

# PROJECT CONCEPT NOTE

CARBON OFFSET UNIT (CoU) PROJECT

Solar Project - 4.5 MW Bundled Solar Ground Mounted Power Project at Vejpur Gujarat



Title: 4.5 MW Bundled Solar Ground Mounted Power Project at Vejpur Gujarat

Version 1.0
Date 28/02/2023
First CoU Issuance Period: 7 years, 8 months

Date: 27/05/2022 to 31/12/2029



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

| BASIC INFORMATION                                 |  |  |
|---|--|--|
| Title of the project activity                     | 4.5 MW Bundled Solar Ground Mounted Power<br>Project at Vejpur Gujarat   |  |
| Scale of the project activity                     | Small  |  |
| Completion date of the PCN                        | 28/02/2023   |  |
| Project participants                              | M/s. Agarwal Roadlines M/s. Maharashtra Gujarat Transport Services M/s. Agarwal Tanks & Allied Works M/s. Sanjivani Industries  Aggregator – Impel Enterprise(UCR ID: 551443447) |  |
| Host Party  | INDIA  |  |
| Applied methodologies and standardized baselines  | Applied Baseline Methodology:<br>AMS-I.D.: "Grid connected renewable<br>electricity generation", version 18<br>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 6,700 CoUs per year]   |  |
|   |  |  |

#### SECTION A. Description of project activity

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

This is a project activity of capacity 4.5 MW(DC) / 3.5 MW(AC), which is Solar Ground Mounted grid connected solar power generation project in the District Vadodara, in the state of Gujarat, in India. The purpose of this plant installation and power generation is for captive consumption and Interconnection agreement is signed between the Project owner and Madhya Gujarat Vij Company Limited (MGVCL). The promoters of these project activity are M/s. Agarwal Roadlines , M/s. Maharashtra Gujarat Transport Services , M/s. Agarwal Tanks & Allied Works and M/s. Sanjivani Industries (herein after called as Project Proponent or PP). 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 purpose of the proposed project activity is to generate electricity using a clean and renewable source of energy i.e., solar radiation. The proposed project activity of 4.5 was installed in one phase. Operation of solar power plant in Vadodara district in the state of Gujarat are per details listed below:

| Sr<br>no | Owner         | Type    | Location | District | State   | Date of Commission | Capacity in MW |
|----------|---------------|---------|----------|----------|---------|--------------------|----------------|
| 110      |               |         |          |          |         | Commission         | 111 171 77     |
| 1        | Agarwal       | Ground  | Vejpur   | Vadodara | Gujarat | 27/05/22           | 1.122          |
|          | Roadlines     | mounted |          |          |         |                    |                |
| 2        | Maharashtra   | Ground  | Vejpur   | Vadodara | Gujarat | 27/05/22           | 1.122          |
|          | Gujarat       | mounted |          |          |         |                    |                |
|          | Transport     |         |          |          |         |                    |                |
|          | Services      |         |          |          |         |                    |                |
| 3        | Agarwal Tanks | Ground  | Vejpur   | Vadodara | Gujarat | 27/05/22           | 1.122          |
|          | & Allied      | mounted |          |          |         |                    |                |
|          | Works         |         |          |          |         |                    |                |
| 4        | Sanjivani     | Ground  | Vejpur   | Vadodara | Gujarat | 27/05/22           | 1.122          |
|          | Industries    | mounted |          |          |         |                    |                |
|          |               |         |          |          |         |                    | 4.488          |

As per the ex-ante estimate, this project will generate approximately 7,444 MWh of electricity per annum considering an average PLF of 20%. The project activity uses Mono Crystalline Vertex PERC Half Cut solar photovoltaic technology to generate clean energy. The generation of power from solar photovoltaic 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 blocks of the complete PV generating unit. Several PV panels mounted on a frame are termed as PV Array. Thus, 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 provided in Section A.4.

The estimated annual average and the total CO<sub>2</sub>e emission reduction by the project activity is expected to be 6,700 tCO<sub>2</sub>e, 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 generates electricity through solar 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**

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.

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:** There has been good employment opportunities created for the local workforce during the project construction phase. The project after implementation has also continued to provide employment opportunities for the local populace in a sustained manner and the same would be continued over the project life time. The employment opportunities created will contribute towards alleviation of poverty in the surrounding area throughout the lifetime of the project activity.

