

VERIFICATION REPORT

DEMPSEY RIDGE WIND PROJECT



Conestoga-Rovers & Associates Limited

651 Colby Drive

Waterloo, Ontario, Canada N2V 1C2

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Prepared By	Conestoga-Rovers & Associates Limited
Contact	651 Colby Drive, Waterloo, Ontario, Canada N2V 1C2, (519) 884-0510
Approved By	Tej Gidda, Ph.D., P. Eng. (Independent Technical Reviewer)
Work Carried Out By	Brent Boss, P. Eng. (Lead Auditor and Technical Expert) Adam Loney, P. Eng. (Validation Team Member) Valerie Chan, P. Eng. (Lead Auditor Under Training)

Summary:

Dempsey Ridge Wind Farm, LLC. (Project Proponent) commissioned Conestoga-Rovers & Associates Limited (CRA) to perform the first verification of the Dempsey Ridge Wind Project, VCS Project ID: 780 (Project Activity) located near Cheyenne, Oklahoma, U.S.A. The first verification period extends from 01 January 2012 through 31 December 2012.

The Project Activity consists of the installation and operation of 66 Gamesa G90/2000-IEC II A, 2.0 MW turbines for a total rated nameplate capacity of 132 MW. The turbines are located over an area of approximately 7,500 acres of rural and agricultural/grazing lands. Electricity generated by the turbines is upgraded from a 34.5 kilovolt (kV) collection line rating to a 230 kV rating at the Project Activity's substation and then transferred via approximately 15 miles of transmission line to the Sweetwater Substation (Point of Interconnection, POI) where the electricity is then delivered to the Southwest Power Pool (SPP) grid. The Project Activity's intent is to generate electricity from renewable sources and therefore displace electricity that otherwise would have been produced for or distributed to the SPP grid in the absence of the Project Activity.

The Project Proponent utilizes the United Nations Framework Convention on Climate Change (UNFCCC) Clean Development Mechanism (CDM) methodology entitled: "Consolidated baseline methodology for grid connected electricity generation from renewable sources (ACM0002), Version 12.1.0", which is valid from September 17, 2010 to May 10, 2012. This methodology has been accepted for use by the VCS.

The scope of this verification is such that CRA, as an independent third party recognized as a Validation and Verification Body by the VCS (Registration Number 027) is responsible for reviewing the VCS Monitoring Report including accompanying materials, the previous VCS Validation Report, and the VCS Project Document (PD) including the monitoring plan, baseline assessment, and any supporting documentation. CRA utilized a risk based analysis against the relevant requirements of both the interpretation from the CDM and of VCS Program Guide Version 3.4 and VCS Standard Version 3.3 as applicable.

As part of the verification process, CRA reviewed the completeness, conservativeness, and accuracy of the underlying evidence for the assumptions and claims made, and data sources used. The results of this investigation were then, together with the results of the review of other areas, combined to form the necessary input for the verification report and opinion.

The verification report and associated annexes document a total of 13 findings which include:

- Ten Corrective Action Requests (CARs)
- Two Clarification Requests (CLs)
- One Forward Action Request (FARs)

Upon review of the documentation and explanations provided by the Project Proponent, all CAR and CL findings were closed in a clear and transparent manner.

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1 INTRODUCTION

1.1 Objective

Dempsey Ridge Wind Farm, LLC (Project Proponent) commissioned Conestoga-Rovers & Associates Limited (CRA) to complete an independent third party verification for the registered Verified Carbon Standard (VCS) project entitled:

- Dempsey Ridge Wind Project located near Cheyenne, Oklahoma, U.S.A., VCS Project ID: 780. (Project Activity)

