



PROJECT CONCEPT NOTE

CARBON OFFSET UNIT (CoU) PROJECT



Title: 2.736 MW Bundled Solar Power Project activity in Gujarat.

Version 2.0

Date 31/01/2026

First CoU Issuance Period: 3 years, 0 months

Date: 01/01/2022 to 31/12/2024



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

BASIC INFORMATION	
Title of the project activity	2.736 MW Bundled Solar Power Project activity in Gujarat.
Scale of the project activity	Small Scale
Completion date of the PCN	09/11/2025
Project participants	Green Shift Climate Solutions (Aggregator) Knack Packaging Private Limited (Project Owner) Knack FlexiPack LLP (Project Owner) Knack Energy private Limited (Project Owner)
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 total GHG emission reductions	To be estimated during verification [An ex-ante estimate is 3926 CoUs per year]

SECTION A. Description of project activity

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

The project 2.736 MW Bundled Solar Power Project activity in Gujarat (Herein after called as Project Proponent “PP”) is a wind power project located in the State of Gujarat, Country India. The purpose of this power is for captive consumption. The promoter of the project activity are “Knack Packaging Private Limited, Knack FlexiPack LLP and Knack Energy Private Limited (herein after called as project Proponent or PP) has the full ownership of the project activity. This Project is an operational activity with continuous reduction of GHG, currently being applied under “Universal Carbon Registry” (UCR).

Purpose of the project activity:

The main purpose of the project activity is to generate electricity using a clean and renewable source of energy i.e.. Solar radiation. The proposed project activity with aggregated 2.736 MW (i.e 2736 Kwp) is installation and operation of solar power plant as per details listed below;

Name of the Company	Type	Total installed Capacity in AC KWp	Commissioning date
Knack Packaging Private Limited, Borisana	Roof Mounted	876	25/06/2021
Knack Packaging Private Limited, Indrad	Roof Mounted	870	21/12/2021
Knack FlexiPack LLP	Roof Mounted	490	25/04/2022
Knack Energy Private Limited	Roof Mounted	500	16/05/2022

The project will generate approximately 4362 MWh of electricity per annum. The project activity uses Longi/Traina Mono PERC with Half cut technology renewable solar photovoltaic technology to generate clean energy. The generation of power from solar photovoltaics is a clean technology as there is no fossil fuel fired or no GHG gases are emitted during the process. Photovoltaic module consists of several photovoltaic cells connected by circuits and sealed in an environmentally protective laminate, which forms the fundamental building block of the complete PV generating unit. Several PV panels mounted on a frame are termed as PV array. Thus, the project activity leads to reduce the GHG emissions as it displaces power from fossil fuel-based electricity generation in the regional grid. The technological details have been proved in Section A-4.

Since the project activity generates electricity through solar energy, a clean renewable energy source it will not cause any negative impact on the environment and thereby contributed to climate change mitigation efforts.

A.1.2 Contribution of project activity to Sustainable development:

The project activity is a greenfield initiative where grid power serves as the baseline. The Indian grid system has predominantly relied on fossil fuel-powered plants. While renewable power generation is gradually increasing its share in the energy mix, the grid emission factor remains relatively high, thereby defining the grid as a distinct baseline.

The Government of India has outlined specific indicators for sustainable development in its interim approval guidelines for projects contributing to greenhouse gas (GHG) mitigation. The Ministry of Environment, Forests & Climate Change has identified four key indicators of sustainable development: economic, social, environmental, and technological well-being.

It is envisaged that the project will contribute to sustainable development in the following ways:

Social well-being: The project has created significant employment opportunities for the local workforce during the construction phase. Even after implementation, it has continued to provide sustained employment for the local population, and this is expected to continue throughout the project's lifetime. These employment opportunities contribute to poverty alleviation in the surrounding areas over the entire duration of the project activity.

Economic well-being: The project is a clean technology investment, made possible with support from carbon revenue. This shows that clean energy investments are flowing into the host country. The project needs both temporary and permanent workers, including skilled and semi-skilled people, at the project site. This will help create more employment opportunities in the region.

