chosen, the emission factor is determined once at the validation stage, thus no monitoring and recalculation of the emissions factor during the crediting period is required.
  OR

- **Ex post option:** If the ex post option is chosen, the emission factor is determined for the year in which the project activity displaces grid electricity, requiring the emissions factor to be updated annually during monitoring.

PP has chosen ex ante option for the calculation of OM with 3 years generation weighted average of the most recent years available at the time of submission of CDM-PDD to the DOE for validation.

OM determined at validation stage will be the same throughout the crediting period. There will be no requirement to monitor & recalculate the emission factor during the crediting period.

STEP 4: Calculate the operating margin emission factor ($EF_{grid,OM,y}$) according to the selected method

The operating margin emission factor has been calculated using a 3 year data vintage:

Net Generation in Operating Margin (MWh) (incl. Imports)			
	2015-16	**2016-17**	**2017-18**
Indian Grid	871,753	916,278	960,693

Simple Operating Margin (tCO_2/MWh) (incl. Imports)			
	2015-16	**2016-17**	**2017-18**
Indian Grid	0.9655	0.9636	0.9543

Weighted Generation Operating Margin	
Indian Grid	**0.9610**

STEP 5: Calculate the build margin emission factor ($EF_{grid,BM,y}$)

In terms of vintage of data, project participants can choose between one of the following two options:
(a) ***Option 1*** *- for the first crediting period, calculate the build margin emission factor ex ante based on the most recent information available on units already built for sample group m at the time of CDM-PDD submission to the DOE for validation. For the second crediting period, the build margin emission factor should be updated based on the most recent information available on units already built at the time of submission of the request for renewal of the crediting period to the DOE. For the third crediting period, the build margin emission factor calculated for the second crediting period should be used. This option does not require monitoring the emission factor during the crediting period.*
(b) ***Option 2*** *- For the first crediting period, the build margin emission factor shall be updated annually, ex post, including those units built up to the year of registration of the project activity or, if information up to the year of registration is not yet available, including those units built up to the latest year for which information is available. For the second crediting period, the build margin emissions factor shall be calculated ex ante, as described in Option 1 above. For the third crediting period, the build margin emission factor calculated for the second crediting period should be used.*

Option 1 as described above is chosen to calculate the build margin emission factor for the project activity. BM is calculated ex-ante based on the most recent information available at the time of submission of PDD and is fixed for the entire crediting period.

Build Margin (tCO_2/MWh) (not adjusted for imports)	
	2017-18
Indian Grid	**0.8644**

STEP 6: Calculate the combined margin (CM) emissions factor

Combined Margin – The combined margin is the weighted average of the simple operating Margin and the build margin. In reference to para 81 (b) of the Tool to calculate the emission factor for an electricity system, Version 07.0.0, Wind and solar power generation project activities: W_{OM} = 0.75 and W_{BM} = 0.25
(owing to their intermittent and non-dispatchable nature) for the first crediting period and for subsequent crediting periods;

The baseline emission factor is calculated using the combined margin approach as described in the following steps:

Calculation of Baseline Emission Factor ($EF_{grid,y}$)

The baseline emission factor $EF_{grid,y}$ is calculated as the weighted average of the Operating Margin emission factor **($EF_{grid,OM,y}$)** and the Build Margin emission factor **($EF_{grid,BM,y}$)**:

$$EF_{grid,y} = w_{OM} * EF_{grid,OM,y} + w_{BM} * EF_{grid,BM,y}$$

Where,

w_{OM}	75% weight of operating margin emissions factor (%)
w_{BM}	25% weight of build margin emissions factor (%)
$EF_{grid,OM,y}$	Build margin CO_2 emission factor of a particular grid in year y; calculated as described in Steps 3&4 above (tCO_2/MWh)
$EF_{grid,BM,y}$	Build margin CO_2 emission factor of a particular grid in year y; calculated as described in Steps 5 above (tCO_2/MWh)

Baseline Emission factor (Indian Grid)

$EF_{Grid,CM,y}$ **= 0.75*0.9610 + 0.25*0.8644**
= 0.9368 tCO_2/MW

Therefore, Baseline Emissions:

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

BE_y**= 388,340 x 0.9368 = 363,796 tCO_2**

BE_y = 363,796 tCO_2

3.2 Project Emissions

The project activity involves harnessing of wind energy and its conversion to electricity. Hence, according to the methodology ACM0002, Version 19.0, there will be no project emissions, i.e. PEy = 0.

3.3 Leakage

As per the methodology ACM0002, Version 19.0, no leakage has been considered, therefore,

LEy = 0.

3.4 Net GHG Emission Reductions and Removals

The procedure for quantification of net GHG emission reductions and removals including all relevant equations has mentioned in the above section 3.3.

