VALIDATION AND VERIFICATION OF "RENEWABLE WIND POWER PROJECT BY AXIS WIND FARMS (RAYALASEEMA) PVT. LTD."

Document Prepared By**Earthood Services Private Limited (ESPL)**

Project Title	Renewable Wind Power Project by Axis Wind Farms (Rayalaseema) Pvt. Ltd.
Report Title	Validation and Verification Report of Renewable Wind Power Project by Axis Wind Farms (Rayalaseema) Pvt. Ltd.
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Summary:

Earthood Services Private Limited (hereafter referred to as ESPL) has been contracted by EKI Energy Services Limited (Representative of Project proponent and the focal point of communication with VCS) to conduct the validation and verification of the project - **"Renewable Wind Power Project by Axis Wind Farms (Rayalaseema) Pvt. Ltd."** (herein after also referred to as Project Activity), with regard to the relevant requirements of VCS programme guidelines and standard (VCS standard version 3.7, & VCS program guide version 3.7)/17/. Relevant requirements of the UNFCCC for CDM project activities, as well as criteria for consistent project operations, monitoring and reporting has been applied for validation and verification.
The monitoring period covered under this verification is from 02/03/2018 to 30/11/2019 (both the days inclusive).
The verification includes confirming the implementation of the monitoring plan of the validated VCS joint PD and MR (Version 2 dated 25/12/2019) (Project pipeline ID 2052) and the application of the monitoring methodology as per ACM0002 version 19: "Grid-connected electricity generation from renewable sources"/04/. A site visit was conducted to verify the data submitted for validation and in the monitoring report.
The main purpose of this project activity is to generate clean form of electricity through renewable wind energy source. The projectinvolves installation of 105 MW wind project in Anantapur district of Andhra Pradesh.
Over the 10 years of first crediting period, the project will replace anthropogenic emissions of greenhouse gases (GHG's) estimated to be approximately 202,492 tCO_2e per year, thereon displacing 216,153MWh/year amount of electricity from the generation-mix of power plants connected to the Indian grid, which is mainly dominated by thermal/fossil fuel based power plant.

Thus the project aims to displace electricity produced by fossil fuel power plants harnessing wind energy. Therefore, the project reduces greenhouse gas emissions and thereby contributes to sustainable development. The project being a renewable energy generation activity, leads to reduction in fossil fuel dominated electricity generation. The project activity results in reductions of greenhouse gas (GHG) emissions that are real, measurable, and verifiable and also plays beneficial role in the mitigation of climate change.
The project proponent has applied the baseline and monitoring methodology ACM0002, Version 19.0: "Grid-connected electricity generation from renewable sources".

A risk based approach has been followed to perform this combined validation & verification. In the course of validation & verification, 07 Corrective Action request (CARs) and 02 Clarification request (CLs) were raised and successfully closed.
The review of the project design documentation, monitoring report and additional documents related to baseline and monitoring methodology; the subsequent background investigation, follow-up interviews and stakeholders have provided ESPL with sufficient evidence to validate the fulfillment of the stated criteria.

In detail the conclusions can be summarized as follows:

- The project is in line with all relevant host country criteria (India) and all relevant VCS and UNFCCC requirements for CDM
- The project additionality is sufficiently justified in the VCS joint PD & MR document.
- The monitoring plan is transparent and adequate.
- The calculation of the emission reductions is carried out in a transparent and conservative manner, so that the calculated emission reductions of 230,885 tCO_2e are most likely to be achieved within the 10 years crediting period. Also, due to expected longer technical lifetime of the project, project can be

further renewed under VCS crediting period.

Validation & Verification Conclusion:

The conclusions of this report show, that the project, as it was described in the project documentation and monitoring report, is in line with all criteria applicable for the validation and verification. This validation and verification are based on the information made available to ESPL and the engagement conditions are detailed in this report. No restrictions or uncertainties were identified related to the validation and verification.
ESPL confirms that the project is implemented in accordance with the validated VCS joint PD & MR. The monitoring system is in place and the emission reductions are calculated without material misstatements. Our opinion relates to the projects GHG emissions and the resulting GHG emission reductions reported and related to the valid and registered project baseline and monitoring and its associated documents. Based on the information seen and evaluated we confirm that the implementation of the project has resulted in 319,405tCO_2e during period 02/03/2018 to 30/11/2019.

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1 INTRODUCTION

1.1 Objective

ESPL has been contracted by EKI Energy Services Limited (Representative of Project proponent, to undertake the validation and verification of the renewable energy project titled "Renewable Wind Power Project by Axis Wind Farms (Rayalaseema) Pvt. Ltd." (which was under the VCS pipeline with ID PL2052). The verifiers have reviewed the GHG data collected for the monitoring period from 02/03/2018 to 30/11/2019 (both days included) covered in this verification.

The purpose of this validation and verification is to have an independent third party assessment of whether the project activity conforms to the qualification criteria set out in the VCS Version 3.7 standard/17/ to attain real, measurable, additional and permanent emission reductions. The validation/verification statement/opinion is a written assurance that:

- The project complies with all the applicable VCS requirements and has the ability to generate the emission reductions stated over the project's crediting period.
- The validation followed the requirements of the current version of the VCS Standard Version 3.7 and VCS program guide 3.7/17/ to ensure the quality and consistency of the validation work and the report.
- The project has resulted in emission reductions as declared by the organisation or GHG project's GHG assertion;
- The data reported is accurate, complete, consistent, transparent and free of material error or omission.

1.2 Scope and Criteria

For validation:

The validation scope is given as an independent and objective review of the project design, the project's baseline study and monitoring plan which is included in the VCS Joint PD & MR (Version 02, dated 25/12/2019) and other relevant supporting documents.

The scope of work covered in the validation is described below:

- To validate whether the project activity meets the requirements of VCS Standard Version 3.7, VCS Validation and VCS program guide 3.7/17/ including additionality, proof of title and compliance with local laws.
- To evaluate whether the baseline and monitoring plan are in conformance with the applied methodology from the VCS approved GHG program
- To confirm that the information presented are completed, consistent, transparent and free of omission or material error
- Background investigation and follow up interviews
- Issuance of draft validation report with CARs, CLs & FARs, if any
- Final validation opinion

The information in the VCS joint PD & MR is reviewed against the criteria of VCS Standard 3.7, the VCS program guide 3.7/17/ and the approved baseline and monitoring CDM methodology ACM0002, Version 19/04/.

ESPL has performed validation based on a risk based approach focusing mainly on the significant risks to meet the qualification criteria and the ability to generate Verified Carbon Units (VCUs).

For Verification:

The scope of the verification was the independent and objective review and ex-post determination of the monitored reductions in GHG emissions from "Renewable Wind Power Project by Axis Wind Farms (Rayalaseema) Pvt. Ltd.". The verification of this project was based on the validated VCS joint project description & monitoring report /01/ and supporting documents submitted by the project proponent to the verification team. The documents were reviewed against the following guidance and protocols:

- VCS Standard: Version 3.7, dated 21 June 2017/17/
- Approved baseline and monitoring methodology ACM0002, Version 19, "Grid-connected electricity generation from renewable sources"/04/.
- Validated VCS joint Project Description & monitoring report version 2.0 dated 25/12/2019/01/
- VCS Program Guide, Version 3.7, dated 21 June 2017/17/
- ISO 14064-3: Specification with guidance for the validation and verification of greenhouse gas assertions, 2006

The validation & verification is not meant to provide any consulting towards the client. However, stated request for clarifications and/or corrective actions may provide input for improvement of the project design.

1.3 Level of Assurance

The validation has been planned and organized to achieve a

☒ Reasonable level of assurance

☐ Limited level of assurance

1.4 Summary Description of the Project

The main purpose of this project activity is to generate clean form of electricity through renewable wind energy source. The project involves installation of 105 MW wind project in Anantapur district of Andhra Pradesh.

Over the 10 years of first crediting period, the project will replace anthropogenic emissions of greenhouse gases (GHG's) estimated to be approximately202,492tCO_2e per year, thereon displacing 216,153 MWh/year amount of electricity from the generation-mix of power plants connected to the Indian grid, which is mainly dominated by thermal/fossil fuel based power plant.

The details of the project is mentioned in the table below:

Project Investor	Capacity (MW)	COD/03/	Connection with the Grid	State	Usage
Axis Wind Farms (Rayalaseema) Pvt. Ltd	10.5	02/03/2018	Indian Grid	Andhra Pradesh	Sale to Grid
	25.2	30/03/2018			
	16.8	15/06/2018			
	10.5	19/07/2018			
	21	04/09/2018			
	21	27/09/2018			

During the Current Monitoring Period from 02/03/2018 to 30/11/2019 (First and last date included) the project activity has supplied 340,962.7MWh of electricity, and thus contributing to the GHG reductions 319,405 tCO_2e.

The project shall result in replacing anthropogenic emissions of greenhouse gases (GHG's) estimated to be approximately 202,492 tCO_2e per year, thereon displacing 216,153MWh/year amount of electricity from the gird over the 10 years crediting period.

The Project activity is a new facility (Greenfield) and the electricity generated by the project will be exported to the Indian electricity grid. The project will therefore displace an equivalent amount of electricity which would have otherwise been generated by fossil fuel dominant electricity grid. The Project Proponent plans to avail the VCS benefits for the project.

In the Pre- project scenario the entire 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.

The technical specifications of the WTGs are as below:

WEG (S88 , 2.1 MW, 50 Hz) TECHNICAL DATA

Rated capacity : 2100 kW

Rotor diameter : 88 m

Hub height : 80 m

Rotor with Pitch Control

Type : Upwind rotor with active pitch control

Number of blades : 3

Swept area: 6082 m^2

Blade material : The rotor blades are made of high grade GRP and manufactured by using Resin Infusing Moldings (RIM) technology

Rotor speed : 15.47 rpm

Tip speed : 71 m/s

Generator :

Type: Single fed Induction Generator with slip-rings, variable rotor resistance with SUZLON-FLEXI-SLIP control system.

Hub : Cast spherical hub

Bearings : High tensile double-row ball-bearing

Braking System : 3 independent Aero Brakes with power back up supply. Yaw Control : Active through adjustment gears, friction damping

Tower : Steel Tubular, 77.5 m height

Technology Transfer

No technology transfer from other countries is involved in the project.

2 VALIDATION AND VERIFICATION PROCESS

2.1 Method and Criteria

For Validation:

The validation process is undertaken by validation team that involves the following:

- The desk review of documents and evidences submitted by the project proponent in context of the reference VCS rules and guidelines,
- Undertaking site visit, interview or interactions with the representative of the project proponent,
- Reporting audit findings with respect to clarifications and non-conformities and the closure of the findings, as appropriate and
- Preparing a draft validation report
- Resolution of outstanding issues and the issuance of final verification report and opinion

In order to ensure transparency, a validation protocol was prepared for the project according to the VVS for PAs version 02.0 verification requirements and VCS Standard version 3.7/17/. The Clarification Requests (CL) were issued where additional information was needed to clarify issues, and Forward Action Requests (FAR) for issues relating to project implementation that required review during the first verification of the project activity.

For Verification:

The verification approach consists two phases.

- In the first phase, ESPL completed a strategic review and risk assessment of the project activities and processes in order to gain a full understanding of:
- Activities associated with all the sources contributing to the project emissions and emission reductions, including leakage if relevant;
- Protocols used to estimate or measure GHG emissions from these sources;
- Collection and handling of data;
- Controls on the collection and handling of data;
- Means of verifying reported data; and
- Compilation of the Monitoring Report.

At the end of this phase, ESPL produced a Verification Checklist which, based on the risk assessment of the parameters and data collection and handling processes for each of those parameters, describes the verification approach and the sampling plan.

Using the Verification checklist, ESPL verified the implementation of the monitoring plan and the data presented in the Monitoring Report for the period in question. This involved a site visit and a desk review of the Monitoring Report. This verification report describes the findings of this assessment.

2.2 Document Review

For Validation:

The validation team has conducted the validation using the VCS Standard and the ACM0002 version 19 methodology as the reference criteria. The validation team had done the completeness check of VCS joint PD & MR (Version 2, dated 25/12/2019)/01/ submitted by the PP as per the VCS standard Version 3.7/17/ requirements was reviewed. Furthermore, a desk review was also carried out to assess the following:

- Information of project details in compliance with VCS joint PD & MR template
- Appropriateness of methodology ACM0002 version 19 applied to the project activity
- Compliance with relevant laws and regulations
- Correctness of application of baseline and monitoring methodology
- Demonstration of additionality
- Monitoring plan described in the VCS joint PD & MR
- Stakeholder consultation
- Proof of listing of project under pipeline
- Calculation of grid emission factor, etc. where applicable.

The VCS joint PD & MR version 01 dated 25/11/2019 /01/ was initially reviewed and the PP requested to submit the revised documents along with the supporting information and documents. The revised documents and additional supporting documents were further assessed by the validation team during des review as well as verified physically during site visit. During the validation process, the revised VCS joint PD & MR (version 02, dated 25/12/2019) /01/ and the supporting documents were assessed to confirm the actions taken by the PP to the CARs and CLs issued.

The validation team has reviewed the final version of the VCS joint PD and MR (i.e. Version 2.0 dated 25/12/2019) to confirm that all changes agreed have been incorporated adequately.

Further, prior to the onsite visit, it was verified by the validation team that the project was listed in the VCS pipeline in line with the requirements (Section 3, Registration and Issuance process, version 3.8) Ref: https://www.vcsprojectdatabase.org/#/pipeline_details/PL2052. /06/

For Verification:

The validated VCS joint PD & MR /01/ (version 2.0 dated 25/12/2019) and additional supporting documents related to the project performance submitted by the client were reviewed.