CRA completed the verification pursuant to the relevant requirements of the VCS guidance (VCS Program Guide, Version 3.4, and VCS Standard, Version 3.3) as well as translational guidance from the United Nations Framework Convention on Climate Change (UNFCCC) Clean Development Mechanism (CDM). As detailed in Section 5.1.1 of the VCS Standard Version 3.3, "Verification is the periodic ex-post independent assessment by a validation/verification body of the GHG emission reductions and removals that have occurred as a result of the project during the monitoring period, conducted in accordance with the VCS rules." The objective of CRA, on behalf of the VCS, is to ensure that only Project Activities that meet the established criteria receive a positive and unconditional verification statement. Specifically, the criteria states that the registered Project Activity must result in emission reductions that are:

- Relevant
- Complete
- Consistent
- Accurate
- Transparent
- Conservative

In the verification of this VCS Project Activity, CRA used a risk-based verification approach to focus and determine the detailed scope of the verification. The VCS and the CDM are rules-based mechanisms; CRA has ensured that the rules for requesting registration as a proposed VCS Project Activity are complied with, in accordance with the VCS Program Guide Version 3.4, and the VCS Standard Version 3.3.

The key risks associated with the project design, baseline, monitoring plan, emission reduction estimates, environmental impacts, and stakeholder comments are elements that are critical for meeting VCS criteria for achieving real, measurable, permanent, additional, independently audited, unique, transparent, and conservative greenhouse gas (GHG) reductions.

1.2 Scope and Criteria

The Project Proponent commissioned CRA to perform the independent third party verification for the first monitoring period (01 January 2012 through 31 December 2012) of the registered Project Activity, which is located near Cheyenne, Oklahoma, U.S.A.

Utilizing a risk-based approach as part of the verification process, CRA reviewed the completeness, conservativeness, and accuracy of the underlying evidence for the assumptions and claims made, and data sources used. The results of this investigation then, together with the results of the review of other areas, gave the necessary input for the verification opinion which is completed pursuant to guidance provided within the VCS Program Guide Version 3.4, and the VCS Standard Version 3.3.

1.3 Level of Assurance

CRA has conducted the verification activities and has prepared this report to a reasonable level of assurance with a maximum allowable materiality threshold of 5 percent as outlined in Section 5.3.1 of the VCS Standard, Version 3.3.

1.4 Summary Description of the Project

The Project Activity consists of the installation and operation of 66 Gamesa G90/2000-IEC II A, 2.0 MW turbines for a total rated nameplate capacity of 132 MW. The turbines are located over an area of approximately 7,500 acres of rural and agricultural/grazing lands near Cheyenne, Oklahoma, U.S.A. Electricity generated by the turbines is upgraded from a 34.5 kilovolt (kV) collection line rating to a 230 kV rating at the Project Activity's substation and then transferred via approximately 15 miles of transmission line to the Point of Interconnection (POI) at the Sweetwater Substation where the electricity is then delivered to the Southwest Power Pool (SPP) grid. The Sweetwater substation is owned and operated by AEP West, which is an electric utility that is a member of SPP. The Project Activity's intent is to generate electricity from renewable sources and therefore displace electricity that otherwise would have been produced for or distributed to the SPP grid in the absence of the Project Activity.

2 VERIFICATION PROCESS

2.1 Method and Criteria

The CRA Project Team has assessed and verified that the implementation of the Project Activity and the steps taken to report emission reductions comply with the VCS criteria and relevant guidance provided by the VCS and the UNFCCC. The verification included a review of relevant documentation, records, and an on-site visit.

CRA followed a risk-based verification approach. CRA identified the key reporting risks related to the claimed emission reductions and assessed to what extent the project's control systems are adequate for mitigating any perceived reporting risks.

Key reporting risks that are not sufficiently addressed by the project control system represent residual risks. The CRA Project Team conducted detailed verification/testing to investigate the residual risks. Key issues assessed during verification included: verification of correct use of emission factors, accurate fuel consumption estimates, correct use of conversion factors, and consistency in aggregation of emissions data, as applicable. Wherever practical, direct reading instruments are preferred to be used to ensure that any reporting risks are kept with equipment and instrumentation performance limits.

