



## Verification Report

# ACR191 MS Renováveis Wind Power Complex: Mar e Terra, Areia Branca, Embuaca and Icaraí

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# 1 INTRODUCTION

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Embrasca, Inc. (Embrasca) contracted Ruby Canyon Environmental, Inc. (RCE) to perform the verification of the ACR191 MS Renováveis Wind Power Complex: Mar e Terra, Areia Branca, Embuaca and Icaraí (Project) for the reporting period January 1, 2020 through June 28, 2020 under the American Carbon Registry (ACR) voluntary offsets program.

The Project generates renewable electricity from wind and includes four wind power plants. All of the wind power plants are located in northeastern Brazil in Ceará and Rio Grande do Norte states. The plants deliver electricity to the Brazil electric grid. The project activity results in the reduction of greenhouse gases (GHG) by displacing CO<sub>2</sub> emissions from fossil fuel combustion for electricity generation.

The goal of the verification is to ensure that the GHG assertion is materially correct, that the data provided to RCE is well documented and that if Embasca has made any material errors, that these errors be corrected.

## 2 PROJECT SUMMARY

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### 2.1 REPORTING PERIOD

The reporting period covered by this verification is January 1, 2020 to June 28, 2020.

### 2.2 ORGANIZATIONAL BOUNDARIES

The project boundary includes the wind power plants—Mar e Terra, Areia Branca, Embuaca and Icaraí—physically connected to the Brazil interconnected national electricity system.

### 2.3 INFRASTRUCTURE, TECHNOLOGIES, PROCESSES

The Project activity occurs at four wind power plants: Mar e Terra (23.1 MW), Areia Branca (27.3 MW), Embuaca (27.3 MW), and Icaraí (16.8 MW), with a total installed capacity of 94.5 MW. The plants deliver electricity to the Brazil electric grid. Two electricity generation meters for each wind power plant measure electricity generation at the substation. The meters are owned by Brazil's Electricity Trading Chamber, Câmara de Comercialização de Energia Elétrica (CCEE), and generation data is transmitted directly to CCEE.

### 2.4 GHG SOURCES AND SINKS

The GHG emission source included in the project boundary is baseline CO<sub>2</sub> emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity. CO<sub>2</sub> is the only GHG included. Project emissions for this project are 0.

### 3 OBJECTIVE

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The purpose of the verification is to ensure that the Project meets the requirements of the ACM0002 Methodology, the validated Project Plan, the ACR Standard, and the ACR Validation and Verification Standard. Furthermore, verification evaluates whether the reported Project emission reductions are materially correct and accurate, complete, consistent, and transparent.

### 4 RESPONSIBLE PARTIES

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#### 4.1 PROJECT OWNER

MS Participações Societárias S.A.  
Av. Senador Virgílio Távora  
1701 - Sala 1302  
60170-251  
Fortaleza, Ceara, Brazil

Parent Company  
Cubico Sustainable Investments  
Av. Sen. Virgílio Távora  
nº 1701 Terreo  
60170-079  
Fortaleza, Ceará, Brazil

#### 4.2 TECHNICAL EXPERT

Embrasca, Inc.  
4040 Circle Dr. Suite 200  
San Rafael, CA 94903

#### 4.3 VERIFICATION BODY

RCE selected the verification team according to its GHG Verification Policies & Procedures to ensure team members are qualified to perform verification activities pertaining to the Project. The verification team consisted of the following individuals:

Lead Verifier: Nina Pinette  
Team Members: Diana Xareni González, Issai Medellin  
Internal Reviewer: Jessica Stavole

## 5 VERIFICATION CRITERIA AND SCOPE

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### 5.1 VERIFICATION STANDARDS, GUIDELINES, AND TOOLS

- ACR Standard Version 3.0, February 2014
- ACM0002: Grid-connected electricity generation from renewable sources version 15.0
- Validated Project Plan “MS Renováveis Wind Power Complex: Mar e Terra, Areia Branca, Embuaca and Icaraí”, November 2014
- MS Renováveis Wind Power Complex: Mar e Terra, Areia Branca, Embuaca and Icaraí Monitoring Report, June 18, 2022
- ACR Validation and Verification Standard Version 1.1, May 2018
- ISO 14064-3:2006 Greenhouse gases – Part 3: Specification with guidance for the validation and verification of greenhouse gas assertions

### 5.2 LEVEL OF ASSURANCE

The verification was conducted to a reasonable level of assurance.