The electricity produced by the project will be used for its own operations (captive consumption), which will reduce the demand for electricity from the main power grid. In addition, improvements in local infrastructure will open up new possibilities for industries and economic activities to be set up in the area.

Besides getting better job opportunities, local people are also expected to receive higher prices for their land. This will lead to overall economic growth and development in the region.

Technological well-being: The successful operation of the project activity would lead to the promotion of solar-based power generation and would encourage other entrepreneurs to participate in similar projects. Increased interest in solar energy projects will further push research and development efforts by technology providers to develop more efficient and better machinery in the future. The project activity leads to the promotion and demonstrates the success of solar projects in the region, which further motivates more investors to invest in solar power projects. Hence, the project activity leads to technological well-being.

Environmental well-being: The project activity involves the generation of electricity through a zero-emission, wind-based power facility, contributing to the reduction of greenhouse gas (GHG) emissions and harmful pollutants such as SO_x, NO_x, and suspended particulate matter (SPM) that are typically associated with conventional thermal power plants. By harnessing wind energy—a clean and renewable source—the project avoids the use of fossil fuels. As a result, it does not produce air pollution, water contamination, or solid waste that would otherwise be generated by traditional power generation methods. Therefore, the project has no adverse environmental impact and actively supports environmental well-being.

A.1.3 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:**

Environmental criteria may include aspects such as a company's energy consumption, waste generation, pollution, conservation of natural resources, and treatment of animals. For the project proponent, the energy usage pattern has now shifted to renewable energy due to the implementation of the project, which also supports the reduction of greenhouse gas (GHG) emissions and helps conserve limited fossil fuel resources that were part of the original project baseline. Additionally, this criterion can be further assessed by considering potential environmental risks the company may encounter and the measures in place to manage those risks. In this case, since power generation will rely on solar energy, environmental risks typically associated with non-renewable energy sources such as emissions and rising fuel costs—are effectively mitigated. Therefore, the project contributes positively to the company's ESG (Environmental, Social, and Governance) profile.

- **Under Social:**

Social criteria focus on a company's business relationships, quality of employment, working conditions—particularly employee health and safety—and the interests of other stakeholders. In relation to this project, the Project Proponent has established strong policies to promote fair employment practices, implement health and safety measures, and create local job opportunities. Additionally, the organization's CSR activities actively support local stakeholders, helping to ensure social sustainability. Therefore, the project positively contributes to the company's ESG credentials.

- **Under Governance:**

Governance criteria relate to the overall operational practices and accounting procedures of an organization. In relation to this project, the Project Proponent follows strong governance principles, emphasizing transparency, accountability, and compliance with local and national laws and regulations. Further details can be found in the company's annual report. The electricity generated by the project is carefully monitored, recorded, and verified through the company's established management systems. Therefore, both the project and the proponent demonstrate strong ESG credentials.

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

There was no harm identified from 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.

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

A.3. Location of project activity >>

Country : India
 State : Gujarat
 Village : Borisana, Indrad, Budasan
 Taluka : Kadi
 District : Mehsana

The geographic co-ordinate of the project locations have been given below;

Site Name	Latitude	Longitude
Knack Packaging Private Limited, Borisana	23° 22' 80.83"N	72° 35' 54.64"E
Knack Packaging Private Limited, Indrad	23° 29' 29.01"N	72° 39' 49.09"E
Knack FlexiPack LLP	23° 29' 18.50"N	72° 38' 96.27"E
Knack Energy Private Limited	23° 29' 23.17"N	72° 38' 93.55"E

The representative location is shown below;



Figure1 Location of the project activity.

A.4. Technologies/measures >>

The project activity uses clean renewable solar energy to produce electricity. The applied technology is considered to be one of the most environmentally friendly technologies available, as the operation of solar photovoltaics does not emit any greenhouse gases (GHGs) or any other harmful gases, unlike the operation of conventional power plants.

A photovoltaic module consists of photovoltaic cells connected by circuits and sealed in an environmentally protective laminate, which forms the fundamental building blocks of the complete PV generating unit. Several PV panels mounted on a frame are termed a PV array. The project activity has used reliable and proven technology to ensure that an environmentally safe and sound technology is implemented, leading to GHG reduction.

