Monitoring Report

CARBON OFFSET UNIT (CoU) PROJECT

Title: 27.65 MW Jagalur Wind Project by NSL Renewable Power in Karnataka, India

Version 2.0
Date 05/08/2022

First COU Issuance Period: 8 years, 03 months
Date: 01/01/2014 to 31/03/2022

Monitoring Report (MR)
CARBON OFFSET UNIT (CoU) PROJECT

Monitoring Report	
Title of the project activity	27.65 MW Jagalur Wind Project by NSL Renewable Power in Karnataka, India.
UCR project registration code	150
Version	2.0
Completion date of the MR	05/08/2022
Monitoring period number and duration of this monitoring period	Monitoring Period Number: 01 Duration of this monitoring Period: 01/01/2014 to 31/03/2022 (first and last days included
Project participants	NSL Renewable Power Private Limited.
Host Party	India
Applied methodologies and standardized baselines	Applied Baseline Methodology: AMS-I.D : "Grid connected renewable electricity generation", version 18 Standardized Methodology: Not Applicable.
Sectoral scopes	01 Energy industries (Renewable/Non-Renewable Sources)
Estimated amount of GHG emission reductions for this monitoring period in the registered PCN	2014: 37,409CoUs (37,409 tCO_{2eq})
	2015: 43,687CoUs (43,687tCO_{2eq})
	2016: 52,872CoUs (52,872 tCO_{2eq})
	2017: 58,920CoUs (58,920 tCO_{2eq})
	2018: 59,098CoUs (59,089 tCO_{2eq})
	2019: 55,466CoUs (55,466 tCO_{2eq})
	2020: 46,908CoUs (46,908 tCO_{2eq})
	2021: 47,738CoUs (47,738 tCO_{2eq})
	2022: 2,191CoUs (2,191 tCO_{2eq})
Total:	**404,289 CoUs (404,289 tCO_{2eq})**

SECTION A. Description of project activity

A.1. Purpose and general description of project activity >>

a) Purpose of the project activity and the measures taken for GHG emission reductions >>

The project activity is promoted by "NSL Renewable Power Private Limited" (earlier designated under Nuziveedu Seeds Limited); hereinafter called as project proponent or PP, engaged in manufacturing of hybrid seeds and the power division is completely focusing on developing green power projects. With a view of being in line with sustainable development priorities of India, PP has promoted this project as a green power project through tapping of wind energy available in the existing barren land available in the state of Karnataka. The project activity is installation and operation of total 29 Wind Turbine Generators (WTGs) having different individual capacities ranging between 0.75 and 1.5 MW; manufactured and supplied by NEG Mecon and GE. The total aggregated installed capacity is 27.65 MW in village Jagalur, district Davangere, Karnataka state of India.

