



## Verification Report for

Project : 15 MW Wind Energy Project in Maharashtra

UCR Project ID : 051

Name of Verifier	SQAC Certification Pvt. Ltd.
Date of Issue	February 02, 2022
Client	M/s D. J. Malpani
Project Proponent	Mr. Kailas Shankar Bankar
Work carried by	Mr. Santosh Nair & Ms. Sheetal Wader
Work reviewed by	Mr. Suuhas Tendulkar

### **Summary:**

SQAC Certification Pvt. Ltd. has performed verification of the “15 MW Wind Energy Project in Maharashtra located in Nandurbar Taluka, Nandurbar District & Sakri Taluka, Dhulia District, Maharashtra, India” for generating electricity from wind, on the basis of UCR criteria. The generated electricity from WEG’s is connected to state electric utility namely Maharashtra State Electricity Distribution Company Limited (MSEDCL) and transmitted through state electric grid.

Verification for the period : **24/10/2018 to 31/12/2021**

In our opinion, the total GHG emission reductions over the crediting / verification period stated in the Project Concept Note (PCN) / Monitoring Report (MR), submitted to SQAC are found to be correct and in line with the UCR guidelines.

The GHG emission reductions were calculated on the basis of UCR Protocols which draws reference from, UCR Protocol Standard Baseline, AMS.I.D – Grid connected renewable electricity generation (Version 18.0). Owing to the Covid pandemic, the verification was done remotely by way of video calls / verification, phone calls and submission of documents for verification through emails.

SQAC is able to certify that the emission reductions from the 15 MW Wind Energy Project in Maharashtra (UCR ID – 051) for the period **24/10/2018 to 31/12/2021** amounts to **51,057 CoUs** (51,057 tCO<sub>2</sub>eq)



## **Detailed Verification Report:**

### **Purpose:**

The main purpose of the project activity is the implementation and operation of 15 MW wind farms to generate electricity in high wind speed areas of Maharashtra. M/s D. J. Malpani (DJM) is the promoter of these wind farms. The project activity consists of 12 wind electric generators (WEGs) installed in three phases at various locations within Maharashtra. The generated electricity from WEGs is connected to state electric utility namely Maharashtra State Electricity Distribution Company Limited (MSEDCL) and transmitted through state electric grid.

The project replaces anthropogenic emissions of greenhouse gases (GHGs) estimated to be approximately 51,057 tCO<sub>2</sub>e for the said period under verification, there on displacing 56730.189 MWh amount of electricity from the generation mix of power plants connected to the Indian electricity grid, which is mainly dominated by the thermal / fossil fuel-based power plant.

The project activity is the installation of a new grid connected renewable power plant/unit. The scenario existing prior to the implementation of the project activity 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. Baseline scenario and scenario existing prior to the implementation of the project activity are both same.

The objectives of this verification are, by way of suitable evidences, to establish that:

1. The project has been commissioned as per the documented & video evidence
2. The details provided in the PCN are correct
3. The emission reductions from the project claimed are correct and in accordance with the requirements of the UCR Standard.

### **Scope:**

The scope covers verification of emission reductions from the project - 15 MW Wind Energy Project in Maharashtra (UCR ID – 051)

### **Criteria:**

Verification criteria is as per the requirements of UCR Standard.

### **Description of project:**

Project activity is the implementation and operation of 15 MW wind farms to generate electricity in high wind speed areas of Maharashtra. M/s D. J. Malpani (DJM) is the promoter of these wind farms. The project activity consists of 12 wind electric generators (WEGs) installed in three phases at various locations within Maharashtra. The generated electricity from WEGs is connected to state electric utility namely Maharashtra State Electricity Distribution Company Limited (MSEDCL) and transmitted through state electric grid.

All the machines are S70 make and have been developed by Suzlon Energy Ltd. (SUZLON) in association with its collaborators using state of the art technology. The primary driver for the development of the

turbines was Suzlon's commitment to make wind energy more accessible - in terms of technology, yield and cost. 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. This kinetic energy when passes through the blades of the WEG is converted into mechanical energy and rotates the wind blades. When the wind blades rotate, the connected generator also rotates, thereby producing electricity. The technology is a clean technology since there are no GHG emissions associated with the electricity generation

In the absence of the project activity, electricity would have been generated using a fossil fuel based thermal power plants. This would have resulted in higher GHG emissions than those emitted in the project activity.

