CROW LAKE WIND EMISSIONS REDUCTION PROJECT VERIFICATION REPORT

RUBY CANYON ENVIRONMENTAL

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Summary:

The Crow Lake Wind Emissions Reduction Project (Project) consists of electricity generation from a renewable source. The project is interconnected to the Western Area Power Administration (WAPA) – Upper Great Plains East (UGPE) bulk transmission system, which is located within the Midwest Reliability Organization (MRO) region. Through the installation of 108 turbines with a total capacity of 162 MW, the project activity results in the reduction of greenhouse gases (GHG) through displacement of carbon dioxide (CO_2) emissions from fossil fuel combustion for electricity generation.

Blue Delta Delta Energy, LLC (Blue Delta Delta Energy) contracted with Ruby Canyon Environmental (RCE) to perform the verification of the monitoring period 1 January 2019 – 31 December 2019. The current verification included a detailed document review of relevant Project information. RCE visited the Project site during the previous reporting period on October 1, 2019.

The purpose of the verification is to ensure that the project activity was implemented according to the monitoring plan, that the emission reduction assertion submitted by Blue Delta Energy is materially correct and free of errors and omissions, and that the Project meets all criteria requirements. Specifically, the Project was assessed against the requirements of the Clean Development Mechanism methodology ACM0002, Version 12.1.0 – "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" and the validated VCS Project Description dated January 3, 2012. RCE assessed the Project Monitoring Report, including the Project's monitoring plan, based on the above criteria documents as well as relevant VCS criteria and guidance documents.

During the verification process, RCE completed a desk review of the Monitoring Report and associated documents to confirm that the project activity was implemented as stated in the VCS Project Description including a review of data and information control systems, interviews with key personnel, and visual inspection of monitoring equipment. RCE issued corrective action requests, additional documentation requests, and clarifications as necessary. During the course of verification activities, Blue Delta Energy provided adequate responses to one material Corrective Action Request and one Additional Documentation Request.

RCE concludes, to a reasonable level of assurance, that the Project's greenhouse gas (GHG) assertion of 444,562 metric tonnes of CO2 equivalent emissions for the period of 1 January 2019 – 31 December 2019 is fairly stated.

1 INTRODUCTION

1.1 Objective

The objective of the verification is to ensure that the GHG emission assertion made by the Project is materially correct and that the data provided are accurate, complete, and transparent. Additionally, RCE ensured that the Project is in conformance with the criteria as stated in Section 1.2.

1.2 Scope and Criteria

The scope of the Project includes the organizational boundaries of the Crow Lake Wind Emissions Reduction Project and all of the grid-connected power plants in the Midwest Reliability Organization (MRO) region. The GHG included in the scope of the project is CO_2. RCE conducted the verification based upon the following criteria:

- Verified Carbon Standard Version 4.0 (19 September 2019);
- VCS Program Guide Version 4.0 (19 September 2019);
- Validation and Verification Manual Version 3.2 (October 19, 2016);
- Clean Development Mechanism (CDM) methodology ACM0002, Version 12.1.0, "Consolidated baseline methodology for grid-connected electricity generation from renewable sources";
- Clean Development Mechanism (CDM) Tool 07, "Tool to calculate the emission factor for an electricity system," Version 01.1
- Validated VCS Project Description, dated 3 January 2012;
- ISO 14064-3:2006 "Greenhouse gases – Part 3: Specification with guidance for the validation and verification of greenhouse gas assertions".

Additionally, RCE reviewed the Project's monitoring period-specific Monitoring Report Version 1.2 dated 11 May 2020, including the monitoring plan, during verification activities.

1.3 Level of Assurance

RCE conducted the verification to a reasonable level of assurance. The VCS Standard defines materiality as errors, omissions, or discrepancies resulting in misstatement of greater than five percent of the Project's GHG assertion. Additionally, RCE considered qualitative non-conformances with criteria requirements as material during the verification process.

1.4 Summary Description of the Project

The Project activity consists of the installation of 108 wind turbines and the generation of renewable energy fed into the grid from Crow Lake Wind Farm across the span of Aurora County, Jerauld County, and Brule County east of Chamberlain, South Dakota. The Project is located at latitude: 43.8°N and longitude: -98.8° over an area of approximately 36,000 acres. The monitoring period under verification is 1 January 2019 – 31 December 2019.

