# WIND POWER PROJECT IN MAHARASHTRA, INDIA – ANDHRA LAKE PHASE - I

| | |
|---|---|
| Project title | Wind power project in Maharashtra, India – Andhra Lake Phase - I |
| Project ID | 1480 |
| Monitoring period | 01-01-2024 to 31-12-2024 |
| Original date of issue | 26-09-2025 |
| Most recent date of issue | 03-11-2025 |
| Version | 1.2 |
| VCS Standard Version | 4.7 |
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# PROJECT DETAILS

## 1.1 Summary Description of the Implementation Status of the Project

The project has been implemented by Apraava Renewable Energy Private Limited (AREPL) which is earlier known as CLP Wind Farms (India) Private Limited ("CLP") in the state of Maharashtra. The main purpose of this project activity is to generate clean form of electricity through renewable wind energy source. Project Proponent (PP), has developed a green-field wind-based electricity generation project at Andhra Lake, Pune District, in the State of Maharashtra. The Project involved installation of 70 number of Wind World (India) Limited (formerly Enercon (India) Limited) make E-53 Wind Turbine Generators (WTGs) to generate electrical power for export to the distribution licensee. The electricity generated from the wind farm exported to the Integrated Indian electricity grid. Distribution licensee thereby marginally contributing towards reduction in the energy demand supply gap in the state of Maharashtra, diversification of grid supply and reduction of greenhouse gas emissions.

The details of Wind power project commissioning and their location of installation are mentioned in the table below:

| Name of Investor | Capacity (MW) | Commissioning Date | Connection with Grid | State | Usage |
|---|---|---|---|---|---|
| Apraava Renewable Energy Private Limited (AREPL) | 56 MW | 19/08/2011 (First WEG) | Indian Grid | Maharashtra | Sale to state discom |

The Power Purchase Agreements (PPAs) of all 15 Wind Turbine Generators (WTGs) connected to Feeder 4 expired on 18/08/2024. For Feeder 6, the PPAs of 19 WTGs expired on 18/08/2024, 3 WTGs on 30/10/2024, and the remaining 3 WTGs on 27/12/2024. For Feeder 7, the PPAs of 5 WTGs expired on 27/12/2024, while the PPAs of remaining 11 WTGs expired on 17/10/2024. For Feeder 8, the PPAs of 10 WTGs expired on 18/08/2024, and the PPAs of remaining 4 WTGs expired on 27/12/2024. In line with the conservative approach adopted for emission reduction estimation, the electricity generation from all WTGs for which PPAs have expired has not been included in the Emission Reduction calculations for the current monitoring period.

During the current monitoring period from 01/01/2024 to 31/12/2024 (first and last date included) the project activity has supplied 84,842.11 MWh of electricity, and thus contributing to the GHG reductions 78,988 tCO2e.

## 1.2 Audit History

| Audit Type | Period | Program | VVB Name | Number of years |
|---|---|---|---|---|
| Validation/ Verification | 19/08/2011 – 30/07/2013 | VCS | Bureau Veritas Certification Holding SAS | 1 year, 11 months |
| Verification | 31/07/2013 – 31/05/2017 | VCS | Earthood Services Private Limited | 3 years, 10 months |
| Verification | 01/06/2017 to 31/12/2018 | VCS | Earthood Services Private Limited | 1 year, 7 months |
| Verification | 01/01/2019 – 31/01/2020 | VCS | LGAI Technological Center, S.A. (Applus+) | 1 year, 1 month |
| Verification | 01/02/2020 to 31/05/2021 | VCS | Earthood Services Private Limited | 1 year, 4 months |
| Verification | 01/06/2021 to 18/08/2021 | VCS | Earthood Services Private Limited | 2 months |
| RCP and Verification | 19/08/2021 to 30/09/2022 | VCS | LGAI Technological Center, S.A. (Applus+) | 1 year, 1 month |
| Verification | 01/10/2022 to 31/12/2023 | VCS | Eco-lance Private Limited | 1 year 3 months |
| Verification | 01/01/2024 to 31/12/2024 | VCS | Eco-lance Private Limited | 1 year |

## 1.3 Sectoral Scope and Project Type

| | |
|---|---|
| Sectoral scope[1] | 01-Energy Industries (renewable/non-renewable sources) |
| Project activity type | Type I – Renewable Energy Projects |

[1] *Projects, activities, or methodologies may be developed under any of the 16 VCS sectoral scopes: https://verra.org/programs/verified-carbon-standard/vcs-program-details/#sectoral-scopes*

## 1.4 Project Proponent

| | |
|---|---|
| Organization name | Apraava Renewable Energy Private Limited |
| Contact person | Jogendra Behera |
| Title | Head – Non Utility Markets (Renewables) |
| Address | 7th Floor, Fulcrum, Sahar Road, Andheri East, Mumbai - 400099 |
| Telephone | +91- 22-67588888 |
| Email | carbongroup@apraav.com |

## 1.5 Other Entities Involved in the Project

At present, Apraava Renewable Energy Private Limited is the sole entity involved in the project.

| | |
|---|---|
| Organization name | NA |
| Role in the project | NA |
| Contact person | NA |
| Title | NA |
| Address | NA |
| Telephone | NA |
| Email | NA |

## 1.6 Project Start Date

| | |
|---|---|
| Project start date | 19/08/2011 |
| Justification | As per the Section 3.8 of the VCS Standard v.4.7, "The project start date of a non-AFOLU project is the date on which the project began generating GHG emission reductions or removals". The project is a non-AFOLU project and the earliest date of interconnection with the grid is 19/08/2011. Hence, the start date of the project is 19/08/2011. |

## 1.7 Project Crediting Period

| | |
|---|---|
| **Crediting period** | ☐ Seven years, twice renewable<br>☐ Ten years, fixed<br>☒ Other (state the selected crediting period and justify how it conforms with the VCS Program requirements)<br>The project was registered under VCS 2007.1 which allowed crediting period of a maximum of 10 years which may be renewed at most two times. As per VCS standard 4, the second crediting period was renewed for duration of 10 years from 19/08/2021 to 18/08/2031. |
| **Start and end date of first or fixed crediting period** | 19/08/2021 to 18/08/2031 |

## 1.8 Project Location

The details of the project locations are mentioned in the table below:

| Name of Investor | Project Capacity | State | District | Tehsil/Taluka |
|---|---|---|---|---|
| Apraava Renewable Energy Private Limited | 56 MW | Maharashtra | Pune | Khed and Maval taluk |