**Economic well-being:** The project is a clean technology investment decided based on carbon revenue support, which signifies flows of clean energy investments into the host country. The project activity requires temporary and permanent, skilled and semi-skilled manpower at the project location; this will create additional employment opportunities in the region. The electricity replaced in grid will be available for nearby area which directly and indirectly improves the economy and life style of the area. In addition, success of these kind of project 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 successful operation of project activity would lead to 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 R&D efforts by technology providers to develop more efficient and better machinery in future. The project activity leads to the promotion and demonstrates the success of solar projects in the region which further motivate more investors to invest in solar power projects. Hence, the project activity leads to technological well-being.

Environmental well-being: The project activity will generate power using zero emissions solar based power generation facility which helps to reduce GHG emissions and specific pollutants like SOx, NOx, and SPM associated with the conventional thermal power generation facilities. The project utilizes solar energy for generating electricity which is a clean source of energy. Also, being a renewable resource, use of solar energy to generate electricity contributes to resource conservation. It reduces the dependence on fossil fuels and conserves natural resources which are on the verge of depletion. The impact on land, water, air and soil is negligible. Thus, the project causes no negative impact on the surrounding environment contributing to environmental well-being.

| SDG Goals                         | Description   |
|-----------------------------------|---|
| 7 AFFORDABLE AND CLEAN ENERGY     | <ul> <li>➤ The project activity will generate clean energy, which with increased shared will increase the affordability at a cheaper rate to end user.</li> <li>➤ The project activity will utilize solar energy (renewal resource) to generate power. The project activity will increase the share of renewable resource-based electricity to global mix of energy consumption</li> </ul>  |
| 8 DECENT WORK AND ECONOMIC GROWTH | <ul> <li>Decent work and economic growth.</li> <li>This project activity generates additional employment for skilled and unskilled, also the project situated in a remote area will provide employment opportunities to unskilled people from villages. Training on various aspects including safety, operational issues, and developing skill sets will also be provided to employees.</li> <li>This project will achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value</li> </ul> |
| 13 CLIMATE ACTION                 | <ul> <li>➤ This 4.5 MW Solar power project meets the SDG 13 goal by saving fossil fuel and producing clean energy.</li> <li>➤ This project is expected to reduce CO₂ emissions by 6,700 ton per year.</li> <li>➤ SDG 13 on clean energy is closely related and complementary.</li> <li>➤ In a Greenfield project, electricity delivered to the grid by the project would have otherwise been generated by the operation of grid- connected power plants. Thereby the project activity reduces the dependence on fossil fuel-based generation units and as there are no associated emissions</li> </ul>      |

| with this project it contributes to the reduction of greenhouse gases (GHG) emissions. |
|--|
|  |

#### 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 a company's energy use, waste, pollution, natural resource conservation, and treatment of animals, etc. For the PP, energy use pattern is now based on renewable energy due to the project and it also contributes to GHG emission reduction and conservation of depleting energy sources associated with the project baseline. 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 will be based on solar 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 activity, the PP has robust policies in place to ensure equitable employment, health & safety measures, local jobs creation 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. With respect to this project activity, the PP practices a good governance practice with transparency, accountability and adherence to local and national rules & regulations etc. This can be further referred from the company's annual report. 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 solar 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 small-scale Solar 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.

#### A.3. Location of project activity >>

Country : India Village : Vejpur Taluka : Disar

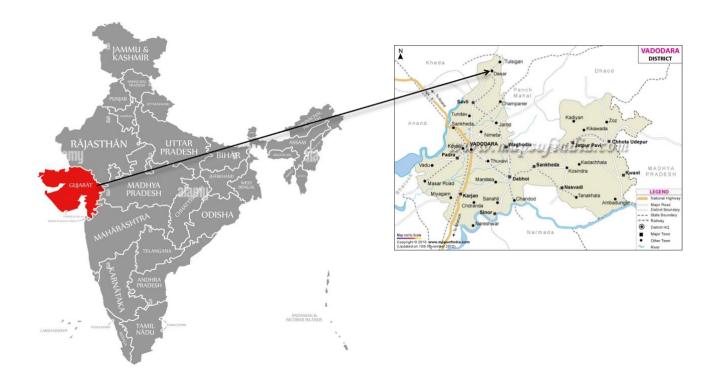
District : Vadodara

The project site is in village Vejpur of Vadodara district, Gujarat. The project site is well connected from airport and railway station. The geographic co-ordinates of the project location have been given below:

Latitude : 22° 44′ 42″

Longitude: 73° 22' 37.1994"

The representative location map is included below:



#### A.4. Technologies/measures >>

The project activity is using clean renewable solar energy to produce electricity. The applied technology is considered to be one of the most environment friendly technologies available as the operation of the Solar photovoltaic does not emit any GHGs or any other harmful gases unlike the operation of conventional power plants.

