



## Verification and certification report form for CDM project activities

(Version 01.0)

*Complete this form in accordance with the "Attachment: Instructions for filling out the verification and certification report form for CDM project activities" at the end of this form.*

### VERIFICATION AND CERTIFICATION REPORT

<b>Title of the project activity</b>	Grid connected electricity generation from renewable source: Windfarm Complex Santa Vitória do Palmar and Chuí
<b>Reference number of the project activity</b>	8012
<b>Version number of the verification and certification report</b>	01
<b>Completion date of the verification and certification report</b>	28 September 2017
<b>Monitoring period number and duration of this monitoring period</b>	Monitoring period 01: 01 January 2015 to 15 April 2016
<b>Version number of monitoring report to which this report applies</b>	Version 02 dated 12 July 2017
<b>Crediting period of the project activity corresponding to this monitoring period</b>	01 January 2015 to 31 December 2021
<b>Project participant(s)</b>	Santa Vitória do Palmar Holding S.A. Chuí Holding S.A. WayCarbon Soluções Ambientais e Projetos de Carbono Ltda.
<b>Host Party</b>	Brazil
<b>Sectoral scope(s), selected methodology(is), and where applicable, selected standardized baseline(s)</b>	Sectoral scope 01- – Energy industry (renewable source) ACM0002 - Consolidated baseline methodology for grid-connected electricity generation from renewable sources (version 12.2.0)
<b>Estimated GHG emission reductions or net anthropogenic GHG removals for this monitoring period in the registered PDD</b>	795,064 tCO <sub>2</sub> e
<b>Certified GHG emission reductions or net anthropogenic GHG removals for this monitoring period</b>	632,797 tCO <sub>2</sub> e
<b>Name of DOE</b>	ERM Certification and Verification Services
<b>Name, position and signature of the approver of the verification and</b>	

certification report



Melanie Eddis, Partner

## SECTION A. Executive summary

ERM Certification and Verification Services (ERMCVS) was commissioned by Santa Vitória do Palmar Holding S.A. to verify and certify the emission reductions reported for the period 01 January 2015 to 15 April 2016 as set out in the monitoring report of the CDM project activity Grid connected electricity generation from renewable source: Windfarm Complex Santa Vitória do Palmar and Chuí Registration Reference 8012.

The project activity consists in the implementation and operation of a windfarm complex located at the municipalities of Santa Vitória do Palmar and Chuí, Rio Grande do Sul State, Brazil. The windfarm complex is composed of 16 new wind electricity generation facilities identified as Chuí I, Chuí II, Chuí IV, Chuí V, Minuano I, Minuano II, Verace I, Verace II, Verace III, Verace IV, Verace V, Verace VI, Verace VII, Verace VIII, Verace IX and Verace X. A total of 201 aero generators are in operation as part of the CDM project. All aero generators are model Gamesa G97.

ERMCVS highlights that the facilities are known by different names. In the results of the 12th Brazilian Auction of New Energy (12º Leilão de Energia Nova - Leilão nº 02/2011), the facilities are officially named as Chuí I, Chuí II, Chuí IV, Chuí V, Minuano I, Minuano II, Verace I, Verace II, Verace III, Verace IV, Verace V, Verace VI, Verace VII, Verace VIII, Verace IX and Verace X, as referred to in the PDD. However, Chuí and Minuano facilities are sometimes all called as Chuí's facilities, as a set, since they are all located in Chuí Municipality; and the holding that owns these facilities is Chuí Holding S.A. Additionally Verace's facilities were found to be several times referred to as Geribatu's facilities. Despite these differences in names that are present in some of the project supporting documentation (calibration certificates, contracts for example), ERM CVS could trace and correlate (via serial numbers, addresses, references to ownership and location), all necessary documents for this verification and confirms that different names used do not reflect differences to the project design.

ERM CVS is responsible to provide an independent verification conclusion on the reported greenhouse gas (GHG) emission reductions for the project during the relevant monitoring period. The verification activities included desk review, site visit, close out of open issues, preparation of report and technical review. This report sets out the methodology and conclusions of the verification process and the ERM CVS Certification Statement. ERM CVS assessed and verified whether the implementation of the project activity and the steps taken to report emission reductions comply with the CDM criteria and relevant guidance provided by the CMP and the CDM Executive Board.

As set out in the CDM modalities and procedures, verification is the periodic independent review and ex post determination by the Designated Operational Entity (DOE) of the monitored reductions in anthropogenic emissions by sources of greenhouse gases (GHGs) that have occurred as a result of a registered CDM project activity during the verification period. Certification is the written assurance by the DOE that, during a specified time period, a project activity achieved the reductions in anthropogenic emissions by sources of GHGs as verified. The objective of the verification is to establish whether sufficient evidence exists to confirm, to reasonable assurance:

- Whether the project activity has been implemented and is being operated as per the PDD /03/ and that all physical features (technology, project equipment, and monitoring and metering equipment) of the project activity are in place.
- Whether the applied monitoring plan /04/ is in compliance with the relevant approved CDM monitoring methodology
- Whether the monitoring report /01/ and other supporting documents provided are complete and verifiable and in accordance with the monitoring plan and applicable CDM requirements.

- Whether the emission reductions as set out in the monitoring report /01/ have been measured, calculated and reported in accordance with the requirements of the monitoring plan /04/.
- Whether the reported data meet the key principles of data quality and are complete, reliable, consistent, accurate, valid, transparent and conservative.

ERM CVS also assessed whether the monitoring report and other supporting documents provided are complete in accordance with the latest applicable UNFCCC checklists and guidance for documentation required to be submitted with the Request for Issuance.

Furthermore, during the verification, ERM CVS was made aware of post-registration changes affecting the project activity. In accordance with section 8.3.4 and 8.3.5 of the Project Standard for Project Activities (version 01.0), the PP has reported the post registration changes and ERM CVS has validated the reported changes in detail in a separate CDM-PRCV-FORM in accordance with the VVS for Project Activities (version 01.0). In accordance with paragraph 247 and Appendix of the Project Standard for Project Activities, the Project Participants have requested ERM CVS to combine the request for approval of the post-registration changes with the request for issuance of CERs (the issuance track). Along with the CDM-PRCV-FORM, a revised PDD including revised monitoring plan (in track changes and clean versions), a revised CER calculation spreadsheet and a revised IRR spreadsheet (both in track changes and clean versions) are being submitted. In relation to this, this report (CDM-VCR-FORM) makes reference to the revised PDD and revised monitoring plan to demonstrate compliance. Please refer to section E.4 and CDM-PRCV-FORM for further details on the post registration changes.

#### Scope and basis of verification work:

The verification is an independent and objective review and ex-post determination of the monitored reductions in GHG emissions by the DOE. Based on the key project information the verification addresses the implementation and operation of the project activity as set out in the PDD /03/, and the information and reported emission reductions set out in the monitoring report prepared by the project participant (PP) for this monitoring period.

Only verification activities undertaken after the publication of the monitoring report on the UNFCCC CDM website are used as a basis for ERM CVS to conclude the verification and submit a request for issuance of CERs to the CDM EB.

The verification considers both quantitative and qualitative information on emission reductions. The monitoring report is assessed, using a rule based approach, against the principles of accuracy, relevance, credibility, reliability, completeness, consistency, and transparency. Conservativeness is applied throughout the process to ensure that emission reductions are not overstated.

ERM CVS conducts all its work under strict rules to safeguard impartiality and ensure the independence of the verification team. The verification does not provide any consulting or recommendations for the client. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the monitoring activities.

#### Conclusions:

In conclusion, based on the verification activities undertaken, ERM CVS concludes that the project activity is implemented and operated as described in the revised Project Design Document — which is being submitted to the UNFCCC for approval along with this issuance request/03/.

The GHG emission reductions set out in the monitoring report were found to be appropriately measured and calculated in accordance with the applied monitoring methodology and the monitoring plan. ERM CVS concluded that the reported emission reductions for the monitoring period are fairly stated. Please see section G for the verification opinion and certification statement.

## **SECTION B. Verification team, technical reviewer and approver**

### **B.1. Verification team member**

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)	Involvement in			
						Desk review	On-site inspection	Interview(s)	Verification findings
1	Lead Validator (PRC)	IR	Seelam	Sushmita	ERM CVS London	Y	N	Y	Y
2	Lead Verifier and support validator	EI	Correa	Alice	ERM Brasil	Y	Y	Y	Y

### **B.2. Technical reviewer and approver of the verification and certification report**

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)
1.	Technical reviewer	IR	Avis	Jonathan	ERM CVS London
2	Approver	IR	Eddis	Melanie	ERM CVS London

## **SECTION C. Application of materiality**

### **C.1. Consideration of materiality in planning the verification**

No.	Risk that could lead to material errors, omissions or misstatements	Assessment of the risk		Response to the risk in the verification plan and/or sampling plan
		Risk level	Justification	
1.	Not applicable as consideration of materiality was not considered in the planning of this verification.		Because this project uses automatic metering/measuring, ERM CVS checked 100% of the calibration information, all data collection process and calculations in order to verify the emission reduction number.	Not applicable

### **C.2. Consideration of materiality in conducting the verification**

In the case of the project activity, an omission, misstatement, or erroneous reporting of information is considered material if it might lead, at an aggregated level, to an overestimation of the total emission reductions or removals achieved by a registered CDM project activity equal to or higher than 0.5 per cent of the emission reductions (project activities achieving a total emission reduction

equal to or more than 500,000 tCO<sub>2</sub>e per year). The project uses automatic metering/measuring devices with automatic data extraction and automated calculations (Excel). ERM CVS checked 100% of the data associated to calibration, all metering systems, all data collection procedures and formulas used in calculations in order to verify the emission reductions number. Every error, omission or misstatement identified by the DOE was corrected, regardless of whether it is material or not.

## **SECTION D. Means of verification**

### **D.1. Desk review**

A detailed desk review was undertaken prior to the site visit. This included the PDD /3/, the monitoring plan /4/, the validation report /5/, the applied monitoring methodology, relevant external data and reports, site documents, and relevant decisions, clarifications and guidance from the CMP and the CDM Executive Board.

