

BUNDLED RENEWABLE ENERGY PROJECT IN GUJARAT AND KARNATKA, INDIA



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Summary:

Sai Pet Preforms Limited has commissioned the “KBS Certification Services Pvt. Ltd.” (KBS) to carry out the Validation of the project - “Bundled renewable energy project in Gujarat and Karnataka, India”, with regard to the relevant requirements of VCS Standard Version 3.7.

The proposed project activity is a bundled project activity involving installation and operation of 2 Wind Turbine Generators (WTGs) having individual capacities 1x2000 kW (G114) and 1x850 kW (G58) manufactured and supplied by Siemens Gamesa Renewable Power Pvt. Ltd. and 3.5 MW solar PV modules manufactured and supplied by Diwakar Soltek Pvt. Ltd. with aggregated capacity of 6.35 MW in Indian states of Karnataka and Gujarat. The proposed project activity is promoted by Sai Pet Preforms Limited with a view to align itself with sustainable development policies of India has undertaken this project to produce green power using wind and solar as an energy source.

A risk-based approach has been followed to perform this validation. In the course of the validation 06 Corrective Action Requests (CAR) and 01 Clarification Requests (CL) were raised and successfully closed out.

The validation is based on the VCS PD, proof of title, proof of right, additional documents related to baseline and monitoring methodology; the subsequent background investigation, follow-up interviews and supporting documents made available to the validation team by project proponent.

As a result of the validation, the validation team confirms that:

- The project fulfils criteria of VCS Standard Version 3.7.
- The project is in line with all relevant VCS requirements.
- The project additionality is sufficiently justified in the PD.
- The monitoring plan is transparent, adequate and in line with applied baseline and monitoring methodology of AMS I. D. version 18.

Based on the information seen and evaluated we confirm that the estimated annual average and the total CO₂e emission reduction by the project activity over the first renewable crediting period of 10 years are expected to be **11,842 tCO₂e** and **118,420 tCO₂e** respectively.

No restrictions or uncertainties were identified related to the validation.

Abbreviations

BE	Baseline Emissions
BM	Build Margin
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEA	Central Electricity Authority
CM	Combined Margin
CER	Certified Emission Reduction
CERC	Central Electricity Regulatory Commission
CL	Clarification request
DOE	Designated Operational Entity
DNA	Designated National Authority
DR	Document Review
EB	Executive Board
EF	Emission Factor
ERs	Emission Reductions
FAR	Forward Action Request
GHG	Greenhouse gas(es)
GSC	Global Stakeholder Consultation
GUVNL	Gujarat Urja Vikas Nigam Limited
GESCOM	Gulbarga Electricity Supply Company Limited
HESCOM	Hubli Electricity Supply Company Limited
IPCC	Intergovernmental Panel on Climate Change
KP	Kyoto Protocol
LSC	Local Stakeholder Consultation
LE	Leakage Emissions
MOP	Meeting of Parties
MP	Monitoring Plan
NEWNE	North-East-Western-North Eastern
OM	Operating Margin
PD	Project Design Document
PE	Project Emissions
PLF	Plant Load Factor
PLR	Prime Lending Rate
PP	Project Participant
PPA	Power Purchase Agreement
PS	Project Standard
PCP	Project Cycle Procedure
QA/QC	Quality Assurance/Quality Control
SD	Sustainable Development
T&C	Technical & Certification
UNFCCC	United Nations Framework Convention on Climate Change
VCS	Verified Carbon Standard
VVS	Validation & Verification Standard
WTG	Wind Turbine Generator

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1 INTRODUCTION

1.1 Objective

Sai Pet Preforms Limited has commissioned the “KBS Certification Services Pvt. Ltd.” (KBS) to carry out the Validation of the project - “Bundled renewable energy project in Gujarat and Karnataka, India”, with regard to the relevant requirements of Verified Carbon Standards (VCS) Project Activity (PA); to attain real, measurable, additional and permanent emission reductions.

The purpose of validation is to ensure a thorough, independent assessment of the project description (PD), in particular the project's baseline, the additionality, the monitoring plan (MP) and the project's compliance with

- The requirements of VCS Program guide Version 3.7^{/4/}
- The requirements of VCS Standard Version 3.7^{/5/}
- The requirements of the CDM Approved methodology, AMS I. D. version 18^{/8/}
- To assess the project's compliance with other relevant rules, including the project country (India) legislation and
- Other relevant rules, of VCS sustainability criteria are validated in order to confirm that the project description as documented is sound and reasonable and meet the stated requirements and identified criteria.

The validation is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of emission reductions over the project's crediting period without any double counting.

1.2 Scope and Criteria

The scope of the validation is defined as an independent and objective review of the Project description document, the project's baseline study, additionality, monitoring plan and other relevant documents. The information in these documents is reviewed against the requirements of VCS Standard. KBS has employed a risk-based approach in the validation, focusing on the identification of significant risks for project implementation and the generation of Emission Reductions.

The items covered in the validation are described below:

- VCS Criteria
- VCS Project Description
- Project Additionality
- Monitoring Plan

- Background investigation and follow up interviews
- Stakeholder Consultation
- Draft validation reporting with CARs & CLs, if any
- Final validation reporting

The validation is based on the information made available to KBS and on the contract conditions.

The validation is not meant to provide any consulting to the project proponent. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the project description. The work carried out by KBS is free from any conflict of interest.

1.3 Level of Assurance

The validation report is based on VCS-PD, monitoring plan, supporting documents made available to the validator and information collected through performing interviews and during the on-site assessment. Based on the process and procedures conducted, KBS states whether the information in the PD:

- is materially correct and is a fair representation of the actual project details, and
- is prepared in accordance with VCS requirements and the applied CDM methodology for information pertaining to additionality, GHG qualification, monitoring and reporting.

The validation work is carried out as per this requirement and the validation opinion is assured provided the credibility of all above. Details are presented in the Validation statement in section 4 below.

1.4 Summary Description of the Project

The proposed project activity is a bundled project activity involving installation and operation of 2 Wind Turbine Generators (WTGs) having individual capacities 1x2000 kW (G114) and 1x850 kW (G58) manufactured and supplied by Siemens Gamesa Renewable Power Pvt. Ltd. and 3.5 MW solar PV modules manufactured and supplied by Diwakar Soltek Pvt. Ltd. with aggregated capacity of 6.35 MW in Indian states of Karnataka and Gujarat. The proposed project activity is promoted by Sai Pet Preforms Limited with a view to align itself with sustainable development policies of India has undertaken this project to produce green power using wind and solar as an energy source.

The 2 MW wind power project site in Karnataka is located in Bableshwar Wind Park at Malaghan village at Basavana Bagewadi Taluka at Vijayapura district and 0.85 MW wind power project in Gujarat is located at Village Juna kataria, Khodasar of Bhachhau Taluka falling under Kutch district. On the other hand, the 3.5 MW solar PV power generation project site is located at Upparhalli village Hospet taluka within Bellari district of Karnataka. The net electricity generated will be supplied to identified customer facilities via Indian grid. Electricity generated from 2 MW wind power plant in Karnataka is supplied to the local electricity distribution licensee Hubli Electricity Supply Company Limited (HESCOM), electricity generated from 0.85 MW wind power

plant in Gujarat is supplied to Gujarat Urja Vikas Nigam Limited (GUVNL) while the 3.5 MW solar PV power plant supplies electricity to Gulbarga Electricity Supply Company Limited (GESCOM). The project activity helps in Greenhouse gas (GHG) emission reduction by using renewable resources (wind/solar energy) for generating power which otherwise would have been generated using grid mix power plants, which is dominated by fossil fuel based thermal power plants. The project activity is a Greenfield project aimed at utilizing wind and solar energy sources to generate electricity. In the pre-project scenario, the equivalent amount of electricity would have been generated by grid mix power plants connected Indian grid, which is dominated by fossil fuel based thermal power plant.

The location of the project activity, as mentioned in the PD was cross-checked and further validated with statutory clearance i.e. consent to establish and operate.

2 VALIDATION PROCESS

2.1 Method and Criteria

The project activity applies approved CDM methodologies AMS ID version 18, categorized under sectoral scope 1 “Energy Industries”. The validation consisted of the following phases:

- Completeness check and desk review of the Project Description
- Onsite inspection, interview with project representatives and issuance of findings.
- Resolution of findings followed by preparation of the final validation report and opinion.

Timeline of Validation:

PD Published for Consultation/Listing	18/03/2019
Contract Signed	03/05/2019
(Draft) Reporting	04/11/2019
(Final) Reporting	13/11/2019

2.2 Document Review

After the submission of the draft PD^{1/} and supporting background documents related to the project design and baseline from the client, the completeness of information made available as per VCS standard version 3.7^{5/} requirements is reviewed. Furthermore, the validation team used additional documentation by third parties like host party legislation, technical reports referring to the project design or to the basic conditions and technical data available on public domain. A desk review is carried out to assess the following:

- the project details as per VCS PD template
- appropriateness of methodology applied

- compliance with relevant law and regulations
- correctness of application of baseline and monitoring methodology
- demonstration of additionality
- monitoring plan
- stakeholder comments
- proof of title

The list of documents reviewed is included in the section 'References'.

2.3 Interviews

Follow-up interviews with the stakeholders were conducted at the PP's office as detailed in the table below:

Key points discussed:	Name of person, interviewed	Designation, Organization
Host Country rule and regulations related to project activity	Mr. Phool Chand	Consultant, PA Research
Project description	Mr. Phool Chand	Consultant, PA Research
Additionality	Mr. Phool Chand	Consultant, PA Research
Baseline and Monitoring plan	Mr. Phool Chand	Consultant, PA Research

2.4 Site Inspections

KBS did not undertake site visit for the validation as the project was SSC project and validation was concluded based on the desk review, interview, publically available information and based on the local and sectoral expertise of validation team.

