VERIFICATION REPORT FOR "MRMPL WIND POWER PROJECT"

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Summary:

LGAI Technological Center, S.A. (hereafter referred to as Applus+ Certification) has been contracted by Modern Road Makers Private Limited to conduct the Gap validation and verification of the project "MRMPL Wind Power Project", VCS PL ID 1781 (UNFCCC CDM Registration Ref. No. 3839), against VCS Standard Version 3.7.

The gap validation and verification includes confirming the project's design description, project's baseline, monitoring plan and the project's compliance with relevant VCS and host party criteria and implementation of the monitoring plan of the PD version 02 dated 25/10/2018 and MR version 02 dated 25/10/2018 (Project ID 1781) (UNFCCC CDM Registration Ref. No. 3839) and the application of the monitoring methodology as per ACM0002 version 10: "Grid-connected electricity generation from renewable sources" (as Project is CDM registered with this version of Methodology). A site visit was conducted to verify the data submitted in the monitoring report.

The purpose of this project activity is to generate clean form of electricity through renewable wind energy source for sale of electricity to the grid. The project activity involves installation of 16 Wind Turbine Generators (WTG) with each WTG capacity of 1.25 MW, hence the total installed capacity of 20 MW wind power project in Jaisalmer, Rajasthan. The project will replace anthropogenic emissions of greenhouse gases (GHG's) estimated to be approximately 32,788 tCO_2e per year, thereon displacing 36,199 MWh/year amount of electricity from the generation-mix of power plants connected to the NEWNE grid India, which is mainly dominated by thermal/fossil fuel-based power plant. Total estimated GHG emission reductions for the chosen 10 year renewable crediting period will be 327,880 tCO_2e. This project is registered with UNFCCC as CDM project with registration no. 3839 on registration date 27/11/2010 with crediting period 27/11/2010 to 26/11/2020.

The review of the CDM registered 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 Applus+ Certification with sufficient evidence to validate the fulfillment of the stated criteria.

The purpose of the gap validation is to have a thorough and independent assessment of the proposed project activity against the applicable VCS requirements, in particular, the project's baseline, monitoring plan and the project's compliance with relevant VCS and host party criteria. These are validated in order to confirm that the project design, as documented, is sound and reasonable and meets the identified criteria. Gap Validation is a requirement for VCS projects registered under approved GHG scheme and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of emission reductions. Applus+ Certification's objective is to perform a thorough, independent assessment of the gap validation of the project activity.

The project is registered under CDM mechanism (reference number: 3839). The present validation (gap validation) is under VCS mechanism and assessment of clause 1.2, 1.3, 1.5, 1.6, 1.7, 1.9, 1.10, 1.12.1, 1.12.2, 1.12.3, 1.12.4 and 1.13 of the VCS Project Description Template. The same is in line with Para 3.11.10 of VCS standard. The gap validation and verification scope is defined as an independent and objective review of the VCS PD (for Gap Validation) & MR (for verification). The VCS PD & MR are reviewed against the relevant criteria and guidance documents provided by VCS which included: VCS Program Guide (v3.7, dated 21/06/2017), VCS Standard (v3.7, dated 21/06/2017,

Program Definitions (v3.7, dated 21/06/2017), Registration & Issuance Process (v3.8, dated 21/06/2017) and in line with the VCS Validation and Verification Manual (v3.2, dated 19/10/2016) applicable at the time in order to confirm that the project meets the applicability conditions of the selected baseline and monitoring methodology namely ACM0002 (version 10) (As methodology version applied at the time of CDM validation of project activity and project is UNFCCC CDM registered with this version) and also assess the claims and assumptions made in the VCS PD & MR without limitation on the information provided by the project proponents.

A risk based approach has been followed to perform this gap validation. In the course of gap validation, 00 Corrective Action request (CARs) and 00 Clarification request (CRs) were raised. There is no FAR raised.

The purpose of the verification is to review the VCS MR for the monitoring results and verify that monitoring methodology was implemented according to monitoring plan and monitoring data, further based on review of ER sheet confirm that the reductions in anthropogenic emissions by sources is sufficient, definitive and presented in a concise and transparent manner. In particular, monitoring plan, VCS PD & MR, ER sheet and the project's compliance with relevant VCS, UNFCCC and host party criteria are verified in order to confirm that the project has been implemented in accordance with design and conservative assumptions, as documented.

The scope of the verification included as verification of project implementation and operation with respect to the VCS PD & MR, implemented monitoring plan with the VCS PD & MR and applied baseline and monitoring methodology, the actual monitoring systems and procedures are in compliance with the monitoring systems and procedures described in the monitoring plan , Evaluation of the GHG emission reduction data and express a conclusion with a reasonable level of assurance about whether the reported GHG emission reduction data is free from material misstatement, confirmation of reported GHG emission data is sufficiently supported by evidence.

A risk based approach has been followed to perform this verification. In the course of verification, 01 Corrective Action request (CARs) and 00 Clarification request (CRs) were raised and successfully closed. There is no FAR raised.

Applus+ Certification confirms that that the project is meeting the criteria specified by VCS PD & MR template versions 3.3 and 3.4 respectively, VCS Standard version 3.7 and applied methodology ACM0002 (version 10) (As The project is registered with CDM against Methodology version 10), and hence be successfully validated, verified and further certified for emission reductions under VCS. Further confirms a combined positive validation and verification opinion confirming the project complies with the applicable VCS requirements, thus recommending the project for registration and issuance.

Our opinion relates to the project's GHG emissions and the resulting GHG emission reductions reported and related to the valid project baseline and monitoring and its associated documents. Based on the information seen and evaluated we confirm that the emission reductions from the project activity "MRMPL Wind Power Project" in India during the period 01/05/2012 – 30/04/2018 (including both days) amount to 129,672 tonnes of CO_2e.