The desk review included

- A review of the data and information presented to verify completeness and consistency in accordance with relevant CDM requirements
- A review of the monitoring plan and monitoring methodology, including applicable tools, paying particular attention to the frequency of measurements, quality of metering equipment (including calibration requirements) and the quality assurance and quality control (QA/QC) procedures
- An evaluation of data management and the QA/QC system in the context of their influence on the generation and reporting of emission reductions.
- Review of the monitoring report to ensure it is completed as per the standardised format

**D.2. On-site inspection**

Duration of on-site inspection: 27 and 29 June 2017				
No.	Activity performed on-site	Site location	Date	Team member
1.	An assessment of the project implementation and operation as per the registered PDD /03/ (including site walk through to confirm physical existence and operation of project components) or any approved revised PDD;	Chui and St Vitoria do Palmar facilities and head office of PP in the city of Florianopolis	27 and 29 June 2017	Alice Correa (site visit)  Sushmita Seelam (interviews by phone)
2.	Review of information flows for generating, aggregating and reporting the monitoring parameters;			
3.	Interviews with relevant personnel to determine whether the operational and data collection procedures are implemented in accordance with the monitoring plan /04/. A list of all interviewees is included in Section D.3.			
4.	A cross-check between information provided in the monitoring report /1/ and data from other sources such as log books, inventories, purchase records or similar data sources to establish the existence of a clear audit trail and records that validate or invalidate the stated data;			
5.	A check of monitoring equipment including calibration performance and observations of the monitoring practices against the requirements of the PDD /03/ and the selected methodology(is) and corresponding tool(s), where applicable;			
6.	A review of calculations and assumptions made in determining the GHG data and emission reductions;			
7.	Identification of quality control procedures in place to prevent or identify and correct any errors or omissions in the reported monitoring parameters			

**D.3. Interviews**

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Rates	Breno	WayCarbon (consultants)	27 and 29 June 2017	Project History Calibration Calculations Site tour PRC related information	Alice Correa  Sushmita Seelam (interviews by phone)
2.	Aroeira	Isabela	WayCarbon (consultants)	27 and 29 June 2017	Project History Calibration Calculations Site tour PRC related information	
3.	Soares	Marcelo	Eólicas do Sul	27 and 29 June 2017	Project History Calibration and maintenance Site tour PRC related information	
4.	Lopez	Mauricio	Eólicas do Sul	27 and 29 June 2017	Project History Organization Structure Data extraction and invoice procedures PRC related information	
5.	Noce	Augusto	Eólicas do Sul	29 June 2017	Licensing and environmental programs	
6.	Oliveira	Luciano	Eólicas do Sul	29 June 2017	Data extraction and invoice procedures	

**D.4. Sampling approach**

&gt;&gt;Not applicable

**D.5. Clarification requests, corrective action requests and forward action requests raised**

Areas of verification findings	No. of CL	No. of CAR	No. of FAR
Compliance of the monitoring report with the monitoring report form			-
Compliance of the project implementation with the registered PDD	CL 01	CAR 01 CAR 02	-
Post-registration changes			-
Compliance of the monitoring plan with the monitoring methodology including applicable tool and standardized baseline			
Compliance of monitoring activities with the registered monitoring plan	CL 03		-

Compliance with the calibration frequency requirements for measuring instruments	CL 02 CL 04		-
Assessment of data and calculation of emission reductions or net removals		CAR 03	-
Others (please specify)			-
<b>Total</b>	<b>4</b>	<b>3</b>	<b>0</b>

## SECTION E. Verification findings

### E.1. Compliance of the monitoring report with the monitoring report form

<b>Means of verification</b>	ERM CVS evaluated whether the monitoring report has been prepared in accordance with the applicable Monitoring Report Form and correctly presents the status of post registration changes that are relevant to the project activity.
<b>Findings</b>	The final version monitoring report was found to be correctly completed. On the initial version the PP did not correctly report post registration changes that were noted during the site visit. The final version of the monitoring report was found, through document review, to correctly state the implementation and operational status of the project activity, in accordance with the Guidelines.
<b>Conclusion</b>	ERM CVS confirms that the final version of the monitoring report has been appropriately prepared using the applicable monitoring report form, and that all sections are completed.  ERM CVS confirms that the final version of the monitoring report correctly presents the status of post registration changes.

### E.2. Remaining forward action requests from validation and/or previous verification

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Forward Action Request	Date and document (Validation or verification)	Verification activities undertaken to close the FAR	Draft OK/ CAR/C L	Final OK/ Not OK
<i>At the moment of validation the project area consisted of a green field and had not obtained the necessary and applicable Environmental Operating License yet. Please provide evidence in order to address this issue during the first verification.</i>	26 Oct 2012	ERM CVS reviewed all Environmental Licenses associated to project activity.  The Project is duly licensed by State Environmental Agency (FEPAM) or Federal Environmental Agency (IBAMA) in the case of Minuano I and II.	OK	OK

### E.3. Compliance of the project implementation with the registered project design document

<b>Means of verification</b>	Based on the review of documentation provided, and the site visit, ERM CVS assessed whether all physical features of the project as described in the revised PDD are in place and that the PP has operated the project in accordance with operational criteria set out in the revised PDD /03/, and whether any deviation or the proposed or actual changes in the implementation or operation of the project activity comply with the requirements of the Project Standard.  During the ERM CVS site visit, the verification team
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	<ul style="list-style-type: none"> <li>• Walked through the project site and inspected the project facility and its operations;</li> <li>• Checked the installed equipment, including the monitoring instruments, their name plates, and cross-checked them against the revised PDD and monitoring plan /03//04/ and the monitoring report/01/).</li> <li>• Interviewed the staff responsible for the monitoring and implementation of the project.</li> </ul>
<b>Findings</b>	<p>During the verification site visit under taken by ERM CVS, it was noted that the aero-generator model used for the Chui and Minuano plants were different to those detailed in the registered PDD. At the time of project registration, the PP planned to install IMPSA IWP-100 type aero-generators (also referred to as IMPSA generators in this report) for Chui I, II, IV, V, Minuano I and II facilities /03/, however ERM CVS noted that the aero-generators actually used by the PP were different – the PP installed GAMESA G97 generators in the above 6 facilities instead of the IMPSA generators stated in the registered PDD.</p> <p>ERM CVS therefore concludes that during the implementation of the registered project 8012, in using GAMESA G97 generators in the 6 facilities (Chui I, II, IV, V and Minuano I, II) instead of the IMPSA generators stated in the registered PDD, the project underwent design changes – a post registration change.</p> <p>Please refer to the PRC validation report (submitted along with this issuance request i.e. issuance track) for further information on how the post registration change was validated.</p> <p>This section therefore addresses compliance of the project implementation with the revised PDD as a result of the PRC submitted along with this request for issuance (issuance track).</p> <p>The verification team confirmed, through visual inspection and review of documentation, that all physical features of the proposed CDM project activity including data collection systems and storage systems have been implemented in accordance with the revised PDD – which is being submitted to the UNFCCC for approval along with this issuance request /03/.</p> <p>ERM CVS confirmed during the site visit that the CDM project is fully operational. The project has been implemented and all physical features installed as described in the revised PDD /03/.</p> <p>The operation of the project during the monitoring period was confirmed to be in line with the operational assumptions made in the revised PDD /03/.</p> <p>During this monitoring period, there were no special events or situations that may impact the applicability of the methodology.</p> <p>ERM CVS confirmed that the project activity operates as per the revised PDD /03/ and consists of the implementation and operation of a windfarm complex with a total of 201 aero generators. ERM CVS therefore concluded that the project was implemented and equipment installed as described in the revised PDD and its monitoring plans /03//04/.</p>
<b>Conclusion</b>	<p>Based on the verifier's site visit, it can be confirmed that all physical features of the project activity have been fully implemented in accordance with the revised PDD /03/ and the monitoring equipment was installed as described in the Monitoring Plan /04/. ERM CVS confirmed, through the visual inspection that all physical features of the proposed CDM project activity have been implemented in accordance with the revised PDD /03/.</p> <p>The project activity was also confirmed to be fully operational in accordance with the revised PDD /03/.</p> <p>The information provided in the latest version of the monitoring report sections A</p>

	<p>and B correctly states the implementation and operational status of the project activity.</p> <p>ERM CVS confirmed during the site visit that:</p> <ul style="list-style-type: none"> <li>▪ the installed capacity and number of units have not changed (please refer to the PRC validation report);</li> <li>▪ no component has been added nor the technology has been extended (please also refer to the PRC validation report);</li> <li>▪ the project is still a single site activity;</li> <li>▪ the scale of the project has not changed (please also refer to the PRC validation report).</li> </ul>
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#### **E.4. Post-registration changes**

##### **E.4.1. Temporary deviations from the registered monitoring plan, monitoring methodology or standardized baseline**

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Not applicable

##### **E.4.2. Corrections**

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Not applicable

##### **E.4.3. Changes to the start date of the crediting period**

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01 January 2015 - 31 December 2021 (Renewable) changed from: 01 January 2014 - 31 December 2020. This change was approved by the EB after the end of the monitoring period and reflected on the project view page of the project on the UNFCCC website/07/.

##### **E.4.4. Inclusion of a monitoring plan to a registered project activity**

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Not applicable

##### **E.4.5. Permanent changes from registered monitoring plan, monitoring methodology or standardized baseline**

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During the verification site visit, ERM CVS was made aware of a changes in the metering system and calculation methodology used to calculate a monitored parameter,  $EG_{PJ,y}$ . ERM CVS denotes these changes as permanent changes from the registered monitoring plan – a post registration change.

Please refer to the PRC validation report (submitted along with this issuance request i.e. issuance track) for further information on how the post registration changes was validated.

##### **E.4.6. Changes to the project design of a registered project activity**

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During the verification site visit under taken by ERM CVS, it was noted that the aero-generator model used for the Chuí and Minuano plants were different to those detailed in the registered PDD. At the time of project registration, the PP planned to install IMPSA IWP-100 type aero-generators (also referred to as IMPSA generators in this report) for Chui I, II, IV, V, Minuano I and II facilities /03/, however ERM CVS noted that the aero-generators actually used by the PP were different – the PP installed GAMESA G97 generators in the above 6 facilities instead of the IMPSA generators stated in the registered PDD.

ERM CVS therefore concludes that during the implementation of the registered project 8012, in using GAMESA G97 generators in the 6 facilities (Chui I, II, IV, V and Minuano I, II) instead of the IMPSA generators stated in the registered PDD, the project underwent design changes – a post registration change.