The coordinates of individual WEGs of this site are as below:

| Sr. No. | Location No. | Date of WEG commissioning | Latitude (N) | | | Longitude (E) | | |
|---|---|---|---|---|---|---|---|---|
| | | | Deg. | Minutes | Second | Deg. | Minutes | Second |
| 1 | 141 | 19/08/2011 | 18 | 56 | 54.2 | 73 | 39 | 18.0 |
| 2 | 140 | 19/08/2011 | 18 | 56 | 57.0 | 73 | 39 | 10.6 |
| 3 | 139 | 19/08/2011 | 18 | 57 | 1.4 | 73 | 39 | 2.6 |
| 4 | 138 | 19/08/2011 | 18 | 57 | 3.9 | 73 | 38 | 54.6 |
| 5 | 137 | 19/08/2011 | 18 | 57 | 8.2 | 73 | 38 | 42.1 |
| 6 | 136 | 19/08/2011 | 18 | 57 | 9.6 | 73 | 38 | 33.4 |
| 7 | 135 | 19/08/2011 | 18 | 57 | 16.4 | 73 | 38 | 32.4 |
| 8 | 134 | 19/08/2011 | 18 | 57 | 21.9 | 73 | 38 | 28.8 |
| 9 | 133 | 19/08/2011 | 18 | 57 | 26.6 | 73 | 38 | 26.3 |

| Sr. No. | Location No. | Date of WEG commissioning | Latitude (N) | | | Longitude (E) | | |
|---|---|---|---|---|---|---|---|---|
| | | | Deg. | Minutes | Second | Deg. | Minutes | Second |
| 10 | 132 | 19/08/2011 | 18 | 57 | 31.3 | 73 | 38 | 23.3 |
| 11 | 131 | 19/08/2011 | 18 | 57 | 37.0 | 73 | 38 | 21.6 |
| 12 | 130 | 19/08/2011 | 18 | 57 | 41.0 | 73 | 38 | 19.2 |
| 13 | 129 | 19/08/2011 | 18 | 57 | 46.4 | 73 | 38 | 15.9 |
| 14 | 128 | 19/08/2011 | 18 | 57 | 51.6 | 73 | 38 | 14.9 |
| 15 | 127 | 19/08/2011 | 18 | 57 | 56.9 | 73 | 38 | 15.9 |
| 16 | 48 | 19/08/2011 | 18 | 53 | 46.1 | 73 | 35 | 48.3 |
| 17 | 49 | 19/08/2011 | 18 | 53 | 49.5 | 73 | 35 | 45.0 |
| 18 | 50 | 19/08/2011 | 18 | 53 | 54.4 | 73 | 35 | 41.9 |
| 19 | 53 | 19/08/2011 | 18 | 54 | 10.6 | 73 | 35 | 25.9 |
| 20 | 54 | 19/08/2011 | 18 | 54 | 8.3 | 73 | 35 | 39.2 |
| 21 | 55 | 19/08/2011 | 18 | 54 | 16.7 | 73 | 35 | 35.2 |
| 22 | 56 | 19/08/2011 | 18 | 54 | 20.4 | 73 | 35 | 31.1 |
| 23 | 57 | 19/08/2011 | 18 | 54 | 27.4 | 73 | 35 | 26.5 |
| 24 | 58 | 19/08/2011 | 18 | 54 | 32.6 | 73 | 35 | 26.5 |
| 25 | 59 | 19/08/2011 | 18 | 54 | 41.7 | 73 | 35 | 21.2 |
| 26 | 60 | 19/08/2011 | 18 | 54 | 45.9 | 73 | 35 | 17.3 |
| 27 | 62 | 19/08/2011 | 18 | 54 | 54.3 | 73 | 35 | 12.2 |
| 28 | 65 | 19/08/2011 | 18 | 55 | 9.8 | 73 | 35 | 6.7 |
| 29 | 66 | 19/08/2011 | 18 | 55 | 14.6 | 73 | 35 | 5.6 |
| 30 | 67 | 19/08/2011 | 18 | 55 | 17.3 | 73 | 34 | 49.7 |
| 31 | 68 | 19/08/2011 | 18 | 55 | 24.5 | 73 | 34 | 54.5 |
| 32 | 70 | 19/08/2011 | 18 | 55 | 36.0 | 73 | 34 | 26.1 |
| 33 | 71 | 19/08/2011 | 18 | 55 | 40.5 | 73 | 34 | 20.6 |
| 34 | 72 | 19/08/2011 | 18 | 55 | 43.0 | 73 | 34 | 15.0 |
| 35 | 98 | 19/08/2011 | 18 | 58 | 12.0 | 73 | 31 | 54.2 |
| 36 | 99 | 19/08/2011 | 18 | 58 | 17.6 | 73 | 31 | 51.3 |
| 37 | 100 | 19/08/2011 | 18 | 58 | 21.7 | 73 | 31 | 47.0 |
| 38 | 101 | 19/08/2011 | 18 | 58 | 27.0 | 73 | 31 | 45.0 |
| 39 | 102 | 19/08/2011 | 18 | 58 | 31. | 73 | 31 | 42.3 |
| 40 | 103 | 19/08/2011 | 18 | 58 | 36.0 | 73 | 31 | 42.1 |

| Sr. No. | Location No. | Date of WEG commissioning | Latitude (N) | | | Longitude (E) | | |
|---|---|---|---|---|---|---|---|---|
| | | | Deg. | Minutes | Second | Deg. | Minutes | Second |
| 41 | 104 | 19/08/2011 | 18 | 58 | 42.1 | 73 | 31 | 42.1 |
| 42 | 105 | 19/08/2011 | 18 | 58 | 45.5 | 73 | 31 | 41.9 |
| 43 | 506 | 19/08/2011 | 18 | 58 | 55.5 | 73 | 31 | 50.4 |
| 44 | 106 | 19/08/2011 | 18 | 58 | 50.3 | 73 | 31 | 43.8 |
| 45 | 73 | 18/10/2011 | 18 | 55 | 51.2 | 73 | 34 | 16.1 |
| 46 | 74 | 18/10/2011 | 18 | 55 | 57.1 | 73 | 34 | 13.1 |
| 47 | 75 | 18/10/2011 | 18 | 56 | 1.0 | 73 | 34 | 7.6 |
| 48 | 77 | 18/10/2011 | 18 | 56 | 16.9 | 73 | 33 | 47.9 |
| 49 | 78 | 18/10/2011 | 18 | 56 | 19.9 | 73 | 33 | 46.1 |
| 50 | 79 | 18/10/2011 | 18 | 56 | 26.7 | 73 | 33 | 45.5 |
| 51 | 80 | 18/10/2011 | 18 | 56 | 31.7 | 73 | 33 | 43.7 |
| 52 | 82 | 18/10/2011 | 18 | 56 | 45.2 | 73 | 33 | 0.9 |
| 53 | 84 | 18/10/2011 | 18 | 56 | 56.5 | 73 | 32 | 57.5 |
| 54 | 85 | 18/10/2011 | 18 | 56 | 59.6 | 73 | 32 | 53.6 |
| 55 | 63 | 31/10/2011 | 18 | 54 | 59.9 | 73 | 35 | 10.0 |
| 56 | 64 | 31/10/2011 | 18 | 55 | 4.9 | 73 | 35 | 8.1 |
| 57 | 69 | 31/10/2011 | 18 | 55 | 30.5 | 73 | 34 | 53.9 |
| 58 | 88 | 31/10/2011 | 18 | 57 | 41 | 73 | 38 | 19.2 |
| 59 | 51 | 28/12/2011 | 18 | 53 | 59.1 | 73 | 35 | 37.7 |
| 60 | 52 | 28/12/2011 | 18 | 54 | 4.0 | 73 | 35 | 33.7 |
| 61 | 61 | 28/12/2011 | 18 | 54 | 48.9 | 73 | 35 | 15.5 |
| 62 | 76 | 28/12/2011 | 18 | 57 | 21.9 | 73 | 38 | 28.8 |
| 63 | 83 | 28/12/2011 | 18 | 56 | 51.0 | 73 | 33 | 0.1 |
| 64 | 86 | 28/12/2011 | 18 | 57 | 9.6 | 73 | 38 | 33.4 |
| 65 | 87 | 28/12/2011 | 18 | 57 | 6.2 | 73 | 32 | 40.6 |
| 66 | 89 | 28/12/2011 | 18 | 57 | 14.8 | 73 | 32 | 27.1 |
| 67 | 90 | 28/12/2011 | 18 | 57 | 22.7 | 73 | 32 | 26.3 |
| 68 | 91 | 28/12/2011 | 18 | 57 | 29.3 | 73 | 32 | 27.5 |
| 69 | 92 | 28/12/2011 | 18 | 57 | 33.9 | 73 | 32 | 26.2 |
| 70 | 93 | 28/12/2011 | 18 | 57 | 38.4 | 73 | 32 | 20.1 |

The Location no. 127-141 are connected to feeder 4, Location no. 48-72 are connected to feeder 6, Location no. 73-80 & 82-89 are connected to feeder 7 and Location no. 90-93, 98-100, 101-106 & 506 are connected to feeder 8.