2.5 Resolution of Findings

KBS applies the risk-based approach aimed at focusing on high risk issues to the validation results whilst not omitting any part of the mandatory processes. A few discrepancies were found during the validation and the validation report was submitted to the project proponent, indicated under the titles corrective action requests (CARs) and clarification requests (CLs). CARs and CLs require the PP to take relevant actions. Criteria for judging items as CAR or CL are as follows:

Corrective action request (CAR):

- the project participants have made mistakes that will influence the ability of the project activity to achieve real, measurable additional emission reductions
- the Voluntary Carbon Standard's requirements have not been met, or
- there is a risk that emission reductions cannot be monitored or calculated.

Clarification request (CL):

- Information is insufficient or not sufficiently clear to determine whether the applicable VCS requirements have been met.

FARs is to be raised to highlight issues related to project implementation that require review during the first validation of the project activity. FARs does not relate to VCS requirements for registration.

CARs and CLs are to be resolved or closed out if the PP modifies the project description, rectifies the PD or provides adequate additional explanations or evidence that satisfies the concerns. If this is not completed, the project activity cannot be recommended for registration under VCS registry.

The project description document was revised addressing the CARs & CLs issued by KBS. After reviewing the revised and resubmitted project description/2/; resolving the CARs & CLs raised and outstanding concerns, KBS issues this final validation report and opinion.

06 CARs and 01 CL were found during validation. The list of CARs/CLs raised and the response provided, the means of validation, reasons for their closure and references to correction in the PD are provided in appendix 2 of this report. The revised PD/2/ with changes incorporated as per the issues raised were rechecked with the documentary evidences and found to be inline.

Forward Action Requests

No FARs raised during the validation.

3 VALIDATION FINDINGS

3.1 Project Details

- Project scope, activity, type, technologies and measures implemented, and eligibility of the project.

The proposed project activity is installation and operation of 2 Wind Turbine Generators (WTGs) having individual capacities 1*2000 kW and 1*850 kW in the states Karnataka and Gujarat respectively and solar PV modules with capacity 3500 kW in Karnataka. WTGs are manufactured and supplied by Siemens Gamesa Renewable Power Pvt. Ltd. while solar PV modules are manufactured and supplied by Diwakar Soltek Pvt. Ltd. The total power generating installed capacity in the proposed project activity is 6.35 MW. The instant project activity involves installation of 3.5MW_{AC} solar power project based on polycrystalline technology. The major components of the solar project are the solar modules, module mounting structures, transformer etc. The solar modules are mounted on the module mounting structures. The solar module is a packaged, connected assembly of solar cells which uses the incident photons from the sun light and converts it into electricity. The solar module generates DC power, which is converted to AC power with the help of inverters

The bundled project activity is a new facility (Greenfield) and the electricity generated by the project will be exported to the INDIAN electricity grid. The project activity will therefore displace an equivalent amount of electricity which would have otherwise been generated by fossil fuel dominant electricity grid. The Project Proponents plan to avail the VCS benefits for the Project. The Project sites are connected by roads to the nearest town.

- Project proponent

The project activity is a bundled project that has been developed by Sai Pet Preforms Limited. The section 1.3 of the VCS PD states that Sai Pet Preforms Limited is responsible for all the communications and actions in relation to the project being validated in accordance with the VCS standard. The information has been verified from the board note^{/15/} of the company. Further the validation team has confirmed the same from the purchase order^{/10/} placed by the developers to the equipment manufactures.

- Project start date

As per the project description (PD) the start date of the project activity is stated as 08/03/2018, from which the project started generating emission reduction. The validation team has verified the commissioning certificates^{/13/} of the WTGs installed under the project activity and found that is the date on 08/03/2018 which the project began generating GHG emission reduction. This is in accordance with section 3.7 of VCS standard, Version 3.7^{/5/}.

- Project crediting period

The VCS Standard version 3.7^{/5/} section 3.8 state that, “the crediting period shall be a maximum of ten year which may be renewed at most twice”. The project start date is 08/03/2018, which is confirmed from the commissioning certificate^{/13/} of the WTG. Therefore the 1st crediting period for the project activity will be from 8th March 2018 (The date of commissioning) to 7th March 2028 (including both days). The validation team has confirmed that the same has correctly mentioned in the PD^{/2/}.

Findings: CAR 06 was raised and successfully closed. Refer to Appendix 2 for further details.

- Project scale and estimated GHG emission reductions or removals

The installed capacity of the two WTGs is 1*2000 kW and 1*850 kW in the states Karnataka and Gujarat respectively and solar PV modules with capacity 3500 kW in Karnataka^{/10//11/}. The PP has sourced the values from the offer letter^{/11/} received from the equipment supplier. The validation team has cross checked the value from the purchase order and found that the PP has placed the purchase order^{/10/} for 2 WTGs of capacity 1*2000 kW and 1*850 kW and solar PV modules of capacity 3500 kW. Further the total installed capacity of the project has been confirmed from the commissioning certificates^{/13/} of the WTGs and the solar PV modules under the project activity. The validation team confirms that the project activity falls under the category 1 ‘Projects’ as per para 3.9.1 of the VCS standard version 3.7^{/5/}, as it does not have the potential to reduce GHG emission more than 300,000 tCO₂e/year.

The estimated annual average and the total CO₂e emission reduction by the project activity over the first renewable crediting period of 10 years are expected to be **11,842 tCO₂e** and **118,420 tCO₂e** respectively. The validation team confirmed that emission reduction forecast is reasonable if the underlying assumptions do not change. The quantification of the emission reduction has been demonstrated in the section 3.2.6 of this report.

- Project location

The physical address and geographic co-ordinate of project site is provided below.

Type	Location	Geo-coordinates
Wind Power Project (2.0 MW)	Malaghan village at Basavana Bagewadi Taluka of Vijayapura District, Karnataka	16.56° N, 75.97° E
Wind Power Project (0.85 MW)	Juna Katiar village at Bhachhau taluka of Kutch district, Gujarat	23.29° N, 70.33° E
Solar PV Power Project (3.5 MW)	Upparhalli village at Hospet taluka of Ballari district, Karnataka	15.26° N, 76.39° E

Conditions Prior to Project Initiation

The proposed project activity is a greenfield activity that is the installation of new 6.35MW (1*2000KW and 1*850 kW WTGs and 1*3500 kW solar PV plant) renewable energy-based power generation for generating electricity. In the absence of the project activity, the equivalent quantity of electricity would have been generated by grid mix power plant connected to INDIAN grid. Therein, the main emission sources in the pre-project scenario are the grid connected power plants and the primary GHG involved is CO₂. For this project activity, the baseline scenario is the same as conditions existing prior to project initiation.

Compliance with Laws, Statutes and Other Regulatory Frameworks

The validation team by its document review confirmed that the project activity is in compliance with all the applicable laws, statutes and other regulatory frameworks. The validation team has also confirmed that the baseline scenario presented in the VCS PD is also in compliance with the laws and regulations of India. The validation team has confirmed the information by reviewing the commission certificates^{/13/} issued to the individual WTG's by the concerned regulatory authority.

Findings: CAR 01 was raised and successfully closed. Refer to Appendix 2 for further details.

Ownership and other programs:

The project The Project is owned by Individual investors hence it possesses right of use of ER credits. The Ownership is demonstrated through the following documents provide evidence of project ownership, in accordance with the VCS specifications on project ownership.

1. Commissioning Certificates
2. Purchase Orders
3. Power Purchase Agreements

Findings: CAR 01 and CL 01 was raised and successfully closed. Refer to Appendix 2 for further details.

Additional Information Relevant to the Project

Eligibility Criteria

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

Leakage Management

Not applicable to the project activity.

Commercially Sensitive Information

No commercially sensitive information has been excluded from the public version of the project description.

Sustainable Development

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

- Social well-being: The project would help in generating employment opportunities during the construction and operation phases. The project activity will lead to development in infrastructure in the region like development of roads and also may promote business with improved power generation.
- Economic well-being: The project is a clean technology investment in the region, which would not have been taken place in the absence of the VCS benefits the project activity will also help to reduce the demand supply gap in the region and eventually in national level. As the project activity generates employment opportunities in the local area. Hence, the project contributes to the economic sustainability, which is promotion of decentralization of economic power.
- Environmental well-being: The project utilizes wind and solar energy for generating electricity which otherwise would have been generated through alternate fuels-based

power plants; thus, the project activity contributes in reduction in specific emissions (emissions of pollutant/unit of energy generated) including GHG emissions. Being renewable resources, using wind or solar energy to generate electricity contributes to resource conservation of natural resources besides avoiding emissions of harmful effluents. Thus, the project causes no negative impact on the surrounding environment contributing to environmental well-being.

- **Technological well-being:** The project makes use of efficient environmentally safe technology for power generation. The project activity employs state of art technology i.e. 2.0MW and 0.85 MW WTGs which has high power generation potential with optimised utilization of land and solar PV modules of combined capacity 3.5 MW with high power conversion efficiency. Hence, the project leads to technological well-being. Successful operation of project activity would lead to promotion of solar based power generation and would encourage many other entrepreneurs to participate in similar projects. The generation of electricity from the project also leads to strengthening of the grid, increasing the energy availability thereby meeting the energy demand to a certain extent leading to technological well-being.

The validation team concludes that the project description is accurate, complete, and provides an understanding of the nature of the project.

3.2 Application of Methodology

3.2.1 Title and Reference

Following approved baseline & monitoring methodology is applied for the project activity;

Title: Type-I, Renewable Energy Project

Methodology: AMS I.D. Grid connected renewable electricity generation

Version: 18, valid from 28/11/2014. Scope: 01, EB 81 Annex-14

The validation team has confirmed that the selected baseline methodology is the approved baseline methodology “Grid connected renewable electricity generation” (AMS ID Ver.18.0)^{8/}, available on UNFCCC web site. The applied methodology is the latest version and is valid from 28 November 2014. The selected baseline methodology, i.e., AMS ID Ver. 18.0 is correctly applied to this type of small scale bundled project. All the applicability criterion of applied methodology is appropriately justified in section 2.2 of the VCS PD. Moreover, as assessed by the DOE during desk review of technical design of project there is no other significant emissions involved with the proposed project activity except listed in the methodology.

