"SATARA WIND POWER PROJECT IN MAHARASHTRA, INDIA"

Document Prepared By Earthood Services Private Limited

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Summary:

Earthood Services Private Limited (ESPL) has performed the verification of the project "Satara Wind Power Project in Maharashtra, India." VCS ID 1519, against VCS Standard Version 4. The scope of verification includes confirming the implementation of the monitoring plan of the registered VCS PD (version 02) dated 24/12/2019 and the application of the monitoring methodology "Consolidated baseline methodology for grid-connected electricity generation from renewable sources", ACM0002, Version 16.

The verification is consisted of three phases: i) desk review of the project; ii) follow-up onsite visit and interviews with project stakeholders; iii) resolution of outstanding issues and the issuance of the final verification report and opinion. The overall verification, from Contract Review to Verification Report & Opinion, was conducted following Earthood internal quality procedures.

During the verification process 03 CARs, 02 CL and 00 FARs were raised. All the findings have been closed satisfactorily and the same has been discussed in Appendix 4.
ESPL confirms that the monitoring system is in place and the emission reductions are calculated without material misstatements. The emission reductions from the project activity "Satara Wind Power Project in Maharashtra, India" in India during the period 01/09/2018 - 31/10/2019 (including both days) amount to 78,256 tonnes of CO2e.

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1. INTRODUCTION

1.1 Objective

NSL Wind Power Company (Satara) Private Limitedhas contracted Earthood Services Private Limited (ESPL) to perform second VCS Verification of the 'Satara Wind Power Project in Maharashtra, India' in India (hereafter called project). Thisproject has already been registered as a VCSproject (VCS ID 1519). The objective of this verification is a thorough and independent assessment of registered project activities against the applicable VCS requirement by the DOE. The verification process shall determine whether the proposed project activity complies with the requirements of latest VCS guidelines, applicability conditions of the selected methodology, relevant host country regulations and guidance issued by the VCS Board.

1.2 Scope and Criteria

The scope of verification is to assess the claims and assumptions made in the VCS monitoring report (MR) against the VCS criteria, including but not limited to, VCS standard, applied methodology and other relevant rules and requirements established for VCS project activities.

The Verification is not meant to provide any consulting towards the project participants. However, stated requests for clarification and/or correction actions request may have provided inputs for improvement of the project design.

1.3 Level of Assurance

The verification team verified the complete monitoring data for all the parameters of the monitoring plan and confirms that the reported emission reductions are free from any type of material errors. Therefore, ESPL confirms that the verification is conducted with reasonable level of assurance.

1.4 Summary Description of the Project

The project activity involves electricity generation by wind electric convertors and supplying the generated electricity to the NEWNE Grid (Before April 2016, the Indian electricity system was divided into two grids, the NEWNE and Southern Grid. These are now integrated as a single "Indian Grid" covering all the states). The project being a renewable energy generation activity, it leads to removal of 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 activity consists of 20 WTGs (1500 kW capacity each), making the total installed capacity to be 30 MW at Mann village, in the district Satara, state of Maharashtrain India.

Location of the project was verified through Google Map (https://www.gps-coordinates.net/) and found consistent with the data provided in the registered PD /01/. The WTGs generate 3-phase power at 400 V (±12.5%) in the frequency range of 47.5 – 51.5 Hz. It is further stepped up to 33 kV for further distribution by the state utility. This information was verified during physical site visit and found to be in line with the details provided in the registered PD /01/.

The WTGs have been commissioned between 06/03/2014 and 31/03/2014. The same was verified against the registered VCS PD/01/ and commissioning certificates/11/.The emission reductions from the project activity during the period 01/09/2018 - 31/10/2019 (including both days) amount to 78,256 tonnes of CO_2e.

2. VERIFICATIONPROCESS

The registered VCS project is undergoing third verification under VCS, the approach adopted to ensure the quality of emission reductions is described in the following sections.

2.1 Method and Criteria

ESPL 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/verification process consist of the following three phases;

- A desk review of the VCS PD and VCS MR
- Site visit and follow up interviews with project stakeholders
- The resolution of outstanding issues and issuance of final report and opinion.

2.2 Document Review

The verification is performed primarily as a document review of the approved revised VCS PD, previous MR and Verification report and associated documents as stated in detail 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 30/11/2019 and the following stakeholders were interviewed.