The details of the documentation reviewed during the validation & verification are provided under Appendix 1 of this report.

2.3 Interviews

The assessment team has carried out interviews in order to verify the information included in the project documentation and to gain additional information regarding the compliance of the project with the VCS requirements. Before and during the on-site visit, the assessment team has interviewed the representatives of the PP to confirm selected information and to clarify issues identified during the document review. Representatives of the PP and O&M contractor were also interviewed. The names and designations of the personnel interviewed are mentioned in section 2.4 below.

The main topics covered during the interview are as follows:

- General Aspects of the project
- Project Implementation
- Equipment and operation
- Staff Training procedures
- Calibration procedures
- Monitoring & Measuring System
- Data collection, recording and archiving procedure
- QA/QC procedures
- VCS documentation
- Emission reduction calculations

2.4 Site Inspections

As part of the validation & verification, an on-site inspection has been performed by the assessment team. The site visit was carried out on 24/12/2019. During the site visit representatives of the PP and O&M contractors were interviewed; i.e. personnel responsible for monitoring of the project activity, data collection and management, and QA/QC procedure. The details of the people interviewed, and the topics discussed are mentioned in the table below:

Location: Village/ Taluk: Kalagalla, Ipperu, Atmakur, Padamatiyaleru and KederuVillage of Anantpur district, Andhra Pradesh	**Date:** 24/12/2019
Coverage	**Source of Information / Persons Interviewed**
Project implementation start date as per the VCS requirements. Electricity Generation Records (monthly energy statements, Invoices) Reliability & accuracy of readings considered for emission reduction calculations, Calibration procedure	Mr. Santhosa Kumar (Axis Wind Farms) Mr. Kapil Sharma (Axis Wind Farms)
Monitoring and measuring system • Collection of measurements • Observations of established practices • Data Verification of monitoring parameters	Mr.Barun Sharma (Enking International) Mr. Pankaj Rajpoot (Enking International) Mr. Bhaskar Dutta (Enking International)
QA/QC procedures, data management, internal audits to maintain data quality & reliability, maintenance Practices Consideration of monitoring period, monitoring methodology, project documentation and emission reduction calculations	Mr.Barun Sharma (Enking International) Mr. Pankaj Rajpoot (Enking International) Mr. Bhaskar Dutta (Enking International)
Documentation Review and verification of data/information with the original documents	Mr.Barun Sharma (Enking International) Mr. Pankaj Rajpoot (Enking International) Mr. Bhaskar Dutta (Enking International)

2.5 Resolution of Findings

As an outcome of the validation & verification process, the team can raise different types of findings:

A Clarification Request (CL) is raised if information is insufficient or not clear enough to determine whether the applicable VCS requirements have been met

Where a non-conformance arises the team leader shall raise a Corrective Action Request (CAR). A CAR is issued, where:

- The project participants have made mistakes that will influence the ability of the project activity to achieve real, measurable additional emission reductions;
- The VCS requirements have not been met;
- There is a risk that emission reductions cannot be monitored or calculated.
- The validation process may be halted until this information has been made available to the team leader's satisfaction. Failure to address a CL may result in a CAR. Information or clarifications provided as a result of a CL may also lead to a CAR. No CL has been raised during the validation of the project activity.

During the validation and verification process, total 07 CARs and 02 CLs were raised and resolved satisfactorily. The list of CARs/CLs/FARs raised and the response provided, the mean of validation, reasons for their closure and references to correction in the relevant documents are provided in Appendix 4 of this report.

2.5.1 Forward Action Requests

A Forward Action Request (FAR) is raised during validation to highlight issues related to project implementation that require review during the first verification of the project activity. FARs shall not relate to the VCS requirements for registration.

No FAR has been raised during the validation and verification of this project activity.

3 VALIDATION FINDINGS

3.1 Project Details

The main purpose of this project activity is to generate clean form of electricity through renewable wind energy source. The projectinvolves installation of 105 MW wind project in Anantapur district of Andhra Pradesh.

The project aims at providing electricity to the state grid by effective utilization of renewable resources. The electricity generated from the project activity would be supplied to the national grid of India.

The Project activity is a new facility (Greenfield) and the electricity generated by the project will be exported to the Indian electricity grid. The project will therefore displace an equivalent amount of electricity which would have otherwise been generated by fossil fuel dominant electricity grid. The Project Proponent plans to avail the VCS benefits for the project.

During the 10 years of first crediting period, the project will replace anthropogenic emissions of greenhouse gases (GHG's) estimated to be approximately 202,492 tCO_2e per year, thereon displacing 216,153MWh/year amount of electricity from the generation-mix of power plants connected to the Indian grid, which is mainly dominated by thermal/fossil fuel based power plant.

Details of the capacity & installation dates are mentioned in Section 1.4 above.

Project location

Assessment team during the validation site visit confirms via google map that the wind power plantsare located at Kalagalla, Ipperu, Atmakur, Padamatiyaleru and Kederu Village of Anantpur district, Andhra Pradesh.

Location	Latitude	Longitude
Kuderu	14° 43' 55.92" N	77° 25' 53.4" E
Kalagalla	14° 48' 49.68" N	77° 25' 4.08" E
Ipperu	14° 46' 37.2" N	77° 25' 30" E
Padmatiyaleru	14° 37' 47.28" N	77° 30' 29.52" E
Atmakur	14° 38' 48.12" N	77° 21' 29.88" E
Thimmapurumu	15° 8' 25.8" N	77° 25' 48" E
Kammuru	14° 44' 44.88" N	77° 29' 1.68" E

During the Current Monitoring Period from 02/03/2018 to 30/11/2019 (First and last date included) the project activity contributed to the GHG reductions 319,405tCO_2e.

Project Start Date

Start date of the project activity is the earliest date of commissioning of the WTGs i.e. 02/03/2018 and hence it is considered as the Project start date.

Project crediting period Date

Crediting Period Start date: 02-March-2018
Crediting Period End date: 01-March -2028
The project activity adopts renewable crediting period of 10 years period which can be renewed for maximum 2 times.

Project Scale and Estimated GHG Emission Reductions or Removals

The project activity involves setting up of 105 MW of wind power project.

Project Scale	
Project	✓
Large project	

As the estimated annual average GHG emission reductions or removal per year is 202,492 tCO_2e which is less than 300,000 tonnes of CO_2e per year, thus the project falls in the category of Project.

Year	Estimated GHG emission reductions or removals (tCO_2e)
02/03/2018 to 01/03/2019	202,492
02/03/2019 to 01/03/2020	202,492
02/03/2020 to 01/03/2021	202,492
02/03/2021 to 01/03/2022	202,492
02/03/2022 to 01/03/2023	202,492
02/03/2023 to 01/03/2024	202,492
02/03/2024 to 01/03/2025	202,492
02/03/2025 to 01/03/2026	202,492
02/03/2026 to 01/03/2027	202,492
02/03/2027 to 01/03/2028	202,492
Total estimated ERs	2,024,920
Total number of crediting years	10
Average annual ERs	202,492

The above estimated emission reduction is confirmed by assessment team via emission reduction calculation spreadsheet. The calculation is conservative and this acceptable to the assessment team.

Conditions prior to project initiation

Assessment team during the desk review and onsite visit confirms that the project is a windpowerproject and does not involve generation of GHG emissions for the purpose of their subsequent reduction, removal or destruction. The baseline as described in section 3.3.4 of this report will continue to be the baseline in the absence of project activity.

Project compliance with applicable laws, statutes and other regulatory frameworks

Assessment team confirms that the Project has received necessary approvals for development and commissioning for the proposed windproject from the state Nodal agencies and is in compliance to the local laws and regulations. Assessment team checked the Commissioning certificates, Installation report for wind power plant in the name of PP issued by state nodal agency of the respective state to confirm the project capacity and its relevant statutory requirements as per the host country regulations.

Assessment team noted that the project fulfils the norms put down by Central Pollution Control Board norms. 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 (29/02/2016).

Being a renewable power project, it falls under the category of White and thus theseprojects do not need clearance for Consent to operate and only needs to inform the relative State Pollution Control Board. The same is done for the project and thus it can be confirmed that it follows the local laws of the host country.

The relevant national laws and regulations pertaining to generation of energy in India are:

- Electricity Act 2003
- National Electricity Policy 2005
- Tariff Policy 2006

The Project activity conforms to all the applicable laws and regulations in India:

- Power generation using renewable energy is not a legal requirement or a mandatory option.
- There are state and sectoral policies, framed primarily to encourage wind power projects. These policies have also been drafted realizing the extent of risks involved in the projects and to attract private investments.
- The Indian Electricity Act, 2003 (May 2007 Amendment) does not influence the choice of fuel used for power generation.
- There is no legal requirement on the choice of a particular technology for power generation.

Thus, assessment team confirms that the project activity follows the National and local law and regulation of the host country.

Project Ownership

Axis Wind Farms (Rayalaseema) Pvt. Ltdis the project proponent (PP) of project activity and they have the legal right to control and operate the project activities.

The project ownership has been checked by the Assessment Team and demonstrated through below supporting documents:

1.Commissioning certificates – The Commissioning Certificate issued by Southern Power Distribution Company of A.P. Limited issued to Axis Wind Farms (Rayalaseema) Pvt. Ltdfor registration of commissioning of generation facility indicates that PP have the legal right to control and operate the project activities. /03/

1. **2.Contract with EPC contractor –** The purchase order on the name of Axis Wind Farms (Rayalaseema) Pvt. Ltdindicates that PP has the legal right to control and operate the project activities. /12/

Assessment team confirms that, Based on above evidences, the project ownership is demonstrated andAxis Wind Farms (Rayalaseema) Pvt. Ltdis authorized project owner.

Emissions trading programs and other binding limits

Assessment team confirms that the Net GHG emission reductions or removals generated by the Project will not be used for compliance with an emissions trading program or to meet binding limits on GHG emissions in any Emission Trading program or other binding limits. Audit team checked the REC Mechanism database of India and found that the project activity is not accredited/ registered under REC mechanism/16/. Further, Declaration in effect of the same has been submitted by project proponent to audit team and found to be correct. Thus, it is concluded that the project activity not involved on other Emissions trading programs and other binding limits.

Additional Information Relevant to the Project

Eligibility Criteria for grouped projects

This is not a grouped project activity. Thus, this section is not applicable for this project.

Leakage Management for AFOLU projects

Not applicable to the project activity.

Commercially Sensitive Information

No commercially sensitive information has been excluded from the public version of the project description. The details are presented transparently to the assessment team for analysis which lead to positive conclusion for this validation and verification.

Sustainable Development

Contribution to sustainable development:

Ministry of Environment Forest and Climate Change has stipulated economic, social, environment and technological well-being as the four indicators of sustainable development. Assessment team found that the project contributes to sustainable development using the following ways.

Social well-being: The project would help in generating employment opportunities during the construction and operation phases.The project activity will lead to development in infrastructure in the region like development of roads and also may promote business with improved power generation.

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: Windbeing 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 emissionsand specific pollutants like SO_x, NO_x, and SPM associated with the conventional thermal power generation facilities.

Project undergone continuous operation and only scheduled maintenance as per the manufacturer specification is considered. No unforeseen incident observed for the present monitoring period.

3.2 Participation under Other GHG Programs

The project has neither been registered nor seeking registration under any other GHG programs. Theproject is seeking registration only in VCS program. Audit team checked the REC Mechanism database ofIndia/16/ and found that the project activity is not accredited / registered under REC mechanism. Further,declaration for the same is checked and found correct by the assessment team. Also assessment team checked the following registries to confirm the same. The details of the registries checked are as follows:

1. https://www.recregistryindia.nic.in/
2. http://cdm.unfccc.int/
3. http://www.goldstandard.org/

Rejection by other GHG programs

The Project is not rejected by other GHG programs. A declaration for the same is checked and found correct by the assessment team. Also assessment team checked the following registries to confirm the same. The details of the registries checked are as follows:

1. https://www.recregistryindia.nic.in/
2. http://cdm.unfccc.int/
3. http://www.goldstandard.org/
4. www.v-c-s.org

The Project has no intend to generate any other form of GHG-related environmental credit for GHG emission reductions or removals claimed under the VCS Program.

Renewable energy certificates are available for trading in the host country However, the same is not availed by the project participant. The undertaking regarding the same is submitted by PP which is acceptable to the assessment team and assessment team also checked the REC web site (https://recregistryindia.nic.in/) and found the declaration to be correct.

3.3 Application of Methodology

3.3.1 Title and Reference

Assessment team checked that following methodology and tools are applicable for the project activity. The details are as below:

Title : Grid-connected electricity generation from renewable sources
Reference : The project activity meets the eligibility criteria of large scale project as it is more than 15MW
Methodology : ACM0002: Grid-connected electricity generation from renewable sources - Version 19.0/04/
Type I : Energy industries (renewable / non-renewable sources)
Category : Approved Consolidated Methodology (ACM0002)

Tools referred with above methodology and applicable for project activity are:

- Tool to calculate the emission factor for an electricity system - Version 07.0 (EB 100, Annex 04)/05/

- Methodological Tool- Tool for the demonstration and assessment of additionality - Version 07.0.0 (EB 70, Annex 08)/25/

3.3.2 Applicability

All applicability conditions of the updated version of the methodology (ACM0002 version 19.0) are met. Thus the methodology is deemed fully applicable for the new crediting period and no request for deviation with regards to the applicability of the methodology is required. All applicability conditions are completely and correctly included in the VCS PD.

Criteria-1.

This methodology is applicable to grid-connected renewable energy power generation project activities that: (a) Install a Greenfield power plant; (b) Involve a capacity addition to (an) existing plant(s); (c) Involve a retrofit of (an) existing operating plants/units; (d) Involve a rehabilitation of (an) existing plant(s)/unit(s); or (e) Involve a replacement of (an) existing plant(s)/unit(s).