### 5.3 MATERIALITY

The verification was conducted to ACR’s required materiality threshold of +/-5% of the GHG project’s emission reductions or removal enhancements.

### 5.4 VERIFICATION SCOPE

The scope of the verification consisted of the following independent and objective activities:

- Select a verification team;
- Perform a Conflict of Interest review;
- Conduct a kick-off meeting with Embrasca;
- Review the validated Project Plan;
- Review the Validation Report;
- Review the Monitoring Report;
- Develop a verification plan and risk-based sampling plan;
- Review the Project information control systems and quality control procedures;
- Review the Project’s emission reduction calculations;
- Issue corrective action requests, additional documentation requests, and clarification requests as necessary;
- Issue a verification report and verification statement; and
- Conduct an exit meeting with Embrasca.

## 6 VERIFICATION PROCESS

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### 6.1 VERIFICATION ACTIVITIES

The verification process consisted of the following activities as outlined in the verification plan:

- RCE completed a Conflict of Interest (COI) Attestation on January 28, 2022 to identify any potential conflict of interest with the Project or Project Developer. Revisions were submitted on February 1, 2022 and June 14, 2022. ACR approved the COI form after RCE submitted it.
- RCE and Embrasca held a verification kick-off meeting on March 9, 2022. During the kick-off meeting RCE reviewed the verification objectives and process, reviewed the verification schedule, and submitted an initial document request.
- RCE performed a strategic review and risk assessment of the received data and support documents to understand the scope and areas of potential risk in the GHG emissions reductions.
- RCE developed a risk-based sampling plan based upon the strategic review and risk assessment. The verification plan and sampling plan were used throughout the verification and were revised as needed based upon additional risk assessments. RCE assessed the risk of not conducting a site visit as part of its risk assessment, and the risk of not detecting material errors was determined to be low.
- RCE performed a risk-based desktop review of the submitted verification documents. The desktop review included an assessment of the GHG calculation methods and inputs, source data completeness, GHG management and monitoring systems and eligibility documentation.
- RCE submitted corrective action requests, non-material corrective action requests, additional documentation requests, and clarification requests to Embrasca throughout the verification.
- RCE's internal reviewer conducted a review of the verification sampling, report, and statement.
- RCE issued a final verification report, verification statement, and list of findings.
- RCE held an exit meeting with Embrasca.

### 6.2 DATA MANAGEMENT SYSTEM AND MONITORING PLAN

RCE reviewed the project proponent's processes for data collection and management and determined that they are sufficient to meet all ACR and Methodology requirements. The verification team gained an understanding of the data collection procedures for data inputs to the emission reduction calculations through the review of all documentation provided by Embrasca. The review also assessed monitoring and measurement methods and the Project's conformance with the monitoring plan in the validated Project Plan; RCE verified that the Project was implemented according to the monitoring plan.

### 6.3 GHG EMISSION REDUCTION ASSERTION

RCE reviewed the GHG assertion calculation as well as supporting data and documentation. The calculations were confirmed to be accurate and commensurate with their reported GHG equations and methods. Appendix A lists the results of the quantitative uncertainty assessment and analysis of the quantification methodologies and applicable data sets and sources.

### 6.3.1 Baseline Emissions

Baseline emissions include only CO<sub>2</sub> emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity. Emissions are calculated by multiplying the quantity of net electricity generation that is produced and fed into the grid because of the implementation of the Project by the combined margin CO<sub>2</sub> emission factor for grid connected power generation.

Annual quantity of net electricity generation is obtained from reports published by Brazil's Electricity Trading Chamber, Câmara de Comercialização de Energia Elétrica (CCEE). These official reports contain monthly net generation for each wind power plant. The reports contain average hourly megawatts (MW) for each month. Embrasca identified this as a deviation from the Project Plan in the Monitoring Report for this reporting period. The Project Plan states that net electricity generated by each power plant is measured in MWh obtained from the official generation reports; however, because the 2020 official report contain average hourly MW for each month, total MWh generated is calculated by multiplying the average hourly MW for each month by the total hours in each month. CCEE still monitors MWh generation for each wind power plant but calculates an average MW production rather than reporting net generation. RCE approved this deviation because it has no impact on the calculated emission reductions.

RCE reviewed the CCEE official reports as a check on Embrasca's emission reduction calculations. RCE verified that use of the data from the official generation reports is the most appropriate method and is consistent with the Project's monitoring plan in the validated Project Plan.