The site contains 108 GE 1.5-megawatt turbines, with the ownership originally divided among PrairieWinds SD 1, Inc. (PWSD1) - a wholly-owned subsidiary of Basin Electric Power Cooperative (BEPC) that owned 100 turbines - South Dakota Wind Partners (SDWP), a South Dakota limited liability company that owned 7 turbines, and one turbine owned by Mitchell Technical Institute (MTI). Through Power Purchase Agreements, BEPC retains all environmental attributes associated with generation with each of the turbine owners listed above. Please note that two significant changes to ownership structure occurred since the Project was validated: on July 14, 2017 SDWP sold and assigned their 7 turbines to PWSD1 and on December 31, 2017, PWSD1 was merged into BEPC and subsequently dissolved. This is noted as a project description deviation below in Section 3.3.

The project achieves emission reductions through the replacement of electricity into the MRO grid that otherwise would have been produced by fossil fuel combustion or a mix of fossil fuel and renewable electricity generation. The Project reduces the quantity of CO_2 released to the atmosphere by generating electricity using a zero-emission source. In the absence of the Project, the majority of electricity produced would be from coal or natural gas.

2 VERIFICATION PROCESS

2.1 Method and Criteria

The verification process involved the following independent and objective activities:

- Select a Verification Team;
- Perform a Conflict of Interest Review;
- Conduct a kick-off meeting with Blue Delta Energy;
- Review the validated Project Description;
- Review the Validation Report;
- Review the previous Verification Report;
- Review the initial 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 representation; and
- Conduct an exit meeting with Blue Delta Energy.

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: Jessica Stavole-Carter
Team Member: Garrett Heidrick
Internal Reviewer: Michael Coté

Prior to verification activities, RCE performed a Conflict of Interest Assessment to determine whether any potential conflicts exist with the project developer. No issues were discovered that would affect the impartiality or independence of the verification team. RCE held a kick-off call with Blue Delta Energy on 4 May 2020. The purpose of the kick-off call was to introduce the Blue Delta Energy personnel and the RCE verification team, review the verification objectives and process, review the VCS requirements, and to confirm the verification schedule.

RCE developed a verification plan and sampling plan that were used throughout the verification of the Project. RCE created the plans after reviewing the Project Monitoring Report, validated Project Description, and the VCS Standard (Version 4.0). RCE performed a risk assessment based upon the criteria listed above and evidence provided to RCE by Blue Delta Energy for the current monitoring period.

RCE used the verification plan throughout the verification as a basis for assessing the completeness, consistency, accuracy, and transparency of the Project's GHG emission reductions. RCE conducted a site visit during the previous reporting period at the Project location near Chamberlain, South Dakota on 1 October 2019 as described below in Section 2.4.

2.2 Document Review

RCE performed a risk-based analysis of the Project and document sampling in order to verify that the Project is in conformance with all criteria requirements and that the stated emission reductions are materially correct. RCE reviewed the following documents:

- Validated Project Description,
- Validation report,
- Previous verification report,
- Monitoring Report, multiple versions,
- Emission reduction calculation spreadsheet,
- Crow Lake meter hourly data (WAPA and BPEC),
- M-RETS retirement documentation,
- WAPA Operations Test Report for the primary meter dated 31 July 2019

2.3 Interviews

RCE held discussions with the following personnel during the verification:

- Ken Nelson, President, Blue Delta Energy: Ken was responsible for the management of project data as well as the development and maintenance of the Project Monitoring Report and emissions reductions calculation. He also addressed all Corrective Action Requests (CARs), additional documentation requests (ADRs), and clarification requests (CRs) as necessary.

2.4 Site Inspection

RCE conducted a site visit at the Project location near Chamberlain, South Dakota during the previous reporting period on 01 October 2019. The site visit activities included a physical inspection of the Project operations and a review of the Project's information control systems, data handling, QA/QC activities, and equipment calibration schedules. RCE confirmed the presence of 108 wind turbines via the SCADA system which tracks operational information for all turbines. In addition, RCE inspected the monitoring equipment at the Crow Lake substation which is used for QA/QC purposes. Access to WAPA's revenue meter at the Wessington Springs substation could not be granted by BPEC during the site visit; however, RCE confirmed with BPEC staff that Project generation data is provided by WAPA's revenue meter. RCE also reviewed calibration and testing certificates for the primary meter. During the site visit, RCE also discussed the day-to-day operation of equipment, data aggregation and compilation, environmental and regulatory compliance, and emission reductions quantification.