Validation assessment:

- Project activity is Greenfield wind power project, supplying electricity to national grid. This is verified thorough the Power purchaseAgreements(PPA)/7/.

Thus the criterion is fulfilled by the proposed project activity.

Criteria-2:

The methodology is applicable under the following conditions:

(a) The project activity may include renewable energy power plant/unit of one of the following types: hydro power plant/unit with or without reservoir, wind power plant/unit, geothermal power plant/unit, solar power plant/unit, wave power plant/unit or tidal power plant/unit;

(b) In the case of capacity additions, retrofits, rehabilitations or replacements (except for wind, solar, wave or tidal power capacity addition projects the existing plant/unit started commercial operation prior to the start of a minimum historical reference period of five years, used for the calculation of baseline emissions and defined in the baseline emission section, and no capacity expansion, retrofit, or rehabilitation of the plant/unit has been undertaken between the start of this minimum historical reference period and the implementation of the project activity.

Validation assessment:

The project activity is the installation of a wind power plant. This is confirmed through the power purchase agreement (PPA) /7/ which confirms that project is awarded by Southern Power Distribution Company of A.P. Limited issued.

Thus the criterion (a) is applicable and (b) is not applicable for the proposed project activity.

Criteria-3:

The methodology is not applicable to:

(a) Project activities that involve switching from fossil fuels to renewable energy sources at the site of the project activity, since in this case the baseline may be the continued use of fossil fuels at the site;

(b) Biomass fired power plants/units.

Validation assessment:

The project activity is the installation of a new wind power plant and does not involve switching from fossil fuels to renewable energy sources at the site of the project activity. This is confirmed through the PPA/07/.

Thus the criterion is not applicable for the proposed project activity.

Criteria-4:

In the case of retrofits, rehabilitations, replacements, or capacity additions, this methodology is only applicable if the most plausible baseline scenario, as a result of the identification of baseline scenario, is "the continuation of the current situation, that is to use the power generation equipment that was already in use prior to the implementation of the project activity and undertaking business as usual maintenance."

Validation assessment:

The project activity does not involve any capacity additions, retrofits or replacements of an existing facility because it is a Greenfield wind power generation project activity; same has been confirmed from the power purchase agreement (PPA) /7/ which confirms that project is awarded by Southern Power Distribution Company of A.P. Limited issued.

Thus the criterion is not applicable for the proposed project activity.

The project activity is the installation of a wind based Power Generation project; it is not a hydro project, thus all conditions related to hydro plants are not applicable to the project activity (and not included in this section).

Thus, it can be concluded that the applied methodology ACM0002, version 19.0 is applicable to the project activity.

Further, the applied methodology refers to latest available versions of the following tools;

1. Tool to calculate the emission factor for an electricity system

The VCS PD /01/ refers and correctly applies the latest version of tool to calculate the emission factor for an electricity system, version 07.0 /05/.Also in the final version of the VCS PD, the PP has referred the CEA Baseline CO_2 Emission Database version 14, dated December 2018.This is the latest available database at the time of revised version of the VCS PD submission for validation of the project activity. The location of the project in the state of Andhra Pradesh in India. As per CEA Baseline CO_2 Emission Database version 14/15/, the state of Andhra Pradesh comes

under the Indian grid, the geographic and system boundaries of which are clearly identified; information on the characteristics of the grid is available. Thus, the tool is applicable for the project activity.

2. Tool for the demonstration and assessment of additionality

The latest version 7.0.0 of the "Tool for the demonstration and assessment of additionality"/25/ has been used by the PP. Since the additionally tool is included in an approved methodology, additionality tool needs to be applied for the project activity. Also PP is neither proposing new methodology nor proposing alternative methods to demonstrate additionality for consideration by the Executive Board. This it is concluded that the Tool for the demonstration and assessment of additionality is applicable for the project activity.

3. Combined tool to identify the baseline scenario and demonstrate additionality

The PP has used the "Tool to demonstration and assessment of additionality" in demonstration of additionality and the baseline has been developed in accordance with the applied baseline methodology. Hence, the combined tool is not used by the project participant.

4. Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion

Since there is no fossil fuel combustion involved in the project site or in the project boundary, this tool is not applicable to the proposed project activity and not used/applied by the project participant.

3.3.3 Project Boundary

The project boundary is given by the applied methodology, ACM0002, Version 19.0/04/:

"The spatial extent of the project boundary includes the project power plant and all power plants connected physically to the electricity system that the CDM project power plant is connected to."
The project boundary includes the wind project, sub-stations, grid and all power plants connected to grid. The proposed project activity will evacuate power to the India national grid. Therefore, the entireIndia national grid and all connected power plants have been considered in the project boundary for the proposed VCS project activity, thereby displacing the grid generated electricity. The project boundary includes the wind project, sub-stations, grid and all power plants connected to grid, which has been illustrated in the Section 2.3 of the joint VCS PD & MR/01/ and gives clear understanding of the project boundary; thus it is acceptable. The same has been confirmed during the site visit and is found to be appropriate.

The consideration, by the PP, of only CO_2 gas for the baseline emissions is conservative and also in line with the methodology. The exclusion of CH_4 & N_2O in the baseline scenario is appropriate. The project activity involves the generation of electricity using wind energy. Hence, there are no project emissions associated with this project activity. Hence, the exclusion of CO_2, CH_4& N_2O in the project scenario are appropriate. There are no other sources of project emissions. Hence, the project participant has considered the project emissions as zero for project activity; this is in line with the methodology.

The assessment team is able to conclude that the project boundary and selected sources are applied as per the methodology and the applicable VCS criteria.

3.3.4 Baseline Scenario

Assessment team confirms that being a grid connected windenergy generation project, PP developed the project based on the Methodology ACM0002, Version 19/04/. As per methodology if the project activity is the installation of a new grid-connected renewable power plant/unit, the baseline scenario is the following:

Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the "Tool to calculate the emission factor for an electricity system".

As per CDM Validation and Verification Standard for project activities version 02, "where the baseline scenario is not prescribed in the approved methodology, the DOE shall assess the list of identified credible alternatives to the project activity in the joint VCS PD & MR selected to determine the most realistic baseline scenario." Thus, joint VCS PD & MR should mention the credible alternatives to the project activity in order to determine the most realistic baseline scenario. As the selected large-scale methodology clearly mention the baseline scenario and the same has been opted in this project, therefore, no further analysis on baseline is required.

Validation Team, therefore, concludes that the joint VCS PD & MR conforms to the guidance given by EB via CDM Validation and Verification Standard for project activities version 02 and VCS via VCS standard version 3.7.

In the absence of the project activity, the equivalent amount of power would have been drawn from the Indian grid. Hence, the baseline for the project activity is the equivalent amount of power from the Indian grid.

The combined margin ($EF_{grid, CM, y}$) is the result of a weighted average of two emission factor pertaining to the electricity system: the operating margin (OM) and build margin (BM). Calculations for this combined margin must be based on data from an official source (where available) and made publicly available. The Central electricity authority (CEA) database version 14 is the latest available data at the time of joint VCS PD & MR submission to DOE for validation, hence same is considered for emission factor calculations.

The combined margin of the Indian grid used for the project activity is as follows:

Parameter	Value	Nomenclature	Source
$EF_{grid,CM,y}$	0.9368 tCO_2/MWh	Combined margin CO_2 emission factor for the	Calculated as the weighted average of the operating margin (0.75) & build margin

Parameter	Value	Nomenclature	Source
		project electricity system in year y	(0.25) values, sourced from Baseline CO_2 Emission Database, Version 14.0, December 2018 published by Central Electricity Authority (CEA), Government of India/14/
$EF_{grid,OM,y}$	0.9610 tCO_2/MWh	Operating margin CO_2 emission factor for the project electricity system in year y	Calculated as the last 3-year (2015-16, 2016-17& 2017-18) generation-weighted average, sourced from Baseline CO_2 Emission Database, Version 14.0, December 2018 published by Central Electricity Authority (CEA), Government of India/14/
$EF_{grid,BM,y}$	0.8644 tCO_2/MWh	Build margin CO_2 emission factor for the project electricity system in year y	Baseline CO_2 Emission Database, Version 14.0, December 2018 published by Central Electricity Authority (CEA), Government of India/14/

Assessment team thus confirmed that baseline is selected as per the applied methodology and combined margin is calculated as per the tool and thus acceptable to the assessment team.

3.3.5 Additionality

The proposed project activity is a large scale project and the additionality of the project activity was demonstrated on the basis of the "Tool for the demonstration and assessment of the additionality", Version 07.0.0/25/, approved by the CDM EB 70 and required by the methodology ACM0002, Version 19.0.0/04/.

PP has adopted the step-wise approach for demonstrating and assessing the additionality of the project activity as follows:

Step 0: Demonstration whether the proposed project activity is the first-of-its-kind
This step is not applied to the project activity since it is not first-of-its-kind, hence the additionality of the project will be demonstrated in next steps below.

Step 1: Identification of alternatives to the project activity consistent with current laws and regulations

Sub-step 1a: Define alternatives to the project activity:

Identify realistic and credible alternative(s) available to the project participants or similar project developers that provide outputs or services comparable with the proposed VCS project activity.

The purpose of the project activity is to generate electrical power using wind energy and feed the electricity generated to the grid. Hence, the following alternatives are considered:

Alternative 1: The proposed project activity not undertaken as a VCS project activity.

The PP could proceed with the implementation of the project without Carbon credit benefits. The electricity produced from the renewable energy project would have been sold to the grid. This is in

compliance with all applicable legal and regulatory requirements and can be a part of the baseline. However, the Project activity is not feasible without revenues from sale of Carbon Credits. This argument has been discussed in step 2 of the Additionality section.

Alternative 2: No proposed project activity and equivalent amount of energy would have been produced by the grid electricity system through its currently running power plants and by new capacity addition to the grid i.e. Continuation of the present situation.

The PP would have continued without investment in Project activity with usual business activities. The grid would continue with the fossil fuel based power projects and this would result in GHG emissions. Hence, the new capacity add-on from a fossil fuel based power plant is appropriate, realistic & credible baseline alternative for the project activity.

Outcome of Sub-step 1a: All the realistic alternatives for the project activity have been enlisted above.

Thus though two alternatives are mentioned above as per step of additionality tool, the first alternative is not possible as project activity is not viable without carbon credit benefits and second alternative is the baseline scenario for the project activity as per methodology as mentioned in section 2.4 of joint VCS PD & MR.

It is to be noted that being the green field project activity, "the baseline scenario is electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the "Tool to calculate the emission factor for an electricity system".

Sub-step 1b: Consistency with mandatory laws and regulations:

The alternative(s) shall be in compliance with all applicable legal and regulatory requirements, even if these laws and regulations have objectives other than GHG reductions, e.g. to mitigate local air pollution. The project activity comes under white category as mentioned in section 1.11 of this document,thus there shall be no necessity of obtaining the Consent to Operate'' for White category of industries. Since project activity falls under white category and the non-polluting nature of project fulfils the compliance to the local laws and regulations(This sub-step does not consider national and local policies that do not have legally-binding status.).

The relevant national laws and regulations pertaining to generation of energy in India are:

- Electricity Act 2003
- National Electricity Policy 2005
- Tariff Policy 2006

The Project activity conforms to all the applicable laws and regulations in India:

- Power generation using renewable energy is not a legal requirement or a mandatory option.
- There are state and sectoral policies, framed primarily to encourage wind energy power projects.

- These policies have also been drafted realizing the extent of risks involved in the projects and to attract private investments.
- The Indian Electricity Act, 2003 (May 2007 Amendment) does not influence the choice of fuel used for power generation.
- There is no legal requirement on the choice of a particular technology for power generation.

The both alternatives are in compliance with laws and regulations required. There is no any mandatory requirement to implement the project activity.

Outcome of Sub-step 1b: Hence, both the alternatives enlisted above are found to comply with the mandatory laws and regulations taking into account the enforcement of the legislations in the region or country and EB decisions on national and/or sectoral policies and regulations. Since wind projects are categorised as white category, no any consent to operate required from pollution control board.

However, Alternative 2 has been selected as the appropriate baseline alternative for this project activity in line with methodology.

Step 2: Investment analysis

Determine whether the proposed project activity is economically or financially less attractive than at least one other alternative, identified in step 1, without the revenue from the sale of emission reductions credits. To conduct the investment analysis, use the following sub-steps:

Sub-step 2a: Determine appropriate analysis method

The Project activity envisages to export the power to Indian grid and the revenues from the sale would be generated in accordance with the terms and tariffs established in the Power Purchase Agreement (PPA). Thus, simple cost analysis (Option I) cannot be used as the analysis method as the sale of the units of generated electricity shall result in a revenue stream during the operations of the Project activity.

In the absence of the project activity grid electricity would have been the obvious choice for the Project which requires no investment. Hence investment comparison analysis (Option II) is also not appropriate for the project activity.

After eliminating Option I and Option II, the use of Benchmark analysis (Option III) is the method of analysis that has been selected as the most suitable method. This method determines the attractiveness of the project activity for the investors, as well as provides a measure of the viability of the investment to generate revenues during its operation, as compared with other avenues and investment options. Hence, the Benchmark analysis method is to be employed for analysis of the said project.

Sub-step 2b (Option III): Apply benchmark analysis

The investment analysis using Benchmark analysis approach (Option III) has been chosen. Further, this method illustrates the evaluation of the Project by the PP before the decision to undertake the project was taken and management approval granted.