The Project electricity generation meters are owned by CCEE and are used for billing purposes. Brazil regulations define those meters must be calibrated every five years; the Project meters are calibrated every five years. The monitoring plan in the validated Project Plan does not include meter calibration procedures and frequency; however, to ensure accuracy of the generation data, the verification team reviewed a sample of calibration reports from 2017 and 2018 which are within 5 years of the reporting period.

Embrasca calculates annual combined margin CO<sub>2</sub> emission factors using the official country operating and build margin emission factors calculated and published annually by Brazil's Science, Technology and Innovations Ministry, Ministério de Ciência, Tecnologia e Inovação (MCTI). Per the validated Project Plan, the operating margin emission factor is weighted 75% and the build margin emission factor is weighted 25%. The verification team reviewed the annual published emission factors and verified that Embrasca appropriately calculated the annual combined margin factors per the validated Project Plan.

Finally, RCE verified that the calculation of annual baseline emissions was appropriate and free of material misstatement.

### 6.3.2 Project Emissions

The Project has no project emissions. This is consistent with the validated Project Plan and the Methodology.

### 6.3.3 Uncertainty Assessment

Per the Methodology, no uncertainty calculation is necessary as emission reductions from this activity are permanent and all relevant parameters are measured using calibrated equipment.

#### 6.3.4 Emission Reductions

RCE calculated emission reductions for the reporting period according to the methods described in the validated Project Plan and the Methodology and found the final assertion to be free of material misstatement.

## 7 SUMMARY OF FINDINGS

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RCE developed a List of Findings notifying Embrasca of corrective action requests, non-material findings, additional documentation requests, and clarifications. Embrasca sufficiently responded to all requests as required to close out the verification. Appendix B contains the complete List of Findings and responses.

## 8 VERIFICATION RESULTS AND CONCLUSION

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RCE conducted a risk-based verification of the MS Renováveis Wind Power Complex: Mar e Terra, Areia Branca, Embuaca and Icaraí project for the reporting period January 1, 2020 to June 28, 2020 that included a strategic review of the project data, documentation, and emission reduction calculations. The objective of the verification activities was to conduct an independent assessment of the project reporting period and ex-post GHG emission reductions resulting from the Project.

Based on the review and the historical evidence collected, RCE concludes to a reasonable level of assurance that the GHG assertion is free of material misstatement. The emission reductions resulting from generation of renewable wind power for the reporting period January 1, 2020 to June 28, 2020 can be considered in conformance with the:

- ACR Standard, Version 3.0 (February 2014)
- ACR Validation and Verification Standard Version 1.1 (May 2018)
- ACM0002: Grid-connected electricity generation from renewable sources version 15.0
- Validated Project Plan “MS Renováveis Wind Power Complex: Mar e Terra, Areia Branca, Embuaca and Icaraí” (November 2014)
- ISO 14064-3:2006 “Greenhouse gases – Part 3: Specification with guidance for the validation and verification of greenhouse gas assertions”

Table 1 provides a summary of the verified emission reductions.



Table 1. Verified Emission Reductions for Reporting Period January 1, 2020 to June 28, 2020

Vintage	Baseline Emissions (mtCO <sub>2</sub> e)	Project Emissions (mtCO <sub>2</sub> e)	Leakage Emissions (mtCO <sub>2</sub> e)	Emission Reductions (mtCO <sub>2</sub> e)
2020	23,129.11	0	0	23,129.11
<b>Reporting Period Total</b>	<b>23,129.11</b>	<b>0</b>	<b>0</b>	<b>23,129.11</b>

Note: Values might not sum due to rounding.

Lead Verifier



Nina Pinette

Internal Reviewer



Jessica Stavole

## APPENDIX A - QUANTITATIVE UNCERTAINTY ASSESSMENT & ANALYSIS OF SSRs

SSR	SSR Description	Ranking and Reason	Ranking for Uncertainty	Selected for Document Review	Selected for Data Checks/Calc. Review	Method	Summary of Review	Quantity of Data Reviewed	Documents Reviewed	Discrepancies Identified	Discrepancy Description and Reason for it
Baseline	CO2 emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity	#1 (Baseline) This SSR represents 100% baseline emissions	1	Yes	Yes	Review official net generation reports published by CCEE. Review calibration procedures and reports to confirm accuracy of meters. Also review evidence for Brazil operating and build margin EFs.	Reviewed all monthly generation for all wind power plants contained in official generation reports, calibration records, and evidence for annual published EFs.	100%	Net generation reports, published EFs, calibration certificates.	None.	N/A
Project	None.	N/A									
Leakage	None.	N/A									

