PROJECT CONCEPT NOTE

CARBON OFFSET UNIT (CoU) PROJECT

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

Version 1.0

Date 12/05/2022

First CoU Issuance Period: 8 years, 03 months

Date: 01/01/2014 to 31/03/2022

Project Concept Note (PCN)
CARBON OFFSET UNIT (CoU) PROJECT

BASIC INFORMATION	
Title of the project activity	27.65 MW Jagalur Wind Project by NSL Renewable Power in Karnataka, India
Scale of the project activity	Large Scale
Completion date of the PCN	12/05/2022
Project participants	NSL Renewable Power Private Limited
Host Party	India
Applied methodologies and standardized baselines	Applied Baseline Methodology: ACM0002: "Grid-connected electricity generation from renewable sources", version 20 (Large-scale Consolidated Methodology) Standardized Methodology: Not Applicable.
Sectoral scopes	01 Energy industries (Renewable/Non-Renewable Sources)
Estimated amount of total GHG emission reductions	To be estimated during verification [An ex-ante estimate is 43,598 CoUs per year]

SECTION A. Description of project activity

A.1. Purpose and general description of Carbon offset Unit (CoU) project activity >>

The project is tiled under UCR as "27.65 MW Jagalur Wind Project by NSL Renewable Power in Karnataka, India", which is a grid connected wind power project located in Davangere district in the state of Karnataka (India). The project is an operational activity with continuous reduction of GHG, currently being applied under "Universe Carbon Registry" (UCR).

Purpose of the project activity:

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 had been executed in three stages, with different capacities-wise bundles in each phase. The details along with commissioning period are as follows:

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**		

The project activity was developed as a greenfield activity with no power generation facility existing at the project site in the pre-project scenario that can be attributed to the captive power requirement of PP. In the pre-project scenario equivalent amount of electricity would have been generated and supplied from grid for the purpose of captive consumption, thus the power displaced by the project activity would have been otherwise generated from fossil fuel dominated thermal power plant and fed to the grid which is the current baseline for the project.

Hence, project activity is displacing the estimated annual net electricity generation i.e., 48,442 MWh from the southern grid (currently part of Unified Indian National Grid system), which otherwise would have been generated from fossil fuel based thermal power plant and exported to the national grid. The project activity doesn't involve any GHG emission sources. The estimated annual average CO_2e emission reduction by the project activity is expected to be 43,598 tCO_2e; whereas actual emission reduction achieved during the first CoU period shall be submitted as a part of first monitoring and verification.

Since the project activity will generate 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.

Project's Contribution to Sustainable Development

Indian economy is highly dependent on "Coal" as fuel to generate energy and for production processes. Thermal power plants are the major consumers of coal in India and yet the basic electricity needs of a large section of population are not being met. This results in excessive demands for electricity and places immense stress on the environment.

Changing coal consumption patterns will require a multi-pronged strategy focusing on demand, reducing wastage of energy and the optimum use of renewable energy (RE) sources. This project is a greenfield activity where grid power is the baseline. 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.

The Government of India has stipulated following indicators for sustainable development in the interim approval guidelines for such projects which are contributing to GHG mitigations. The Ministry of Environment, Forests & Climate Change, has stipulated economic, social, environment and technological well-being as the four indicators of sustainable development. It has been envisaged that the project shall contribute to sustainable development using the following ways:

Social well-being: 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. It has led to development of infrastructure around the project area in terms of improved road network etc. and will also directly contribute to the development of renewable infrastructure in the region.

Economic well-being: Being a renewable resource, using wind energy to generate electricity contributes to conservation of precious natural resources. 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.

Technological well-being: The project activity leads to the promotion of 27.65 MW WTGs into the region and will promote practice for small scale industries to reduce the dependence on carbon intensive grid supply to meet the captive requirement of electrical energy and also increasing energy availability that can lead to energy security under clean technology. Hence, the project leads to technological well-being.

Environmental well-being: The project utilizes wind energy for generating electricity which is a clean source of energy. The project activity will not generate any air pollution, water pollution or solid waste to the environment which otherwise would have been generated through fossil fuel-based power plants. Also, it will contribute to reduction GHG emissions. Thus, the project causes no negative impact on the surrounding environment contributing to environmental well-being.