Choice of Financial Indicator:

According to the “Tool for demonstration and assessment of Additionality”, the financial indicator can be based either on (1) project IRR or (2) equity IRR. There is no general preference between the approaches (1) or (2). The benchmark chosen for analysis shall be fully consistent with the choice of approach. Therefore in accordance with the guidance, the relevant financial indicator for project activity has been chosen as post tax equity IRR.

Choice of Benchmark:

As per Investment Analysis tool, Required/expected returns on equity are appropriate benchmarks for an equity IRR. The Equity IRR is considered as the financial indicator and the benchmarks used is cost of equity. Hence the benchmarks used are applicable to the project activity and the type of IRR calculation presented

At the time of decision made of project activity, Version 07 of methodological tool "Investment Analysis" (version 7 & 8) were the latest available tools to the PP at the time of decision making. However, the request for registration for Version 7 could be submitted till 31/10/2017 and for version 8 the registration request could be submitted till 28/11/2018. Hence, PP has used Methodological Tool for Investment Analysis version 09 (EB 101, Annex 11)/34/. Upon comparison of the detail of version 07.0, 08.0 and version 09.0 of the methodological tools it was observed that, there is no major difference in the versions except for the change of default value for benchmark calculation. The default value as mentioned in version 07 was 11.06% for the group 1 projects in India, in the version 08 it was 10.73% for group 1 project in India and Value as mentioned in version 09 is 9.79% for group 1 project in India which is clearly more conservative than version 07 & 08 values. Hence, version 09 is used which is appropriate and more conservative for benchmark calculation and PP has considered the same tool for default value of return on equity for the respective SPVs. The default value of Return on Equity for Group-1 projects in India is 9.79 % as per EB 101, Annex 11.

As per paragraph 7 of Appendix A of the above mentioned document, “In situations where an investment analysis is carried out in nominal terms, project participants can convert the real term values provided in the table below to nominal values by adding the inflation rate. The inflation rate shall be obtained from the **inflation forecast of the central bank of the host country for the duration of the crediting period**. If this information is not available, the target inflation rate of the central bank shall be used. If this information is also not available, then the average forecasted inflation rate for the host country published by the IMF (International Monetary Fund World Economic Outlook) or the World Bank for the next five years after the start of the project activity shall be used”. For the concerned project activity, the inflation rate has been considered from the inflation forecast published by the Reserve Bank of India.

Default Value Benchmark:

As per EB 101, Annex 11, the cost of equity is determined by selecting the values provided in the Appendix, i.e. Default values for cost of equity (expected return on equity) is presented below:

Whereas, appendix in EB 101, Annex 11 specifies default value of expected return on equity in real terms for Energy Industries (Group 1) in India = **9.79%**

The Required return on equity (benchmark) was computed in the following manner:

Nominal Benchmark = {(1+Real Benchmark)*(1+Inflation rate)}-1

Where:

- Default value for Real Benchmark = 9.79% (as per Appendix of EB 101, Annex 11)

- Inflation Rate forecast for by Reserve Bank of India (RBI) (i.e. Central Bank of India) for India

Benchmark estimation:

Appendix in EB 101, Annex 11 specifies default value of expected return on equity in real terms for Energy Industries (Group 1) in India = **9.79%**

Inflation Forecast for India as per RBI website:

Since RBI publishes the inflation forecast for 5 years and 10 years, PP has considered the maximum 10 year inflation considering the renewable crediting period of total 30 years.

Benchmark Calculations	Value	Sources Link	Document Date	Decision making Date
Default Value for India as per UNFCCC guidelines	**9.79%**	EB 101 Annex 11	29-11-2018	01-09-2017
Inflation forecast (WPI Mean) as per RBI for 10yrs	**3.30%**	https://rbi.org.in/Scripts/PublicationsView.aspx?id=17759	02-08-2017	
Benchmark (with 10yrs Forecast)	**13.41%**	Calculated		

Sub-step 2c: Calculation and comparison of financial indicators (only applicable to Options II and III):

The Post tax Equity IRR is evaluated for the entire lifetime of the project activity, i.e. 25 years. It is calculated based on the cash outflows from and cash inflows into the project activity.
Key Assumptions supporting financial projections are provided in excel spreadsheet to the DOE. Also the Assumptions and Values considered for Financial and Sensitivity Analysis of 105 MW-Wind power project has been represented in Appendix 1.
Based on result of IRR excel spreadsheets, equity IRR is less than Benchmark.

This substantiates that the investment is not financially attractive (Equity IRR for the project activity is less than the Benchmark). Thus it can be easily concluded that project activity is additional & is not business as usual scenario.
The financial analysis of the project at the time of investment decision as well as with publicly available parameters such as Tariff Order, Regulation etc, along with the respective sensitivity analysis, shows that the Equity IRR of the project, under no scenario crosses the benchmark returns. Therefore it can be concluded that the project is not financially viable and hence no investment would have been made at a rate lower than the benchmark return in absence of expected carbon revenue from the project under VCS.

The individual financial parameters used for calculations of Project IRR of the project activity have been discussed as below in detail;

Project Cost:

The Project cost for the project activity has been considered on the basis of the Detailed Project Report /10,13/ which is a third part approved report for project participant during conceptualization stage of the project. The project cost includes cost of materials and equipment, labour and services, identification, selection and allocation of land, cost for obtaining all government permissions and infrastructure development charges. This is found to be appropriate and it is accepted. The project cost for the project activity has been considered as INR 7840 million based on project cost from DPRavailable at the time of investment decision for the project activity.

The appropriateness of the same is further cross-checked against the project financials available with DPR and Financial Statement proposed by PP/10,13/ and this assumed project cost is found to be conservative as actual project cost for other similar projects is generally higher than the assumption, as verified by DOE during the review of the financial expert. Also, the per MW cost prescribed by CERC order 2016 /19/ for Wind project is higher than the value considered for IRR calculation. Thus, the consideration of project cost is appropriate and already very conservative.

Also, sensitivity analysis considering +/- 10% variation in the project cost is carried under the IRR sheet and results are summarized in this report

Operation and Maintenance Cost and its escalation:

Operation and maintenance cost considered is INR 231 million for the project activity (including the applicable tax) and an escalation of 5% per year has been considered as per DPR.

This consideration of O&M cost is found to be appropriate and conservative as actual O&M cost is higher than this input value, also CERC order 2016 prescribes higher value than both the assumed and actual values.

Also, sensitivity analysis considering +/- 10% variation in the project cost is carried under the IRR sheet and results are summarized in this report.

Plant Load Factor:

The PP has considered the PLF or CUF of the project based on the projected generation provided in the approved DPR /10,13/, which is 23.5%.

The assessment team has verified that the proposed generation is higher than the actual generation generally achieved for similar projects in the state, as experienced by DOE from previous validation practices. Moreover, this assumed value has also been compared with CERC Order 2016 and MNRE performance report; and found the input value considered for IRR computation is optimistic and quite conservative.

Hence, the assessment team is of opinion that the value used is in line with the investment guidelines and is sufficient for validation of Plant load factor (PLF). The plant load factor (PLF) is sourced from the project DPR which is a third party certified document (Engineering Company), which is in conformity with para 3 (b) of annex-11, EB48 report. The PPA also prescribes a lower CUF range for the project, which is 23.5%. Additionally, this parameter is considered under +/- 10% sensitivity.

Electricity Tariff:

The Project participant had considered the tariff rate in line with the Tariff rate considered in the DPR which was available at the time of decision making, followed by rate agreed under PPA, which is INR 4.84 per kWh, fixed for 25 years of project's lifetime. Since the source documents

referred for, tariff rate were the latest available and applicable documents at the time of conceptualization of the project activity, paragraph 10 of investment analysis tool is followed and it is accepted. Thus it is concluded that electricity tariff considered for the project activity is found to be appropriate and it is accepted.

Also, in order to check the conservativeness of value, the tariff rate is further verified with CERC tariff order 2016 that indicate the tariff rate as INR 6.35/kWh. Additionally, the actual tariff rate going to be availed by the project under the signed PPA/07/ with APERC has been checked, which is also INR 4.84/kWh; hence the above tariff considered for IRR calculation is found to be relevant and appropriate for acceptance.

The Electricity Act, 2003, the policies framed under the Act, as also the National Action Plan on Climate Change (NAPCC) provide for a roadmap for increasing the share of renewable energy in the total generation capacity in the country. Central Electricity Regulatory Commission (CERC) has notified Regulation on Renewable Energy Certificate (REC) in fulfilment of its mandate to promote renewable sources of energy and development of market in electricity. Thus the project applicability for these benefits under REC mechanism has been checked. Detailed procedure on REC mechanism dated 01/06/2010 published by Central Electricity Regulatory Commission/19/ (https://recregistryindia.nic.in/) is checked for REC eligibility of the project activity and it is confirmed that the procedure was applicable at the time of projects investment decision. It is confirmed that REC is not applicable for the projects taking benefits of preferential tariff, hence it is concluded that REC benefits are not applicable to the project activity. Also in the actual scenario, PP will not be claiming REC benefits for the project activity and it is confirmed during the site visit while interviewing the PPs representative and further checked from the official web site of REC registry/16/ hence it is accepted.

Debt to Equity Ratio:

The project activity is funded by 25% equity and 75% debt. This is in line with the Investment Analysis tool, which talks about typical debt/equity finance structure in the sector in the country. Also, this ratio is applicable as per DPR which was the base document at the time of conceptualization of the project activity, which us further in line with the paragraph 10 of investment analysis tool and hence. This D:E ratio has also been checked with the actual D:E ratio, also checked from CERC order 2016 /19/ and found to be comparable and hence accepted.

Life Time of project activity: 25 years

The lifetime of the project activity is 25 years which has been considered from the DPR/10,13/ and also as per CERC order 2016/19/. This is consistent with the lifetime of wind power projects and has been confirmed by the technical expert. The crediting period of the project activity is 10 years (renewable) as mentioned in the VCS PD /01/. However the period of assessment considered for the investment analysis is 25 years. This has been confirmed from the IRR-benchmark spread sheet submitted by the PP. Hence the considered assessment period of 25 years meets the requirement of paragraph 6 of investment analysis tool.

Interest rate on term loan, Loan tenure, Repayment period and Moratorium period:

The PP has considered the interest rate of 12.3% on term loan as per the DPR. The loan tenure of 20 years including 6 months of moratorium period. As these values are as per latest available documents to the PP at the time of the investment decision, hence the values are found to be appropriate and in line with applicable guidance in paragraph 10 of investment analysis tool. Also, assessment team has found this assumption as a conservative rate based on prior experience of evaluating similar projects in India. Moreover, the rate prescribed by CERC order is 12.76%, which is higher than the assumed rate, but they are comparable with the input values and do not

have any significant variation. Thus, assumption of Interest Rate is conservative and hence acceptable.

Book Depreciation Rate and Income Tax Depreciation Rate:

The Depreciation on plant and machinery is calculated at 3.80% as per the Straight Line Method (SLM) as per the Companies Act, Schedule XIV, Item II (i) (a) published by the Government of India/19/. Furthermore, the PP has considered 10% as salvage value and 90% as depreciable component on plant and machinery as per publically available source (CERC order, 2016 and Schedule XIV, The Companies Act 1956), which is found justified.

The income tax depreciation rate of 80% has been considered as per the Income Tax/18,19, 20/, depreciation rates for power generating units published by the Government of India.
(Source:https://www.incometaxindia.gov.in/charts%20%20tables/depreciation%20rates.htm)
As the Income tax India website is official data, it eliminates any ambiguity that there could have been in this regard.

Income Tax and MAT:

PP has considered Income Tax as 30%, which is considered as per Tax rates applicable to a domestic company, as also considered in the DPR. Also, the value can be checked from the projected tax rate at Taxman official website.
(https://www.taxmann.com/emailer/images/pdf/incometaxratesfor_17-03-2016.pdf)

MAT 37.75% (Including surcharge and education cess) as per projected IT rule (https://www.bcasonline.org/referencer2016-17/Taxation/Income%20Tax/rates_of_income_tax.html) in investment analysis for the project activity.

The appropriateness of the same has been checked and confirmed by financial expert involved in the project activity. Based on prior experience and similar projects evaluated by DOE in the host county, theseassumptions are found to be appropriate and hence accepted.

Residual (Salvage) Value:

Salvage value is considered as 10% of the total project cost (excluding cost of land charges) has been considered as per the assumption of DPR/10,13/. The value has been added back to the cash flow. As the land cost is being non-depreciable item, it is added back to the cash flow. However, PP considered 5% of cost of plant and machinery and 100% land cost as residual (salvage) value for the project activity conservatively. This is further validated as per the accounting practises and same has been also cross checked from Section 205 (2b and c) of Companies Act 1956 on the publically available web-link(http://www.indiankanoon.org/doc/1422372/) which allows a depreciable cost of ninety five per cent which implies a consideration of 10% of salvage value as a standard accounting practice. Thus, the consideration by the PP of 10% salvage value is conservative and hence appropriate for the purpose. The appropriateness of this is confirmed by the financial expert involved in the project activity; thus it is accepted.

Sub-step 2d: Sensitivity Analysis

Addressing Guidance 28 & 29 of EB 101, Annex 11, following factors has been subjected to sensitivity analysis:

1. PLF
2. O&M Cost
3. Project Cost
4. Tariff

The rationale of sensitivity is, "The ultimate objective of the sensitivity analysis is to determine the likelihood of the occurrence of a scenario other than the scenario presented, in order to provide a cross-check on the suitability of the assumptions used in the development of the investment analysis."

The results of sensitivity analysis show that even with a variation of +10% & -10% in project cost, O&M cost, PLF and Tariff Rate Equity IRR is significantly lower than the benchmark. And it is evident from the results given above; the project remains additional even under the most favourable conditions.