In the absence of the project activity, the equivalent amount of electricity imported from the NEWNE grid would have been generated by the NEWNE grid, which is predominantly based on fossil fuels. Hence, the baseline scenario of the project activity is the grid-based electricity system, which is also the project scenario.

Salient features of the 2.736 MW rooftop PV technology are:

Knack Packaging Private Limited-Borisana

Total number of Photovoltaic Modules	1770
Rating of the Photovoltaic Module	495
Module Make	Longi/Trina
Technology	Mono PERC
No of Inverters/Rating	250 Kw x 5 nos
Invertor	String
Invertor make	Delta
Energy meter make	Secure
Meter Serial No	X1603939

Knack Packaging Private Limited-Indrad

Total number of Photovoltaic Modules	1758
Rating of the Photovoltaic Module	495
Module Make	Longi/Trina
Technology	Mono PERC
No of Inverters/Rating	100 Kw x 9 nos
Invertor	String
Invertor make	Delta-2 nos & Solace-1nos
Energy meter make	Secure
Meter Serial No	X1603941/X1612014

Knack FlexiPack LLP

Total number of Photovoltaic Modules	1313
Rating of the Photovoltaic Module	450
Module Make	Longi/Trina
Technology	Mono PERC
No of Inverters/Rating	6 / 100 Kw x 3 nos, 70 KW x 2nos, 50 Kw
Invertor	String Inverter
Invertor make	Delta
Energy meter make	Secure
Meter Serial No	190091

Knack Energy private Limited

Total number of Photovoltaic Modules	1330
Rating of the Photovoltaic Module	495 KWp
Module Make	Longi/Trina
Technology	Mono PERC
No of Inverters/Rating	5 / 100 KW
Invertor	String Inverter
Invertor make	Delta
Energy meter make	Secure
Meter Serial No	X1900900

A.5. Parties and project participants >>

Party (Host)	Participants
India	GreenShift Climate Solutions (Aggregator) Contact Person: Sonia Bhatt Mobile: 8735000438 Address: 402, Akhand Anand avenue, Anand Nagar, charwda road, Vapi 396 191 Knack Packaging Private Limited (Project Owner) Plot no 8, Kamala Amrut Ind Park, Phase-II, At Indrad, Ta, Kadi, Dist. Mehsana Knack Packaging Private Limited (Project Owner) Block No. 482, 489, 493, 497, B/h. Shankar Parvati Cotton Mill, Kadi-Thol Road, Village Borisana, Ta. Kadi, Dist.: Mehsana-382715, Gujarat, India. M/S Knack FlexiPack LLP , (Project Owner) Plot No 31-B/Kamla Amrut Ind Estate, Budasan, Ta-Kadi, Dist.-Mehsana, Budasan. M/S Knack Energy Private Limited (Project Owner), Plot no 31-A/Kamla Amrut Ind Estate, Kadi, Budasan.