Please refer to the PRC validation report (submitted along with this issuance request i.e. issuance track) for further information on how the post registration change was validated.

#### **E.4.7. Types of changes specific to afforestation and reforestation project activities**

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Not applicable

#### **E.5. Compliance of monitoring plan with the monitoring methodology including applicable tool and standardized baseline**

<b>Means of verification</b>	The verification team reviewed the revised monitoring plan /04/ and compared it against the requirements of the applied methodology and the applicable tools.
<b>Findings</b>	ERM CVS confirms that the revised monitoring plan /04/ includes appropriate provisions for the organisation and management structure, monitoring and reporting procedures, measuring instruments, QA/QC procedures, and data management to comply with the monitoring methodology. ERM CVS confirms that monitoring processes for the data and parameters, which are required to be monitored by the methodology, are included in the revised monitoring plan. The application of the monitoring methodology was found to be appropriate and ERM CVS confirms that the revised monitoring plan is consistent with the requirements of the approved methodology /6/ ERM CVS did not note any relevant monitoring aspects that are not specified in the methodology, which may enhance the level of accuracy and completeness of the revised monitoring plan.
<b>Conclusion</b>	ERM CVS confirms that the revised monitoring plan /04/ is in accordance with the approved methodology /08/ applied by the CDM project activity.

#### **E.6. Compliance of monitoring activities with the registered monitoring plan**

##### **E.6.1. Data and parameters fixed ex ante or at renewal of crediting period**

<b>Means of verification</b>	The verification team evaluated the status of data and parameters that were determined at registration and not monitored during the monitoring period, including default values and factors, and confirmed whether they were correctly presented in Section D.1 of the final monitoring report /01/ and applied correctly in the emission reduction calculations /02/.
<b>Findings</b>	The parameters were correctly presented in the final monitoring report /01/ and applied appropriately in the emission reduction calculations /02/.
<b>Conclusion</b>	ERM CVS confirms that the parameters were correctly presented in the monitoring report /01/ and applied appropriately in the emission reduction calculations /02/.

##### **E.6.2. Data and parameters monitored**

<b>Means of verification</b>	During the ERM CVS site visit, the verification team <ul style="list-style-type: none"> <li>Walked through the project site and inspected the project facility and its operations;</li> </ul>
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	<ul style="list-style-type: none"> <li>• Checked the installed equipment, including the monitoring instruments, their name plates, and cross-checked them against the revised PDD and revised monitoring plan /03//04/ and the monitoring report /01/.</li> <li>• Interviewed the staff responsible for the monitoring, maintenance and implementation of the project.</li> <li>• Reviewed metering equipment specifications and calibration records, where relevant.</li> <li>• Review of data gathering and invoice procedures and practices.</li> </ul>
<b>Findings</b>	<p>During the verification site visit, ERM CVS was made aware of a changes in the metering system and calculation methodology used to calculate a monitored parameter, EG<sub>PJ,y</sub>. ERM CVS denotes these changes as permanent changes from the registered monitoring plan – a post registration change.</p> <p>Please refer to the PRC validation report (submitted along with this issuance request i.e. issuance track) for further information on how the post registration changes was validated.</p> <p>This report therefore addresses compliance of the monitoring activities with the revised monitoring plan as a result of the PRC submitted along with this request for issuance (issuance track).</p> <p>ERM CVS's findings for each monitored parameter are presented in Appendix 5.</p>
<b>Conclusion</b>	<p>ERM CVS confirms that the all monitoring parameters stated in the revised monitoring plan /04/, the applied methodology /08/ and the relevant CDM EB decisions have been appropriately monitored. Please see Appendix 5 for further details.</p>

### E.6.3. Implementation of sampling plan

<b>Means of verification</b>	ERM CVS did not apply a sampling approach for this verification
<b>Findings</b>	Not applicable
<b>Conclusion</b>	Not applicable

### E.7. Compliance with the calibration frequency requirements for measuring instruments

<b>Means of verification</b>	<p>ERM CVS evaluated whether the calibration of measuring equipment that can have an impact on the claimed emission reductions was conducted at the frequency specified in the applied monitoring methodology /08/ and/or the monitoring plan /04/. ERM CVS reviewed the status of the equipment on site, and reviewed documented technical specifications and calibration certificates where applicable. Please refer to appendix 5 for details.</p>
<b>Findings</b>	<p>If the calibration frequency deviates from the prescribed frequency, one of the two situations is applied:</p> <ol style="list-style-type: none"> <li>a) Calibration has been delayed and the calibration has already been implemented (i.e. the results of delayed calibration are available). In this case, the PP must adopt a conservative approach in the calculation of emission reductions by either: <ol style="list-style-type: none"> <li>(i) If the results of the delayed calibration do not show any errors in the measuring equipment, or if the error is smaller than the maximum permissible error - Applying the maximum permissible error of the instrument to the measured values taken during the period between the scheduled date of calibration and the actual date of calibration or</li> <li>(ii) If the error is beyond the maximum permissible error of the measuring equipment - Applying the error identified in the delayed calibration test,</li> </ol> </li> <li>b) Calibration has been delayed and the results are not available at the time of verification. In this case, ERM CVS will request the project participants to conduct the required calibration and then apply a</li> </ol>

	<p>conservative approach as set out in (a) above.</p> <p>If ERM CVS determines that it is not possible for the project participants to conduct the calibration at a frequency specified by either the applied methodology, guidance provided by the Board, and/or the monitoring plan due to reasons beyond the control of project participants, the requirements for post registration changes in section 9.5 of the VVS are followed (see section 6).</p> <p>In cases where neither the monitoring methodology nor the monitoring plan specify any requirements for calibration frequency for measuring equipment, ERM CVS determines whether the equipment is calibrated either in accordance with the specifications of the local/national standards, or as per the manufacturer's specification or, if neither are available, appropriate international standards may be used.</p> <p>The status of instrument calibration for this monitoring period is set in Appendix 5 below.</p> <p>Calibration is done by a contracted independent and qualified third party (Eletrosul)/27/ following procedures that comply with national standards and industrial regulations/33/. The first round of calibration was (during the installation of the meters), was done either by Cam/GyM or Power Logistic commissioned by Schneider Eletric Brasil LTDA the suppliers of the meters /9/10/11/12/13/14/15/16/17/18/19/20/21/22/23/24/25/26/.</p> <p>Calibration frequency is every 2 (two) years as per the revised PDD and guideline of the National Operator of the Brazilian System (ONS)/29/.</p> <p>During this monitoring period no calibration delay occurred.</p>
<b>Conclusion</b>	<p>ERM CVS confirms that the calibration of the measuring equipment was conducted at the specified frequency (in the applied monitoring methodology and/or the approved monitoring plan).</p>

## E.8. Assessment of data and calculation of emission reductions or net removals

### E.8.1. Calculation of baseline GHG emissions or baseline net GHG removals by sinks

<b>Means of verification</b>	<p>ERM CVS evaluated the data and calculations of baseline emissions of the project activity by the application of the selected approved methodology.</p> <p>In conducting this evaluation, the verification team evaluated whether:</p> <ul style="list-style-type: none"> <li>• A complete set of data for the monitoring period was available,</li> <li>• Information provided in the monitoring report has been cross checked with official online registers from the Brazilian Electric Energy Commercialization Chamber (CCEE – <i>Câmara de Comercialização de Energia Elétrica</i>) that controls the Measurement for Invoicing System;</li> <li>• Calculations of baseline emissions have been carried out in accordance with the formulae and methods described in the revised monitoring plan and the applied methodology;</li> <li>• Appropriate emission factors, IPCC default factors and other reference values have been correctly applied.</li> </ul>
<b>Findings</b>	<p>ERM CVS confirmed that the calculation of baseline emissions as set out in the emission reduction calculation spreadsheet /02/ has been based on appropriate methods and formulae and that the calculation of baseline emissions during the monitoring period is accurate and in line with the revised monitoring plan and methodology(is).</p> <p>ERM CVS has confirmed that the emission reduction at the latest version of the</p>

	<p>calculation spreadsheet /02/ and emission factors and default factors that have been applied have been appropriately justified and applied.</p> <p>ERM CVS confirmed that all data and formulae in the final documents have been correctly presented.</p>
<b>Conclusion</b>	Baseline emissions have been calculated in accordance with the revised monitoring plan and the applied methodology, and it was determined that the data processing and emission reductions calculations resulted in real and measurable emission reductions.

#### E.8.2. Calculation of project GHG emissions or actual net GHG removals by sinks

<b>Means of verification</b>	As per ACM0002/Version 12.2.0, since the project activity is neither a geothermal, solar nor a hydropower plant, project emissions are zero.
<b>Findings</b>	Not applicable
<b>Conclusion</b>	Not applicable

#### E.8.3. Calculation of leakage GHG emissions

<b>Means of verification</b>	Not applicable as according to ACM0002, version 12.2.0, no leakage emissions are considered.
<b>Findings</b>	Not applicable
<b>Conclusion</b>	Not applicable

#### E.8.4. Summary of calculation of GHG emission reductions or net anthropogenic GHG removals by sinks

<b>Means of verification</b>	<p>ERM CVS evaluated the data and calculations of emission reductions resulting from the project activity by the application of the selected approved methodology. In conducting this evaluation, the verification team evaluated whether:</p> <ul style="list-style-type: none"> <li>• A complete set of data for the monitoring period was available;</li> <li>• Information provided in the monitoring report has been cross checked with other sources such as official online registers from the Brazilian Electric Energy Commercialization Chamber (<i>CCEE – Câmara de Comercialização de Energia Elétrica</i>), that controls the Measurement for Invoicing System;</li> <li>• Calculations of emission reductions have been carried out in accordance with the formulae and methods described in the revised monitoring plan and the applied methodology;</li> <li>• Appropriate emission factors, IPCC default factors and other reference values have been correctly applied.</li> </ul>
<b>Findings</b>	<p>ERM CVS confirmed that the calculation of emission reductions as set out in the final emission reduction calculation spreadsheet /02/ has been based on appropriate methods and formulae and that the calculation of emission reductions during the monitoring period is accurate and in line with the revised monitoring plan and methodology(ies).</p> <p>Project participants use an Excel spreadsheet which presents in a transparent manner data and formulae used in the calculation. Data on the delivered energy to the grid is automatically transferred for the online official registers data base of the Brazilian Electric Energy Commercialization Chamber to the Excel spreadsheet</p> <p>ERM CVS has confirmed that the final emission reduction calculation spreadsheet</p>

	<p>/02/ and emission factors and default factors that have been applied have been appropriately justified and applied.</p> <p>ERM CVS confirmed that all data and formulae in the final documents have been correctly presented.</p>
<b>Conclusion</b>	Emission reductions have been calculated in accordance with the revised monitoring plan and the applied methodology. It was determined that the data processing and emission reductions calculations resulted in real and measurable emission reductions. All emission factors and default values have been justified and the information has been cross checked with other sources.