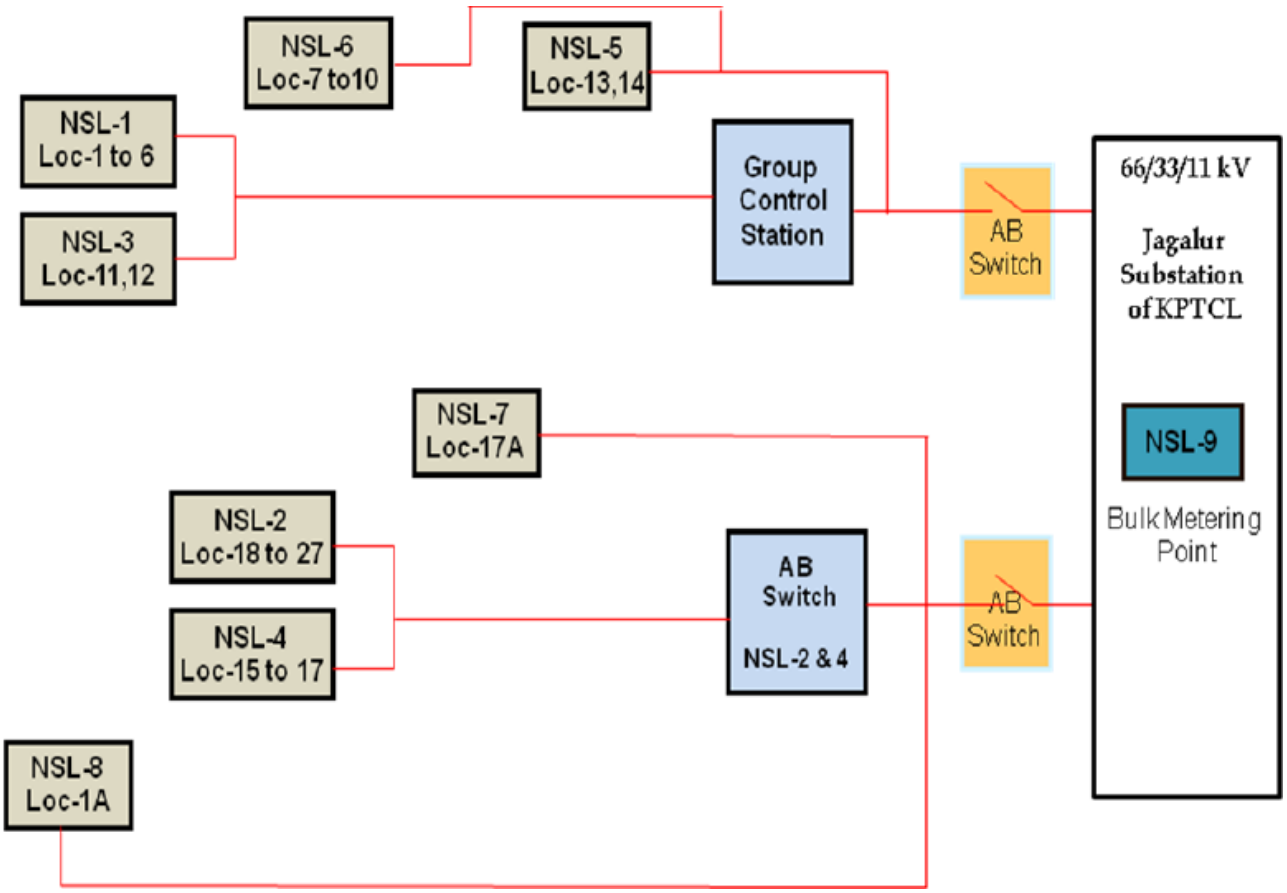
The project activity aims to harness kinetic energy of wind (renewable source) to generate electricity. It is capable to generate around 48,442 MWh per year, which is estimated based on operation with around 20% utilization factor with efficient utilization of the available wind energy through adoption of an efficient and modern technology. The net generated electricity from the project activity has been evacuated to regional grid under a long-term power purchase arrangement with the Karnataka State Electricity Board (KSEB), where power is being sold to BESCOM (Bangalore Electricity Supply Company Limited).

The project activity has achieved total GHG emission reduction of 404,289 tCO2e for overall period of 8 years and 3 months starting from 01/01/2014 to 31/03/2022 (both days included) during this first monitoring and verification cycle. Since the project activity generates electricity through wind energy, a clean renewable energy source it will not cause any negative impact on the environment and thereby contributes to climate change mitigation efforts.

b) Brief description of the installed technology and equipment>>

The project activity employs state-of-art horizontal axis wind turbines. The WTGs comprising the project activity generates clean power which is then exported to the nearest receiving station of KPTCL at Jagalur (66/11 kV substation). The WTGs are grid connected and houses the metering, switchgear and other protection equipment. Representation of the same is provided below.

Describe in detail
The machine details are given below:



Power purchase agreements have been signed with KPTCL, which for a term of 20 years, extendable by another term of 10 years. The power is being sold to BESCOM (Bangalore Electricity Supply Company Limited). The technology providers would provide all necessary operational training for the plant personnel and maintenance service during the operation of the project activity. The WTGs are manufactured as per stringent quality standards in accordance with Indian climatic conditions with three bladed stalls.

The installation of 1.5 MW machines in the state of Karnataka was first. The WTGs use a bedplate drive train design where all nacelle components are joined on a common structure, providing exceptional durability. The generator and gearbox are supported by elastomeric elements to minimize noise emissions.

The salient features of the 1.5 MW WEG's are as follows:

- Doubly-fed induction generator with a four-quadrant DC-link converter
- Converter feeds generator rotor via slip rings
- Rotor is excited by the frequency converter (sized at 1/3 of system output)
- Speed range of ±30% around rated speed (800 –1600 rpm)
- Generator torque and output can be controlled via rotor current
- Power factor control
- Power and torque control
- Reactive power control
- Voltage or power factor control in isolated operation
- Improved flicker behaviour (power oscillations)
- Reduced loading on turbine components

- Power converter handles a fraction (~30%) of total system power
- Reduced losses and cost saving
- Increased energy production
- Enhanced energy capture
- Converter controls speed/torque and reactive power on the stator side.