As per para 61 of ACM0002 version19; Emission Reductions are calculated as follows:

$$ER_y = BE_y - PE_y$$

Where:

ER_y = Emission reductions in year *y* (t CO_2e/yr)

BE_y = Baseline emissions in year *y* (t CO_2/yr)

PE_y = Project emissions in year *y* (t CO_2e/yr)

Therefore, Net GHG Emission Reductions and Removals are calculated as follows:

$$ER_y = BE_y - PE_y$$

ER_y **= 363,796 – 0 = 363,796 tCO_2**

Year	Estimated baseline emissions or removals (tCO_2e)	Estimated project emissions or removals (tCO_2e)	Estimated leakage emissions (tCO_2e)	Estimated net GHG emission reductions or removals (tCO_2e)
Year 1	363,796	-	-	363,796
Year 2	363,796	-	-	363,796
Year 3	363,796	-	-	363,796
Year 4	363,796	-	-	363,796
Year 5	363,796	-	-	363,796
Year 6	363,796	-	-	363,796
Year 7	363,796	-	-	363,796
Year 8	363,796	-	-	363,796

Year 9	363,796	-	-	363,796
Year 10	363,796	-	-	363,796
Total	36,37,960	-	-	36,37,960

4 MONITORING

4.1 Data and Parameters Available at Validation

Data / Parameter	$EF_{OM,y}$
Data unit	tCO_2/MWh
Description	Operating Margin CO_2 emission factor in year y
Source of data	Calculated from CEA database, Version 14[13]
Value applied:	0.9610 (Indian Grid)
Justification of choice of data or description of measurement methods and procedures applied	Calculated as per "Tool to calculate the emission factor for an electricity system, version 07.0.0" as 3-year generation weighted average using data for the years 2015-16, 2016-17 & 2017-18. The data are obtained from "CO_2 Baseline Database for Indian Power Sector" version 14.0, published by the Central Electricity Authority, Ministry of Power, Government of India.
Purpose of Data	For the calculation of the Baseline Emission
Comments	This parameter is fixed ex-ante for the entire crediting period.

Data / Parameter	$EF_{BM,y}$
Data unit	tCO_2/MWh
Description	Build Margin CO_2 emission factor in year y
Source of data	Calculated from CEA database, Version 14
Value applied:	0.8644 (Indian Grid)
Justification of choice of data or description of measurement methods and procedures applied	Calculated as per "Tool to calculate the emission factor for an electricity system, version 07.0.0" as 3-year generation weighted average using data for the years 2017-18. The data are obtained from "CO2 Baseline Database for Indian Power Sector" version 14.0, published by the Central Electricity Authority, Ministry of Power, Government of India.
Purpose of Data	For the calculation of the Baseline Emission
Comments	This parameter is fixed ex-ante for the entire crediting period.

Data / Parameter	$EF_{CM,y}$
Data unit	tCO_2/MWh
Description	Combined Margin CO_2 emission factor in year y

[13] http://www.cea.nic.in/reports/others/thermal/tpece/cdm_co2/database_14.zip

Source of data	Calculated from CEA database, Version 14
Value applied:	0.9368 (Indian Grid)
Justification of choice of data or description of measurement methods and procedures applied	The combined margin emissions factor is calculated as follows: $EF_{grid,CM,y} = EF_{grid,OM,y} * W_{OM} + EF_{grid,BM,y} * W_{BM}$ 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
Comments	This parameter is fixed ex-ante for the entire crediting period.

4.2 Data and Parameters Monitored

Data / Parameter	EG_y
Data unit	MWh
Description	Electricity supplied to GUVNL
Source of data	Certificate for share of electricity generated by the wind farm.
Description of measurement methods and procedures to be applied	Net electricity generated will be calculated at the main meter connected to the incoming feeder of GUVNL. The procedures for metering will be as per the provisions of the power purchase agreement. The Project WTGs are connected to Keshiya and Tarana wind farm site substation which are further connected to GETCO substations Dhrol and Jamdudhai. Please Refer appendix 1 & 2 for details. The Main meter and Check meter have been installed by GETCO on outgoing 66 kV circuit lines of Keshiya & Tarana site substation. . Data monitoring takes place at the individual WTGs through CMS and GETCO meter at the wind farm site substation. The electricity metered at the GETCO meter installed Keshiya and Tarana wind farm site substation is solely for the project WTGs. As no other WTGs (Non-Project WTGs) has been connected to this substation feeders as of now. 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 on monthly basis. The electricity measurements at CMS and GETCO meter are continuous and recorded on monthly basis.

Frequency of monitoring/recording	Continuous measurement and at least monthly recording
Value applied	**388,340 MWh**
Monitoring equipment	Electricity Meters of 0.2s Class
QA/QC procedures to be applied	Annual calibration of all the meters will be undertaken at required intervals (Once in 5 years) and faulty meters will be duly replaced immediately. The data will be cross checked with sales receipts/invoices.
Purpose of data	Calculation of Baseline emissions
Calculation method	N/A
Comments	The data will be archived electronically for two years after the end of the last crediting period or the last issuance of VERs for this project activity, whichever occurs later.