The CRA Project Team ranked reporting risks and assessed the control systems implemented to mitigate these risks. The ranks are assigned as follows:

- Fully Implemented - All best practice expectations are implemented, resulting in a low risk
- Partially Implemented - A portion of the best practice expectations are implemented, resulting in a moderate risk
- Limited Implementation - Few or none of the expected system components or best practice expectations are implemented, resulting in a high risk

During the verification process, the CRA Project Team considered both quantitative and qualitative information on emission reductions. Quantitative data was comprised of the monitoring report and accompanying information submitted to the CRA Project Team by the Project Proponent. Qualitative data was comprised of information on internal management controls, calculation procedures, and procedures for transfer, frequency of emissions reports, and review and internal audit of calculations/data transfers.

The audit conclusion was based on the interaction of three key verification principles as follows:

1. Compliance with the monitoring plan
2. Accuracy
3. Quality of evidence

During the desk review, the CRA Project Team became familiar with the Project Activity in order to be able to compare the situation and status on site with the situation as described in the underlying documentation. The CRA Project Team reviewed the following items:

- Review of the data and information presented to verify completeness
- Review of the monitoring plan and monitoring methodology, paying particular attention to the frequency of measurements, the quality of metering equipment including calibration requirements, and the quality assurance and quality control procedures
- Evaluation of data management and the quality assurance and quality control system in the context of their influence on the generation and reporting of emission reductions
- Review of the last revision of the previous verification and validation reports (as applicable)
- Review of the written management manual (as applicable)
- Review of operation licenses from local authorities (as applicable)

Other documents such as process flow diagrams, technical drawings, manuals of equipment suppliers, and performance records were reviewed, if applicable to the Project Activity.

The CRA Project Team used a risk-based approach for on-site investigation conducted during the verification process. The Lead Auditor and other Project Team members followed the audit trails and data sets on site for specific indicators, and cross checked with the monitoring plan and records. Direct reading instrumentation and redundancy in the data used to support the verification was identified in the verification reporting.

During the on-site assessment, the CRA Project Team focused on the key areas identified as follows:

- An assessment of the implementation and operation of the VCS Project Activities as per the registered VCS PD
- A review of information flows for generating, aggregating, and reporting the monitoring parameters
- Interviews with relevant personnel to confirm that the operational and data collection procedures are implemented in accordance with the monitoring plan in the VCS PD
- A cross-check between information provided in the monitoring report and data from other sources such as plant log books, inventories, purchase records, or similar data sources
- A check of the monitoring equipment including calibration performance and observations of monitoring practices against the requirements of the VCS PD and the selected methodology
- A review of calculations and assumptions made in determining the GHG data and emission reductions
- An identification of quality control and quality assurance procedures in place to prevent or identify and correct any errors or omissions in the reported monitoring parameters

The outcome of the on-site assessment and the desk-top review was the creation of a Draft Findings Assessment. The Draft Findings Assessment was issued to the Project Proponent for response to any corrective actions or clarification requests. Upon receipt of the Project Proponent's response to these requests, the CRA Project Team prepared a Draft Verification Report. The CRA Independent Technical Reviewer completed a peer review of this Draft Verification Report. Any additional findings were presented to the Project Proponent. Upon receipt of the Project Proponent's response, the CRA Project Team issued a Final Verification Report along with a completed Verification Statement and Verification Representation.

2.2 Verification Team

The following presents the members of the CRA Project Team assembled for the verification of the registered VCS Project Activity:

CRA Project Team Position	CRA Project Team Member
Lead Auditor/Technical Expert	Brent Boss, P. Eng.
Validation Team Member	Adam Loney, P. Eng.
Lead Auditor Under Training	Valerie Chan, P. Eng.
Independent Technical Reviewer	Tej Gidda, Ph.D., P. Eng.

Curricula vitae for each of the CRA Project Team Members have been provided as Annex C of this report.