The table below summarizes the outcome of sensitivity:

Variation %	-10%	Normal (without variation)	+10%	Variation required to reach the benchmark
PLF	1.54%	5.29%	9.12%	20.30%
O&M	6.49%	5.29%	4.01%	-76.01%
Project Cost	8.09%	5.29%	3.07%	-21.79%
Tariff Rate	1.54%	5.29%	9.12%	20.30%

Threshold limits for variations:

It is verified that the project IRR crosses the benchmark if:

1. **Project cost reduced by 21.79%:**

   This is not a likely scenario as the estimated project cost is already found to be conservative as compared to cost indication in the CERC order. Also, based on prior experience with similar projects in the host county, the financial expert finds this value to be relevant and bit conservative.Hence reaching to this threshold is not a plausible scenario for the project activity.

2. **PLF increases by 20.30%:**

   PLF considered by the project participant is appropriate in line with paragraph 3 (b) of EB 48 Annex 11. Project IRR is crossing the benchmark if PLF is increased by more than 28% and it is very unlikely as the average PLF considered in the assessment is already higher than the same mentioned in the CERC tariff order/19/. Additionally, as per APERC performance report, calculated avg. PLF for Andhra Pradeshis 21.47% (http://aperc.gov.in/admin/upload/15135773708995996225a375b9a21708.pdf) which is lower than the input PLF value considered by PP in the IRR assessment.

3. **Tariff increases by 20.30%:**

   The breakeven for tariff rate is at increase in tariff rate by 20.30%, however DOE has verified that further increase in tariff rate is not possible as PP has already signed long term PPA/7/ with Southern Power Distribution Company of A.P. Limited issued for 25 years which is the same tariff as considered for IRR calculation.

   Moreover the Power Tariff is 4.84Rs./kWh, which is fixed for 25 years (as verified from the PPA/7/).

4. **O&M cost decreases by 76.01%:**

   This is a highly impractical condition as O&M cost can never go negative. Moreover, as per prior experience of technical expert the actual O&M cost is expected to go up, hence the O&M cost is going to be higher than what was assumed in the IRR.

Outcome of Step 2:

This substantiates that the investment is not financially attractive (Equity IRR for the projectactivity is less than the Benchmark Equity IRR) for any of the investor. Thus it can be easily concluded that project activity is additional & is not business as usual scenario.

Step 3: Barrier analysis

Barrier analysis has not been used.

Step 4: Common practice analysis

For the concerned project activity, Common Practice Analysis has been carried out for 105 MW capacity wind energy power project.

Stepwise approach for common practice analysis has been carried out as per Methodological tool "Common Practice", version 03.1 EB84, Annex 7:

Step (1): Calculate applicable capacity or output range as +/-50% of the total design capacity or output of the proposed project activity.

Range	Capacity	Unit
+50%	157.5	MW
Capacity of the proposed project activity	105	MW
-50%	52.5	MW

Step (2): Identify similar projects (both CDM and non-CDM) which fulfil all of the following conditions:
(a) The projects are located in the applicable geographical area;
(b) The projects apply the same measure as the proposed project activity;
(c) The projects use the same energy source/fuel and feedstock as the proposed project activity, if a technology switch measure is implemented by the proposed project activity;

(d) The plants in which the projects are implemented produce goods or services with comparable quality, properties and applications areas (e.g. clinker) as the proposed project pla;

(e) The capacity or output of the projects is within the applicable capacity or output range calculated in Step 1;
(f) The projects started commercial operation before the project design document (CDM-PDD) is published for global stakeholder consultation or before the start date of proposed project activity, whichever is earlier for the proposed project activity.
Identification of the similar projects (CDM and non-CDM) is carried out as per sub-steps of Step (2) as follows:

a) As the projects are located Andhra Pradesh, India, therefore, projects in the geographical area of Andhra Pradesh, India have been chosen for analysis. The project activity involves generation of electricity from wind energy. The project activity are located in Andhra Pradesh in India and the policy applicable for the wind projects is regulated by respective state policy. The policies/tariff for each state is regulated by State Electricity Regulatory Commissions of respective states and they differ for respective states. The project implemented in different states are claimed as different since the policies and regulations differ in each state. Each state have different policies regarding renewable energy, hence Andhra Pradesh state is considered as geographical region for common practise analysis.
b) The project activity is a green-field wind energy project and uses measure (b) “Switch of technology with or without change of energy source including energy efficiency improvement as well as use of renewable energies”. Therefore, projects applying same measure (b) are candidates for similar projects.
c) The energy source used by the project activity is wind. Hence, only wind energy projects have been considered for analysis.
d) The project activity produces electricity; therefore, all power plants that produce electricity are candidates for similar projects.
e) The capacity range of the projects is within the applicable capacity range from 52.5 MW to 157.5 MW.
f) The start date of the concerned project activity is 02-March-2018. Therefore projects, which have started commercial operation before 02-March-2018, have been considered for analysis.
Numbers of Similar projects identified, which fulfil above-mentioned conditioned are

N_{wind}= 0

Step (3): Within the projects identified in Step 2, identify those that are neither registered CDM project activities, project activities submitted for registration, nor project activities undergoing validation. Note their number N_{all}.

CDM project activities, which have got registered or are under validation have been excluded in this step. The list of the power plants identified is provided to the DOE. After excluding the registered and under validation projects the total number of projects.

N_{all} = 0

Step (4): Within similar projects identified in Step 3, identify those that apply technologies that are different to the technology applied in the proposed project activity. Note their number N_{diff}.

As per the tool on Common Practice, the project activities have been separated from the different technologies on the basis two criteria:

1. Size of Installation– Since project activity is large scale project, small and micro scale projects are considered as different technology project. Based on this criteria, there are no any different technology project out of similar identified projects.

2. Investment climate on the date of the investment decision– The wind projects developed under different phases can be considered as different technology projects. For proposed project activity, there are no any different technology project considered out of similar identified projects.

Hence, projects where either of the conditions is satisfied those projects are counted for calculating N_{diff} projects.

N_{diff} = 0

Step (5): Calculate factor $F=1-N_{diff}/N_{all}$ representing the share of similar projects (penetration rate of the measure/technology) using a measure/technology similar to the measure/technology used in the proposed project activity that deliver the same output or capacity as the proposed project activity.

Calculate $F=1-N_{diff}/N_{all}$

$F=1-(0/2) = 1$

As per methodological tool "common practise" version 03.1/35/, the proposed project activity is a "common practice" within a sector in the applicable geographical area if the factor F is greater than 0.2 and $N_{all}-N_{diff}$ is greater than 3.
Thus if both conditions are fulfilled, then project activity will be a common practise.Otherwise, the project activity is treated as not a common practise.
Outcome of Common Practise analysis:
As,
i. F = 1; which is greater than 0.2
ii. $N_{all}-N_{diff}$= 2; which is not greater than 3
The project activity does not satisfy second condition. Hence, project activity is not a common practice.
Thus, the proposed project activity is not a "common practice" within a sector in the applicable geographical area.

The above discussions show that wind energy power development is not a common practice and the project activity is not financially attractive; hence the project activity is additional.

As per paragraph 18 of the "Common practice tool", v.03.1 /35/ "The proposed project activity is a "common practice" within a sector in the applicable geographical area if the factor F is greater than 0.2 and $N_{all}-N_{diff}$ is greater than 3". As the project activity does not satisfy the required conditions, as mentioned above, the project activity is not a "common practice" within a sector in the applicable geographical area.

The approach used in the VCS PD /01/ has been assessed based on a document review, whilst the following relevant documents have been reviewed:

- Verified and Certified data and financial input values,/13/
- Project IRR and Benchmark Analysis calculation sheets/33/
- Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2016/19/

During telephonic discussion, the additionality of the project activity has been discussed with representatives of the PP and finally the data, rationales, assumptions; justifications and documentation provided have been checked using local knowledge and sectoral and financial expertise of the Assessment Team, and cross checked all relevant documents.

Conclusion:

The assessment team is able to confirm that:

- The project analysis complies with requirements of the latest version of VVS.
- All the parameters and assumptions used in the investment analysis have been assessed thoroughly and found appropriate. The information with regard to how the input values was validated, cross-checked is included under relevant parameter.
- The sources used have been reviewed by the assessment team found to be authentic as referenced under relevant parameter.
- The benchmark was found suitable and has been thoroughly explained in detail.
- All the assumptions and calculations for investment analysis area have been checked by the financial expert and technical expert and found to be correct and reasonable.
- The financial returns from the project activity are insufficient to meet the required investment against the selected benchmark under reasonable variations (sensitivity) conducted on key parameters.
- The project activity complies with the latest version of “Tool for demonstration and assessment of additionality” and “Tool 27: Methodological Tool - Investment Analysis (version 09)”/11/.

3.3.6 Quantification of GHG Emission Reductions and Removals

Assessment team checked the baseline, project and leakage calculation and confirm that the evaluation of baseline, project and leakage is as per the approved methodology and formula used to calculate the same is correct. The detail analysis is as below:

Baseline Emission:

As per the approved consolidated MethodologyACM0002, Version 19/04/:

Baseline emissions include only CO_2 emissions from electricity generation in fossil fuel fired 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:

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

Where:

BE_y = Baseline emissions in year y (t CO_2/yr)

$EG_{PJ,y}$ = 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/yr)

$EF_{grid,CM,y}$ = Combined margin CO_2 emission factor for grid connected power generation in year y calculated using the latest version of the "Tool to calculate the emission factor for an electricity system" (tCO_2/MWh)

The grid emission factor is calculated as the weighted average of the operating margin (0.75)& build margin (0.25) values. The value of combined margin is sourced from Baseline CO_2 Emission Database, Version 14, December2018/14/ published by Central Electricity Authority (CEA), Government of India. CEA calculates the data based on Tool to Calculate the Emission Factor for an Electricity System", Ver. 7.0/05/. No further assessment is required for grid emission calculation as the ex-ante value is sourced directly from the Govt. of India database.

Emission factor (EF_y):

$EF_{grid,\ y} = EF_{grid,M,y} = 0.9368$ t CO_2/MWh. This value is fixed ex-ante for the crediting period.

$BE_y = 216,153 \times 0.9368 = 202,492$ tCO_2

Project Emission:

As per the approved consolidated Methodology ACM0002 (Version 19.0) para 34:"For most renewable energy power generation project activities, $PE_y = 0$. However, some project activities may involve project emissions that can be significant. These emissions shall be accounted for as project emissions by using the following equation:

$$\mathbf{PE_y = PE_{FF,y} + PE_{GP,y} + PE_{HP,y}}$$

Where:

PE_y = Project emissions in year y (t CO_2e/yr)

$PE_{FF,y}$ = Project emissions from fossil fuel consumption in year y (t CO_2/yr)

$PE_{GP,y}$ = Project emissions from the operation of dry, flash steam or binary geothermal power plants in year y (t CO_2e/yr)

$PE_{HP,y}$= Project emissions from water reservoirs of hydro power plants in year y (t CO_2e/yr)

As the project activity is the installation of a new grid-connected wind energy generation plant and does not involve any project emissions from fossil fuel, operation of dry, flash steam or binary geothermal power plants, and from water reservoirs of hydro power plants. Therefore $PE_{FF,y}$, $PE_{GP,y}$, $PE_{HP,y}$ are equal to zero and thus, $PE_y = 0$.

Leakage Emission:

No other leakage emissions are considered. The emissions potentially arising due to activities such as power plant construction and upstream emissions from fossil fuel use (e.g. extraction, processing, transport etc.) are neglected.

Net Emission reduction:

Reductions are calculated as follows:

$$\mathbf{ER_y = BE_y - PE_y}$$

Where:

ER_y	=	Emission reductions in year *y* (t CO_2e/yr)
BE_y	=	Baseline emissions in year *y* (t CO_2/yr)
PE_y	=	Project emissions in year *y* (t CO_2e/yr)

Therefore, Net GHG Emission Reductions and Removals are calculated as follows:

$$\mathbf{ER_y = BE_y - PE_y}$$

Year	Estimated baseline emissions or removals (tCO_2e)	Estimated project emissions or removals (tCO_2e)	Estimated leakage emissions (tCO_2e)	Estimated net GHG emission reductions or removals (tCO_2e)
02/03/2018 to 01/03/2019	202,492	0	0	202,492
02/03/2019 to 01/03/2020	202,492	0	0	202,492
02/03/2020 to 01/03/2021	202,492	0	0	202,492

02/03/2021 to 01/03/2022	202,492	0	0	202,492
02/03/2022 to 01/03/2023	202,492	0	0	202,492
02/03/2023 to 01/03/2024	202,492	0	0	202,492
02/03/2024 to 01/03/2025	202,492	0	0	202,492
02/03/2025 to 01/03/2026	202,492	0	0	202,492
02/03/2026 to 01/03/2027	202,492	0	0	202,492
02/03/2027 to 01/03/2028	202,492	0	0	202,492
Total	2,024,920	**0**	**0**	2,024,920

This is the annualized average value calculated for ex-ante representation purposes. The year-wise ER value has been demonstrated under the section 3.4 of the Joint VCS PD & MR, which is found to be acceptable.

Conclusion:

In line with the paragraph 113 of VVS for PAs version 02.0/17/, validation team confirms that the project activity complies with the specified requirements of algorithms and/or formulae used to determine emission reductions and discussed above. The assessment team also confirms that:

- All assumptions and data used by the project participants are listed in the joint VCS PD&MR, including their references and sources;
- All documentation used by project participants as the basis for assumptions and source of data is correctly quoted and interpreted in the joint VCS PD & MR;
- All values used in the joint VCS PD & MR are considered reasonable in the context of the project activity;
- The baseline methodology and corresponding tool(s) have been applied correctly to calculate project emissions, leakage emissions, baseline emissions and emission reductions;
- All estimates of the baseline emissions can be replicated using the data and parameter values provided in the joint VCS PD & MR.