Data / Parameter	EG_{WTG}
Data unit	MWh
Description	Electricity generated by each WTG
Source of data	Monthly generation reports provided by Vestas
Description of measurement methods and procedures to be applied	Each 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. The generation data of individual WTG can be monitored as a real-time entity at CMS. This data for each individual WTG will be recorded daily and reported monthly.
Frequency of monitoring/recording	Continuous measurement and at least monthly recording
Value applied	This data will not be used for the calculation of emission reductions per say but would act as a backup data for the net electricity generated. Incase there may be addition of Non-project WTGs in Wind farm site.
Monitoring equipment	The meter is a software-based meter integrated with the control panel of the WEG.
QA/QC procedures to be applied	The meter is a software-based meter integrated with the control panel of the WEG. In case of any fault in the system, the control panel shall shutdown the WTG until the error is rectified. So there is no meter calibration is required either the machine will run or will be shutdown.
Purpose of data	This data will not be used for the calculation of emission reductions per say but would act as a backup data for the net electricity generated from the project activity.
Calculation method	N/A
Comments	The data will be archived electronically for two years after the end of the last crediting period or the last issuance of VERs for this project activity, whichever occurs later.

4.3 Monitoring Plan

The monitoring plan is being devised as per approved consolidated monitoring methodology ACM0002 - ***"Consolidated monitoring methodology for zero-emissions grid-connected electricity generation from renewable sources".***

The methodology requires monitoring of the following parameters:
- Electricity generation from the project activity;
Data needed to recalculate the operating margin emission factor, if needed, based on the choice of the method to determine the operating margin (OM), consistent with "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" (ACM0002);

- Data needed to recalculate the build margin emission factor, if needed, consistent with "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" (ACM0002);

For the project activity to establish its creditable emission reduction, it has to record the actual electricity generation, which would displace equivalent units of electricity at the operating and build margin of the grid. Since the simple OM emission factor is calculated based on a 3-year average, based on the most recent statistics available at the time of PDD preparation, its updation based on ex-post monitoring is not required. For BM calculation, option 1 (refer ACM 0002) has been chosen, which is calculated ex-ante based on the most recent information, hence its monitoring is also not required.

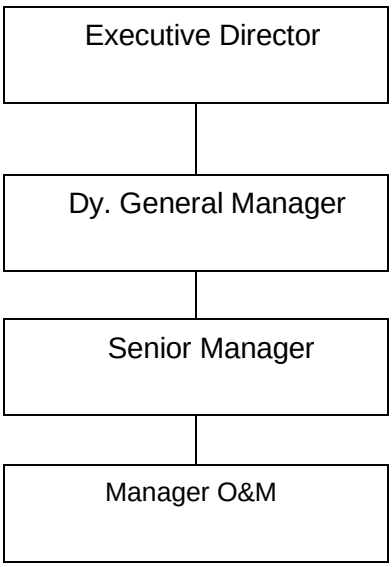
Hence, under the monitoring protocol for the project it is required to: Monitor and record the electricity generated and exported by the project WTGs to the National grid.

To ensure trouble free operations and efficient generations through all the wind turbines, PP has entered into a comprehensive Operation and Maintenance agreement with the manufactures of the turbines for a period of 25 years. The contractor Vestas, under the O&M contract with PP would be responsible for the operation and maintenance of the project activity for the entire crediting period.

The authority and responsibility of project management as well as registration, monitoring, measurement and reporting lies with PP.

PP has formulated a Project Team to ensure proper and continuous monitoring of the performance of turbines and generation of power.

The same has been outlined as follows:



Responsibilities
Executive Director: To be responsible for overall project management.

Dy. General Manager: To be responsible for generation data VCS related monitoring, internal verification and presenting the same to the Executive director. To verify if the monitored data is normal. To calculate the emission reductions regularly and write the monitoring report.

Chief Manager: To conduct the monitoring task strictly based on the monitoring manual and registered PDD. To record required monitored parameters. To report the monitoring results to the Dy. General Manager.

Manager O&M. For O&M monitoring and coordinate with the O&M contractor for smooth functioning of the wind farm. To assess regular maintenance of monitoring equipment.

The O&M personnel of are qualified engineers and are well trained.

Metering layout

a) The pooling meters at Keshiya & Tarana Wind farm site substation of GETCO main meter (M) and check meter (M') are installed at 66 KV side at the substation.
b) The meters at WTG (m) are bidirectional meters recording the electricity export and import to the grid. The net electricity exported to the grid is calculated as difference of electricity exported minus the electricity imported and reported as net electricity delivered to grid in the share certificate issued by Gujarat Discom.
c) Data monitoring takes place at the GETCO main meter at substation (M), GETCO Check meter at substation (M'), and WTGs (m1, m2, m3,…..m50).
d) As per general practice, GETCO follows the procedure in which the electricity metered at the GETCO meter (M) is proportionally divided among the customers connected to the meter on the basis of the prorata readings taken at the individual WTG meter (m). However, in this project activity meters are installed at Wind farm site substation where no other PPs WTGs and non-project WTGs of same PP is connected as of now. The energy meter solely accounts the energy generation from the project WTGs. Hence, apportioning is not required as of now.

As per standard practice, there is a transmission loss between the individual WTGs and the substation. This loss is proportionally divided among the WTGs connected to the meter on the basis of the prorate readings taken at the individual WTG meter (m). The final share certificate issued to the project proponent is based on the electricity generated minus the line losses by GETCO. However, the process of share certificate preparation is solely under control of Gujarat DISCOM and PP has no control over the government proceedings. Hence, the metering and monitoring related procedures will be governed as per the PPA.