Findings: CAR 02 was raised and successfully closed. Refer to Appendix 2 for further details.

3.2.2 Applicability

The summary of the project compliance with applicability criteria is listed below:

Applicability of AMS-I.D., Version 18.0					Validation Remarks
1. This methodology comprises renewable energy generation units such as photovoltaic, hydro, tidal/wave, wind, geothermal and renewable biomass					The project activity involves 2.85 MW wind and 3.5 MW solar based power generation project with aggregated installed capacity 6.35 MW the net electricity generated will be supplied to identified customer facilities via Indian grid. The validation team has verified the information from Offer Letter ^{/11/} , Purchase order ^{/10/} , Wheeling and Banking Agreement ^{/29/} and Commissioning Certificate ^{/13/} provided by the PP and found acceptable. Hence the project is in compliance with latest version of the methodology AMS-I.D. Version 18.0.
a) Supplying electricity to a national or a regional grid b) Supplying electricity to an identified consumer facility via national/regional grid through a contractual arrangement such as wheeling.					
2. Illustration of respective situations under which each of the methodology (i.e. “AMS I. D.: Grid connected renewable electricity generation”, “AMS-I.F.: Renewable electricity generation for captive use and mini-grid” and “AMS-I.A.: Electricity generation by the user) applies is included in the appendix.					The 3 rd option of Table of AMS-I.D Version 18, EB 81 Annex 24 is applicable. The validation team has verified the information from Offer Letter ^{/11/} , Purchase order ^{/10/} , and Commissioning Certificate ^{/13/} provided by the PP and found acceptable. Hence the project is in compliance with latest version of the methodology AMS-I.D. Version 18.0.
	Project Type	AMS-I. A	AMS-I.D	AMS-I.F	
1	Project supplies electricity to a national/regional grid		√		
2.	Project displaces grid electricity			√	

	consumption (e.g. grid import) and/or captive fossil fuel electricity generation at the user end (excess electricity may be supplied to the grid)				
3	Project supplies electricity to an identified consumer facility via national/regional grid (through a contractual agreement such as wheeling)		√		
4	Project supplies electricity to a mini-grid system where in the baseline all generators use exclusively fuel oil and/or fossil fuel			√	
5	Project supplies electricity to household users (included in the project boundary) located in the off-grid areas	√			
3. This methodology is applicable to project activities that (a) install a new power plant at a site where there was no renewable energy power					The project is installation of new power generation plant based on wind and solar energy sources (not

plant operating prior to the implementation of project activity (Greenfield plant); (b) involve a capacity addition; (c) involve a retrofit of (an) existing plant(s); or (d) involve a replacement of (an) existing plant(s)	addition/retrofit/replacement). Option (a) is applicable. The validation team has verified the information from Offer Letter^{/11/}, Purchase order^{/10/}, and Commissioning Certificate^{/13/} provided by the PP and found acceptable. Hence the project is in compliance with latest version of the methodology AMS-I.D. Version 18.0.
4. Hydro power plants with reservoirs that satisfy at least one of the following conditions are eligible to apply this methodology: • The project activity is implemented in an existing reservoir with no change in the volume of reservoir; • The project activity is implemented in an existing reservoir, where the volume of reservoir is increased and the power density of the project activity, as per definitions given in the Project Emissions section, is greater than 4 W/m²; The project activity results in new reservoirs and the power density of the power plant, as per definitions given in the Project Emissions section, is greater than 4 W/m².	The project activity is wind and solar based power generation; hence not applicable. The validation team has verified the information from Offer Letter^{/11/}, Purchase order^{/10/}, and Commissioning Certificate^{/13/} provided by the PP, therefore this criterion is not applicable to proposed project activity.
5. If the new unit has both renewable and non-renewable components (e.g. a wind/diesel unit), the eligibility limit of 15MW for a small- scale CDM project activity applies only to the renewable component. If the new unit co fires fossil fuel, the capacity of the entire unit shall not exceed the limit of 15MW.	The project activity is only 6.35MW Wind and Solar based renewable electricity generation project. It does not include any non-renewable unit and co-firing system. The validation team has verified the information from Offer Letter^{/11/}, Purchase order^{/10/}, and Commissioning Certificate^{/13/} provided by the PP, therefore this criterion is not applicable to proposed project activity.
6. Combined heat and power (co-generation) systems are not eligible under this category.	The project activity does not involve combined heat and power generation system as it involves solar and wind energy-based power generation.

	The validation team has verified the information from Offer Letter^{/11/}, Purchase order^{/10/}, and Commissioning Certificate^{/13/} provided by the PP, therefore this criterion is not applicable to proposed project activity.
7. In the case of project activities that involve the addition of renewable energy generation units at an existing renewable power generation facility, the added capacity of the units added by the project should be lower than 15 MW and should be physically distinct⁵ from the existing units.	It is a Greenfield project and not the extension of an existing renewable energy facility. The validation team has verified the information from Offer Letter^{/11/}, Purchase order^{/10/}, and Commissioning Certificate^{/13/} provided by the PP, therefore this criterion is not applicable to proposed project activity. Hence the project is in compliance with latest version of the methodology AMS-I.D. Version 18.0.
8. In the case of retrofit or replacement, to qualify as a small-scale project, the total output of the retrofitted or replacement unit shall not exceed the limit of 15 MW.	The project activity is not the retrofitting or replacement of an existing facility for renewable energy generation. Hence, the criterion is not applicable. The validation team has verified the information from Offer Letter^{/11/}, Purchase order^{/10/}, and Commissioning Certificate^{/13/} provided by the PP, therefore this criterion is not applicable to proposed project activity.
9. In the case of landfill gas, waste gas, wastewater treatment and agro-industries projects, recovered methane emissions are eligible under a relevant Type III category. If the recovered methane is used for electricity generation for supply to a grid then the baseline for the electricity component shall be in accordance with procedure prescribed under this methodology. If the recovered methane is used for heat generation or cogeneration other applicable Type-I methodologies such as “AMS-I.C.: Thermal energy production with or without electricity” shall be explored.	The proposed project activity is a solar and wind based-power project. Hence, the criterion is not applicable. The validation team has verified the information from Offer Letter^{/11/}, Purchase order^{/10/}, and Commissioning Certificate^{/13/} provided by the PP, therefore this criterion is not applicable to proposed project activity.
10. In case biomass is sourced from dedicated plantations, the applicability criteria in the tool “Project emissions from cultivation of biomass” shall apply.	The proposed project activity is a solar and wind based-power project power project. Hence, the criterion is not applicable. The validation team has verified the information from Offer Letter^{/11/}, Purchase

	order ^{/10/} , and Commissioning Certificate ^{/13/} provided by the PP, therefore this criterion is not applicable to proposed project activity.
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3.2.3 Project Boundary

The spatial boundary of the project includes the NEWNE grid. KBS could confirm this from the commissioning certificates^{/13/}, and from the CEA baseline database for the Indian power sector^{/07/}. The validation team was able to confirm that all the identified emission sources which are impacted by the project activity are addressed by the approved methodology and can be seen in the Table below.

Source		Gas	Included?	Justification/Explanation
Baseline	Electricity from grid	CO ₂	Yes	Main Emission source.
		CH ₄	No	Excluded for simplification. This is conservative.
		N ₂ O	No	Excluded for simplification. This is conservative.
Project activity	Electricity from project via grid	CO ₂	No	No emission

Findings: CAR 02 was raised and successfully closed. Refer to Appendix 2 for further details.

The validation team is of opinion that the VCS PD^{/2/} has correctly described the project boundary, including the physical delineation of the project activity and complies with VCS standard version 3.7^{/5/}.

3.2.4 Baseline Scenario

The selected methodology to identify the baseline scenario is, the approved baseline methodology “Grid connected renewable electricity generation” (AMS ID Ver.18.0)^{/8/} and this is in accordance with the requirements as per section 3.13 of the VCS standard, version 3.7^{/5/}. As per para 19 of AMS-I.D. (Version 18) “The baseline scenario is that the electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid- connected power plants and by the addition of new generation sources into the grid. In the absence of the project activity same amount electricity would have been generated from grid, in which the electricity is generated by the fossil fuel intensive power plant. Thus, baseline is in line with para 19 of AMS-I.D. (Version 18).

Baseline emissions include only CO₂ emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity. The baseline emissions are calculated by multiplying the baseline emission factor which is grid emission factor (EF_g) and the electricity exported to the Indian grid[/] (EG_g). The grid emission factor (EF_g) is estimated as a combined

margin (CM), which is derived from operating margin (OM) and build margin (BM) factors. The combined margin for the project is calculated based on three years weighted average generation of Simple Operating Margin and Build Margin of the year (2017-18), this is in line with steps of tool to calculate the emission factor for an electricity system (Version 7.0). Both the value of OM and BM are selected under ex-ante approach.

In accordance with the tool to calculate the emission factor for an electricity system, version 7.0, out of 3 options of calculating OM, the PP has rightly selected simple OM emission factor calculation as the share of low cost/must run resources of the selected grid over the three most recent years (2015-16, 2016-17, 2017-18) is < 50% of the gross grid generation^{/07/}. As per the tool to calculate the emission factor for an electricity system, version 7.0 weight factors of $w_{OM} = 0.75$ and $w_{BM} = 0.25$ has been used and the resultant grid emission factor (EFy) works out as 0.9368 tCO₂/MWh. The calculation of EFy is publicly available and published by the Central Electricity Authority on its web-site^{/07/}. The validation team is convinced of the result of the emission factor calculation and found that the calculation is done in a transparent manner.