S N	Name	Organization
1	Mr. Abhay Yadav	NSL Wind Power Company (Satara) Private Limited
2	Mr. Ganesh Mohite	ReGen Power Tech Pvt. Ltd
3	Mr. Shrikant Wagh	ReGen Power Tech Pvt. Ltd

The topics covered during interview ranges from general features and implementation of project to technical details of the project like 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

A site visit was undertaken by ESPL team on 30/11/2019 to carry out the following;

a) An assessment of the implementation and operation of the registered project activity as per the approved revised VCS PD and VCS MR;
b) A review of information flows for generating, aggregating and reporting the monitoring parameters;
c) Interviews with relevant personnel to determine whether the operational and data collection procedures are implemented in accordance with the monitoring plan in the PD;
d) 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;
e) A check of the monitoring equipment including calibration performance and observations of monitoring practices against the requirements of the PD, the applied methodology including applicable tool(s), and, where applicable, the applied standardized baseline;
f) A review of calculations and assumptions made in determining the GHG data and emission reductions;
g) 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 monitoring, implementation 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 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 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 (CL) is raised if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met. All CARs and CLs raised by the ESPL during verification shall be resolved prior to submitting a request for issuance.

FAR (Forward Action Request) is raised during verification if the monitoring and reporting require attention and/or adjustment for the next verification period.

All the findings that are raised and communicated to project participant during the verification are included under Appendix 4. 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

The project activity is undergoing third verification under VCS; there were no FARs raised during the validation or previous verification/2.1/.

2.6 Eligibility for Validation Activities

Not applicable.

3. VALIDATION FINDINGS

Not applicable.

3.1 Participation under Other GHG Programs

This project is registered under VCS (Project ID-1519). As verified through the records available at VCS registry, VERs for the third monitoring period (01/09/2018 to 31/10/2019) are already issued.

The project is not registered under any other emissions trading program or any other mechanism that includes GHG allowance trading. PP also confirms that net GHG emission reductions or removals generated during this monitoring period shall not be used for compliance under any such programs or mechanisms. This was confirmed through a declaration/14/ submitted by the PP and hence accepted by the assessment team.

3.2 Methodology Deviations

There is no methodology deviation identified during the current monitoring period.

3.3 Project Description Deviations

No deviation in current monitoring period.

3.4 Grouped Project

Not applicable. The project activity is not a grouped project

4. VERIFICATION FINDINGS

4.1 Project Implementation Status

The project activity consists of 20 WTGs installed at Mann village, in the district Satara, state of Maharashtra in India. The first and last machine under the project activity was commissioned on 06/03/2014 and 31/03/2014 respectively. The WTGs are of Vensys V87 typewith an individual capacity of 1.5 MW, summing up to 30 MW of total installation capacity. The installation and specification of WTGs has been checked with commissioning certificates/11/ and on-site assessment/18/. The commissioning has also been duly validated in the VCS validation report of the project activity/02/. There was no major breakdown or shut downs during the monitoring period which might affect the applicability of methodology or might cause material errors in emission reductions.

Assessment team concludes the following:

a) There is no material discrepancies between project implementation and the project description provided in the registered PD/01/.

b) The monitoring plan is implemented completely and monitoring system (i.e., process and schedule for obtaining, recording, compiling and analysing the monitored data and parameters) is appropriate.

c) There is no material discrepancies between the actual monitoring system, and the monitoring plan set out in the project description and the applied methodology/09/.

d) The GHG emission reductions or removals generated by the project have not included in an emissions trading program or any other mechanism that includes GHG allowance trading/14/.

e) The project has not received or sought any other form of environmental credit, or has become eligible to do so since validation or previous verification/2.1/.

f) The project has been implemented in three separate phases out of which capacity under two phases developed as separate projects and participated in CDM but not registered yet.

g) The project activity comply with indicators for sustainable development in the interim approval guidelines for Clean Development Mechanism (CDM) projects from India as discussed under section 1.11 of MR.

In view of the information's as verified above the assessment team is able to conclude that the project has been implemented as described in the project description.

4.2 Safeguards

4.2.1 No Net Harm

Not applicable for this verification.

4.2.2 Local Stakeholder Consultation

Not applicable for this verification.

4.3 AFOLU-Specific Safeguards

Not applicable for this verification.