2.3 Document Review

The VCS verification process relies heavily upon documentation review. The primary document for review is the VCS Monitoring Report. The Project Proponent provided CRA with the VCS Monitoring Report and revised VCS Monitoring Reports as detailed below:

Document Date	Date Issued to CRA	Version Number	Methodology
15 March 2013	16 March 2013	1	ACM0002, Ver. 12.1.0
25 April 2013	26 April 2013	2	

Each of the above submissions was reviewed by CRA. As part of the verification process, additional documentation supplemental to the VCS Monitoring Report was requested and reviewed by CRA. This supplemental information included the following documents:

Issued to CRA Date	Type of Document
15 March 2013	- Current Transmission Line Layout, dated 24 May 2012 - Dempsey Ridge Wind Farm Grid Coordinates, EWI-4470-03, Rev. A - Dempsey Ridge Wind Project Site Map, Rules and Information, dated 28 March 2011
16 March 2013	VCS Monitoring Report, "First Monitoring Report" Version 1, dated 15 March 2013
26 April 2013	<u>Response to CAR #1</u> - AEP 230kV Main Meter Data – Hourly, Microsoft Excel file <u>Response to CAR #2</u> - Acciona 34kV Check Meter Data – 15 Minute, Microsoft Excel file - Acciona 230kV Check Meter Data – 15 Minute, Microsoft Excel file - AEP 230kV Check Meter Data – 15 Minute, Microsoft Excel file - AEP Check Meter Picture, JPG File - AEP Main Meter Picture, JPG file <u>Response to CAR #3</u> - Acciona 34.5kV Check Meter Calibration Certificate, PDF - Acciona 230kv Check Meter Calibration Certificate, PDF - AEP 230kV Check Meter Calibration Certificate, PDF - AEP 230kV Main Meter Calibration Certificate, PDF <u>Response to CAR #4</u> - Interconnection Agreement, dated 26 May 2009 (file name 1810_Dempsey Ridge Wind Farm_LGIA_2009-05-26.pdf) - Revised Appendices A – C and E – F to GEN-2006-035 LGIA, dated 4 March 2011 (file name 20110329 Amended Fully Executed Dempsey Ridge LGIA SA 1810R1.pdf) <u>Response to CAR #6</u> - SCADA Report Detailed Dempsey Ridge Wind Farm Production from 01 January 2012 to 31 December 2012

Issued to CRA Date	Type of Document
	<u>Response to CAR #7</u> - Dempsey Northfork 10.27-11.27.12 Invoice - Dempsey Northfork 2012 Invoices - PSO Invoice – August 2012 - PSO Invoice – December 2012 - PSO Invoices 2012 – All but August and December - SPP.2012.Invoices <u>Response to CL #2</u> - Meter Correction Factor Calculations, dated 8/2/2011 - LC Dempsey Ridge 08-02-11, Microsoft Excel file
16 May 2013	2012 DEMP Settlement Files
21 May 2013	PSO Invoice – October 2012, Bill Date 7 November 2012

2.4 Interviews

CRA completed a Site Inspection for the verification on 20 March 2013. During this portion of the verification process, CRA was able to interview a series of project stakeholders regarding various aspects of the Project Activity. Mr. Brent Boss and Ms. Valerie Chan of CRA completed the Site Inspection. The following Project Stakeholders were interviewed by CRA:

Name of Interviewee	Position and Company	Details of Items Discussed
Mr. Chris Strong	Site Project Manager – Acciona Energy North America	Represented the Project Proponent on the Site and assisted in conducting Site Inspection tour. Discussed technical details of the Project Activity implementation and operation and Monitoring Report details.

2.5 Site Inspections

The verification process is primarily a document review process. The completion of a Site Inspection provided the CRA Project Team with an added level of assurance that the information provided within documentation from the Project Proponent is complete and accurate as it relates to the registered Project Activity. As stated above, CRA completed a Site Inspection for the verification on 20 March 2013. Aside from interviewing project stakeholders as per Section 2.4 of this report, the CRA Project Team reviewed the implementation status of the Project Activity. During the Site Inspection the CRA Project Team noted that there were a total of 66 installed turbines. The turbines were in compliance with the registered VCS PD. The implementation status of the Project Activity will be discussed in Section 3.1 below.