## 1.9 Title and Reference of Methodology

| Type (methodology, tool or module). | Reference ID, if applicable | Title | Version |
|---|---|---|---|
| Methodology | ACM0002 | Grid-connected electricity generation from renewable sources | 21.0 |
| Tool | Tool 07 | Tool to calculate the emission factor for an electricity system | 7.0 |
| Tool | Tool 01 | Tool for the demonstration and assessment of additionality | 7.0 |

## 1.10 Double Counting and Participation under Other GHG Programs

### 1.10.1 No Double Issuance

Is the project receiving or seeking credit for reductions and removals from a project activity under another GHG program?

☐ Yes ☒ No

### 1.10.2 Registration in Other GHG Programs

Was the project registered or seeking registration under any other GHG programs?

☐ Yes ☒ No

## 1.11 Double Claiming, Other Forms of Credit, and Scope 3 Emissions

### 1.11.1 No Double Claiming with Emissions Trading Programs or Binding Emission Limits

Are project reductions and removals or project activities also included in an emissions trading program or binding emission limit?

☐ Yes ☒ No

### 1.11.2 No Double Claiming with Other Forms of Environmental Credit

Has the project activity sought, received, or is planning to receive credit from another GHG-related environmental credit system?

☐ Yes ☒ No

### 1.11.3 Supply Chain (Scope 3) Emissions

Do the project activities affect the emissions footprint of any product(s) (goods or services) that are part of a supply chain?

☐ Yes ☒ No

The Project Activity is a wind power project and does not involve any supply chain involved in the project such as manufacturers, wholesalers, distributers and retailers. So, no indirect upstream and downstream GHG emissions are not involved in the project activity. Thus, the Scope 3 emissions are not applicable in this project activity.

## 1.12 Sustainable Development Contributions

Ministry of Environment and Forests, has stipulated economic, social, environment and technological well-being as the four indicators of sustainable development. The project contributes to sustainable development using the following ways:

- Social well-being: The project activity has generated employment opportunities for the local population in different phases of the project. Manpower requirement is there in erection and operational phase of the renewable energy project. This would result in upliftment of the living standards of the local community.
- Economic well-being: The project is a clean technology investment in the region, which would not have been taken place in the absence of the VCS benefits the project activity will also help to reduce the demand supply gap in the state.
- Technological well-being: The successful operation of project activity would lead to promotion of wind-based power generation and would encourage other entrepreneurs to participate in similar projects.
- Environmental well-being: Wind being a renewable source of energy, it reduces the dependence on fossil fuels and conserves natural resources, which are on the verge of depletion. Due to its zero emission the Project, activity also helps in avoiding significant amount of GHG emissions.

The project activity will generate power using zero emissions. Wind based power generation that helps to reduce GHG emissions and specific pollutants like SOx, NOx, and SPM associated with the conventional thermal power generation facilities.

**Table 1: Sustainable Development Contributions**

| Row number | SDG target | SDG indicator | Net impact on SDG indicator | Current project contributions | Contributions over project lifetime |
|---|---|---|---|---|---|
| 1 | 7.2 | 7.2.1: Renewable energy share in the total final energy consumption | Implemented activities to increase | About 84,842.11 MWh renewable electricity has been supplied to Central Grid to Indian Electricity grid during the reported period that helps to increase the renewable energy share in the energy mix. | A total of 13,49,430.72 MWh renewable electricity will be supplied to the Indian grid by the project activity since commissioning. |
| 2 | 8.6 | 8.6.1: Quality of Employment | Plant records or training records for employees/O&M Contractor | 1 Training has been provided during first verification period, The training was organized for staff on the technology, plant operation, emergency and safety procedure. | Overall, 1 Training annually has been provided, the training was organized for staff on the technology, plant operation, emergency and safety procedure. |
| 3 | 13.0 | Tonnes of greenhouse gas emissions avoided or removed | Implemented activities to increase | By generating MWh renewable electricity, the project has avoided emission of 78,988 tCO2e in the atmosphere. | Since commissioning the project has avoided emission 12,56,320 tCO2e in the atmosphere. |

## 1.13 Commercially Sensitive Information

No commercially sensitive information has been excluded from the public version of the monitoring report.

# 2 SAFEGUARDS AND STAKEHOLDER ENGAGEMENT

## 2.1 Stakeholder Engagement and Consultation

### 2.1.1 Stakeholder Identification

| | |
|---|---|
| **Stakeholder Identification** | Stakeholders associated with the project activity throughout its lifetime are identified at different stages of project development. The stakeholders identified are generally grouped under two categories- directly affected parties, and indirectly affected parties as shown below:<br>a) Representatives from EIL now WWIL;<br>b) Employees of AREPL;<br>c) Contractor of AREPL;<br>d) Villagers from nearby villages<br>Furthermore, all the stakeholders mentioned above were identified at the project's validation. There has been no change in stakeholder makeup since validation. |
| **Legal or customary tenure/access rights** | The project activity is a greenfield wind power project and it has not involved any legal or customary tenure/access rights to territories and resources. So, this section is not applicable |
| **Stakeholder diversity and changes over time** | Not applicable<br>This is renewable energy project and does no impact on the diversity of the stakeholders. |
| **Expected changes in well-being** | There are not any significant impacts due to implementation of project activity on air, water, soil quality and ambience are |

| | |
|---|---|
| | envisaged due to the project activity. Furthermore, wind projects in India have several positive socio-economic impacts:<br><br>a) Job Creation: Wind energy projects create jobs in various sectors, contributing to local economic growth.<br><br>b) Economic Growth: These projects contribute to economic growth and community investment.<br><br>c) Reduced Electricity Rates: Wind energy can reduce electricity rates for project neighbours.<br><br>d) Health Benefits: Wind turbines help reduce carbon footprints and improve air quality, leading to better health outcomes.<br><br>e) Educational Opportunities: They provide educational and research opportunities, fostering innovation and knowledge exchange. |
| **Location of stakeholders** | No negative impact generated outside/inside of the project boundary.<br><br>(All stakeholders who will be directly affected by the project activity are included within the project boundary. Further, this grouped project activity does not require the relocation of any stakeholder, Indigenous people, or local communities.) |
| **Location of resources** | Not Applicable<br><br>(In the project activity, neither any territories and resources are owned by the stakeholders, nor they have any customary access) |

