



**Verified Carbon  
Standard**

**BUNDLED WIND POWER GENERATION  
PROJECT BY SAVITA OIL TECHNOLOGIES  
LTD, INDIA**



Document Prepared By

**LGAI Technological Center S.A.** (Applus+ Certification)

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### Summary:

**Verification purpose:** LGAI Technological Center S.A. (Applus+ Certification) (Hereafter referred as Applus+ Certification) has been appointed/2/ by “Savita Oil Technologies Limited” to perform the 2<sup>nd</sup> periodic verification of the “Bundled Wind Power generation project by Savita Oil Technologies Ltd., India”. The main purpose of this verification activity is to have an independent third party for the assessment of the project design, monitoring report to ensure a thorough assessment of the proposed project activity against the applicable CDM and VCS requirements.

The total installed capacity of the project is 8.25 MW; which involves operation of 3 nos. of 1.25 MW Wind Turbine Generators (WTGs) in Sadawaghapur site in Satara district of Maharashtra and 3 nos. of 1.5 MW Wind Turbine Generators (WTGs) at Thadichery & Koduvilarpatti site in Theni district of Tamil Nadu.

The project is registered with VCS with Project ID 891<sup>1</sup>. Start date of the project activity is the 18-March-2010. The monitoring period for this VCS verification is chosen from 01-January-2012 to 31-December-2017 (including both days) and the project activity achieved 88,358 tCO<sub>2e</sub> emission reductions during this monitoring period.

The scope of the verification is the independent and objective review of the Monitoring Report (MR). The MR is reviewed against the relevant criteria (see above) and decisions by the CDM Executive Board and VCS executive board, including the approved baseline and monitoring methodology. The verification was based on the guidance given in the CDM validation and verification standard for project activities, Version 03.0, review against registered PD/5/ and Final Validation report/6 and VCS program guideline version 4.1/9/ and standard version 4.2/9/.

A risk-based approach has been followed to perform this verification activity. In the course of verification, 06 Corrective Action request (CAR) and 00 Clarification Requests (CLs) were raised and successfully closed. No FAR was raised during this verification. The review of the monitoring report and additional documents related to baseline and monitoring methodology; the subsequent background

<sup>1</sup> <https://registry.verra.org/app/projectDetail/VCS/891>

investigation, follow-up interviews and PP have provided LGAI Technological Center S.A. (Applus+ Certification) with sufficient evidence to verify the fulfilment of the stated criteria of VCS.

The assessment team has employed a risk-based approach to assess the completeness and accuracy of the claims and conservativeness of the assumptions in the MR. The main focus of the assessment team is to identify the significant risks for the project implementation and the generation of VERs. The verification is not meant to provide any consulting towards the project participants. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the monitoring report combined.

The only purpose of the verification is its usage during the issuance process as part of the VCS project cycle. Therefore, LGAI Technological Center S.A. (Applus+ Certification) can't be held liable by any party for decisions made or not made based on the verification opinion, which will go beyond that purpose.

The verification has been planned and organized to achieve a Reasonable Level of assurance as per the requirement of VCS. No sampling procedure applied for document verifications. The entire documents checked/WTGs verification conducted to arrive at positive verification conclusions.

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# 1 INTRODUCTION

## 1.1 Objective

LGAI Technological Center S.A. (Applus+ Certification) (Hereafter referred as Applus+ Certification) has been appointed by “Savita Oil Technologies Limited” to perform the 2<sup>nd</sup> periodic verification of the “Bundled Wind Power generation project by Savita Oil Technologies Ltd., India” under VCS standard version 4.2/9/ and guideline version 4.1/9/. The objective of this verification activity is to have an independent third party for the assessment of the project design, Monitoring Report and Final Verification report and to ensure a thorough assessment of the proposed project activity against the applicable CDM and VCS requirements. In particular;

- the project's baseline is assessed against “AMS-I.D.- Version 16.0” /9/
- the project’s monitoring plan is assessed against “AMS-I.D.- Version 16.0” /9/
- 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 4.1 /9/ and standard version 4.2/9/
- CDM validation and verification standard for project activities, Version 03.0/9/
- VCS standard v4.2/9/
- VCS program guideline v4.1/9/

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 Unit (VCUs).

## 1.2 Scope and Criteria

The scope is defined as an independent and objective review of the Monitoring report (MR) prepared as per the registered PD and registered approved methodology AMS-I.D.- Version 16.0. The MR is reviewed against the criteria stated in Article 12 of the Kyoto Protocol, the CDM modalities and procedures as agreed in the Marrakech Accords and the relevant decisions by the CDM Executive Board and VCS standard version 4.2/9/ and guideline version 4.1/9/, including the approved baseline and monitoring methodology AMS-I.D.- Version 16.0. The verification was based on the requirements in the CDM validation and verification standard for project activities, Version 03.0 and VCS program guideline version 4.1/9/ and standard version 4.2/9/

The verification is not meant to provide any consulting towards the project participants. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the Monitoring report. In line with Guidelines for Application of materiality in verifications, the verification team has conducted a complete verification of all the information presented in the monitoring report

and data monitored as presented in the emission reduction calculation spread sheet. It follows the paper trail back to the raw data such as meter reading records and invoices. There are no material errors, overestimation of ER, omission or misstatement. The verification team has reviewed all the documents like commissioning certificates/1/, technical specification, O&M practices, JMR, invoices, training records, grievance registers etc.

### 1.3 Level of Assurance

Applus+ Certification has planned and performed the verification by obtaining evidence and other information and explanations that assessment team considers necessary to give reasonable assurance that reported estimated GHG emission reductions are fairly stated. No sampling procedure applied for site visit or document verifications. The entire documents checked/Power plant verification conducted to arrive at positive verification conclusions.

In our opinion, the estimated GHG emissions reductions were calculated correctly on the basis of the approved baseline and monitoring methodology “AMS-I.D.- Version 16.0/9/ and the VCS standard v4.2 /9/.

### 1.4 Summary Description of the Project

The purpose of the project activity is to generate energy electricity by the utilization of wind velocity and further selling the generated energy to the respective Grid. In this process there is no consumption of any fossil fuel and hence it does not lead to any greenhouse gas emissions. Thus, electricity would be generated through sustainable means without causing any negative impact on the environment.

The total installed capacity of the project is 8.25 MW; which involves operation of 3 nos. Wind Turbine Generators (WTGs) with capacity of 1.25 MW each located at Maharashtra state and 3 nos. Wind Turbine Generators (WTGs) with capacity of 1.5 MW each located at Tamil Nadu state of India and the project is promoted by M/s Savita Oil Technologies Limited.

The technology employed, converts wind energy to electrical energy. In wind power generation, energy of wind is converted into mechanical energy and subsequently into electrical energy. Wind power generation technology is environment friendly technology since there are no GHG emissions associated with the electricity generation.