2.6 Assessment Against VCS Requirements

This Project Activity was assessed by CRA's Project Team versus the approved consolidated large-scale methodology entitled "Consolidated baseline methodology for grid-connected

electricity generation for renewable sources", Version 12.1.0 (ACM0002), associated methodological tools referenced within the registered VCS PD, and relevant VCS and CDM guidance documentation.

Findings were categorized as either a Corrective Action Request (CAR), Forward Action Request (FAR), or as a Clarification Request (CL).

The CRA Project Team raised CARs in this Assessment if:

- The Project Proponent made mistakes in assumptions or in the project documentation that will directly influence project results
- The requirements deemed relevant for validation of a Project Activity with certain characteristics have not been met
- There is a risk that the project emission reductions cannot be monitored, calculated, verified, and/or certified
- The Project Proponent made mistakes that will influence the ability of the Project Activity to achieve real, measurable additional emission reductions
- The VCS/CDM requirements have not been met

FARs were issued to highlight issues related to project implementation that require review during subsequent verifications of the Project Activity. FARs will not relate to the VCS/CDM requirements for issuance and thus do not require any formal response from the Project Proponent.

CLs were issued to the Project Proponent if the CRA Project Team determined that the information provided by the Project Proponent was insufficient, unclear or not transparent enough to establish whether the applicable requirements are met.

2.7 Resolution of Any Material Discrepancy

Each CAR, and CL raised by CRA was presented in individual tables within the Findings Assessment. The Project Proponent was required to complete the appropriate responses and to provide, where necessary, documentation as evidence of their assumptions and/or responses.

A summary of the final results of the findings assessments is presented as follows:

Finding Category	Number of Findings
CAR	10
FAR	1
CL	2
Total	13

Section 3.0 of this report will provide the details of the individual findings and the responses from the Project Proponent pertaining to each of the findings.

No material discrepancies were observed by CRA in the verification of the Project Activity.

2.8 Internal Quality Control and Technical Review

Upon completion of the verification assessment, and recommendation by the CRA Project Team, all Project Activity related materials were sent to the Independent Technical Reviewer. The Independent Technical Reviewer checked that the proper procedures have been followed and that all of the conclusions made by the CRA Project Team are just. Ultimately, the Independent Technical Reviewer issued an approval notice to the CRA Project Team based on their review. During review the Independent Technical Reviewer and the CRA Project Team were able to raise additional findings at which point the Project Proponent must sufficiently address each of the additional findings should they occur. All CAR and CL findings were successfully closed by the Project Proponent.

Documents provided to CRA by the Project Proponent are filed according to the date received and the source of the information. All documentation is placed in CRA's secure filing system with restricted access to safeguard confidentiality.

3 VERIFICATION FINDINGS

The following sections will detail the verification requirements as established by the CRA Project Team throughout the duration of the verification process.

3.1 Project Implementation Status

The Project Activity received its Validation Representation with the VCS dated 19 December 2011 as a Renewable Energy Industries type project under Sectoral Scope 1 defined by the UNFCCC and adopted by the VCS. The Project Activity was registered utilizing the approved consolidated large-scale methodology entitled "Grid connected electricity generation from renewable sources", Version 12.1.0 (ACM0002) with a renewable crediting period of 10 years commencing on the date the wind farm begins commercial operation, which was expected to be 15 December 2011 and expected to conclude on 15 December 2021.

Section 3.7.1 of the VCS Standard Version 3.3 states that "[t]he project start date is the date on which the project began generating GHG emission reductions or removals". The project reached commercial operation on 27 April 2012. The renewable 10-year crediting period began on 1 January 2012 and will conclude on 31 December 2022. The CRA Project Team raised CAR #5 in order to determine the quality of data and parameters monitored between the project start date of the crediting period (1 January 2012) and the commercial operation start date of 27 April 2012. CAR #5 was closed out following review of the project proponent response which indicated that test power was produced prior to the commissioning date and based on the CRA Project Team's review and confirmation that the data available for the period between the project start date and date of commercial operation was collected in accordance with the monitoring requirements of the approved methodology. The stated crediting period is in accordance with the project crediting period VCS Standard Version 3.3 requirements.

