

WIND POWER PROJECT IN RAJASTHAN

Document Prepared By Mytrah Energy (India) Limited

Project Title	Wind power Project in Rajasthan
Version	2
Date of Issue	08/10/2013
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PROJECT DETAILS

1.1 Summary Description of the Project

Mytrah Energy (India) Limited (MEIL) (formerly Caparo Energy (India) Limited) is entering into the renewable energy sector with an objective to build wind power assets in India. MEIL has set up 42MW wind power project in Jaisalmer District in the state of Rajasthan. The project activity comprises of 20 Wind Energy Generators (WEGs) with a capacity of 2.1 MW each.

The Project activity is a zero emissions wind based power generation project connected to NEWNE regional grid of India. The project will help to reduce the supply demand gap in the state and will also generate power using zero emissions wind 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. The project activity will conserve fossil fuel like coal, which can be used in other industrial applications. In the project site, there are other wind projects owned by other customers connected to the same substation. There is an apportioning procedure which is approved by the state nodal agency for apportioning the electricity to each and every customer. The WEG commissioning details has been mentioned under Section 2.1.

1.2 Sectoral Scope and Project Type:

As per the categorisation by UNFCCC, the project activity falls under ‘Scope 1, Sectoral Scope: Energy industries (renewable/non-renewable) Project Proponent.

Methodology applied is ACM 0002 of version 12.3.0

The project is not a bundled project activity

1.3 Project proponent

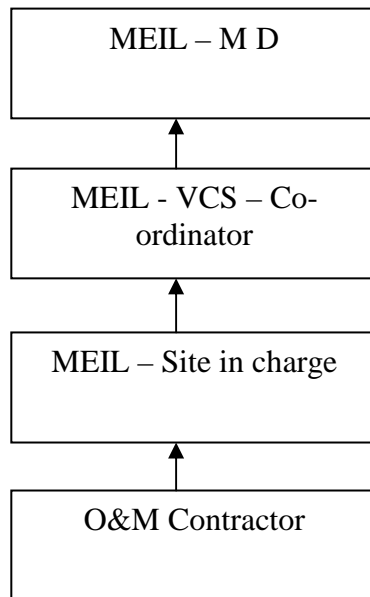
The project proponent has entered into agreement with the WEG- Supplier – Suzlon Energy Limited for the operation and maintenance of WEGs. The WEG supplier has dedicated and technically well-equipped O&M team for day to day Operation and maintenance of each WEG. O&M contractor will provide a monthly report, which includes wind data, generation data, major breakdown events and machine availability, which forms the basis for invoicing and emission reduction computation. Project Manager is responsible for recording of monthly Joint Meter Readings of export and import. Monthly power export and import data will be sent regularly to CDM coordinator of MEIL. All data will be archived for a period two years after crediting period.

Contact details of the project proponent are as follows:

Organization:	Mytrah Energy (India) Limited (MEIL)
Street/P.O.Box:	8001,
Building:	Q-City, S.No: 109,Nanakramguda, Gachibowli
City:	Hyderabad
State/Region:	Andhra Pradesh
Postcode/ZIP:	500032
Country:	India
Telephone:	+91-40- 3376 0100
FAX:	+91-40- 3376 0101
E-Mail:	-

URL:	-
Represented by:	-
Title:	Managing Director
Salutation:	Mr
Last name:	Kailas
Middle name:	-
First name:	Vikram
Department:	-
Mobile:	-
Direct FAX:	+91-40- 3376 0100
Direct tel:	+91-40- 3376 0101
Personal e-mail:	Vikram.Kailas@mytrah.com

The organisational structure of this VCS project activity is as follows.



1.4 Other Entities Involved in the Project

Not applicable

1.5 Project Start Date

The project start date for this project is said to be 19th June 2011. This is the day on which the first machine was commissioned.

1.6 Project Crediting Period

The project is registered under Clean Development Mechanism (CDM) of UNFCCC with 10 years crediting period (Reference No: 8591).¹ Crediting period of the project under CDM starts on 31st December 2012 and ends on 30th December 2022.