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 as PV Array. The project activity has used the reliable and proven technology to ensure that an environmentally safe and sound technology is only being implemented in the proposed project activity leading to the GHG reduction.

The other salient features of the technology are:

| Parameters                           | Value                      |
|--------------------------------------|----------------------------|
| Total number of Photovoltaic Modules | 2078 nos. x 4 projects     |
| Rating of Photovoltaic Module        | 545 - 550 Wp               |
| Module Module Make                   | Trina                      |
| Technology                           | Vertex Mono PERC Half Cut  |
| No. of Inverter                      | 5                          |
| Invertor Capacity                    | 185 kW x 3 ,<br>160 kW x 2 |
| Invertor make                        | Huawei                     |
| Optimizer                            | No optimizers              |

## A.5. Parties and project participants >>

| Party (Host | ) Participants   |
|-------------|--|
|             | Impel Enterprise (Representator)   |
|             | UCR Id: 551443447  |
|             | Contact person: Vatsal Makadia<br>Mobile: +91 9428866081   |
|             | Address: 101-102,SNS Atria,Vesu , Surat, India-395007  |
| India       | M/s. Agarwal Roadlines (Developer) –<br>Address: 27, G.I.D.C., Ranoli, Dist. Vadodara, Gujarat - 391350, India |
|             | M/s. Maharashtra Gujarat Transport Services (Developer) –  |
|             | Address: 27, G.I.D.C., Ranoli, Dist. Vadodara, Gujarat - 391350, India   |
|             | M/s. Agarwal Tanks & Allied Works (Developer) –  |
|             | Address: 17, G.I.D.C., Ranoli, Dist. Vadodara, Gujarat - 391350, India   |
|             | M/s. Sanjivani Industries (Developer) –  |
|             | Address: 27, G.I.D.C., Ranoli, Dist. Vadodara, Gujarat - 391350, India   |

### A.6. Baseline Emissions>>

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

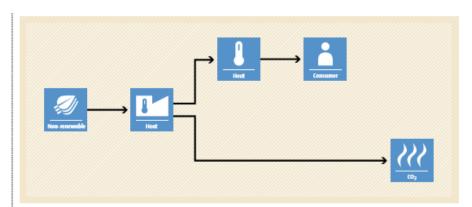
In the absence of the project activity, the equivalent amount of electricity would have been imported from the regional grid (which is connected to the unified Indian Grid system), which is carbon intensive due to predominantly sourced from fossil fuel-based power plants. Hence, baseline scenario of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

Schematic diagram showing the baseline scenario:

#### **Baseline Scenario:**

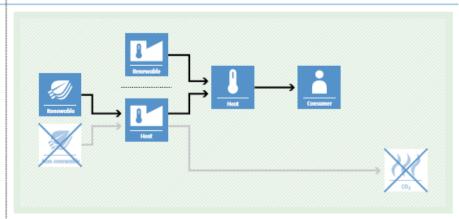
#### **BASELINE SCENARIO**

Thermal energy would be produced by more-GHG-intensive means based on the use of non-renewable biomass.



#### PROJECT SCENARIO

Use of renewable energy technologies for thermal energy generation, displacing nonrenewable biomass use.



#### A.7. Debundling>>

This project 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 >>

This project activity involves generation of grid connected electricity from the construction and operation of a new solar power-based power project. The project activity has installed capacity of 4.5 MW which will qualify for a small-scale project activity under Type-I of the Small-Scale methodology. The project status is corresponding to the methodology AMS-I.D., version 18 and applicability of methodology is discussed below:

| Applic   | cability Criterion  | Project Case   |
|--|---|--|
| (a) Supplying electricity to a national or a regional grid; or |   | The project activity is a Renewable Energy Project i.e., wind power project which sell its energy to the grid and falls under applicability criteria option 1 point (a). |
| 2.   | (b) Supplying electricity to an identified consumer facility via national/regional grid through a contractual arrangement such as wheeling. | Thus, this project activity fulfil this criterion.   |
| 2. This  | methodology is applicable to project activities that:   |  |
| 1.   | (a) Install a Greenfield plant;   |  |
| 2.   | (b) Involve a capacity addition in (an) existing  | The option (a) of applicability criteria 2 is applicable as project is   |
|  |   | a Greenfield plant /unit. Hence the project activity meets the given   |
| 3.   | (c) Involve a retrofit of (an) existing plant(s);   | applicability criterion.   |
| 4. (d) Involve a rehabilitation of (an) existing               |   |  |
|  | plant(s)/unit(s); or  |  |