PP has also implemented the projects with 750 kW and 950 kW capacity wind turbines first time in the state of Karnataka. The salient features of these wind turbines are:

- Higher efficiency
- Low wear and tear of gear box
- Low peak loading
- Robust construction
- Simple and efficient interface with distribution
- Automatic adjustment of blade angles
- Rapid synchronization
- Lesser harmonic distortion
- Approved by MNES
- Lower percentage of yawning error
- State-of-art technology
- Micro-processor-based control

The wind turbines have already been commissioned by KPTCL.

In the absence of the project activity the equivalent amount of electricity would have been generated from the southern grid (part of Indian national grid), which is predominantly based on fossil fuels[1], hence baseline scenario of the project activity is the grid-based electricity system, which is also the pre-project scenario as discussed in the previous section.

c) Relevant dates for the project activity (e.g., construction, commissioning, continued operation periods, etc.)>>

UCR Project ID or Date of Authorization:	150
Start Date of Crediting Period:	01/01/2014
Project Commissioned:	27/03/2003 - 02/09/2004
Monitoring Period:	01/01/2014 to 31/03/2022

d) Total GHG emission reductions achieved or net anthropogenic GHG removals by sinks achieved in this monitoring period>>

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

[1] http://www.cea.nic.in/executive_summary.html

Summary of the Project Activity and ERs Generated for the Monitoring Period	
Start date of this Monitoring Period	01/01/2014
Carbon credits claimed up to	31/ 03/2022
Total ERs generated (tCO_{2eq})	404,289 (tCO_2eq)
Leakage	0

e) Baseline Scenario>>

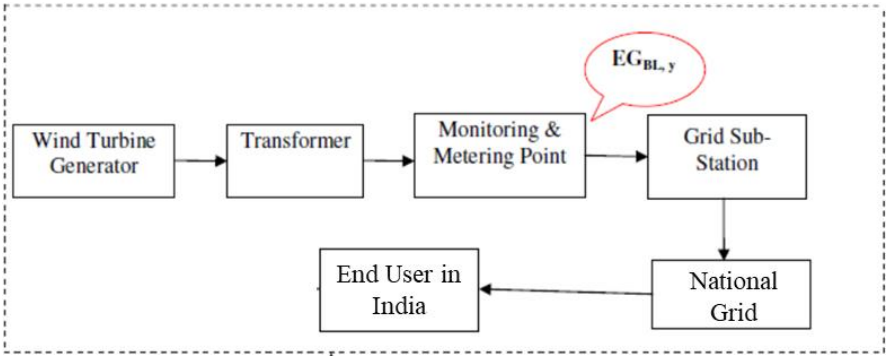
The baseline scenario identified at the PCN stage of the project activity is:

- Grid.

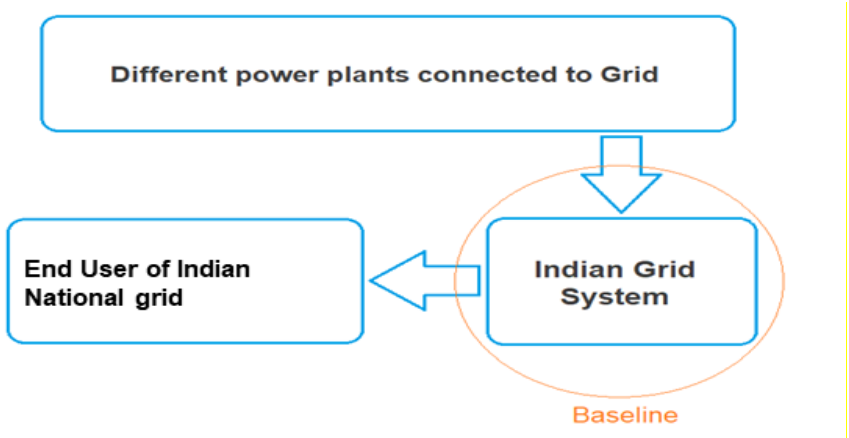
In the absence of the project activity, the equivalent amount of electricity would have been generated from fossil fuel-based power plants and exported to the southern regional grid (which is connected to the unified Indian Grid system) as national grid is predominantly sourcing from fossil fuel-based power plants. Hence, baseline scenario of the project activity is the grid-based electricity system, which is also the pre-project scenario.