#### **E.8.5. Comparison of actual GHG emission reductions or net anthropogenic GHG removals by sinks with estimates in registered PDD**

<b>Means of verification</b>	ERM CVS reviewed the monitoring report to confirm that the PP has compared the emission reductions with the number of emission reductions estimated in the PDD for an equivalent number of days as the monitoring period.
<b>Findings</b>	<p>ERM CVS has reviewed the emission reductions stated in the monitoring report and confirmed that the PP has presented a clear comparison of the emission reductions during the monitoring period with the prediction in the PDD.</p> <p>The emission reductions for this monitoring period predicted in the registered PDD have been correctly calculated as 795,064 tCO<sub>2</sub>e:</p> <p>The total ERs for the period were therefore found to be lower than had been predicted in the PDD. The difference is mainly due to the fact that the project claims zero credits for the period from 01 January 2015 to 01 February 2015, as operation started on 01 February and Chui I, Chui II, Chui IV, Chui V, Minuano I and Minuano II only began operating between April/2015 and May/2015.</p>
<b>Conclusion</b>	The PP has appropriately presented the emission reductions for the monitoring period and these were lower than predicted.

#### **E.8.6. Remarks on difference from estimated value in registered PDD**

<b>Means of verification</b>	ERM CVS reviewed the monitoring report to confirm that the PP has compared the emission reductions with the number of emission reductions estimated in the PDD for an equivalent number of days as the monitoring period. The total ERs for the period were therefore found to be lower than had been predicted in the PDD.
<b>Findings</b>	As the emission reductions are less than the estimation in the PDD for an equivalent number of days, no further explanation is required.
<b>Conclusion</b>	The PP has appropriately presented the emission reductions for the monitoring period and these were lower than the prediction in the PDD.

#### **E.8.7. Actual GHG emission reductions or net anthropogenic GHG removals by sinks during the first commitment period and the period from 1 January 2013 onwards**

<b>Means of verification</b>	ERM CVS reviewed the monitoring report to check whether the PP has correctly presented the actual emission reductions or net anthropogenic GHG removals by sinks during the first commitment period and the period from 1 January 2013 onwards
<b>Findings</b>	All emission reductions during this monitoring period have occurred during the second commitment period, after 31 December 2012.
<b>Conclusion</b>	The PP has correctly presented the actual emission reductions or net anthropogenic GHG removals by sinks (from 1 January 2013 onwards).

**SECTION F. Internal quality control**

>> The verification activities and content of the report are subject to a review by an independent technical reviewer. The role of the Technical Reviewer is to provide oversight that all procedures have been followed by the verification team and all conclusions justified and supported by evidence. The Technical Reviewer will either accept or reject the recommendations made by the verification team.

**SECTION G. Verification opinion**

ERM CVS based its verification work on:

- the approved methodology applied in the project design document (PDD)
- the registered and revised PDD – which is submitted for approval along with this issuance request
- the CDM Validation and Verification Standard (VVS) for project activities, version 1.0
- the CDM Project Standard (PS) and Project Cycle Procedure (PCP) for project activities, versions 1.0
- UNFCCC criteria referred to in the Kyoto Protocol criteria and the CDM modalities and procedures as agreed in the Bonn Agreement and the Marrakech Accords
- Relevant decisions, guidance and clarifications of the CMP and CDM Executive Board and any other information and references relevant to the project activity's reported emission reductions

Relevant guidance and clarification of the Executive Board applicable to this project


Based on the verification activities undertaken, ERM CVS concludes that the project activity is implemented and operated as described in the registered Project Design Document.

The GHG emission reductions set out in the monitoring report, version 02 dated 12 July 2017 were found to be appropriately measured and calculated in accordance with the applied monitoring methodology ACM0002 - Consolidated baseline methodology for grid-connected electricity generation from renewable sources (version 12.2.0) and the monitoring plan set out in the revised Project Design Document, version 04 dated 24 September 2017.

Based on the verification activities undertaken, ERM CVS concludes that the reported emission reductions for the monitoring period 01st January 2015 to 15th April 2016 are fairly stated.

**SECTION H. Certification statement**

<b>Basis of verification</b>	<p>ERM CVS based its verification work on:</p> <ul style="list-style-type: none"> <li>▪ the approved methodology applied in the PDD</li> <li>▪ the registered and revised PDD – which is submitted for approval along with this issuance request</li> <li>▪ the CDM Validation and Verification Standard (VVS) for project activities, version 1.0</li> <li>▪ the CDM Project Standard (PS) and Project Cycle Procedure (PCP) for project activities, versions 1.0</li> <li>▪ UNFCCC criteria referred to in the Kyoto Protocol criteria and the CDM modalities and procedures as agreed in the Bonn Agreement and the Marrakech Accords</li> <li>▪ Relevant decisions, guidance and clarifications of the CMP and CDM</li> </ul>
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	Executive Board and any other information and references relevant to the project activity's reported emission reductions
<b>Responsibilities of ERM CVS</b>	ERM CVS is responsible to provide an independent verification conclusion on the reported greenhouse gas (GHG) emission reductions for the Project Activity during the relevant monitoring period. The verification activities included desk review, site visit, close out of open issues, preparation of report and technical review.
<b>Responsibilities of Project Participants</b>	The Project Participants (PPs) are responsible for the preparation of the information and GHG emissions data and the reported GHG emissions reductions of the Project Activity on the basis set out within the applicable monitoring plan.
<b>ERM CVS Opinion</b>	See section G above.
<b>Total GHG emission reductions certified</b>	The total GHG emission reductions certified for this monitoring period are:  632,797 tonnes CO2 equivalent
<b>Approved by</b>	<b>Signature</b> 
<b>Name:</b> <b>Melanie Eddis, Partner</b>	
<b>Date:</b> 28 September 2017	

## Appendix 1. Abbreviations

Abbreviations	Full texts
CAR	Corrective Action Request
CDM	Clean Development Mechanism
EB	Executive Board
CER	Certified Emission Reduction(s)
CL	Clarification Request
CO <sub>2</sub>	Carbon Dioxide
CO <sub>2</sub> e	Carbon Dioxide Equivalent
DNA	Designated National Authority
DOE	Designated Operational Entity
ER	Emission Reduction
FAR	Forward Action Request
GHG	Greenhouse Gas
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
PCP	Project Cycle Procedure
PDD	Project Design Document
PP	Project Participant
PS	Project Standard
QA/QC	Quality Assurance / Quality Control
UNFCCC	United Nations Framework Convention for Climate Change
VVS	CDM Validation and Verification Standard
<b>Project specific abbreviations</b>	
CCEE	Brazilian Electric Energy Commercialization Chamber ( <i>Câmara de Comercialização de Energia Elétrica</i> )
ONS	National Operator of the Electric System ( <i>Operador Nacional do Sistema Elétrico</i> ).

## Appendix 2. Competence of team members and technical reviewers

**Alice Correa** has been working in the Climate Change field since 2010 and has more than 20 years of professional experience in the environmental area. She has been involved in environmental audits and is experienced in developing documents and management system compatible with ISO 14001, OSHAS 18001, Ecuador Principles among others. She has conducted more than 100 projects associated to environmental audits/assessments for companies in diverse business sectors including chemical industries and has developed of GHG inventory for tobacco industry, which included the agricultural and processing activities. She has training as Lead Assessor for Mergers & Acquisitions, Auditing, Foundation Course in Environmental Auditing (EARA registered) and Advanced Environmental Management System Auditor. She is a civil engineer and has a Ph.D. in Engineering from the University of São Paulo and M.Sc. Environmental Sanitation (Chemical Engineering) from the University of Gent, Belgium.

**Sushmita Seelam** is a Lead Assessor and a Client Account Manager (CAM) based in London and has been with ERM CVS since July 2012. She is involved in conducting validations and verifications for CDM & Gold Standard Projects and Programmes of Activities (PoAs) under Scope 1: Energy industries (renewable/non-renewable sources), Scope 3: Energy demand, as well as in GHG Assurance projects and EU-ETS engagements in various sectors. Prior to ERM CVS, Sushmita had been working in the sustainability consulting service industry for three years. As a consultant, she has been involved in the development of over 25 CDM and VCS projects in various sectors. Her work also involves research and experience in supply chain evaluation, resource footprinting and life cycle assessment of commodities, with a focus on water and GHG footprinting for sectors such as global energy, agricultural commodities etc. Sushmita holds a B.E. in Environmental Engineering and an MSc in Environment and Sustainable Development. She has also completed the ERM CVS CDM validation and verification training and the CDM Gold Standard training.

**Jonathan Avis** is CDM Business Manager for ERM CVS, and a GHG Assessor and Technical Reviewer with over 10 years of experience in the CDM, Gold Standard and VCS. Since joining ERM CVS Jonathan has worked as a Technical Reviewer or GHG Assessor on more than 50 CDM validations in Renewable Energy (scope 1), more than 10 CDM validations in Manufacturing Industries (scope 04), 10 CDM validations in Mining (scope 8), and 10 CDM validations in Waste Handling and Disposal (scope 13). Jonathan's previous work experience involved screening and due diligence of carbon projects, Project Design Document (POA-DD & CPA-DD) development, quality assurance and technical review of CDM and GS project documentation, the development of carbon monitoring plans, and management of carbon projects through the validation, registration and verification stages. Jonathan has completed the ERM CVS CDM training as well as the GHGMI Renewable Energy training and Gold Standard training. Jonathan holds a BA in Geography and an MSc in Environmental Change and Management from the University of Oxford.