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1 INTRODUCTION

1.1 Objective

Applus+ Certification has been contracted by Modern Road Makers Private Limited, (project proponent), to undertake the gap validation and first periodic verification of the renewable energy project titled "MRMPL Wind Power Project". The verifiers have reviewed the GHG data collected to date for the monitoring period from 01/05/2012 to 30/04/2018 (both days included) covered in this verification. The objective of the combined validation and verification is to have an independent third-party assessment of the VCS PD (for Gap Validation)[/1.1/] & MR[/1.2/] and supporting documentation to ensure compliance with the rules, regulations and guidelines by CDM and VCS requirements. In particular;

- The project's baseline is assessed against "ACM0002 - Version 10" (The project is registered with CDM against Methodology version 10)
- The project's monitoring plan is assessed against "ACM0002 - Version 10"
- The projects compliance with, the requirements of Article 12 of the Kyoto Protocol, the CDM Modalities and Procedures as agreed in the Marrakech Accords under decision 3/CMP.1, the annexes to this decision, subsequent decisions and guidance made by COP/MOP & CDM Executive Board and other relevant rules, including the Host Country legislation and sustainability criteria along with VCS guideline and standard version 3.7
- CDM project standard for project activities Version 01.0
- CDM project cycle procedure for project activities Version 01.0
- VCS standard v3.7
- VCS guideline v3.7

Validation and verification is a requirement for all VCS projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of verified carbon units (VCUs). This report contains the findings and resolutions from the validation and verification of the project activity.

1.2 Scope and Criteria

For Gap validation:

The project is already registered with CDM with UNFCCC CDM reference no. 3839. The VCS validation scope is given as an independent and objective review of the project design, the project's baseline study and monitoring plan (applied ACM0002 Version 10 "Grid-connected electricity generation from renewable sources") which are included in the VCS PD[/1.1/] & MR[/1.2/] 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, VCS Validation and Verification Manual and VCS program guide 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, CRs & FARs, if any
- Final validation opinion

The information in the VCS PD is reviewed against the criteria of VCS Standard; the VCS program guide and the applied consolidated baseline and monitoring CDM methodology.

Applus+ Certification 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 "*MRMPL Wind Power Project*" The verification of this project was based on the validated VCS project description & monitoring report, CDM registered PDD version 06 (dated 14/06/2010) and supporting documents submitted by the project proponent to the verification team. The documents were reviewed against the following guidance and protocols:

- VCS Program Guide (v3.7, dated 21/06/2017)
- VCS Standard (v3.7, dated 21/06/2017)
- VCS Program Definitions (v3.7, dated 21/06/2017)
- VCS Registration & Issuance Process (v3.8, dated 21/06/2017)
- VCS Validation and Verification Manual (v 3.2, dated 19/10/2017)
- UNFCC CDM approved methodology ACM0002 (version 10) (as per UNFCCC CDM registration ref. no 3839)

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 verification and gap validation have been planned and organized to achieve a Reasonable Level of assurance as per the requirements of VCS.

1.4 Summary Description of the Project

The purpose of the project activity is the installation, commissioning and operation of Wind Power Project at Jaisalmer, Rajasthan. The electricity generated by the wind project will be supplied to the NEWNE grid of India. As the project involves power generation through renewable sources of energy, it will result in emission reductions due to displacement of grid electricity, which is majorly fossil fuel based. The implementation status of the project as s below:

Project Investors' Name	**Commissioning Date**	**Capacity in MW**	**Location (Village/State)**
Modern Road Makers Private Limited	28/09/2008 and 21/01/2009	20	Mudari, Ganesh ki Dhani, Dhava and Dedha in the district of Jaisalmer, Rajasthan

The project activity promotes environmental and social well being as it results in zero GHG emissions due to installation and operation of clean, renewable energy technology for electricity generation. The design lifetime of the entire wind project is 20 years, which is based on the DPR (As per registered PDD) and deemed acceptable to the validation team.

The total estimated GHG emission reductions expected for the project is 327,880 tCO_2e for the entire crediting period (of ten years). Thus, the estimated annual average emission reductions will be 32,788 tCO_2e.

The total actual GHG emission reduction for the project is 129,672 tCO_2e for the current monitoring period ranging from 01/05/2012 to 30/04/2018.

This was confirmed based on review of VCS PD/1.1/ & MR/1.2/, ER verification spreadsheet/02/, Joint Metering Reading reports/8/ and Invoices/9/ issued to state DISCOMs.

2 VERIFICATION PROCESS

2.1 Method and Criteria

Gap Validation and Verification was conducted using Applus+ Certification's procedures in line with the requirements specified in the VCS standard Requirements, CDM M&P, the CDM Validation and Verification Standard, and relevant decisions of the COP/MOP and the CDM EB and applying standard auditing techniques.

It is to be assessed and determined whether the proposed implementation and operation of the project activity, and the steps taken to report emission reductions comply with the criteria and relevant guidance provided by the VCS Board. The validation and verification process consist of the following three phases;

- A desk review of the VCS PD (Clause 1.1, 1.2, 1.3, 1.5, 1.6, 1.7, 1.9, 1.10, 1.12.1, 1.12.2, 1.12.3, 1.12.4, 1.13 and 2.6).
- A desk review of the VCS MR.
- Site visit and follow up interviews with project stakeholders.

2.2 Document Review

The verification is performed primarily as a document review of the VCS MR and associated documents as stated in details in appendix 1 of this document. The assessment is performed by a verification team using a protocol. The cross checks between information provided in the Monitoring report, VCS PD and information from sources other than those used, if available, the team's sectoral or local expertise and, if necessary, independent background investigations.

2.3 Interviews

The site visit for the project location, by the assessment team, was conducted on 08/08/2018 and the following stakeholders were interviewed.