1. The procedures for metering will be as per the provisions of the power purchase agreement. The WEGs of a single customer (PP in this case) at a particular site are connected to a to a feeder that ultimately leads to the main GETCO meter at the site substation maintained by O&M provider. Data monitoring takes place at the CMS for Individual WTGs and GETCO meter 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 prorata readings taken at the individual WTGs end. 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 on monthly basis.

2. 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.

3. Sealing and maintenance of meters:
   i. The GETCO meter shall be sealed in the presence of representatives of PP / O&M provider, GEDA and GETCO.
   ii. Any meter seal(s) shall be broken only by the GEDA /GETCO/ representative in the presence of PPs representative whenever the main metering system or the 66kV metering system is to be inspected, tested, adjusted, repaired or replaced.
   iii. The GETCO meter at the substation will be calibrated once in 5 year.

4. Records: PP will maintain 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 will be kept for two years after the end of the crediting period or the last issuance of VERs for this project activity, whichever occurs later.

5. The billing will be on monthly basis. PP shall raise invoice and submit to GUVNL for payment based on joint meter reading as certified at the end of each month for the energy supplied

6. The electronic data will be archived for 2 years or up to the end of the crediting period, whichever late.

Billing and meter failure related issues:

a) The billing will be on monthly basis. PP shall raise invoice and submit to GUVNL for payment based on joint meter reading as certified at the end of each month for the energy supplied

b) 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 ±0.2s of 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 check meter at the substation fail to register, or upon being tested, be found not to be accurate within ±0.2 / 0.5s the energy injected in the grid, shall for the period be adjusted by immediately restoring and recalibrating the GETCO meter and the corresponding check meter at the substation end 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:

- The period since the immediately preceding test of the relevant Main meter; or
- One hundred and eighty (180) days immediately preceding the test at which the relevant Main meter was determined to be defective or inaccurate.

Project activity electricity evacuation SLD is provided under Appendix-2 of the PD.

5 SAFEGUARDS

5.1 No Net Harm

There were no harm identified from the project and hence no mitigations measures are applicable.

5.2 Environmental Impact

According to Indian regulation, the implementation of the wind park does not require an environmental impact assessment. The Ministry of Environment and Forests (MoEF), Government of India notification dated September 2006 regarding the requirement of environment Impact Assessment (EIA) studies as per the Environment Protection Rule, any project developer in India needs to file an application to the Ministry of Environment and Forests (including a public hearing and an EIA) in case the proposed industry or project is listed in a predefined list[14]. Wind parks are not included in this list and thus an EIA is not required.

5.3 Local Stakeholder Consultation

The following stakeholders were identified for the project activity.

1. Local villagers and representatives of village governing body
2. Gujarat Energy Development Agency
3. Supplier of WTG
4. Local villagers and representatives of village governing body including NGOs

The varied sections of the local population, village panchayat / NGO & local elected body of representatives administering the local area are a true representative of the local population in a democracy like India. Hence, their consents / permissions to set the project are necessary.

[14] S.O. 1533, Notification dated 14th September 2006. http://envfor.nic.in/

The agency GEDA is responsible for promotion of renewable energy technologies in the state. After confirming the inherent wind potential at the sites specified by MNES and the EPC contractor, the land was leased out for execution of project.

GUVNL is responsible for providing evacuation facility for the generated electricity. GUVNL has entered into power purchase agreement with the project proponent for transmission of power and sale to grid. The state electricity utility was contacted by the EPC contractor on behalf of the project proponent, and all the necessary modalities and procedures were followed and agreement for power purchase.

PP has organized a stakeholder consultation meeting with the local villagers on 25th Sep 2019 to inform them on the environmental and social impacts of the project activity and discuss their concerns regarding the project activity. The meeting was organized at Keshiya wind farm site on the above specified date. People from nearby villages at these locations were also called. Villagers were informed through oral (dhindhora) and written announcements about the meeting. The oral (dhidhora) announcements were made on 22nd Aug 2019 to inform the villagers about the agenda of the stakeholder meeting. Written notices were also pasted on the main gate of the project site on 22nd Aug 2019 for the stakeholder meeting. The oral (Dhindhora) announcements were also made on the day of the stakeholder meeting to call the stakeholders on the venue.

All participants were informed in their local language about the salient features and environmental benefits of the project activity. The stakeholder consultation was widely announced by means of written notifications in town hall and of oral announcements, so that every interested person could attend the meeting.

No major issues were identified for the project. All the minor issues were addressed and also the concerned departments are keeping a tight vigil for assessing any changes likely that may take place.

Furthermore, PP has established following mechanism for ongoing communications with local stakeholders to allow stakeholders to raise concerns about the potential negative/positive impacts during project implementation and operation phase throughout the life of project activity:

1. Stakeholder Grievance Register – PP has established a procedure of recording stakeholder concerns and action taken to resolve the concern if any at the Keshiya & Tarana site substations. Site In charge will maintain the procedure under the supervision of Senior Manager.

   Person Responsible: Mr. Kanu Hadiya (+91-9662591383), O&M Site In charge (VRPL)

2. Stakeholder complaint box – There will be a complaint box as well at the site substation to consider the stakeholder concerns if any.

5.4 Public Comments

The project shall be listed for 30 days period. In case any comments are received they shall be incorporated during the validation.