## Appendix 3. Documents reviewed or referenced

No.	Author	Title	References to the document	Provider
1	PP	Monitoring Report for 'Grid connected electricity generation from renewable source: Windfarm Complex Santa Vitória do Palmar and Chuí.  Version 01 (made publicly available), dated 26 May, 2017		PP

		Version 02 (final), dated 12 July 2017		
2	PP	ER calculation spreadsheet  Version 01 dated 26 May, 2017  Version 02 (final), dated 15 April 2017		PP
3	PP	Project Design Document: Grid connected electricity generation from renewable source: Windfarm Complex Santa Vitória do Palmar and Chuí, version 03 dated 22 June, 2012  Revised Project Design Document: Grid connected electricity generation from renewable source: Windfarm Complex Santa Vitória do Palmar and Chuí, version 04 dated 24 September 2017	<a href="http://cdm.unfccc.int/Projects/DB/RWTUV1351861126.92/view">http://cdm.unfccc.int/Projects/DB/RWTUV1351861126.92/view</a>	Others
4	PP	Monitoring Plan included in the registered PDD, version 03 dated 22 June, 2012  Revised Monitoring Plan included in the revised PDD, version 04 dated 24 September 2017	<a href="http://cdm.unfccc.int/Projects/DB/RWTUV1351861126.92/view">http://cdm.unfccc.int/Projects/DB/RWTUV1351861126.92/view</a>	Others
5	TUV Nord Certification	Validation Report:  Validation report prepared by Tuv Nord for Grid connected electricity generation from renewable source: Windfarm Complex Santa Vitória do Palmar and Chuí, version 0.1, dated 26 October, 2012	<a href="http://cdm.unfccc.int/filestorage/x/w/Z6YD7INP2XKHQUWF8ERS3VJ0ABCG54.pdf/8012%20FValR.pdf?t=aU98b3dtcHU0fDD8l69wnnetC101VX-o60Dy">http://cdm.unfccc.int/filestorage/x/w/Z6YD7INP2XKHQUWF8ERS3VJ0ABCG54.pdf/8012%20FValR.pdf?t=aU98b3dtcHU0fDD8l69wnnetC101VX-o60Dy</a>	Others
6	UNFCCC	<b>Approved Methodology and methodological tools applied for the project:</b>  ACM0002: “Consolidated baseline methodology for grid-connected electricity generation from renewable sources”, Version 12.2.0.  “Tool to calculate the emission factor for an electricity system”. Latest approved version at the time of conclusion of this monitoring report: 05.5;	<a href="http://cdm.unfccc.int/methodologies/DB/8W400U6E7LFHHYH2C4JR1RJWWO4PVN">http://cdm.unfccc.int/methodologies/DB/8W400U6E7LFHHYH2C4JR1RJWWO4PVN</a>	Others
7	UNFCCC	<b>Project view page on the UNFCCC website</b>  <a href="http://cdm.unfccc.int/Projects/DB/RWTUV1351861126.92/view">http://cdm.unfccc.int/Projects/DB/RWTUV1351861126.92/view</a>		Others
8	UNFCCC	CDM validation and verification standard for project activities (VVS), Version 01.0	<a href="https://cdm.unfccc.int/filestorage/e/x/t/extfile-20170502114945594-reg_stan06.pdf/reg_stan06.pdf?t=anZ8b3dtcHg1fDDk61acNEONhzOG-ysZ5VOB">https://cdm.unfccc.int/filestorage/e/x/t/extfile-20170502114945594-reg_stan06.pdf/reg_stan06.pdf?t=anZ8b3dtcHg1fDDk61acNEONhzOG-ysZ5VOB</a>	Others
9	Eletrobras/Eletrosul and Cam/GyM	Chui I Service and calibration reports		PP

10	Eletrobras/ Eletrosul and Cam/GyM	Chui II Service and calibration reports		PP
11	Eletrobras/ Eletrosul and Power Logistic	Chui IV Service and calibration reports		PP
12	Eletrobras/ Eletrosul and Cam/GyM	Chui V Service and calibration reports		PP
13	Eletrobras/ Eletrosul and Cam/GyM	Chui III (also named as IX) Service and calibration reports		PP
14	Eletrobras/ Eletrosul and Cam/GyM	Minuano I Service and calibration reports		PP
15	Eletrobras/ Eletrosul and Cam/GyM	Minuano II Service and calibration reports		PP
16	Eletrobras/ Eletrosul and Cam/GyM	Verace I Service and calibration reports		PP
17	Eletrobras/ Eletrosul and Cam/GyM	Verace II Service and calibration reports		PP
18	Eletrobras/ Eletrosul and Cam/GyM	Verace III Service and calibration reports		PP
19	Eletrobras/ Eletrosul and Cam/GyM	Verace IV Service and calibration reports		PP
20	Eletrobras/ Eletrosul and Cam/GyM	Verace V Service and calibration reports		PP
21	Eletrobras/ Eletrosul and Cam/GyM	Verace VI Service and calibration reports		PP
22	Eletrobras/ Eletrosul and Cam/GyM	Verace VII Service and calibration reports		PP
23	Eletrobras/ Eletrosul and Cam/GyM	Verace VIII Service and calibration reports		PP
24	Eletrobras/ Eletrosul and Cam/GyM	Verace IX Service and calibration reports		PP

25	Eletrobras/ Eletrosul and Cam/GyM	Verace X Service and calibration reports		PP
26	Eletrobras/ Eletrosul and Cam/GyM	Meter SPA TF# 525 KV ( main and back-up) Service and calibration reports		PP
27	INMetro	Eletrobras/Eletrosul Accreditation Certificate issued by National metrology authority		PP
28	Schneider Electric	Manual of Meter model ION 8650		PP
29	ONS	National Operator of the Electric System - Grid Procedures	<a href="http://apps05.ons.org.br/procedimentorede/procedimento_rede/procedimento_rede.aspx">http://apps05.ons.org.br/procedimentorede/procedimento_rede/procedimento_rede.aspx</a>	-
30	FEPAM	Environmental Operating License for Chui I, II, IV and V		PP
31	IBAMA	Environmental Operating License for Minuano 1 and 2		PP
32	FEPAM	Environmental Operating License Verace I to X		PP
33	ONS	National Operator of the Electric System – Grid Procedures /Calibration Procedures (sub-módulo 12.3 – Anexo 1)	<a href="http://apps05.ons.org.br/procedimentorede/procedimento_rede/procedimento_rede.aspx">http://apps05.ons.org.br/procedimentorede/procedimento_rede/procedimento_rede.aspx</a> ( Módulo 12 – Medição para Faturamento/ Submódulo 12.3)	-
34	CCEE	System of Energy Data Collection ( <i>Sistema de Coleta de Dados de Energia – SCDE</i> ) of CCEE - Official data on the delivered energy to the grid.	<a href="https://www.ccee.org.br/portal/faces/pages_publico/inicio?_afLoop=178227081494811">https://www.ccee.org.br/portal/faces/pages_publico/inicio?_afLoop=178227081494811</a> ( based on password access)	-
35	MCTi	<i>Files with emission factors of the Brazilian Grid for the Operation Margin – 2015 and 2016</i>	<a href="http://www.mct.gov.br/upd_blob/0242/242332.htm">http://www.mct.gov.br/upd_blob/0242/242332.htm</a>  <a href="http://www.mct.gov.br/upd_blob/0239/239592.htm">http://www.mct.gov.br/upd_blob/0239/239592.htm</a>	-
36	MCTi	<i>Files with emission factors of the Brazilian Grid for the Build Margin -2015 and 2016</i>	<a href="http://www.mct.gov.br/index.php/content/view/303069.html">http://www.mct.gov.br/index.php/content/view/303069.html</a>	-
37	PP	Original Emission Reduction calculation (CER) spreadsheet – for the registered project  Updated Emission Reduction calculation (CER) spreadsheet	Appendix 5 on project view page: <a href="http://cdm.unfccc.int/Projects/DB/RWTUV1351861126.92/view">http://cdm.unfccc.int/Projects/DB/RWTUV1351861126.92/view</a>  24 September 2017	PP
38	PP	Original Financial Additionality Spreadsheet for Chui and Minuano Facilities – for the registered project  Updated Financial Additionality Spreadsheet for Chui and Minuano Facilities (with GAMESA generator)	Appendix 1 on project view page: <a href="http://cdm.unfccc.int/Projects/DB/RWTUV1351861126.92/view">http://cdm.unfccc.int/Projects/DB/RWTUV1351861126.92/view</a>  24 September 2017	PP
39	PP	Original Financial Additionality Spreadsheet for Verace Facilities – for the registered project	Appendix 2 on project view page: <a href="http://cdm.unfccc.int/Projects/DB/RWTUV1351861126.92/view">http://cdm.unfccc.int/Projects/DB/RWTUV1351861126.92/view</a>	PP

40	PP	Benchmark Analysis – for the registered project	Appendix 3 on project view page: <a href="http://cdm.unfccc.int/Projects/DB/RWTUV1351861126.92/view">http://cdm.unfccc.int/Projects/DB/RWTUV1351861126.92/view</a>	PP
41	Others	Information on IMPSA Bankruptcy  Caso Impsa_ Energia Inteligente.PDF  FalenciaIMPSA.PDF	27 July 2015  22 January 2016	PP
42	EREDA and Aenor	Study on energy production by GAMESA generators (Certification of Anemometric Data and Annual Production):  IT-1402-MBF-CertificacionProduccionChui-05.PDF	February 2014	PP
43	Others	Costs of GAMESA generator:  GamesaBudget_20110817.PDF	17 August 2011	PP
44	Others	Documents detailing Insurance costs incurred by the PP at the time of Decision Making:  ABB_CommercialProposal_20110816.PDF  Schahin_20110817.PDF  Schahin_NegotiatedCosts_20110819.PDF	16 August 2011 17 August 2011 19 August 2011	PP
45	PP & IMPSA	Termination of contract with IMPSA Termo de Acordo – IMPSA	Entered into force 24 September 2013	PP
46	PP & GAMESA, Schahin for Chui and Minuano facilities	Contract between PP and GAMESA  EOL CH CH VII 253 2013-253A1 EPC CHUI EOL CH CH VI 252 2013-252A1 EPC CHUI EOL CH CH V 251 2013-251A1 EPC CHUI EOL CH CH IV 250 2013-250A1 EPC CHUI  EOL CH CH I 316 2014 EPC CHUI EOL CH CH II 317 2014 EPC CHUI	21 October 2013  12 February 2014	PP
47	PP & GAMESA, Schahin for Verace I-X facilities	Contrato EPC - Geribatu X - EOL ST GB X 085 2012 Contrato EPC - Geribatu VIII - EOL ST GB VIII 083 2012 Contrato EPC - Geribatu VII - EOL ST GB VII 082 2012 Contrato EPC - Geribatu VI - EOL ST GB VI 081 2012 Contrato EPC - Geribatu V - EOL ST GB V 080 2012 Contrato EPC - Geribatu IX - EOL ST GB IX 084 2012 Contrato EPC - Geribatu IV - EOL ST GB IV	09 August 2012	PP