| 5.  | (e) Involve a replacement of (an) existing  |  |
|---|---|--|
|   | plant(s).   |  |
| of the f  | ro power plants with reservoirs that satisfy at least one following conditions are eligible to apply this lology:   |  |
| 1 ' '   | e project activity is implemented in existing reservoir, o change in the volume of the reservoir; or  |  |
| 2.  | (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.   | The project activity involves installation of Solar PV (SPV); hence, this criterion is not applicable.   |
| 3.  | (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 $4\ \text{W/m2}$  |  |
| compo<br>MW for<br>renewa   | e new unit has both renewable and non- renewable nents (e.g., a wind/diesel unit), the eligibility limit of 15 or a small-scale CDM project activity applies only to the able component. If the new unit co-fires fossil fuel, the try of the entire unit shall not exceed the limit of 15 MW.  | The proposed project is 4.5 MW Wind power project, i.e., only component is renewable power project below 15MW, thus the criteria is not applicable to this project activity.                     |
|   | abined heat and power (co-generation) systems are not e under this category   | The project activity is wind power project thus the criterion is not applicable to this project activity.  |
| additio<br>renewa<br>units a  | ne case of project activities that involve the capacity in of renewable energy generation units at an existing able power generation facility, the added capacity of the dded by the project should be lower than 15 MW and be physically distinct1 from the existing units.                    | The proposed project is a greenfield 4.5 MW wind power project. As no capacity addition is taking place thus the criterion is not applicable to this project activity.                           |
| 7. In the case of retrofit, rehabilitation or replacement, to qualify as a small-scale project, the total output of the retrofitted, rehabilitated or replacement power plant/unit shall not exceed the limit of 15 MW. |   | The proposed project is a greenfield 4.5 MW wind power project. As this does not involve retrofit, rehabilitation or replacement, thus the criterion is not applicable to this project activity. |
| and agr<br>eligible<br>methar   | the case of landfill gas, waste gas, wastewater treatment pro-industries projects, recovered methane emissions are the under a relevant Type III category. If the recovered the is used for electricity generation for supply to a grid, the baseline for the electricity component shall be in | The proposed project is a greenfield 4.5 MW wind power project; hence, this criterion is not applicable to this project activity.  |

| accordance with procedure prescribed under this methodology. If the recovered methane is used for heat generation or cogeneration other applicable Type-I methodologies such as "AMS- I.C.: Thermal energy production with or without electricity" shall be explored. |   |
|---|---|
| applicability criteria in the tool "Project emissions from cultivation of biomass" shall apply  | No biomass is involved, the project is only a wind power project and thus the criterion is not applicable to this project activity. |

#### **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-I.D. Version 18, "The spatial extent of the project boundary includes the project power plant and all power plants connected physically to the electricity system that the project power plant is connected to."

Thus, the project boundary includes the Solar PV system and the Indian grid system.

| Source      | GHG             | Included? | Justification/Explanation             |
|-------------|-----------------|-----------|---------------------------------------|
|             | $CO_2$          | YES       | Main emission source                  |
| Grid        | CH <sub>4</sub> | NO        | Minor source of emission              |
| connected   | $N_2O$          | NO        | Minor source of emission              |
| electricity |                 |           | No other GHG emissions were emitted   |
| generation  | Other           | NO        | from the project                      |
| Greenfield  |                 |           | No CO2 emissions are emitted from the |
| Wind        | $CO_2$          | NO        | project                               |

| Power               |                  |    |   |
|---------------------|------------------|----|---|
| Project<br>Activity | CH <sub>4</sub>  | NO | Project activity does not emit CH4      |
| Activity            | N <sub>2</sub> O | NO | Project activity does not emit N2O      |
|                     |                  |    | No other emissions are emitted from the |
|                     | Other            | NO | 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 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. 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 CO<sub>2</sub> emission factor (tCO<sub>2</sub>/MWh) which will be associated with each unit of electricity provided by an electricity system. The UCR recommends an emission factor of 0.9 tCO<sub>2</sub>/MWh for the 2014- 2020 years as a fairly conservative estimate for Indian projects not previously verified under any GHG program. Also, for the vintage 2021, the combined margin emission factor calculated from CEA database in India results into higher emission than the default value. Hence, the same emission factor has been considered to calculate the emission reduction under conservative approach.