4.4 Accuracy of GHG Emission Reduction and Removal Calculations

The project monitoring has been carried in accordance with the registered VCS PD/01/ and the monitoring report/04/. The monitoring plan laid in the registered PD is being followed at the site/18/. The assessment team has verified the information flow (from data generation, aggregation, to recording, calculation and reporting for these parameters including the values) in the MR/04/. The emission reductions are purely based on the net electricity generated and exported from the machines. PP has provided all the sufficient data for current monitoring period. The values of the parameter net electricity generation supplied to the grid by each phaseused in deriving the GHG emission reduction could be very well correlated between the data sets and ER spreadsheet/05/ provided by PP. the verification of each monitoring parameter has been discussed later in section 4.5.
The calculation method and formulae used in calculating baseline emission is in compliance to the methodology used i.e. ACM0002 Version 16 /09/. Since project activity is a wind power project, leakage emission and project emission has been considered as zero.

4.5 Quality of Evidence to Determine GHG Emission Reductions and Removals

The below tables describe how the parameter, that is to be measured according to the monitoring plan, has been verified to confirm that the actual monitoring complies with the monitoring plan, monitoring data has been thoroughly assessed and that the calibration requirements are met.

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

Means of verification	Criteria/Requirements	Assessment/Observation
	Measuring /Reading /Recording frequency	The parameter is calculated and recorded on monthly basis. Quantity of net electricity generation supplied by the project plant/unit to the grid in year y, is calculated as: $EG_{facility,y} = (EG_{JMR, NSL, export, y}$ $EG_{JMR, NSL, import, y})$ Where, $EG_{JMR, NSL, export, y}$=Quantity of Electricity exported by the Project WTGs connected to the feeder i to the grid during the year y. $EG_{JMR, NSL, import, y}$= Quantity of Electricity imported by the Project WTGs connected to the feeder i from the grid during the year y.
	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 registered PD/01/ and monitoring methodology/09/.
	Monitoring equipment	No monitoring equipment is used as this parameter is calculated. However the parameter $EG_{JMR, NSL, export, y}$ and $EG_{JMR, NSL, import, y}$are calculated using measured values, are continuously monitored, hourly

		measured and monthly recorded.
	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 to measure the input values used to calculate $EG_{JMR, NSL, export, y}$ and $EG_{JMR, NSL, import, y}$ is 0.2s, which is as per the registered PD/01/ which is as per the norm defined in the PPA/12/.
	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 once in 3 years.
	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 once in 3 years as outlined in the registered PD/01/ is in accordance with the national standards/15/.
	Is the calibration of measuring equipment carried out by an accredited person or institution?	Yes the calibration is conducted by state utility which is NABL Accredited entity/06/.
	Is(are) calibration(s) valid for	There is no delay in Calibration of meters during the current monitoring period.

	the whole reporting period?	(please refer discussion under heading "calibration of meters" in this section of this report for further details).
	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 $EG_{facility,y}$ for entire monitoring period is reported in the monitoring report/04/, and monthly values in the ER calculation sheet/05/. The monthly values were verified from the credit notes issued by state utility and found to be consistent. Value of this parameter for the current monitoring period was verified as 80,123MWh.
	If applicable, has the reported data been cross-checked with other available data?	The monthly reported values of $EG_{facility,y}$were further cross checked with the monthly invoices raised by the PP /07/ to state utility and 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.

	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	No suchissues.
Findings	CAR #2 and CAR #3 was raised and resolved	
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan. The emission reduction calculation for the project activity is estimated based on the electricity supplied by the WTGs. Since 100% data was verified, the team can ascertain that the values taken for emission reduction calculation are free from material errors.	

Parameter	**Quantity of Electricity exported by the Project WTGs connected to the feeder i to the grid during the year y, $EG_{JMR, NSL, export,y}$ (MWh)**

	Criteria/Requirements	Assessment/Observation
Means of verification	Measuring /Reading /Recording frequency	The parameter is calculated from measured parameter as Monthly Export value of Wind Farm (JMR Reading) and Summation of Controller Reading of project WTGs and non-project WTGs. The parameter is reported monthly in the credit note, which is prepared for each project developer separately.
	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 registered PD/01/ and monitoring methodology/09/.
	Monitoring equipment	No monitoring equipment is used as this parameter is calculated. However, the input value used to calculate the value of this parameter are continuously monitored, hourly measured and monthly recorded. The WTGs belongs to project activity are connected to different feeders and each feeder have exclusive dedicated metering arrangement at project site. Also, the WTGs of other project (non-project activity) are also connected to these feeders. The electricity generated by all the WTGs (project and non-project) is been fed to the