During the verification, a Site Inspection was conducted, during which Project Activity implementation status was reviewed. The following paragraphs outline the information that was confirmed regarding the implementation status of the Project Activity.

The Project Activity's intent is to generate electricity from renewable sources and therefore displace electricity that otherwise would have been produced for or distributed to the SPP grid in the absence of the Project Activity.

The Project Activity is located over approximately 7,500 acres with the grid connection point geographic coordinates are as follows:

- Latitude: 35.5o N
- Longitude: -99.4o W

The Project Activity achieves GHG emissions reductions through the installation and operation of 66 Gamesa G90/2000-IEC II A, 2.0 MW turbines for a total rated nameplate capacity of 132 MW. The turbines are located in an area of rural and agricultural/grazing lands near Cheyenne, Oklahoma, U.S.A. Electricity generated by the turbines is upgraded from a 34.5 kilovolt (kV) collection line rating to a 230 kV rating at the Project Activity's substation and then transferred via approximately 15 miles of transmission line to the POI at Sweetwater Substation where the electricity is then delivered to the SPP grid.

The CRA Project Team confirmed the implementation status of the Project Activity during the Site Inspection and confirmed the following details:

- At the time of the Site Inspection there were 66 erected turbines capable of operation with a total nameplate capacity of 132 MW
- Monitoring of required parameters as per the approved Monitoring Plan is conducted via four electricity meters; a revenue meter and three check meters. The revenue meter and one check meter are owned by AEP and the remaining two check meters are owned by the Project Proponent. Each of the meters is classified as a bi-directional meter in that they record electricity supplied to, and taken from, the grid. Each meter monitors the net electricity generated as per the approved Monitoring Plan. The revenue meter, as per the signed interconnection agreement, is the meter of record. The Project Proponent does not have access to the revenue meter.

No material discrepancies were noted between the Project Activity and the Project Description.

3.1.1 Phased Implementation Delays

The CRA Project Team noted that the Project Activity was registered to operate a total of 66 wind turbines. During the completion of the Site Inspection, the CRA Project Team noted that the Project Activity was fully implemented with a total of 66 turbines installed. As such no phased implementation delays were evident.

During the Site Inspection, the CRA Project Team was informed of the possibility of a Phase 2 to the Dempsey Ridge Wind Project and were shown possible locations of additional wind turbines on a map. The CRA Project Team raised CAR #8 to clarify the information in Section 2.3 of Monitoring Report Version 1 that stated the Project is not a grouped project. Paragraph 3.4.1 of the VCS Standard Version 3.3 states "[g]rouped projects are projects structured to allow the expansion of a project activity subsequent to project validation". CAR #8 was closed out following provision of sufficient explanation and evidence by the Project Proponent that the Project Activity is not a grouped project because no project company was set up for any expansion project and land options are expiring beginning in late 2013.

3.1.2 Remaining Items from Validation

The CRA Project Team assessed the Validation Report presented on the VCS website in regards to the registration of the Project Activity. Upon review of the Validation Report, the CRA Project Team determined that there are zero FARs raised.

3.2 Accuracy of GHG Emission Reduction or Removal Calculations

3.2.1 Monitoring Parameters

The following is a list of monitoring parameter(s) that the Project Proponent measured and recorded in order to calculate the claimed emission reductions throughout the Monitoring Period:

Symbol	Monitoring Parameter Description (Units)	Frequency
EG _{facility,y}	Quantity of net electricity generation supplied by the project plant to the grid in year y (MWh)	Continuous/Real-Time measurement and at least monthly recording (electricity meter)

Upon review of the approved methodology, ACM0002, Version 12.1.0, the CRA Project Team has determined that the Project Activity applied a conservative factor in calculation of total emission reductions.

