

BUNDLED WIND POWER PROJECT IN GUJARAT AND TAMIL NADU



Document Prepared by EKI Energy Services Limited

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Table of Contents

1	Project Details	3
1.1	Summary Description of the Project and its Implementation Status	3
1.2	Sectoral Scope and Project Type.....	4
1.3	Project Proponent	4
1.4	Other Entities Involved in the Project	5
1.5	Project Start Date	5
1.6	Project Crediting Period	5
1.7	Project Scale and Estimated GHG Emission Reductions or Removals	5
1.8	Description of the Project Activity.....	6
1.9	Project Location	7
1.10	Conditions Prior to Project Initiation	9
1.11	Compliance with Laws, Statutes and Other Regulatory Frameworks.....	9
1.12	Ownership and Other Programs	9
1.12.1	Project Ownership	9
1.12.2	Emissions Trading Programs and Other Binding Limits	10
1.12.3	Other Forms of Environmental Credit	10
1.12.4	Participation under Other GHG Programs	10
1.12.5	Projects Rejected by Other GHG Programs	10
1.13	Additional Information Relevant to the Project.....	10
2	Application of Methodology	11
2.1	Title and Reference of Methodology	11
2.2	Applicability of Methodology.....	12
2.3	Project Boundary.....	14
2.4	Baseline Scenario	15
2.5	Additionality	16
2.6	Methodology Deviations	19
3	Estimated GHG Emission Reductions and Removals	19
3.1	Baseline Emissions	19
3.2	Project Emissions.....	24
3.3	Leakage.....	24
3.4	Estimated Net GHG Emission Reductions and Removals	24
4	Monitoring.....	25
4.1	Data and Parameters Available at Validation	25
4.2	Data and Parameters Monitored	26
4.3	Monitoring Plan	28
5	Safeguards	30
5.1	No Net Harm	30
5.2	Environmental Impact	30
5.3	Local Stakeholder Consultation	30
5.4	Public Comments	31
6	Achieved GHG Emission Reductions and Removals.....	31
6.1	Data and Parameters Monitored	31
6.2	Baseline Emissions	31
6.3	Project Emissions.....	31
6.4	Leakage.....	31
6.5	Net GHG Emission Reductions and Removals.....	31
	APPENDIX X: <title of appendix>	32

1 PROJECT DETAILS

1.1 Summary Description of the Project and its Implementation Status

The main purpose of this bundled project activity is to generate clean form of electricity through renewable wind energy sources. The project activity involves installation of combined capacity of 8.7 MW wind power projects in the states of Gujarat and Tamil Nadu India.

Over the 10 years of first crediting period, the project will replace anthropogenic emissions of greenhouse gases (GHG's) estimated to be approximately 13,563 tCO_{2e} per year, thereon displacing 14,479 MWh/year amount of electricity from the generation-mix of power plants connected to the Indian grid, which is mainly dominated by thermal/fossil fuel based power plant.

The details of the project, their investors and their location of installation are mentioned in the table below:-

Name of Investor	Capacity in MW	COD	Connection with Grid	State	Usage
M/s Venus Textile Service	1.50 MW	30/03/2017	Indian Grid	Tamil Nadu	Sale to State Discom
	1.50 MW	30/03/2017			
	1.50 MW	31/03/2017			
M/s JB Ecotex LLP	2.10 MW	17/10/2017		Gujarat	
M/s J. Korin Spinning Private Limited	2.10 MW	02/08/2017			

Sectoral Scope : 01 - Energy industries (renewable / non-renewable sources)
Project Type : I - Renewable Energy Projects
Project Category : Grid-connected electricity generation from renewable sources AMS-I.D Version 18.0

Tools referred with above methodology are:

Tool to calculate the emission factor for an electricity system¹ - Version 07.0 (EB 100)

Scenario existing prior to the implementation of project activity:

The scenario existing prior to the implementation of the project activity, is electricity delivered to the grid by the project activity that 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 the "Tool to calculate the emission factor for an electricity system".

Baseline Scenario:

¹ <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v7.0.pdf>

As per the applicable methodology, a Greenfield power plant is defined as “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”.

As the project activity falls under the definition of a Greenfield power plant, the baseline scenario as per paragraph 22 of Section 5.2.1 of applied methodology is the following:

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 plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the “Tool to calculate the emission factor for an electricity system”.

Hence, pre-project scenario and baseline scenario are the same.

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
Project Category : Grid-connected electricity generation from renewable sources AMS-I.D (Version 18.0)

The project is not a grouped project activity.

1.3 Project Proponent

Organization name	M/s Venus Textile Service
Contact person	Mr. Mathew Venus
Title	Proprietor
Address	48/B4, Maniam Kaliappan Street, K. K. Pudur, Coimbatore – 641038, Tamil Nadu, India
Telephone	+91-9873654312
Email	mjvts@gmail.com

Organization name	M/s JB Ecotex LLP
Contact person	Mr. Vishal Kejriwal
Title	Director
Address	Block No. 195, National Highway-8, Near Rose Garden Hotel, Dhamdod, Taluka: Mangrol, District Surat – 394125, Gujarat, India.
Telephone	+91-987365322
Email	vishal@gmail.com

Organization name	M/s J. Korin Spinning Private Limited
Contact person	Mr. Vishal Kejriwal
Title	Director
Address	502, 5 th Floor, Union Trade Center, Udhana Dawaraja, Ring Road, Surat – 395002, Gujarat, India
Telephone	+91-987365322
Email	vishal@gmail.com

1.4 Other Entities Involved in the Project

Organization name	EKI Energy Services Limited
Role in the project	Project Consultant
Contact person	Manish Dabkara
Title	CEO & MD
Address	EnKing Embassy, Office No 201, Plot 48, Scheme 78, Part 2, Vijay Nagar, Indore- 452010, Madhya Pradesh, India.
Telephone	+91-731-4289086
Email	manish@enkingint.org

1.5 Project Start Date

Start date of the bundled project activity is the earliest date of interconnection with the grid i.e 30-03-2017. This is the date of commissioning of 1.50 MW Wind Project activity by M/s Venus Textile Service in Tamil Nadu.

The details of the commissioning dates of the individual project activity are mentioned in the section 1.1 of this report.

1.6 Project Crediting Period

Crediting Period Start date: 30-March-2017

Crediting Period End date: 29-March-2027

The project activity adopts renewable crediting period of 10 years period which can be renewed for maximum 2 times.

1.7 Project Scale and Estimated GHG Emission Reductions or Removals

The bundled project involves setting up of a Wind power project of combined capacity of 8.70 MW in the states of Gujarat and Tamil Nadu.

Project Scale	
Project	✓
Large project	

As the estimated annual average GHG emission reductions or removal per year is 13,563 tCO_{2e} which is less than 300,000 tonnes of CO_{2e} per year, thus the project falls in the category of Project.