Schematic diagram showing the baseline scenario:

Project Scenario:



Baseline Scenario:



A.2. Location of project activity>>

The project sites are located at Jagalur (Guheshwaragudda-Bidrakere ridge), in the district of Davangere in the Indian state of Karnataka. Davangere is approximately 240 km from Bangalore, capital of Karnataka. The site has been identified as ideally suited for wind power generation based on the micro siting studies and data analysis based on annual wind speed and frequency distribution, carried out by eminent agencies like Indian Institute of Tropical Meteorology and Karnataka Renewable Energy Development Limited.

Country : India
States : Karnataka
District : Davangere
Village : Jagalur

The representative location map is included below:

(Courtesy: google map and images)

A.3. Parties and project participants >>

Party (Host)	Participants
India	**NSL Renewable Power Private Limited.** Contact details: Mr. Rajnikant. A rajnikant.a@nslpower.com Address: 8 - 2-684/2/A, 4th Floor, Road.No.12, Banjara Hills, Hyderabad - 500034, Telangana, India

A.4. References to methodologies and standardized baselines >>

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

TYPE:
I - Renewable Energy Projects

CATEGORY:
ACM0002
Large-scale Consolidated Methodology: Grid-connected electricity generation from renewable sources, Version 20.0

Note: Project Proponent has applied the project under CDM of UNFCCC, applied under the version 06 of the Methodology (CDM ID 0998). However, the project is now revalidated under UCR mechanism without further continuity in CDM since 31 March 2011. Hence, latest version of the methodology (version 20) has been applied under UCR.

Applicability of methodologies and standardized baselines >>
The project activity has installed capacity of 27.65 MW which will qualify for a large-scale project activity under Type-I of the Large-scale Consolidated Methodology.

A.5. Crediting period of project activity >>

Length of the crediting period corresponding to this monitoring period:
08 years, 3 months.

Date:
01/01/2014 to 31/03/2022 (inclusive of both dates).

A.6. Contact information of responsible persons/entities >>

Particulars	Details
Name	Mr. Rajnikant. A
Designation	Head of Projects
Company	NSL Renewable Power Private Limited. (Also the authorized representative at UCR)
Address	8 - 2-684/2/A, 4th Floor, Road.No.12, Banjara Hills, Hyderabad – 500 034, Telangana, India.
E-mail	rajnikant.a@nslpower.com
Contact	+91 9581412677

SECTION B. Implementation of project activity

B.1. Description of implemented registered project activity >>

A) Provide information on the implementation status of the project activity during this monitoring period in accordance with UCR PCN>>

a) Description of the installed Technologies, technical processes and equipment:

Ref: (Technical information given on **Section – A.1.(b)**)

b) Information on the implementation and the actual operation of the project activity, including relevant dates:

Capacity (MW)	Details (Nos., Type & Make)	Commissioning Date	Connection Reference
4.5	6 WTGs @750 KW NEG Micon	27-03-2003	1 to 6, connected to RR NSL-1
7.5	10 WTGs @750 KW NEG Micon	27-03-2003	15 to 17, connected to RR NSL-4 21 to 27, connected to RR NSL-2
2.85	3 WTGs @950 KW NEG Micon	28-07-2003	18, 19 & 20, connected to RR NSL-2
1.9	2 WTGs @950 KW NEG Micon	28-07-2003	11 & 12, connected to RR NSL-3
1.9	2 WTGs @950 KW NEG Micon	31-08-2003	13 & 14, connected to NSL-05
6	4 WTGs @1.5 KW NEG Micon	06-08-2004	1 to 6, connected to RR NSL-1
1.5	1 WTG @1.5 KW GE Make	02-09-2004	17A, connected to NSL-07
1.5	1 WTG @1.5 KW GE Make	02-09-2004	1A, connected to NSL-08
27.65	**29 WTGs**		

Project activity has been in continuous operation since the date of commissioning of the machines. Also, the project cycle with UCR as follows:

S N	UCR activity	UCR Date
1	UCR PCN (version 01)	12/05/2022
2	UCR Registration/Approval	13/05/2022
3	UCR Monitoring Report (version 01)	02/06/2022
4	UCR Verification, appointment of verifier	27/06/2022

B) For the description of the installed technology(is), technical process and equipment, include diagrams, where appropriate>>

B.2 Do no harm or Impact test of the project activity>>

This project is a greenfield activity where grid power is the baseline. Indian grid system has been predominantly dependent on power from fossil fuel powered plants. The renewable power generation is gradually contributing to the share of clean & green power in the grid; however, grid emission factor is still on higher side which defines grid as distinct baseline.