S N	Name	Role	Organization
1	Mr. Satish Sharma	Site Engineer	Suzlon Global Services Limited
2	Mr. Jimmy Sah	VCS Project	Infinite Solutions

		Consultant	

The topics covered during interview ranges from general features and implementation of project to project technical details of the project like design & technical specification, project implementation status, project start date, location, baseline identification and additionality calibration details, monitoring and measuring system and data collection, recording and archiving procedures. The assessment was drawn based on the feedback received during interview coupled with the documentation and on-site observations

2.4 Site Inspections

Site Location visited: Mudari, Ganesh ki Dhani, Dhava and Dedha in the district of Jaisalmer, Rajasthan

A site visit was undertaken by the verification team on 08/08/2018 to carry out the following;

- An assessment of the project design and technical specification, project location, implementation status and operation of the project activity as per the VCS PD & MR and CDM registered PDD;

- A review of information flows for generating, aggregating and reporting the monitoring parameters;

- Interviews with relevant personnel to determine whether the operational and data collection procedures are implemented in accordance with the monitoring plan in the VCS PD & MR and CDM registered PDD;

- A cross check between information provided in the monitoring report and data from other sources such as plant logbooks, inventories, purchase records or similar data sources;

- A check of the monitoring equipment including calibration performance and observations of monitoring practices against the requirements of the VCS PD & MR and CDM registered PDD, the applied methodology including applicable tool(s), and, where applicable, the applied standardized baseline;

- A review of calculations and assumptions made in determining the GHG data and emission reductions;

- An identification of quality control and quality assurance procedures in place to prevent or identify and correct any errors or omissions in the reported monitoring parameters.

2.5 Resolution of Findings

The objective of this step is to identify, discuss and conclude on the issues related to the project description, technical specification, baseline and additionality, monitoring parameter and monitoring plan, implementation status and operations of the registered project activity that could impair the capacity of the registered project activity to achieve emission reductions or influence the monitoring and reporting of emission reductions. This is done based on the desk review and onsite assessment. The verification team prepares and/or updates a validation cum verification protocol (internal document) that records the conformities and non-conformities, which may be of following types;

CAR (Corrective Action Request) is raised if one of the following occurs:

- Non-compliance with the project description, applicability of monitoring methodology and its tools, additionality tools and has not been sufficiently documented by the project participants, or if the evidence provided to prove conformity is insufficient;

- Non-compliance with the monitoring plan, the methodology or the standardized baseline are found in monitoring and reporting and has not been sufficiently documented by the project participants, or if the evidence provided to prove conformity is insufficient;

- Modifications to the implementation, operation and monitoring of the registered project activity has not been sufficiently documented by the project participants;

- Mistakes have been made in applying assumptions, data or calculations of emission reductions that will impact the quantity of emission reductions;

- Issues identified in a FAR during validation to be verified during verification or previous verification(s) have not been resolved by the project participants.

Clarification request (CR) is raised if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met. All CARs and CRs raised by the Applus+ Certification during validation and verification shall be resolved prior to submitting a request for registration and issuance.

During the current VCS validation, 00 Corrective Action request (CARs) and 00 Clarification request (CRs) were raised and successfully closed.

During the current VCS verification, 01 Corrective Action request (CARs) and 00 Clarification request (CRs) were raised and successfully closed.

All the findings that are raised and communicated to project participant during the validation and verification are included under Appendix 3. The section also includes the response, if provided, by the project participants and an assessment by the verification team if it was closed out or otherwise.

2.5.1 Forward Action Requests

Forward Action Request (FAR) is to be raised when the monitoring and reporting require attention and/or adjustment for the next verification period. FARs does not relate to VCS requirements for issuance of ERs achieved during subject monitoring.

Applus+ Certification has not raised any FAR during this VCS verification report.

2.6 Eligibility for Validation Activities

Applus+ Certification is accredited for validation and verification under scope applied by the project.

3 VALIDATION FINDINGS

3.1 Participation under Other GHG Programs

The project is already registered with CDM mechanism with UNFCCC CDM reference no. 3839. In-line with the clause 3.11.10 of VCS standard DOE has carried out gap validation as below:

Project Details:

The proposed project activity is a wind power project owned by Modern Road Makers Private Limited, who is also the project proponent for the project activity. The total installed capacity of the wind power plant is 20 MW. The electricity produced from the project activity shall be supplied to the regional electrical NEWNE grid of India.

Technical specifications of the project as stated in section A.4.3 of the CDM registered PDD[/3/] and VCS PD[/1.1/] & MR[/1.2/] were verified from the technical specification supporting documents submitted by the PP [/07/]. The project is located within the Jaisalmer, Rajasthan in India and the geographical boundary is within the country of India.

The geo coordinates of the project activity, were verified using Google Map (Ref: https://www.gps-coordinates.net/) and were found to be consistent with the same reported in the VCS PD[/1.1/] and MR[/1.2/] and CDM registered PDD[/3/].

Project Start Date:

The start date of the project activity is the earliest date of commissioning of the 1st 5 MW of project was commissioned *as* on 28/09/2008.

Project Crediting Period:

The project activity adopts renewable crediting period of 10 years period which can be renewed for 2 times. The 1st Crediting Period Start date is 01/05/2012 and End date is 30/04/2022.

Project Scale and Estimated GHG Emission Reductions or Removals:

The project falls under Project category since the emission reductions are less than 300,000 tCO2e per annum.