Commissioning dates of WEG's (as per commissioning certificate):

Capacity	WTG No	Location	WTG Supplier	Location	Date of Commissioning
1.25 MW	K 413			Mandal,Nandurbar	26-03-2006
1.25 MW	K 407		Suzlon Energy Pvt. Ltd.	Mandal Nandurbar	06-03-2006
1.25 MW	K 402			Akahtwade, Nandurbar	06-02-2006
3.75 MW	K400,K401&K412			Mandal, Nandurbar	31-12-2005
1.25MW	K 254			Dhavivhir, Dhule	31-03-2006
1.25 MW	J 115			Isharde, Dhule	24-08-2006
2.5 MW	J114,& J128			Isharde, Dhule	13-08-2006
1.25 MW	J 127			Isharde, Dhule	16-08-2006
1.25 MW	K 118			Titane, Dhhule	29-03-2006

The total GHG emission reductions achieved in this monitoring period is as follows:

Summary of the Project Activity and ERs Generated for the Monitoring Period	
Start date of this Monitoring Period	24/10/2018
Carbon credits claimed up to	31/12/2021
Total ERs generated (tCO <sub>2eq</sub> )	51,057 tCO <sub>2eq</sub>
Leakage	0

The baseline scenario identified is:

- In the absence of the project activity, the equivalent amount of electricity would have been imported from the regional grid (which is connected to the unified Indian Grid system (NEWNE Grid), which is carbon intensive due to predominantly sourced from fossil fuel-based power plants. Hence, baseline scenario of the project activity is the grid-based electricity system, which is also the pre project scenario.

#### **Level of Assurance:**

The verification report is based on the information collected through interviews conducted over video calls / phone calls, supporting documents provided during the verification, Project Concept Note (PCN) / Monitoring Report (MR), submitted to SQAC. The verification opinion is assured provided the credibility of all the above.

#### **Verification Methodology:**

Review of the following documentation was done by SQAC Verifier, Mr. Santosh Nair, who is experienced in such projects.

- Project Concept Note (PCN)
- Monitoring Report (MR)
- Commissioning Report of all WTG's
- Data provided upon request of all the documents of the related projects

#### **Sampling:**

Since there are 12 Wind Turbine generators (WTGs) installed in three phases at various locations within Maharashtra, which are spread around, 4 WTG's (2 WTG's each in Nandurbar & Dhulia respectively) have been selected for complete site monitoring through video. The 4 WTG's selected are :

K 402 & K 413 (from Nandurbar)

J 115 & J 127 (from Dhulia)

However verification of meter reading of all 12 WTG's was done.

#### **Persons interviewed:**

1. Mr. Kailas Bankar : M/s. D. J. Malpani
2. Ms. D. Asha : M/s. D. J. Malpani
3. Mr. Debjit Bag : EKI Energy Services Ltd.
4. Mr. Rais Sheikh : M/s. D. J. Malpani
5. Mr. Akshay Jare : Site Supervisor
6. Mr. Pratik Pimple : Gangapur Substation
7. Mr. Sagar Durgavle : M/s. D. J. Malpani
8. Mr. Hemkant Nehre : Jamde Substation

## Documentation Verified:

- Project Concept Note (PCN)
- Monitoring Report (MR)
- Energy Readings
- Calibration Reports
- Joint Meter Reading (JMR)
- Energy Meter
- Maharashtra State Electricity Distribution Co. Ltd. Credit notes
- M/s. D. J. Malpani Invoices
- Breakdown Reports
- Commissioning Certificates

## Corrective Action Requests (CARs)

Corrective Action Requests (CARs) and their resolutions are listed below

### **CAR 1** :

PCN says GHG Emission Reduction is 82,595 tCO<sub>2eq</sub>, whereas Monitoring Report (V01) mentions reduction as 51,122 tCO<sub>2eq</sub>.

#### **Response from Project Participant**

The correction has been made in the Monitoring Report (V02) as it was a copy paste error

#### **Conclusion by Verification Team**

Verified Monitoring Report (V02) for correction and found to be matching as per requirement. Hence Corrective Action Request CAR-1 is closed.

### **CAR 2** :

December 2021 JMR / Invoice was not made available at the time of audit and energy readings for December 2021 was dummy entry based on December 2020 readings.

#### **Response from Project Participant**

The correct energy readings has been made in the Monitoring Report (V02) and also the copies of JMR / Invoice was made available subsequently.