The project has begun generating GHG emission reductions from 19th June 2011. Hence, crediting period for VCS begins on 19th June 2011 and ends on 30th December 2012, since the crediting period under CDM starts on 31st December 2012.

The project proponent will also not claim GHG emission reductions under VCS and CDM scheme for same period during the period of 31st December 2012 to 30th December 2022.

1.7 Project Scale and Estimated GHG Emission Reductions or Removals

The project is a large scale project that involves setting up of 42 MW of wind power

Years	Estimated GHG emission reductions or removals (tCO ₂ e)
Year 1	70677
Year 2	70677
Year 3	70677
Year 4	70677
Year 5	70677
Year 6	70677
Year 7	70677
Year 8	70677
Year 9	70677
Year 10	70677
Total estimated ERs	706770
Total number of crediting years	10 Years (fixed)
Average annual ERs	70677

¹ <http://cdm.unfccc.int/Projects/DB/DNV-CUK1354785555.66/view>

1.8 Description of the Project Activity

The project activity comprises of 20 WEGs with a capacity of 2.1 MW each. The technology is indigenous and no technology transfer is taking place. The project activity is a zero emissions wind based power generation project which intent to use Wind Energy Generators (WEGs) to generate power. The technology doesn't involve any fossil fuel usage and hence there are no emissions associated with the project. The S88 model WEGs are supplied by Suzlon Energy Limited (SEL), a subsidiary of the Suzlon group, and considered to be one of the leading manufacturers of site-specific WEGs with strong R&D backup having R&D centres in Germany, Netherlands and Asia. The technical design of the WEG is advanced and is deemed to reflect current good practice.

1.9 Project Location

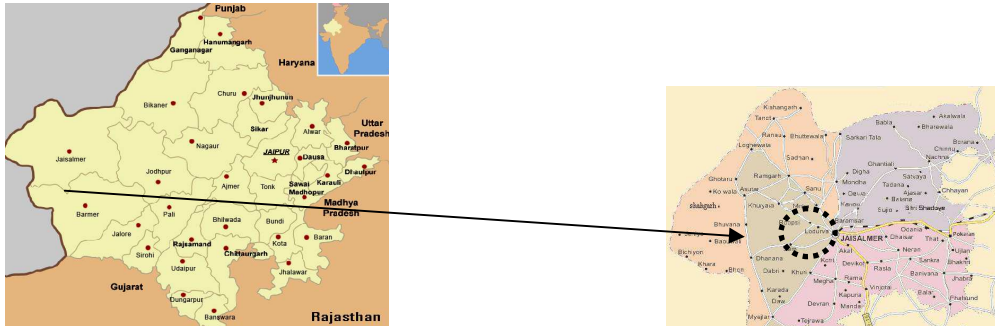
The wind power project is located in Tejwa – Mokal village, Jaisalmer District, Rajasthan State, India. The geo- coordinates of the project location is as follows:

The location of WEGs is as given below

Sl. No	WEG	Latitude	Longitude
1	MK014	27.1631	70.6809
2	MK015	27.1612	70.6858
3	MK016	27.1594	70.6907
4	MK017	27.1576	70.6956
5	MK021	27.1466	70.7251
6	MK039	27.1697	70.6926
7	MK040	27.1715	70.6877
8	MK042	27.1752	70.6779
9	MK043	27.1771	70.6730
10	MK066	27.1837	70.6848
11	MK067	27.1812	70.6891
12	MK068	27.1804	70.6949
13	MK069	27.1782	70.6995
14	MK092	27.1887	70.7016
15	MK093	27.1905	70.6966
16	MK094	27.1924	70.6917

17	MK161	27.2195	70.6917
18	MK163	27.2237	70.6833
19	MK164	27.2255	70.6784
20	MK165	27.2274	70.6735

The geographical location of the project site is as shown 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.

1.11 Compliance with Laws, Statutes and Other Regulatory Frameworks

The Project is a CDM registered project and complies with all laws, statutes and regulations of the Electricity Act, 2003.