There are social, environmental, economic and technological benefits which contribute to sustainable development.

1. **Social benefits:**

- The primary social benefits of wind are due to its zero emissions of greenhouse gasses (GHGs) and criteria pollutants (CPs) related to fossil-fuelled generators at baseline CP reduction are valued by estimating how wind power reduces harm to human health and the environment.
- The project has helped generating direct and indirect employment benefits accruing out of ancillary units for manufacturing towers for erection of the Wind Turbine Generators (WTGs) and for maintenance during operation of the project activity.
- Wind turbines can be built on existing farms or ranches. This greatly benefits the economy in rural areas, where most of the best wind sites are found. Farmers and ranchers can continue to work the land because the wind turbines use only a fraction of the land. Wind power plant owners make rent payments to the farmer or rancher for the use of the land, providing landowners with additional income.

2. **Environmental benefits:**

- Wind energy is a source of renewable energy**.** It does not contaminate, it is inexhaustible and reduces the use of fossil fuels at the baseline, which are the origin of greenhouse gasses that cause global warming.

- Generating energy from the wind does not release any carbon emissions. By replacing electricity generated from other sources such as fossil fuel power stations, wind energy leads to an overall reduction in carbon emissions.

- Wind energy does not emit toxic substances or contaminants into the air while comparing with the project baseline, which can be very damaging to the environment and to human beings. Toxic substances can acidify land and water ecosystems, and corrode buildings. Air contaminants can trigger heart disease, cancer and respiratory diseases like asthma.

- Wind energy does not generate waste or contaminate water—an extremely important factor for water sustainability. Unlike fossil fuels and nuclear power plants, wind energy has one of the lowest (almost zero) water-consumption footprints, which makes it a key for conserving hydrological resources.

3. Economic benefits:

- Wind energy projects provide many economic benefits, including direct and indirect employment, land lease payments, local tax revenue, and lower electricity rates in wind-rich regions. While project-specific impacts depend on factors such as location, size, and ownership, the overall economic impacts of utility-scale wind energy development are easily identified.
- The project contributes to the economic sustainability through promotion of decentralization of economic power, leading to diversification of the national energy supply, which is dominated by conventional fuel based generating units. Locally, improvement in infrastructure will provide new opportunities for industries and economic activities to be setup in the area. Apart from getting better employment opportunities, the local people will get better prices for their land, thereby resulting in overall economic development.

Thus, the project activity is contributing to various sustainable benefits which can be realized both in direct and indirect forms and positive impacts are realizable across the operational lifetime of the project.

B.3. Baseline Emissions>>

This section provides details of emission displacement rates/coefficients/factors established by the applicable methodology selected for the project.

As per para 22 of the approved consolidated methodology ACM0002 Version 20, if the project activity is the installation of a new grid-connected renewable power plant/unit, the baseline scenario 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 - TOOL07: Tool to calculate the emission factor for an electricity system".

The project activity involves setting up of a new wind power plant to harness the green power from wind energy and to use for selling it to the southern grid which is part of unified Indian national grid system as per PPA. In the absence of the project activity, the equivalent amount of power would have been supplied by fossil fuel fired power plants to the Indian grid, as grid power supply 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_2 emission factor (tCO_2/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_2/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 2021-22, 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.

B.4. Debundling>>

This project activity is not a debundled component of a larger project activity.

SECTION C. Application of methodologies and standardized baselines

C.1. References to methodologies and standardized baselines >>

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

TYPE:
I - Renewable Energy Projects

CATEGORY:
ACM0002
Large-scale Consolidated Methodology: Grid-connected electricity generation from renewable sources, Version 20.0

Note: Project Proponent has applied the project under CDM of UNFCCC, applied under the version 06 of the Methodology (CDM ID 0998). However, the project is now revalidated under UCR mechanism without further continuity in CDM since 31 March 2011. Hence, latest version of the methodology (version 20) has been applied under UCR.