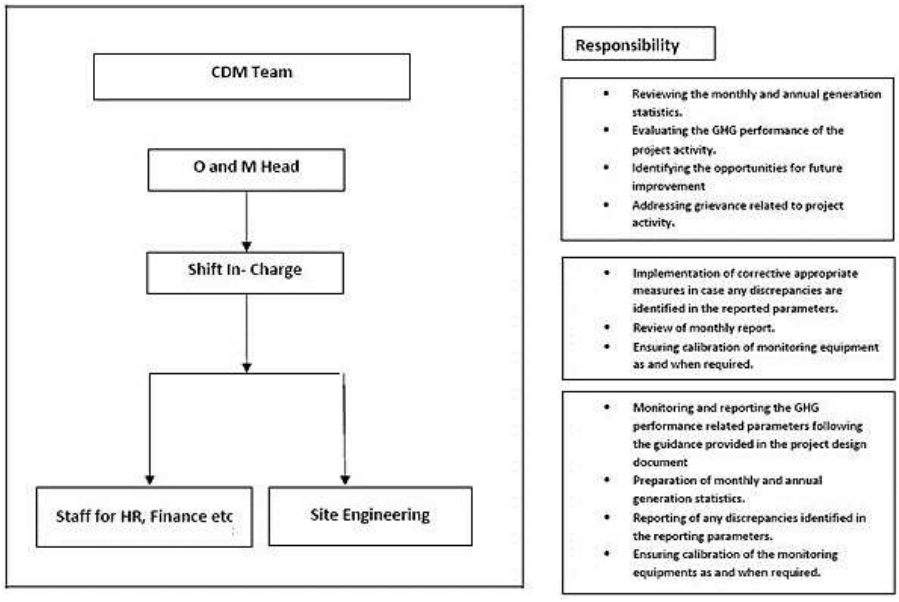
3.3.7 Methodology Deviations

Assessment team confirms that No methodology deviation is applicable for the present project activity.

3.3.8 Monitoring Plan

According to the applied methodology, ACM0002, Version 19/04/, the only parameter to be monitored is the "Quantity of net electricity generation supplied by the project plant/unit to the grid in year y". This parameter is directly monitored through the dedicated metering system installed at the switch yard located at project site.
The monitoring plan is developed in accordance with the modalities and procedures for VCS project activity and is proposed for grid-connected wind power project being implemented. The monitoring plan, which will be implemented by the project participant describes about the monitoring organisation, parameters to be monitored, monitoring practices, quality assurance, quality control procedures, data storage and archiving.

The authority and responsibility for registration, monitoring, measurement, reporting and reviewing of the data rests with the project participant. PP proposed the following structure for data monitoring, collection, data archiving and calibration of equipment for this project activity. The team comprises of the following members:



Data Measurement

The export and import energy will be measured continuously using above mentioned Main and Check meters located at the substations. Readings of meters shall be taken on monthly basis by authorized officer of SEB in the presence of PP or representative of PP. Based on the Meter Reading Statement to PP, invoices will be raised. These invoices can be used for cross checking the meter readings taken for the respective project activity.

Data collection and archiving

Readings from meters will be collected in the presence of the plant in-charge. Export and Import data would be recorded and stored in logs as well as in electronic form on a daily basis. The records are checked periodically by the Plant Manager and discussed thoroughly with the plant supervisor. The period of storage of the monitored data will be 2 years after the end of crediting period or till the last issuance of VCUs for the project activity whichever occurs later.

Emergency preparedness

The project activity will not result in any unidentified activity that can result in substantial emissions from the project activity. No need for emergency preparedness in data monitoring is visualized.

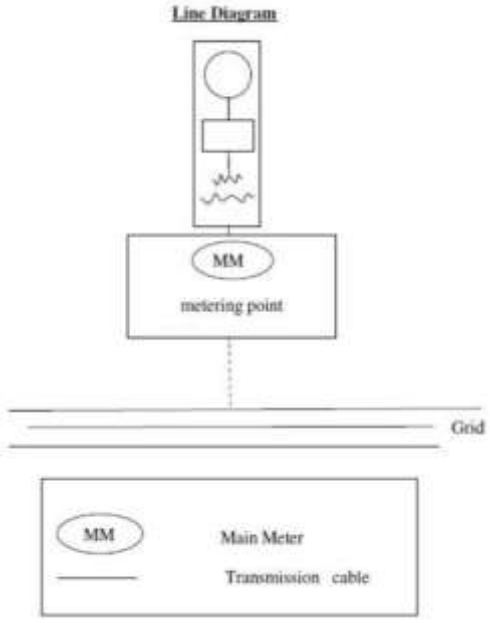
In the event that the main meter, which is used to record the net electricity exported by the project, is found to be faulty it will be repaired or replaced and the data from the check meter will be used in its place. In the unlikely event that the check meter fails it will also be repaired or replaced.

Personnel training

In order to ensure a proper functioning of the project activity and a properly monitoring of emission reductions, the staff will be trained. The plant helpers will be trained in equipment operation, data recording, reports writing, operation and maintenance and emergency procedures in compliance with the monitoring plan.

Metering Arrangement

Line diagram with metering arrangement for the wind project activity is shown below



QA/QC procedures

The energy meters at the feeders are maintained and owned by state electricity board. Neither the project proponent nor the site personnel have any control over it. The records will be crosschecked with the records of sold electricity to state electricity board. The meters are calibrated by state electricity board at-least once in five years.

Apportioning

In case the dates of a particular monitoring period do not match with the dates of the billing cycle, the net electricity exported to the grid would be calculated from:

- Apportioning the net electricity exported to grid, as recorded in the consolidated Share Certificate / JMR Report / Credit Notes certified by the respective state discom, based on the number of days in the monitoring period and the number of days for which Share Certificate / JMR Report / Credit Notes was prepared.

The responsibilities and authorities of project management, data handling and recording, measurement methods and QA/QC procedure have been systematically established and formalized and the same was verified during the site visit.

Conclusion:

The monitoring methodology applies consistently the choice of the option selected for monitoring of baseline emissions. The monitoring plan provide procedures for the collection and archiving of all relevant data necessary for estimation or measuring the emission reductions within the project boundary during the crediting period.

The project participant has the ability to implement the monitoring plan. This is checked through discussion with consultant, the project participant and O&M contractors of the project activity during the physical site inspection.The staffs at the sub-station and the representative of the technology providers were also interviewed to verify the accuracy in the documents. This has been checked during the site visit and is found to be acceptable.

The final joint VCS PD & MR (version 02, dated 25/12/2019) /01/ has been reviewed to check that the procedure for data uncertainty, emergency preparedness, roles and responsibility, operational and management structure are mention in the PD. The monitoring plan completely describes all measures to be implemented for monitoring all parameters required. Based on the above discussion and the requirements of paragraphs 117 and 119 of the VVS for PAs version 02.0/09/, the validation team confirm that:

1. The monitoring plan included in the joint VCS PD & MR is based on the baseline methodology ACM0002 version 19.0 which has been applied to the VCS project activity.
2. The monitoring arrangements described in the monitoring plan are feasible within the project design.
3. The PP has the ability to implement the monitoring plan as per the joint VCS PD & MR.

3.4 Non-Permanence Risk Analysis

The project activity does not require a non-permanence risk analysis. Hence this is not applicable.

4 SAFEGUARDS

4.1 No Net Harm

There is no negative impact to any socio economic conditions of the region due to the project activity. This project activity will not involve any negative environmental or socio-economic impacts, as the project activity involves generation of power using windpower which is a clean source of energy. Hence no mitigation measures are required.

4.2 Environmental Impact

The project activity is expected to have positive impacts and no significant adverse environmental impacts are foreseen. Since, the project activity is an electricity generation from renewable source (i.e. windenergy) therefore no negative impact are envisaged. There is no mandatory legal requirement for carrying out an environmental impact assessment in the host country. The Ministry of Environment, Forests & Climate change (MoEFCC), Government of India (GoI) notificationdated 14/09/2006/24/ regarding the requirement of Environment Impact Assessment (EIA) studies states that any project developer in India needs to file an application to the Ministry of Environment and Forests (including a public hearing and an EIA) in case the proposed industry or project is listed in a predefined list. The list includes thirty nine project activities that require EIA studies. The windpower projects are not included in this list and thus an EIA study is not required.

4.3 Local Stakeholder Consultation

The local stakeholder consultation process has been described in detail, by the PP, in section 5.3 of the joint VCS PD & MR the project participant identified the relevant stakeholders such as local villagers, local employee, representatives of affected people residing in the project area and local village head etc.

Local stakeholder consultation process has been performed during the design phase through inviting the relevant stakeholders to comment on the project activity. The details of the Stakeholder Meetings are as follows:

Name of Investor	Capacity	Project Location			Date of Invitation	Date of Meeting
		Village	District	State		
Axis Wind Farms (Rayalseema) Pvt. Ltd	10.5	Kalagalla and Ipperu	Anathapur	Andhra Pradesh	09/01/2018	16/01/2018
	25.2	Ipperu, Padmatiyaleru&Atmakur			08/01/2018	15/01/2018
	16.8	Ipperu, Kuderu&Atmakur			20/07/2018	28/07/2018
	10.5	Ipperu&Kuderu			08/01/2018	15/01/2018

	21	Kalagalla, Kuredu, Padamatiyaleru&Atmakur			20/01/2018	31/01/2018
	21	Kammuru, Kuredu&Thimmapurumu			20/07/2018	27/07/2018

The documentary evidence provided as proof of date of the invitation, meeting; and mode of invitation/08/ has been checked by the assessment team during the site visit and found to be appropriate.

After sharing information with the local stakeholders about the company and the purpose of proposed activity, the stakeholders were briefed about non-conventional energy sources and their importance. The PP also informed the stakeholders about their intention of securing carbon credit benefits for the project activity for financial sustainability of the project. The Minutes of the meeting of the stakeholder meeting and attendance sheet/08/ have been submitted by the PP.

During the site visit the assessment team interviewed some of the local villagers. Based on the replies of the villagers, the validation team was convinced that the process of stakeholder consultation was carried out as described in the joint VCS PD & MR. The villagers also confirmed that they were invited for the meeting through public notice. This was found to be consistent with the invitation process mentioned in the joint VCS PD & MR /01/.

Overall, there was an understanding among the stakeholders that the project activity would lead to the overall development of the area, mainly by generating employment opportunities and improving the infrastructure leading to an improved life for the villagers. The local stakeholders interviewed during the site visit endorsed this view.

4.4 Public Comments

In accordance with the requirement in clause 3.17.5 of the VCS standard version 3.7 “All VCS projects are subject to a 30-day public comment period. The date on which the project is listed on the project pipeline marks the beginning of the project’s 30-day public comment period”.

The PP listed their project activity in the VCS pipeline for 30 days from 25/11/2019 to 25/12/2019 (https://www.vcsprojectdatabase.org/ - /pipeline_details/PL2052) for public comments.
No comments received during the commenting period, as evident from the VCS pipeline in the

5 VERIFICATION FINDINGS

5.1 Accuracy of GHG Emission Reduction and Removal Calculations

The calculation of the emission reductions is found to be correct. The details of the reported and the verified values for all parameters are listed in section 5.2 of this report.

The parameter “Quantity of net electricity generation supplied by the project to the grid in year y” by each sub-project is directly sourced from meter reading report and invoice issued by relevant grid authority. The PP has provided the complete set of data for all the monitored parameters in the ER spreadsheet/02/. This data has been verified as described in section 5.2 below. The formulae & method used to calculate the baseline emissions, project emissions and leakage are appropriate and in line with the approved methodology ACM0002, Version 19/4/.

The PP has calculated the grid emission factor as per the combined margin approach described in the ‘Tool to calculate the emission factor for an electricity system’, version 07.0/5/. The grid emission factor has been calculated as the weighted average of OM & BM; and has been fixed ex-ante for the entire crediting period.

The OM and BM have been obtained from a publicly available source i.e. “Central electricity authority (CEA) database version 14/14/. The combined margin emission factor was arrived at by applying weights of 75% for OM and 25% for BM, as specified in the tool. The OM and BM have been calculated to be 0.9610 tCO_2/MWh and 0.8644 tCO_2/MWh respectively. Applying the weights, the grid emission factor has been calculated to be 0.9368 tCO_2/MWh.

As per ER excel spreadsheet/02/ submitted by the PP, the net emission reduction for the current monitoring period has been estimated to 319,405 tCO_2e which was against the quantity of net power supplied to the grid during the monitoring period 02/03/2018 to 30/11/2019, which was 340,962.7MWh.

The assessment team is able to confirm that the GHG emission reductions and removals have been quantified correctly in accordance with the project description and applied methodology. Hence, the total quantity of emission reductions claimed for the current monitoring period, i.e. 319,405 tCO_2e, has been verified.

5.2 Quality of Evidence to Determine GHG Emission Reductions and Removals

All the data recorded is in compliance with the VCS joint PD & Monitoring Report/1/.The assessment team has checked the monthly electricity generated and supplied by project activity/26/ in the current monitoring period to verify the values of monitoring parameter reported in ER calculation sheet and found to be consistent. Since the monthly statement prepared and issued by state utility, they are found to be reliable and authentic.

As per the validated joint VCS PD & MR /01/, the operations, maintenance and monitoring of the project activity is being carried out by an in-house O&M team at project site, consist of trained technical professionals. Also, regular training sessions are imparted to the team for ensuring efficient monitoring and operation of the project. Hence it is confirmed that the management system of the VCS project is in place; with the responsibilities properly identified. The same was also verified during the on-site verification.