### 2.1.2 Stakeholder Consultation and Ongoing Communication

| | |
|---|---|
| **Ongoing consultation** | Stakeholders' consultation is a continuous process and hence a feedback register is kept at the project site office where any stakeholder can come and share his/her feedback. The feedback irrespective of the type is taken care by PP with utmost priority. |
| **Date(s) of stakeholder consultation** | 19/02/2010 |
| **Communication of monitored results** | Monitored outcomes are conveyed to the stakeholders in two ways: |

| | |
|---|---|
| | 1.Through VERRA Website: - PP submits third-party (i.e., VVB) verified monitoring results to VERRA, and once approved, the project documentation is made publicly available on the VERRA webpage for each monitoring period.<br><br>2.Through PP regional office: - A copy of all the project related documents and monitoring data (e.g., grievance register) is available at regional offices of the PP, which is accessible to all the stakeholders associated with the project activity. |
| **Consultation records** | The Local Stakeholder Consultation (LSC) records were submitted to VVB at the time of validation and grievance register records for the current monitoring period will be submitted to VVB. |
| **Stakeholder input** | Stakeholder input/feedback received during LSC and the LSC report for the same had been submitted to the VVB during validation.<br><br>Furthermore, the stakeholder feedback/grievance received during the current MP, through ongoing consultation mechanism, has been taken care as per the standard procedure adopted by PP, provided in section 2.1.4 of the VCS-MR. There were no major comments from the stakeholders which could impact on the design of the grouped project. |

### 2.1.3 Free, Prior, and Informed Consent

| | |
|---|---|
| **Consent** | Before the project commissioning PP had taken appropriate approvals from relevant authorities. |
| **Outcome of FPIC** | Not Applicable.<br><br>The project activity does not affect any type of property rights, and there are no ongoing or unresolved conflicts over property rights, usage, or resources. This project activity does not involve any encroachment on land, people's relocation, or forced physical or economic displacement. |

### 2.1.4 Grievance Redress Procedure

| Grievances received | Resolution and outcome |
|---|---|
| No grievances were received during the current monitoring period | NA |

The grievance mechanism process could be illustrated as below:

PP has placed a grievance register onsite where-in, the stakeholders can put down their request/complaint/requirements. Same is continuously monitored and appropriate action are also being taken by management. Furthermore, PP has also placed a notice board on site to communicate any necessary information/updates to local stakeholders. PP has found this two-way communication with local stakeholders is very effective towards sustainability of the project in long run.

As part of organizational policy, there are continuous interactions undertaken by Project Participant's officials with local community stakeholders. During these discussions, local villagers shares their observations and comments. All the observations, comments and queries raised during discussion have been adequately responded to. Some of the suggestions have also been incorporated in the overall vision and stakeholder engagement action plan of the organization.

### 2.1.5 Public Comments

No public comment was received during current monitoring period.

| Summary of comments received | Actions taken |
|---|---|
| No comments from stakeholder during current monitoring period. | No action is required |

## 2.2 Risks to Stakeholders and the Environment

### 2.2.1 Management Experience

The PP is Independent Power Producer (IPP) and has been in the renewable energy business for more than 20 years. PP has been actively involved in design or implementation of project activity. The management is experienced and well educated as per the understanding of the carbon market. The field staff has been trained well and annual trainings are provided to keep them up to date.

### 2.2.2 Risk assessment

| | Risk identified | Mitigation or preventative measure(s) taken |
|---|---|---|
| Natural and human-induced risks to stakeholders' wellbeing | No risk identified | Project activity involves the installation of WTG which are consider as nature friendly and placed far away from human interference, hence no risk to human and nature. |
| Risks to stakeholder participation | No risk identified | Project activity only has benefits for the stakeholders as it provided clean energy with zero risk to human and nature. |
| Working conditions | Safety of employees at project site | PP has a health and safety policy, and procedure manual in place to ensure favorable working condition. |
| Safety of women and girls | No risk identified | PP has Health, Safety, Security and Environment (HSSE) Policy and Prevention of Sexual Harassment at Work policies are stated as per the safety of both women and girls (Apraava Energy HSSE Policy, https://www.apraava.com/getmedia/cd8c962d-c86b-42db-8976-15c1d494b54d/Apraava-Energy-HSSE-Policy.pdf Prevention of Sexual Harassment at Workplace https://www.apraava.com/getmedia/b485f4e1-aaf3-49ae-9864-ea38aefbb18e/Handbook-on-Prevention-of-Sexual-Harassment-at-Workplace-Oct-2023.pdf) |
| Safety of minority and marginalized groups, including children | No risk identified | PP has followed all the regulations and safety protocols provided to the minority and marginalized groups. (Ref Apraava Energy \| Annual Integrated Report FY 2024-25) |

| | | |
|---|---|---|
| **Pollutants (air, noise, discharges to water, generation of waste, and release of hazardous materials and chemical pesticides and fertilizers)** | No risk identified | The project activity involves installation of wind power project, which do not emit any kind of air, water, soil, and hazardous material.<br>The waste/used oil from the turbines and transformer oil is disposed as per applicable laws.<br>No waste water generation is envisaged from operation of wind farm.<br>There will be only a marginal increase in noise levels due to operation of wind farm and there will be no significant impact on the noise levels due to the Project. |

## 2.3 Respect for Human Rights and Equity

### 2.3.1 Labor and Work

| | Risks identified | Mitigation or preventative measure(s) taken |
|---|---|---|
| **Discrimination** | Discrimination on the basis of individual's race, gender, age, disability, ethnicity or cultural affiliation, sexual orientation, belief, educational background, or any other basis. | PP is committed to providing an environment free from sexual harassment. PP follows company policy on 'Prevention of Sexual Harassment at the Workplace Policy' which protects from sexual harassment by vendors, contractors, and third parties.<br>(Ref Human Rights Policy, https://www.apraava.com/getmedia/c5d64657-fa1d-4fad-a803-a8ca9727c2fa/Human-Rights-Policy.pdf<br>Prevention of Sexual Harassment at Workplace https://www.apraava.com/getmedia/b485f4e1-aaf3-49ae-9864-ea38aefbb18e/Handbook-on- |

| | | |
|---|---|---|
| | | Prevention-of-Sexual-Harassment-at-Workplace-Oct-2023.pdf |
| Sexual harassment | Unwelcome acts or behavior (whether directly or by implication) | PP has a prevention of sexual harassment policy in place which is applicable to both permanent and contractual employees. |
| Gender equity in labor and work | Biasness in hiring, promotions or terminations | PP has a prevention of sexual harassment policy in place which is applicable to both permanent and contractual employees. |
| Forced labor | No risk identified | PP complies with the core labour standards for the ADB financed portion of the Project by engaging those contractors and other providers of goods and services who do not employ forced labour |
| Child labor | No risk identified | PP complies with the core labour standards for the ADB financed portion of the Project by engaging those contractors and other providers of goods and services who do not employ child labour |
| Human trafficking | No risk identified | The PP works with ethical suppliers as per code of conduct policy and no such scenario is envisaged for the project activity. |

### 2.3.2 Human Rights

| Risks identified | Mitigation or preventative measure(s) taken |
|---|---|
| No risk identified | The land required for the project was purchased on willing seller- willing buyer basis and direct negotiations with the land owners.<br>The land required for the project comprises of entirely private land and is purchased on willing seller- willing buyer basis and direct negotiations with the land owners |

### 2.3.3 Indigenous Peoples and Cultural Heritage

| Risks identified | Mitigation(s) or preventative measure taken |
|---|---|

| | |
|---|---|
| No risk identified | The project activity is a greenfield Wind power project and wind mills are installed in approved/permitted areas. The project does not affect the indigenous people and their cultural heritage. |