The annual net exportable power generation is estimated to 12,642 MWh. The validation team has confirmed the same by reviewing the documents purchase order^{/10/}, and third-party assessment study^{/16/}. Altogether the project activity reduces emission to **118,420 tCO₂e** over the ten year first crediting period.

The validation team confirms that:

- All the assumptions and data used by the project participants are listed in the VCS PD, including their references and sources;
- All documentation used is relevant for establishing the baseline scenario and correctly quoted and interpreted in the VCS PD;
- Assumptions and data used in the identification of the baseline scenario are justified appropriately, supported by evidence and can be deemed reasonable;
- Relevant national and/or sectoral policies and circumstances are considered and listed in the VCS PD;
- The approved baseline methodology has been correctly applied to identify the most reasonable baseline scenario and the identified baseline scenario reasonably represents what would occur in the absence of the project activity.

Findings: CAR 03 was raised and successfully closed. Refer to Appendix 2 for further details.

3.2.5 *Additionality*

In accordance with AMS ID Version 18.0, the additionality was demonstrated based on the valid version of the “demonstration of additionality of small-scale project activity Version 12.0^{/17/}”.

According to para 10 of the “demonstration of additionality of small-scale project activity” Version 12.0^{/17/}, PP shall provide an explanation to show that the project activity would not have occurred due to at least one of the following barriers:

- Investment barrier:
- Technological barrier:

- Barrier due to prevailing practice:
- Other barriers

The project proponent identified “investment barrier” as the most relevant barrier faced by the project activity. The revised investment decision for proposed project activity was taken on 8th February 2017 for WTGs and project activity commissioned on 8th March 2018. The solar PV project commissioned on August 2019.

Investment analysis

The PP has chosen benchmark analysis (option III) to carry out investment analysis. Simple cost analysis (option I) was simply ruled out as the project activity leads to generation of revenue from sale of electricity to grid.

In line with EB 101 Annex 11^{/19/}, ‘if the alternative to the project activity is the supply of electricity from a grid this is not to be considered an investment and a benchmark approach is considered appropriate’. The guideline further states that ‘the benchmark approach is therefore suited to circumstances where the baseline does not require investment or is outside the direct control of the project developer i.e. cases where the choice of the developer is to invest or not to invest’.

The baseline scenario for the project activity as per applied methodology AMS ID version 18.0^{/8/} is the electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants. Therefore, benchmark is found most appropriate to demonstrate additionality of the project activity.

According to the “demonstration of additionality of small-scale project activity” Version 12.0^{/17/}, equity IRR is chosen as the financial indicator for investment analysis.

In line with EB 101 Annex 11^{/18/}, required/expected returns on equity have been chosen as the benchmark for investment analysis. Standard market parameters are used to determine the appropriate benchmark in context of the project activity.

Further, in accordance with the tool EB 101 Annex 11^{/18/}, “the cost of equity should be determined either by: (a) selecting the values provided in the Appendix; or by (b) calculating the cost of equity using CAPM”. Hence as per option (a), the default value for India is being considered as per the value provided in Appendix of EB 101 Annex 11. The benchmark thus selected complies as per the relevant guidelines on Investment Analysis. The cost of equity was determined using default values in Appendix of the tool. Default value of expected return on equity for Energy Industries (Group I) for India is 9.79%. Since the Investment analysis is carried out in the nominal terms of input parameter and the default values of expected return on Equity as per Appendix of the tool EB 101 Annex 11^{/18/}, meeting report are in real terms. So, to convert the real terms of Expected return on Equity to Nominal term of expected return on Equity, the inflation rate is added to the real term Expected return on Equity. The inflation is the forecasted inflation rate for the host country published by RBI (Reserve Bank of India), which is a Central Bank of India, for the next Ten years available at the time of investment decision of the project activity is conservatively used for the estimation of Benchmark. The benchmark Expected return on Equity after adding inflation comes out to be 14.29%.

In line with EB 101 Annex 11^{/18/}, Post tax returns on equity (equity IRR) are calculated for the operational lifetime of the project activity i.e. 20 years^{/13/}. In-line with paragraph 120 of VVS 3.7^{/5/},

the accuracy of the input values and financial calculations have been validated. Documentary evidence for all input values used in investment analysis was provided by PP. The PP submitted the spreadsheet for the financial calculation, which was checked by the financial expert who reviewed the assumptions, links and formulas and found them appropriate and legible. It was also found that the equity IRR of the project activity did not cross the benchmark of 14.29%.

At the time of investment decision, PP intended to setup WTGs under project activity with the consideration of selling its generation to grid and project to be funded with 70:30 Debt Equity ratio. However, post investment decision, the management has further decided to wheel its power to its manufacturing facility and funded with 100% Equity. Hence, the financial calculation is assessed by considering following two ways:

- Financial calculation considering Input values applicable at the time of investment decision and;
- Financial calculation considering the post investment decision changes like wheeling, 100% Equity funding, etc.

The Post tax Equity IRR is evaluated considering the following input values:

1*0.85 MW WTGs MH-GAL16		
Assumptions	Value	Reference used cross checking
Capacity of Machines in kW	850	The capacity of the machines has been verified from the offer letter ^{/11.2/} submitted by Gamesa dated 12/01/2017 and found consistent. Commissioning certificate/PO also verified to confirm the start date.
Number of Machines	1	The number of machines has been verified from the offer letter ^{/11.2/} submitted by Gamesa dated 12/01/2017 and found consistent. The same was also verified from the purchase order placed to the technology supplier.
Project Capacity in MW	0.85	The project capacity has been verified from the purchase orders ^{/11.2/} submitted by Gamesa.
Project Cost (INR. In Millions)	51.7	The project cost has been verified from the offer letter ^{/11.2/} submitted by Gamesa dated 12/01/2017 and found consistent. Purchase orders also verified and it was concluded that the difference between purchase order and offer letter is within the range of sensitivity applied by PP in VCS PD.
Plant Load Factor Base Case	24.5%	It has been verified from the GERC order, 2016 ^{/28/} available at the time of decision making. PP also appointed third party to compute the site specific PLF and it was concluded in the thir- party report that PLF is 24%. Since PP has considered higher

		PLF, same was accepted by the validation team.
Net Electricity Generation per year (MWh)	1820	This is a calculated value based on above validated PLF and number of annual operating hours i.e 8760.
Operation & Maintenance Cost (INR Million)	0.88	Operation & Maintenance Cost has been verified from the offer letter ^{/11.2/} submitted by Gamesa dated 12/01/2017 and found consistent. Moreover, it is a small amount and doesn't affect the IRR.
% of escalation per annum on O & M Charges every year after 4 th Year	5.0%	% of escalation per annum on O & M Charges has been verified from the offer letter ^{/11.2/} submitted by Gamesa dated 12/01/2017 and found consistent.
Tariff Rate of Electricity (INR/kWh)	4.19	It has been verified from the GERC order, 2016 ^{/28/} and found consistent. Tariff order are released by the state regulatory bodies therefore the same has been assessed adequate by the validation team.
Equity	30%	The value used have been verified from the webpage link ^{/30/} provided by the PP and found consistent.
Debt	70%	The value used have been verified from the webpage link ^{/30/} provided by the PP and found consistent.
Interest Rate	14.55%	The value has been calculated as average of BPLR of five major bank and found consistent. The information on webpage link shows that most of the public sector banks prime lending rate. The validation team was also able to confirm that the value used was applicable to PP at the time of investment decision.
Loan Tenure (years) including 1-year moratorium period	8	The value used have been verified from the webpage link^{/30/} provided by the PP and found consistent. The validation team also reviewed the actual loan sanction letter and observed the loan repayment period to be 5 years. The validation team observed that the equity IRR remains below the benchmark, if the actual rate of interest and tenure was considered. The validation team considers the value used is reasonable and appropriate.

Rate of Depreciation (As per Books) on Plant and Machinery	4.75%	The value used have been verified from the webpage link^{25/} provided by the PP and found consistent. The validation team was able to cross check the value from the official website of Income Tax Department, Government of India (http://law.incometaxindia.gov.in/DIT/Income-tax-acts.aspx) and confirms that value used is consistent. The validation team considers the value used is correct and appropriate.
Book depreciation	90%	The value used have been verified from the webpage link^{26/} provided by the PP and found consistent. The validation team was able to cross check the value from the official website of Income Tax Department, Government of India (http://law.incometaxindia.gov.in/DIT/Income-tax-acts.aspx) and confirms that value used is consistent. The validation team considers the value used is correct and appropriate.
Residual Value (%)	10%	The value used have been verified from the webpage link^{26/} provided by the PP and found consistent. The value used has been verified from the CERC (Terms and Conditions of Tariff) Regulation-2009^{39/}. Also, this is a standard practice. The validation team considers the value used is reasonable and appropriate.
Rate of Depreciation (As per Income Tax) (15%+ 20% additional)	35%	The value has been verified from the income tax act and found consistent. The validation team was able to cross check the value from the official website of Income Tax Department, Government of India (http://law.incometaxindia.gov.in/DIT/Income-tax-acts.aspx) and confirms that value used is consistent. The validation team considers the value used is correct and appropriate.
MAT Rate	21.34%	The value used have been verified from the webpage link^{27/} provided by the PP and found

		consistent. The assessment team confirmed the host country taxation laws applicable during the investment decision
Corporate Tax	34.61%	The value used have been verified from the webpage link ^{/27/} provided by the PP and found consistent. The assessment team confirmed the host country taxation laws applicable during the investment decision
Lifetime of the project activity (years)	25	The value used have been verified from the webpage link ^{/30/} provided by the PP and found consistent.