		NEWNE grid and monthly generation of all the WTGs at each feeder reading is recorded by the representatives MSEDCL in the presence of O&M contractor officials in the form of JMR. Based on the data recorded in the JMRs and generation recorded through controller meter at individual WTG, electricity supplied to the grid by the project activity is calculated by MSEDCL, using the apportioning procedure and credit note for each project developer is prepared.
	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 to measure the input values used to calculate ($EG_{JMR, NSL, export,y}$) is 0.2s, which is as per the registered PD/01/ which is as per the norm defined in the PPA/12/.
	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 once in 3 years.
	Is the calibration interval in line with the monitoring plan and/or methodology? If the	Yes. The calibration frequency is in line with the monitoring plan as outlined in 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?	registered PD/01/.
	Is the calibration of measuring equipment carried out by an accredited person or institution?	Yes the calibration is conducted by state utility which is NABL Accredited entity/06/.
	Is(are) calibration(s) valid for the whole reporting period?	There is no delay in Calibration of meters during the current monitoring period. (please refer discussion under heading "calibration of meters" in this section of this report for further details).
	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 $EG_{JMR,\ NSL,\ export,y}$ for entire monitoring period is reported in the monitoring report, however monthly values are reported in the ER calculation sheet/05/. The monthly values were verified from the credit notes/08/ issued by state utility and found to be consistent. Value of this parameter for the current monitoring period was verified as 80,162MWh.
	If applicable, has the reported data been cross-checked with	The monthly reported values of $EG_{JMR,\ NSL,\ export,y}$were further

	other available data?	cross checked with the monthly invoices raised by the PP /07/ to state utility and 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.
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	No such issues.
Findings	CAR #2 and CAR #3 was raised and resolved	
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan. The emission reduction calculation for the project activity is estimated based on the electricity supplied by the WTGs. Since 100% data was verified, the team can ascertain that the values taken for emission reduction calculation are free from material errors.	

Parameter	**Quantity electricity imported by the Project WTGs connected to the feeder i from the grid during the year y, $EG_{JMR, NSL, import,y}$ (MWh)**	
Means of verification	**Criteria/Requirements**	**Assessment/Observation**
	Measuring /Reading /Recording frequency	The parameter is calculated from measured parameter as (a) Monthly Import

			Readings of Wind Farm (JMR Reading) and (b) Summation of Controller Reading of project WTGs and non-project WTGs. The parameter is reported monthly in the credit note, which is prepared for each project developer separately.
		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 registered PD/01/ and monitoring methodology/09/.
		Monitoring equipment	No monitoring equipment is used as this parameter is calculated. However, the input values used to calculate the value of this parameter are continuously monitored, hourly measured and monthly recorded. The WTGs belongs to project activity are connected to different feeders and each feeder have exclusive dedicated metering arrangement at project site. Also, the WTGs of other project (non-project activity) are also connected to these feeders. The electricity generated by all the WTGs (project and non-project) is been fed to the Indian grid and monthly

			generation of all the WTGs at each feeder reading is recorded by the representatives MSEDCL in the presence of O&M contractor officials in the form of JMR. Based on the data recorded in the JMRs and generation recorded through controller meter at individual WTG, electricity supplied to the grid by the project activity is calculated by MSEDCL, using the apportioning procedure and credit note for each project developer is prepared.
		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 to measure the input values used to calculate ($EG_{JMR, NSL, import,y}$) is 0.2s, which is as per the registered PD/01/ which is as per the norm defined in the PPA/13/.
		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 annual.
		Is the calibration interval in	Yes. The calibration