#### **Conclusion by Verification Team**

Verified Monitoring Report (V02) for correction along with JMR / Invoices for December 2021 and found to be matching as per requirement. Hence Corrective Action Request CAR-2 is closed.

## Applied methodologies and standardized baselines :

UCR Protocol Standard Baseline

AMS.I.D – Grid connected renewable electricity generation (Version 18.0)

## Technical Details of 1.25 MW (S 70) WTG

Sr. No.	Particulars	Specifications
1.	Rotor diameter	69.1 m
2.	Hub height	74 m
3.	Installed electrical output	1250 kW
4.	Cut-in wind speed	3 m/s
5.	Rated wind speed	12 m/s
6.	Cut-out wind speed	20 m/s
7.	Rotor swept area	3750 m <sup>2</sup>
8.	Rotational speed	13.2/19.8
9.	Rotor material	GRP
10.	Regulation	Pitch
11.	Generator	Asynchronous Generator, 4/6 poles
12.	Rated output	250/1250 kW
13.	Rotational speed	1010/1515 rpm
14.	Operating voltage	690 V
15.	Frequency	50 Hz
16.	Protection	IP 56
17.	Insulation class	H
18.	Cooling system	Air cooled
19.	Gear box	3 stage gear box, 1 planetary and 2 helical
20.	Manufacturer	Winenergy
21.	Gear ratio	77.848
22.	Nominal load	1390 kW
23.	Type of cooling	Oil cooling system
24.	Yaw drive system	4 active electrical yaw motors
25.	Yaw bearing	Polymide slide bearing
26.	Safety system	
26.1	Aerodynamic brake	3 times independent pitch regulation
26.2	Mechanical brake	Spring power disc brake, hydraulically released, fail safe.
27.	Control unit	Microprocessor controlled, indicating actual operating conditions, UPS back up system
28.	Tower	Tubular
29.	Design standards	GL/IEC

Meter Calibration Details						
Sub station Name	Feeder Name	WTG connected	Main Meter	Check Meter	Date of Calibration	Due date of Calibration
Valve GSS 220KV/33KV	Valve-1	K254	4725793	4725788	29/03/2018	28/03/2023
Jamde GSS 220KV/33KV	Jamde-3	J114, J115, J127 & J128	4862465	4725796	07/03/2018	06/03/2023
Jamde GSS 220KV/33KV	Jamde-4	K118	2793536	2793537	23/03/2018	22/03/2023
Gangapur GSS 220KV/33KV	Gangapur- 8	K412, K413	2831472	2831473	20/03/2018	19/03/2023
Gangapur GSS 220KV/33KV	Gangapur- 9	K400, K401, K402 & K407	2831474	2831475	20/03/2018	19/03/2023

The unique location of individual wind turbines are:

PHASE	WINDMILL LOCATION NO.	ADDRESSES	Latitude	Longitude
Phase – I	K 400	Gut No. 168/4/P, Village- Mandal, Taluka- Nandurbar, Dist.: Nandurbar	21 21'57.29" N	7414'27.60" E
Phase – I	K 401	Gut No. 161/1A/1, Village- Mandal, Taluka- Nandurbar, Dist.: Nandurbar	21 21'57.29" N	7414'27.60" E
Phase – I	K 402	Gut No. 46/P, Village- Akhatwade, Taluka- Nandurbar, Dist.: Nandurbar	21 21'57.29" N	7414'27.60" E
Phase – I	K 407	Gut No. 370/1/P, Village- Mandal, Taluka- Nandurbar, Dist.: Nandurbar	21 21'57.29" N	7414'27.60" E
Phase – I	K 412	Gut No. 375/1/P, Village- Mandal, Taluka- Nandurbar, Dist.: Nandurbar	21 21'57.29" N	7414'27.60" E
Phase – I	K 413	Gut No. 378/1B/P, Village- Mandal, Taluka- Nandurbar, Dist.: Nandurbar	21 21'57.29" N	7414'27.60" E
Phase – II	K 254	Gut No. 74/1A/P, Village- Dhavlivihir, Taluka- Sakri, Dist.: Dhulia	20 59'25.01" N	7418'51.54" E
Phase – II	K 118	Gut No. 43/1, Village- Titane, Taluka-	20 59'25.01" N	7418'51.54" E