No negative feedback/comment was received from any of the stakeholders. All of them supported the initiative and appreciated the project proponent for carrying out such an activity in the region. Hence no comments warranting action from the project proponent were received. Furthermore, Local Stakeholder proceeding and MOM has been attached in Appendix -3.

The project proponent shall take due account of all and any input received from the local stakeholder consultation through ongoing communications as well,

Appendix 1: <WTG COMMISSIONING DETAILS>

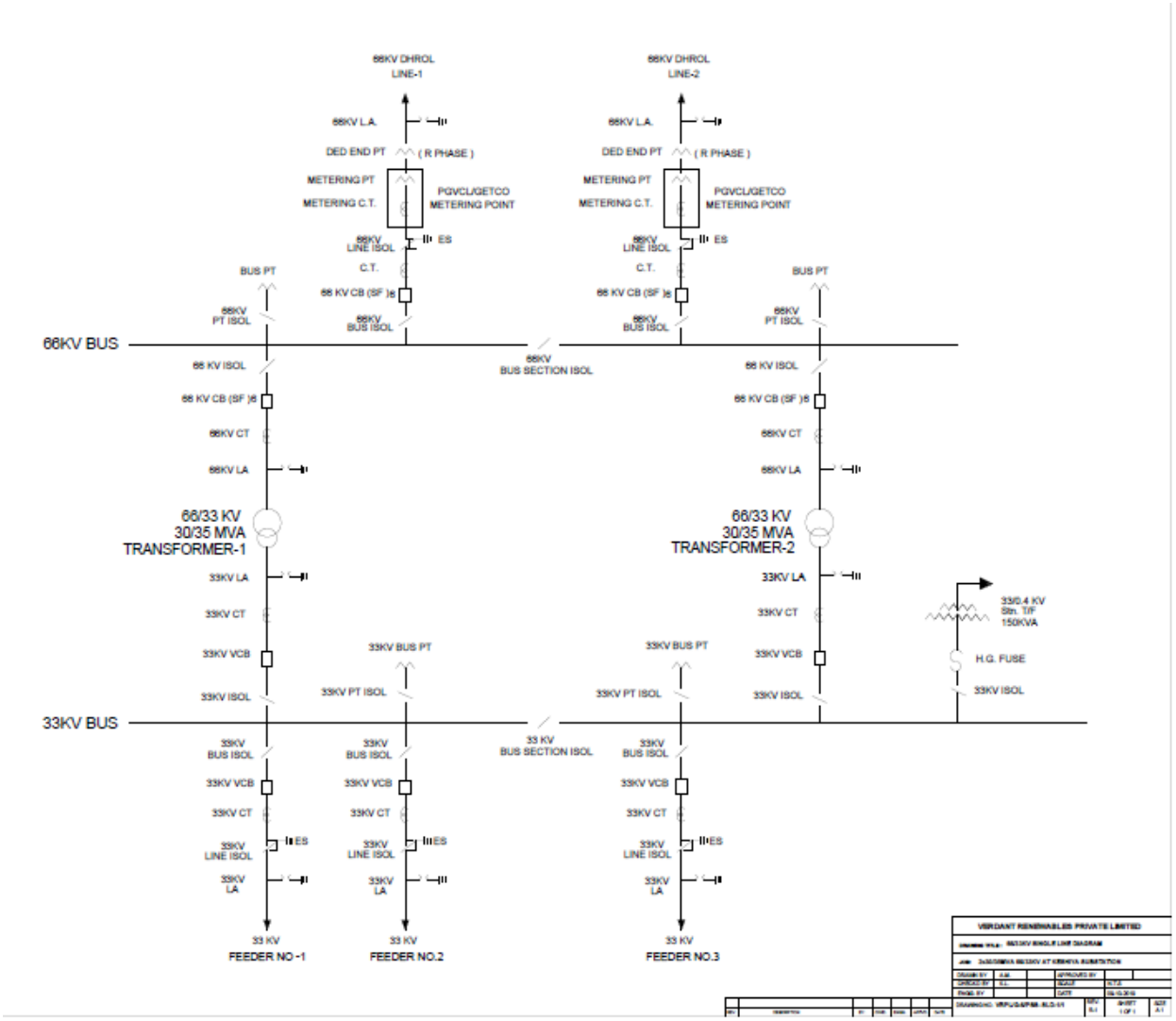
					UTM Geo Coordinates				
S.NO	WTG ID No	Village	Survey No	Capacity (MW)	Latitude 42Q X	Longitude Y	DOC	Site sub-station	GETCO Sub-Station
1	GUVNL-I/VERDANT/19-20/5573	Keshiya	1123	2.1	646520	2504706	21-Jun-19	keshiya 33/66kV	Dhrol 132/66kV
2	GUVNL-I/VERDANT/19-20/5574	Keshiya	1123	2.1	646299	2505045	21-Jun-19		
3	GUVNL-I/VERDANT/19-20/5575	Keshiya	1123	2.1	646102	2505457	21-Jun-19		
4	GUVNL-I/VERDANT/19-20/5576	Keshiya	1000	2.1	645834	2505864	21-Jun-19		
5	GUVNL-I/VERDANT/19-20/5577	Meghpar	89	2.1	652183	2508645	21-Jun-19		
6	GUVNL-I/VERDANT/19-20/5578	Balambha	2642	2.1	649153	2512052	21-Jun-19		
7	GUVNL-I/VERDANT/19-20/5579	Hajamchora	544	2.1	647288	2508198	21-Jun-19		
8	GUVNL-I/VERDANT/19-20/5580	Hajamchora	544	2.1	647197	2508913	21-Jun-19		
9	GUVNL-I/VERDANT/19-20/5581	Bhensdad	309	2.1	650331	2507345	21-Jun-19		
10	GUVNL-I/VERDANT/19-20/5582	Bhensdad	573	2.1	652528	2507446	21-Jun-19		
11	GUVNL-I/VERDANT/19-20/5583	Bhensdad	383	2.1	651155	2508133	21-Jun-19		
12	GUVNL-I/VERDANT/19-20/5585	Keshiya	1000	2.1	645548	2506158	29-Jun-19		
13	GUVNL-I/VERDANT/19-20/5587	Mota Garediya	242	2.1	645603	2503016	26-Jul-19	keshiya 33/66kV	Dhrol 132/66kV
14	GUVNL-I/VERDANT/19-20/5589	Manekpar	70	2.1	646612	2502492	26-Jul-19		
15	GUVNL-I/VERDANT/19-20/5590	Manekpar	95	2.1	650547	2501393	26-Jul-19		
16	GUVNL-I/VERDANT/19-20/5591	Mota Garediya	77	2.1	646724	2500748	26-Jul-19		
17	GUVNL-I/VERDANT/19-20/5592	Mota Garediya	114	2.1	646646	2501818	26-Jul-19		
18	GUVNL-I/VERDANT/19-20/5586	Tarana	49	2.1	651224	2513736	13-Sep-19	keshiya 33/66kV	Dhrol 132/66kV
19	GUVNL-I/VERDANT/19-20/5685	Hajamchora	547	2.1	645687	2507369	21-Sep-19		
20	GUVNL-I/VERDANT/19-	Keshiya	1720	2.1	642559	2507730	21-Sep-19		