2.5 Resolution of Findings

During the verification process, RCE issued one corrective action request (CAR) and one additional documentation request (ADR). RCE documented these requests in the List of Findings. Blue Delta Energy sufficiently addressed all requests as documented below.

ID#	Action Item	Resolution
CAR 1	Ownership changes must be listed as a project description deviation in the monitoring report.	11 May 2020: Blue Delta Energy added a project description deviation in the monitoring report regarding the ownership changes.
ADR 1	Please provide an attestation regarding REC retirement.	21 May 2020: Blue Delta Energy provided the requested documentation.

2.5.1 Forward Action Requests

There were no forward action requests.

2.6 Eligibility for Validation Activities

No validation activities took place during the verification of this monitoring period.

3 VALIDATION FINDINGS

No validation activities took place during the verification of this monitoring period.

3.1 Participation under Other GHG Programs

The Project is currently listed in M-RETs (the Midwest Renewable Energy Tracking System), a third-party registry created to record the generation of renewable energy MWh and renewable energy credits (RECs). WAPA, a third-party, reads the Project revenue meter on a monthly basis and reports the number of megawatt hours generated to M-RETs, which then issues Renewable Energy Credits (RECs) to the project's account. As noted in the project description, the project's registration in M-RETS is being used for reporting purposes only – all certificates for which VCUs are being generated will be retired. A screenshot of the retirement was provided and reviewed during the verification process, ensuring that the RECs will not be double-sold and that VCUs can be issued with confidence. RECs for the 1 January 2019 – 31 December 2019 were retied for other use and are not used to claim any VCUs.

3.2 Methodology Deviations

There were no methodology deviations for this monitoring period.

3.3 Project Description Deviations

RCE identified one project description deviation during the current reporting period. The validated Project Description states that ownership was originally divided among PrairieWinds SD 1 (PWSD1), Inc, a wholly-owned subsidiary of Basin Electric Power Cooperative, South Dakota Wind Partners (SDWP), and Mitchell Technical Institute. On July 14, 2017 SDWP sold and assigned their 7 turbines to PWSD1. On December 31, 2017, PWSD1 was merged into BEPC and subsequently dissolved. No changes were made to the onsite destruction equipment or monitoring equipment. RCE approved this deviation because it does not impact the applicability of the methodology, or additionality, or appropriateness of the baseline scenario.

3.4 Grouped Project

The project is not a grouped project.

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

The Project start date is 01 February 2011, the date upon which commercial operation began. The crediting period is for ten years, beginning on 01 February 2011 and ending on 31 January 2021. RCE found that the Project was implemented in conformance with the validated Project Description with no deviations. RCE also confirmed that the Project continues to meet the requirements of the VCS Standard Version 4.0.

BEPC is identified as the Project Proponent in the Monitoring Report. During verification activities, RCE confirmed that BEPC is the Project owner and operator and thus has rights to all emission reduction credits generated by the Project. Blue Delta Energy confirmed that the Project has not participated in or been rejected under any other GHG programs since validation or the previous verification, has not sought any other form of environmental credit, and that the GHG emission reductions generated by the Project have not become included in any other mechanism that includes GHG allowance trading. Overall, RCE concludes that the Project has been implemented in accordance with the project description.

4.2 Safeguards

4.2.1 No Net Harm

The project developer identified one potential negative environmental impact pertaining to avian mortality, particularly the endangered whooping crane. BPEC provides and annual training to staff and any pertinent contractors on this issue: attendees are taught how to identify, track, and protect whooping cranes. The project proponent did not identify any negative socioeconomic impacts.

4.2.2 Local Stakeholder Consultation

The project proponent identified three major stakeholder groups; government, public, and first responders. During the initial permitting phase of the project, BEPC facilitated regular meetings with the public, addressing any issues as they arose. BEPC is currently unaware of any pending landowner issues. In addition, as the Project is subject to local, state, and federal requirements, BEPC ensures that staff are adequately trained to respond to any requirements and request. Lastly, BEPC holds annual emergency response meetings on the wind farm site, where the safety coordinator invites all local public officials including the Sheriff's Department, Fire Department, ambulance services, emergency dispatch center, and emergency management coordinator.

4.3 AFOLU-Specific Safeguards

The Project is non-AFOLU and as such, AFOLU-specific safeguards do not apply.