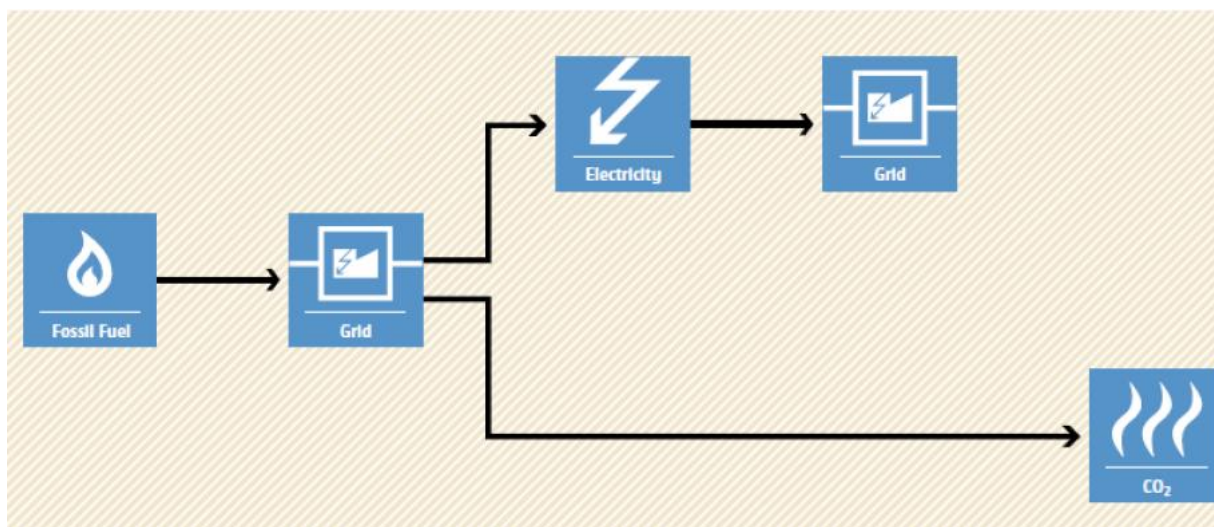
A.6. Baseline Emissions>>

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

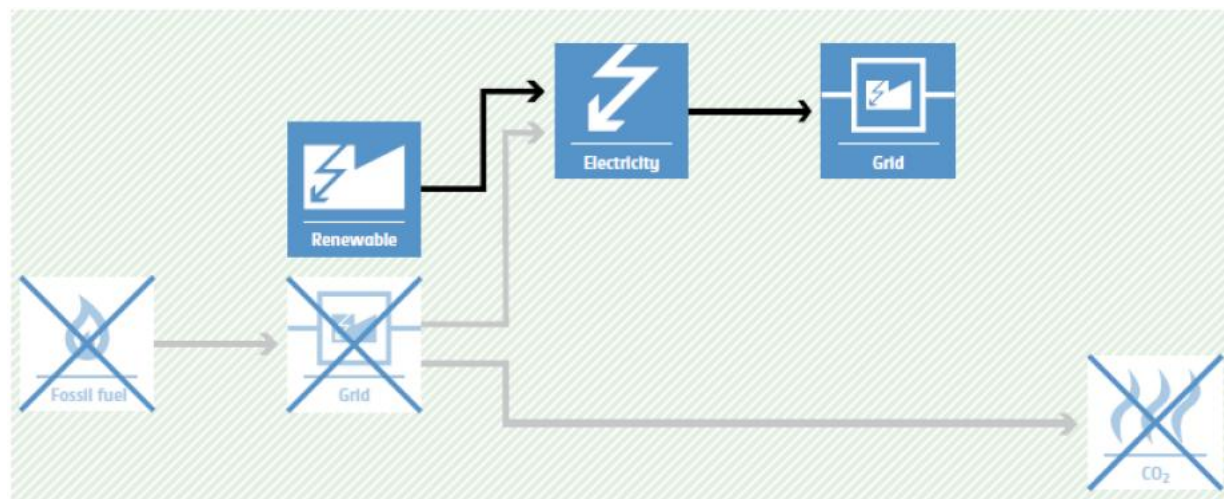
In the absence of the project activity, the equivalent amount of electricity would have been imported from the regional grid (which is connected to the unified Indian Grid system (NEWNE Grid)), which is carbon intensive due to predominantly sourced from fossil fuel-based power plants. Hence, baseline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

Schematic diagram showing the baseline scenario:

Baseline Scenario



Project 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-

AMS I.D. (Title : “Grid connected renewable electricity generation”, version 18

B.2. Applicability of methodologies and standardized baselines >>

- The project activity involves generation of grid connected electricity from the construction and operation of a Roof top Solar Power Project for Captive use. The project activity has installed capacity of 2.736 MW which qualifies for a small scale project activity. The project status is corresponding to the methodology AMS.I.D. version 21 .0 and applicability of methodology is discussed below