Project Location:

The project activity is located at villages Mudari, Ganesh ki Dhani, Dhava and Dedha in the district of Jaisalmer, Rajasthan. The coordinates of the WTGs have been tabled below:

Sr No.	Location No.	Latitude	Longitude
1	R060	N 260 48' 45.8''	E 700 44' 16.3''
2	R061	N 260 48' 36.8''	E 700 44' 26.1''
3	R078	N 260 49' 15.4"	E 700 51' 35.4"
4	R007	N 260 48' 58.4"	E 700 51' 37.2"
5	R008	N 260 48' 41.7"	E 700 51' 39.4"
6	R063	N 260 48' 54.6"	E 700 43' 33.2"
7	R064	N 260 48' 45.1"	E 700 43' 43.5"
8	R069	N 260 48' 36.8"	E 700 43' 23.5"
9	R070	N 260 48' 27.3"	E 700 43' 33.8"
10	R071	N 260 48' 17.7"	E 700 43' 44.2"
11	R072	N 260 48' 08.2"	E 700 43' 54.5"
12	R073	N 260 47' 58.6"	E 700 44' 04.9"
13	R074	N 260 47' 49.1"	E 700 44' 15.2"
14	R016	N 260 49' 21.4"	E 700 49' 30.9"
15	R062	N 260 48' 25.3"	E 700 44' 37.1"
16	R067	N 260 48' 00.3"	E 700 44' 34.7"

Project Ownership and Project proponent:

The Project is owned by Modern Road Makers Pvt. Ltd., hence it possess right of use of ER credits. The PP has submitted the Ownership documents to demonstrated the same as it was verified from Commissioning certificates[7] for WTGs in the name Modern Road Makers Pvt. Ltd issued by state nodal agencies. It was further verified from Power Purchase Agreement[6] with Jodhpur Vidyut Vitran Nigam Limited" (JVVNL) for sale of electricity by the Modern Road Makers Pvt. Ltd. Therefore, the ownership documents are checked by assessment team and found to be appropriate and acceptable.

Description of the Project Activity:

The project is the generation of electricity from wind power by installation of 16 Wind Turbine Generators (WTG) at Jaisalmer, Rajasthan. Each WTG has an installed capacity of 1.25 MW. The total installed capacity of the project is 20 MW. The electricity produced from the project activity shall be supplied to the regional electrical NEWNE grid of India.

Technical specifications of wind turbine are verified during onsite visit and crosschecked with registered CDM PDD[/3/]. The technology being employed is well proven, safe & sound. No technology transfer to host party is there due to project activity. Thus project activity description, capacity are checked and found correct by the assessment team. The PDD mentions all the criteria properly and found correct by the assessment team.

Compliance with relevance laws and regulation:

The Project has received necessary approvals for development and commissioning for each WTG and thus confirms compliance to the local laws and regulations.

Ownership and Other Programs:

Project Ownership: The Project is owned by Modern Road Makers Pvt. Ltd., hence it possess right of use of ER credits.

Emissions Trading Programs and Other Binding Limits: 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.

Other Forms of Environmental Credit: The project is registered with UNFCCC under Clean Development Mechanism program (CDM) with Registration reference number 3839. The VCS start date of the project activity is 28/09/2008 which is the date of commissioning of first four WTGs with total capacity of 5 MW wind power project. The project crediting period starts on 01/05/2012 and ends on 31/04/2022 with a total crediting period of 10 years (renewable two times). The monitoring period for this VCS verification is chosen from 01/05/2012 – 30/04/2018 (including both days) and the project activity achieved 129,672 tCO2e emission reductions during this monitoring period.

Participation under Other GHG Programs: This project is registered with UNFCCC (reference number 3839), however an undertaking has been submitted by PP for double counting would never happens with any other GHG program.

Projects Rejected by Other GHG Programs: The Project is not rejected by other GHG programs.

Application of Methodology:

Assessment team confirms that the application of the baseline methodology is transparent and conservative, and confirms that the chosen baseline and monitoring methodology i.e. ACM0002 – Version 10 is applicable to the project activity.

Project Boundary:

The spatial extent of project boundary diagram (including the metering system) referred by the methodology is now mentioned in the CDM PDD as per the requirement of applied methodology and thus the same is acceptable to the assessment team.

Baseline Scenario:

ACM0002 already prescribes the baseline scenario being "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", hence no further analysis of alternatives is required in section B.4 or B.5 of the PDD/3/. The baseline identification in section B.4 of the PDD/3/ is found to be described as per the applied methodology ACM0002 - Version 10.

Based on the above described evidences and checks, the assessment team confirms the adequacy of the project to be registered in the VCS in line with the Gap Validation requirements.

3.2 Methodology Deviations

Not Applicable as there are no methodology deviations for the project.

3.3 Project Description Deviations

Not Applicable as there are no project description deviations for the project.

3.4 Grouped Project

Project not a group project. Not Applicable

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

The main purpose of the proposed project activity is to generate clean energy through renewable energy sources. The proposed project activity is a wind power project owned by Modern Road Makers Private Limited, who is also the project proponent for the project activity. The total installed capacity of the wind power plant is 20 MW. The electricity produced from the project activity shall be supplied to the regional electrical NEWNE grid of India.

Technical specifications of the project as stated in section A.4.3 of the CDM registered PDD/3/ and VCS PD/1.1/ & MR/1.2/ were verified from the technical specification supporting documents submitted by the PP /07/. The project is located within the Jaisalmer, Rajasthan in India and the geographical boundary is within the country of India.

The geo coordinates of the project activity, were verified using Google Map (Ref: https://www.gps-coordinates.net/) and were found to be consistent with the same reported in the VCS PD[/1.1/] and MR[/1.2/] and CDM registered PDD[/3/].

The VCS start date of the project activity is 28/09/2008 which is the date of commissioning of first four WTGs with total capacity of 5 MW wind power project. The start date of the project activity has been confirmed through review of Commissioning certificate of WTGs [/07/]. The Validation for the project was completed on 15/06/2010 as per the CDM Validation Report[/19/] which is within two years of commissioning thus is eligible under VCS Mechanism.

The project crediting period starts on 01/05/2012 and ends on 31/04/2022 with a total crediting period of 10 years (renewable two times).

The project scale is "Project" as the expected ERs (i.e. 32,788 tCO_2e/year) as from the project activity is less than 300,000 tCO_2e/year.

The total estimated GHG emission reductions expected for the project is 327,880 tCO_2e for the entire crediting period (of ten years). Thus, the estimated annual average emission reductions will be 32,788 tCO_2e. This was confirmed based on the review of ER validation spreadsheet [/02/] and other supporting documents like Monthly Credit Notes [/8/].