		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?	frequency is in line with the monitoring plan as outlined in the registered PD/01/.
		Is the calibration of measuring equipment carried out by an accredited person or institution?	Yes the calibration is conducted by state utility which is NABL Accredited entity/06/.
		Is(are) calibration(s) valid for the whole reporting period?	There is no delay in Calibration of meters during the current monitoring period. (please refer discussion under heading "calibration of meters" in this section of this report for further details).
		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 $EG_{JMR,NSL,import,y}$ for entire monitoring period is reported in the monitoring report, however monthly values are reported in the ER calculation sheet/05/. The monthly values were verified from the credit notes/08/ issued by state utility and found to be consistent. Value of this parameter for the current monitoring

		period was verified as 39MWh.
	If applicable, has the reported data been cross-checked with other available data?	The monthly reported values of $EG_{JMR, NSL, import,y}$ were further cross checked with the monthly invoices raised by the PP /07/ to state utility and 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.
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	No such issues.
Findings	CAR #2 and CAR #3 was raised and resolved	
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan. The emission reduction calculation for the project activity is estimated based on the electricity supplied by the WTGs. Since 100% data was verified, the team can ascertain that the values taken for emission reduction calculation are free from material errors.	

Parameter	**Quantity electricity generated by the project activity WTGs recorded at respective controller meters, $EG_{Controller, gen}$ (MWh)**

Means of verification	
	Criteria/Requirements / **Assessment/Observation**
	Measuring /Reading /Recording frequency / The parameter is continuously measure, recorded hourly and reported monthly in line with the registered monitoring plan.
	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 registered PD/01/ and monitoring methodology/09/.
	Monitoring equipment / This parameter is measured through LCS meter (controller panel meter) integrated with WTG and monitored via online monitoring system (SCADA).
	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? / Not applicable
	Is the accuracy valid for the entire measuring range or do different accuracy levels apply to different measuring ranges? / Not applicable

	Calibration frequency /interval:	Not applicable
	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?	Not applicable
	Is the calibration of measuring equipment carried out by an accredited person or institution?	It is not possible to calibrate controller because it is integral part of WTG cannot be removed during operation. Same has been confirmed through interview of site personnel during site visit.
	Is(are) calibration(s) valid for the whole reporting period?	Not applicable
	Is the calibration carried out for a measuring range comparable with the range for which measurements have been carried out?	The LCS meter at each WTG is a microprocessor based multi-function relay (MFR) which is highly accurate, and it monitors the electricity generated by each WTG. The relay runs software to sample inputs and numerically processes the information. It is therefore highly unlikely for this relay to wrongly read/record data. The data is generated and recorded in the SCADA system automatically. The O&M contractor, based on recorded data in the SCADA system, prepares the daily generation reports. These daily generation reports are used to prepare monthly generation reports. The monitoring procedures were sufficiently

		robust to enable accurate transmission of data.
	How were the values in the monitoring report verified?	Cumulative value of $\sum EG_{Controller,j}$ for entire monitoring period is reported in the monitoring report, however monthly values are reported in the ER calculation sheet. The monthly values were verified from the monthly generation reports/19/ issued by state utility and found to be consistent. Value of this parameter for the current monitoring period is 80,689 MWh.
	If applicable, has the reported data been cross-checked with other available data?	Not applicable, as the generation recorded at the LCS meter is cross verified by the energy calculated by inverting system installed in the WTGs.
	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.
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	No such issues.
Findings	CAR #2 and CAR #3 was raised and resolved	
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods	

	and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan. The emission reduction calculation for the project activity is estimated based on the electricity supplied by the WTGs. Since 100% data was verified, the team can ascertain that the values taken for emission reduction calculation are free from material errors.

Parameters fixed ex ante:

$EF_{grid,OM,simple}$; tCO_2e/MWh: It is the operating margin emission factor of NEWNE grid fixed at the time of project registration the mentioned value of 0.9857 tCO2e/MWh is consistent with the registered PD/01/.
$EF_{grid,BM,y}$; tCO_2e/MWh: It is build margin emission factor of NEWNE grid fixed at the time of project registration the mentioned value of 0.9495 tCO2e/MWh is consistent with the registered PD/01/.
$EF_{grid,CM,y}$; tCO_2e/MWh: it is the combined margin emission factor of NEWNE grid fixed at the time of project registration the mentioned value of 0.9767 tCO2e/MWh is consistent with the registered PD/01/.