Year	Estimated GHG emission reductions or removals (tCO _{2e})
Year 1	13,563
Year 2	13,563
Year 3	13,563
Year 4	13,563
Year 5	13,563
Year 6	13,563
Year 7	13,563
Year 8	13,563
Year 9	13,563
Year 10	13,563
Total estimated ERs	135,630
Total number of crediting years	10
Average annual ERs	13,563

1.8 Description of the Project Activity

The bundled project activity involves the installation of Wind project. The total installed capacity of the project is 8.7 MW Wind project located in the states Gujarat and Tamil Nadu in India. The details of the investors is mentioned in Section 1.1.

The Project activity is a new facility (Greenfield) and the electricity generated by the project will be exported to the Indian electricity grid. The project will therefore displace an equivalent amount of electricity which would have otherwise been generated by fossil fuel dominant electricity grid. The Project Proponent plans to avail the VCS benefits for the project.

In the Pre- project scenario the entire electricity, delivered to the grid by the project activity, would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources.

The project shall result in replacing anthropogenic emissions of greenhouse gases (GHG's) estimated to be approximately 13,563 tCO_{2e} per year, thereon displacing 14,479 MWh/year amount of electricity from the grid over the 10 years crediting period.

The basic technical details of the WTGs are as follows: -

Name of Investor	Capacity in MW	Details
M/s Venus Textile Service	3 X1.50 MW	WEC type Vensys make V87-1500 KW
M/s JB Ecotex LLP	1 X2.10 MW	Suzlon make, 2100 kW
M/s J. Korin Spinning Private Limited	1 X2.10 MW	Suzlon make, 2100 kW

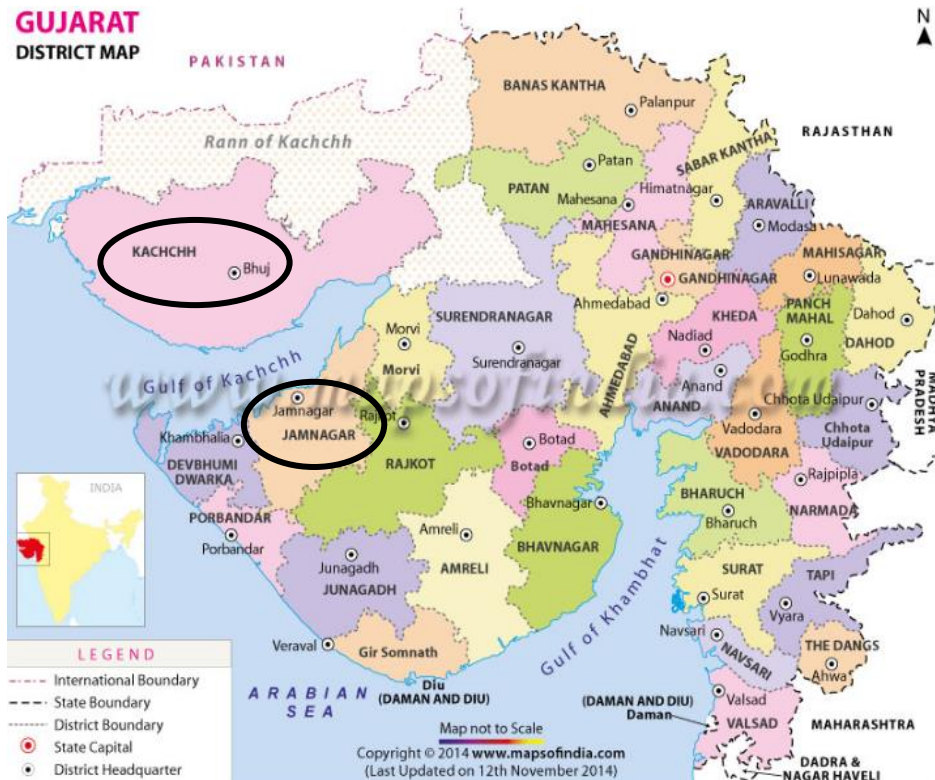
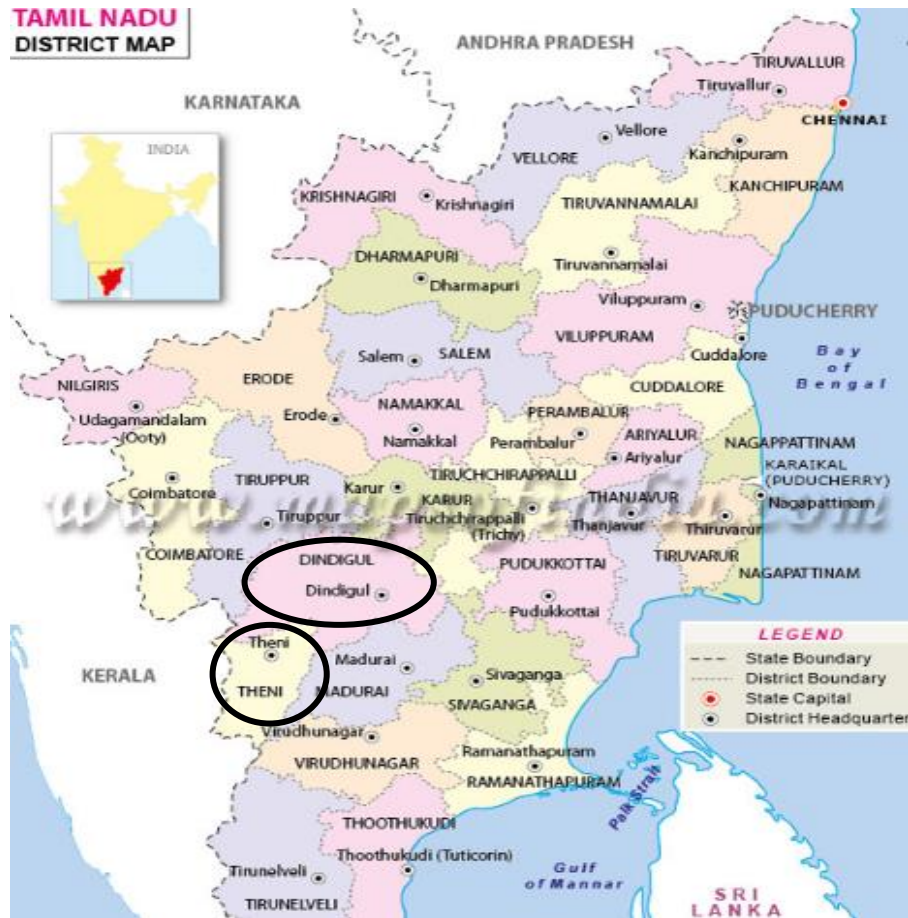
The detailed technical specification for the respective WTGs shall be provided at the time of Verification.

1.9 Project Location

The details of the project locations are mentioned in the table below: -

Name of Investor	Capacity (MW)	Village(s)	Tehsil / Mandal	District	State	Latitude (N) (tentative)	Longitude (E) (tentative)
M/s Venus Textile Service	1X1.5 MW	Seepala-kottai;	Uthama-palayam	Theni	Tamil Nadu	9.8495° N	77.4523° E
	1X1.5 MW						
	1X1.5 MW	Odaipatti	Oddan-chatram	Dindigul		9.8294° N	77.4458° E
M/s JB Ecotex LLP	1X2.10 MW	Hadiyana	Jodiya	Jam-nagar	Gujarat	22.6025° N	70.2602° E
M/s J. Korin Spinning Private Limited	1X2.10 MW	Karmata	Abdasa	Kutch		23.3820° N	68.6738° E

The project locations have been shown in the map below: -



1.10 Conditions Prior to Project Initiation

The project is a Greenfield wind power project and does not involve generation of GHG emissions for the purpose of their subsequent reduction, removal or destruction. Thus prior to project initiation, there was nothing at site.