### 2.3.4 Property Right

| Risks identified | Mitigation or preventative measure(s) taken |
|---|---|
| No risk identified | The project activity is a greenfield wind power project. The land required for the project was purchased on willing seller- willing buyer basis and direct negotiations with the land owners. This project does not infringe with property rights and resources. Hence, there is no need to implement any measures to protect and preserve the property rights of stakeholders, IPs, LCs, and customary rights holders. |

### 2.3.5 Benefit Sharing

| | |
|---|---|
| **Summary of the benefit sharing plan** | Project activity is a greenfield wind power project where the benefit sharing is not applicable. |
| **Benefit sharing during the monitoring period** | Not applicable because the project activity does not have any impacts property right. |

## 2.4 Ecosystem Health

| | Risk identified | Mitigation or preventative measure(s) taken during the monitoring period |
|---|---|---|
| **Impacts on biodiversity and ecosystems** | No risk identified | This project activity does not involve any activity which may negatively impact biodiversity and ecosystem. The locations identified for the WTG do not comprise of any trees or shrubs in the immediate vicinity.<br>Provision of adequate spaces between each turbine for movement of birds which reduces the potential for accidental collision has been provided as per the project site layout plan. |

| | | |
|---|---|---|
| Soil degradation and soil erosion | Dispersion of soil | Temporary paved areas are constructed to be used while refueling the machineries, in case of any accidental spill the soil will be cut and stored securely for disposal with hazardous waste. |
| Water consumption and stress | No risk identified | Since the project activity is wind power plant, there is no water consumption and stress is likely to be caused. |

### 2.4.1 Rare, Threatened, and Endangered species

| | |
|---|---|
| Species or habitat | Since the project activity is greenfield wind power project, no ecosystem impact was identified during validation |
| Areas needed for habitat connectivity | Not Applicable |

| | Risks identified | Mitigation or preventative measure(s) taken |
|---|---|---|
| Habitats for rare, threatened, and endangered species | Not Applicable | Not Applicable |
| Areas for habitat connectivity | Not Applicable | Not Applicable |

### 2.4.2 Introduction of species

This project activity neither involve any planting activities nor introduction of species. Hence, not applicable.

| Species introduced | Classification | Justification for use | Adverse effects and mitigation |
|---|---|---|---|
| Not Applicable | Not Applicable | Since, the project activity is greenfield wind power project, it is not applicable as project activity does not introduce any species. | Not Applicable |

This project activity does not involve introduction of any species which may be invasive in nature.

| Existing invasive species | Mitigation measures to prevent the spread or continued existence of invasive species |
|---|---|

| | |
|---|---|
| Not Applicable | Not Applicable |

| | Risks identified | Mitigation or preventative measure(s) taken |
|---|---|---|
| Invasive species | Not Applicable | Not Applicable |

### 2.4.3 Ecosystem conversion

The project activity is a greenfield wind power project. This project activity does not involve ARR, ALM, WRC or ACoGS activities. Hence, not applicable.

| | Risks identified | Mitigation or preventative measure(s) taken |
|---|---|---|
| Ecosystem conversion | NA | NA |

# 3 IMPLEMENTATION STATUS

## 3.1 Implementation Status of the Project Activity

Andhra Lake Ph-I has implemented of a 56 MW wind power project consisting of 70 Wind Electric Generators (WEGs) of individual capacity 0.8 MW by Apraava Renewable Energy Private Limited (AREPL). Total capacity of 56 MW has been commissioned. The first WEG under this project has commissioned on 19-Aug-2011 and last WEG has been commissioned on 28-Dec-2011. Thus, the project is now operation to its full operational capacity of 56 MW. A comprehensive list of WEGs commissioning dates are provided under section 1.8.

The project activity has been implemented as per the description in the registered VCS PD. The Project is owned by Apraava Renewable Energy Private Limited (AREPL) and WWIL is responsible for operation and maintenance of the wind farm. The project has been under operation since commissioning without any major breakdowns. Though normal breakdowns due to O&M measures are continuously being worked upon by the dedicated O&M contractor for the projects WEGs. There have been no events that may have an impact on the GHG emissions or removals during the current monitoring period.

Further, there are no changes to the project participant for the project activity during the monitoring period. Further, there are no changes to the project participant for the project activity during the monitoring.

**Technology Details** –

The project uses Wind World India Ltd's wind energy technology. The project activity implements E-53 model of 0.8 MW WEGs.




The technical details for the WEG is as follows:

| Turbine model | WWIL E- 53 |
|---|---|
| Rated power | 0.8 MW |
| Rotor diameter | 52.9 m |
| Hub height | 74 m |
| Turbine Type | Gearless, variable speed, variable pitch control |
| Power regulation | Independent electromechanical pitch system for each blade. |
| Cut in wind speed | 3 *m/s* |
| Rated wind speed | 12.6 *m/s* |
| Cut out Wind speed | 24-28 m/s |
| Rated rotational speed | 32 rpm |
| Operating range rot. speed | 12-29 rpm |
| Orientation | Upwind |
| No of Blades | 3 |
| Blade Material | Fibre Glass Epoxy reinforced with integral lightning protection |
| Gear box type | Gear less |
| Generator type | Synchronous generator |
| Braking | Aerodynamic |
| Output Voltage | 400 V |
| Tower | 74 m concrete |

No events or situations happened during the reported monitoring period which can alter the applicability of the applied methodology.

## 3.2 Deviations

### 3.2.1 Methodology Deviations

No methodology deviation is applied during the monitoring period.

### 3.2.2 Project Description Deviations

This project did not apply any deviations related to Project Description during the current monitoring period.

## 3.3 Grouped Projects

Not applicable, as the project is not a grouped project.

## 3.4 Baseline Reassessment

Did the project undergo baseline reassessment during the monitoring period?

☐ Yes ☒ No

# 4 DATA AND PARAMETERS

## 4.1 Data and Parameters Available at Validation

| | |
|---|---|
| **Data / Parameter** | $EF_{OM,y}$ |
| **Data unit** | $tCO_2/MWh$ |
| **Description** | Operating margin $CO_2$ emission factor of Indian Integrated Grid |
| **Source of data** | Central Electricity Authority:<br>CO2 Emission Database CEA CO2 Baseline database Version 18.0 |
| **Value applied:** | <table><tr><th></th><th>2019-20</th><th>2020-21</th><th>2021-22</th></tr><tr><td>Net Generation in Operating Margin (GWh)</td><td>965,009</td><td>958,218</td><td>1,035,672</td></tr><tr><td>Simple Operating Margin ($tCO_2/MWh$)</td><td>0.9541</td><td>0.9402</td><td>0.9605</td></tr><tr><td>Wt. Average ($tCO_2/MWh$)</td><td colspan="3">0.9518</td></tr></table> |
| **Justification of choice of data or description of measurement methods and procedures applied** | Calculated as per "Tool to calculate the emission factor for an electricity system, version 07". The data are obtained from "$CO_2$ Baseline Database for Indian Power Sector" 18.0, published by the Central Electricity Authority, Ministry of Power, Government of India. |
| **Purpose of Data** | Calculation of Baseline emissions |
| **Comments** | This database is an official publication of Government of India for the purpose of baseline emission calculations. It is based on |