Calibration of meters:

During the verification assessment of the project activity, accuracy of all the metering have been checked and found appropriate. The installation and working conditions of the meters were checked during the on-site inspection and were found to be satisfactory. Details of meters are provided in below table:

WTG Ref No	Feeder No	Meter Details	Date of Calibration	Due Date
NSL-1 NSL-2 NSL-3 NSL-6 NSL-7 NSL-10 NSL-11 NSL-12 NSL-13 NSL-14 NSL-15	F-02	Main Meter: Make: Elster, S.No:13277651 Class: 0.2s Check Meter: Make: Elster, S.No: 13277650 Class: 0.2s	21/08/2018	21/08/2021
NSL-20 NSL-22 NSL-17 NSL-23 NSL-26 NSL-34 NSL-36 NSL-37	F-01	Main Meter: Make: Elster, S.No:13277649 Class: 0.2s Check Meter: Make: Elster, S.No:02814525 Class: 0.2s	21/08/2018	21/08/2021
NSL-28	F-05	Main Meter: Make: Elster, S.No:13277639 Class: 0.2s Check Meter:	06/10/2018	06/10/2021

		Make: Elster, S.No:13277640 Class: 0.2s		

Meters used to measure the parameters are of accuracy class 0.2s, as verified through calibration certificates/06/ and also physical inspection during the site visit. The CEA Notification No. 502/70/CEA/DP&D dated 17/03/2006 and its amendments Notified on 26/06/2010 No. 502/6/2009/DP&D/D-I /15/ which is considered as national standard, mentions that for voltage of 650 V up to 33 kV, 0.5s accuracy class or above is recommended. Hence, the accuracy classes of 0.2s for the energy meters installed at the project activity site are found to be appropriate.

The details of monitoring equipment are involved in the project activity and their calibration details/06/ are mentioned in the table under Annexure-1 of the VCS MR/04/. The monitoring equipment for each feeder consists of a main and check meter at 132/33 kV DISCOM substation. The meters have been physically inspected during the site visit and the meter details are found to be consistent with that observed during the site visit. The CEA Notification No. 502/70/CEA/DP&D dated 17/03/2006/15/ which is considered as national standard mentions that "All interface meters shall be tested at least once in five years." Hence, the stipulated calibration frequency once in 3 years is appropriate.

Assessment on delay in calibration:

There is no delay in meter calibration as the meter calibration frequency is "Once in three years" and as the meter calibration during the current monitoring period has happened in 2018, as provided above. Hence, the due date for meter calibration is in 2021 which is outside the monitoring period.

The verification team has physically checked all the meters during the site and confirmed that the meters were working satisfactorily. Also, the calibration of meters is completely under preview of state utility and PP has no control over the same as confirmed through interviews of site personnel and PPA signed by the PP with state utility/12/.

The registered VCS PD/01/ & MR /04/ and site visit observations confirm that the metering equipment are sealed and maintained by the state utility.

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 and leakage emissions for such project activities is considered zero). The formula provided for the calculation of baseline emissions is:

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

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 (CM) Emission Factor of NEWNE (tCO_2e/MWh)

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

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

Where,

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

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

Thus, BE_y =80,123* 0.9767 tCO_2/MWh

= 78,256 tCO_2 (Rounded down value)

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. 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. The actual emission reduction achieved during the current monitoring period are 23.44% greater than the estimated amount of emission reductions at the time of validation, which is due to the high PLF achieved by the project activity during the monitoring period. It is to be noted that PLF is completely governed by the availability of wind, which is natural phenomenon and same is beyond the control of PP. Furthermore, the assessment team checked the registered PD and verified that in the sensitivity analysis, increase in PLF is well within the sensitivity analysis margin of 10% assumed in the financial calculation and does not have any impact on additionality; hence the assessment team has concluded the increase in emission reduction of the project activity is justified and acceptable.

All the data were made available and have monitored as per required monitoring frequency. The means of verification for the values of parameters, used for baseline emission calculation, is described above.

4.6 Non-Permanence Risk Analysis

Not applicable for the project activity.

5. VERIFICATION CONCLUSION

Earthood Services Private Limited (ESPL), contracted by NSL Wind Power Company (Satara) Private Limited, has performed the independent verification of the emission reductions for the VCS project activity (VCS ID- 1519) “Satara Wind Power Project in Maharashtra, India” in India for the monitoring period 01/09/2018 - 31/10/2019as reported in the Monitoring Report Version 02 dated 24/12/2019. The NSL Wind Power Company (Satara) Private Limited is responsible for the collection of data in accordance with the monitoring plan and the reporting of GHG emissions reductions from the project activity.