	20/5681								
21	GUVNL-I/VERDANT/19-20/5680	Bhadra	308	2.1	640082	2508000	27-Sep-19		
22	GUVNL-I/VERDANT/19-20/5682	Bhadra	277	2.1	640604	2508625	27-Sep-19		
23	GUVNL-I/VERDANT/19-20/5683	Bhadra	257	2.1	640274	2509037	27-Sep-19		
24	GUVNL-I/VERDANT/19-20/5588	Hajamchora	289	2.1	644929	2508302	28-Sep-19		
25	GUVNL-I/VERDANT/19-20/5811	Hajamchora	165	2.1	648326	2509218	6-Nov-19	keshiya 33/66kV	Dhrol 132/66kV
26	GUVNL-I/VERDANT/19-20/5820	Hadatoda	17	2.1	646341	2504068	27-Nov-19	keshiya 33/66kV	Dhrol 132/66kV
27	GUVNL-I/VERDANT/19-20/5821	Hadatoda	119	2.1	647174	2503216	27-Nov-19		
28	GUVNL-I/VERDANT/19-20/5819	Hajamchora	113	2.1	648777	2508951	27-Nov-19		
29	GUVNL-I/VERDANT/19-20/5849	Hajamchora	226	2.1	647851	2509572	7-Dec-19	keshiya 33/66kV	Dhrol 132/66kV
30	GUVNL-I/VERDANT/19-20/5848	Bhadara	163	2.1	638472	2507688			
31	GUVNL-I/VERDANT/19-20/5609	Tarana	409	2.1	653436	2515462	5-Jul-19	Tarana 33/66 kV	Jamdudhai 66/11kV
32	GUVNL-I/VERDANT/19-20/5610	Tarana	344	2.1	652583	2515924	5-Jul-19		
33	GUVNL-I/VERDANT/19-20/5611	Tarana	347	2.1	652006	2515735	5-Jul-19		
34	GUVNL-I/VERDANT/19-20/5612	Tarana	341	2.1	652218	2516117	5-Jul-19		
35	GUVNL-I/VERDANT/19-20/5613	Tarana	338	2.1	652370	2516482	5-Jul-19		
36	GUVNL-I/VERDANT/19-20/5615	Dudhai	196	2.1	651911	2520489	5-Jul-19		
37	GUVNL-I/VERDANT/19-20/5608	Tarana	468	2.1	654281	2514950	26-Jul-19	Tarana 33/66 kV	Jamdudhai 66/11kV
38	GUVNL-I/VERDANT/19-20/5614	Dudhai	761	2.1	654933	2520220	26-Jul-19		
39	GUVNL-I/VERDANT/19-20/5684	Dudhai	253	2.1	652512	2522092	21-Sep-19	Tarana 33/66 kV	Jamdudhai 66/11kV
40	GUVNL-I/VERDANT/19-20/5809	Manamora	227/Pl	2.1	651035	2525085	25-Oct-19	Tarana 33/66 kV	Jamdudhai 66/11kV
41	GUVNL-I/VERDANT/19-20/5808	Manamora	503	2.1	649022	2523791	25-Oct-19		
42	GUVNL-I/VERDANT/19-	Kothariya	339P2	2.1	653266	2526492	18-Nov-19	Tarana 33/66	Jamdudhai 66/11kV