		079 2012 Contrato EPC - Geribatu III - EOL ST GB III 078 2012 Contrato EPC - Geribatu II - EOL ST GB II 077 2012 Contrato EPC - Geribatu I - EOL ST GB I 076 2012		
48	PP & IMPSA, Schahin for Chui & Minuano facilities	EOL CH CHVII 108 2012 CONSÓRCIO EPC  EOL CH CHV 144 2012 - CONSÓRCIO EPC  EOL CH CH VI 145 2012 - CONSÓRCIO EPC  EOL CH CH IV 143 2012 - CONSÓRCIO EPC  EOL CH CH II 142 2012 - CONSÓRCIO EPC  EOL CH CH I 141 2012 - CONSÓRCIO EPC	23 November 2012	PP

## Appendix 4. Clarification requests, corrective action requests and forward action requests

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

FAR ID	xx	Section no.	Date: 26 October 2012
<b>Description of FAR</b>			
<i>At the moment of validation the project area consisted of a green field and had not obtained the necessary and applicable Environmental Operating License yet. Please provide evidence in order to address this issue during the first verification.</i>			
<b>Project participant response</b>			<b>Date: 29 June 2017</b>
<i>Licenses were made available to DOE during onsite during site visit.</i>			
<b>Documentation provided by project participant</b>			
<ul style="list-style-type: none"> <li>FEPAM Environmental Operating License for Chui I, II, IV and V</li> <li>IBAMA Environmental Operating License for Minuano 1 and 2</li> <li>FEPAM Environmental Operating License Verace I to X</li> </ul>			
<b>DOE assessment</b>			<b>Date: 29 June 2017</b>
ERM CVS reviewed all Environmental Licenses associated with the project activity.			
The Project is duly licensed by State Environmental Agency (FEPAM) or Federal Environmental Agency (IBAMA) in the case of Minuano I and II.			
FAR 1 is closed.			

Table 2. CL from this verification

CL ID	01	Section no.	B.1	Date:	27/June/2017
<b>Description of CL</b>					
<i>The description of the implemented registered project activity in the monitoring report should focus on the actual status of the implementation rather than be a copy of the PDD or a description of changes made to the project. PP to please provide clear information on the implemented activity indicating any particular event that may have occurred that could impact the applicability of the methodology.</i>					
<b>Project participant response</b>					<b>Date:</b> 25/Aug/2017
<i>The description of implemented registered project activity was reviewed and now focuses on the actual status of the implemented project activity.</i>					
<b>Documentation provided by project participant</b>					
<i>Revised MR: "MR_CHUI_8012_rev 02 12 July, 2017"</i>					
<b>DOE assessment</b>					<b>Date:</b> 28/Aug/2017
PP has revised sections A, B.1 (as applicable) and section C of the monitoring report to reflect the actual project description. ERM CVS confirms that the revised description in the monitoring report now accurately reflects the implementation of the project activity as observed & recorded by ERM CVS during the site visit and is in line with the interviews conducted with relevant personnel during and after the site visit/D.3/.					
CL01 is closed					

CL ID	02	Section no.	D.2	Date:	27/June/2017
<b>Description of CL</b>					
<i>Monitoring report (page 18) indicates that all metering devices are model ION 8600, however as per calibration certificates the model is ION 8650. PP please clarify.</i>					
<b>Project participant response</b>					<b>Date:</b> 25/Aug/2017
<i>The metering devices model indication contained a typo. The model is ION 8650. It is now reviewed in the present version of the MR.</i>					
<b>Documentation provided by project participant</b>					
<i>Revised MR: "MR_CHUI_8012_rev 02 12 July, 2017"</i>					
<b>DOE assessment</b>					<b>Date:</b> 28/Aug/2017
ERM CVS has revised the documentation provided by PP and confirms that the metering models refereed to are correct in line with calibration certificates and visual evidences obtained during site visit. The issue was a typo with no impact to the project description in relation to PDD or the calculations.					
CL02 is closed.					

CL ID	03	Section no.	D.2	Date:	27/June/2017
<b>Description of CL</b>					
<i>As per the monitoring plan, data values of <math>EG_{facility,y}</math> are to be aggregated monthly and yearly, however monthly results are not presented in monitoring report nor in the excel spread sheet. PP please clarify.</i>					
<b>Project participant response</b>					<b>Date:</b> 25/Aug/2017
<i>The documents were reviewed and monthly results of <math>EG_{facility,y}</math> are presented monthly and yearly both in the monitoring report and in the CER excel spreadsheet.</i>					
<b>Documentation provided by project participant</b>					
<i>Revised MR: "MR_CHUI_8012_rev 02 12 July, 2017"</i>					
<i>Revised Excel spreadsheet: "CER_Calculation_CHUI_till_15thApril2016_NewBM"</i>					
<b>DOE assessment</b>					<b>Date:</b> 28/Aug/2017
ERM CVS has revised the documentations provided by PP and confirms that data has been reported with monthly aggregation in line with the monitoring plan and that aggregation has been correctly calculated.					
CL03 is closed.					

CL ID	04	Section no.	D.2	Date:	27/June/2017
<b>Description of CL</b>					
<i>The meter code of the equipment SPA LT Chui (backup) is not consistent with the information on the calibration certificate. PP please clarify.</i>					
<b>Project participant response</b>					<b>Date:</b> 25/Aug/2017

*The meter code of the equipment SPA LT Chui (backup) contained a typo in the Monitoring Report. It is revised in the present version of the MR.*

**Documentation provided by project participant**

*Revised MR: "MR\_CHUI\_8012\_rev 02 12 July, 2017"*

**DOE assessment**

**Date:** 28/Aug/2017

ERM CVS has reviewed the documentation provided by the PP and confirms that the reference to *SPA LT Chui (backup)* is correct in line with calibration certificates and visual evidences obtained during site visit. The issue was a typo with no impact to the project description in relation to PDD or the calculations.

CL04 is closed.

**Table 3. CAR from this verification**

<b>CAR ID</b>	01	<b>Section no.</b>	B.2.5	<b>Date:</b> 27/June/2017
<b>Description of CAR</b>				
Permanent changes from the registered monitoring plan have occurred to the project associated to: (1) change in the meter location used to determine EGPJ,y and (2) change in the pro-rating method of EGPJ,y amongst the aero generators within the project. PP to please to include information in MR providing details on these changes.				
<b>Project participant response</b>				<b>Date:</b> 25/Aug/2017
<i>The details on permanent changes from the registered monitoring plan were provided in MR.</i>				
<b>Documentation provided by project participant</b>				
<i>Revised MR: "MR_CHUI_8012_rev 02 12 July, 2017"</i>				
<b>DOE assessment</b>				<b>Date:</b> 25/Sept/2017
ERM CVS has revised the documentation provided by PP and confirms that the permanent changes from the registered monitoring plan have occurred to the project have been duly and correctly reported in the MR. Aside from the changes associated to 1) change in the meter location used to determine EGPJ,y and (2) change in the pro-rating method of EGPJ,y amongst the aero generators, no other permanent change exist in the monitoring of the project (please refer to section D.7 of the PRC validation report in relation to the design changes associated with the project).				
CAR 01 is closed.				

<b>CAR ID</b>	02	<b>Section no.</b>	B.2.6	<b>Date:</b> 27/June/2017
<b>Description of CAR</b>				
Changes have occurred to the project design associated to a change in aero generators model of all Chuí and Minuano facilities (as per registered PDD IMPSA IWP-100now GAMESA G97). PP to please to include information in the specific section of the MR.				
<b>Project participant response</b>				<b>Date:</b> 25/Aug/2017
<i>The information on the aerogenerators model change of all Chuí and Minuano facilities was included in the specific section of the MR.</i>				
<b>Documentation provided by project participant</b>				
<i>Revised MR: "MR_CHUI_8012_rev 02 12 July, 2017"</i>				
<b>DOE assessment</b>				<b>Date:</b> 25/Sept/2017

ERM CVS has revised the documentation provided by the PP and confirms that the project design changes that have occurred to the project have been duly and correctly reported in the MR. Aside from the changes associated to the model of the aero generators of all Chuí and Minuano facilities, no other design change exist in the project (please refer to section D.7 of PRC validation report for further information).

CAR 02 is closed.

<b>CAR ID</b>	03	<b>Section no.</b>	D.2	<b>Date:</b> 27/June/2017
<b>Description of CAR</b>				
Build margin CO <sub>2</sub> emission factor in 2016 is information currently available at the website of the Brazilian Ministry of Science and Technology. PP to use up dated information in the calculation of ER.				
<b>Project participant response</b>				<b>Date:</b> 25/Aug/2017
<i>Build Margin CO<sub>2</sub> emission factor was revised accordingly and the ER for the period was recalculated.</i>				
<b>Documentation provided by project participant</b>				
<i>Revised MR: "MR_CHUI_8012_rev 02 12 July, 2017"</i>				
<i>Revised Excel spreadsheet: "CER_Calculation_CHUI_till_15thApril2016_NewBM"</i>				
<b>DOE assessment</b>				<b>Date:</b> 25/Sept/2017
ERM CVS has reviewed the documentation provided by the PP and confirms that the updated value for the Build margin CO <sub>2</sub> emission factor in 2016 has been used in the calculations. Furthermore ERM CVS confirms that the factor has been correctly used in ER calculations.				
CAR 03 is closed.				