It is our responsibility to express an independent verification statement on the reported GHG emission reductions from the project activity

ESPL commenced the verification on the basis of the baseline and monitoring methodology ACM0002 Version 16, the monitoring plan contained in the registered VCS PD Version 03, dated 24/12/2019 and VCS guidelines version 4, Monitoring Report Version 02 dated 24/12/2019 as per the process described under Section 2 of this report.

ESPL 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. ESPL planned and performed the

verification by obtaining evidence and other information and explanations that ESPL considered necessary to give reasonable assurance that reported GHG emission reductions are fairly stated.

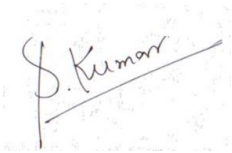
In our opinion the GHG emissions reductions reported for the project activity for the period 01/09/2018 - 31/10/2019 are fairly stated in the Monitoring Report Version 02 dated 24/12/2019. The GHG emission reductions were calculated correctly on the basis of the approved baseline and monitoring methodology ACM0002, Version 16, and the VCS standard.

Verification period: From01/09/2018 - 31/10/2019 (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)
Vintage 2018 *(01/09/2018 to 31/12/2018)*	11,591	0	0	11,591
Vintage 2019 *(01/01/2019 to 31/12/2019)*	66,665	0	0	66,665
Total	**78,256**	**0**	**0**	**78,256**

Approved by



Sanjeev Kumar

Director **Date: 10/01/2020**

Earthood Services Privated Limited **Place: Gurgaon**

APPENDIX 1: REFERENCES

S.No	Title of Document	Version	Date
1.	Registered VCS PD	03	08/02/2016
2.	VCS Validation Report	1.0	10/02/2016
2.1	VCS Verification Report (Third monitoring period: 01/09/2018 to 31/10/2019)	02	14/11/2018
3.	VCS Monitoring Report	1	28/09/2018
4.	VCS Monitoring Report (Final)	02	24/12/2019
5.	ER spread sheet (corresponding to the final monitoring report)	02	24/12/2019
6	Certificates of Calibration for all the meters belongs to project activity	-	-
7.	Invoice issued by PP to state DISCOM	For the period 01/09/2018 to 31/10/2019	-
8.	Monthly JMR and Credit notes issued by MSEDCL for the current verification period.	For the period 01/09/2018 to 31/10/2019	-
9.	"Consolidated baseline methodology for grid-connected electricity generation from renewable sources", ACM0002	16.0	-
10.	CEA Database	version 10	-
11.	Commissioning certificate for all the WTGs of the project activity issued by state electricity authority	-	Commissioned from 09/07/2013 to 06/03/2014
12.	Power Purchase Agreements signed between Project Proponent and state electricity authority	For 7.5 +12 MW	Dated 06/05/2014
		For 10.5 MW	Dated 13/08/2014
13.	VCS webpage for the project, VCS ID 1519; http://www.vcsprojectdatabase.org/#/project_details/1519	-	Last accessed on 20/12/2017
14.	Letter of declaration dated from PP regarding not having created or sought any other form of environmental credit for the same period	-	-
15.	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	-	dated 17/03/2006

S.No	Title of Document	Version	Date
16.	VCS Standard	Version 4	19/09/2019
17.	VCS Program Guide	Version 4	19/09/2019
17.1	CDM VVS for project activities	Version 02.0	-
18.	On site assessment –interviews of staff personnel, photographs, physical inspection of monitoring system	-	30/11/2019
19.	Monthly generation reports issued by O&M contractor	For the period 01/09/2018 to 31/10/2019	-

APPENDIX 2: 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 3: ABBREVIATIONS

ABT	Availability Based Tariff
BEF	Baseline Emission Factor
BM	Build Margin
CAR	Corrective Action Request
CEA	Central Electricity Authority
CERC	Central Electricity Regulatory Commission
CL	Clarification Request
CMS	Central Monitoring System
CMP	Conference of Parties Serving as Meeting of Parties
CO2	Carbon dioxide
DISCOM	Distribution Company
EB	Executive Board
EPC	Engineering, Procurement and Construction
FAR	Forward Action Request
GHG	Green House Gas
ISO	International Standards Organization
JMR	Joint Meter Reading
kW	Kilowatt
kWh	Kilowatt hour
MEDA	Maharashtra Energy Development Agency
MFR	Multi-Function Relay
MR	Monitoring Report
MSEDCL	Maharashtra State Electricity Distribution Company Limited