1*2MW WTG MP (Gamesa)		
Assumptions	Value	Reference used cross checking
Capacity of Machines in kW	2000	The capacity of the machines has been verified from the offer letter ^{/11.3/} submitted by Gamesa dated 17/01/2017 and found consistent. The validation team has further cross checked the number of machines from purchase order.
Number of Machines	1	The number of machines has been verified from the offer letter ^{/11.3/} submitted by Gamesa dated 17/01/2017 and found consistent. The validation team has further cross checked the number of machines from purchase order.
Project Capacity in MW	2	The project capacity has been verified from the offer letter ^{/11.3/} submitted by Gamesa dated 17/01/2017 and found consistent. The validation team has further cross checked the number of machines from purchase order.
Project Cost (INR. In Millions)	150	The project cost has been verified from the offer letter ^{/11.3/} submitted by Gamesa dated 17/01/2017 and found consistent. The validation team has cross checked the values from the purchase orders ^{/14/} , the actual project cost as per purchase orders placed is in the range

		of -10% less than the indicated cost in offer letter which is attributed to negotiations. The IRR was recalculated by the validation team considering the actual cost and the IRR does not cross the benchmark.
Plant Load Factor Base Case	25%	It has been verified from the KERC order, 2016^{/28/} and found consistent. Third party was also appointed by PP for PLF and it has provided the same PLF. Since the source is in conformance with Annex 11 of EB 48 the PLF was accepted by the assessment team.
Net Electricity Generation per year (MWh)	4380	Calculated based on PLF and annual operating days.
Operation & Maintenance Cost (INR Million)	2.71	Operation & Maintenance Cost has been verified from the offer letter ^{/11.3/} submitted by Gamesa dated 17/01/2017 and found consistent.
% of escalation per annum on O & M Charges every year after 4 th Year	5.0%	% of escalation per annum on O & M Charges has been verified from the offer letter^{/11.3/} submitted by Gamesa dated 17/01/2017 and found consistent. Moreover, O&M cost has been subjected to sensitivity in O&M cost to breach the benchmark value is not possible considering PP has already entered into a contract with WTG supplier. Hence the validation team considers the O&M value used for investment analysis is reasonable and appropriate.
Tariff Rate of Electricity (INR/kWh)	4.5	It has been verified from the KERC order, 2016 ^{/28/} and found consistent. Moreover, PP also verified and found that it has same value as the KERC tariff order.
Equity	30%	The value used have been verified from board resolution and found consistent. The validation team cross-checked the financials considered by the PP during investment to confirm that the debt-equity ratio of 70:30 was assumed by the PP during the investment decision. The Tariff Policy (TP) notified by Ministry of Power, Government of India stipulates a debt-equity ratio of 70:30 for financing of power project.

		However, in actual financing pattern of the project varies in the debt: equity ratio. The validation team was able to check the actual values from the loan sanction letter, wherein the loan amount is 70 million INR. The additionality was reassessed considering the actual financing pattern by the validation team and the IRR was found to be within the benchmark limits. However, based on the information available at the time of decision making the financing pattern considered was found reasonable and appropriate.
Debt	70%	The value used have been verified from board resolution and found consistent. The validation team cross-checked the financials considered by the PP during investment to confirm that the debt-equity ratio of 70:30 was assumed by the PP during the investment decision. The Tariff Policy (TP) notified by Ministry of Power, Government of India stipulates a debt-equity ratio of 70:30 for financing of power project. However, in actual financing pattern of the project varies in the debt: equity ratio. The validation team was able to check the actual values from the loan sanction letter, wherein the loan amount is 70 million INR. The additionality was reassessed considering the actual financing pattern by the validation team and the IRR was found to be within the benchmark limits. However, based on the information available at the time of decision making the financing pattern considered was found reasonable and appropriate.
Interest Rate	14.55%	The value has been calculated as average of BPLR of five major bank and found consistent.
Loan Tenure (years) including 1-year moratorium period	8	It has been verified from the Wind tariff order, 2017 ^{/24/} and found consistent.
Rate of Depreciation (As per Books) on Plant and Machinery	4.75%	The value used have been verified from the webpage link ^{/25/} provided by the PP and found consistent.
Book depreciation	90%	The value used have been verified from the webpage link ^{/26/} provided by the PP and found

		consistent.
Residual Value (%)	10%	The value used have been verified from the webpage link ^{/26/} provided by the PP and found consistent.
Rate of Depreciation (As per Income Tax) (15%+ 20% additional)	35%	The value has been verified from the income tax act and found consistent.
MAT Rate	21.34%	The value used have been verified from the webpage link ^{/27/} provided by the PP and found consistent.
Corporate Tax	34.61%	The value used have been verified from the webpage link ^{/27/} provided by the PP and found consistent.
Lifetime of the project activity (years)	25	It has been verified from the Wind tariff order, 2017 ^{/24/} and found consistent.

Sensitivity Analysis:

The Guidance on Assessment of Investment Analysis requires the robustness of the conclusion arrived at to be proved through a sensitivity analysis by varying the critical assumptions to a reasonable variation. The project developer has identified PLF, Tariff, Project Cost and O&M cost as critical assumptions. Reasonable variations of the PLF, Tariff, Project Cost and O&M cost were checked by calculating the variation necessary to reach the benchmark and then discussing the likelihood for that to happen. None of the parameters in the sensitivity analysis are considered to have any significant positive correlation.

Tool EB 101 Annex 11^{/18/} states that as a general point of departure, variations in the sensitivity analysis should at least cover a range of +10% and –10%, unless this is not deemed appropriate in the context of the specific project circumstances. Accordingly, all these parameters have been subjected to 10% variation on either side. The outcome of sensitivity analysis on identified parameter is presented in table below:

1*2MW Gamesa

FACTOR	VARIATION			Breaching value
	-10%	0%	+10%	
Project Cost	8.49%	6.34%	4.34%	-28.76%
O&M Cost	6.64%	6.34%	5.99%	-340.4%
PLF	3.95%	6.34%	8.56%	36.0%

Tariff	3.95%	6.34%	8.56%	36.0%
Interest Rate	6.98%	6.34%	5.60%	-95.7%
Benchmark	14.29%			

1*0.85MW Gamesa

FACTOR	VARIATION			Breaching value
	-10%	0%	+10%	
Project Cost	9.28%	7.08%	5.31%	-26.62%
O&M Cost	7.42%	7.08%	6.82%	-285.4%
PLF	4.69%	7.08%	9.35%	32.12%
Tariff	4.69%	7.08%	9.35%	32.12%
Interest Rate	7.73%	7.08%	6.52%	-88.28%
Benchmark	14.29%			

Plant Load Factor (PLF)

The Equity IRR is within the benchmark for the reasonable variation (+10%) of net generation (PLF). The PLF value considered is based on CWET assessment sourced by respective State i.e. 24.5% and 25% for 1*0.85MW Gamesa and 1*2MW Gamesa and the PLF will breach the benchmark value at PLF variation of 31.12% and 36% respectively. The increase in PLF value to breach the benchmark is highly unlikely.

Tariff

The sensitivity analysis on the power tariff is within the benchmark for a reasonable variation of $\pm 10\%$ as provided in the table above. The Tariff rate of electricity used for investment analysis i.e. 4.19 INR/kWh (Gujarat) and 4.5 INR/kWh (Karnataka) are sourced from the tariff orders by respective states, the same has been also confirmed from tariff orders of respective states applicable to project activity at the time of investment decision. Furthermore, these tariffs will be fixed for lifetime of the project activity, hence this is not a likely scenario.

Project Cost:

The project IRR is within the benchmark for a reasonable variation of $\pm 10\%$ of the project cost as provided in the table above.

The project activity is operational and the costs have already been incurred by the project participant. The assessment team reviewed the Purchase Order ^{/10/} that constitutes 100% of the total actual project cost and confirmed that the actual total project costs are 3% lower than the project cost considered in the project financials as per Offer letter applicable at the time of

investment decision and the same is well within $\pm 10\%$ sensitivity range. Hence a decrease in 15% is not realistic as the project activity is already commissioned.

O&M Cost

The sensitivity analysis reveals that O&M will breach the benchmark at negative values and is hypothetical case. Since the O&M cost is subject to escalation (as evidence by the O&M agreement) and also subject to inflationary pressure, any reduction in the O&M costs is highly unlikely. Hence, the reduction in the O&M cost is highly unlikely.

Interest rate

The interest rate of long-term loan i.e. 14.43% is considered for investment analysis, which is calculated as five major banks average available to PP prior to decision making date for individual projects. The sensitivity analysis reveals that a variation in interest rate by -88.28% and -95.70% for 0.85MW WTG, 2 MW WTG will breach the benchmark value, which is much lower than actual value of interest rate.

Validation assessment:

3.5MW Solar PV:

As per para 11 of the EB 99 Annex 3 "Demonstration of additionality of small-scale Project activities" (Version 12), the small scale Solar photovoltaic power plant with aggregated installed capacity 3.5 MW, which is below 15 MW is automatically additional.

Findings: CAR 02, CAR 06 and CL 01 was raised and successfully closed. Refer to Appendix 2 for further details.

Opinion:

The validation team would like to confirm that

- (a) Each input parameter has been sufficiently validated and cross checked wherever possible
- (b) The equity IRR calculation are undertaken in correct manner and follows the standard accounting practice
- (c) The selected benchmark is developed using parameters that are standard in the market and have been suitably calculated.
- (d) The investment analysis period is consistent with the technical lifetime of the project activity and adequate salvage value has been considered.
- (e) The national and sectoral policies have been considered while undertaking the financial calculations and all available incentives are being shown availed in the final spreadsheet.
- (f) The sensitivity has been conducted to a likely variation in the all the key parameters that might affect significantly the equity IRR and it is confirmed that equity IRR is not able to cross the identified benchmark under any likely scenario.
- (g) The investment analysis complies with EB101 Annex 11^{18/} to the extent that it can be concluded that project remains financial unattractive and therefore additional.