		Sakri, Dist.: Dhulia		
Phase – IIIJ	114	R.S. No.16, Village- Isharde, Taluka- Sakri, Dist.: Dhulia	20 59'25.01"N	7418'51.54"E
Phase – IIIJ	115	R.S. No.16, Village- Isharde, Taluka- Sakri, Dist.: Dhulia	20 59'25.01"N	7418'51.54"E
Phase – IIIJ	127	R.S. No.16, Village- Isharde, Taluka- Sakri, Dist.: Dhulia	20 59'25.01"N	7418'51.54"E
Phase – IIIJ	128	R.S. No.16, Village- Isharde, Taluka- Sakri, Dist.: Dhulia	20 59'25.01"N	7418'51.54"E

## Application of methodologies and standardized baselines

### References to methodologies and standardized baselines

SECTORAL SCOPE – 01 Energy industries (Renewable/Non-renewable sources)

TYPE I – Renewable Energy Projects

CATEGORY – AMS. I.D. – Grid connected renewable electricity generation (Version 18.0)

### Applicability of methodologies and standardized baselines

The project activity involves generation of grid connected electricity from the construction and operation of a new wind power based power project for supply to grid. The project activity has installed capacity of 15 MW which qualifies for a small scale project activity. The project status is corresponding to the methodology AMS.I.D. Version 18.0 and applicability of methodology is discussed below:

Applicability Criterion	Project Case
This methodology is applicable to project activities that: (a) Install a Greenfield plant; (b) Involve a capacity addition in (an) existing plant(s); (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 activity is a Renewable Energy Project i.e. Wind Power Project which falls under applicability criteria option 1 (a) i.e., "Install a Greenfield power plant". Hence the project activity meets the given applicability criterion.
Hydro power plants with reservoirs that satisfy at least one of the following conditions are eligible to apply this methodology: (a) The project activity is implemented in an existing reservoir with no change in the volume of reservoir; AMS-I.D Small-scale Methodology: Grid connected renewable electricity generation Version 18.0 Sectoral scope(s): 01 4 of 20 (b) 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	The project is installation of new wind based electricity generation plants (not a hydro power plant). Hence this criteria is not applicable.



<p>greater than 4 W/m<sup>2</sup> ; (c) 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/m<sup>2</sup> .</p>	
<p>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.</p>	<p>The project is wind power project and thus the criterion is not applicable to this project activity.</p>
<p>Combined heat and power (co-generation) systems are not eligible under this category</p>	<p>The project is wind power project and thus the criterion is not applicable to this project activity.</p>
<p>In the case of project activities that involve the capacity 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<sup>1</sup> from the existing units</p>	<p>The project is a greenfield wind power project and does not involve in capacity addition and thus the criterion is not applicable to this project activity.</p>
<p>In the case of retrofit, rehabilitation or replacement, to qualify as a small-scale project, the total output of the retrofitted, rehabilitated or replacement power plant/unit shall not exceed the limit of 15 MW.</p>	<p>The project activity is Greenfield and there is no switching of fossil fuel to renewable energy. Hence the criteria is not applicable to the project activity</p>
<p>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.</p>	<p>This project is a wind power project and hence the criteria is not applicable.</p>
<p>In case biomass is sourced from dedicated plantations, the applicability criteria in the tool “Project emissions from cultivation of biomass” shall apply.</p>	<p>The project is not a biomass fired power plant. Hence the criteria is not applicable to the project activity.</p>

### **Applicability of double counting emission reductions**

The project activity was a Clean Development Mechanism (CDM) project of UNFCCC Registration No. 1778 . The crediting period of the registered CDM project was 23/10/2008 – 23/10/2018 (Fixed). The request is for issuance of carbon offsets in UCR for the post completion of the fixed crediting period (23/10/2008 – 23/10/2018) i.e. crediting period will start from 24/10/2018. The project is not registered with any other voluntary market (National or International). Hence, the criteria for double counting is not applicable for the project. Agreement for Double Counting Avoidance from Proponent has been provided duly signed on 24.01.2022

### **Project boundary, sources and greenhouse gases (GHGs)**

As per applicable methodology AMS.I.D. Version 18.0, “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”. Thus, the project boundary includes the Wind Turbine Generators (WTGs) and the Indian grid system.