The project is registered with VCS with Project ID 891. Start date of the project activity is the 18-March-2010. The monitoring period of this VCS verification covered from 01-January-2012 to 31-December-2017 (inclusive of both dates) and the project activity is achieved 88,358 tCO<sub>2</sub>e emission reductions during this monitoring period.

The commissioning details of the WTGs were verified from the Commissioning certificates/1/provided by the PP. The WTGs used in this project are of Suzlon make at Maharashtra state of India and Regen make WTG at Tamil Nadu state of India . Technical description was found to be consistent with the on-site observation and registered VCS PD/5/.

## 2 VERIFICATION PROCESS

### 2.1 Method and Criteria

**Verification Process:** The project assessment is based on the “CDM validation and verification standard for project activities, Version 03.0 and “VCS standard version 4.2/9/ and program guideline version 4.1/9/” and is conducted using standard auditing techniques to assess the correctness of the information provided by the project participants. Before the assessment begins, members of the team covering the technical scope(s), sectoral scope(s), and relevant host country experience for evaluating the VCS project activity are appointed.

Once the project is received by the assessment team, the members of the assessment team carried out: -

1. A desk review of the Monitoring report against the registered PD/5/ and final validation report/6/;
2. Site visit;
3. The resolution of outstanding issues and the issuance of the final verification report and opinion.

The prepared verification report and other supporting documents then undergo an internal quality control at the HQ (Accredited office) before being submitted to the VCS executive board.

In order to ensure transparency, assumptions must be clear and stated explicitly and background material must also be referenced. Applus+ Certification has developed a specific checklist customized for the project. The checklist demonstrates, in a transparent manner, the project criteria (requirements), discussion on each criterion by the assessment team, and the results from validating the identified criteria.

#### **Appointment of the assessment team**

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	Role	SS Coverage	TA Coverage	Financial aspect	Host country experience
Dr. Atul Takarkhede	LA/TE	YES	YES	NA	YES
Mr. Simon Shen	TR	YES	YES	NA	NA

The detail regarding the assessment team is provided below in this report as Appendix 3

### **Document review**

The Monitoring report version 01 submitted by the PP was reviewed against the approved methodology, registered PD, final validation report and other relevant criteria to verify the correctness, credibility, and interpretation of the presented information. Furthermore, a cross-check between information provided and information from other sources has been done. A complete list of all documents and evidence material reviewed is included in this report below in Appendix 1.

### **Site visit**

A Site visit is conducted by Applus+ Certification. Audit team performed interviews with project stakeholders to confirm selected information provided in initial monitoring report and to resolve issues identified in the document review. The detail is provided in this report.

### **Resolution of Clarification and Corrective Action Request**

The objective of this phase of the Verification was to resolve the requests for corrective actions and clarification and any other outstanding issues which need to be clarified for Applus+ Certification positive conclusion on the Monitoring report. The Corrective Action Requests and Clarification Requests raised by Applus+ Certification were resolved during communications between the Client and Applus+ Certification to guarantee the transparency of the verification process, the concerns raised and responses given are summarized below in the Appendix 2.

The final MR Version 02 submitted by PP serves as the basis for the final assessment presented. Additional changes to the project during the verification process are not considered to be significant with respect to the main CDM/VCS objectives. The two CDM/VCS main objectives are the reduction of anthropogenic GHG emissions and the contribution of sustainable development to the host country.

### **Internal quality control**

As final step of a verification of the final documentation including the verification report and the checklist have to undergo an internal quality control by the technical review committee, i.e., each report has to be finally approved either by the head of the technical review committee or the deputy. In case one of these two persons is part of the assessment team approval can only be given by the other one to avoid any conflict of Interest.

After confirmation of the PP the positive verification opinion and relevant documents are submitted to

the VCS board through the VCS web-platform.

## 2.2 Document Review

The details of the document observed during the verification process are listed below in Appendix 1 of this report

## 2.3 Interviews

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Sinha	Mr. Neelay	Site In charge, Maharashtra Site	06-January-2022 to 07-January-2022	Project Implementation, JMR & invoicing procedure, grievance mechanism Management practices, data storage, QA/QC	Dr. Atul Takarkhede
2.	Krishna Anantha	Mr. Sai	Site In charge, Tamil Nadu Site		Project Implementation, JMR & invoicing procedure, calibration, grievance mechanism Management practices, data storage, QA/QC	
3.	Mukherjee	Mr. Priyanka	EKI Energy Services Limited		GHG calculations, MR and ER preparation	

## 2.4 Site Inspections

Duration of Site visit: 06-January-2022 to 07-January-2022				
No.	Activity performed on-site	Site location	Date	Team member
1.	<p>Assessment team checked the implementation of the project, Baseline emission, Emission reduction calculation, technical description of the project and Monitoring.</p> <p>Assessment team also checked that whether the monitoring plan as described in the VCS PD is actually practised onsite. Also, assessment team checked any change in host country criteria which may affect the baseline of the project activity.</p>	<p>Satara district, State Maharashtra India</p> <p>Theni district, State-Tamil Nadu. India</p>	<p>06-January-2022</p> <p>07-January-2022</p>	Dr. Atul Takarkhede

## 2.5 Resolution of Findings

The objective of this phase of the Verification was to resolve the requests for corrective actions and clarification and any other outstanding issues from validation which need to be clarified for Applus+ Certification's positive conclusion on the Monitoring report. The Corrective Action Requests and Clarification Requests raised by Applus+ Certification were resolved during communications between the Client and Applus+ Certification to guarantee the transparency of the verification process, the concerns raised and responses given are summarized below in the appendix 2.

The final MR submitted by PP serves as the basis for the final assessment presented. Additional changes to the project during the verification process are not considered to be significant with respect to the main CDM/VCS objectives. The two CDM/VCS main objectives are the reduction of anthropogenic GHG emissions and the contribution of sustainable development to the host country.

Areas of validation and verification findings	No. of CL	No. of CAR	No. of FAR
Project design document and Monitoring report	00	00	00
Description of project activity	00	03	00
Application of selected baseline and monitoring methodology and selected standardized baseline			
Applicability of methodology and standardized baseline	00	00	00
Deviation from methodology	00	00	00
Clarification on applicability of methodology, tool and/or standardized baseline	00	00	00
Project boundary	00	00	00
Establishment and description of baseline scenario	00	00	00
Demonstration of additionality	00	00	00
Emission reductions	00	01	00
Calibration details	00	01	00
Monitoring plan	00	00	00
No Net harm assessment	00	00	00
Local stakeholder consultation	00	01	00
Others (please specify)	00	00	00
<b>Total</b>	<b>00</b>	<b>06</b>	<b>00</b>

The list of findings and the resolution is presented in Appendix 2 of this report.