**Table 4. FAR from this verification**

<b>FAR ID</b>		<b>Section No.</b>		<b>Date:</b> DD/MM/YYYY
<b>Description of FAR</b>				
<i>Not applicable</i>				
<b>Project participant response</b>				<b>Date:</b> DD/MM/YYYY
<i>Not applicable</i>				
<b>Documentation provided by project participant</b>				
<i>Not applicable</i>				
<b>DOE assessment</b>				<b>Date:</b> DD/MM/YYYY
<i>Not applicable</i>				

## Appendix 5. Data and parameters monitored

The verification findings for the monitoring of each parameter are set out below.

Data / Parameter:	$EG_{facility,y} = EG_{PJ,y}$	Baseline	
Data unit:	MWh		
Description:	Quantity of net electricity generation supplied by the project plant to the grid in year y		
Measured/calculated/default	Measured and calculated		
Compliance question	Verification findings	Draft OK/ CAR/CL	Final OK/ Not OK
Is the monitoring equipment appropriately installed and operated and are the QA/QC procedures appropriately applied?	During the verification site visit, ERM CVS was made aware of a changes in the metering system and calculation methodology used to calculate a monitored parameter, $EG_{PJ,y}$ . ERM CVS denotes these changes as permanent changes from the registered monitoring plan – a post registration change.	CL-02	OK
	Please refer to the PRC validation report (submitted along with this issuance request i.e. issuance track) for further information on how the post registration changes was validated.	CL-03	OK
	This report therefore addresses compliance of the monitoring activities with the revised monitoring plan as a result of the PRC submitted along with this request for issuance (issuance track). ERM CVS therefore evaluated whether this parameter was monitored as required in the revised monitoring plan.	CL-04	OK
	<b>a) Equipment specification</b> This parameter is measured using two meters tag SPA TF3 (serial number MW1309A114-01 – main meters– and MW1309A444-01 - back up), manufactured by Schneider Eletric. Meters are located at the Santa Vitória do Palmar Substation where all the electricity generated by the project activity is transformed from 138.9kV to 525 kV, which is the tension electricity is supplied to the national grid.		
	Based on the review of Service and Calibration Reports, ERM CVS confirms that the meters were designed and implemented in accordance of the Brazilian Association of Technical Standards ( <i>Associação Brasileira de Normas Técnicas – ABNT</i> ) and meet the requirements of ONS and the criteria established on the PDD.		
	The class of accuracy of the meters is Class 0.2, with error in measurements of up to $\pm 0.2\%$ in line with PDD/28/.		
	<b>b) Calibration</b>		

Data / Parameter:	$EG_{facility,y} = EG_{PJ,y}$	Baseline	
Data unit:	MWh		
Description:	Quantity of net electricity generation supplied by the project plant to the grid in year y		
Measured/calculated/default	Measured and calculated		
Compliance question	Verification findings	Draft OK/ CAR/CL	Final OK/ Not OK
	<p>During this verification ERM CVS reviewed all the calibration certificates associated to this monitoring period.</p> <p>The calibration of the meters has been conducted by an independent and qualified organization /27/ and in compliance with national standards and industrial regulations to ensure the accuracy. Calibration frequency is of a maximum of two years. After calibration, the meters are sealed. The frequency of calibration is in line with the requirements of ONS /33/ and of the PDD.</p> <p>Detailed Calibration information provided in the Monitoring Report section D was verified and all calibrations dates are correctly indicated. ERM CVS confirms that the calibrations have been undertaken as required and were valid throughout the monitoring period. The calibration have confirmed that the equipment have performed to the required level of accuracy.</p> <p><b>c) Measurement/reading/recording frequency</b></p> <p>Data is monitored continuously with hourly recording and monthly aggregation.</p> <p><b>d) QA/QC procedures applied</b></p> <p>The monthly amount of electricity generated by each of the 16 facilities that are part of this project are individually metered at the sub collector substations (two: Chui/Minuano substation and Verace Substation). This information is crosschecked with the amount of electricity accounted / invoiced by the Brazilian Electric Energy Commercialization Chamber (CCEE – <i>Câmara de Comercialização de Energia Elétrica</i>).</p> <p>The National Operator of the Electric System (ONS) regulates, by means of its Grid Procedures /29/ among other topics, the measurements of electricity production for invoicing. It is necessary for the PP to maintain the Measurement for Invoicing System (<i>Sistema de Medição para Faturamento – SMF</i>), according to a set of technical specifications to assure not only the control of energy accounting process by CCEE, but also the determination of demands by ONS. All meters are connected with regulators data base via optic fibre and are monitored by the local authorities/regulators.</p>		

Data / Parameter:	$EG_{facility,y} = EG_{PJ,y}$	Baseline	
Data unit:	MWh		
Description:	Quantity of net electricity generation supplied by the project plant to the grid in year y		
Measured/calculated/default	Measured and calculated		
Compliance question	Verification findings	Draft OK/ CAR/CL	Final OK/ Not OK
	<p><b>e) Cross check</b></p> <ul style="list-style-type: none"><li>ERM CVS cross checked the location of the meters SPA TF3. They are confirmed to be located at the last point of the project grid prior to entering the national grid, in line with the revised PDD/03/ and ONS procedures.</li><li>ERM CVS verified all of the other project meters, confirming there locations as indicated in page 09 of the final version of the MR and that they have the same specifications as the SPA TF3 meters. ERM CVS has also verified all of the service and calibration reports confirming that these meters have been dully calibrated and maintained through the monitoring period and that they met the requirements set forward in the PDD and monitoring plan. The calibration have confirmed that the equipment have performed to the required level of accuracy.</li><li>ERM CVS verified the meters (serial number MW1309A78-010 main and MW1310A189 -01- backup), associated to Chui IX facility (not part of the project), confirming they have the same specifications as the SPA TF3 meters. ERM CVS has also verified all of the service and calibration reports confirming that these meters have been dully calibrated and maintained through the monitoring period. The calibration have confirmed that the equipment have performed to the required level of accuracy. ERM CVS confirms that the meters associated to Chui IX are installed at the Chui/Minuano Substation where the tension is transformed from 34.5KV to 138.0kv. The energy generated by Chui IX adds up to the energy generated by all other Chui and Minuano facilities entering the nation grid together at the Santa Vitoria do Palmar Substations via the SPA TF3 meter (which also includes the contribution of the Verace facilities). Thus the readings of SPA TF3 include the Chui IX contribution. In order the exclude Chui IX from the ER calculations PP has established a prorating procedure once the readings at SPA TF3 include transmission losses within the project (and transmission loses until the Santa Vitoria do Palmar Substation exclusively associated to Chui IX cannot be measured). ERM CVS confirms that the prorating procedures is technically sound and results in a realistic result in terms of ER. The pro-rating formula is:</li></ul> $EG_{PJ,y} = \sum_h \{ EG_{SPA\ TF3,h} * \sum_{project\ facility} (EG_{project\ facility,h}) /$		

Data / Parameter:	$EG_{facility,y} = EG_{PJ,y}$	Baseline	
Data unit:	MWh		
Description:	Quantity of net electricity generation supplied by the project plant to the grid in year y		
Measured/calculated/default	Measured and calculated		
Compliance question	Verification findings	Draft OK/ CAR/CL	Final OK/ Not OK
	<p><math>[\sum_{project\_facility}(EG_{project\_facility,h}) + EG_{Chui\ 9,h}]</math></p> <p>Where:</p> <p><math>EG_{PJ,y}</math> = Quantity of net electricity generation that is produced and fed into the grid as a result of the CDM project activity (MWh/yr)</p> <p><math>EG_{SPA\ TF3,h}</math> = Hourly electricity generation measured by the meter SPA TF3 (MWh/hour);</p> <p><math>EG_{project\_facility,h}</math> = Hourly electricity generation by the project plants (CHUI I, CHUI II, CHUI IV, CHUI V, Minuano I, Minuano II, Verace I, Verace II, Verace III, Verace IV, Verace V, Verace VI, Verace VII, Verace VIII, Verace IX, Verace X) measured by their respective individual meters located at subcollector substations Chui / Minuano and Verace (MWh/hour);</p> <p><math>EG_{Chui\ 9,h}</math> = Hourly electricity generation by CHUI IX measured by its individual meters located at subcollector substations Chui / Minuano (MWh/hour).</p> <ul style="list-style-type: none"><li>ERM CVS verified Information provided in the ER calculation spread sheet related electricity generation cross checking it with the official online registers from CCEE/34/ that controls the measurement for the invoicing system of the ONS. Besides electricity measurements that are performed by the PP, all the electricity dispatched to the grid by the project activity is monitored online by CCEE. Reported values in the MR and ER calculation spread sheet are considered to be correct and reflect the data in the invoicing system of CCEE.</li></ul> <p><b>f) Check of information flow</b> ERM CVS checked and verified the flow of information from data generation, aggregation, to recording, calculation and reporting.</p> <p>Data is monitored continuously with hourly recording and monthly aggregation. The energy meters possess mass memory capable of storing the data of active, reactive and demand energy in a bidirectional manner, voltages and currents. Data stored on the meters is collected by the System</p>		

<b>Data / Parameter:</b>	$EG_{facility,y} = EG_{PJ,y}$	<b>Baseline</b>	
<b>Data unit:</b>	MWh		
<b>Description:</b>	Quantity of net electricity generation supplied by the project plant to the grid in year y		
<b>Measured/calculated/default</b>	Measured and calculated		
<b>Compliance question</b>	<b>Verification findings</b>	<b>Draft OK/ CAR/CL</b>	<b>Final OK/ Not OK</b>
	<p>of Energy Data Collection (<i>Sistema de Coleta de Dados de Energia – SCDE</i>) of CCEE/34/, remotely and automatically through direct access to the meters of the project. These collected data are processed in SCDE for electricity accounting by CCEE and are available to PP via online access (depending of a project specific password).</p> <p>CCEE is the entity responsible for the official monthly readings and records keeping of the energy generated and subsequent invoicing. CCEE information is automatically extracted by PP using a software application and transferred to an Excel spread were further calculation is done. There is no manual input of data in the ER calculation spread sheet in relations to energy generated.</p>		
<b>Does the monitoring report (section D) correctly state all relevant information and data relating to the monitoring of this parameter during the monitoring period?</b>	<p>ERM CVS reviewed the content of the monitoring report section D and evaluated its alignment with the requirements of the monitoring plan and the actual monitoring observed during the site visit and document review.</p> <p>CL 02 was raised due to unclear information on meters model. CL03 was raised due to data aggregation inconsistency. CL 04 was raised due to a meter code identification number inconsistency. CL02, CL03, CL04 have been duly closed.</p> <p>ERM CVS confirms that the final monitoring report (section D) and ER calculation spread sheet correctly state all relevant information and data relating to the monitoring of this parameter during the monitoring period.</p>	OK	OK
<b>Conclusion</b>	<p>ERM CVS confirmed that</p> <ul style="list-style-type: none"> <li>The equipment for monitoring has an appropriate accuracy and has been controlled and operated in accordance with the monitoring plan.</li> <li>The calibrations have been conducted at the frequency as specified by the methodology and the monitoring plan of the registered PDD.</li> <li>The monitoring results have been recorded consistently as per the approved frequency in the monitoring plan.</li> <li>QA/QC procedures have been applied in accordance with the monitoring plan.</li> </ul>		