The total actual GHG emission reduction for the project is 129,672 tCO_2e for the current monitoring period ranging from 01/05/2012 to 30/04/2018. This was confirmed based on the review of ER verification spreadsheet [/02/.]

Prior to the project initiation, 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 above scenario is also the respective baseline scenario and was confirmed to be accurate during on site assessment and interviews with representatives of PP [/17/].

The project is in compliance with the applicable regulatory framework on wind power projects in targeted country of India.

The project is registered CDM project activity with ref. no. 3839. Based on its assessment through review of relevant documentation (as cited above), the assessment team confirms that the description given in the VCS PD[/1.1/] & MR [/1.2/] and registered CDM PDD[/3/] is accurate, complete, and provides an understanding of the nature of the project, and the project has been implemented as described in the VCS PD[/1.1/] & MR [/1.2/] and registered CDM PDD[/3/].

4.2 Accuracy of GHG Emission Reduction and Removal Calculations

The data and parameters used to calculate the GHG emission reductions and removals have been listed below:

Parameters with Default Values (ex-ante parameters):

Parameter	Description	Value	Unit	Source
$EF_{Grid,OM,y}$	Weighted Average Simple Operating margin of the grid	1.0086	tCO_2e/MWh	As per registered CDM PDD; Calculated as per "Tool to calculate the emission factor for an electricity system (version 02.0.0)[13]" The value has been used form the Central Electricity Authority (CEA) database (Version 4.0, dated 1st September 2008) for the calculation of the Baseline emissions.
$EF_{Grid,BM,y}$	Build Margin of the grid.	0.5977	tCO_2e/MWh	As per registered CDM PDD; Calculated as per "Tool to calculate the emission factor for an electricity system (version 02.0.0)[13]" . The value has been used form the Central Electricity Authority (CEA) database (Version 4.0, dated 1st September 2008) for the calculation of the Baseline emissions.
$EF_{Grid,CM,y}$	Combined Margin emission factor of the grid	0.9058	tCO_2e/MWh	As per registered CDM PDD; Calculated as per "Tool to calculate the emission factor for an electricity system (version 02.0.0)[13]". The value has been used form the Central Electricity Authority (CEA) database (Version 4.0, dated 1st September 2008) for the calculation of the Baseline emissions.

Parameter(s) monitored ex-post:

Parameter	**EG_y** (Total Electricity Exported to the grid)
Means of verification	

Criteria/Requirements	**Assessment/Observation**
Measuring /Reading /Recording frequency	The electronic energy meter at the sent out point of the project activity plant is used to measure the data of electricity exported to grid.

	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 VCS PD[/1.1/] & MR[/1.2/], CDM PDD[/3/] and monitoring methodology[/12/]. This parameter is continuous monitoring and Monthly recording from Energy Meters, Summarized Annually. .
	Monitoring equipment	Monitoring: Electrical Energy Meters which are electronic tri-vector meters of accuracy class 0.2s (Main & Check meters) Main Meter: Meter No: RJB00316 Accuracy: 0.2 Check Meter: Meter No: RJB00317 Accuracy: 0.2 Data type: Measured & Calculated Archiving: Paper & Electronic Calibration Agency : Rajasthan Rajya Vidhyut Prasaran Nigam Ltd (which is NABL accredated)
	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?	Yes, the accuracy of the monitoring equipment used is 0.2s, which is as per the VCS PD[/1.1/] & MR[/1.2/] and registered CDM PDD[/3/].

	Is the accuracy valid for the entire measuring range or do different accuracy levels apply to different measuring ranges?	Yes. The accuracy of monitoring equipment's is valid for the entire range.
	Calibration frequency /interval:	Calibration frequency of the meters is annualy.
	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 frequency in accordance with the local/national standards, or as per the manufacturer's specifications?	Yes. The calibration frequency is in line with the monitoring plan as outlined in the VCS PD[/1.1/] & MR[/1.2/] and registered CDM PDD[/3/].
	Is the calibration of measuring equipment carried out by an accredited person or institution?	Yes the calibration is conducted by NABL accredited lab [/10/].
	Is(are) calibration(s) valid for the whole reporting period?	Yes. Calibration of meters is valid for the whole reporting period.
	Is the calibration carried out for a measuring range comparable with the range for which measurements have been carried out?	Yes. The calibration is carried out appropriately.
	How were the values in the monitoring report verified?	Cumulative value of $\mathbf{EG_y}$ for entire monitoring period is reported in the monitoring report, however monthly values are reported in the ER calculation sheet[/02/]. The monthly values were verified from the plant data and found to be consistent. Value of this parameter for the current monitoring period was verified as 143,754.602 MWh
	If applicable, has the reported data been cross-checked with other available data?	Total electricity exported to grid is cross checked from the invoices raised by the project participant to the grid. The same

		is found to be consistent.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	On site assessment of the project activity confirms that the necessary QA/QC procedures are in place and the data management system is effective and reliable.
Findings	Not Applicable	
Conclusion	The parameter has been monitored appropriately, in accordance with the PD monitoring plan (as per measurement methods and procedures to be applied), CDM PDD and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan.	