### 2.5.1 Forward Action Requests

This is 2<sup>nd</sup> periodic verification of the project activity and no FAR raised from validation & previous VCS verifications and nor during current verification. Please refer Appendix 2 of this report for details.

## 2.6 Eligibility for Validation Activities

This section is not applicable for present verification, as Applus+ Certification holds the accreditation for Validation of projects for this Sectoral Scope.

## 3 VALIDATION FINDINGS

### 3.1 Participation under Other GHG Programs

The project is not registered or seeking registration under any other GHG programs except CDM with reference no. 5485<sup>2</sup>. However, PP has not claimed any benefits from CDM for the current monitoring period. Declaration/15/ regarding “no double counting” for the same, PP has submitted to assessment team. Thus, accepted by assessment team.

### 3.2 Methodology Deviations

PP has not requested any methodological deviation. Thus, this section is not applicable for present verification.

### 3.3 Project Description Deviations

PP has requested change in contact details of the project proponent as a project description deviation. Updated contact details have been mentioned section 1.3 and 1.4 of final monitoring report. During review, assessment team reviewed the same and found that changes do not affect project design, applicability of methodology, baseline scenario and additionality of project activity. Thus, after deviation in project description, project activity still remains under compliance with VCS standard and guidelines. hence accepted by VVB.

### 3.4 Grouped Project

The project is not a grouped project. Thus, this section is not applicable.

## 4 VERIFICATION FINDINGS

### 4.1 Project Implementation Status

The project activity, “Bundled Wind Power generation project by Savita Oil Technologies Ltd., India” is registered as a VCS project (VCS Ref No. 891) applying the methodology AMS-I.D.- Version 16.0. The WTGs of the project activity are owned by the Project Proponent, i.e., Savita Oil Technologies Limited, which was verified from Commissioning certificate/1/ and the PPA/4/ for the project activity.

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<sup>2</sup> <https://cdm.unfccc.int/Projects/DB/LROA%20Ltd1323423959.3/view>

The total installed capacity of the project is 8.25 MW; which involves operation of 3 nos. 1.25 MW Wind Turbine Generators (WTGs) in Sadawaghapur site in Satara district of Maharashtra and 3 nos. 1.5 MW Wind Turbine Generators (WTGs) at Thadichery & Koduvilarpatti site in Theni district of Tamil Nadu.

The technical parameters have been verified with the nameplates as well as the technical specifications of WTGs.

Project location is confirmed by the assessment team during the site visit. Assessment team also checked with the GPS meter regarding the latitude and longitude of the project site and confirm that the details as mentioned in the registered PD are correct. The detail is as below:

Sr. No.	Location No.	Village	State	Latitude (D° M' Sec")	Longitude (D° M' Sec")	Commissioning Dates
1.	S-40	Sadawaghapur	Patan Taluka, Satara District, Maharashtra State	17° 24' 00"	73° 56' 18"	30-March-2010
2.	S-63	Sadawaghapur		17° 25' 16.8"	73° 55' 33.6"	
3.	S-64	Sadawaghapur		17° 25' 22.8"	73° 55' 40.2"	
4.	T-45	Thadichery & Koduvilarpatti	Theni District, Tamil Nadu State	9° 56' 38.06"	73° 56' 18"	18-March -2010
5.	T-46	Thadichery & Koduvilarpatti		9° 56' 44.20"	77° 27' 37.70"	
6.	T-75	Thadichery & Koduvilarpatti		9° 56' 42.78"	73° 29' 39"	29-March -2010

Assessment team checked the Commissioning certificates/1/and confirmed that the dates of Commissioning for each WTG are correct.

The assessment team confirmed that there is no proposed or actual change to the project design during this monitoring period except to the changes in contact details of PPs.

All required equipment and procedures are available and implemented in an appropriate manner.

It was observed that the monitoring plan was implemented as per the requirement of the registered PD, FVR and approved methodology AMS-I.D.- Version 16.0. The organisational role and responsibility as mentioned in the registered PD is followed onsite. All the monitoring equipment was calibrated as per the specified interval in the registered PD. All the emergency preparedness as mentioned in the registered PD is followed onsite and no discrepancies were found regarding the same.

The project activity fulfilled the contribution of sustainable development to the host country by implementing environmental friendly technology and creating employment opportunities to the local community. Same is confirmed during site visit. Further, PP have provided SDG contributions in the section 1.11 of the MR however, VVB has not assessed SDG 8 for which PP have not submitted

supporting documents. Moreover, demonstration of SDG contribution is applicable from 20-January-2025<sup>3</sup>.

By comparing the actual ER claimed in this monitoring period (2192 days) with the estimate in the registered VCS PD/5/ (91,692 tCO<sub>2</sub>e for the monitoring period), the actual emission reductions (88,358 tCO<sub>2</sub>e for the monitoring period) are lower than by 4% what is stated in the registered VCS PD/5/ which surely will not lead to the overestimation of VERs. The lower emissions achieved are due to the lower PLF achieved during this monitoring period.

It was also observed during the verification process that project is not rejected by any other GHG program around the world. Declarations dated 1-January-2022 in that effect is also provided by PP.

The project is registered by VCS board and the registered PD and registered FVR is used to assess the present periodic verification. The following web sites were checked to confirm the same:

1. <https://registry.verra.org/app/projectDetail/VCS/891>

Assessment team hereby also confirms from the declaration made by PP the projects are not registered under the any other scheme except CDM<sup>4</sup>, Other environmental or GHG credits (i.e., GS4GG, GCC etc.) & REC mechanism of India and the same is cross-checked at <https://recregistryindia.nic.in>. Moreover, as per state tariff policy the project is not eligible to receive REC benefits as it is selling power to State electricity grid.

The assessment team observed that the project is in line with the registered PD, FVR and approved methodology and thus no clarification/deviation is sought.

CAR 01 & CAR 02 and CAR 03 was raised during the verification process and closed successfully. Please refer Appendix 2 of this report for the detail closure of the CAR.

## 4.2 Safeguards

### 4.2.1 No Net Harm

No potential environment or socio-economic matter was found during the documents review of VCS PD/5/ and grievance register etc. The project is renewable energy project and thus no negative impact observed due to project activity.

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. The report on “Developmental Impacts and Sustainable Governance Aspects of Renewable Energy Projects” prepared by MNRE dated September 2013<sup>5</sup>. This report clearly mentioned that

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<sup>3</sup> <https://verra.org/wp-content/uploads/2022/01/VCS-Summary-of-Effective-Dates-2022-Q1.pdf>

<sup>4</sup> <https://cdm.unfccc.int/Projects/DB/LRQA%20Ltd1323423959.3/view>

<sup>5</sup> <https://smartnet.niua.org/sites/default/files/resources/report-on-developmental-impacts-of-RE.pdf>

solar/Wind power project activity operations do not result in direct air pollution, noise pollution. Moreover, also as per the Central Pollution Control Board of India notification<sup>6</sup> solar/wind project falls under White Category and are practically non-polluting.