The monitoring of the project activity is found to be in accordance with the monitoring methodology described in ACM0002, Version 19.0/4/.The monitoring mechanism is effective and reliable. During the site visit, personnel involved at various levels of the operation of the project activity have been interviewed to confirm that the plant personnel are conscious of the importance of the monitoring activities. The on-site verification of the plant records also substantiate consistency in recording and reporting of monitored data.

The required monitoring systems have been installed and are operational. The meters comply with appropriate quality standards applicable for the used technology. The accuracy class of the meters installed for the project activity was verified against the validated VCS joint PD & MR /01/ and cross-checked against the Power Purchase Agreements /07/ signed for the project activity.

The supporting records of power generation/26/ were checked and found to be in line with the calculation provided by PP in the ER sheet and MR section.

The following parameter has been verified for current monitoring period:

Quantity of net electricity generation supplied by the project plant/unit to the grid in year y,$EG_{PJ,,y}$ (MWh):

Means of verification		
	Criteria/Requirements	**Assessment/Observation**
	Measuring /Reading /Recording frequency	The parameter is monitored continuously and recorded on monthly basis.
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The reporting frequency is in line with the monitoring plan as outlined in the joint VCS PD & MR/01/ and monitoring methodology/04/.

	Monitoring equipment	The two parameters, import and export to the grid, are measured at the same location near the connection to the grid, through standard electricity metering instrument. The metering instruments are installed at the grid-connected point to measure the amount of electricity going from and to the grid. The readings of electricity will be continuously measured by metering instrument itself and monthly recorded. The energy meter details are reported under section 4.3 of the joint VCS PD & MR/01/ which are verified by assessment team and same is included under a table under the section 3.3.8 above.
	Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?	The accuracy of the monitoring equipment used is 0.2s as verified from the physical inspection of the project activity, which is as per the joint VCS PD & MR/01/ which is as per the norm defined in the PPA/07/.
	Is the accuracy valid for the entire measuring range or do different accuracy levels apply to different measuring ranges?	Yes. The new meters are installed at the time of commissioning of the project which are pre-calibrated meters from the manufacturer. Hence at present no external calibration or testing is required
	Calibration frequency /interval:	Calibration frequency of the meters is once in 5 years/19/.
	Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the selected	Yes. The calibration frequency is in line with the monitoring plan as outlined in the joint VCS PD & MR/01/. The new meters are installed at the time of commissioning of the project which are pre-calibrated meters. Hence, the due date of calibration will be after 5 years.

	frequency in accordance with the local/national standards, or as per the manufacturer's specifications?	
	Is the calibration of measuring equipment carried out by an accredited person or institution?	The new meters are installed at the time of commissioning of the project which are pre-calibrated meters from the manufacturer. Hence at present no external calibration or testing is required.
	Is(are) calibration(s) valid for the whole reporting period?	Yes, the calibrations of meters are valid for the whole monitoring period.
	Is the calibration carried out for a measuring range comparable with the range for which measurements have been carried out?	The new meters are installed at the time of commissioning of the project which are pre-calibrated meters from the manufacturer. Hence at present no external calibration or testing is required.
	How were the values in the monitoring report verified?	In line with the monitoring parameter, the cumulative value of $EG_{PJ,y}$for entire monitoring period is to be reported in the monitoring report, whereas monthly values are to be reported in the ER calculation sheet. The assessment team has verified the values from the monthly generation report and invoice and also checked the ER calculation in line with the prescribed formulae and procedure.
	If applicable, has the reported data been cross-checked with other available data?	Yes. The assessment team has cross checked the quantity of net electricity supplied to the grid both from the monthly generation report and invoice raised by the project participant to the third party.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the adequate QA/QC procedures were implemented in the project.The energy meters at the feeders are maintained and owned by state utility. Neither the project proponent nor the site personnel have any control over it. The meters are calibrated by the monthly generation report and invoice at-least once in 5 years.
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM	No suchissues.

	EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	
Findings	No finding raised	
Conclusion	The parameter has been monitored appropriately, in accordance with the monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. From the physical verification, documentary evidence the assessment team has concluded that the monitoring plan is adequately implemented and also the all required records and documentations are maintained, hence results are achievable.	

Meter and Calibration Details :

Meter Serial Number and Type	Accuracy Class	Date of Calibration	Due Date of Calibration
17103228 (Main Meter)	0.2 s	02-03-2018	01-03-2023
17103230 (Check Meter)	0.2 s	02-03-2018	01-03-2023
17103234 (Standby Meter)	0.2 s	02-03-2018	01-03-2023

Parameters fixed ex ante:

$EF_{grid,OM,y}$; tCO_2e/MWh: it is the operating margin emission factor of India national grid fixed for the entire crediting period and the value is considered as 0.9610tCO_2e/MWh, that is consistent with the joint VCS PD & MR/01/.

$EF_{grid,BM,y}$; tCO_2e/MWh: it is build margin emission factor of India national grid fixed for the entire crediting period and the value is considered as 0.8644 tCO2e/MWh, that is consistent with the joint VCS PD & MR/01/.

$EF_{grid,CM,y}$; tCO_2e/MWh: it is the combined margin emission factor of India national grid fixed for the entire crediting period and the value is considered as 0.9368 tCO2e/MWh, that is consistent with the joint VCS PD & MR/01/.

The details of monitoring equipment are involved in the project activity and their calibration details/27/ are mentioned in the table under section 4.3 of the joint VCS PD & MR/01/. There details of energy meters are provided in the VCS document, and assessment team has verified the information during the site visit that all the meters were tested and calibrated at the time of installation and currently calibration is not due; hence accepted.

While the meters have been physically inspected during the site visit, the meter details are found to be consistent with that observed during the site visit.

In view of the above discussion the assessment team able to confirm that evidence used to determine the GHG reductions and removals are sufficient and appropriate with respect to quality and quantity.

GHG Calculations

The emission reduction as per the applied methodology equals the baseline emissions (project emissions is considered zero). The formula provided for the calculation of baseline emissions is:

$$\mathbf{BE_y = EG_{PJ,y} * EF_{grid,CM,y}}$$

Where:

BE_y: Baseline emissions in year y (tCO_2e/yr)

$EG_{PJ,\ y}$: 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/yr)

$EF_{grid,CM,y}$: Combined margin CO_2 emission factor for grid connected power generation in year y calculated using the latest version of the "Tool to calculate the emission factor for an electricity system" (tCO_2/MWh) (i.e., 0. 9368 tCO_2e/MWh).

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

BE_y = 340,962.7MWh* 0.9368 tCO_2e/MWh= 319,405 tCO_2e

As per the applied methodology, the project emission is nil. Hence, emission reductions are calculated as follows:

$ER_y = BE_y - PE_y$

ER_y = 319,405tCO_2e

The verification team confirms that appropriate methods and formulae for calculating baseline emissions have been followed. The assumptions, emission factors and default values that were applied in the calculations are justified. However, due to infirm power generation during the current monitoring period, the actual emission reduction achieved is considered as zero, which is a conservative approach. Hence the assessment team has concluded the justification in emission reduction calculation as justified and acceptable. The means of verification for the different parameters used for baseline emission calculation formulae are described above.

6 VALIDATION AND VERIFICATION CONCLUSION

EKI Energy Services Limitedhas contracted the Earthood Services Private Limited(also referred to as ESPL)to validate and verify the project: “Renewable Wind Power Project by Axis Wind Farms (Rayalaseema) Pvt. Ltd.” with regard to VCS Version 3 requirements and the information provided by the project proponent related to the project design, operation, monitoring and reporting. The monitoring period considered for current verificationisfrom 02/03/2018 to 30/11/2019 in the VCS joint project description & Monitoring Report Version 02 dated 25/12/2019 are eligible for registration and issuance.

A risk-based approach has been followed to perform this validation and verification. In the course of the joint validation & verification 07 Corrective Action Requests (CARs), 02 Clarification requests (CLs) were raised and successfully closed.

No limitations or doubts were identified related to the validation and verification.

Validation conclusion:

ESPL has reviewed the project description documents and subsequently carried out site visit interviews to confirm the fulfilment of stated criteria.

The purpose of this project activity is to generate electricity using renewable sources (wind) and export it to Indianational grid and sold to the Southern Power Distribution Company of A.P. Limited, thereby marginally contributing to reducing the energy demand supply gap in India.

The project activity has applied the baseline and monitoring methodology, ACM0002 Grid-connected electricity generation from renewable sources, Version 19.0.0/04/, which is an approved methodology under the CDM programme and is acceptable under VCS Version 3. The baseline has been determined in accordance with the stated approved baseline methodology.

As summary the validation team able to conclude that:

- The project is in line with all relevant host country criteria (India) and all relevant VCS version 3 program guidelines requirements.
- The project additionality is sufficiently justified in the joint VCS PD & MR.
- The monitoring plan is transparent and adequate and in line with applied baseline and monitoring methodology of ACM0002, Version 19/04/.
- The calculation formulae and use of parameter for the project emission reductions estimation are transparent and in line with the requirement of the applied methodology. The ex-ante projection of emission reductions given is found to be appropriate, conservative and in line with the requirement. The ex-ante projected volume of 202,492 tCO_2e/year and a total of 230,885 tCO_2e is most likely to be achieved during the 10 years (renewable) of crediting period. The calculated emission reduction for the current monitoring period (i.e. 02/03/2018 to 30/11/2019) is 319,405 tCO_2e, which is correct, in line with the calculation prescribed in the VCS PD & MR, hence considered to be verified ERs.
- The conclusions of this report show, that the project, as it was described in the project documentation, is in line with all criteria applicable for the validation as outlined under VCS version 3.

Verification conclusion:

This engagement covers the verification of emission reductions from anthropogenic sources of greenhouse gases included within the project boundary of the project "Renewable Wind Power Project by Axis Wind Farms (Rayalaseema) Pvt. Ltd." (Project pipeline VCS ID-2052), as well as an additional confirmation of the compliance of the joint VCS PD & MR with the requirements of VCS Standard version 3.7.

ESPL is an entity accredited by the United Nations Framework Convention on Climate Change (UNFCCC) to undertake certification and verification services in the sectoral scope in which the Project is undertaken.

The VCS joint project description & Monitoring Report, together with other information examined, was prepared as per the VCS joint project description & Monitoring Report Template, Version 3.1.

The information in the VCS joint project description & Monitoring Report together with other information examined by the assessment team, including all the information necessary to determine that the emission reductions achieved have been determined correctly.

In view of the information provided in the VCS joint project description & Monitoring Report and other relevant information, it can be concluded that the project meets all the requirements of the VCS Standard Version 3.7/18/. Also on the basis of our examination of the VCS joint project description & Monitoring Report and other relevant information, it has been concluded that the emission reductions during the current monitoring period (i.e. 02/03/2018 to 30/11/2019 (both the days included)) are verified as 319,405 tCO_2e.

The CDM team of EKI Energy Services Ltd. (i.e. authorized representative of PP) is responsible for the preparation of the GHG emissions data and the reported GHG emissions reductions. ESPL is responsible for verification and confirming emission estimates for the project, as described in the VCS joint project description & Monitoring Report.

The certification approach followed by ESPL draws on an understanding of the risks associated with reporting GHG emissions data and the controls in place to mitigate these. Our examination includes an assessment of evidence, through desk review, and where necessary, interviews, stakeholder discussions and site visits, relevant to certifying the rightfulness of the amounts and disclosures in relation to the Project's GHG emission reductions.

We planned and performed our work to obtain the information and explanations that we considered necessary to provide sufficient evidence for us to give reasonable assurance that the amount of GHG emission reductions for the given period, prepared on the basis of the VCS Joint project description & Monitoring Report, are fairly stated.

Based on process and procedures conducted, in our opinion, Axis Wind Farms (Rayalaseema) Pvt. Ltd (i.e. PP) assertion on GHG emission reductions for the "Renewable Wind Power Project by Axis Wind Farms (Rayalaseema) Pvt. Ltd." (i.e. VCS project pipeline ID-2052) project during the reporting period "02/03/2018 to 30/11/2019" is materially correct and is a fair representation of the GHG data and information and the emission reductions are fairly stated. The GHG emission reductions were calculated correctly on the basis of approved monitoring methodology ACM0002, version 19. The verification team also confirms that the project is implemented as described in the validated VCS joint PD & MR (final version 02, dated 25/12/2019).

Therefore, ESPL is able to certify that the project is in full compliance with the VCS Standard Version 3.7, and the quantity of the reported emission reductions during below reporting period are completely, comparably, accurately and correctly reported.

Verification period: From02/03/2018 to 30/11/2019

The verified GHG emission reductions and removals in the above verification period (both the dates inclusive) are presented as follows:

Year / Period	Baseline emissions or removals (tCO_2e)	Project emissions or removals (tCO_2e)	Leakage emissions (tCO_2e)	Net GHG emission reductions or removals (tCO_2e)
02-03-2018 to 31-12-2018	125,297	0	0	125,297
01-01-2019 to 30-11-2019	194,108	0	0	194,108
Total	**319,405**	**0**	**0**	**319,405**

It is to be noted here that as per the estimated emission reduction to be achieved from the project activity for the current monitoring period is 354,500 tCO_2e, whereas actual emission reductions achieved are 319,405 tCO_2e, which is approximately 10% lower than the estimated emission reductions. The generation of electricity depends upon many other climatic conditions, and not within the control of the project participant. The lower generation during the current verification period is hence due to certain natural conditions and hence acceptable.