| | |
|---|---|
| | most recent data available to the Central Electricity Authority and hence considered authentic. As the calculation of baseline emission has been done ex ante its value will remain fixed for the entire crediting period. |

| | |
|---|---|
| Data / Parameter | $EF_{BM,y}$ |
| Data unit | $tCO_2/MWh$ |
| Description | Build margin CO2 emission factor of Indian Intergard grid |
| Source of data | Central Electricity Authority:<br>CO2 Emission Database CEA $CO_2$ Baseline database Version 18.0 |
| Value applied: | 0.8687 |
| Justification of choice of data or description of measurement methods and procedures applied | Calculated as per "Tool to calculate the emission factor for an electricity system, version 07". The data are obtained from "$CO_2$ Baseline Database for Indian Power Sector" 18.0, published by the Central Electricity Authority, Ministry of Power, Government of India. |
| Purpose of Data | Calculation of Baseline emissions |
| Comments | This database is an official publication of Government of India for the purpose of baseline emission calculations. It is based on most recent data available to the Central Electricity Authority and hence considered authentic. As the calculation of baseline emission has been done ex ante its value will remain fixed for the entire crediting period. |

| | |
|---|---|
| Data / Parameter | $EF_{grid,CM,y}$ |
| Data unit | $tCO_2/MWh$ |
| Description | Combined $CO_2$ emission factor of Indian Integrated Grid |
| Source of data | Central Electricity Authority: |

| | |
|---|---|
| | CO2 Emission Database CEA $CO_2$ Baseline database Version 18.0[2] |
| Value applied: | Operating margin $CO_2$ emission factor ($tCO_2$/MWh): 0.9518<br>Build margin CO2 emission factor ($tCO_2$/MWh): 0.8687<br>Weighted Average ($tCO_2$/MWh): = 0.9518* 0.75 + 0.8687 *0.25 = 0.9310 |
| Justification of choice of data or description of measurement methods and procedures applied | Calculated as per "Tool to calculate the emission factor for an electricity system, version 07". The data are obtained from "CO2 Baseline Database for Indian Power Sector" version 18.0 published by the Central Electricity Authority, Ministry of Power, Government of India. |
| Purpose of Data | Calculation of Baseline emissions |
| Comments | This database is an official publication of Government of India for the purpose of baseline emission calculations. It is based on most recent data available to the Central Electricity Authority and hence considered authentic. As the calculation of baseline emission has been done ex ante its value will remain fixed for the entire crediting period. |

## 4.2 Data and Parameters Monitored

| | |
|---|---|
| Data / Parameter | $EG_{export,y}$ |
| Data unit | MWh/yr |
| Description | Quantity of electricity exported by the Project to the grid in year y |
| Source of data | Joint Meter Reading Sheets and credit notes issued by Maharashtra State Electricity Distribution Co. Ltd. (MSEDCL) for all the feeders to which WTGs of the project activity are connected. $EG_{export,y}$ is the summation of readings of individual Joint Meter Reading Sheets. |
| Description of measurement methods and procedures to be applied | AREPL has duly installed the approved ABT meters with accuracy class of 0.2s with online metering features at the metering point (Main Meter). AREPL has also installed Check meter with separate CT/PT of class 0.2s. Quantity of electricity exported by the Project to the grid |

[2] https://cea.nic.in/cdm-co2-baseline-database/?lang=en

| | |
|---|---|
| | has been calculated using the sum of readings taken at the main/check meter installed at the interconnection points.<br><br>Data monitoring is being taking place at the substation on a continuous basis and recorded on at least monthly basis. On the basis of these readings taken, a generation report has also been issued by MSEDCL. |
| Frequency of monitoring/recording | Monthly |
| Value monitored | 84,895.68 MWh |
| Monitoring equipment | AREPL has duly installed the approved ABT meters with accuracy class of 0.2s with online metering features at the metering point (Main Meter). AREPL has also installed Check meter with separate CT/PT of class 0.2s. Quantity of electricity exported by the Project to the grid has been calculated using the sum of readings taken at the main/check meter installed at the interconnection points. Data monitoring is being taking place at the substation on a continuous basis and recorded on at least monthly basis. On the basis of these readings taken, a generation report has also been issued by MSEDCL.<br><br>For Type, Accuracy Class, Serial numbers of energy meters kindly refer Appendix 02. |
| QA/QC procedures to be applied | The readings from main and check meters installed at the interconnection point have been checked every month at the time of metering of electricity generation. In case the meters are found to be operating beyond the permissible limits, it shall be immediately sent for calibration. The frequency of meter testing is once in 5 years. It would be prudent to note that the meter testing and calibration is not within the control of the Project Proponent. |
| Purpose of the data | Baseline Emissions calculation |
| Calculation method | Measured Value |
| Comments | The data will be kept for two years after the end of the crediting period or the last issuance of VERs for this Project activity, whichever occurs later. |

| | |
|---|---|
| Data / Parameter | $EG_{import,y}$ |
| Data unit | MWh/yr |
| Description | Quantity of electricity imported by the Project from the grid in year y |

| | |
|---|---|
| Source of data | Joint Meter Reading Sheets and credit notes issued by Maharashtra State Electricity Distribution Co. Ltd. (MSEDCL) for all the feeders to which WTGs of the project activity are connected. $EG_{import, y}$ is the summation of readings of individual Joint Meter Reading Sheets. |
| Description of measurement methods and procedures to be applied | Quantity of electricity imported by the Project to the grid is calculated using the sum of readings taken at the main/check meter installed at the interconnection points. Data monitoring has been done at the substation on continuous basis and recorded on at least a monthly basis. On the basis of these readings taken, a generation report is issued by MSEDCL. |
| Frequency of monitoring/recording | Monthly |
| Value monitored | 53.57 MWh |
| Monitoring equipment | AREPL has duly installed the approved ABT meters with accuracy class of 0.2s with online metering features at the metering point (Main Meter). AREPL has also installed Check meter with separate CT/PT of class 0.2s. Quantity of electricity imported by the Project to the grid has been calculated using the sum of readings taken at the main/check meter installed at the interconnection points. Data monitoring is being taking place at the substation on a continuous basis and recorded on at least monthly basis. On the basis of these readings taken, a generation report has also been issued by MSEDCL.<br><br>For Type, Accuracy Class, Serial numbers of energy meters kindly refer Annex 01. |
| QA/QC procedures to be applied | The readings from main and check meters installed at the interconnection point have been checked every month at the time of metering of electricity generation. In case the meters are found to be operating beyond the permissible limits, it shall be immediately sent for calibration. The frequency of meter testing is once in 5 years. It would be prudent to note that the meter testing and calibration is not within the control of the Project Proponent. |
| Purpose of the data | Baseline Emissions calculation |
| Calculation method | Measured Value |
| Comments | The data will be kept for two years after the end of the crediting period or the last issuance of VERs for this Project activity, whichever occurs later. |

| | |
|---|---|
| Data / Parameter | $EG_{facility,y}$ |
| Data unit | MWh/yr |
| Description | Quantity of net electricity generation supplied by the project plant/unit to the grid in year y |
| Source of data | Joint Meter Reading Sheets and credit notes issued by Maharashtra State Electricity Distribution Co. Ltd. (MSEDCL) for all the feeders to which WTGs of the project activity are connected. |
| Description of measurement methods and procedures to be applied | Net electricity supplied by the project is calculated as the difference of electricity exported to and imported from the grid measure using the readings taken at the main/check meter installed at the interconnection point.<br><br>$EG_{facility,y} = EG_{export,y} - EG_{import,y}$<br><br>Joint Meter Reading Sheets and generation report issued by Maharashtra State Electricity Distribution Co. Ltd. (MSEDCL) on a monthly basis is used for this purpose. |
| Frequency of monitoring/recording | Monthly |
| Value monitored | 84,842.11 MWh |
| Monitoring equipment | Not applicable as it is a calculated value |
| QA/QC procedures to be applied | The value of this parameter can be cross checked with all the invoices generated for the sold electricity during the year y. |
| Purpose of the data | Baseline Emissions calculation |
| Calculation method | Measured value |
| Comments | The data will be kept for two years after the end of the crediting period or the last issuance of VERs for this Project activity, whichever occurs later. |

## 4.3 Monitoring Plan

Wind World India Limited (WWIL) is O&M contractor for the project activity. WWIL is responsible for the maintaining all the monitoring data on behalf of state utility in respect of the project activity. WWIL has implemented the management structure for managing the monitored data.