#### 4.2.2 Local Stakeholder Consultation

Local stakeholder consultation has been conducted at the time of project registration. For on-going stakeholder's communication, PP have maintained feedback/complaint register at the site office. All the stakeholders are happy with the implementation and operation of the project activity and no negative comments envisaged for the project activity. Complaint/suggestion/feedback register is maintained at site as a part of ongoing communication with stakeholders in line with clause 3.16.17 of VCS Standard, ver.4.2/9/ and appropriate actions taken time to time by PP.

Assessment team checked the grievance register provided by PP and found that local stakeholders can anytime lodge their grievances if any in the register over the operational life time of the project. However, during current monitoring period no grievance was received.

CAR 04 was raised during the verification process and closed successfully. Please refer Appendix 2 of this report for the detail closure of the CAR.

#### 4.3 AFOLU-Specific Safeguards

This section is not applicable as this project activity is a non-AFOLU project activity.

#### 4.4 Accuracy of GHG Emission Reduction and Removal Calculations

Means of verification	The verification team assessed whether the data and calculations of GHG emission reductions achieved resulting from the VCS PD/5/. The verification team has checked whether calculations of baseline GHG emissions, project GHG emissions and leakage GHG emissions have been carried out in accordance with the formulae and methods described in the monitoring plan of the VCS PD/5/.
Findings	CAR 05 was raised during the verification process and closed successfully. Please refer Appendix 2 of this report for the detail closure of the CAR.
Conclusion	<p><b>Baseline Emissions:</b> The baseline Emissions for a given year is calculated by multiplying the energy baseline with the grid emission factor. The grid in this case would be the 'Indian Grid'</p> <p>As per the registered PD and CDM PDD, Formula Used: -</p> $BE_y = EG_{y,Mah} \times EF_{NEWNE,CM,y} + EG_{y,TN} \times EF_{South,CM,y}$ <p>Where</p> <p><math>BE_y</math> = Basline Emission (tCO<sub>2e</sub>)</p> <p><math>EG_{y,Mah}</math> &amp; <math>EG_{y,TN}</math> = Quantity of net electricity supplied by the WTG in Maharashtra and WTG in Tamil Nadu to the respective</p>

<sup>6</sup> [http://envfor.nic.in/sites/default/files/Latest\\_118\\_Final\\_Directions.pdf](http://envfor.nic.in/sites/default/files/Latest_118_Final_Directions.pdf)

	<p>regional grid as a result of the implementation of the CDM project activity in year y (MWh)</p> <p><math>EF_{NEWNE,CM,y}</math> &amp; <math>EF_{South,CM,y}</math> = Grid Emission Factors (tCO<sub>2</sub>e/MWh)</p> <p><b>Ex-ante Parameters:</b></p> <p><math>EF_{NEWNE,CM,y}</math>, <math>EF_{South,CM,y}</math>, <math>EF_{NEWNE,OM,y}</math>, <math>EF_{South,OM,y}</math>, <math>EF_{NEWNE,BM,y}</math>, <math>EF_{South,BM,y}</math>, <math>W_{om}</math> and <math>W_{BM}</math> were mentioned as ex-ante fixed parameter. Assessment team checked the values, source of data, choice of data, purpose of the data mentioned in the MR from the registered PD and confirms that the similar approach was considered for the current monitoring period also.</p> <p><math>EF_{NEWNE,CM,y}</math> = Parameter is fixed ex-ante for the entire crediting period and as per the validated VCS PD/5/ same is fixed 0.9224 tCO<sub>2</sub>/MWh. Verification team found same was used in the ER calculations.</p> <p><math>EF_{SOUTH,CM,y}</math> = Parameter is fixed ex-ante for the entire crediting period and as per the validated VCS PD/5/ same is fixed 0.9445 tCO<sub>2</sub>/MWh. Verification team found same was used in the ER calculations.</p> <p><math>EF_{NEWNE,OM,y}</math> = Parameter is fixed ex-ante for the entire crediting period and as per the validated VCS PD/5/ same is fixed 1.0049 tCO<sub>2</sub>/MWh. Verification team found same was used in the ER calculations.</p> <p><math>EF_{SOUTH,OM,y}</math> = Parameter is fixed ex-ante for the entire crediting period and as per the validated VCS PD/5/ same is fixed 0.9868 tCO<sub>2</sub>/MWh. Verification team found same was used in the ER calculations.</p> <p><math>EF_{NEWNE,BM,y}</math> = Parameter is fixed ex-ante for the entire crediting period and as per the validated VCS PD/5/ same is fixed 0.6752 tCO<sub>2</sub>/MWh. Verification team found same was used in the ER calculations.</p> <p><math>EF_{SOUTH,BM,y}</math> = Parameter is fixed ex-ante for the entire crediting period and as per the validated VCS PD/5/ same is fixed 0.8179 tCO<sub>2</sub>/MWh. Verification team found same was used in the ER calculations.</p> <p><math>W_{om}</math> = Parameter is fixed ex-ante for the entire crediting period and as per the validated VCS PD/5/ same is fixed 0.75 . Verification team found same was used in the ER calculations.</p> <p><math>W_{BM}</math> = Parameter is fixed ex-ante for the entire crediting period and as per the validated VCS PD/5/ same is fixed 0.25 . Verification team found same was used in the ER calculations.</p> <p><b>Ex-post parameters:</b></p> <p>As per the registered monitoring plan and requirement of the registered methodology following parameters needs to be monitored:</p> <p><math>EG_{y, Mah}</math> = Net electricity exported to grid</p> <p>This parameter is monitored continuous and recorded monthly in electricity generation statement (JMR)/10/ through the energy meters installed at substation. This parameter refers to net difference of total energy exported and imported by the Maharashtra site of project activity. The export and import reading have been taken</p>
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by respective state utility officials in presence of site-in-charge once in a month. The verification team has checked the entire monthly JMR reports/10/ for net electricity generated & supplied to the grid and crosschecked same with the invoices raised by PP towards State Utilities for the monitoring period. All values are found correct. All the parameters are monitored and recorded as per the monitoring plan in the registered VCS PD/5/. The verification team has crosschecked the revised emission reduction sheet and monitoring report data with the JMR sheet/10/ and invoice/13/ and found all the values are matching. During the current monitoring period, the project activity supplied 38,621.35 MWh electricity to the grid.