MW	Megawatt
MWh	Megawatt-hour
NEWNE	Northern Eastern Western Northern-Eastern
O&M	Operation and Maintenance
PD	Project Description
PLF	Plant Load Factor
PP	Project Proponent
PPA	Power Purchase Agreement
QA/QC	Quality Assurance and Quality Control
TOD	Time of the Day
UNFCCC	United Nations Framework Convention on Climate Change
WEC	Wind Energy Convertor
WEG	Wind Energy Generator
WTG	Wind Turbine Generator
VCS	Voluntary Carbon Standard
VCSA	Voluntary Carbon Standard Association
VCS PD	VCS Project Description
VCUs	Voluntary Carbon Units

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

CL ID	1	Section no.	MR	Date :10/12/2019
Description of CL				
Please submit the monthly power statements and other supporting documents for the current MP.				
Project participant response				Date :26/12/2019
PP is hereby submitting all the monthly power sale statements and other supporting documents for the current monitoring period.				
Documentation provided by project participant				
✓ Monthly JMR copies ✓ Copies of the Invoices				
DOE assessment				Date: 06/01/2020
Assessment team confirm that PP has submitted monthly JMR and Invoices for current monitoring period which is inline with requirements. Hence acceptable. CL#1 Closed				

CL ID	2	Section no.	MR	Date :10/12/2019
Description of CL				
Pls provide the declaration pertaining to the section 1.10 of the VCS MR.				
Project participant response				Date :26/12/2019
PP is hereby submitting the declaration confirming that Project has not been applied under any other GHG or any related programs. Also, the project has not sought or received another form of GHG-related environmental credit, including renewable energy certificates, during this monitoring period.				
Documentation provided by project participant				
Declaration pertaining to section 1.10				
DOE assessment				Date: 06/01/2020
Assessment team confirm that PP has submitted declaration pertaining that Project has not been applied under any other GHG or any related programs. Also, the project has not sought or received another form of GHG-related environmental credit, including renewable energy certificates, during this monitoring period. Hence accepted CL#2 Closed				

Table 3.CAR from this validation

CAR ID	01	Section no.	MR	Date :10/12/2019
Description of CAR				

PP is requested to correct the ER values in the MR as the value reported under the MR does not match with the ER sheet submitted.	
Project participant response	**Date :26/12/2019**
PP has revised the MR respective sections to correctly report the Emission Reduction values consistent with the ER sheet. Also, the input values of the monitoring parameters are corrected in line with the final ER sheet.	
Documentation provided by project participant	
MR Version 02, 24 Dec 2019 ER Version 02, 24 Dec 2019	
DOE assessment	**Date: 06/01/2020**
Assessment team confirm that PP has updated ER value in revised MR, now it's matching with ER sheet. Hence acceptable CAR#1 Closed.	

CAR ID	02	**Section no.**	MR	**Date :10/12/2019**
Description of CAR				
Values of the monitoring parameters included under the section 4.2 and 5.1 are not consistent with the ER sheet.				
Project participant response				**Date :26/12/2019**
PP has revised MR Section 4.2 and 5.1 to report the ER values consistently with the ER sheet.				
Documentation provided by project participant				
DOE assessment				**Date: 06/01/2020**
Assessment team confirm that PP has updated monitoring parameter value iin revised MR, now it's matching with ER sheet. Hence acceptable CAR#2 Closed.				

CAR ID	03	**Section no.**	MR	**Date :10/12/2019**
Description of CAR				
Please submit the latest Calibration Certificates and also update the Appendix 1 of the MR in line with the latest dates of calibration for all the meters.				
Project participant response				**Date :26/12/2019**
PP would like to clarify that as per registered PD the meter calibration frequency specified is "once in three years". As per the meter calibration details all the energy meters were calibrated in the year 2018, hence their next calibration due date is outside the monitoring period i.e. due in 2021. PP has demonstrated the same in Appendix 1 of the MR.				
Documentation provided by project participant				
MR Version 02, 24 Dec 2019				
DOE assessment				**Date: 06/01/2020**
Assessment team confirm that PP has included latest Calibration Certificates details in Appendix 1 of the revised MR. Hence acceptable CAR#3 Closed.				

Table 4. FAR from this validation

FAR ID		**Section No.**	MR	**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	