Parameter	**EC_y** (Total Electricity Import from Grid)	
Means of verification	**Criteria/Requirements**	**Assessment/Observation**
	Measuring /Reading /Recording frequency	The electronic energy meter at the sent out point of the project activity plant is used to measure the data of electricity exported to grid.
	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 VCS PD[/1.1/] & MR[/1.2/], CDM PDD[/3/] and monitoring methodology[/12/]. This parameter is continuous monitoring and Monthly recording from Energy Meters, Summarized Annually. .
	Monitoring equipment	Monitoring: Electrical Energy Meters which are electronic tri-vector meters of accuracy class 0.2s (Main & Check meters) Main Meter:

		Meter No: RJB00316 Accuracy: 0.2 Check Meter: Meter No: RJB00317 Accuracy: 0.2 Data type: Measured & Calculated Archiving: Paper & Electronic Calibration Agency : Rajasthan Rajya Vidhyut Prasaran Nigam Ltd (which is NABL accredated)
	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?	Yes, the accuracy of the monitoring equipment used is 0.2s, which is as per the VCS PD[/1.1/] & MR[/1.2/] and registered CDM PDD[/3/].
	Is the accuracy valid for the entire measuring range or do different accuracy levels apply to different measuring ranges?	Yes. The accuracy of monitoring equipment's is valid for the entire range.
	Calibration frequency /interval:	Calibration frequency of the meters is annualy.
	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 frequency in accordance with the local/national standards, or as per the manufacturer's specifications?	Yes. The calibration frequency is in line with the monitoring plan as outlined in the VCS PD[/1.1/] & MR[/1.2/] and registered CDM PDD[/3/].

	Is the calibration of measuring equipment carried out by an accredited person or institution?	Yes the calibration is conducted by NABL accredited lab /10/.
	Is(are) calibration(s) valid for the whole reporting period?	Yes. Calibration of meters is valid for the whole reporting period.
	Is the calibration carried out for a measuring range comparable with the range for which measurements have been carried out?	Yes. The calibration is carried out appropriately.
	How were the values in the monitoring report verified?	Cumulative value of $\mathbf{EC_y}$ for entire monitoring period is reported in the monitoring report, however monthly values are reported in the ER calculation sheet/02/. The monthly values were verified from the plant data and found to be consistent. Value of this parameter for the current monitoring period was verified as 593.074 MWh
	If applicable, has the reported data been cross-checked with other available data?	Total Electricity Import from grid is cross checked from the invoices raised by the project participant to the grid. The same is found to be consistent.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	On site assessment of the project activity confirms that the necessary QA/QC procedures are in place and the data management system is effective and reliable.
Findings	Not Applicable	
Conclusion	The parameter has been monitored appropriately, in accordance with the PD monitoring plan (as per measurement methods and procedures to be applied), CDM PDD and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan.	

Energy Meter Calibration Details: The calibration details have been provided in MR and same has been verified with calibration certificate of energy meters.

Meter no.	Type	Class	2012	2012	2013	2014
RJB00316	Main	0.2s	14/04/2012	22/12/2012	13/12/2013	12/10/2014
RJB00317	Backup	0.2s	14/04/2012	22/12/2012	13/12/2013	10/12/2014

Meter no.	Type	Class	2015	2016	2017	Due date
RJB00316	Main	0.2s	25/11/2015	22/11/2016	20/11/2017	19/11/2018
RJB00317	Backup	0.2s	25/11/2015	22/11/2016	20/11/2017	19/11/2018

The equations for calculation of emission reduction as provided in the VCS PD[/1.1/] & MR [/1.2/], registered CDM PDD[/3/] and confirmed with the applied methodology ACM0002 (version 10) [/12/] have been checked and found to be correct. The values as provided in the VCS PD[/1.1/] & MR [/1.2/] and registered CDM PDD[/3/] have been compared with ER verification sheet [/02/] and raw values from Monthly Credit Notes Reports [/8/] and Invoices issued to state utility [/9/] to ensure that no manual transposition errors between data sets have occurred. The verification team confirms that that all electricity generation values are matching between the above three documents. Moreover, the formulae applied in the ER spreadsheet [/02/] were also reviewed and found to be consistent with the applied methodology. The verification team confirms that all parameters are used correctly in the calculations, all results are verifiable and transparent, all assumptions are described and based on verifiable evidence and calculations are done in accordance with the formulae laid out in the applied methodology ACM0002 (version 10) [/12/] and requirements of the monitoring plan.

The total number of emission reductions for the monitoring period from 01/05/2012 to 30/04/2018 is 129,672 tCO_2e. The calculation of emission was checked in ER sheet and found to be correct, hence accepted.

Comparison of actual GHG emission reductions or net anthropogenic GHG removals by sinks with estimates in PD:

Based on review of ER sheet[/02/], it confirm that the comparison between actual GHG emission reductions with estimated in CDM PDD[/3/] and VCS PD[/1.1/] and MR[/1.2/]:

Annual estimated GHG emission reductions in the PD (tCO_2e)	Estimated GHG emission reductions for current monitoring period , tCO_2e	Actual GHG emission reductions achieved in the current monitoring period, tCO_2e	Difference
32,788	196,818 (It is estimated ER as per CDM PDD equivalent to current MP calculated as 32,788 x	129,672	- 34.12 %

T h e	(2191 days/365 days) = 196,818)		

re is around 34.12 % lesser emission reduction is achieved during the current monitoring period as compared to the projected ERs of equivalent period, which is mainly due to the lower PLF achieved during the current monitoring period, which is reasonable and accepted by the audit team.

4.3 Quality of Evidence to Determine GHG Emission Reductions and Removals

The quality of supporting documents that are provided by the PP as evidence is adequate. Raw values from Monthly Credit Reports /8/ and Invoices issued to state utility /9/ are provided, which tallies with the data provided in the ER verification spreadsheet /02/.

Competent employees are recruited for the management and operation of the project. The quality of supporting evidences submitted for verification is adequate and found to be verifiable. Monthly Credit Reports /8/, Invoices issued to state utility /9/ and other supporting documents related to quality and maintenance were checked by the assessment team to confirm the authenticity of the documents and to check the correctness of the calculations. The verification team for the records and future reference also obtains copies of these documents. The detailed information flow with the roles and responsibilities of the individuals and the monitoring system have been discussed and found to be appropriate.

Based on the above, the assessment team confirms the sufficiency and appropriateness of the quality of evidence provided by the PP to determine the GHG reductions and further deems them to be acceptable.