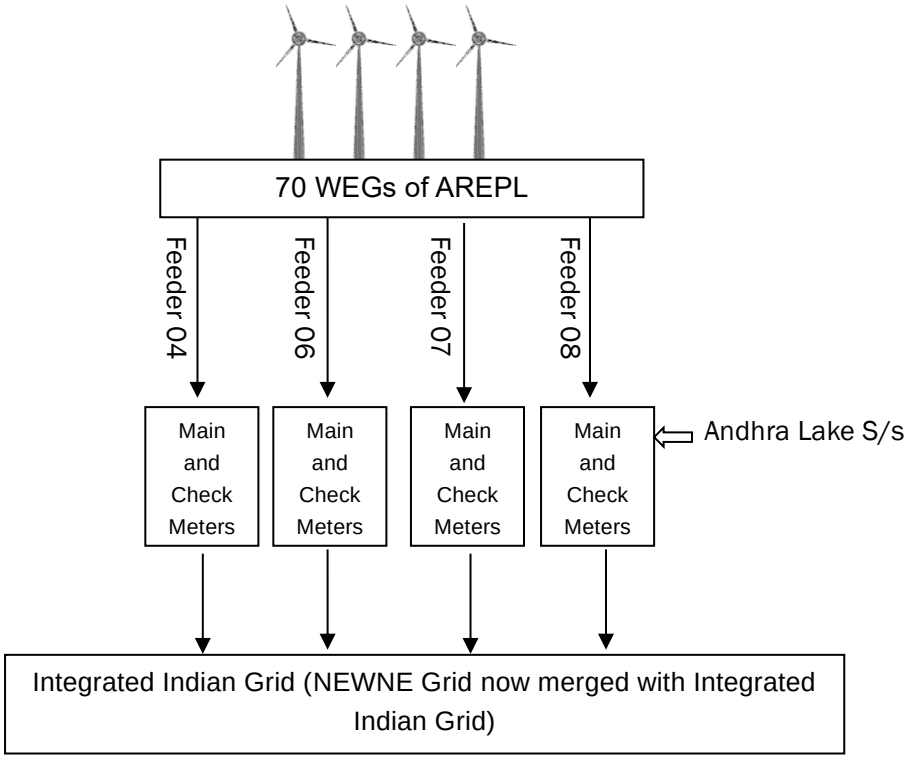
This approved monitoring methodology requires monitoring of the following:

Net electricity supplied from the project activity. While Emission factor of the project activity is fixed ex ante hence no further monitoring of this parameter is required. As per ACM0002 leakage

need not be considered hence leakage has not been considered for the project activity. Hence, the sole parameter for monitoring is the net electricity supplied by the project activity to the grid.

The Project activity is operated by WWIL (O&M contractor for the project activity) and managed by the PP. The operational and maintenance contract for the project activity is with WWIL, which is an ISO 9001 certified company. WWIL follows the documentation practices to ensure the reliability and availability of the data for all the activities as required from the identification of the site, wind resource assessment, logistics, finance, construction, commissioning and operation of the wind power project.

**Calibration of Meters:** The readings from main and check meters installed at the interconnection point has been checked every month at the time of metering of electricity generation. In case the meters are found to be operating beyond the permissible limits, it shall be immediately sent for calibration. The meters were calibrated on 13/07/2021, prior to the current monitoring period. As per the registered monitoring plan, this calibration was valid until 12/07/2026, which is also in line with the Central Electricity Authority (Installation and Operation of Meters) (Amendment) Regulations, 2019. However, during the current monitoring period, these meters were replaced by the State Utility with new meters on 06/08/2024 to ensure continued measurement accuracy. The newly installed meters were tested for accuracy by the state utility (MSEDCL) on 04/07/2024. The calibration of these meters will remain valid for the next five years, in accordance with the registered monitoring plan and the national guidelines issued by the CEA. The details of the same is provided in Appendix 2 of monitoring report. Location of the meters are mentioned below:



**Apportioning of electricity:**

In case dates of monitoring period do not match with the dates of Joint Meter Reading Sheets / Credit notes issued by Maharashtra State Electricity Distribution Co. Ltd. (MSEDCL)

Apportioning has been carried out based on ratio of generation data recorded using LCS meters installed at the WTG. The LCS meters do not require calibration as the energy readings of electricity generated at the LCS meter is cross verified by the energy calculated by inverting system installed in the WTGs.

The emission reductions of that particular period (from the date of registration of the project till the end of the month) will be calculated based on percentage generation of that particular period at WTG using LCS data multiplied with the total units generated in the month as per the Joint Meter Reading Sheets / Generation report issued by Maharashtra State Electricity Distribution Co. Ltd. (MSEDCL).

**The sample calculation is furnished below:**

Generation from AREPL WTGs for the monitoring period = A (From LCS data) Generation from AREPL WTGs for the billing period = B (From LCS data)

Net energy exported from AREPL WTGs for the billing period = C (JMR/Generation share report by MSEDCL)

Net energy export used for calculation of emission reduction for the monitoring period = (C * A/B)

Calibration Details of billing meters for the project activity are provided in the Appendix 2.

**Frequency of meter reading:** The meters installed at the metering point will have 15 minutes block online reading. However, the main/check meter reading at the metering point is undertaken jointly by the representative of the MSEDCL and authorized officials of the AREPL on 1st day of every month for the preceding month.

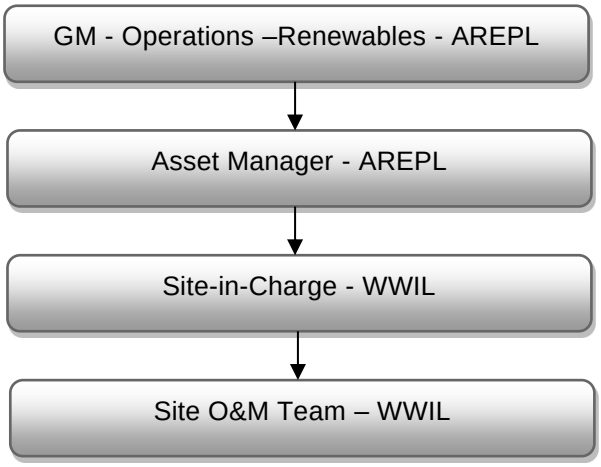
**Data archiving:** Data has been archived electronically. The data would be archived two years after crediting period or last issuance whichever is later.