1.12 Ownership and Other Programs

1.12.1 Right of Use

The project activity comprises of 20 WEGs with a capacity of 2.1 MW each owned by Mytrah Energy India Limited.

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. Letter of Approval issued by National CDM Authority, Ministry of Environment and Forests (MOEF) which is the Designated National Authority of India is submitted as the evidence.

1.12.3 Participation under Other GHG Programs

The project is registered under Clean Development Mechanism (CDM) of UNFCCC with 10 years crediting period (Reference No: 8591).² Crediting period of the project under CDM starts on 31st December 2012 and ends on 30th December 2022.

1.12.4 Other Forms of Environmental Credit

The project neither has nor intends to generate any other form of GHG-related environmental credit for GHG emission reductions or removals claimed under the VCS Program. Approvals accorded by Rajasthan Renewable Energy Corporation are submitted as documentary evidences.

1.12.5 Projects Rejected by Other GHG Programs

No, the project activity is not rejected by other GHG programs

1.13 Additional Information Relevant to the Project

Eligibility Criteria

Not applicable to the project activity.

Leakage Management

Not applicable to the project activity.

Commercially Sensitive Information

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

Further Information

Contribution to sustainable development:

Ministry of Environment and Forests, has stipulated economic, social, environment and technological well-being as the four indicators of sustainable development⁴. The project contributes to sustainable development using the following ways.

Social wellbeing: 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. The project proponent will contribute 2% of net revenue realised from sale of CERs towards community development initiatives.

² <http://cdm.unfccc.int/Projects/DB/DNV-CUK1354785555.66/view>

Economic wellbeing: The project is a clean technology investment in the region, which would not have been taken place in the absence of the CDM 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 based power generation which helps to reduce GHG emissions and specific pollutants like SOx, NOx, and SPM associated with the conventional thermal power generation facilities.

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

2 APPLICATION OF METHODOLOGY

2.1 Title and Reference of Methodology

The methodology applied for the project is ACM 0002 of version 12.3.0.

2.2 Applicability of Methodology

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

SI.No	Applicability criteria	Justification
1	This methodology is applicable to grid-connected renewable power generation project activities that: <ul style="list-style-type: none"> a) install a new power plant at a site where no renewable power plant was operated prior to the implementation of the project activity (Greenfield plant); b) involve a capacity addition; c) involve a retrofit of (an) existing plant(s); or d) involve a replacement of (an) existing plant(s) 	The project activity is a wind power plant connected to NEWNE grid of India. Hence the project activity satisfies this applicability criterion.
2	The project activity is the installation, capacity addition, retrofit or replacement of a power plant/unit of one of the following types: <ul style="list-style-type: none"> a) hydro power plant/unit (either with a run-of-river reservoir or an accumulation reservoir), b) wind power plant/unit, c) geothermal power plant/unit, d) solar power plant/unit, e) wave power plant/unit or tidal power plant/unit 	The project activity is the installation of wind power units with a total generation capacity of 42MW and hence the project is applicable under these criteria.
3	In the case of capacity additions, retrofits or replacements (except for capacity addition projects for which the electricity generation of the existing power plant(s) or unit(s) is not affected: the existing plant started commercial	This criterion is not applicable as the project activity is development of Greenfield wind power generation project.

	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 addition or retrofit of the plant has been undertaken between the start of this minimum historical reference period and the implementation of the project activity;	
4	In case of hydro power plants: At least one of the following conditions must apply: <ul style="list-style-type: none"> a) The project activity is implemented in an existing single or multiple reservoirs, with no change in the volume of any of the reservoirs; or b) The project activity is implemented in an existing single or multiple reservoirs, where the volume of any of reservoirs is increased and the power density of each reservoir, as per the definitions given in the Project Emissions section, is greater than 4 W/m² after the implementation of the project activity; or c) The project activity results in new single or multiple reservoirs and the power density of each reservoir, as per the definitions given in the Project Emissions section, is greater than 4 W/m² after the implementation of the project activity. 	The project activity is wind power project and hence the condition is not applicable.
5	The methodology is not applicable to the following: <ul style="list-style-type: none"> a) Project activities that involve switching from fossil fuels to renewable energy sources at the site of the project activity, since in this case the baseline may be the continued use of fossil fuels at the site; b) Biomass fired power plants; c) Hydro power plants¹ that result in new reservoirs or in the increase in existing reservoirs where the power density of this is less than 4 W/m². 	The project activity does not involve fuel switch from fossil fuels to renewable energy sources. The project activity is Greenfield wind power project and does not used biomass fuels/Hydel resources for power generation. Hence the project activity satisfies the applicability criterion.