As per ACM0002, Version 12.1.0, the Project Proponent is required to monitor the electricity supplied to the grid, and monitor the combined margin CO₂ emission factor for grid connected power generation in year y (EF_{grid,CM,y}) calculated using the latest version of the "Tool to calculate the emission factor for an electricity system".

In accordance with the Paragraph 36a of the "Tool to calculate the emission factor for an electricity system", Version 03.0.0, the Project Proponent calculated the emission factor using the ex ante option, in which the emission factor is determined once at the validation stage and no monitoring and recalculation of the emission factor during the crediting period is required. Paragraph 38 of the "Tool to calculate the emission factor for an electricity system" Version 03.0.0, states "[t]he data vintage chosen should be documented in the CDM-PDD and should not be changed during the crediting period". In accordance with Paragraph 38 of the "Tool to calculate the emission factor for an electricity system" Version 03.0.0, the Project Proponent stated in Section 3.1 of the Project Description (PD) Version 3, dated 11 November 2011:

The project proponent choose an ex ante option for calculation of the OM with a three year generation weighted average, based on the most recent data available at the time of submission of the PD to the DOE for validation, without requirement to monitor and recalculate the emission factor during the crediting period.

As per ACM0002 Version 12.1.0, the Project Proponents is required to monitor total electricity produced by the project activity, including the electricity supplied to the grid and electricity supplied to internal loads in year y (TEGy) only for hydro power plants, in order to measure internal loads.

The CRA Project Team raised CAR #10 requesting documentation for Renewable Energy Credits (RECs). CAR #10 was closed out based on the Project Proponent explanation that no documentation exists because no RECs were generated during the monitoring period. No RECs were sold in 2012 and all emission reductions are being claimed as VCUs.

3.2.2 Methods for Recording Monitoring Parameters

Emission reductions regarding this Project Activity are entirely dependent upon the direct measurement of the electricity both supplied and taken from the SPP grid which combines to form the net electricity generated. The net electricity generated is measured directly at the Project Activity substation. Located within this substation are four separate electricity meters; the revenue (main) meter and three check meters. The revenue meter and one check meter are owned by AEP and the remaining two check meters are owned by the Project Proponent. Each of the meters is classified as a bi-directional meter in that they record electricity supplied to, and taken from, the grid. The meters are programmed to include a loss compensation factor of 0.028 percent to account for energy losses between the Project Activity substation and the POI at the Sweetwater substation. The Project Proponent calculated the loss compensation factor based on project conditions including the distance between the Project Activity substation and the POI, the line material, and transformer and meter specifications. In the Validation Report Version 3, dated 19 December 2011, the CRA Project Team was satisfied that all transmission losses were correctly accounted for in the VCS PD. Invoices tracking these electricity records were made available by the Project Proponent as will be discussed in Section 3.3. Net electricity generated is recorded in the units of MWh.

The Project Proponent is a merchant generator, and there is no explicitly executed agreement between SPP and Dempsey Ridge Wind Farm, LLC. SPP operates an imbalance market and pays Dempsey Ridge Wind Farm for its production at the Locational Imbalance Price (LIP), calculated hourly for the project. As a result, the Project Activity is operational during hours when the LIP is at or greater than the rate required to be profitable.

AEP records the net electricity generation of the Project Activity through the use of the revenue meter as stated above. AEP collates the data and send it to SPP on a daily basis for settlement and invoice creation. SPP invoices the Project Proponent for electricity supplied to the grid on a weekly basis. The funds to pay the Project Proponent for electricity supplied to the grid come from an aggregate pool of funds collected by SPP from other market participants that need to purchase energy. Therefore, it is not a bilateral transaction that takes place. SPP operates the aggregate imbalance markets as a whole.

The Project Proponent states in the Monitoring Report that the revenue meter alone is adequate for the purposes of monitoring, recording and billing. Should the revenue meter fail to register, AEP will base the measurements on data recorded by the check meters.