**Training and maintenance requirements:** Training on the machine is an essential pre-requisite, to ensure necessary safety of man and machine. Further, in order to maximize the output from the Wind Energy Generators (WEGs), it is extremely essential, that the engineers and technicians understand the machines and keep them in good health. In order to ensure that WWIL's service staffs is deft at handling technical snags on top of the turbine, the necessity of ensuring that they are capable of climbing the tower with absolute ease and comfort has been established. The WWIL Training Academy provides need-based training to meet the training requirements of WWIL projects. The training is contemporary, which results in imparting focused knowledge leading to value addition to the attitude and skills of all trainees. This ultimately leads to creativity in problem solving.

Monitoring roles and responsibilities

AREPL has formulated a Project Team to ensure proper and continuous monitoring of the performance of turbines and generation of power.

The operation and management structure implemented by the AREPL for the purpose of the Project activity is illustrated below:




The Project activity is operated by WWIL (O&M contractor for the project activity) and managed by the PP. The operational and maintenance contract for the project activity is with WWIL, which is an ISO 9001 certified company. WWIL follows the documentation practices to ensure the reliability and availability of the data for all the activities as required from the identification of the site, wind resource assessment, logistics, finance, construction, commissioning and operation of the wind power project. The data for the project is compiled by the O&M Contractor and subsequently stored by the PP, the data flows as per the below mentioned flow chart starting from Site O&M team which monitors day to day operational data and monthly recording. The roles and responsibilities for the project are described as below:

Data Recording

The state utility and representative of concerned Power Producer / developer shall jointly read the metering system every month at the delivery point.

Meter readings taken jointly will be signed by the representatives of state utility and of concerned power producer/developer. If Power Producer/ Developer's representative is not present for joint meter reading then the meter reading taken by state utility shall be considered as final; provided a signed copy of the meter reading is sent to the Power Purchase / Developer within twenty four (24) hours of such reading of the main metering system or back up metering system as the case may be.

Emergency Preparedness

In case of any abrupt breakdown, the fault will be immediately identified by the O&M personnel. All minor faults shall be taken care of by the O& M personnel, In case of any major faults, the grid personnel will be informed and replacement of the equipment shall be made within 24 hours.

# 5 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

## 5.1 Baseline Emissions

The baseline emissions are calculated as follows:

$BE_y = EG_{PJ,y} . EF_{Integrated\ grid,CM,\ y}$

Where:

$BE_y$ = Baseline emissions in year y ($tCO_2$)

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

$EF_{grid,CM,y}$ = Combined margin $CO_2$ emission factor for Integrated Indian grid connected power generation in year y calculated using the latest version of the "Tool to calculate the emission factor for an electricity system"

Since the project activity is the installation of a new grid-connected renewable power plant/ unit at a site where no renewable power plant was operated prior to the implementation of the project activity, therefore:

$EG_{PJ,y} = EG_{facility,y}$

Where:

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

Baseline Emission ($BE_y$):

Baseline emissions ($BE_y$) are calculated as follows:

$BE_y = EG_{facility,y} \times EF_{Integrated,grid,CM,y}$

| *Vintage Period* | *Net Electricity Export (MWh)* | *Emission Factor (tCO2/MWh)* | *Baseline Emissions (tCO2)* |
|---|---|---|---|
| 2024 (01/01/2024 to 31/12/2024) | 84,842.11 | 0.9310 | 78,988 |
| | **84,842.11** | | **78,988** |

## 5.2 Project Emissions

The project activity involves harnessing of wind energy and its conversion to electricity. Hence according to ACM0002 Version 21.0.0, there will be no project emissions in the project activity PEy = 0

## 5.3 Leakage Emissions

As per ACM0002 Version 21.0.0, no leakage has been considered for the calculation of emission factor.

## 5.4 GHG Emission Reductions and Carbon Dioxide Removals

| Vintage period | Baseline emissions ($tCO_2e$) | Project emissions ($tCO_2e$) | Leakage emissions ($tCO_2e$) | Reduction VCUs ($tCO_2e$) | Removal VCUs ($tCO_2e$) | Total VCUs ($tCO_2e$) |
|---|---|---|---|---|---|---|
| 2024 (01/01/2024 to 31/12/2024) | 78,988 | 0 | 0 | 78,988 | 0 | 78,988 |
| **Total** | **78,988** | **0** | **0** | **78,988** | **0** | **78,988** |

| Vintage period | Ex-ante estimated reductions/ removals | Achieved reductions/ removals | Percent difference | Explanation for the difference |
|---|---|---|---|---|
| 2024 (01/01/2024 to 31/12/2024) | 83,112 | 78,988 | -4.96 % | PLF increase of 4.96 % is well below additionality limits and there is no adverse impact on additionality due to this variation. The increase in PLF is due to seasonal and cyclical variation in wind characteristics which is beyond the control of project participant. |

# APPENDIX 1: COMMERCIALLY SENSITIVE INFORMATION

| Section | Information | Justification |
|---|---|---|
| Not Applicable | Not Applicable | The project activity is greenfield wind power project, there are no commercially sensitive information so this section is not applicable. |

# APPENDIX 2: CALIBRATION DETAILS

**Main Meter**

| Feeder No. | Meter identification-Sl No. | Meter Make | Accuracy Class | Date of Calibration/Testing/Installation | Valid Till |
|---|---|---|---|---|---|
| 4 | 13098992 (Old Meter) | Elster | 0.2s | 13/07/2021 | 12/07/2026 |
| | Q1008096 (New Meter) | Secure | 0.2s | 04/07/2024 | 03/07/2029 |
| 6 | 13098994 (Old Meter) | Elster | 0.2s | 13/07/2021 | 12/07/2026 |
| | Q1008100 (New Meter) | Secure | 0.2s | 04/07/2024 | 03/07/2029 |
| 7 | 15687864 (Old Meter) | Elster | 0.2s | 13/07/2021 | 12/07/2026 |
| | Q1008102 (New Meter) | Secure | 0.2s | 04/07/2024 | 03/07/2029 |
| 8 | 13098996 (Old Meter) | Elster | 0.2s | 13/07/2021 | 12/07/2026 |
| | Q1008104 (New Meter) | Secure | 0.2s | 04/07/2024 | 03/07/2029 |

**Check Meter**

| Feeder No. | Meter identification-Sl No. | Meter Make | Accuracy Class | Date of Calibration/Testing/Installation | Valid Till |
|---|---|---|---|---|---|
| 4 | 13098993 (Old Meter) | Elster | 0.2s | 13/07/2021 | 12/07/2026 |
| | Q1008095 (New Meter) | Secure | 0.2s | 04/07/2024 | 03/07/2029 |
| 6 | 13098995 (Old Meter) | Elster | 0.2s | 13/07/2021 | 12/07/2026 |
| | Q1008099 (New Meter) | Secure | 0.2s | 04/07/2024 | 03/07/2029 |
| 7 | 13099005 (Old Meter) | Elster | 0.2s | 13/07/2021 | 12/07/2026 |
| | Q1008101 (New Meter) | Secure | 0.2s | 04/07/2024 | 03/07/2029 |
| 8 | 13098997 (Old Meter) | Elster | 0.2s | 13/07/2021 | 12/07/2026 |
| | Q1008103 (New Meter) | Secure | 0.2s | 04/07/2024 | 03/07/2029 |