In absence of project activity, the continuation of current practise i.e generation of equivalent amount electricity would have been generated from grid connected fossil fuel dominated power plants. Thus for project activity 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.

1.11 Compliance with Laws, Statutes and Other Regulatory Frameworks

The Project has received all the necessary approvals for development and commissioning for the proposed bundled project of combined capacity of 8.7 MW wind project from the respective State Nodal Agencies of Gujarat and Tamil Nadu and is in compliance to the local laws and regulations.

As per Central Pollution Control Board (Ministry of Environment & Forests, Govt. of India), final document on revised classification of Industrial Sectors under Red, Orange, Green and White Categories (February 29, 2016).

The newly introduced White category of industries pertains to those industrial sectors which are practically non-polluting such as Biscuit trays etc. from rolled PVC sheet (using automatic vacuum forming machines), Cotton and woollen hosiers making (Dry process only without any dyeing/washing operation), Electric lamp (bulb) and CFL manufacturing by assembling only, Scientific and mathematical instrument manufacturing, Solar power generation through photovoltaic cell, wind power and mini hydel power (less than 25 MW).

There shall be no necessity of obtaining the Consent to Operate” for White category of industries. An intimation to concerned SPCB / PCC shall suffice.

Since project activity falls under white category and the non-polluting nature of project fulfils the compliance to the local laws and regulations. The state nodal agency approval is submitted to DOE.

1.12 Ownership and Other Programs

1.12.1 Project Ownership

As per VCS Program Definitions version 3.7, the project ownership is the legal right to control and operate the project activities.

M/s Venus Textile Service, M/s JB Ecotex LLP and M/s J. Korin Spinning Private Limited are the project proponents (PP) of the bundled project activity and they have the legal right to control and operate the project activities.

The project ownership has been demonstrated through below supporting documents:

1. **Commissioning certificates** – The letter from respective State Nodal Agency to the M/s Venus Textile Service, M/s JB Ecotex LLP and M/s J. Korin Spinning Private Limited for

registration of commissioning of generation facility indicates that PP have the legal right to control and operate the project activities.

2. **Contract with EPC contractor** – The purchase order on the name of M/s Venus Textile Service, M/s JB Ecotex LLP and M/s J. Korin Spinning Private Limited indicates that PP have the legal right to control and operate the project activities.

Based on above evidences, the project ownership is demonstrated and **M/s Venus Textile Service, M/s JB Ecotex LLP and M/s J. Korin Spinning Private Limited** are authorised for the project activity.

1.12.2 Emissions Trading Programs and Other Binding Limits

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.

1.12.3 Other Forms of Environmental Credit

The Project has no intend to generate any other form of GHG-related environmental credit for GHG emission reductions or removals claimed under the VCS Program.

However it can be crosschecked that PP is not claiming REC benefits, the same can be verified with the REC accreditation body of India².

1.12.4 Participation under Other GHG Programs

The project has neither been registered nor seeking registration under any other GHG programs. The project is seeking registration only in VCS program.

1.12.5 Projects Rejected by Other GHG Programs

The Project is not rejected by other GHG programs.

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

Not applicable to the project activity.

Commercially Sensitive Information

² https://recregistryindia.nic.in/index.php/publics/registered_regens

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

Sustainable Development

Contribution to sustainable development:

Ministry of Environment and Forests, has stipulated economic, social, environment and technological well-being as the four indicators of sustainable development. The project contributes to sustainable development using the following ways.

Social well-being: The project would help in generating employment opportunities during the construction and operation phases. The project activity will lead to development in infrastructure in the region like development of roads and also may promote business with improved power generation.

Economic well-being: The project is a clean technology investment in the region, which would not have been taken place in the absence of the VCS benefits the project activity will also help to reduce the demand supply gap in the state.

The project activity will generate power using zero emissions wind energy based power generation which helps to reduce GHG emissions and specific pollutants like SO_x, NO_x, and SPM associated with the conventional thermal power generation facilities.

Technological well-being: The successful operation of project activity would lead to promotion of wind power generation and would encourage other entrepreneurs to participate in similar projects

Environmental well-being: Wind being a renewable source of energy, it reduces the dependence on fossil fuels and conserves natural resources which are on the verge of depletion. Due to its zero emission the Project activity also helps in avoiding significant amount of GHG emissions.

Further Information

Not Applicable

2 APPLICATION OF METHODOLOGY

2.1 Title and Reference of Methodology

Title	: Grid-connected electricity generation from renewable sources
Reference	: The project activity meets the eligibility criteria of small scale project as it is less than 15 MW
Methodology	: Grid-connected electricity generation from renewable sources AMS-I.D (Version 18.0) ³
Type I	: Energy industries (renewable / non-renewable sources)

³ <https://cdm.unfccc.int/methodologies/DB/W3TINZ7KKWCK7L8WTFQQOFQQH4SBK>

Category : Approved Consolidated Methodology (AMS-I.D.: Grid connected renewable electricity generation --- Version 18.0)

Tools referred with above methodology and applicable for project activity are:

- Tool to calculate the emission factor for an electricity system⁴ - Version 07.0 (EB 100, Annex 04)

2.2 Applicability of Methodology

The project activity involves generation of grid connected electricity from renewable wind energy. The project activity has an installed capacity of 8 MW which will remain within the maximum. qualifying capacity of 15 MW for a small scale CDM project activity under Type-I of the small scale methodologies. The installed capacity will not increase throughout and even after the crediting period therefore the project activity will remain within the limit of small scale in each year of the crediting period. The project status is corresponding to the methodology AMS-I.D and applicability of methodology AMS-I.D are discussed below:

Applicability Criterion					Project Case
1. This methodology comprises renewable energy generation units, such as photovoltaic, hydro, tidal/wave, wind, geothermal and renewable biomass: (a) Supplying electricity to a national or a regional grid. (b) Supplying electricity to an identified consumer facility via national/regional grid through a contractual arrangement such as wheeling.					The project activity is a Renewable Energy Project i.e. Wind Power Project which falls under applicability criteria option 1(a) i.e., "Supplying electricity to a national or a regional grid". Hence the project activity meets the given applicability criterion.
2. Illustration of respective situations under which each of the methodology (i.e. AMS-I.D, AMS-I.F and AMS-I.A) applies is included below:					The 1 st option of Table of AMS I.D. Version 18, EB 100 is applicable.
	Project type	AMS-I.A	AMS-I.D	AMS-I.F	
1	Project supplies electricity to a national/regional grid		√		
2	Project displaces grid electricity consumption (e.g. grid import) and/or captive fossil fuel electricity generation at the user end (excess electricity may be supplied to a grid)			√	
3	Project supplies electricity to an identified consumer facility via national/regional grid (through a contractual arrangement such as		√		