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 2.736 MW Bundled Solar Power Project activity in Gujarat that generates and wheels (supply) renewable electricity through NEWNE grid (currently identified as Unified Indian grid system) to its unit for captive consumption as per wheeling agreement signed between UGVCL and PP. Hence, the project activity meets the given applicability criterion as well as satisfies the applicability illustration mentioned in AMS-I.D. version 21.
2. This methodology is applicable to project activities that: (a) Install a new power plant at a site where there was no renewable energy power plant operating prior to the implementation of the project activity (Greenfield plant); (b) Involve a capacity addition in (an) existing plant(s); (c) Involve a retrofit of (an) existing plant(s); or (d) Involve a replacement of (an) existing plant(s).	The project activity is installation of new Solar Power Project. PP doesn't have any Solar Installation 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. 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	The project activity is a Solar Power plant. Hence, not applicable

(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/m². (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	
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 project activity is 2.736 MW Bundled Solar Power Project activity in Gujarat. It does not include any non-renewable unit and cofiring system.
5. Combined heat and power (co-generation) systems are not eligible under this category	The project activity does not involve combined heat and power generation system as it is only a wind power project.
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.	It is a Greenfield project and not the extension of an existing renewable energy facility.
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 not the retrofitting or replacement of an existing facility for renewable energy generation. Hence, this criterion is 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 the consumption point for project developer.

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

As per applicable methodology AMS-ID Version 18 “The spatial extent of the project boundary included the project power plant and all power plants connected physically to the electricity systems that the project power plant is connected to.”

Thus, the project boundary includes the Wind turbine Generator (WTGs) and the India grid system.

Source		GHG	Included?	Justification/Explanation
Baseline	Grid Connected electricity generation	CO2	Yes	Main emission source
		CH4	No	Minor emission source
		N2O	No	Minor emission source
		Other	No	No other GHG emissions were emitted from the project
Project	Greenfield Wind Power Project Activity	CO2	No	No CO2 emissions are emitted from the project
		CH4	No	Project activity does not emit CH4
		N2O	No	Project activity does not emit N2O
		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 10 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 use for captive purpose via grid interface through wheeling arrangement. 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 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- 2023 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.

Net GHG Emission Reductions and Removals

Thus, $ER_y = BE_y - PE_y - LE_y$

Where:

ER_y = Emission reductions in year y (tCO₂/y)

BE_y = Baseline Emissions in year y (t CO₂/y)

PE_y = Project emissions in year y (tCO₂/y)

LE_y = 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:

$$BE_y = EGPJ,y \times EF_{grid,y}$$

Where:

BE_y = Baseline emissions in year y (t CO₂)

$EGPJ,y$ = 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 tCO₂/MWh has been considered.

(Reference: General Project Eligibility Criteria and Guidance, UCR Standard, page 4)

Project Emissions

As per AMS-I.D. version-17, 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 22 of AMS-I.D. version-17, '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, $LE_y = 0$

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 (BEy)

= 4,362 MWh/year *0.9 tCO₂/MWh

= 3,926 tCO₂/year (i.e., 3,926 CoUs/year)

B.6. Prior History>>

The project activity has not applied to any other GHG program for generation or issuance of carbon offsets or credits for the said crediting period.

B.7. Changes to start date of crediting period >>

There is no change in the start date of crediting period.

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

Not Applicable

B.9. Monitoring period number and duration>>

First Issuance Period: 1 years, 0 months

01/01/2022 to 31/12/2024

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://cea.nic.in/wp-content/uploads/baseline/2024/01/User_Guide_Version_19.0.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 19, Dec 2023) 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 BL,y
Data unit:	Mwh/Year
Description:	Net electricity supplied to the NEWNE grid facility by the project activity
Source of data:	GEDA Share certificate issued by GETCO (Gujarat Energy Transmission Corporation Limited)
Measurement procedures (if any):	Continuous monitoring and monthly recordings take place. The net electricity supplied by the project activity is taken directly from the share certificate issued by GETCO on monthly basis and will be directly used to estimate the emission reduction. This can be further cross-checked with the invoice receipt. Measurement Procedure:
Monitoring frequency:	Monthly
Value applied	1973
QA/QC procedures:	Calibration of the GETCO 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 net amount of electricity exported to the grid as per Share certificate issued by GETCO can be 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. Since the renewable power generated from the project is used for captive consumption via wheeling, hence during the monitoring and verification the provision of the wheeling agreement may be referred.