2.3 Project Boundary

Source		Gas	Included?	Justification/Explanation
Baseline	CO ₂ emissions from electricity generation in fossil fuel fired power plants that is displaced due to the project activity	CO ₂	Yes	Major emission source
		CH ₄	No	Minor Emission Source

Source		Gas	Included?	Justification/Explanation
Project	Grid Connected wind power based electricity generation	CO ₂	No	Electricity generation by using WEGs does not generate any emissions
		CH ₄	No	
		N ₂ O	No	
		Other	No	

2.4 Baseline Scenario

As per ACM0002 version 12.3.0, if the project activity is the installation of a new grid-connected renewable power plant/unit, the baseline scenario is the following:

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”.

As per methodology, “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 case is in compliance with all applicable legal and regulatory requirements.

2.5 Additionality

The Project is a CDM registered project activity and proved to be additional.

2.6 Methodology Deviations

There is no methodology deviation

3 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

3.1 Baseline Emissions

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

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

Where:

BE_y = Baseline emissions in year y (tCO_2)

$EG_{PJ,y}$ = 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” (tCO_2/MWh)

3.2 Project Emissions

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

3.3 Leakage

No leakage emissions have been considered and hence the leakage emission is zero.

3.4 Summary of GHG Emission Reductions and Removals

Years	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	70677	0	0	70677
Year 2	70677	0	0	70677
Year 3	70677	0	0	70677
Year 4	70677	0	0	70677
Year 5	70677	0	0	70677
Year 6	70677	0	0	70677
Year 7	70677	0	0	70677
Year 8	70677	0	0	70677
Year 9	70677	0	0	70677
Year 10	70677	0	0	70677
Total	706770	0	0	706770

4 MONITORING

4.1 Data and Parameters Available at Validation

Data Unit / Parameter:	EF _{grid,OMsimple,y}
Data unit:	tCO ₂ /MWh
Description:	Operating margin CO ₂ emission factor of NEWNE Grid
Source of data:	Central Electricity Authority: CO ₂ Emission Database. CEA CO ₂ Baseline database Version 07
Value applied:	0.9842
Justification of choice of data or description of measurement methods and procedures applied:	Baseline Emission calculation
Any comment:	The operating margin emission factor is a 3-year generation-weighted average (2008-11). Data calculated to be 0.9842. The operating Margin is calculated ex ante and fixed during the crediting period.

Data Unit / Parameter:	EF _{grid,BM,y}
Data unit:	tCO ₂ /MWh
Description:	Build margin CO ₂ emission factor of NEWNE grid
Source of data:	Central Electricity Authority: CO ₂ Emission Database. CEA CO ₂ Baseline database Version 07
Value applied:	0.8588
Justification of choice of data or description of measurement methods and procedures applied:	Baseline Emission calculation
Any comment:	The Build Margin would be calculated ex ante and fixed during the crediting period. For ex ante calculation the most recent data available has been used and the build margin thus calculated is 0.8588.

Data Unit / Parameter:	EF _{grid,CM,y}
Data unit:	tCO ₂ /MWh
Description:	Combined margin CO ₂ emission factor of NEWNE grid
Source of data:	Central Electricity Authority: CO ₂ Emission Database CEA CO ₂ Baseline database Version 07
Value applied:	0.9529
Justification of choice of data or description	Baseline emission calculation

of measurement methods and procedures applied:	
Any comment:	The combined margin would be calculated ex-ante and fixed for the entire crediting period and the combined margin thus calculated is 0.9529.