**$EG_{y,TN}$**  = Net electricity exported to grid

This parameter is monitored continuous and recorded monthly in electricity generation statement (JMR)/10/ through the energy meters installed at substation. This parameter refers to net difference of total energy exported and imported by the Tamil Nadu site of project activity. The export and import reading have been taken by respective state utility officials in presence of site-in-charge once in a month. The verification team has checked the entire monthly JMR reports for net electricity generated & supplied to the grid and crosschecked same with the invoices/13/ raised by PP towards State Utilities for the monitoring period. All values are found correct. All the parameters are monitored and recorded as per the monitoring plan in the registered VCS PD/5/. The first and last date of the monitoring period is not inline with billing period of the project activity, hence, in order to provide actual generation values, PP has applied apportioning in both first and last month of the monitoring period. The verification team has crosschecked the revised emission reduction sheet and monitoring report data with the JMR sheet/10/ and invoice/13/ and found all the values are matching. During the current monitoring period, the project activity supplied 55,832.08 MWh electricity to the grid.

$$\begin{aligned} BE_y &= 38,621.35 \times 0.9224 + 55,832.08 \times 0.9445 \\ &= 88,358 \text{ tCO}_2\text{e (round down values)} \end{aligned}$$

$PE_y$  = As per AMS-I.D.- Version 16.0, all renewable energy power generation project activities, emissions due to the use of fossil fuels for the backup generator can be neglected. As the project activity involved wind project emissions ( $PE_y$ ) are taken as zero.

Leakage: As per applied methodology AMS-I.D.- Version 16.0 and VCS PD/5/ Leakage emissions are not considered for the project activity.

$$\begin{aligned} \text{Hence, } ER_y &= BE_y - PE_y - L_y \\ &= 88,358 - 0 - 0 \\ &= 88,358 \text{ tCO}_2\text{e (round down values)} \end{aligned}$$

Assessment team confirmed that the GHG emission reductions and removals have been quantified correctly in line with the registered VCS PD/5/.

Verification team also confirms that the monitoring has been carried out in accordance with the monitoring plan contained in the registered VCS PD/5/.

## 4.5 Quality of Evidence to Determine GHG Emission Reductions and Removals

<b>Means of verification</b>	The verification team checked the Calibration details of the monitoring meters with the calibration certificates.
<b>Findings</b>	CAR 06 was raised during the verification process and closed successfully. Please refer Appendix 2 of this report for the detail closure of the CAR.
<b>Conclusion</b>	<p>The metering arrangement is tri-vector bi-directional energy meters at the State Electricity Board (SEB) substation of respective project location (Detailed in Appendix 05).</p> <p><b>Maharashtra Site:-</b>                      The energy delivered by the WTG S-40, S-63 and S-64 at Maharashtra site is measured by two set of main meters and check meters is provided at each of the 2 feeders by the project proponent and respective electricity distribution company (MSEDCL). These meters record several parameters including electricity exported &amp; imported. These electricity meters are being used by state electricity board for JMR (Joint Meter Reading) electricity generation statements.                      During commissioning of the WTGs monitoring meters of accuracy class i.e., 0.2s were installed. The meters are monitored continuously &amp; cumulative readings are taken at the end of the month by joint meter reading procedure. These are sealed by State Utilities to avoid malfunctioning with meter readings. However, during operation, due to some technical issues, few meters are replaced with new pre-calibrated meters (detailed out in appendix 05). Calibration frequency of the monitoring meters is once in a year. However, Meters are usually calibrated yearly by the meter testing division of the state utility in the presence of O&amp;M Contractor/investor's representatives and State Utilities officials to ensure the working of meter within permissible limits, however, calibration frequency and schedule is under the complete discretion of State Utility and PP do not have control on it. The calculation of net electricity supplied to grid is under purview of state electricity board and PP does not have control on it. Calibration details of the monitoring meters checked with calibration certificates submitted by PP and found that calibration frequency of once in year is complied. Please refer Appendix 5 for details.</p> <p>During current Monitoring period, Delay has been observed in calibration of meters installed at Maharashtra site. Details of the same is provided in appendix 05 of this report. As per Conservative approach, PP has applied error factor of maximum permissible error i.e., 0.2% deducted from exported and added in imported data for the complete month of delayed period. Due to availability of monthly generation data only. Assessment team found approach correct and conservative. Thus accepted.</p> <p><b>Tamil Nadu Site:-</b>                      The energy delivered by the WTG T45, T46 and T47 at Tamil Nadu site is measured by three different main meters is provided at Theni substation by the project proponent and respective electricity distribution company (TNEB). These meters record several parameters including electricity exported &amp; imported. These electricity meters are being used by state electricity board for JMR (Joint Meter Reading) electricity generation statements.                      During commissioning of the WTGs monitoring meters of accuracy class i.e., 0.5s were installed. The meters are monitored continuously &amp; cumulative readings are taken at the end of the month by joint meter reading procedure. These are sealed by State Utilities to avoid malfunctioning with meter readings. Calibration frequency</p>

	<p>of the monitoring meters is once in three years. However, Meters are usually calibrated by the meter testing division of the state utility in the presence of O&amp;M Contractor/investor’s representatives and State Utilities officials to ensure the working of meter within permissible limits, however, calibration frequency and schedule is under the complete discretion of State Utility and PP do not have control on it. The calculation of net electricity supplied to grid is under purview of state electricity board and PP does not have control on it. Calibration details of the monitoring meters checked with calibration certificates submitted by PP and found that calibration frequency of once in 3 years is complied. Please refer Appendix 5 for details. No delay is observed in schedules calibration of the energy meters during current monitoring period.</p> <p>The break down log is checked and there is no major breakdown during the monitoring period. No unforced error observed.</p> <p>No sampling procedure applied for monitoring of the data parameter and entire documents were checked by the assessment team to arrive at positive verification conclusions. The monitoring plan is followed at the project site. Thus, assessment team concluded that the evidences are sufficient in quantity, and appropriate for the quality, to determine the GHG reductions and removals.</p>
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#### 4.6 Non-Permanence Risk Analysis

No.	Risk that could lead to material errors, omissions or misstatements	Assessment of the risk		Response to the risk in the verification plan and/or sampling plan
		Risk level	Justification	
NA	NA	NA	NA	NA

## 5 VERIFICATION CONCLUSION

Applus+ Certification has been engaged by Savita Oil Technologies Limited to perform the 2<sup>nd</sup> periodical verification of the “Bundled Wind Power generation project by Savita Oil Technologies Ltd., India”.

The management of Savita Oil Technologies Limited is responsible for the preparation of the GHG emissions data and the reported GHG emissions reductions on the basis set out within the project’s Monitoring Plan in the registered PD and the applied methodology AMS-I.D.- Version 16.0.