⁴ <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v7.0.pdf>

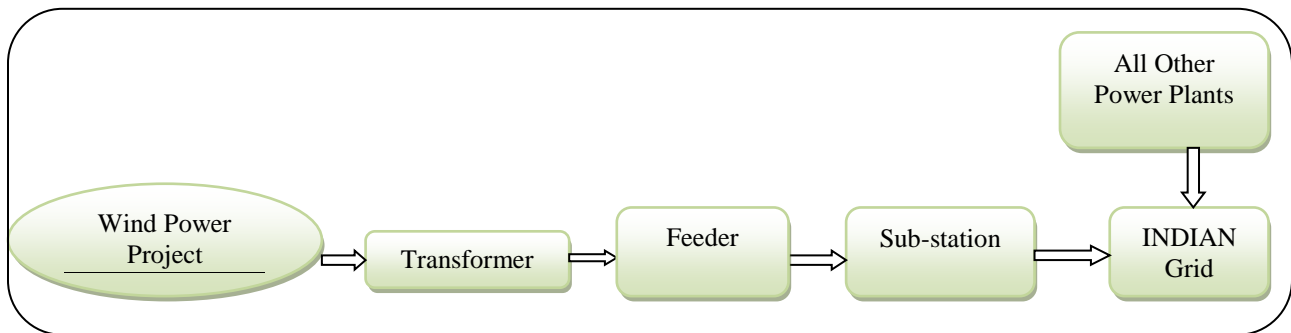
Applicability Criterion					Project Case
	wheeling)				
4	Project supplies electricity to a mini grid system where in the baseline all generators use exclusively fuel oil and/or diesel fuel			√	
5	Project supplies electricity to household users (included in the project boundary) located in off grid areas	√			
3. This methodology is applicable to project activities that (a) install a Greenfield plant; (b) involve a capacity addition; (c) involve a retrofit of (an) existing plant(s); (d) Involve a rehabilitation of (an) existing plant(s)/unit(s); or (e) involve a replacement of (an) existing plant(s).					The project is installation of new wind based electricity generation plants (not addition to existing system). Option (a) is applicable.
4. Hydro power plants with reservoirs that satisfy at least one of the following conditions are eligible to apply this methodology: <ul style="list-style-type: none"> • The project activity is implemented in an existing reservoir with no change in the volume of reservoir; • The project activity is implemented in an existing reservoir, where the volume of reservoir is increased and the power density of the project activity, as per definitions given in the Project Emissions section, is greater than 4 W/m²; • The project activity results in new reservoirs and the power density of the power plant, as per definitions given in the Project Emissions section, is greater than 4 W/m². 					The project is wind power project and thus the criterion is not applicable to this project activity.
5. If the new unit has both renewable and non-renewable components (e.g., a wind/diesel unit), the eligibility limit of 15 MW for a small-scale CDM project activity applies only to the renewable component. If the new unit co-fires fossil fuel, the capacity of the entire unit shall not exceed the limit of 15 MW.					The project activity is 8.7 MW wind electricity generation. Unit does not co-fire fossil fuels. Hence the criterion is not applicable to the project activity.
6. Combined heat and power (co-generation) systems are not eligible under this category.					The Project activity is a renewable wind energy project and is not a combined heat and power system. Hence the criteria is not applicable to the project activity
7. In the case of project activities that involve the addition of renewable energy generation units at an existing renewable power generation facility, the added capacity of the units added by the project should be lower than 15 MW and should be physically distinct from the existing units.					The project activity is Greenfield and there is no existing power generation facility at the site. Hence the criteria is not applicable to the project activity

Applicability Criterion	Project Case
8. In the case of retrofit or replacement, to qualify as a small-scale project, the total output of the retrofitted or replacement unit shall not exceed the limit of 15 MW.	Not applicable, the wind project is a Green field project activity and this project is not the enhancement or up gradation project.
9. In the case of landfill gas, waste gas, wastewater treatment and agro-industries projects, recovered methane emissions are eligible under a relevant Type III category. If the recovered methane is used for electricity generation for supply to a grid then the baseline for the electricity component shall be in accordance with procedure prescribed under this methodology. If the recovered methane is used for heat generation or cogeneration other applicable Type-I methodologies such as “AMS-I.C.: Thermal energy production with or without electricity” shall be explored.	The Project activity is a renewable wind power project and is not a landfill gas, waste gas, waste water treatment and agro-industries projects or recovered methane emissions project. Hence the criteria is not applicable to the project activity
10. In case biomass is sourced from dedicated plantations, the applicability criteria in the tool “Project emissions from cultivation of biomass” shall apply.	The Project activity is a renewable wind power project and is not a biomass project. Hence the criteria is not applicable to the project activity.

2.3 Project Boundary

As per AMS-I.D Version 18, EB 100 - “The spatial extent of the project boundary includes the project power plant and all power plants connected physically to the electricity system that the CDM project power plant is connected to”.

The project boundary includes the wind turbine generator, sub-station, grid and all power plants connected to grid. The proposed project activity will evacuate power to the INDIAN grid. Therefore the entire INDIAN grid and all connected power plants have been considered in the project boundary for the proposed CDM project activity.



Source		GHG	Included?	Justification/Explanation
Baseline	Grid-connected electricity generation	CO ₂	Yes	Major emission sources.
		CH ₄	No	Excluded for simplification. This is conservative
		N ₂ O	No	Excluded for simplification. This is conservative
Project activity	Greenfield wind energy generation system	CO ₂	No	The project activity does not emit any emissions.
		CH ₄	No	No methane generation is expected to be emitted.
		N ₂ O	No	No nitrous oxide generation is expected to be emitted.

2.4 Baseline Scenario

As the project activity is the installation of a Greenfield power plant, the baseline scenario is the following as per applied methodology:

The baseline scenario is that the 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 into the grid.

The project activity involved setting up of a wind plant to harness the power of wind to produce electricity and supply to the grid. In the absence of the project activity, the equivalent amount of power would have been supplied by the state grid (part of Indian grid), which is fed mainly by fossil fuel fired plants.

In the absence of the project activity, the equivalent amount of power would have been drawn from the state grid. Hence, the baseline for the project activity is the equivalent amount of power from the INDIAN grid.

The combined margin ($EF_{grid,y}$) is the result of a weighted average of two emission factor pertaining to the electricity system: the operating margin (OM) and build margin (BM). Calculations for this combined margin is based upon CEA Database for Indian Power System, Version 14.0, dated December 2018. This data base is the latest available data at the time of PDD submission to DOE for validation purpose.