3.2.6 Quantification of GHG Emission Reductions and Removals

Quantification of baseline emissions Baseline emissions

According to the methodology AMS ID, Version 18.0, for new grid connected renewable power plant, the baseline emissions are the product of electricity produced by renewable energy generating unit multiplied by the emission factor of the grid. The baseline emissions are to be calculated as follows:

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

Where:

BE_y = Baseline Emissions in year y ; t CO₂

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

$EF_{grid,y}$ = Combined margin CO₂ emission factor for grid connected power generation in year y calculated using the latest version of the “Tool to calculate the emission factor for an electricity system” (t CO₂/MWh)

Calculation of the emission factor

The baseline emission factor is calculated as a Combined Margin (CM) consisting of Operating Margin (OM) and Build Margin (BM) factors based on data from an official source publicly available. The CM emission factor (EF) for the displaced electricity was calculated based on the ‘Tool to calculate the emission factor for an electricity system’ Version 07 (hereinafter referred to as “the tool”), in accordance with the applied methodology. This version of the tool is currently having an “active” status.

The PP uses the EF for the grid electricity as calculated in CO₂ Baseline Database for the Indian Power Sector published by the Central Electricity Authority (CEA)^{07/}, Ministry of Power, Government of India. The CEA publishes on an annual basis the General Review and the Performance Review of Thermal Power Stations which is used by the majority of project developers. The database for baseline estimation issued by the CEA has been developed consistently with the availability of data in India. The database is an official publication of the Government of India for the purpose of CDM baselines. The CEA Database Version 14.0^{07/} has been applied as it was current at the time of submission of the VCS-PD for validation. The step wise estimation of CM EF is provided as below:

Step 1 of the tool requires identification of the relevant electric power system. In line with the requirements specified in the tool, the PP has used a regional grid definition applicable for large countries like India with layered dispatch systems. Historically, the Indian power system was divided into five independent regional grids, namely Northern, Eastern, Western, Southern, and North-Eastern. Each grid covered several states.

Since August 2006 however, all regional grids except the Southern Grid have been integrated and are operating in synchronous mode, i.e. at the same frequency. The Gujarat and Karnataka site is located in NEWNE Grid and its selection for the purpose of estimation of baseline emission factor is considered appropriate. Therefore, the validation team confirmed the applicability of Step 1 of the tool.

Step 2 of the tool gives the PP an option to include off-grid power plants in the project electricity system. The PP has chosen only grid power plants for analysis.

Step 3 of the tool requires selecting a method for estimation of operating margin. Of the four methods provided in the tool for calculating the operating margin ($EF_{grid,OM,y}$), the PP has selected

simple OM method since the low-cost/must-run resources constitute less than 50% of total grid generation on average of the five most recent years, i.e. from 2013-14 to 2017-18.

Share of Must-Run (Hydro/Nuclear) (% of Net Generation)					
	2013-14	2014-15	2015-16	2016-17	2017-18
India	18.6%	16.8%	15.1%	14.6%	14.3%

Low operating cost/must run resources include hydro and nuclear.

The tool provides two options – (i) ex-ante option and (ii) ex-post option in calculating the simple OM. The PP has chosen the ex-ante option for determining the OM. This choice of ex-ante option which is based on a 3-year generation-weighted average, based on the most recent data available at the time of submission of the VCS-PD to the DOE for validation, was found acceptable in view of the availability of the requisite data vintages.

Step 4 of the tool requires the calculation of the operating margin emission factor according to the Simple OM method chosen as per Step 2 above. In validating Step 3, KBS independently crosschecked and confirmed the calculations presented by the PP with respect to the OM emission factor for the last three years for the NEWNE Grid and arrived at the following summary:

Project System	NEWNE Grid		
Year	2015-16	2016-17	2017-18
Net generation (GWh)	871753	916278	960693
Specific emissions (tCO₂/MWh)	0.97	0.96	0.95

$$EF_{\text{grid,NEWNE,OM}} = 0.9610 \text{ tCO}_2/\text{MWh}$$

Step 5 of the tool requires the identification of the cohort of the power units to be included in the build margin. PD correctly mentions that it considers sample group selected for calculation of BM includes The CEA database has selected the set of power capacity additions in the electricity system that comprises 20% of the system generation (in MWh) and these have been built most recently. The calculations are based on generation, fuel consumption and fuel quality data obtained from the power stations.

In validating this step, KBS confirmed that:

- the identified power capacity additions comprise 20% of the system generation for the year under consideration, and
- none of the considered power capacity additions considered under (i) above have been built more than ten years earlier.

The CEA database provides a BM value for the NEWNE grid as 0.8644^[07]. As part of validation of Step 5 of the tool, KBS confirmed through the BM for the year 2017-2018 as per the following summary:

Grid System	Year	Net Generation (GWh)	Specific emissions (tCO ₂ /MWh) BM
NEWNE	2017-2018	960693	0.8644

Step 6 of the tool requires calculation of the combined margin emission factor as per the following equation:

$$EF_{\text{grid,CM,y}} = EF_{\text{grid,OM,y}} \times wOM + EF_{\text{grid,BM,y}} \times wBM$$

According to the guidance on selecting alternative weights in the tool, the default weights applicable for wind projects are $wOM = 0.75$ and $wBM = 0.25$ for the first and subsequent crediting period have been applied,

The baseline grid emission factor has been calculated as;

$$EF_{\text{grid,CM,y}} = 0.75 \times 0.9610 + 0.25 \times 0.8644 = 0.9368 \text{ tCO}_2\text{e/MWh}$$

$$EG_{PJ,y} = EG_{PJ,0.85MW} + EG_{PJ,2MW} + EG_{PJ,3.5MW}$$

The electricity generation for each site is calculated based on PLF estimates by third party as below

$$EG_{PJ,y} = (0.85MW \times 0.245 + 2MW \times 0.25 + 3.5MW \times 0.21) \times 24 \text{ hours} \times 365 \text{ days}$$

$$EG_{PJ,y} = (1824 + 4380 + 6438) \text{ MWh}$$

$$EG_{PJ,y} = 12,642 \text{ MWh}$$

Hence baseline emission is

$$BE_y = 12642 \times 0.9368 = 11,842 \text{ tCO}_2\text{e/year}$$

$$BE_y = 11,842 \text{ tCO}_2\text{e/year}$$

Annual average baseline emission is estimated to be **11,842 tCO₂e**.

Ex-ante electricity generation has been evaluated based on 'Guidelines for the reporting and validation of plant load factors' Version 01, Annex 11^[21], CDM EB report of its 48th meeting through the PLF study report prepared by third party^[16].

- Quantification of Project emissions (PE_y)

The applied methodology states that for most renewable energy project activities, $PE_y = 0$. However, the methodology prescribes that the project emissions are applicable only for geothermal power plants, solar thermal power plants or hydro power plant. Therefore, project emission from wind power plant is considered as nil.

- Quantification of Leakage (LE_y)

The applied methodology states that if the energy generating equipment is transferred from another activity, leakage is to be considered. Since the project activity is a new wind power

project and there is no transfer of equipment from another activity so leakage is not considered. The new installation of the WTG has been confirmed based on the verification of purchase orders placed by the PP to the WTG supplier and the commissioning certificates. Thus, the validation team confirms that the consideration of leakage emission as zero is appropriate for the project.

Hence, $LE_y = 0$

- Emission reductions

As provided in the methodology, emission reduction is calculated from the equation

$$ER_y = BE_y - PE_y - LE_y$$

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

PE_y : Project emissions in the year y (tCO_2e/y)

LE_y : Leakage emissions in the year y (tCO_2e/y)

ER_y : Emission Reductions in the year y (tCO_2e/y)

The annual emission reductions from the project activity can be estimated as the difference between the baseline emissions and the project emissions as follows:

$$ER_y = BE_y - PE_y - LE_y$$

$$ER_y = 11,842 - 0 - 0$$

$$= 11,842 \text{ tCO}_2e$$

The total emission reduction is 118,420 over 10 years fixed crediting period.

Through the validation process KBS has confirmed that:

- All the assumptions and data used by the project participants are listed in the PD including their references and sources;
- All documentation used by the project participants as the basis for assumptions and source of data is correctly quoted and interpreted in the PD;
- All values used in the PD are considered reasonable in the context of the VCS project activity;
- The baseline methodology has been applied correctly to calculate project emissions, baseline emissions, leakage and emission reductions;

All estimates of the baseline emissions can be replicated using the data and parameter values provided in the PD

Findings: CAR 03 and CAR 06 was raised and successfully closed. Refer to Appendix 2 for further details.

3.2.7 Methodology Deviations

The project activity has used the CDM methodology AMS ID, version 18.0^{/8/} and the PP has completely followed the methodology for the development of the PD^{/2/}. The validation team has confirmed that that, the PP does not make any deviations from the applied methodology.

3.2.8 Monitoring Plan

The project monitoring plan is in compliance with the monitoring methodology AMS ID (version 18.0)^{/8/}. The monitoring plan will give opportunity for real measurement of emission reductions achieved. Since the project is a wind and solar energy generation activity, no indicators have been defined regarding project emissions. Leakage accounting has not been considered for the project since the renewable energy technology equipment used is new equipment and not transferred from another activity. The monitor-able action plan for the same has been included in section 4.3 of the VCS PD^{/2/}. It is KBS's opinion, that the project participant is able to implement the monitoring plan.