## APPENDIX B – LIST OF FINDINGS

Corrective Action Request (CAR), Non-Material Finding (NMF), Additional Documentation Request (ADR), or Clarification Request (CR) #	Finding and Date	Section of Protocol/ Methodology or Program Document	Project Developer Response and Date	RCE response and Date
<b>CAR 1</b>	None.			
<b>NMF 1</b>	13 June 2022: There are small differences between the electricity generation values used in the emission reduction calculations and the CCEE official generation reports (estimated -0.42% difference in reported emission reductions). As this is a non-material finding it is not required to be addressed to close out the verification.	Validated Project Plan	June 20, 2022: The difference was because, when calculating the energy generation for February 2020, we used 28 days, but it was actually 29 days. The spreadsheets and monitoring reports have been updated.	Confirmed that Embrasca updated the calculations and the values in the Monitoring Report. The difference is now 0.00%. Item closed.
<b>ADR 1</b>	13 June 2022: Please provide an updated Monitoring Report to address the following errors: <ul style="list-style-type: none"> <li>• Section III, 3, Update the description of the deviation for use of MW instead of MWh to be relevant to the current monitoring period (instead of 2018 &amp; 2019).</li> <li>• Section V, 2, Add additional detail to the statement "Brazilian legislation defines that calibration procedures are performed each 5 years." such as when the project meters were last calibrated, project calibration frequency, party responsible for calibration, etc.</li> <li>• Section VIII, respond to the instructions: "State the date of the last full site visit verification" and "State the number of consecutive years the verification body has verified the project".</li> <li>• Section IX, include Project Proponent signature in the final version of the Monitoring Report</li> </ul> Finally, there is a new version of the Monitoring Report template, released May 2022, that needs to be used.	Monitoring Report Instructions	June 20, 2022: <ul style="list-style-type: none"> <li>•Regarding the ADR "Update the description of the deviation for use of MW instead of MWh to be relevant to the current monitoring period (instead of 2018 &amp; 2019).", the text mentioned the following: "This was already an adopted and accepted deviation in the last monitoring period, for the years of 2018 and 2019.". It was only making reference that this deviation had already been used and not repeating the same information. An additional sentence was added: "The same deviation is being used at this monitoring period, regarding the year of 2020."</li> <li>•Regarding the ADR "such as when the project meters were last calibrated, project calibration frequency, party responsible for calibration, etc.", additional information was added to the section.</li> <li>•Regarding the ADR "State the date of the last full site visit verification" and "State the number of consecutive years the verification body has verified the project", new information was added to the monitoring report.</li> <li>•A signature has been added to the monitoring report.</li> <li>•The updated monitoring report considered ACR's version of May 2022.</li> </ul>	Confirmed that the updated Monitoring Report contains the requested revisions. Item closed.
<b>ADR 2</b>	13 June 2022: Provide meter calibration records if new certificates are available since 2017 and 2018. During the last verification, the Monitoring Report indicated that meters were calibrated every 2 years (exceeding Brazil's requirement to calibrated every 5 years).	Monitoring Report Instructions	June 20, 2022: According to the project operator, the available certificates are the last ones. Since the last verification, procedures have changed and calibration is only attending national legislation. This legislation can be checked at " <a href="https://apps08.ons.org.br/ONS.Sintegra.Proxy/ecmprsite/ecmfragmentsdocuments/Subm%C3%B3dulo%206.16-OP_2020.12.pdf">https://apps08.ons.org.br/ONS.Sintegra.Proxy/ecmprsite/ecmfragmentsdocuments/Subm%C3%B3dulo%206.16-OP_2020.12.pdf</a> ", item 1.1.2. The two years interval is actually for maintenance purposes. Calibration must happen every 5 years.	Confirmed that the project meets the calibration requirements in the legislation (5 years). Item closed.
<b>CR 1</b>				

## APPENDIX C – DOCUMENTS REVIEWED

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1. Validated Project Plan
2. Project Monitoring Report and updates
3. Assertion spreadsheet and updates
4. Regulatory compliance attestation
5. Calibration reports
6. CCEE Official Generation Reports
7. MCTI operating and build margin emission factors
8. Samples of environmental permits and inspection results