With regards to ESG credentials:

At present specific ESG credentials have not been evaluated, however, the project essentially contributes to various indicators which can be considered under ESG credentials. Some of the examples are as follows:

Under Environment:
For the project proponent, it contributes to GHG emission reduction and conservation of depleting energy sources associated with the project baseline, which is a significant contribution under Environmental indicator. Also, the criteria can be further evaluated on the basis of any environmental risks which the company might face and how those risks are being managed by the company. Here, as the power generation is based on wind power, the risk of environmental concerns associated with non-renewable power generation and risk related to increasing cost of power etc. are now mitigated. Hence, project contributes to ESG credentials.

Under Social:
Social criteria reflect on the company's business relationships, qualitative employment, working conditions with regard to its employees' health and safety, interests of other stakeholders' etc. With respect to this project, the PP has robust policies in place to ensure equitable employment, health & safety measures, local jobs creation, regular training etc. Also, the organizational CSR activities directly support local stakeholders to ensure social sustainability. Thus, the project contributes to ESG credentials.

Under Governance:
Governance criteria relates to overall operational practices and accounting procedure of the organization. The PP practices a good governance practice with transparency, accountability and adherence to local and national rules & regulations etc. The project activity is a wind power project owned and managed by the proponent for which all required NOCs and approvals are received. The electricity generated from the project can be accurately monitored, recorded and further verified under the existing management practice of the company. Thus, the project and the proponent ensure good credentials under ESG.

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

There was no harm identified form the project and hence no mitigations measures are applicable.

Rational: as per 'Central Pollution Control Board (Ministry of Environment & Forests, Govt. of India)', final document on revised classification of Industrial Sectors under Red, Orange, Green and White Categories (07/03/2016), it has been declared that wind project activity falls under the "White category". White Category projects/industries do not require any Environmental Clearance such as 'Consent to Operate' from PCB as such project does not lead to any negative environmental impacts. Additionally, as per Indian Regulation, Environmental and Social Impact Assessment is not required for Wind Projects.

Nevertheless, stakeholders' consultation meeting was conducted prior to establishment for project activity with the identified stakeholders namely - local elected body of representatives administering the local area, Ministry of Non-Conventional Energy Sources, Karnataka Renewable Energy Development Limited, Karnataka Pollution Control Board, consultants and equipment suppliers by the PP to understand, discuss, record all possible concerns related environment and socio-economic aspects of the project so that as per requirements mitigation measures can be taken. Along with personal invitation, public notices were placed in local newspapers to invite people for the consultation meeting with the agenda of inviting public comments on the project activity. The feedback and inputs received from stakeholders confirm that no negative impact is foreseen by the stakeholders.

Additionally, there are social, environmental, economic and technological benefits which contribute to sustainable development. The key details have been discussed in the previous section.