The combined margin of the INDIAN grid used for the project activity is as follows:

Parameter	Value	Nomenclature	Source
$EF_{grid,y}$	0.9368 tCO ₂ /MWh	Combined margin CO ₂ emission factor for the project electricity system in year y	Calculated as the weighted average of the operating margin (0.75) & build margin (0.25) values, sourced from Baseline CO ₂ Emission Database, Version 14.0 Dated December 2018 published by Central Electricity Authority (CEA), Government of India

Parameter	Value	Nomenclature	Source
EF _{grid,OM,y}	0.9610 tCO ₂ /MWh	Operating margin CO ₂ emission factor for the project electricity system in year y	Calculated as the last 3 year (2014-15, 2015-16 and 2017-18) generation-weighted average, sourced from Baseline CO ₂ Emission Database, Version 14.0, Dated December 2018 published by Central Electricity Authority (CEA), Government of India.
EF _{grid,BM,y}	0.8644 tCO ₂ /MWh	Build margin CO ₂ emission factor for the project electricity system in year y	Calculated from latest year (2017-18) sourced from Baseline CO ₂ Emission Database, Version 14.0, Dated December 2018 published by Central Electricity Authority (CEA), Government of India.

2.5 Additionality

As per Methodological Tool for the demonstration of Additionality of Small-scale Project Activities (Ver. 7, EB 70 Annex 08⁵), to establish the project additionality, it has to be shown that the project activity would not have occurred anyway due to at least one of the following barriers:

- **Investment barrier:** a financially more viable alternative to the project activity would have led to higher emissions;
- **Technological barrier:** a less technologically advanced alternative to the project activity involves lower risks due to the performance uncertainty or low market share of the new technology adopted for the project activity and so would have led to higher emissions;
- **Barrier due to prevailing practice:** prevailing practice or existing regulatory or policy requirements would have led to implementation of a technology with higher emissions;
- **Other barriers:** without the project activity, for another specific reason identified by the project participant, such as institutional barriers or limited information, managerial resources, organizational capacity, financial resources, or capacity to absorb new technologies, emissions would have been higher.

The project investor has selected Investment barrier to demonstrate in a conservative and transparent manner that the proposed CDM project activity is financially unattractive. In line with the guidelines stipulated under Annex 34 of EB 35⁶ ("Non-binding best practice examples to demonstrate additionality for SSC project activities"), a benchmark analysis is used in the project case under investment barrier.

Specify the methodology, tool, standardized baseline or specific renewable technologies/measures conferring automatic additional microscale CDM project activities proposed by DNAs and approved by the Board, that establish automatic additionality for the proposed project activity (including the version number and the specific paragraph, if applicable).	Not applicable, as the project is not an auto additional project.
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⁵ <http://cdm.unfccc.int/methodologies/PAMethodologies/tools/am-tool-01-v7.0.0.pdf>

⁶ https://cdm.unfccc.int/Reference/Guidclarif/ssc/methSSC_guid15_v01.pdf

Describe how the proposed project activity meets the criteria for automatic additionality in the relevant methodology, tool, standardized baselines or specific renewable technologies/measures conferring automatic additional microscale CDM project activities proposed by a DNA and approved by the Board.	Not applicable.
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Selection of Financial Indicator

According to the “Tool for demonstration and assessment of Additionality (EB 70, Annex 8)”, the financial indicator can be based either on (1) project IRR or (2) equity IRR. There is no general preference between the approaches (1) or (2). The benchmark chosen for analysis shall be fully consistent with the choice of approach. Therefore in accordance with the guidance, the relevant financial indicator for project activity has been chosen as post tax equity IRR.

Determine appropriate analysis method.

As per Sub-step 2a, Paragraph (1), as the project activity is selling the generated electricity or using it for captive purposes & getting financial benefits other than CDM benefits hence, Option- I (Apply simple cost analysis) is not applicable under this situation. Also as per EB-92, Annex 5, clause no.19 “If the alternative to the project activity is the supply of electricity from a grid this is not to be considered an investment and a benchmark approach is considered appropriate”. Hence Option-II (Apply investment comparison analysis) is also not applicable under this situation. So the project investor has chosen Option- III or benchmark analysis as an appropriate analysis method to demonstrate the investment barrier.

Appropriateness of using benchmark analysis for additionality demonstration and its conformity to guidance 16 of Annex 5, EB 92 -

Considering the fact that the alternative to the project is the supply of electricity from the grid & the choice of the developer is to invest or not to invest, benchmark analysis has been considered appropriate to circumstances where the baseline does not require investment or is outside the direct control of the project developer, i.e. cases where the choice of the developer is to invest or not to invest. Benchmark analysis has been considered appropriate for demonstration of additionality, which is in conformity with guidance 16 of Annex 5 EB 92.

Benchmark Calculation

As per the guidelines of Methodological Tool- Investment Analysis, para 16, “The applied benchmark shall be appropriate to the type of IRR calculated. Local commercial lending rates or weighted average costs of capital (WACC) are appropriate benchmarks for a project IRR. Required/expected returns on equity are appropriate benchmarks for an equity IRR. Benchmarks supplied by relevant national authorities are also appropriate”. Since in this project activity, equity IRR has been considered as financial indicator, hence as per guidance 16, Required/expected returns on equity are considered as appropriate benchmarks and benchmark supplied by relevant national authorities has been used.

Since the choice of benchmark is based upon parameters that are standard in the market, hence as per Guidance 20 of EB 92 Annex 5, “the cost of equity should be determined either by: (a) selecting the values provided in the Appendix; or by (b) calculating the cost of equity using CAPM”. Hence as per option (a), the default value for India is being considered as per the value provided in Appendix of EB 92 Annex 12. The benchmark thus selected complies as per the relevant guidelines on Investment Analysis.

Further as per guidance 17 of EB 92 Annex 5, “In situations where an investment analysis is carried out in nominal terms and the available IRR benchmarks are in real terms, project participants shall convert the real term values of benchmarks to nominal values by adding the

inflation rate. The inflation rate shall be obtained from the inflation forecast of the central bank of the host country for the duration of the crediting period". Following the above guidance, the default value is being converted to nominal values by adding inflation rate for 10 years, as per the inflation forecast rate provided by Reserve Bank of India.

Benchmark Calculation

The benchmark has been considered in accordance with Guidance 16 of EB 92 Annex 5, "The values in the table in Appendix A may also be used, as a simple default option".

As suggested in Appendix A in EB 92 Annex 5, default value benchmark is presented below:

Appendix A in EB 92 Annex 5 specifies default value of expected return on equity in real terms for Energy Industries (Group 1) in India = 11.06%

Methodology deployed for arriving at a suitable value of Benchmark using Default Value has been described below:

- As the proposed project activity generates power utilizing wind energy, Group 1 as per para 5 of Appendix of EB 92, Annex 5 has been identified as a suitable category.
- The investment analysis has been carried out in Nominal terms. The investment decision date of the project activity is on 06 December, 2016. Accordingly, Default value as given in Para 6, Appendix of Annex 5, EB 92 has been adjusted by adding suitable forecasted inflation rate taken from RBI (Central Bank, India).
- Project investor has calculated Benchmark based on WPI mean inflation rate. As per Para 17 of EB 92, Annex 5, the inflation forecast should be for the duration of the crediting period. The project investor has calculated benchmark using 10 years forecast and the same is considered as Benchmark for the project activity.