Approved by

Dr. Kaviraj Singh
Managing Director
Earthood Services Privated Limited

Date: 27/12/2019
Place: Gurgaon, Haryana

APPENDIX 1: Document Reference

Ref. No	Title of Document	Version	Date
1	VCS Project description (VCS PD)	1.0	25/11/2019
		2.0	25/12/2019
2	Emission Reductions Calculation Spread sheet	1.0	25/11/2019
		2.0	25/12/2019
3	Commissioning certificate issued by Southern Power Distribution Company of A.P. Limited issued		02/03/2018
4	ACM0002, "Grid-connected electricity generation from renewable sources"	19.0	EB100 Annex 6
5	Tool to calculate the emission factor for an electricity system	07.0	EB 100 Annex 4
6	VCS pipeline: https://www.vcsprojectdatabase.org/ -/pipeline_details/PL2052	-	-
7	Power purchase agreement (PPA) signed by PP with Southern Power Distribution Company of A.P. Limited issued	-	19/10/2018
8	Local stakeholder documents – • Public notice • Attendance sheet • Comments sheet • Photographs	-	01/08/2018
9	Clean Development Mechanism Validation and Verification Standard	02.0	29/11/2018
10	Detailed Project Report (DPR)	-	
11	Technical specifications (part of DPR)	-	
12	Purchase order		-
13	Financial Data, Information and supporting documents applicable to the project activity, important dates of chronological events etc. (Certified Declaration from PP)	-	28/11/2019
14	CO_2 baseline database published (in Dec 2018) by Central Electricity Authority, Govt. Of India	14	December 2018
15	Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2016	-	29/04/2016
16	Detailed procedure on REC mechanism dated 01/06/2010 by Central Electricity Regulatory Commission (http://www.nerldc.org/Docs/Order_for_Detailed_Procedure_01-06-2010.pdf) REC registry (Source : https://recregistryindia.nic.in/)	-	-
17	VCS Standard	Version 3.7	21/06/2017
	VCS Program Guide	Version 3.7	21/06/2017
	VVS, latest version by CDM	Version 02.0	29/11/2018
18	Letter of undertaking/declarations from PP regarding not having created or sought any other form of environmental creditsand other GHG programs for the project	-	02/12/2019

19	Central Electricity Authority (Installation and Operation of Meters) Regulations Notified on 17/03/2006 No. 502/70/CEA/DP&D Amendments Notified on 26/06/2010 No. 502/6/2009/DP&D/D-I CERC Regulation (2016) http://www.cercind.gov.in/2016/regulation/124_1.pdf	- -	17/03/2006 06/04/2016
20	Site visit attendance sheet,photographs	-	03/12/2019
21	VCS Listing Representation	-	15/11/2019
22	Communication Agreement for VCS representation	-	15/11/2019
23	Ministry of Environment and Forest notification dated 14/09/2006		14/09/2006
24	EIA Notification, 2006 (Annexure -2, MoEF&CC, OM on J-11013/41/2006-IA.II (I) dated7th July 2017)	-	07/07/2017
25	Tool for the demonstration and assessment of additionality	7	EB70, Annex 8
26	JMR and invoices		02/03/2018 to 30/11/2019
27	Calibration Certificates		02/03/2018 to 30/11/2019
28	Income Tax Act 1961 (Source: Appendix IA of Income Tax Rules) http://taxguru.in/company-law/rates-of-depreciation-under-the-companies-act-as-mentioned-in-schedule-xiv.html and https://www.taxmann.com/emailer/images/pdf/incometaxratesfor_17-03-2016.pdf	-	-
29	IT depreciation rate http://www.incometaxindia.gov.in/charts%20%20tables/depreciation%20rates.htm	-	-
30	Income tax rate and Minimum Alternate Tax (MAT) rate https://www.taxmann.com/emailer/images/pdf/incometaxratesfor_17-03-2016.pdf https://www.bcasonline.org/referencer2016-17/Taxation/Income%20Tax/rates_of_income_tax.html Good &Service tax rate (GST): https://www.bankbazaar.com/tax/service-tax.html	-	-
31	Inflation forecast (CPI Combined Mean) as per RBI for 10yrshttps://m.rbi.org.in/scripts/PublicationsView.aspx?id=18092	-	07/02/2018
33	IRR sheet		25/12/2019
34	Methodological Tool for Investment Analysis	version 09	EB 101, Annex 11
35	Common Practice Tool	Version 3.1	

APPENDIX 2: Abbreviations

ABT	Availability Based Tariff
ACM	Approved Consolidated Methodology
APERC	Andhra Pradesh Electricity Regulatory Commission
BM	Build Margin
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEA	Central Electricity Authority
CL	Clarification Request
DISCOM	Distribution company
DPR	Detailed Project Report
EB	Executive Board
EIA	Environmental Impact Assessment
EPC	Engineering and Procurement Contractor
ER	Emission Reductions
FAR	Forward Action Request
GHG	Greenhouse Gases
ISO	International Organization for Standardization
JMR	Joint Meter Readings
LCS	Local Controller System
MGRs	Monthly Generation Reports
MoEF	Ministry of Environment and Forest
MP	Monitoring Period
MW	Mega Watt
MWh	MegaWatt hour
OM	Operating Margin
O&M	Operation & Maintenance
PD	Project Description
PP	Project proponent
PPA	Power Purchase Agreement
QA/QC	Quality Assurance/Quality Control
REC	Renewable Energy Certificates
tCO_2	Tonnes of Carbon Dioxide
UNFCCC	United Nations Framework Convention on Climate Change
VCS	Verified Carbon Standard
VCSA	Verified Carbon Standard Association
VCU	Verified Carbon Unit

APPENDIX 3: Competency Statement

Competence Statement			
Name	Vivek Kumar Ahirwar		
Country	India		
Education	B.E. (Mechanical Engineering) M.Tech (Energy Management)		
Experience	10 Years +		
Field	Climate Change & Environment		
Approved Roles			
Team Leader	YES		
Validator	YES		
Verifier	YES		
Methodology Expert	ACM0002, AMS.I.D		
Local expert	YES (India)		
Financial Expert	NO		
Technical Reviewer	NO		
TA Expert	YES (1.1, 1.2, 13.1)		
Reviewed by	Shreya Garg	**Date**	11/09/2018
Approved by	Anshika Gupta	**Date**	11/09/2018

Competence Statement			
Name	Anshika Gupta		
Country	India		
Education	M.Sc. (Climate Science & Policy), TERI University		
Experience	4 Years +		
Field	Climate Change		
Approved Roles			
Team Leader	YES		
Validator	YES		
Verifier	YES		
Methodology Expert	AMS-I.A., AMS-II.G., ACM0002, AMS-III.A.V.		
Local expert	YES (India)		
Financial Expert	NO		
Technical Reviewer	YES		
TA Expert	Yes (TA 1.2, TA 3.1)		
Reviewed by	Shreya Garg	**Date**	12/03/2019
Approved by	Kaviraj Singh	**Date**	12/03/2019

APPENDIX 4: Findings Overview

Table 1. Remaining FAR from validation and/or previous verification

FAR ID		**Section no.**	NA	**Date :**DD/MM/YYYY
Description of FAR				
N/A				
Project participant response				**Date :**DD/MM/YYYY
NA				
Documentation provided by project participant				
NA				
DOE assessment				**Date:** DD/MM/YYYY
NA				

Table 2. CL from this validation and verification

CL ID	01	**Section no.**	-	**Date:** 25/12/2019
Description of CL				
PP needs to furnish documents related to the following- 1. letter of undertaking mentioned in section 1.12.2, 1.12.3 and 1.12.5 2. supplier Technical specification of wind turbine 3. commissioning certificates 4. Energy Meter calibration certificates 5. JMR for electricity generation 6. Invoices for monitoring period 7. Stakeholder consultation documents				
Project participant response				**Date:** 25/12/2019
1. Letter of undertaking has now been submitted to the assessment team. 2. Technical specification has now been included in section 1.8 of the PDMR. 3. Commissioning certificates have now been submitted to the assessment team. 4. Calibration certificates have been submitted to the assessment team. 5. JMRs have now been submitted to the assessment team. 6. Invoices have also been submitted to the assessment team. 7. Stakeholder consultation documents have now been submitted to the assessment team				
Documentation provided by project participant				
1. letter of undertaking 2. Technical specification of wind turbine 3. commissioning certificates 4. Energy Meter calibration certificates 5. JMR for electricity generation 6. Invoices for monitoring period 7. Stakeholder consultation documents 8. PDMR Version 02				
DOE assessment				**Date:**26/12/2019
Assessment team confirm receipt of documents and all documents are inline with requirements. Hence acceptable **CL#1 Closed**				

CL ID	02	**Section no.**	-	**Date:** 25/12/2019
Description of CAR				
PP shall clarify as how the PLF/Electricity generation is in conformity with the EB 48, Annex 11 (Guidelines for the reporting and validation of Plant Load Factors). Further please indicate as how it meets the requirements of the paragraph 3 of this above Guideline.				

Project participant response	**Date:** 25/12/2019
1. As per EB 48, Annex 11 Option 3(B), the PLF has been determined based upon third party report contracted by PP	
Documentation provided by project participant	
1. Feasibility report/ LIE Report	
DOE assessment	**Date:**26/12/2019
Assessment team confirm that PLF/Electricity generation taken from feasibility report and LIE Report, it's fulfil requirement of Annex 11, EB 48 Guidelines for the reporting and validation of Plant Load Factors. **CL#2 Closed**	

Table 2. CAR from this validation and verification

CAR ID	01	**Section no.**	-	**Date:** 25/12/2019
Description of CAR				
PP is requested to update project title in Joint PD and MR as per VCS Webpage which is "Renewable Wind Power Project by Axis Wind Farms".				
Project participant response				**Date:** 25/12/2019
1. Email to VERRA has been sent for updating the project title according to the PDMR and the same has been acknowledged to the respective auditor.				
Documentation provided by project participant				
1. Email copy				
DOE assessment				**Date:**26/12/2019
Assessment team confirm that Project title mentioned in updated Joint VCS PD and MR is matching with listed Joint PD and MR, PP has already shared email with registry for updation of project title on VCS webpage. Hence acceptable CAR#1 Closed				

CAR ID	02	**Section no.**	-	**Date:** 25/12/2019
Description of CAR				
In section 1.8 "*Description of the project activity*", PP need to provide more technical details i.e turbine model and manufacturer and technology				
Project participant response				**Date:** 25/12/2019
1. Technical specifications have now been updated in section 1.8 of the PDMR version 02.				
Documentation provided by project participant				
1. PDMR Version 02				
DOE assessment				**Date:**26/12/2019
Assessment team confirm that PP has included technical details of solar panel and inverter, which is acceptable. **CAR#2 Closed**				

CAR ID	03	**Section no.**	-	**Date:** 25/12/2019
Description of CAR				
In Section 5.4 "*Public Comments*" of the VCS-PD, PP needs to add the details of the public comments once the comment period (Listing period) is over. In Section 5.3 PP needs to update local stakeholder consultation details.				
Project participant response				**Date:** 25/12/2019

1. Commenting Period is over and no comments have been received. The same has been updated in the section 5.4 of the PDMR version 02. 2. Local Stakeholder consultation details have been updated in section 5.3 of PDMR Version 02.
Documentation provided by project participant
1. PDMR Version 02
DOE assessment **Date:**26/12/2019
Assessment team confirm that during public commenting period no comment has been received. And PP has updated section 5.4 accordingly. CAR#3 Closed

CAR ID	04	**Section no.**	-	**Date:** 25/12/2019
Description of CAR				
In Section 2.2 PP needs to correct reference of section B.6.3 of the PDD				
Project participant response				**Date:** 25/12/2019
1. The reference of section B.6.3 has now been updated in PDMR Version 02.				
Documentation provided by project participant				
1. PDMR Version 02.				
DOE assessment				**Date:**26/12/2019
Assessment team confirm that PP has updated section 2.2 in revised VCS PD and MR. CAR#4 Closed				

CAR ID	05	**Section no.**	-	**Date:** 25/12/2019
Description of CAR				
PP is requested to include exact period for 2018 and 2019 vintage credits in section 6.5.				
Project participant response				**Date:** 25/12/2019
1. The vintage credits have now been included in PDMR Version 02.				
Documentation provided by project participant				
1. PDMR Version 02.				
DOE assessment				**Date:**26/12/2019
Assessment team confirm that PP has included exact period for 2018 and 2019 vintage credits in section 6.5 of revised VCS PD and MR. Hence acceptable. **CAR#5 Closed**				

CAR ID	06	**Section no.**	-	**Date:** 25/12/2019
Description of CAR				
PP is requested to include energy meter numbers and their calibration details in VCS PD and MR.				
Project participant response				**Date:** 25/12/2019
1. Calibration details along with energy meter number have now been updated in PDMR version 02.				
Documentation provided by project participant				
1. PDMR Version 02.				
DOE assessment				**Date:**26/12/2019
Assessment team confirm that PP has included energy meter numbers and their calibration details in Appendix- 1 of the revised VCS PD and MR. Hence acceptable. **CAR#6 Closed**				

CAR ID	07	**Section no.**	-	**Date:** 25/12/2019
Description of CAR				
PP is requested to correct emission reduction calculation in ER sheet from 7 years to 10years.				
Project participant response				**Date:** 25/12/2019

1. The correct emission reduction has now been updated to 10 years.	
Documentation provided by project participant	
1. Estimated ER Version 02.	
DOE assessment	**Date:**26/12/2019
Assessment team confirm that PP has updated emission reduction calculation in ER sheet from 7 years to 10years. CAR#7 Closed	

Table 2. FAR from this validation and verification

FAR ID		**Section No.**	PD	**Date :** DD/MM/YYYY
Description of FAR				
NA				
Project participant response				**Date :**DD/MM/YYYY
NA				
Documentation provided by project participant				
NA				
DOE assessment				**Date:** DD/MM/YYYY
NA				