A.3. Location of project activity >>

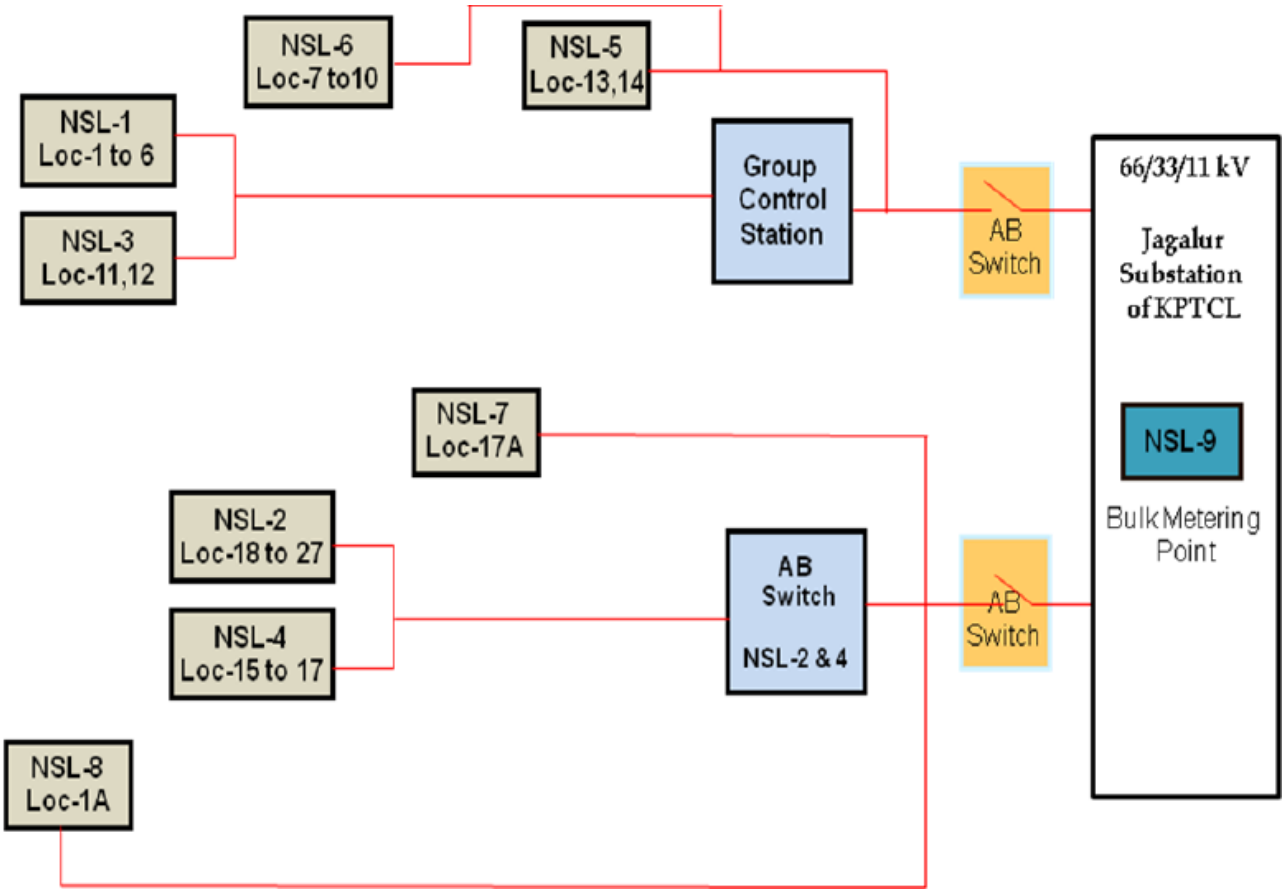
The project sites are located at Jagalur (Guheshwaragudda-Bidrakere ridge), in the district of Davangere in the Indian state of Karnataka. Davangere is approximately 240 km from Bangalore, capital of Karnataka. The site has been identified as ideally suited for wind power generation based on the micro 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.

The representative location map is included below:

(Courtesy: google map and images)

A.4. Technologies/measures >>

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.



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.

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

A.5. Parties and project participants >>

Party (Host)	Participants
India	**NSL Renewable Power Private Limited** Contact details: Mr. Rajnikant. A rajnikant.a@nslpower.com / +91 9581412675 Address: 8 - 2-684/2/A, 4th Floor, Road.No.12, Banjara Hills, Hyderabad - 500034, Telangana, India

A.6. Baseline Emissions>>

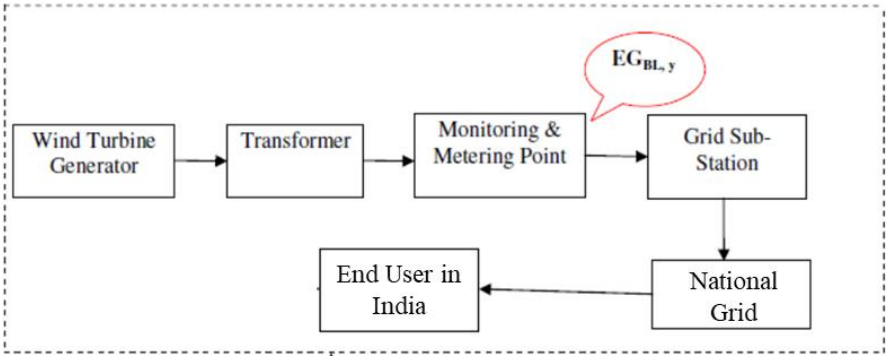
The baseline scenario identified at the PCN stage of the project activity is:

- Grid

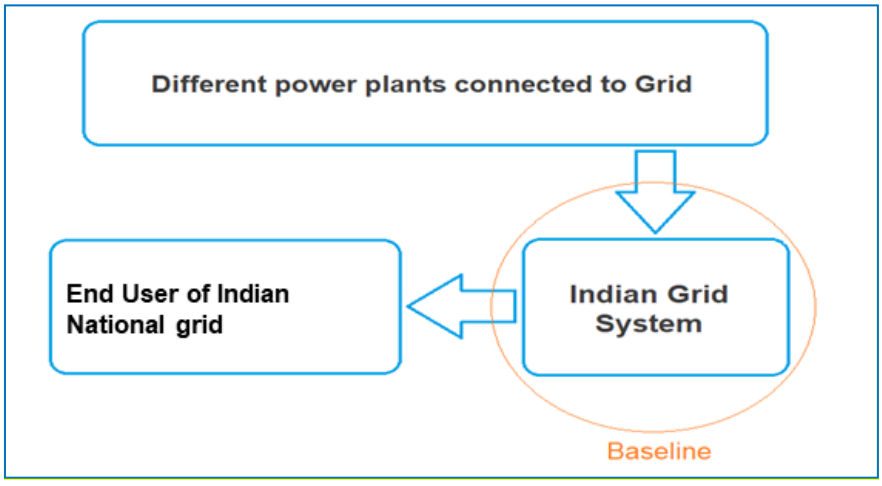
In the absence of the project activity, the equivalent amount of electricity would have been generated from fossil fuel-based power plants and exported to the southern regional grid (which is connected to the unified Indian Grid system) as national grid is predominantly sourcing from fossil fuel-based 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.7. Debundling>>

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

SECTION B. Application of methodologies and standardized baselines

B.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.

B.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:

Applicability Criterion	Project Case
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.

Applicability Criterion	Project Case
3. The methodology is applicable under the following 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.	The project activity is greenfield project 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	The project activity is a wind power project. Hence, not applicable.

Applicability Criterion	Project Case
(b) Provide an analysis of the water balance covering the water fed to power units, with all 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.

B.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

B.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

B.5. Establishment and description of baseline scenario >>

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, 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_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 achieved during the first CoU period shall be submitted as a part of first monitoring and verification. However, for the purpose of an ex-ante estimation, following calculation has been submitted:

Estimated annual baseline emission reductions (BE_y)

= 48,442 MWh/year ✕ 0.9 tCO_2/MWh

= 43,598 tCO_2/year (i.e., 43,598 CoUs/year)

B.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 can not be extended further for CERs.. Hence project will not cause double accounting of carbon credits (i.e. COUs).

B.7. 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.

B.8. Permanent changes from PCN monitoring plan, applied methodology or applied standardized baseline >>

Not applicable.

B.9. 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)

B.8. 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	0.9
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 16, Year 2021) results into higher emission factor. Hence for 2021 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):	For the purpose of a simplified and reliable measurement method, PP has proposed the following procedure for the parameter: (i) If the B-forms/JMR/Share certificates/credit notes etc. generated for the project WTGs provide net export quantity, the same will be directly considered for calculation. (ii) However, if the monthly statement does not directly provide "net electricity" units, then quantity of net electricity supplied to the grid shall be calculated using the parameters reflected in the monthly document, such as Export units and Import units. Thus, the difference between the measured quantities of the grid export and the import will be considered as net export: $EG_{PJ,y} = EG_{Export} - EG_{Import}$

	(iii) In case the monthly accounting procedure (as may be reflected in the monthly statement (e.g. B-form, JMR, share certificate, invoice etc. whichever is relevant during the crediting period) includes any transmission losses or other parameters to discount the units and month billing is done on such discounted net value, then PP may decide to consider this value for ER calculation, which is conservative. Thus, $EG_{PJ,y}$ is the net export which will be either directly sourced from the monthly generation statements (such as JMR) or to be calculated from export and import values reported and/or the losses parameters (if included).
Measurement Frequency:	Monthly
Value applied:	48,422 (This is an annualized average value considered here for an ex-ante estimation only, whereas this is an ex-post parameter hence actual value shall be applied during monitoring and verification)
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) and faulty meters will be duly replaced immediately as per the provision of power purchase agreement. The energy meter details are attached in Appendix-1 for further reference. Any change/replacement in energy meters shall be addressed during periodic verification. The net amount of electricity considered for ER estimate which will be anyhow based on monthly statements to be issued by KPTCL, which can be further cross verified by 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