The project boundary includes the physical, geographical site(s) of:

	Source	GHG	Included?	Justification/Explanation
Baseline	Grid connected electricity generation	CO2	Yes	Major source of emission
		CH4	Excluded	Minor source of emission
		N2O	Excluded	Minor emission source
Project Activity	Greenfield Wind Power Project Activity	CO2	Excluded	No CO2 emission are emitted from the project
		CH4	Excluded	CH4
		N2O	Excluded	No other emissions are emitted from the project

### **Establishment and description of baseline scenario (UCR Protocol)**

As per the approved methodology AMS.I.D. Version 18.0, if the project activity is the installation of a new grid-connected renewable power plant/unit, the baseline scenario is the following:

“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 involves setting up of a new wind power plant to harness the green power from wind

energy and to supply power to grid. In the absence of the project activity, the equivalent amount of power would have been supplied by the Indian grid, which is fed mainly by fossil fuel fired plants. The power produced at grid from the conventional sources which are predominantly fossil fuel based. Hence, the baseline for the project activity is the equivalent amount of power produced at the Indian grid.

A "grid emission factor" refers to a CO<sub>2</sub> emission factor (tCO<sub>2</sub>/MWh) which will be associated with each unit of electricity provided by an electricity system. The UCR recommends an emission factor of 0.9 tCO<sub>2</sub>/MWh for the 2014- 2020 years as a fairly conservative estimate for Indian projects not previously verified under any GHG program. Also, for the vintage 2021, the combined margin emission factor calculated from CEA database in India results into higher emission than the default value. Hence, the same emission factor has been considered to calculate the emission reduction under conservative approach.

### **Net GHG Emission Reductions and Removals:**

Thus,  $ER_y = BE_y - PE_y - LE_y$

Where:

$ER_y$  = Emission reductions in year y (tCO<sub>2</sub>/y)

$BE_y$  = Baseline Emissions in year y (t CO<sub>2</sub>/y)

$PE_y$  = Project emissions in year y (tCO<sub>2</sub>/y)

$LE_y$  = Leakage emissions in year y (tCO<sub>2</sub>/y)

#### **a) Baseline Emissions**

Baseline emissions include only CO<sub>2</sub> emissions from electricity generation in 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:  $BE_y = EG_{PJ,y} \times EF_{grid,y}$

Where:  $B$

$E_y$  = Baseline emissions in year y (t CO<sub>2</sub>)

$EG_{PJ,y}$  = Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the project activity in year y (MWh)

$EF_{grid,y}$  = UCR recommended emission factor of 0.9 tCO<sub>2</sub>/MWh has been considered. (Reference: General Project Eligibility Criteria and Guidance, UCR Standard, page 4)

### **Issuance Period: 03 years, 02 months – 24/10/2018 to 31/12/2021**

$(BE_y) = 56730.189 \text{ MWh} \times 0.9 \text{ tCO}_2/\text{MWh} = 51,057 \text{ tCO}_2\text{e}$  (i.e. 51,057 CoUs)

Total baseline emission reductions  $(BE_y) = 51,057 \text{ CoUs}$  (51,057 tCO<sub>2</sub>eq)

Annual baseline emission reductions ( $BE_y$ )

Year	Emission Reductions ( tCO <sub>2eq</sub> )
2018	743
2019	20,400
2020	14,210
2021	15,704
<b>Total</b>	<b>51,057</b>

### b) Project Emissions

As per AMS.I.D. Version 18.0, only emission associated with the fossil fuel combustion, emission from operation of geo-thermal power plants due to release of non-condensable gases, emission from water reservoir of Hydro should be accounted for the project emission. Since the project activity is a wind power project, project emission for renewable energy plant is nil. Thus,  $PE_y = 0$ .

### c) Leakage

As per AMS.I.D, Version 18.0, 'If the energy generating equipment is transferred from another activity, leakage is to be considered.' In the project activity, there is no transfer of energy generating equipment and therefore the leakage from the project activity is considered as zero. Hence,  $LE_y = 0$

$$\begin{aligned} ER_y &= BE_y - PE_y - LE_y \\ &= 51,057 - 0 - 0 \\ &= 51,057 \end{aligned}$$

Total Emission Reductions ( $ER_y$ ) = 51,057 CoUs (51,057 tCO<sub>2eq</sub>)

### Conclusions:

Based on the audit conducted on the basis of UCR Protocol, which draws reference from UCR Protocol Standard Baseline, AMS.I.D – Grid connected renewable electricity generation (Version 18.0), the documents submitted during the verification including the data, Project Concept Note (PCN) / Monitoring Report (MR), SQAC is able to certify that the emission reductions from the project - 15 MW Wind Energy Project in Maharashtra (UCR ID – 051) for the period 24/10/2018 to 31/12/2021 amounts to **51,057 CoUs** (**51,057 tCO<sub>2eq</sub>**)