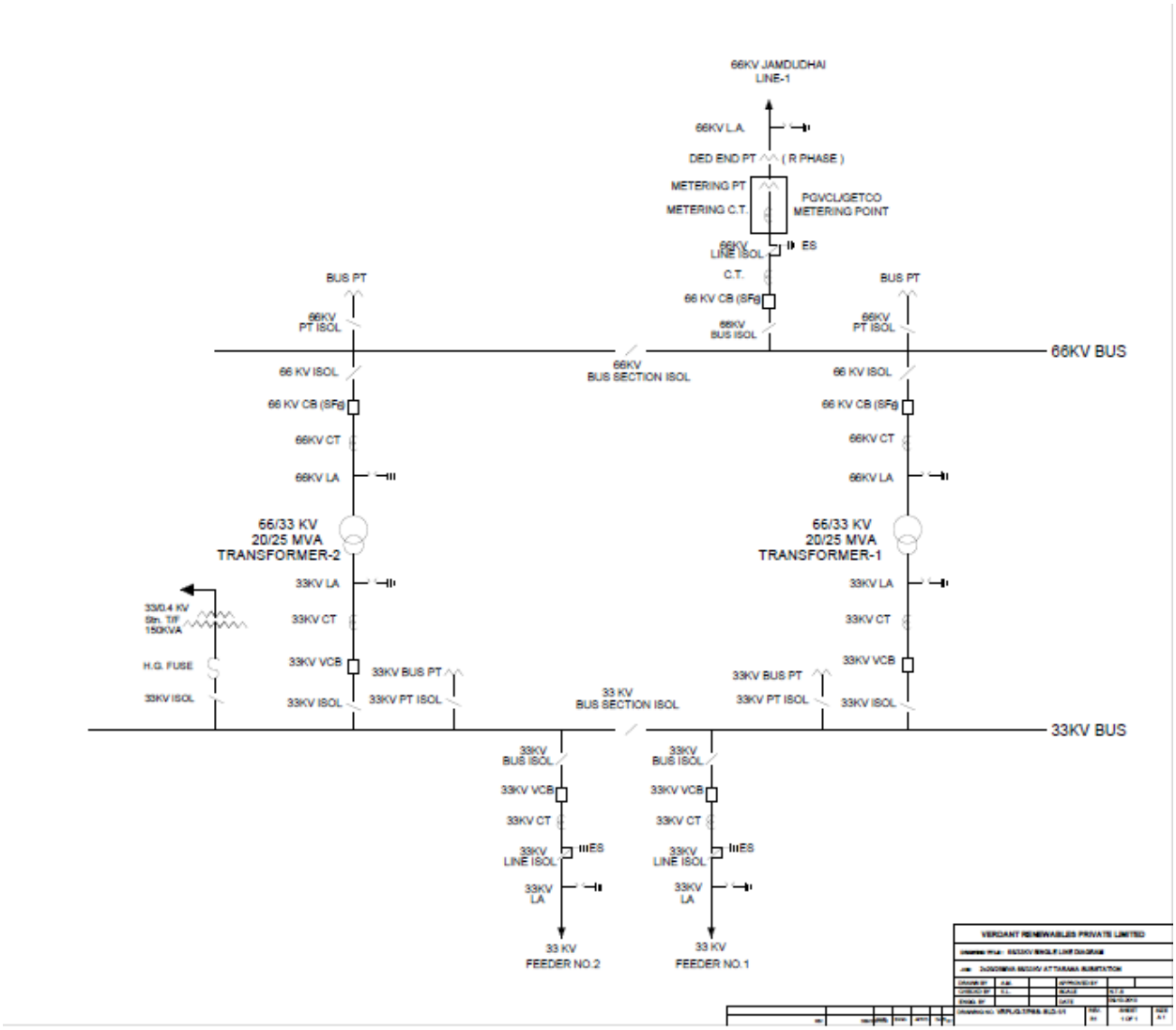
	20/5810							kV	
43	GUVNL-I/VERDANT/19-20/5818	Manamora	488P2	2.1	648610	2523419	22-Nov-19	Tarana 33/66 kV	Jamdudhai 66/11kV
44	GUVNL-I/VERDANT/19-20/5817	Kothariya	339P2	2.1	653441	2527289			
45	GUVNL-I/VERDANT/19-20/5850	Manamora	75/P2	2.1	651647	2525676	7-Dec-19	Tarana 33/66 kV	Jamdudhai 66/11kV
46	GUVNL-I/VERDANT/19-20/5851	Dudhai	253	2.1	652204	2522370			
				96.6					

APPENDIX 2: <PROJECT ELECTRICITY EVACUATION ARRANGEMENT SLD>

FOR KESHIYA WIND FARM SITE SUBSTATION: ELECTRICAL SINGLE LINE DIAGRAM



FOR TARANA WINDFARM SITE SUBSTATION: ELECTRICAL SINGLE LINE DIAGRAM



APPENDIX 3: <Project activity - Local Stakeholder consultation documents >

VERDANT RENEWABLES PRIVATE LIMITED

CIN: U40300DL2017PTC319228
Registered Office : 507 – 508, Ashoka Estate
24 Barakhamba Road, New Delhi – 110001, India
Phone: +91-11-47470100, 42403340-41, Facsimile: +91-11-23706185

Public Notice

Date: 22nd August 2019

Subject: Invitation for Local Stakeholder meeting for proposed Wind project by M/s Verdant Renewables Pvt Ltd at Keshiya wind farm site substation.