C.2. 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 sale to Indian national grid through KSEB. The project activity has installed capacity of 27.65 MW which will qualify for a large-scale project activity under Type-I of the Large-scale Consolidated Methodology. The project status is corresponding to the methodology ACM0002, version 20 and applicability of methodology is discussed below:

1. This methodology applies to project activities that include retrofitting, rehabilitation (or refurbishment), replacement or capacity addition of an existing power plant or construction and operation of a Greenfield power plant	The project activity is a greenfield wind project with total installed capacity of 27.65 MW generates wind power and sale renewable electricity to southern grid (currently identified as Unified Indian grid system) as per signed PPA. Hence, the project activity meets the given applicability criterion.
2. This methodology is applicable to grid-connected renewable energy power generation project activities that: a. Install a Greenfield power plant; b. Involve a capacity addition to (an) existing plant(s); c. Involve a retrofit of (an) existing operating plants/units; d. Involve a rehabilitation of (an) existing plant(s)/unit(s); or e. Involve a replacement of (an) existing plant(s)/unit(s).	The project activity is installation of new WTG's. PP doesn't have any WTG at the project site prior to the implementation of the project activity. The option (a) of applicability criteria 2 is applicable as project is a Greenfield plant /unit. Hence, the project activity meets the given applicability criterion.
3. The methodology is applicable under the following	The project activity is greenfield project

conditions: a. The project activity may include renewable energy power plant/unit of one of the following types: hydro power plant/unit with or without reservoir, wind power plant/unit, geothermal power plant/unit, solar power plant/unit, wave power plant/unit or tidal power plant/unit; b. In the case of capacity additions, retrofits, rehabilitations or replacements (except for wind, solar, wave or tidal power capacity addition projects) the existing plant/unit started commercial operation prior to the start of a minimum historical reference period of five years, used for the calculation of baseline emissions and defined in the baseline emission section, and no capacity expansion, retrofit, or rehabilitation of the plant/unit has been undertaken between the start of this minimum historical reference period and the implementation of the project activity.	involves installation of new WTG's. PP doesn't have any WTG at the project site prior to the implementation of the project activity. Hence, project activity meets the given applicability criterion.
4. In case of hydro power plants, one of the following conditions shall apply: (a) The project activity is implemented in existing single or multiple reservoirs, with no change in the volume of any of the reservoirs; or (b) The project activity is implemented in existing single or multiple reservoirs, where the volume of the reservoir(s) is increased and the power density, calculated using equation (7), is greater than 4 W/m2; or (c) The project activity results in new single or multiple reservoirs and the power density, calculated using equation (7), is greater than 4 W/m2; or (d) The project activity is an integrated hydro power project involving multiple reservoirs, where the power density for any of the reservoirs, calculated using equation (7), is lower than or equal to 4 W/m2	The project activity is a wind power plant. Hence, not applicable.
5. In the case of integrated hydro power projects, project proponent shall: (a) Demonstrate that water flow from upstream power plants/units spill directly to the downstream reservoir and that collectively constitute to the generation capacity of the integrated hydro power project; or (b) Provide an analysis of the water balance covering the water fed to power units, with all	The project activity is a wind power project. Hence, not applicable.

possible combinations of reservoirs and without the construction of reservoirs. The purpose of water balance is to demonstrate the requirement of specific combination of reservoirs constructed under CDM project activity for the optimization of power output. This demonstration has to be carried out in the specific scenario of water availability in different seasons to optimize the water flow at the inlet of power units. Therefore, this water balance will take into account seasonal flows from river, tributaries (if any), and rainfall for minimum of five years prior to the implementation of the CDM project activity	
6. The methodology is not applicable to: (a) Project activities that involve switching from fossil fuels to renewable energy sources at the site of the project activity, since in this case the baseline may be the continued use of fossil fuels at the site; (b) Biomass fired power plants/units.	The project activity is a wind power project and does not involve any fuel switch and biomass firing. Hence, project activity meets the given applicability criterion.
7. In the case of retrofits, rehabilitations, replacements, or capacity additions, this methodology is only applicable if the most plausible baseline scenario, as a result of the identification of baseline scenario, is "the continuation of the current situation, that is to use the power generation equipment that was already in use prior to the implementation of the project activity and undertaking business as usual maintenance".	The project activity is not the retrofitting or replacement of an existing facility for renewable energy generation. Hence, this criterion in not applicable.