The benchmark has been computed in the following manner:

$$\text{Nominal Benchmark} = \{(1 + \text{Real Benchmark}) * (1 + \text{Inflation rate})\} - 1$$

Where,

Real Benchmark = Default Value, i.e., 11.06% (as per Appendix of Annex 5, EB 92)

Inflation rate = Projected Inflation Rate for India

Addressing Guidance 28 & 29 of EB 92, Annex 5, Sensitivity Analysis has been carried out. The rationale of sensitivity is, "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."

Sensitivity Analysis

As per Guidance 28 and 29 of Annex 5 of EB 92, only variables, including the initial investment cost, that constitute more than 20% of either total project costs or total project revenues should be subjected to reasonable variation and the results of this variation should be presented in the PDD and be reproducible in the associated spreadsheets. Guidance also states, "All parameters varied need not necessarily be subjected to both negative and positive variations of the same magnitude". The Annex also states, as a general point of departure, variations in the sensitivity analysis should at least cover a range of +10% and -10%, unless this is not deemed appropriate in the context of the specific project circumstances.

Since the project cost is not firmed up at the time of investment making decision, the cost is variable. The tariff is determined by state electricity board tariff order which is fixed for years

mentioned as per the State Electricity Board's tariff order and hence it need not be subjected to variation. All other expenses are much less than 20% of the total cost. Hence, only PLF needs to be subjected to reasonable variation. Nevertheless, following factors have been subjected to sensitivity analysis:

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

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.

This substantiates that the investment is not financially attractive (equity IRR for the project activity is less than the Benchmark) for all WTGs. Thus it can be easily concluded that project activity is additional & is not business as usual scenario.

2.6 Methodology Deviations

There is no methodology deviation.

3 ESTIMATED GHG EMISSION REDUCTIONS AND REMOVALS

3.1 Baseline Emissions

As per the approved consolidated Methodology AMS - I.D, version 18, EB 100:

Baseline emissions include only CO₂ 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:

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

Where:

BE_y = Baseline emissions in year y (t CO₂/yr)

$EG_{P,J,y}$ = 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 CO₂ emission factor for grid connected power generation in year y calculated using the latest version of the "Tool to calculate the emission factor for an electricity system" (t CO₂/MWh)

As per methodology, combined grid emission factor as per the "Tool to calculate the emission factor for an electricity system" version 07 is calculated as below.

CO₂ Baseline Database for the Indian Power Sector, Version 14, December 2018⁷ published by Central Electricity Authority (CEA), Government of India has been used for the calculation of emission reduction.

⁷ http://www.cea.nic.in/reports/others/thermal/tpece/cdm_co2/user_guide_ver14.pdf

As per Methodological tool: Tool to calculate the emission factor for an electricity system (Version 07.0, EB 100, Annex 4), following six steps have been followed:

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

Step 1: Identify the relevant electricity systems

As described in tool “For determining the electricity emission factors, identify the relevant project 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 since August 2006, however, all regional grids except the Southern Grid had been integrated and were operating in synchronous mode, i.e. at same frequency. Consequently, the Northern, Eastern, Western and North-Eastern grids were treated as a single grid named as NEWNE grid from FY 2007-08 onwards for the purpose of this CO₂ Baseline Database. As of 31 December 2013, the Southern grid has also been synchronised with the NEWNE grid, hence forming one unified Indian Grid. Since the project supplies electricity to the Indian grid, emissions generated due to the electricity generated by the Indian grid as per CM calculations will serve as the baseline for this project.

Table: Geographical Scope of Indian Electricity Grid

Northern	Eastern	Western	North-Eastern	Southern
Chandigarh	Bihar	Chhattisgarh	Arunachal Pradesh	Andhra Pradesh
Delhi	Jharkhand	Gujarat	Assam	Karnataka
Haryana	Orissa	Daman & Diu	Manipur	Kerala
Himachal Pradesh	West Bengal	Dadar & Nagar Haveli	Meghalaya	Tamil Nadu
Jammu & Kashmir	Sikkim	Madhya Pradesh	Mizoram	Telangana
Punjab	Andaman & Nicobar	Maharashtra	Nagaland	Puducherry
Rajasthan		Goa	Tripura	Lakshadweep
Uttar Pradesh				
Uttarakhand				

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

Project participants may choose 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)

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 and Dispatch data analysis OM is not possible due to lack of availability of data to project developers. The choice of other two options for calculating operating margin emission factor depends on 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 2018⁸

The above data clearly shows that the percentage of total grid generation by low-cost/ must-run plants (on the basis of average of five most recent years) for the Indian grid is less than 50 % of the total generation. Thus the Average OM 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 CO₂ emissions per unit net electricity generation (tCO₂/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:

- (a) **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

⁸ http://www.cea.nic.in/reports/others/thermal/tpece/cdm_co2/user_guide_ver12.pdf

- (b) **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 calculation of Simple OM emission factor using a 3-year generation-weighted average, based on the most recent data available at the time of submission of the PD 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 ($EF_{\text{grid,OMSimple,y}}$) according to the selected method

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

Net Generation in Operating Margin (GWh) (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 (BM) emission factor ($EF_{\text{grid,BM,y}}$)

As per Methodological tool: “Tool to calculate the emission factor for an electricity system” (Version 07.0, EB 100, Annex 4) para 70:

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 PD 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 by PP 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 PD and is fixed for the entire crediting period.

Build Margin (tCO₂/MWh) (not adjusted for imports)	
	2017-18
INDIAN Grid	0.8644

Step 6: Calculate the combined margin (CM) emission factor (EF_{grid,CM,y})

As per Methodological tool: “Tool to calculate the emission factor for an electricity system” (Version 07.0, EB 100, Annex 4) para 79:

The calculation of the combined margin (CM) emission factor (EF_{grid,CM,y}) is based on one of the following methods:

- (a) Weighted average CM; or
- (b) Simplified CM.

PP has chosen option (a) i.e weighted average CM to calculate the combined margin emission factor for the project activity.

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 CO₂ emission factor in year y (t CO₂/MWh)
- EF_{grid,OM,y} = Operating margin CO₂ emission factor in year y (t CO₂/MWh)
- W_{OM} = Weighting of operating margin emissions factor (per cent)
- W_{BM} = Weighting of build margin emissions factor (per cent)

The following default values should be used for W_{OM} and W_{BM}:

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. Since project activity is of wind power generation, the above weightage has been considered for OM and BM.

Therefore, EF_{grid,CM,y} = 0.9610 * 0.75 + 0.8644 * 0.25
 = 0.9368 tCO₂/MWh

Baseline emission factor (EF_y):

The baseline emission factor is calculated using the combined margin approach as described in Step 6 above:

Therefore, EF_y = EF_{grid,CM,y} = 0.9368 tCO₂/MWh.

BE_y = 14,479 x 0.9368 = 13,563 tCO₂ during a given year y.