<b>Data / Parameter:</b>	EF <sub>grid, CM, y</sub>	<b>Baseline</b>	
<b>Data unit:</b>	tCO <sub>2</sub> /MWh		
<b>Description:</b>	Combined margin CO <sub>2</sub> emission factor in year y		
<b>Measured/calculated/default</b>	Calculated		
<b>Compliance question</b>	<b>Verification findings</b>	<b>Draft OK/ CAR/CL</b>	<b>Final OK/ Not OK</b>
<b>Is the monitoring equipment appropriately installed and operated and are the QA/QC procedures appropriately applied?</b>	<p>ERM CVS evaluated whether this parameter was monitored as required in the monitoring plan.</p> <p><b>a) Equipment specification</b> Not applicable.</p> <p><b>b) Calibration</b> Not applicable</p> <p><b>c) Measurement/reading/recording frequency</b> Annually</p> <p><b>d) QA/QC procedures applied</b> Based on the As per the most recent version of the “Tool to calculate the emission factor for an electricity system”.</p> <p><b>e) Cross check</b></p> <ul style="list-style-type: none"> <li>ERM CVS reviewed the information available at the site of the Ministry of Science and Technology of Brazil /35/ confirming that the information presented in the MR is correct.</li> <li>ERM CVS confirmed to correct usage of the values of wOM: Weighting of operating margin emissions factor (75%) and wBM Weighting of build margin emissions factor (25%) to be in line with PDD.</li> <li>ERM CVS revised the use of the data in calculations and found them to be correct.</li> </ul> <p><b>f) Check of information flow</b> ERM CVS checked and verified the flow of information from data generation, aggregation, to recording, calculation and reporting. Data is taken from the Ministry of Science and Technology of Brazil website/35/. Calculation consists of weighed average of the yearly emission factor of the operating margin (OM) and the build margin (BM). Weighting factors are those provided in section D1 of the MR (wOM and wBM).</p>	OK	OK
<b>Does the monitoring report (section D) correctly state all relevant information and data relating to the monitoring of</b>	<p>ERM CVS reviewed the content of the monitoring report section D and evaluated its alignment with the requirements of the monitoring plan and the actual monitoring observed during the site visit and document review.</p> <p>ERM CVS confirms that the final monitoring report (section D)</p>	OK	OK

CDM VER FORM			
Data / Parameter:	EF <sub>grid, CM, y</sub>	Baseline	
Data unit:	tCO <sub>2</sub> /MWh		
Description:	Combined margin CO <sub>2</sub> emission factor in year y		
Measured/calculated/default	Calculated		
Compliance question	Verification findings	Draft OK/ CAR/CL	Final OK/ Not OK
this parameter during the monitoring period?	and ER calculation spread sheet correctly state all relevant information and data relating to the monitoring of this parameter during the monitoring period.		
Conclusion	ERM CVS confirmed that <ul style="list-style-type: none"><li>The monitoring results have been recorded consistently as per the approved frequency in the monitoring plan.</li><li>QA/QC procedures have been applied in accordance with the monitoring plan.</li></ul>		

Data / Parameter:	EF <sub>grid, OM, y</sub>	Baseline	
Data unit:	tCO <sub>2</sub> /MWh		
Description:	Operating margin CO <sub>2</sub> emission factor in year y		
Measured/calculated/default	Calculated		
Compliance question	Verification findings	Draft OK/ CAR/CL	Final OK/ Not OK
Is the monitoring equipment appropriately installed and operated and are the QA/QC procedures appropriately applied?	<p>ERM CVS evaluated whether this parameter was monitored as required in the monitoring plan.</p> <p><b>a) Equipment specification</b> Not applicable. The data is sourced from the Ministry of Science and Technology of Brazil.</p> <p><b>b) Calibration</b> Not applicable</p> <p><b>c) Measurement/reading/recording frequency</b> Hourly emission factors of the operating margin are averaged annually, weighted by the hourly amount of electricity fed into the grid by the project activity.</p> <p><b>d) QA/QC procedures applied</b> Based on the As per the most recent version of the “Tool to calculate the emission factor for an electricity system”.</p> <p><b>e) Cross check</b></p> <ul style="list-style-type: none"><li>ERM CVS reviewed the information available at the site of</li></ul>	OK	OK

Data / Parameter:	EF <sub>grid, OM, y</sub>	Baseline	
Data unit:	tCO <sub>2</sub> /MWh		
Description:	Operating margin CO <sub>2</sub> emission factor in year y		
Measured/calculated/default	Calculated		
Compliance question	Verification findings	Draft OK/ CAR/CL	Final OK/ Not OK
	<p>the Ministry of Science and Technology of Brazil /35/ confirming that the information presented in the MR is correct.</p> <ul style="list-style-type: none"><li>ERM CVS revised the use of the data in calculations and found them to be correct.</li></ul> <p><b>f) Check of information flow</b> ERM CVS checked and verified the flow of information from data generation, aggregation, to recording, calculation and reporting. Hourly data is extracted from the website of the Ministry of Science and Technology of Brazil by PP using a software application and transferred to an Excel spread were further calculation is automatically done.</p>		
Does the monitoring report (section D) correctly state all relevant information and data relating to the monitoring of this parameter during the monitoring period?	<p>ERM CVS reviewed the content of the monitoring report section D and evaluated its alignment with the requirements of the monitoring plan and the actual monitoring observed during the site visit and document review.</p> <p>ERM CVS confirms that the final monitoring report (section D) and ER calculation spread sheet correctly state all relevant information and data relating to the monitoring of this parameter during the monitoring period.</p>	OK	OK
Conclusion	<p>ERM CVS confirmed that</p> <ul style="list-style-type: none"><li>The monitoring results have been recorded consistently as per the approved frequency in the monitoring plan.</li><li>QA/QC procedures have been applied in accordance with the monitoring plan.</li></ul>		

Data / Parameter:	EF <sub>grid, BM, y</sub>	Baseline	
Data unit:	tCO <sub>2</sub> /MWh		
Description:	Build margin CO <sub>2</sub> emission factor in year y		
Measured/calculated/default	Calculated		
Compliance question	Verification findings	Draft OK/ CAR/CL	Final OK/ Not OK
Is the monitoring equipment appropriately installed and	ERM CVS evaluated whether this parameter was monitored as required in the monitoring plan.  a) Equipment specification	CAR-03	OK

<b>Data / Parameter:</b>	EF <sub>grid, BM, y</sub>	<b>Baseline</b>	
<b>Data unit:</b>	tCO <sub>2</sub> /MWh		
<b>Description:</b>	Build margin CO <sub>2</sub> emission factor in year y		
<b>Measured/calculated/default</b>	Calculated		
<b>Compliance question</b>	<b>Verification findings</b>	<b>Draft OK/ CAR/CL</b>	<b>Final OK/ Not OK</b>
<b>operated and are the QA/QC procedures appropriately applied?</b>	<p>Not applicable.</p> <p><b>b) Calibration</b> Not applicable</p> <p><b>c) Measurement/reading/recording frequency</b> Annually.</p> <p><b>d) QA/QC procedures applied</b> Based on the the most recent version of the “Tool to calculate the emission factor for an electricity system”.</p> <p><b>e) Cross check</b></p> <ul style="list-style-type: none"> <li>ERM CVS reviewed the information available at the site of the Ministry of Science and Technology of Brazil /36/ confirming that the information presented in the MR is correct.</li> <li>ERM CVS revised the use of the data in calculations and found them to be correct.</li> </ul> <p><b>f) Check of information flow</b> ERM CVS checked and verified the flow of information from data generation, aggregation, to recording, calculation and reporting. Data is extracted from the website of the Ministry of Science and Technology of Brazil by PP and manually transferred to an Excel spread were further calculation is automatically done.</p>		
<b>Does the monitoring report (section D) correctly state all relevant information and data relating to the monitoring of this parameter during the monitoring period?</b>	<p>ERM CVS reviewed the content of the monitoring report section D and evaluated its alignment with the requirements of the monitoring plan and the actual monitoring observed during the site visit and document review.</p> <p>CAR 03 was raised as PP did not consider the updated information of Build margin CO<sub>2</sub> emission factor in 2016. CAR 03 has been duly closed.</p> <p>ERM CVS confirms that the final monitoring report (section D) and ER calculation spread sheet correctly state all relevant information and data relating to the monitoring of this parameter during the monitoring period.</p>	OK	OK
<b>Conclusion</b>	<p>ERM CVS confirmed that</p> <ul style="list-style-type: none"> <li>The monitoring results have been recorded consistently as per the approved frequency in the monitoring plan.</li> </ul>		

<b>Data / Parameter:</b>	EF <sub>grid, BM, y</sub>	<b>Baseline</b>	
<b>Data unit:</b>	tCO <sub>2</sub> /MWh		
<b>Description:</b>	Build margin CO <sub>2</sub> emission factor in year y		
<b>Measured/calculated/default</b>	Calculated		
<b>Compliance question</b>	<b>Verification findings</b>	<b>Draft OK/ CAR/CL</b>	<b>Final OK/ Not OK</b>
	<ul style="list-style-type: none"> <li>QA/QC procedures have been applied in accordance with the monitoring plan.</li> </ul>		

### Document information

<i>Version</i>	<i>Date</i>	<i>Description</i>
01.0	23 March 2015	Initial publication.
Decision Class: Regulatory Document Type: Form Business Function: Issuance Keywords: project activities, verifying and certifying		