C.3 Applicability of double counting emission reductions >>

There is no double accounting of emission reductions in the project activity due to the following reasons:

- Project is uniquely identifiable based on its location coordinates,
- Project has dedicated commissioning certificate and connection point,
- Project is associated with energy meters which are dedicated to each WTGs at the sale point

C.4. Project boundary, sources and greenhouse gases (GHGs)>>

As per applicable methodology ACM0002 Version 20, "The spatial extent of the project boundary includes the project power plant and all power plants connected physically to the electricity system that the project power plant is connected to."

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

Source		Gas	Included?	Justification/Explanation
Baseline	Grid connected fossil fuel-based electricity generation	**CO_2**	**Yes**	**Main emission source**
		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 Wind 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

C.5. Establishment and description of baseline scenario (UCR Protocol) >>

Net GHG Emission Reductions and Removals

Thus, $ER_y = BE_y – PE_y – LE_y$

Where:

ER_y = Emission reductions in year y (tCO_2/y)

BE_y = Baseline Emissions in year y ($t CO_2/y$)

PE_y = Project emissions in year y (tCO_2/y)

LE_y = Leakage emissions in year y (tCO_2/y)

Baseline Emissions

Baseline emissions include only CO_2 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:

BE_y	=	Baseline emissions in year y ($t CO_2$)
$EG_{PJ,y}$	=	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)
$EF_{grid,y}$	=	UCR recommended emission factor of 0.9 tCO_2/MWh has been considered. (Reference: General Project Eligibility Criteria and Guidance, UCR Standard, page 4)

Project Emissions

As per ACM0002 version 20, 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.

Leakage

As per paragraph 53 of ACM0002 version-20; '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.' Therefore, the leakage from the project activity is considered as zero.

Hence, $LE_y = 0$

The actual emission reduction (annualized average) achieved during the first CoU period (01/01/2014 to 31/03/2022) are estimated as follows:

$BE_{y, avg}$ = 49,912.54 MWh/year ✕ 0.9 tCO_2/MWh
= 44,920.97 tCO_2/year (against ex-ante estimate of 43,598 CoUs/year)

This is the annual average generation and corresponding CoUs based on actual data.

However, Overall emission reduction achieved by the project activity for this current monitoring period is demonstrated below:

$Be_{y, total}$ = 449,212.87 MWh × 0.9 tCO2/MWh
= 404,289 tCO2e

ERy = BEy – PEy – LEy
=404,289 – 0 – 0
= 404,289 tCO2e

The final net ER value considered for claim for the current monitoring period
= 404,289 tCO2e (i.e.,404,289 CoUs).

Rational: This final value is conservative as all annualized ER values are rounded down and final sum is considered for reporting, which gives the most conservative result.

The vintage wise break up is given under the ER excel sheet and also included under the Appendix 3 of this report.

C.6. Prior History>>

The project activity is a large-scale wind project (as per definition of CDM), following are the key details under the prior history of the project:

(a) The project activity was applied under Clean Development Mechanism (CDM) of UNFCCC to consider generation or issuance of carbon credits under the project ID and title "Project: 0998 - NSL 27.65 MW Wind Power Project in Karnataka, India" and got registered on 25 May 2007 with fixed crediting period from 01 April 2001 to 31 March 2011. For the fixed crediting period PP had successfully completed the monitoring & verification activities and successfully issued carbon credits; which has helped the project in financial sustainability. However, after completion of crediting period PP has not applied for re-registration on CDM neither applied to any other carbon credit mechanisms. Currently project is being applied under UCR in order to issue emission credits for receiving carbon financing for remaining lifetime of the project.

(b) The project has never been applied under any other GHG mechanism except CDM; also, for the current period of COUs, the CDM verification is not possible as the project was under fixed crediting period which cannot be extended further for CERs. Hence project will not cause double accounting of carbon credits (i.e., COUs).

C.7. Monitoring period number and duration>>

Number : First Monitoring Period
Duration : 8 years, 03 months
01/01/2014 to 31/03/2022 (inclusive of both dates)

C.8. Changes to start date of crediting period >>

There is no change in the start date of crediting period applicable during this PCN submission.

The start date of crediting under UCR is considered as 01/01/2014, as the WTGs under the project were commissioned during 2003-04 and currently no GHG emission reduction has been claimed under the project since 01 April 2011.

C.9. Permanent changes from PCN monitoring plan, applied methodology or applied standardized baseline >>

Not applicable.