4.2 Data and Parameters Monitored

Data Unit / Parameter:	$EG_{P,J,y}$
Data unit:	MWh
Description:	Quantity of net electricity exported to the grid during the year y.
Source of data:	Certificate for share of electricity generated by Wind Farm.
Description of measurement methods and procedures to be applied:	<p>Net electricity supplied will be calculated based on the difference between calculated values of “export” and calculated value “import” on the JVVNL energy meter at the common evacuation point and the percentage transmission loss as prescribed in the PPA for metering at 220 kV</p> <p>All the data items monitored under the monitoring plan will be archived for entire crediting period or till the last issuance of CERs for this project activity whichever occurs later.</p> <p>Calibration Frequency: All Energy meters will be tested for accuracy at least once in a year. The accuracy class of the energy meter is 0.2s</p>
Frequency of monitoring/recording:	Continuously monitored and monthly recorded
Value applied:	74,173
Monitoring equipment:	Energy meters of accuracy class 0.2s
QA/QC procedures to be applied:	Net electricity supplied to the grid by the project activity will be cross checked with invoices submitted to JVVNL.
Calculation method:	Not Applicable
Any comment:	-

Data Unit / Parameter:	$E_{,WEG,I,y}$
Data unit:	MWh/y

Description:	Quantity of Electricity generated by the individual WEGs of the PP in year y
Source of data:	WEG Controller meter reading
Description of measurement methods and procedures to be applied:	Electricity generated by the WEG will be continuously monitored by the controller meter installed within the WEG. These reading are recorded online by the technology supplier Calibration Frequency: The WEG controller meter does not require calibration as per the specification provided by the technology supplier
Frequency of monitoring/recording:	Continuously monitored and monthly recorded
Value applied:	3,708
Monitoring equipment:	Energy meters of accuracy class 0.2s
QA/QC procedures to be applied:	The quantity of electricity generated by the individual WEG will be cross-checked with the online tracking system provided by the technology supplier
Calculation method:	Not Applicable
Any comment:	-

4.3 Description of the Monitoring Plan

The electricity exported to the grid through the project activity and the electricity imported from the JVVNL grid will be monitored. The electricity export and import is through a common evacuation system having common metering equipments. Suzlon Energy Limited has been identified as the common agency responsible for joint metering. net electricity exported by the project proponent is calculated as mentioned below:

$$EG_{P,J,y} = (\text{Export-Import}) \times (1 + \text{Transmission Loss}).$$

Where,

Export-Import = will be sourced from monthly energy breakup report issued by Suzlon energy limited (O & C contractor for the project).

Transmission losses= will be sourced from power purchase agreement signed with Jodhpur Vidyut Vitran Nigam limited.

Net electricity exported by the project proponent ($EG_{P,J,y}$) can be cross checked from sales invoices raised to Jodhpur Vidyut Vitran Nigam limited.

The project proponent has entered into agreement with the WEG- Supplier – Suzlon Energy Limited for the operation and maintenance of WEGs. The WTG supplier has dedicated and technically well-equipped O&M team for day to day Operation and maintenance of each WEG.

O&M contractor will provide a monthly report, which includes wind data, generation data, major breakdown events and machine availability, which forms the basis for invoicing and emission reduction computation. Project Manager is responsible for recording of monthly Joint Meter Readings of export and import. Monthly power export and import data will be sent regularly to CDM coordinator of MEIL. All data will be archived for a period two years after crediting period.

5 ENVIRONMENTAL IMPACT

As per the prevailing Ministry of Environment and Forest laws, the Schedule 1 of Ministry of Environment and Forests (Government of India) notification dated 14 September 2006, Environmental Impact Assessment study is not required for wind mill project as there is no negative environmental impact due to the project activity and wind energy is one of the cleanest sources of energy

6 STAKEHOLDER COMMENTS

According to the feedback received from the stakeholders, due to the erection of wind farms the socio-economic situation in the area and the village people's living standard has been improved. It has not only provided employment but also significantly contributed to the infrastructure development likes roads.

In general, all stakeholders related to the project activity had a positive opinion on the project activity.