- Data and parameters available at validation

The combined margin emission coefficient for the north east west north eastern grid of India has been calculated at 0.9368 tCO₂e/MWh (considering OM and BM at a weight of 75:25), and is fixed ex-ante for the entire crediting period. The CM emission factor value has been calculated from version 14.0 of data published by the Central Electricity Authority (CEA) of the Ministry of Power, Government of India^{/07/}. CEA has published a database of carbon dioxide emission factors for the power sector in India based on detailed authenticated information obtained from all operating power stations in the country^{/07/}. This CO₂ baseline database provides information about the OM and BM factors of electricity grids in India, which has been established as per the "Tool to calculate the emission factor for an electricity system" ^{/20/}. KBS confirms that the database is an official publication of the Government of India for the purpose of CDM baselines and the OM in the CEA database is calculated ex-ante using the simple OM approach based on the generation-weighted average emissions per electricity unit over a three-year period of 2015-16, 2016-17 and 2017-18^{/07/}. BM is calculated ex-ante based on the 20% most recent capacity additions in the grid based on net generation for the year 2017-18. The operating margin has been determined to be 0.9610 tCO₂e/MWh and the build margin to be 0.8644 tCO₂e/MWh^{/07/}. KBS confirms that the database version 14 is used to calculate the combined margin emission factor was the latest database available at the time of start of validation and the combined margin emission factor for the north east west north eastern grid of India is fixed ex-ante for the entire crediting period.

- Data and parameters monitored

The project applies monitoring methodology AMS ID version 18.0. "Grid connected renewable electricity generation", as per the methodology, monitoring shall consist of metering the quantity of net electricity generation supplied by the project plant/unit to the grid by the renewable technology installed by the project proponent.

The electricity exported to the grid by the project activity connected to the sub-station is measured by electronic meters. Net electricity supplied to the grid would be calculated based on export and import data. (Net electricity supplied to the grid = Export electricity – Import electricity).

The export and import energy will be measured continuously using main meters installed at individual WTG. Export & import readings of Main & Check meters shall be taken on monthly basis by authorized officer of GEDA/GETCO/KPTCL in the presence of PP or representative of PP. The energy meter installed at sub-station is used to measure the net quantum of electricity supplied to the grid by the wind farm (inclusive of project and non-project WTGs). The state utility will issue a monthly certificate for share of electricity to all the individual investors specifying the share of net electricity exported to the grid by their respective WTGs connected at the same sub-station.

The procedure to monitor the electricity export and import is explained in section 4.2 of the VCS-PD and assessed to be appropriate. The OM and BM are calculated as fixed for the whole period by choosing data vintage based on ex-ante monitoring published by CEA. Hence data needed to recalculate OM and BM does not apply. According to the monitoring plan of the PD this requirement is fulfilled.

As per section 4.2 of the VCS-PD the data and parameters to be monitored is as follows:

- a) Net Electricity supplied to the Grid by the project activity, $EG_{PJ,y}$

All the monitored data will be archived electronically for a period of 2 years after the crediting period. Accuracy, calibration, periodical testing and maintenance procedures of monitoring equipments are clearly mentioned in the section 4.2 of VCS-PD. Validation team has reviewed the same and is convinced that the same is adequate and will lead to correct measurement of the net electricity exported to the grid.

Finding: CAR 04 was raised and successfully closed. Refer to Appendix 2 for further details.

3.3 Non-Permanence Risk Analysis

NA

4 SAFEGUARDS

4.1 No Net Harm

The project activity does not produce any pollution in process of power generation as it utilises renewable energy sources in all its project sites - wind energy and solar energy. This was confirmed during through the telephonic interviews conducted with local stakeholders. Hence there is positive impact on the environment due to this small-scale project activity of reducing the pollution caused by fossil fuels used in mix power plants in grid. Further this project activity will have no air pollution, no water pollution and no noise pollution.

4.2 Environmental Impact

The project does not lead to any significant adverse environmental impacts. This was confirmed through the interviews conducted with local stakeholders. Other than the noise that is emanated from the WTGs during operation, there are no other known environmental impacts. Thus, the project activity is expected to have only beneficial impacts and no adverse impacts are foreseen.

KBS through review of the current Environmental clearance regulations confirmed that there is no requirement for carrying out any Environmental impact analysis. As per the Ministry of Environment and Forests (MoEF), India, Environment Impact Assessment Notification no. 3067 dated 01/12/2009 and Feb 2016 ^{/22/}, wind and solar power projects are not covered under any Schedule for which Environmental Impact Assessment is required. The project activity is in compliance with all current, applicable legislations in India.

Findings: CAR 05 was raised and successfully closed. Refer to Appendix 2 for further details.

4.3 Local Stakeholder Consultation

The stakeholder meeting was conducted on following dates with respect to different locations:

Venue	Stakeholder Meeting Date
Upprahalli, Karnataka	12 th Dec 2018
Vijayapar, Karnataka	14 th Dec 2018
Bachau, Kuchh, Gujarat	20 th Dec 2018

The local stakeholders were invited for comments through advertisement in the local newspaper as well as by invitation letters. The comments by local stakeholders are to be invited in an open and transparent manner. A summary of the comments received has provided to the DOE along with the report indicating how due account was taken to the comments received.

Review of the Stakeholder meeting minutes shows that people were supportive to the project activity and expressed no negative comments on the project activity. As part of the validation, KBS confirmed through document review that the stakeholders were invited in a transparent manner.

Findings: CL 01 was raised and successfully closed. Refer to Appendix 2 for further details.

4.4 Public Comments

General comments related to employment generation, any negative impacts and GHG reduction estimation etc. were submitted. There were no negative comments raised by stakeholders in the local stakeholder consultation meetings and due to the associated benefits stakeholders have appreciated the proposed project activity. No public comments received during the one month publication. Link is:

https://www.vcsprojectdatabase.org/#!/pipeline_details/PL1878

5 VALIDATION CONCLUSION

Sai Pet Preforms Limited has commissioned the KBS Certification Services Pvt. Ltd. to carry out the Validation of the project - "Bundled renewable energy project in Gujarat and Karnataka, India", with regard to the relevant requirements of VCS Standard Version 03.7.

The project is a renewable energy project. It has been implemented to produce electricity by using wind which is a renewable source of energy. The installed capacity of the two WTGs is 1*2000 kW and 1*850 kW in the states Karnataka and Gujarat respectively *and* solar PV modules with capacity 3500 kW in Karnataka. It has been estimated to generate **12,642 MWh** of electricity from the project activity annually which will be supplied to the NEWNE Grid of India. Throughout the fixed crediting period of 10 years the project has been estimated to reduce **118,420 tCO₂e**.

A risk-based approach has been followed to perform this validation. In the course of the validation 06 Corrective Action Requests (CAR) and 01 Clarification Requests (CL) were raised and successfully closed out.

The validation is based on the VCS PD, proof of title, proof of right, additional documents related to baseline and monitoring methodology; the subsequent background investigation, follow-up interviews and supporting documents made available to the validation team by project proponent.

As a result of the validation, the validation team confirms that:

- The project fulfils criteria of VCS Standard Version 03.7.
- The project is in line with all relevant VCS requirements.
- The project additionality is sufficiently justified in the PD.
- The monitoring plan is transparent, adequate and in line with applied baseline and monitoring methodology of AMS ID Version 18.0.
- The calculation of the project emission reductions is carried out in a transparent and conservative manner, so that the calculated emission reductions of **118,420 tCO₂e** is most likely to be achieved within the 10 years of first renewable crediting period.

No restrictions or uncertainties were identified related to the validation.

Location: Faridabad, Haryana, India

Date: 13/11/2019



Kaushal Goyal

Managing Director

KBS Certification Services Pvt. Ltd.

APPENDIX 1: REFERENCES

S. No.	Name of document (Validation Process)
/1/	VCS PD version 01 dated 07/02/2019
/2/	VCS PD Version 02 dated 31/10/2019
/3/	/3.1/ ER spread-sheet corresponding to PD Version 01 /3.2/ ER spread-sheet corresponding to PD Version 02 /3.3/ EIRR spread-sheet corresponding to PD Version 01
/4/	VCS Program Guide Version 03.7
/5/	VCS Standard Version 03.7
/6/	Audit plan sent to PP for the site inspection.
/7/	CEA baseline database for the Indian power sector (Version 14)
/8/	AMS I.D Version 18
/9/	EB66_Annex63_GLOSSARY OF CDM TERMS_V6
/10/	Purchase order
/11/	/11.1/ Offer letter by Diwakar Soltek Pvt Ltd. dated 19/06/2018 /11.2/ Offer letter Gamesa dated 12/01/2017 /11.3/ Offer Letter Gamesa dated 17/01/2017
/12/	Calibration certificates of various instruments as referred in main section of report.
/13/	Commissioning Certificates.
/14/	Technical specifications.
/15/	Board note
/16/	Third party assessment study for PLF
/17/	Demonstration of additionality of small-scale project activity Version 12.0
/18/	Investment Analysis tool Version 9.0
/19/	Guidelines on the assessment of investment analysis, EB 101
/20/	Tool to calculate the emission factor for an electricity system Version 07.0.0
/21/	Guidelines for reporting and validation of Plant Load Factors, version 01
/22/	Environment Impact Assessment Notification no. 3067 dated 01/12/2009 and Feb 2016
/23/	Letter of Award from KREDL
/24/	Wind tariff order, 2017 https://www.karnataka.gov.in/kerc/Downloads/Tariff%202017/Dated%2004.09.2017-Wind%20Tariff%20Order-DT_MA.pdf
/25/	Company's act, Schedule XIV, http://www.aadisol.in/aca/images/bullentins/bt_23.pdf
/26/	CERC order dated 26/04/2010 http://www.cercind.gov.in/2010/ORDER/April10/Final_RE_Tariff_Order_FY2010-11(53-2010_Suo-motu).pdf
/27/	http://taxguru.in/income-tax/income-tax-rate-chart-slabs-for-ay-2017-18-fy-2016-17.html
/28/	GERC order, 2016
/29/	Wheeling and Banking Agreement dated 16/10/2019
/30/	GUJARAT ELECTRICITY REGULATORY COMMISSION (MULTI-YEAR TARIFF) REGULATIONS, 2016 https://www.gercin.org/wp-content/uploads/2019/08/Tariff-Regulations.pdf