4.4 Accuracy of GHG Emission Reduction and Removal Calculations

Blue Delta Energy calculated the Project's emission reductions in accordance with the equations in ACM0002 Version 12.1.0 and the validated Project Description. RCE reviewed Blue Delta Energy's GHG assertion spreadsheet to ensure the accuracy of the formulas, emission factors applied, and functionality of the spreadsheet. RCE sampled the Project's raw data sets to ensure the accuracy of reported data and to ensure that there were no transcription errors.

The primary Project data includes the electricity generated and supplied to the grid. Blue Delta Energy uses this data to calculate the carbon dioxide emissions displaced by the Project. RCE sampled the Project data recorded via WAPA's SEL revenue meter at the Wessington Springs substation which is aggregated hourly. No manual or transcription errors were identified within the source data. RCE also reviewed the M-RETS retirement.

Blue Delta Energy calculates baseline emissions from wind power generation by multiplying the quantity of net electricity produced and supplied to the grid by the combined margin CO2 emission factor for grid connected power generation (0.8422 tCO_2/MWh). RCE reviewed the calculation of the combined margin factor that Blue Delta Energy calculated in accordance with the CDM methodological tool 07 "Tool to calculate the emission factor for an electricity system" Version 01.1 using a weighted average of the operating and build margin emission factors. The weighted operating margin and build margin values were consistent with the CDM methodological tool 07 default values. Per the validated Project Description, both the build margin (0.4126 tCO2/MWh) and simple operating margin (0.98542 tCO2/MWh) are calculated ex-ante and are fixed for the Project's crediting period. RCE verified that Blue Delta Energy correctly applied all factors in the calculation of emission reductions for this monitoring period.

Per CDM's ACM0002 Version 12.1.0 methodology, project emissions are zero as the Project is not a geothermal, solar, thermal, or hydro project. RCE recalculated the emission reductions for the entire monitoring period and found the GHG emission reduction calculations to be in conformance with the ACM0002 Version 12.1.0 methodology and the validated Project Description and to be free of material misstatement.

4.5 Quality of Evidence to Determine GHG Emission Reductions and Removals

Blue Delta Energy provided adequate documentation for the emission reduction calculations as well as the Project's information control systems, data management processes, and data quality assurance procedures. RCE reviewed the Project's Monitoring Report, meter test reports, raw data, and all emission reduction calculations. Additionally, RCE interviewed Project personnel to assess their understanding of the Project equipment and data outputs including data management. BEPC's primary revenue meter, installed at the Wessington Springs Interconnection point collects and records Project data continuously. The SEL meter (S/N 10 21 13576), was tested on 11 April 2018 and 31 July 2019 and found to be operating in a satisfactory manner.

Per the project description, both the MV90 data and the corresponding M-RETS generation records are being provided to corroborate the number of MWhs generated. RCE performed a cross-check of WAPA and BPEC generation data. For the current reporting period, the difference between the annual M-RETS value and the MV90 value was non less than 0.0003%.

RCE found the information provided to be transparently documented, of sufficient quantity and appropriate quality and in accordance with requirements of the ACM0002 Version 12.1.0 methodology and the validated Project Description.

4.6 Non-Permanence Risk Analysis

The project has no risk of non-permanence as it is a grid-connected renewable energy project and can be categorized under Sectoral Scope Number 1: Energy (renewable/non-renewable sources).

5 VERIFICATION CONCLUSION

RCE conducted a risk-based analysis of the Crow Lake Wind Emissions Reduction Project including a strategic review of the Project data, documentation, and emission reduction calculations. RCE concludes to a reasonable level of assurance that the GHG assertion is free of material misstatement. The emission reductions resulting the reporting period 1 January 2019 – 31 December 2019 can be considered in conformance with the:

- Verified Carbon Standard Version 4.0 (19 September 2019),
- Clean Development Mechanism methodology ACM0002 Version 12.1.0, "Consolidated baseline methodology for grid connected electricity generation from renewable sources," and
- Validated VCS Project Description, dated 03 January 2012

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

Year	Baseline emissions or removals (tCO_2e)	Project emissions or removals (tCO_2e)	Leakage emissions (tCO_2e)	Net GHG emission reductions or removals (tCO_2e)
2019	444,562	--	--	444,562
Total	**444,562**	--	--	**444,562**