Verification Report for Carbon Offset Units (CoUs) for Project (UCR ID Number: 075)

Title: “2.1 MW Small Scale Wind Power Project By M/s Galaxy Knitters in Gujarat”

Project Owner details:

M/s Galaxy knitters,

Block No. 258, Paiki-1, village Karamla, Ta. Olpad, Surat-394540, Gujarat, India.

Submitted by:

Arjun K Vyas

Approved Verifier, UCR

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Executive Summary

Verifier has performed verification of the "2.1 MW Small Scale Wind Power Project By M/s Galaxy Knitters in Gujarat located in Hothiji village of District Jamnagar, Gujarat, India" for generating clean energy from Wind Turbine Generator (WTG) based project, on the basis of UCR criteria. The generated electricity from wind power project is consumed for the captive needs of the project proponent.

Verification for the period : 07/08/2019 to 31/12/2021

In my opinion, the total GHG emission reductions over the crediting / verification period stated in the Monitoring Report (MR), submitted to me is 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, 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, phone calls and submission of documents for verification through emails.

I am able to certify that the emission reductions from the 2.1 MW small scale Wind Power Project in Gujarat (UCR ID – 075) for the period 07/08/2019 to 31/12/2021 amounts to 14,082 CoUs (14,082 tCO_2eq).

Detailed Verification Report

Scope of the verification

The scope of this verification includes, 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 and MR are correct.
3. The emission reductions from the project claimed are correct and in accordance with the requirements of the UCR Standard.

Description of the Project

The project activity aims to harness kinetic energy of wind (renewable source) to generate electricity. The net generated electricity from the project activity is consumed for the captive use by the project proponent.

The project replaces anthropogenic emissions of greenhouse gases (GHGs) estimated to be approximately 14,082 tCO2e for the said period under verification, there on displacing 15,647 MWh amount of electricity from the generation mix of power plants connected to the Indian electricity grid, which is mainly dominated by the fossil-fuel based power plant.

The project activity is the installation of a new grid connected renewable power plant. 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 project consists of single WTG of capacity of 2.1 MW which was implemented in a single phase and commissioned by Gujarat Energy Development Agency (GEDA) on 07/08/2019.

Total emission reductions achieved through the project activity during the monitoring period is summarised below:

Summary of the Project Activity and ERs Generated for the Monitoring Period	
Start date of this Monitoring Period	07/08/2019
Carbon credits claimed up to	31/12/2021
Total ERs generated (tCO2eq)	14,082 tCO2eq
Leakage	0

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 by the project owner. The verification opinion is assured provided there exists credibility in the above mentioned.

Verification Methodology

Review of the following documentation was done by Mr. Arjun K Vyas, who is experienced in such projects.

1. Project Concept Note (PCN)
2. Monitoring Report (MR)
3. Commissioning Certificate
4. Requested documents of the related project

Persons Interviewed

1. Mr. Arvind Goswami : M/S Galaxy Knitters
2. Mr. Shailendra Singh Rao : Creduce Technologies Pvt Ltd

Documentation Verified

1. Project Concept Note (PCN)
2. Monitoring Report (MR)
3. Wind Energy Certificates
4. Energy Meter Calibration Reports
5. Commissioning Certificates
6. Power Purchase Agreement
7. Avoidance of double counting agreement

Technical Details of the Project

The details provided in the MR and PCN regarding the technical details of the project are duly verified using appropriate verification methodology. It is confirmed that the project is located at the pin point location mentioned in the PCN/MR by the project proponent. The project activity involves installation and operation of a single Wind Turbine Generator (WTG) having capacity of 2100 kW manufactured and supplied by Suzlon Energy Limited. Below are the salient features of the WTG:

Parameter	S120-2100-50 (WTG ID No. SEL/2100/19-20/5584) Installed at Jamnagar	
Operating Data	Wind Class	IEC S
	Rated Power	2.1 MW
	Cut-in Wind Speed	3.0 m/s
	Rated Wind Speed	9.5 m/s
	Cut-out Wind Speed	26.1 m/s (3-second average) 18.0 m/s (10-minute average)
Rotor	Rotor Diameter	120 m
	Swept Area	11,225 m^2
Generator	Frequency	50 Hz
	Type	Asynchronous with Slip ring
Tower	hub Height	140 m
	Type	Tubular Steel Tower / Hybrid Lattice - tubular
Blade	Suzlon Make	SB59

Application of methodologies and standardized baseline

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 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; or (b) Supplying electricity to an identified consumer facility via national/regional grid through a contractual arrangement such as wheeling.	The project activity involves setting up of a renewable energy (Wind) generation plant that displaces electricity from the fossil fuel dominated electricity grid (Indian Grid system). Thus, the project activity meets this applicability conditions.
2. 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); or (e) Involve a replacement of (an) existing plant(s).	The Project activity involves the installation of new power plant at a site where there was no renewable energy power plant operating prior to the implementation of the project activity. Thus, Project activity is a Greenfield plant and satisfies this applicability condition (a).
3. 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 existing reservoir, with no change in the volume of the reservoir; or (b) The project activity is implemented in existing reservoir, where the volume of the reservoir(s) is increased and the power density as per definitions given in the project emissions section, is greater than 4 W/m^2. (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/m2	As the project activity is a Wind Turbine Generator, this criterion is not relevant for the project activity.
4. 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 rated capacity of the project activity is 2.1 MW with no provision of Co-firing fossil fuel. Hence, meeting with this criterion.
5. Combined heat and power (co-generation) systems are not eligible under this category	This is not relevant to the project activity as the project involves only Wind power generating units.