APPENDIX 2: DETAILED FINDINGS

Summary of findings	CAR	CL	FAR
	06	01	--

Date	Type & Number	Raised by	Reference
04/09/2019	CL#01	Deboshmita Dey, Shikha Sharma (Validator-Trainee)	Project description (Section 1)
Non conformities raised			
PP needs to provide the following documents for validation: 4. Commissioning Certificates 5. Purchase Orders 6. Power Purchase Agreements between DISCOM and PP 7. Tariff documents 8. Local stakeholder documents 9. JMR reports 10. ONM report 11. Offer Letter from Gamesa dated 17/01/2017 12. Offer Letter from Gamesa dated 12/01/2017			
Project Participants response		Date: 18/10/2019	
The documents provided along with this response.			
Documentation Provided as Evidence by Project Participant			

1. Commissioning Certificates 2. Purchase orders 3. PPA 4. LSC 5. Offer letter from Gamesa 6. Tariff documents		
Information Validated by Team Leader	Date of review: 02/11/2019	
1. Commissioning Certificates 2. Purchase orders 3. PPA 4. LSC 5. Offer letter from Gamesa 6. Tariff documents		
Reasoning for not acceptance or close out		
The documents listed above has been furnished by the PP. Hence, CL 01 is closed.		
Date of acceptance or non- acceptance	Date: 02/11/2019	Status: Closed

Date	Type & Number	Raised by	Reference
04/09/2019	CAR#01	Deboshmita Dey, Shikha Sharma (Validator-Trainee)	Project description (Section 1)
Non conformities raised			
Under section 1.11 of the PD,			
1. Please provide reference for the environment act;			
2. Incomplete sentence under ownership and other programs.			
Project Participant’s response		Date: 18/10/2019	
1. The reference is added in revised VCS PD			
2. There was typo error the same is corrected in revised VCS PD			
Documentation Provided as Evidence by Project Participant			

VCS PD V02		
Information Validated by Team Leader	Date of review: 02/11/2019	
VCS PD V02		
Reasoning for not acceptance or close out		
1. The reference is now provided in the revised VCS PD and is functional. 2. The correction has been done in the revised VCS PD. Hence, CAR 01 is closed.		
Date of acceptance or non- acceptance	Date: 02/11/2019	Status: Closed

Date	Type & Number	Raised by	Reference
04/09/2019	CAR#02	Deboshmita Dey, Shikha Sharma (Validator-Trainee)	Project description (Section 2)
Non conformities raised			
Under section 2.1 of the PD, 1. The annex and EB number for “Tool to calculate project or leakage CO2 emissions from fossil fuel combustion” Version 03 and General guidelines for SSC CDM methodologies, Version 22.1 is inconsistent; 2. The reference link for guidelines is not valid. Under section 2.3 of the PD, the font size is not consistent. Under section 2.5 of the PD, 1. In benchmark section, the paragraph number of the EB 101, Annex 11 stating “inflation forecast should be for the duration of the crediting period” is not correct. 2. In the table “3.5MW Solar Karnataka”, the operation and maintenance cost is inconsistent with the offer letter provided by PP. 3. The source link of equity, debt, Loan Tenure (years) including 1-year moratorium period and Lifetime of the project activity (years) for the Table- “1*0.85 MW WTGs MH-GAL16” is not valid. 4. In sensitivity analysis section, PP needs to update the EB and annex no. of the Investment analysis tool.			
Project Participant's response		Date: 18/10/2019	

Under Section 2.1 of the PD		
1. There was typo error the latest version of tools and guidelines used is updated as available on UNFCCC website. 2. The weblink updated in revised VCS PD.		
Under Section 2.3 of the PD, the font size is corrected in revised PD.		
Under section 2.5 of the PD,		
1. There was typo error the relevant para is corrected as para 16 in revised PD 2. The solar project is auto additional, hence the same is removed and no more relevant. 3. The source link is corrected in revised PD 4. The latest tool version is applied and updated in revised PD		
Documentation Provided as Evidence by Project Participant		
VCS PD V02		
Information Validated by Team Leader	Date of review: 02/11/2019	
VCS PD V02		
Reasoning for not acceptance or close out		
Under section 2.1 of the PD,		
1. The annex and EB number for “Tool to calculate project or leakage CO2 emissions from fossil fuel combustion” Version 03 and General guidelines for SSC CDM methodologies, Version 22.1 has been updated in the revised VCS PD. 2. The reference link for guidelines has been updated in the revised VCS PD.		
Under section 2.3 of the PD, the font size is now consistent in revised VCS PD.		
Under section 2.5 of the PD,		
1. In benchmark section, the paragraph number of the EB 101, Annex 11 is now consistent in the revised VCS PD. 2. The correction has been made in the revised VCS PD. Since the capacity of the solar project is less than 15 MW, it is automatically additional. 3. The source link for equity, debt, Loan Tenure (years) including 1-year moratorium period and Lifetime of the project activity (years) for the Table- “1*0.85 MW WTGs MH-GAL16” is now updated in the revised VCS PD. 4. The latest tool for the investment analysis has been applied in the revised VCS PD		
Hence, CAR 02 is closed.		
Date of acceptance or non- acceptance	Date: 02/11/2019	Status: Closed

Date	Type & Number	Raised by	Reference
04/09/2019	CAR#03	Deboshmita Dey, Shikha Sharma (Validator-Trainee)	Project description (Section 3)
Non conformities raised			
Minor comments:			
1. Under section 3.1 of the PD, PP needs to add the reference link for “As of 31 December 2013, the Southern grid has also been synchronised with the NEWNE grid”.			
2. Under section 3.4 of the PD, check the calculation of total estimated GHG emission reductions in the table.			
Project Participant’s response		Date: 18/10/2019	
Section 3.1 of PD-Please refer the CEA database for the merger of Southern and NEWNE regional grid (http://www.cea.nic.in/tpeandce.html)			
There was a typo error in section 3.4 of the PD, the same has been corrected.			
Documentation Provided as Evidence by Project Participant			
VCS PD V02			
Information Validated by Team Leader		Date of review: 02/11/2019	
VCS PD V02			
Reasoning for not acceptance or close out			
1. The reference link provided by PP is valid and has been provided in the section 4.1 of the revised VCS PD.			
2. The total estimated GHG emission reductions in the table is now consistent in the revised VCS PD.			
Hence, CAR 03 is closed.			
Date of acceptance or non- acceptance		Date: 02/11/2019	Status: Closed

Date	Type & Number	Raised by	Reference
04/09/2019	CAR#04	Deboshmita Dey, Shikha Sharma (Validator-Trainee)	Project description (Section 4)
Non conformities raised			

Under section 4.1 of the PD, the source link of CEA CO2 database version-14 for the parameters EF _{OM,Y} , EF _{BM,Y} , EF _{CM,Y} is not provided.		
Project Participant's response	Date: 18/10/2019	
The source of CEA CO2 database version-14 is incorporated in revised PD.		
Documentation Provided as Evidence by Project Participant		
VCS PD V02		
Information Validated by Team Leader	Date of review: 02/11/2019	
VCS PD V02		
Reasoning for not acceptance or close out		
The source link of CEA CO2 database version-14 for the parameters EF _{OM,Y} , EF _{BM,Y} , EF _{CM,Y} is now provided in the revised VCS PD.		
Hence, CAR 04 is closed.		
Date of acceptance or non- acceptance	Date: 02/11/2019	Status: Closed

Date	Type & Number	Raised by	Reference
04/09/2019	CAR#05	Deboshmita Dey, Shikha Sharma (Validator-Trainee)	Project description (Section 5)
Non conformities raised			
Under section 5.2 of the PD, the source link of MoEF is not valid.			
Project Participant's response		Date: 18/10/2019	
The reference used has changed is now updated in revised PD as http://ismenvis.nic.in/Database/Notification_01st Dec 2009-SO3067 EIA-Notification-2009_11456.aspx			
Documentation Provided as Evidence by Project Participant			
VCS PD V02			
Information Validated by Team Leader		Date of review: 02/11/2019	
VCS PD V02			
Reasoning for not acceptance or close out			

The source link of MoEF is now functional in the revised VCS PD.

Hence, CAR 05 is closed.

Date of acceptance or non- acceptance	Date: 02/11/2019	Status: Closed
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Date	Type & Number	Raised by	Reference
04/09/2019	CAR#06	Deboshmita Dey, Shikha Sharma (Validator-Trainee)	ER Sheet

Non conformities raised

1. PP needs to update the versions in the ER sheet (Section- Results).
2. The value for PLF in 3.5 MW Solar Karnataka is inconsistent with the PD.
3. Under section ER calculation, the total number of crediting years is inconsistent with the PD.
4. Under section EF calculation, the values for OM, BM and CM for NEWNE grid is inconsistent with the PD.

Project Participant's response

Date: 18/10/2019

1. The result section of ER sheet contained reference as mentioned in CEA database, the latest version of CEA database used now.
2. The value of PLF for solar is taken as 21% in PD and ER sheet is consistently used
3. The number of years is corrected in ER sheet as 10 years
4. As mentioned in PD both the grid is merged as Indian grid only and value is used accordingly, the values updated in ER sheet

Documentation Provided as Evidence by Project Participant

VCS PD V02

ER V02

Information Validated by Team Leader

Date of review: 02/11/2019

VCS PD V02

ER V02

Reasoning for not acceptance or close out

1. The versions of the CEA database and methodology is now updated in the revised ER sheet.
2. The value of PLF for solar has been updated in the revised ER sheet.
3. The number of crediting years has been updated in the revised ER sheet.
4. The value of OM, BM and CM is now consistent in the revised ER sheet.

Hence, CAR 06 is closed.

Date of acceptance or non- acceptance	Date: 02/11/2019	Status: Closed
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