Our verification approach was based on the requirements as defined under the Kyoto Protocol, Marrakesh accord, as well as those defined by the CDM Executive Board. Our approach is risk-based, drawing on an understanding of the risks associated with reporting GHG emissions data and the controls in place to mitigate these. Further, the verification has been planned and organized to achieve a Reasonable Level of assurance as per the requirement of VCS. No sampling procedure applied for document verifications. The entire documents checked/Power plant verification conducted to arrive at positive verification conclusions. The verification team can confirm that:

- the project is operated as planned and described in the project document;
- the monitoring plan is as per the applied methodology;
- the monitoring process in Monitoring Report is as per the VCS PD/5/ and CDM PD/5/.
- the development and maintenance of records and reporting procedures are in accordance with the monitoring plan;
- the installed equipment being essential for generating emission reduction runs reliably and is calibrated appropriately;
- the monitoring system is in place and generates GHG emission reductions data;
- the GHG emission reductions are calculated without material misstatements.
- A Reasonable Level of assurance was achieved as planned, during verification process.
- Verification period: 01-January-2012 to 31-December-2017 (inclusive of both days).

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

Year	Baseline emissions or removals (tCO <sub>2</sub> e) <sup>7</sup>	Project emissions or removals (tCO <sub>2</sub> e)	Leakage emissions (tCO <sub>2</sub> e)	Net GHG emission reductions or removals (tCO <sub>2</sub> e)
01-January-2012 to 31-December-2012	17,683	0	0	17,683

<sup>7</sup> Round down values

Year	Baseline emissions or removals (tCO <sub>2</sub> e) <sup>7</sup>	Project emissions or removals (tCO <sub>2</sub> e)	Leakage emissions (tCO <sub>2</sub> e)	Net GHG emission reductions or removals (tCO <sub>2</sub> e)
01-January-2013 to 31-December-2013	15,108	0	0	15,108
01-January-2014 to 31-December-2014	13,413	0	0	13,413
01-January-2015 to 31-December-2015	11,114	0	0	11,114
01-January-2016 to 31-December-2016	16,075,	0	0	16,075
01-January-2017 to 31-December-2017	14,965	0	0	14,965
Total	88,358	0	0	88,358

The achieved GHG emission is 4% lower than the estimated. As the estimated emission reduction for the monitoring period was 91,692 tCO<sub>2</sub>e (15268/365\*2,192). The decrease in emission reduction than estimated due to unfavourable wind during the monitoring period and is beyond the control of the Project Proponent.



No.	Author	Title	References to the document	Provider
9.	UNFCCC and VCS	Tools/ guidelines used in the project activity <ul style="list-style-type: none"> <li>• CDM Methodology AMS-I.D.- Version 16.0</li> <li>• Tool to determine the remaining lifetime of the project activity in line with Annex 15 EB 50</li> <li>• Tool to calculate the emission factor for an electricity system</li> <li>• Glossary of CDM terms</li> <li>• VCS standard Version 4.2</li> <li>• VCS Program Guide 4.1</li> <li>• VCS verification report template version 4.1</li> </ul> CDM validation and verification standard for project activities, Version 03.0	UNFCCC CDM web site	UNFCCC
10.	State Utility and PP	JMR/Credit notes records for the complete monitoring period an	JMR records	Project participant
11.	PP	MR version 1 MR version 2	20- December-2021 15-February-2022	Project participant
12.	PP	Emission Calculation sheet version 01 Emission Calculation sheet version 02	20- December-2021 15-February-2022	Project participant
13.	PP	Invoices for the complete monitoring period	Invoice	Project participant
14.	PP	Break down details of the complete monitoring period	Log sheet	Project participant
15.	PP	Self-Declaration from PP for not participating/ claiming other emission reduction programme	31-January-2022	Project participant

# APPENDIX 2: CORRECTIVE ACTION REQUESTS, CLARIFICATION REQUESTS AND FORWARD ACTION REQUESTS (CAR/CL/FAR)

## Project Implementation Status

CAR ID	01	Section no.	4.1	Date: 12-January-2022
Description of CAR				
During Desk review of monitoring report following inconsistencies observed:				
<ol style="list-style-type: none"> <li>1. Monitoring report is found not inline with the VERRA guidelines to complete MR thus comments have been provided in the respective sections of MR. Corrective action requested for each comment.</li> <li>2. Alteration in Content Page of the Monitoring report observed not in line with the VCS Template Version.4.0. Corrective action sought.</li> <li>3. Section 1.1, Section 3.1 of monitoring report is found not inline with the VCS MR template v 4.0. Thus, corrective action sought.</li> <li>4. Grid detail mentioned throughout the monitoring report is found not inline with the current grid scenario of India. Thus, corrective action sought.</li> <li>5. Consistent Date format is found missing throughout the Monitoring report not inline with the VCS Template Version.4.0, Thus, corrective action sought.</li> <li>6. PP has mentioned commissioning date of project activity in section 1.1 of monitoring report, however to verify the same, supporting documents is missing, thus PP is requested to submit it to assessment team.</li> <li>7. In section 1.11 of Monitoring report, Title of authorized ministry for providing indicators of sustainable development is not in line with respective ministry's webpage. Thus, corrective action sought.</li> <li>8. PP requested to submit copies of technical specifications of equipment, O&amp;M agreement, PPA &amp; Breakdown details of the project activity to the assessment team.</li> </ol>				
Project participant response				Date: 20-January-2022

1 The revised Monitoring report ver 02 is now completed in line with the VERRA guidelines.

Content of the page has now been corrected in the revised Monitoring Report ver 02.

Section 1.1, Section 3.1 of the revised monitoring report is now been made as per the updated monitoring template v4.1

Grid detail mentioned in the revised monitoring report ver 02 is now been made as per the current grid scenario of India.

Date format has now been maintained though out the revised MR ver 02.

The commissioning certificate has now been provided to the assessment team

In section 1.11 of Monitoring report, Title of authorized ministry along with the hyperlink of the webpage has now been provided in the revised MR ver 02

Technical specification has been provided in the form of hyperlink in the revised MR ver 02. Break down details, PPA and O&M agreement has now been provided to the assessment team.