Dear Stakeholders,

We, M/s Verdant Renewables Pvt Ltd has organised a discussion round with the stakeholders for the proposed Wind power generation project activity in Jamnagar district of Gujarat. The details about the agenda, brief project description and timings of the meet are described below:

Agenda of Meeting:
The agenda of the meetings are as follows:

- General awareness about the proposed project activity.
- Describe carbon mechanism (VCS/CDM/GS), covering various social, environmental, technological and economic impacts.
- Climate change and its related impact by the proposed project.
- To resolve/ clarify queries/ comments or any grievance received from the local stakeholders.
- Feedback from Stakeholders.
- General Discussions to be followed by Snacks.

Brief non-technical description of the proposed project:
The proposed project activity involves the installation of 50 WTGs of vestas make at villages near Keshiya & Tarana site substation such as Tarana, Manakpar, Mota Garediya, Hajamchora, Bhadra, Dudhai, Manamora and Keshiya in Jamnagar district of Gujarat. The electricity generated will be supplied to the regional grid.
The Project activity utilizes the velocity of the wind for power generation, wind is a natural, clean and renewable resource which can be converted into a useful source for generation of electricity, and wind power projects are environment friendly and are free from emission of Greenhouse gasses (GHG) emission.

The details of the meeting are, as:-

Organizer :-	M/s Verdant Renewables Pvt Ltd		
Venue:-	Keshiya Wind Farm site	**Date:-**	25-Sep-2019
Village:-	Keshiya	**Start Time: -**	11:00 am
District:-	Jamnagar	**End Time: -**	1:00 pm
State:-	Gujarat		

We invite you to attend the stakeholder meeting and offer your views and queries, in case you are not able to attend the meet, you may submit your views/queries as per details mentioned below:

You may contact our representative Mr Vipul Jambucha, Contact no: +91-63355990410
email id: Vipul.j@sitacre.com

Yours Faithfully,

VERDANT RENEWABLES PVT. LTD.

Minutes of Meeting of Local Stakeholder Consultation carried out for Wind Power Project in Jamnagar district, India by M/s Verdant Renewables Pvt Ltd at Keshiya held on 25/09/2019.

I. Meeting Details

Venue	:	Project activity site, Keshiya wind farm Site substation
Meeting Start Time	:	11:00 Hrs.
Meeting End Time	:	13:00 Hrs.

II. Agenda Of Meeting

The Agenda of the meeting is given below:

- General awareness about the proposed project activity.
- Describe Clean Development Mechanism (CDM), covering various social, environmental, technological and economic impacts.
- Climate change and its related impact by the proposed project.
- To resolve/ clarify queries/ comments or any grievance received from the local stakeholders.
- Feedback from Stakeholders.
- Closure of Meeting to be followed by Tea & Snacks.

The stakeholders gathered at the venue, as per the scheduled time. The welcome speech was given by Mr. Vipul Jambucha of M/s Verdant Renewables Pvt Ltd thanking all the participants on for attending the local stakeholder's meeting and informed them the objective of the local stakeholders meeting in local language (Gujarati) as well as in Hindi & English. He explained that the purpose of meeting is to appraise the stakeholders about the features and benefits of the proposed project activity and obtain their valuable suggestions & comments.

They were informed that a 50 WTGs of Vestas under this wind power project WTGs will be installed across different villages of Jamnagar districts, Gujarat state and how it leads to reduction of the GHG gases emission. Details regarding the proposed project cycle & also the role of local stakeholders in the project have been outlined. Further, it was informed that the proposed project activity shall obtain necessary licenses and clearances to start the construction of the project activity. They were told that the team of EPC Contractor is highly experienced in development and operating similar project activity. Hence, the O&M team is technically strong and ensures excellence in operations of the current project.

Explanation about the main purpose of the project activity i.e. "To generate electrical energy through renewable sources and supply of electricity to grid." was narrated. Furthermore, it was elaborated that the said project also conceives the following:

- Indian economy is highly dominated by generation of electricity using fossil fuel, & coal is majorly used in thermal power plants to generate energy & for production processes, yet the basic necessity of large section is not being met. Use of renewable form of energy generation will change consumption pattern & will mitigating the immense stress on the environment.
- Spread of the commercialization of the wind projects in the region.
- Contribution to various Sustainable development aspects like social, environmental, economic etc.
- Social and economic benefits to be accrued by the project, i.e. employment opportunities as well as overall development of the local area.
- For the development of local communities, various CSR activities will be carried out, some activities identified are follows: Education for economically backward children, promotion to cultural activities, Infrastructure development, Health camps for local villagers, skill development, women empowerment etc which would be carried out time to time.
- Such projects would lead to more and more technology improvements over time.

Local populace present were then asked for asking any question/ doubts or put any comments related to the Project activity.

Vipul

VERDANT RENEWABLES PVT. LTD.

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