6. 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 from the existing units.	There is no other existing renewable energy power generation facility at the project site. Therefore, this criterion is not applicable.
7. In the case of retrofit or replacement, to qualify as a small-scale project, the total output of the retrofitted or replacement power plant/unit shall not exceed the limit of 15 MW.	The project activity is a new installation, it does not involve any retrofit measures nor any replacement and hence is not applicable for the project activity.
8. 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.	This is not relevant to the project activity as the project involves only Wind power generating units.
9. In case biomass is sourced from dedicated plantations, the applicability criteria in the tool "Project emissions from cultivation of biomass" shall apply.	Not biomass is involved, the project is only a wind power project and thus the criterion is not applicable to this project activity.

Applicability of double counting emission reductions

As mentioned in the PCN and MR the project is not registered in any other GHG mechanism. Also, "Assurance to avoid double accounting by Project Owners" is duly signed and obtained for the verification purpose.

Project boundary, sources and greenhouse gases (GHGs)

As per applicable methodology AMS-I.D. Version 18, "The spatial extent of the project boundary includes the project power plant and all power plants connected physically to the electricity system."

Thus, the project boundary includes the Wind Turbine Generators and the Indian grid system.

Source		Gas	Included?	Justification/Explanation
Baseline	Grid connected electricity generation	CO_2	**Yes**	**CO2 emissions from electricity generation in fossil fuel fired power plants**
		CH_4	No	Minor emission source
		N_2O	No	Minor emission source
		Other	No	No other GHG emissions were emitted from the project
Project	Greenfield Hydro Power Project Activity	CO_2	No	No CO_2 emissions are emitted from the project
		CH_4	No	Project activity does not emit CH_4
		N_2O	No	Project activity does not emit N_2O
		Other	No	No other emissions are emitted from the project

Establishment and description of baseline scenario (UCR Protocol)

As per para 19 of the approved consolidated methodology AMS-I.D. Version 18, 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 displace fossil-fuel based electricity from the national grid i.e., India grid system through PPA arrangement. In the absence of the project activity, the equivalent amount of power would have been generated by the operation of grid-connected fossil fuel-based power plants and by the addition of new fossil fuel-based generation sources into the grid. The power produced at grid from the other 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 CO2 emission factor (tCO2/MWh) which will be associated with each unit of electricity provided by an electricity system. The UCR

recommends an emission factor of 0.9 tCO2/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 same emission factors as that of the default value. Hence, the same emission factor has been considered to calculate the emission reduction.

Net GHG Emission Reductions and Removals

ERy = BEy – PEy – LEy

Where:

ERy = Emission reductions in year y (tCO2/y)
BEy = Baseline Emissions in year y (t CO2/y)
PEy = Project emissions in year y (tCO2/y)
LEy = Leakage emissions in year y (tCO2/y)

Baseline Emissions

Baseline emissions include only CO2 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:

BEy = EGPJ,y × EFgrid,y

Where:

BEy	=	Baseline emissions in year y (t CO2/yr)
EGPJ,y	=	Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of this project activity in year y (MWh/yr).
EFgrid,y	=	UCR recommended emission factor of 0.9 tCO2/MWh has been considered, this is conservative as compared to the combined margin grid emission factor which can be derived from Database of Central Electricity Authority (CEA), India. (Reference: General Project Eligibility Criteria and Guidance, UCR Standard, page 4)

Hence, BEy = 15,647 x 0.9 = 14,082 tCO2eq

Project Emissions

As per paragraph 39 of AMS-I.D. (version 18, dated 28/11/2014), for most renewable energy project activities emission is zero.

Hence, PEy = 0

Leakage Emissions

As per paragraph 42 of AMS-I.D. version-18, all projects other than Biomass projects have zero leakage.

Hence, LEy = 0

Total Emission reduction by the project for the current monitoring period is calculated as below:

Hence, ERy= 14,082 – 0 – 0 = 14,082 CoUs

Annual Emission Reduction are as below:

Year	Emission Reductions (tCO2eq)
2019	1,674
2020	6,076
2021	6,332
Total	14,082

Conclusion

Considering the above mentioned verification 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), I am able to certify that the emission reductions from the project - 2.1 MW Small Scale Wind Power Project By M/s Galaxy Knitters in Gujarat (UCR ID – 075) for the period 07/08/2019 to 31/12/2021 amounts to 14,082 CoUs (14,082 tCO2eq).