Documentation provided by project participant

Revised MR ver 02, Commissioning certificate, PPA, Breakdown Details, O&M agreement

DOE assessment Date: 04-March-2022

1. PP has provided the revised monitoring report and resolved the all comment of MR and made consistent as per the updated VCS MR template version 4.1. Thus, CAR is Closed.
2. PP has corrected the content page of revised monitoring report as per the updated VCS MR template version 4.1. Thus, CAR is Closed.
3. PP has now updated the section 1.1 and 3.1 of revised monitoring report and made consistent with the VCS MR template version 4.1 and VERAA guideline. Thus, CAR is Closed.
4. PP has provided the grid detail in revised monitoring report is now inline with the current grid scenario of India (i.e., Indian grid). Thus, Car is Closed.
5. PP has updated the date format in revised monitoring report as per updated VCS MR template version 4.1. Thus, CAR is Closed.
6. PP has submitted following Commissioning certificate issued by respective state Utilities:-  
 Tamil Nadu Site:  
 T 45 :- Ref. no: EE/O&M/Theni/DM/F.WINDFARM/S.C.No.WEG T 45/D.606 , Dated : 12-April-2010  
 T 46 :- Ref. no. EE/O&M/Theni/DM/F.WINDFARM/S.C.No.WEG T 46/D.607, Dated: 12-April-2010  
 T 75 :- Ref. no. EE/O&M/Theni/DM/F.WINDFARM/S.C.No.WEG T 75/D.613, Dated: 12-April-2010  
  
 Maharashtra Site:  
 S40 :- Ref. no. SE/STRC/T-WM/04538, Dated: 08-April-2010  
 S63 :- Ref. no. SE/STRC/T-WM/04537, Dated: 08-April-2010  
 S64 :- Ref. no. SE/STRC/T-WM/04539, Dated: 08-April-2010  
  
 Above Documents found consistent with revised MR. Thus, accepted and CAR is Closed.
7. PP has provided the correct name of Title of authorized ministry and hyperlink in revised monitoring report in section 1.1 of MR. Thus, CAR is Closed.
8. PP has submitted the following documents: -
  - i) Brochure of technical specification of WTGs involved in project activity.
  - ii) PP has submitted the O&M contract between PP and Regen Powertech private (For Maharashtra ) and Suzlon infrastructure service ltd (For Tamil Nadu)
  - iii) Power purchase agreement between PP and Tamil Nadu Electricity Board for theni site and between Maharashtra State Electricity Distribution Company Limited for Sadawaghapur site.
  - iv) Breakdown sheets of WTGs for the current monitoring period.
 Above all documents verified by the assessment team and found consistent with revised MR for the current monitoring period of project activity.

CAR ID	02	Section no.	4.1	Date: 05-January-2022
Description of CAR				
Crediting period of the project activity found not inline with the VCU issuance records, VCS PD, validation report & previous verification details. Corrective action sought. Further, issuance history of the project activity including VCUs & CERs found missing in the Section 1.6 of the MR. Corrective actions sought.				
Project participant response				Date: 20-January-2022
Crediting Period and the start date of the project activity is 18/03/2010 and it's a fixed crediting period of 10 years which is 17/03/2020. The same has been mentioned in the revised MR. the issuance history has now been provided in the revised MR ver 02				
Documentation provided by project participant				
Revised MR ver 02				
DOE assessment				Date: 04-March-2022

PP has corrected the crediting period of project activity in revised MR. Assessment team verified the same with previous validation and verification report and VCS PD. And issuance history of the project activity including VCUs & CERs now mentioned in the Section 1.6 of the MR. Thus CAR is Closed.

CAR ID	03	Section no.	4.1	Date: 12-January -2022
Description of CAR				
PP is requested to submit an undertaking for no any double accounting for current monitoring period and for project activity is participated in other GHG program other than VCS including CDM & other forms of credits. Kindly submit.				
Project participant response				Date: 20-January-2022
The declaration of double counting has now been provided to the assessment team				
Documentation provided by project participant				
DOE assessment				Date: 04-March-2022
PP has submitted no double counting /undertaking letter issued by Savita oil technologies limited for current monitoring current period dated 10-January-2012 to 31-December-2017 dated 31-January-2022 Thus, CAR is closed.				

CAR ID	04	Section no.	4.2.2	Date: 12-January-2022
Description of CAR				
PP is requested to submit records of ongoing local stakeholder consultation including grievance register etc.				
Project participant response				Date: 20-January-2022
There has been no negative comment received and the proof of the same has been submitted in the form of grievance register to the assessment team				
Documentation provided by project participant				
Grievance register				
DOE assessment				Date: 04-March-2022
PP has submitted Grievance register to the assessment team. No, Major and negative comments has been observed by assessment team in grievance register. Thus, accepted and CAR is Closed.				

#### Accuracy of GHG Emission Reduction and Removal Calculation

CAR ID	05	Section no.	4.4	Date: 12-January-2022
Description of CAR				
PP requested to submit ER sheet for further assessment. Value of achieved emission reduction is thus reserved till submission.				
PP requested to submit all JMR & other supporting documents for all the monitoring parameters and invoices for crosscheck of electricity export/import for the project activity.				
Project participant response				Date: 20-January-2022
Emission reduction sheet has now been submitted to the assessment team				
JMR and invoices has been submitted to the assessment team				
Documentation provided by project participant				
1)Emission Reduction Sheet ver 02				
2)JMR and Invoice for the entire monitoring period				
DOE assessment				Date: 04-March-2022

PP has revised the value for emission reduction throughout the revised monitoring report. now the emission reduction value is also consistent with the revised emission reduction sheet.  
 PP has submitted the JMRs and Invoices for the entire Monitoring period to the assessment team and the values of the same is now made consistent throughout the ER sheet. The calculation of achieved emission reduction is found conservative and inline with the VCS standards. Thus accepted, CAR is closed.

**Quality of Evidence to Determine GHG Emission Reductions and Removals**

CAR ID	06	Section no.	4.5	Date: 12-January-2022
Description of CAR				
In order to verify the calibration details mentioned in section 3.1 of MR, PP is requested to submit the copies of calibration certificates covering complete monitoring period to the assessment team.				
Project participant response				Date: 20-January-2022
Calibration details for both the site has now been provided.				
Documentation provided by project participant				
Calibration records				
DOE assessment				Date: 04-March-2022
PP has submitted revised monitoring report updated calibration frequency accuracy class and meter details in appendix 1 and also the Calibration certificate to the assessment team issued by the Maharashtra State Electricity Distribution Company Limited (MSEDCL) for Sadawaghapur site and Tamil Nadu Electricity board for Theni site meters. During review, Delay in schedules calibration has been observed for the meters of Maharashtra site. Thus, as per the conservative approach, error factor of 0.2% is applied to the complete month of the delay period. Found acceptable and Thus, CAR is Closed.				