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

```
Thus, ER<sub>v</sub> Where:
```

$$=BE_v-PE_v-LE_v$$

- = Emission reductions in year y ( $tCO_2/y$ ) = Baseline Emissions in year y ( $tCO_2/y$ ) = Project emissions in year y ( $tCO_2/y$ )
- = Leakage emissions in year y  $(tCO_2/y)$
- © Universal CO2 Emission And Offset Registry Private Ltd

#### **Baseline Emissions**

Baseline emissions include only CO<sub>2</sub> emissions from electricity generation in power plants that are displaced due to the project activity. The methodology assumes that all project electricity generation above baseline levels would have been generated by existing grid-connected power plants and the addition of new grid-connected power plants. The baseline emissions are to be calculated as follows:

 $BE_y = EG_{PJ,y} \times EF_{grid,y}$ 

Where,

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

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

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

#### **Project Emissions**

As per Paragraph **39** of AMS-I.D. version-18, 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 = 0

#### Leakage

As per paragraph 42 of AMS-I.D. version-18, '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 = 0

#### $EG_{Pl,y}$ Total Energy Generated during crediting period :

| Month            | Generation in MWh |
|------------------|-------------------|
| May - 2022       | 82.472            |
| June - 2022      | 591.996           |
| July - 2022      | 410.408           |
| August - 2022    | 420.365           |
| September - 2022 | 420.282           |
| October - 2022   | 469.839           |
| November - 2022  | 521.07            |

| December - 2022  | 551.847  |
|--|----------|
| Quantity of net electricity supplied to the grid as a result of the implementation of the project activity | 3468.279 |

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) =

**3468.279** MWh/year \* 0.9 tCO2/MWh = **3,121.4511** tCO2/year (i.e. 3,121.4511 CoUs/year)

#### **B.6.** Prior History>>

The project activity is a small-scale solar project and this project was never applied under any other GHG mechanism prior to this registration with UCR. Also, the capacity or the total project as a whole has not been applied for any other environmental crediting or certification mechanism. Hence project will not cause double accounting of carbon credits (i.e., COUs).

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

The start date of crediting under UCR is considered as 27/05/2022 and no GHG emission reduction has been claimed so far.

# 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: 0 years, 8 months – Date: 27/05/2022 to 31/12/2022

#### **B.8.** Monitoring plan>>

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

| Data/Parameter | UCR recommended emission factor  |
|----------------|--|
| Data unit      | tCO2 /MWh  |
| Description    | A "grid emission factor" refers to a CO <sub>2</sub> emission factor (tCO <sub>2</sub> /MWh) which will be associated with each unit of electricity provided by an electricity system. The UCR recommends an emission factor of 0.9 tCO <sub>2</sub> /MWh for the 2014- 2020 years as a fairly |

|                                    | conservative estimate for Indian projects not previously verified under any GHG program. Hence, the same emission factor has been considered to calculate the emission reduction under conservative approach. |
|------------------------------------|---|
| Source of data                     | https://a23e347601d72166dcd6-<br>16da518ed3035d35cf0439f1cdf449c9.ssl.cf2.rackcdn.c<br>om//Documents<br>/UCRStandardJan2022updatedVer3_18022203532872<br>1166.pdf   |
| Value(s) 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 Comments                | 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 <sub>PJ,facility, y</sub>  |
|----------------------------------|---|
| Data unit:                       | MWh   |
| Description:                     | Quantity of net electricity supplied to the grid as a result of the implementation of the project activity in year y (MWh)  |
| Source of data:                  | Monthly Joint Meter Readings (JMRs)   |
| Measurement procedures (if any): | Data Type: Measured Monitoring equipment: Energy Meters are used for monitoring Recording Frequency: Continuous monitoring and Monthly recording from Energy Meters, Summarized Annually Archiving Policy: Paper & Electronic Calibration frequency: 5 years (as per CEA provision) |

| Monitoring frequency: | Monthly  |
|-----------------------|--|
| Value applied         | To be applied as per actual data   |
| QA/QC procedures:     | Calibration of the Main meters will be carried out once in five (5) 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.  Cross Checking:  Quantity of net electricity supplied to the grid will be cross checked from the invoices raised by the project participant to the grid. |
| Any comment:          | Data will be archived electronically for a period of 36 months beyond the end of crediting period.   |