4.4 Non-Permanence Risk Analysis

Not applicable

5 SAFEGUARDS

5.1 No Net Harm

No potential negative environmental and socio-economic impacts have been identified by the project proponent. The project activity promotes environmental and socio-economic well-being as it results in zero GHG emissions due to installation and operation of clean, renewable energy technology for electricity generation.

This is as per the requirements laid out in Appendix-1 of the VCS Standard (version 3.7) /14/ and deemed acceptable to the validation team.

5.2 Local Stakeholder Consultation

The local stakeholder consultation process has been described in detail, by the PP, in section 5.3 of the Registered CDM PDD/3/. All the stakeholders are happy with the implementation and operation of the project activity and no negative comments envisaged for the project activity.

There was no change in project description form the registered CDM PDD. Assessment team confirmed the same during the verification site visit.

6 VERIFICATION CONCLUSION

LGAI Technological Center, S.A. (also referred to as Applus+ Certification), contracted by Modern Road Makers Private Limited, to perform a joint validation and verification of the VCS project activity "MRMPL Wind Power Project" in India.

The Gap validation and verification process was performed on the basis of all guidance and criteria as provided in VCS Standard (version 3.7), VCS Program Guide (version 3.7), VCS Validation and Verification Manual (version 3.2) and Registration & Issuance Process (version 3.8) /14/.

The conclusions of validation and verification process can be individually summarised as follows:

Gap Validation Conclusion:

The project activity provides the information in VCS PD/1.1/ & MR /1.2/ as required by VCS Standard, version 3.7 /14/ and Validation and Verification Manual, version 3.2 /14/ and in Applus+ Certification's opinion meets the requirements of the applied baseline and monitoring methodology, ACM0002 (version 10)/12/ and is likely to achieve the estimated emission reductions. The validation has been performed using a risk-based approach, as described above. The expected emission reductions from the project activity during the course of its crediting period (ten years) will be 327,880 tCO_2e.

Applus+ Certification concludes the validation with a positive opinion and confirms that the VCS Project Activity "MRMPL Wind Power Project" in India, as described in the VCS PD/1.1/ & MR /1.2/ meets all applicable VCS requirements, including those specified in the CDM Project Standard /18/, relevant methodologies, tools and guidelines.

The selected baseline and monitoring methodology ACM0002 (version 10)/12/ is applicable to the project and correctly applied. Applus+ Certification therefore requests the registration of the project as a VCS project activity.

Verification Conclusion:

Applus+ Certification verification approach is based on the understanding of the risks associated with reporting of GHG emission data and the controls in place to mitigate these. Applus+ Certification planned and performed the verification by obtaining evidence and other information and explanations that Applus+ Certification considered necessary to give reasonable assurance that reported GHG emission reductions are fairly stated.

In our opinion the GHG emissions reductions reported for the project activity for the period 01/05/2012 – 30/04/2018 are fairly stated in the PD/1.1/ and MR/1.2/. The GHG emission reductions were calculated correctly on the basis of the approved baseline and monitoring methodology and the VCS standard.

Verification period: From 01/05/2012 to 30/04/2018 (including both days)

Verified GHG emission reductions and removals in the above verification period:

Year	Baseline emissions or removals (tCO_2e)	Project emissions or removals (tCO_2e)	Leakage emissions (tCO_2e)	Net GHG emission reductions or removals (tCO_2e)
2012	20,326	0	0	20,326
2013	21,507	0	0	21,507
2014	21,340	0	0	21,340
2015	18,328	0	0	18,328
2016	22,317	0	0	22,317
2017	21,473	0	0	21,473
2018	4,381	0	0	4,381
Total	**129,672**	**0**	**0**	**129,672**

Applus+ Certification confirms a positive verification opinion confirming that the project complies with the applicable VCS requirements, thus recommending the project for issuance.

APPENDIX 1: DOCUMENT REFERENCES

S. No	Title of Document	Version	Date
1.1	PD (Gap Validation)	02	25/10/2018
1.2	MR (Monitoring period 01/05/2012 to 30/04/2018)	02	25/10/2018
2.	Emission reduction spreadsheet	01	23/07/2018
3.	CDM Registered PDD	06	14/06/2010
4.	CDM Project Activity Registration : UNFCCC ref. no. 3839 https://cdm.unfccc.int/Projects/DB/LRQA%20Ltd1278588174.29/view	-	-
5.	VCS Public Comment period from 01/08/2018 – 01/09/2018. (https://www.vcsprojectdatabase.org/#/pipeline_details/PL1781)	-	-
6.	Power Purchase Agreement	-	15/09/2018
7.	Commissioning certificates issued by respective state electricity board. (proof of VCS project start date)	-	28/09/2008 and 21/01/2009
8.	Monthly Credit Notes for the monitoring period	-	From 01/05/2012 to 30/04/2018
9.	Invoices raised by the PP to the state electricity board for the monitoring period	-	From 01/05/2012 to 30/04/2018
10.	Calibration certificates for the electricity meters used during the monitoring period	-	From 01/05/2012 to 30/04/2018
11.	Declaration from PPs for: - No Generation based incentives are claimed by the projects - No ODA funding is used in the projects from any Annex 1 country	-	-
12.	Approved CDM monitoring methodology: ACM0002: Grid-connected electricity generation from renewable sources	10	-
13.	Tool to calculate the emission factor for an electricity system,	02.0	-
14.	VCS Requirements: - Verified Carbon Standard Program Guide, v3.7; - Verified Carbon Standard, v3.7; - VCS Program Definitions, Ver. 3.7 - VCS Registration and Issuance Process, v3.8 - VCS Validation and Verification Manual, v3.2 - VCS Project Description, v 3.3 - VCS Monitoring Report Template, v3.4 - VCS Verification Report Template, v3.4	-	-
15.	Baseline CO2 Emission Database, published by Central Electricity Authority (CEA), Government of India.	4.0	-
16.	Methodological Tool: Tool for the demonstration and assessment of additionality	05.1	-
17.	On site assessment –interviews of staff personnel, photographs, physical inspection of monitoring system	-	08/08/2018
18.	CDM Validation and Verification Standard for PA and CDM Project Standard for PA	01.0	-
19.	CDM Validation Report	-	-