## APPENDIX 3: COMPETENCE OF TEAM MEMBERS AND TECHNICAL REVIEWERS

Verification team member

No.	Role		Last name	First name	Affiliation	Involvement in
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					(e.g. name of central or other office of DOE or outsourced entity)	Desk review	On-site inspection	Interview(s)	Verification findings
1.	Lead Auditor/Technical Expert	OR	TAKARKHEDE	ATUL	TQC-Outsourced entity	Yes	Yes	Yes	Yes

**Technical reviewer and approver of the verification and certification report**

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)
1.	Technical reviewer (TR) / Technical Expert (TE)	EI	Shen	Simon	Applus+ Certification
2.	Approver	IR	Calle de Miguel	Agustín	Applus+ Certification

**Short CVs of the Team:**

- Dr. Atul Takarkhede is Ph.D. (Environmental Sciences) from Institute of Science, RTM Nagpur University, Nagpur, and he has already published different technical papers related to environmental sciences. He counts with more than 11 years of experience in field of Environmental Auditing, consulting and accreditation. He is an expert in ISO 9001-14001, CO2/GHG Reporting, Carbon Foot Print, Energy, Water and Waste Management reporting for organizations' environmental performance. His professional portfolio is mainly related with carrying out EIA, conducting QA/QC of EIA Reports; conducting environmental/water audits; NABET requirements appliance, functional area expert in Water Pollution & Solid & Hazardous Waste management among others. Furthermore, he counts with solid experience on CDM-VCS-GS consultancy and auditing. Currently he is associated with True Quality Certifications Private Limited and empanelled with Applus+ Certification to carry out GHG audits in the aforementioned schemes.
- Mr. Simon Shen (Master's Degree in Thermal Energy Engineering, Bachelor's Degree in Environmental Engineering) is an Auditor appointed by Applus+ LGAI for the GHG project assessment, auditing and technical review. He has more than 6 years of work experience in CDM/GS4GG/VCS project assessment and review with Applus+, apart from the years of experience working as GHG Auditor and ISO 9001/14001 in TUV SUD for 3.5 years before he joined Applus+. Mr. Simon Shen has extensive experience also as former Applus+ Shanghai CDM Technical Manager.

## APPENDIX 4: ABBREVIATIONS

Abbreviations	Full texts
BM	Build Margin
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction(s)
CEA	Central Electricity Authority
CL	Clarification request
CM	Combined Margin
CMS	Central Monitoring system
CO <sub>2</sub>	Carbon dioxide
CO <sub>2</sub> e	Carbon dioxide equivalent
DNA	Designated National Authority
DOE	Designated Operational Entity
DR	Document Review
EF	Emission Factor
EIA	Environmental Impact Assessment
ER	Emission Reductions
FAR	Forward Action Request
GHG	Greenhouse gas(es)
GWP	Global Warming potential
MSEDCL	Maharashtra State Electricity Distribution Company Limited
PP	Project Participant
TNEB	Tamil Nadu Electricity Board

# APPENDIX 5: CALIBRATION DETAILS OF THE METERS

For Sadawaghapur

Location No.	Main Meter No.	Check Meter No.	Substation Feeder no.	Accuracy Class	Date of Calibration	Next Calibration Date	Calibration Compliance	Error Factor Applied
Period 2011-2012								
S-40	0496 1755	0493 9180	Sadawaghapur Feeder 03	0.2	25-July- 2011	24-July- 2012	No Delay Observed	No Delay Observed
S-63	0496 1761	0496 1757	Sadawaghapur Feeder 04	0.2	25-July- 2011	24-July- 2012		
S-64				0.2				
Period 2012-2013								
S40	0496 1755	0493 9180	Sadawaghapur Feeder 03	0.2	23- July- 2012	22-July- 2013	No Delay Observed	No Delay Observed
S-63	0496 1761	0496 1757	Sadawaghapur Feeder 04	0.2	23- July- 2012	22-July- 2013		
S-64			Sadawaghapur Feeder 04	0.2	23- July- 2012	22-July- 2013		
Period 2013-2014								
S40	0496 1755 (Old meter)	0493 9180 (Old Meter)	Sadawaghapur Feeder 03	0.2	18- February- 2013	17- February- 2014	No Delay Observed	No Delay Observed
	1479 6507 <sup>8</sup> (New Meter)	1476 508 <sup>9</sup> (New Meter)						
S63	0496 1761 (Old Meter)	0496 1757 (Old Meter)	Sadawaghapur Feeder 04	0.2	18- February- 2013	17- February- 2014		
S64								

<sup>8</sup> old main meter (04961755) replaced by new main meter (14796507) on meter replacement date 18-February- 2013

<sup>9</sup> old check meter (04939180) replaced by new check meter (1476508) on meter replacement date 18-February-2013

	1479 6504 10 (New Meter)	1479 6505 11 (New Meter)						
Period 2014-2015								
S40	1479 6507	1479 6508	Sadawaghapur Feeder 03	0.2s	21- May- 2014	20- May- 2015	Delay Observed from 18- February-2014 to 20-May- 2014	Error factor applied from month of February-2014 to May-2014
S63	1479	1479	Sadawaghapur Feeder 04	0.2s	21-May- 2014	20-May- 2015		
S64	6504	6505						
Period 2015-2016								
S40	1479 6507	1479 6508	Sadawaghapur Feeder 03	0.2s	29-June- 2015	28-June- 2016	Delay Observed from 21-May- 2015 to 28- June-2015	Error factor applied from month of May- 2015 to June- 2014
S63	1479	1479	Sadawaghapur Feeder 04	0.2s	29-June- 2015	28-June- 2016		
S64	6504	6505						
Period 2016-2017								
S40	1479 6507	1479 6508	Sadawaghapur Feeder 03	0.2s	23-May- 2016	22-May- 2017	No Delay Observed	No Delay Observed
S63	1479	1479	Sadawaghapur Feeder 04	0.2s	23-May- 2016	22-May- 2017		
S64	6504	6505						
Period 2017-2018								
S40	1479 6507	1479 6508	Sadawaghapur Feeder 03	0.2s	20-May- 2017	19-May- 2018	No Delay Observed	No Delay Observed
S63	1479	1479	Sadawaghapur Feeder 04	0.2s	20-May- 2017	19-May- 2018		
S64	6504	6505						

**For Theni**

Location No.	Main Meter No.	Substation	Meter Accuracy	Date of Calibration	Next Calibration Date	Calibration Compliance	Error Factor Applied
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<sup>10</sup> old main meter (04961761) replaced by new main meter (14796504) on meter replacement date 18-February- 2013

<sup>11</sup> Old check meter (04961757) replaced by new check meter (14796505) on meter replacement date 18-February- 2013

Period 2011-2014							
T45	TNB 04537	Theni	0.5s	27-March-2011	26-March-2014	No Delay Observed	No Delay Observed
T46	TNB 04534		0.5s	27-March-2011	26-March-2014		
T47	TNB 04517		0.5s	27-March-2011	26-March-2014		
Period 2012-2015							
T45	TNB 04537	Theni	0.5s	04-February-2012	03-February-2015	No Delay Observed	No Delay Observed
T46	TNB 04534		0.5s	04-February-2012	03-February-2015		
T47	TNB 04517		0.5s	04-February-2012	03-February-2015		
Period 2015- 2018							
T45	TNB 04537	Theni	0.5s	01-February-2015	31-January-2018	No Delay Observed	No Delay Observed
T46	TNB 04534		0.5s	01-February-2015	31-January-2018		
T47	TNB 04517		0.5s	01-February-2015	31-January-2018		