3.2 Project Emissions

As per the approved consolidated Methodology AMS I.D. (Version 18.0): “For most renewable energy power generation project activities, $PE_y = 0$. However, some project activities may involve project emissions that can be significant. These emissions shall be accounted for as project emissions by using the following equation:

$$PE_y = PE_{FF,y} + PE_{GP,y} + PE_{HP,y}$$

Where:

PE_y = Project emissions in year y (tCO₂e/yr)

$PE_{FF,y}$ = Project emissions from fossil fuel consumption in year y (tCO₂/yr)

$PE_{GP,y}$ = Project emissions from the operation of dry, flash steam or binary geothermal power plants in year y (tCO₂e/yr)

$PE_{HP,y}$ = Project emissions from water reservoirs of hydro power plants in year y (tCO₂e/yr)

As the project activity is the installation of a new grid-connected Wind Power plant and does not involve any project emissions from fossil fuel, operation of dry, flash steam or binary geothermal power plants, and from water reservoirs of hydro power plants. Therefore $PE_{FF,y}$, $PE_{GP,y}$, $PE_{HP,y}$ are equal to zero and thus, $PE_y = 0$.

3.3 Leakage

No other leakage emissions are considered. The emissions potentially arising due to activities such as power plant construction and upstream emissions from fossil fuel use (e.g. extraction, processing, transport etc.) are neglected.

3.4 Estimated Net GHG Emission Reductions and Removals

Reductions are calculated as follows:

$$ER_y = BE_y - PE_y$$

Where:

ER_y	=	Emission reductions in year y (t CO ₂ e/yr)
BE_y	=	Baseline emissions in year y (t CO ₂ /yr)
PE_y	=	Project emissions in year y (t CO ₂ e/yr)

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

$$ER_y = BE_y - PE_y$$

Year	Estimated baseline emissions or removals	Estimated project emissions or removals	Estimated leakage emissions (tCO ₂ e)	Estimated net GHG emission reductions or removals
------	--	---	--	---

	(tCO ₂ e)	(tCO ₂ e)		(tCO ₂ e)
Year 1	13,563	0	0	13,563
Year 2	13,563	0	0	13,563
Year 3	13,563	0	0	13,563
Year 4	13,563	0	0	13,563
Year 5	13,563	0	0	13,563
Year 6	13,563	0	0	13,563
Year 7	13,563	0	0	13,563
Year 8	13,563	0	0	13,563
Year 9	13,563	0	0	13,563
Year 10	13,563	0	0	13,563
Total	135,630	0	0	135,630

4 MONITORING

4.1 Data and Parameters Available at Validation

Data / Parameter	EF_{grid,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, Dec 2018 ⁹
Value applied	0.9610
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 7.0” 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, 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_{grid,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, Dec 2018 ¹⁰
Value applied	0.8644

⁹ http://www.cea.nic.in/reports/others/thermal/tpece/cdm_co2/user_guide_ver14.pdf

¹⁰ http://www.cea.nic.in/reports/others/thermal/tpece/cdm_co2/user_guide_ver14.pdf

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 7.0” as per the latest data available for the most recent year 2017-18. The data is obtained from “CO ₂ Baseline Database for Indian Power Sector” version 14, 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_{grid,CM,y}
Data unit	tCO ₂ /MWh
Description	Combined Margin CO ₂ emission factor in year y
Source of data	Calculated from CEA database, Version 14, Dec 2018 ¹¹
Value applied	0.9368
Justification of choice of data or description of measurement methods and procedures applied	<p>The combined margin emissions factor is calculated as follows:</p> $EF_{grid,CM,y} = EF_{grid,OM,y} * W_{OM} + EF_{grid,BM,y} * W_{BM}$ <p>Where:</p> <p>EF_{grid,BM,y}= Build margin CO₂ emission factor in year y (tCO₂/MWh) EF_{grid,OM,y}= Operating margin CO₂ emission factor in year y (tCO₂/MWh) W_{OM} = Weighting of operating margin emissions factor (%) = 75% W_{BM}= Weighting of build margin emissions factor (%) = 25%</p>
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_{PJ, yGujarat}
Data unit	MWh/y
Description	Quantity of net electricity generation supplied by the project plant/unit to the grid in year y in MWh
Source of data	Monthly joint meter reading reports
Description of measurement methods and procedures to be applied	The difference of final value of export and import is used for monthly values of net electricity supplied to the grid by the project activity and same value will be considered for ER calculations.
Frequency of monitoring/recording	Continuous measurement & monthly recording

¹¹ http://www.cea.nic.in/reports/others/thermal/tpece/cdm_co2/user_guide_ver14.pdf

Value applied	7,489 (estimated)
Monitoring equipment	The electricity exported / supplied by the plant to pooling substation and further to substation. This meter also measures electricity imported by the plant from the grid.
QA/QC procedures to be applied	<p>The meters is approved, tested & sealed by the State Utility. The meters are in the custody of State Utility. The frequency of calibration is once in 5 years.¹² The monthly electricity supplied/exported by the project activity in the JMR report is cross checked with the monthly invoices of sale. In the absence or delay in the meter calibration appropriate Guidelines will be applied appropriately to confirm the conservativeness of metering.</p> <p>The metering arrangement, accuracy class of meters, calibration frequency is under control of state electricity board and PP do not have any control on it. PP is getting value of net electricity supplied to grid and the same is considered the monitoring parameter.</p> <p>The billing is raised based on substation meters.</p>
Purpose of data	Calculation of baseline emissions
Calculation method	Thus, Net electricity supplied to the grid by the project plant in a given month = Export, kWh– Import, kWh
Comments	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_{PJ, y} Tamil Nadu
Data unit	MWh/y
Description	Quantity of net electricity generation supplied by the project plant/unit to the grid in year y in MWh
Source of data	Monthly joint meter reading reports
Description of measurement methods and procedures to be applied	The difference of final value of export and import is used for monthly values of net electricity supplied to the grid by the project activity and same value will be considered for ER calculations.
Frequency of monitoring/recording	Continuous measurement & monthly recording
Value applied	6,990 (estimated)
Monitoring equipment	The electricity exported / supplied by the plant to pooling substation and further to substation. This meter also measures electricity imported by the plant from the grid.
QA/QC procedures to be	The meters is approved, tested & sealed by the State Utility. The