C.10. Monitoring plan>>

Data and Parameters available at validation (ex-ante values):

Data / Parameter	UCR recommended emission factor
Data unit	tCO_2 /MWh
Description	A "grid emission factor" refers to a CO_2 emission factor (tCO_2/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_2/MWh for the 2014- 2020 years as a fairly conservative estimate for Indian projects not previously verified under any GHG program. Hence, the same emission factor has been considered to calculate the emission reduction under conservative approach.
Source of data	https://a23e347601d72166dcd6-16da518ed3035d35cf0439f1cdf449c9.ssl.cf2.rackcdn.com//Documents/UCRStandardNov2021updatedVer2_301121081557551620.pdf
Value applied	0.90
Measurement methods and procedures	-
Monitoring frequency	Ex-ante fixed parameter
Purpose of Data	For the calculation of Emission Factor of the grid
Additional Comment	The combined margin emission factor as per CEA database (current version 17, Year 2022) results into higher emission factor. Hence for 2021-22 vintage UCR default emission factor remains conservative.

Data and Parameters to be monitored (ex-post monitoring values):

Data / Parameter	$EG_{PJ, y}$
Data unit	MWh/year
Description	Net electricity supplied to the grid by the project activity
Source of data	NSL records / KPTCL records
Measurement procedures (if any):	PP has referred to the #(iii) of the measurement procedure prescribed under the registered PCN. As per the monthly accounting procedure reflected in the monthly statement (e.g., B-form and invoices) the net units are calculated after adjusting import losses and Transmission losses. All these values such as Export, Import, Import Loss, Transmission losses etc. are reported under the calculation sheet. Thus, $EG_{PJ, y}$ is the net export which has been calculated from export and import values reported and/or the losses parameters. (calculation has been referred in the ER sheet)
Measurement Frequency:	Monthly
Value applied:	49,912.54 (MWh/year) [This is an annualized average value, whereas the actual total for the entire monitoring period is 449,212.87 MWh]

QA/QC procedures applied:	Calibration of the KPTCL Main meters will be carried out once in five years as per National Standards (as per the provision of CEA, India). The energy meter details are attached in Appendix-1 for further reference. All meters are calibrated within the prescribe frequency of 5 years, as can be referred from the meter test certificates. Additionally, the net amount of electricity considered for ER estimate are based on monthly statements to be issued by KPTCL, and all the monthly values are cross verified with the monthly bills.
Purpose of data:	The Data/Parameter is required to calculate the baseline emission.
Any comment:	All the data will be archived till a period of two years from the end of the crediting period.

Appendix 1:

List of energy meters and their basic details:

Jagalur Project					
Energy Meter Details					
Sl. No.	**RR. Number**	**Make of Energy Meter**	**Energy Meter Accuracy**	**Main Meter Serial Number**	**Check Meter Serial Number**
1	NSL-01	L&T	0.2s	11068953	11068957
2	NSL-02	L&T	0.2s	11068970	11068972
3	NSL-03	L&T	0.2s	722940	722981
4	NSL-04	L&T	0.2s	11068935	11068975
5	NSL-05	L&T	0.2s	8001242	8001255
6	NSL-06	L&T	0.2s	2995252	2995256
7	NSL-07	L&T	0.2s	8001256	8001257
8	NSL-08	L&T	0.2s	8001249	8001262
9	NSL-09	L&T	0.2s	10058885	10059243

Appendix 2:

Final summary of CoUs claim under this monitoring period:

	Year	Net MWH	Net CoU	Final CoUs considered	
	2014	41,565.5700	37,409.02	37,409	Final for the vintage
	2015	48,541.4100	43,687.27	43,687	Final for the vintage
	2016	58,747.2900	52,872.56	52,872	Final for the vintage
	2017	65,467.0100	58,920.31	58,920	Final for the vintage
	2018	65,664.46	59,098.01	59,098	Final for the vintage
	2019	61,628.92	55,466.03	55,466	Final for the vintage
	2020	52,120.81	46,908.73	46,908	Final for the vintage
	2021	53,043.27	47,738.94	47,738	Final for the vintage
	2022	2,434.13	2,190.72	2,191	Partial for the vintage
Total =		4,49,212.87	4,04,292	4,04,289	Total claimed
Annual avg. =		49,912	44,921	44,921	Average

	Comparison with Ex-ante estimate		
	Ex-ante estimated value as per UCR PCN =	43,598	CoUs/year
	Actual value of annual average =	44,921	CoUs/year
	Variation in CoUs =	3.03%	Fraction