APPENDIX 2: ABBREVIATIONS

Abbreviations	Full texts
ABT	Availability Based Tariff
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CDM PCP	Clean Development Mechanism Project Cycle Procedure
CDM PS	Clean Development Mechanism Project Standard
CDM VVS	Clean Development Mechanism Validation and Verification Standard
EB	Executive Board
EF	Emission Factor
EPC	Engineering ,Procurement and Construction
ER	Emission Reductions
CEA	Central Electricity Authority
CER	Certified Emission Reduction
CR	Clarification Request
DOE	Designated Operational Entity
DNA	Designated National Authority
FAR	Forward Action Request
GCEES	Green Carbon Energy and Environment Services
GHG	Greenhouse Gas(es)
GOI	Government of India
IPCC	Intergovernmental Panel on Climate Change
MCR	Monthly Credit Reports
MP	Monitoring Plan
MR	Monitoring Report
MWh	Megawatt hour
PD	Project Description
PP	Project Proponent
PS	Project Standard
TR	Technical Review
UNFCCC	United Nations Framework Convention on Climate Change
VVS	Validation and Verification Standard

APPENDIX 3: Findings Overview

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

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

Table 2. CL from this verification

CL ID	N/A	**Section no.**	N/A	**Date :** N/A
Description of CL				
N/A				
Project participant response				**Date :** N/A
N/A				
Documentation provided by project participant				
N/A				
DOE assessment				**Date:** N/A
N/A				

Table 3. CAR from this verification

CAR ID	01	**Section no.**	PD and MR	**Date:** 09/10/2018
Description of CAR				
The details of energy meters and their calibration are not provided in Joint PD and MR. Please clarify?				
Project participant response				**Date:** 25/10/2018
The energy meter details and their calibration details provide in revised VCS PD and updated MR. The VCS PD and MR submitted with all details of energy				
Documentation provided by project participant				
VCS PD version 02 and MR version 02				
DOE assessment				**Date:** 28/10/2018
The PP has submitted the VCS PD and updated MR for provide the details of energy meter and their calibration. Same has been verified with the calibration certificate and found to be correct, hence accepted. Therefore, CAR#1 is closed satisfactorily.				

Table 4. FAR from this verification

FAR ID	N/A	**Section No.**	N/A	**Date :** N/A
Description of FAR				
No FAR raised				
Project participant response				**Date :** N/A
N/A				
Documentation provided by project participant				
N/A				
DOE assessment				**Date:** N/A
N/A				

APPENDIX 4: Competency Statements

According to the sectoral scope / technical area and experience in the sectoral or national business environment, Applus+ Certification has composed a project assessment team in accordance with the appointment rules in the internal Quality Management System of Applus+ Certification. The composition of audit team shall be approved by the Applus+ Certification ensuring that the required skills are covered by the team. The four qualification levels for team members that are assigned by formal appointment rules are as presented below:

- Lead Auditor (LA).
- Auditor (A) / Auditor in Training (AiT).
- Technical Expert (TE).
- Technical Reviewer (TR).

The sectoral scope / technical area knowledge linked to the applied methodology/ies shall be covered by the assessment team.

Name	Qualification	Coverage of scope	Coverage of technical Area	Financial aspect	Host country Experience	Attendance to the On-Site Assessment
Vivek Kumar Ahirwar	Lead Auditor (LA) and Technical Expert (TE)	Yes (1)	Yes (1.2)	Yes	Yes	Yes
Ravikant Soni	Auditor in Training (AiT) and Technical Expert (TE)	Yes (1)	Yes (1.2)	Yes	Yes	Yes
Denny XUE	Technical Reviewer (TR)	Yes (1)	Yes (1.2)	Yes	N/A	N/A

The curricula vitae of the DOE's team members are provided below:

Vivek Kumar Ahirwar is a BEE-Certified Energy Auditor by Govt of India with over eight years of relevant experience in energy efficiency, energy audit, thermal and electrical energy generation technology from renewable source and energy conservation in energy intensive industries, designated consumers and commercial buildings, implementation of energy conservation building codes, research, process and green building projects. He is a certified lead auditor for ISO 14001 EMS and 14064. He has experience under various categories of projects stating from renewable to waste to supercritical projects and WCD. He has successfully audited more than 100 GHG (CDM/VCS/GS) projects in different states across the India. He has done Mater in Technology (Energy Management) from a premier institute, School of Energy& Environmental Studies, DAVV, Indore (M.P.), India and Bachelor of Engineering (Mechanical Engineering) from Govt. Engineering college, Rewa, RGPV, India.

Ravikant Soni is a certified lead auditor for Lead Auditor ISO 14001:2004&Lead Auditor ISO 14064:2006 GHG Inventory and verification. He has more than 10 years of work experience across Climate Change, Environmental Management & Monitoring, Health & Safety Management, and Statutory Compliance. He was involved in more than 100 CDM validation and verifications activities and Gold Standard, VER projects as a team leader/technical reviewer / validator / verifier covering the sectoral scope 1 technical area 1.2. He has done Mater in Technology (Energy Management) from a premier institute, School of Energy & Environmental Studies, DAVV, Indore (M.P.), India and Bachelor of Engineering (Mechanical Engineering) from M.I.T.S Gwalior Jiwaji University Gwalior, India.

Denny XUE: Master Degree in Environmental Engineering, Bachelor Degree in Thermal Engineering) is an Auditor appointed by Applus+ LGAI for the GHG project assessment. He is based on Shanghai. He has 1.5 years of work experiences in CDM project development. Before he joined Applus+ LGAI, he has been worked for Shanghai Chuanji Investment and Management which is a CDM consultancy company as a project manager for CDM project development.

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