¹² http://www.aegcl.co.in/Metering_Regulations_Of_CEA_17_03_2006.pdf

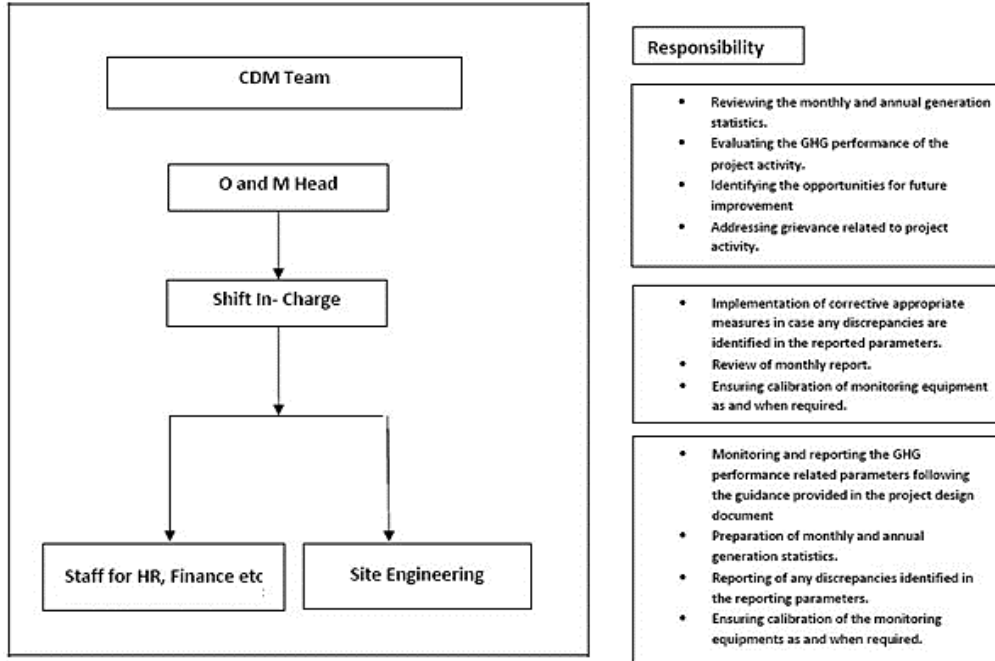
applied	<p>meters are in the custody of State Utility. The frequency of calibration is once in 5 years.¹³ The monthly electricity supplied/exported by the project activity in the JMR report is cross checked with the monthly invoices of sale. In the absence or delay in the meter calibration appropriate Guidelines will be applied appropriately to confirm the conservativeness of metering.</p> <p>The metering arrangement, accuracy class of meters, calibration frequency is under control of state electricity board and PP do not have any control on it. PP is getting value of net electricity supplied to grid and the same is considered the monitoring parameter.</p> <p>The billing is raised based on substation meters.</p>
Purpose of data	Calculation of baseline emissions
Calculation method	Thus, Net electricity supplied to the grid by the project plant in a given month = Export, kWh– Import, kWh
Comments	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.

4.3 Monitoring Plan

The monitoring plan is developed in accordance with the modalities and procedures for CDM project activities and is proposed for grid-connected wind power project being implemented. The monitoring plan, which will be implemented by the project participant describes about the monitoring organisation, parameters to be monitored, monitoring practices, quality assurance, quality control procedures, data storage and archiving.

The authority and responsibility for registration, monitoring, measurement, reporting and reviewing of the data rests with the project participant. PP proposed the following structure for data monitoring, collection, data archiving and calibration of equipments for this project activity. The team comprises of the following members:

¹³ http://www.aegcl.co.in/Metering_Regulations_Of_CEA_17_03_2006.pdf



Data Measurement

The export and import energy will be measured continuously using above mentioned Main and Check meters located at the substations. Readings of meters shall be taken on monthly basis by authorized officer of SEB in the presence of PP or representative of PP. Based on the Meter Reading Statement to PP, invoices will be raised. These invoices can be used for cross checking the meter readings taken for the respective project activity.

Data collection and archiving

Readings from meters will be collected in the presence of the plant in-charge. Export and Import data would be recorded and stored in logs as well as in electronic form on a daily basis. The records are checked periodically by the Plant Manager and discussed thoroughly with the plant supervisor. The period of storage of the monitored data will be 2 years after the end of crediting period or till the last issuance of VERs for the project activity whichever occurs later.

Emergency preparedness

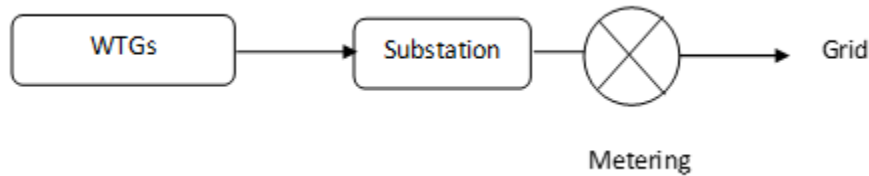
The project activity will not result in any unidentified activity that can result in substantial emissions from the project activity. No need for emergency preparedness in data monitoring is visualized.

Personnel training

In order to ensure a proper functioning of the project activity and a properly monitoring of emission reductions, the staff will be trained. The plant helpers will be trained in equipment operation, data recording, reports writing, operation and maintenance and emergency procedures in compliance with the monitoring plan.

Metering Arrangement

Line diagram with metering arrangement for the wind project activity is shown below.



The wind plant have their own dedicated metering arrangement at the substation end. The metering arrangement is under control of state electricity board and may change in future.

5 SAFEGUARDS

5.1 No Net Harm

The project activity does not involve any major construction activity. It primarily requires the installation of the WTGs, interfacing the generators with the State Electricity Board by setting up HT transmission lines and installation of other accessories.

The report on “Developmental Impacts and Sustainable Governance Aspects of Renewable Energy Projects” prepared by MNRE dated September 2013. This report clearly mentioned that wind power project activity operations do not result in direct air pollution, noise pollution. Please refer below web link for the same¹⁴.

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

5.2 Environmental Impact

The project activity has no significant impact on the environment. Wind power projects are not included in the Schedule I of the EIA notification S.O.1533 (E) dated 14th September 2006¹⁵ and thus an EIA is not required. Ministry of Environment & forests vide their OM J-11013/41/2006 - IA II (I) dated 01st December 2009¹⁶ has re-affirmed this and exempted wind power plants from EIA and EC requirement.

As per the Schedule 1 of the EIA notification dated 1/12/2009¹⁷ and latest notification dated 24/12/2013¹⁸, given by the Ministry of Environment and Forests under the Environment (Protection) Act 1986, the proposed Project activity does not fall under the list of activities requiring EIA as the environmental impacts for such project are not considered as significant by the host Party or PP.

5.3 Local Stakeholder Consultation

The details of the Stakeholder Meetings have been provided to the DOE during validation.

¹⁴ <http://mnre.gov.in/file-manager/UserFiles/report-on-developmental-impacts-of-RE.pdf>

¹⁵ <http://envfor.nic.in/legis/eia/so1533.pdf>

¹⁶ <http://www.moef.nic.in/downloads/rules-and-regulations/3067.pdf>

¹⁷ <http://www.moef.nic.in/downloads/rules-and-regulations/3067.pdf>

¹⁸ <http://envfor.nic.in/sites/default/files/ia-24122013.pdf>

5.4 Public Comments

This section shall be updated after the Global commenting period of 1 month gets completed.

6 ACHIEVED GHG EMISSION REDUCTIONS AND REMOVALS

6.1 Data and Parameters Monitored

This section shall be updated at the time of Verification.

Data / Parameter	
Data unit	
Description	
Value applied:	
Comments	

6.2 Baseline Emissions

This section shall be updated at the time of Verification.

6.3 Project Emissions

Not Applicable, since emissions from the project activity is zero as per AMS I.D. methodology.

6.4 Leakage

Not Applicable, since emissions from the project activity is zero as per AMS I.D. methodology.

6.5 Net GHG Emission Reductions and Removals

This section shall be updated at the time of Verification.

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Total				

APPENDIX X: <TITLE OF APPENDIX>

Not Applicable.