All data parameters recorded by the revenue meter are accessed only by the AEP personnel. The total amount of electricity consumed by the Project Activity is invoiced separately to the Project Proponent from AEP on a monthly basis. The amount of electricity consumed by the project building operations is invoiced separately to the Project Proponent from Northfork Electric Cooperative.

It is the CRA Project Team's opinion that methods employed by the Project Proponent meet the requirements of the registered VCS PD and the associated approved methodology and additionally provide a level of redundancy with the monitoring of net electricity generated with four separate meters.

3.2.3 Calculation of Emission Reductions

The value of net electricity supplied to the grid once obtained, is then multiplied by the grid combined margin emission factor that was established as an ex-ante parameter during the validation stage and therefore is only required to be updated upon renewal of the crediting period. The grid emission combined margin factor established for this initial crediting period is 0.647 tCO₂/MWh.

The CRA Project Team compared the grid emission combined margin factor calculated for the Project Activity to average Oklahoma electricity emission factors. In comparison to U.S. Energy Information Administration 2002 average Oklahoma CO₂ emission factor, the Project Activity grid emission factor is conservative. The Project Activity grid emission combined margin factor was calculated in accordance with the approved methodology and associated tools, with clear and transparent references and sources.

As the Project Activity is displacing only carbon dioxide emissions from electricity production the resulting number value is then multiplied by the global warming potential of carbon dioxide as follows:

- GWP CO₂ = 1 tCO₂e/1 tCO₂

The calculations used to determine the overall emission reductions as applied to the Microsoft Excel spreadsheet provided by the Project Proponent are as follows:

Total Emission Reductions Calculation:

$$ER_y = BE_y - PE_y - L_y$$

Where:

BE_y = Baseline emissions in year y (tCO₂e/year)

PE_y = Project emissions in year y (tCO₂e/year)

L_y = Leakage emissions in year y (tCO₂e/year)

Baseline Emissions Calculations:

$$BE_y = EG_y * EF_{grid,CM,y}$$

Where:

EG_y = Quantity of net electricity generation that is produced and supplied to the grid by the Project Activity in year y (MWh/year)

$EF_{grid,CM,y}$ = Ex-ante combined margin CO₂ grid emission factor (0.647 tCO₂/MWh)

The net electricity generated (EG_y) is determined by continuous measurement and monthly recording by the electricity revenue meter. The revenue meter is a bi-directional meter that records electricity supplied to, and consumed from the grid. The CRA Project Team confirmed the net electricity generation value(s) through the review of invoices and data from the revenue and check meters.

Project Emissions Calculations:

Project emissions are not quantified or required to be quantified based on the registered VCS PD and the approved methodology.

Leakage Emissions Calculations:

Leakage emissions are not quantified or required to be quantified based on the registered VCS PD and the approved methodology.

3.3 Quality of Evidence to Determine GHG Emission Reductions or Removals

Through the verification process, the CRA Project Team has raised several corrective action and clarification requests to the Project Proponent in order to request evidence to support the

emission reductions claims made in the Monitoring Report. These requests were provided to the Project Proponent in order to ensure the relevance, consistency, transparency, completeness, accuracy, and conservativeness of the statements and calculations made. These requests are detailed in CAR #1, CAR #2, CAR #6, CAR #7, CAR #9, CL #1, and CL #2.

In accordance with Article 7, Section 7.4 of the Southwest Power Pool Interconnection Agreement for Gen-2006-035, Dempsey Ridge Wind Farm, LLC, the Transmission Owner (AEP Public Service Company of Oklahoma) is required to:

Inspect and test all Transmission Owner-owned Metering Equipment upon installation and at least once every two years thereafter.

If Metering Equipment fails to register, or if the measurement made by Metering Equipment during a test varies by more than two percent from the measurement made by the standard meter used in the test, Transmission Owner shall adjust the measurements by correcting all measurements for the period during which Metering Equipment was in error by using Interconnection Customer's check meters, if installed. If no such check meters are installed or if the period cannot be reasonably ascertained, the adjustment shall be for the period immediately preceding the test of the Metering Equipment equal to one-half the time from the date of the last previous test of the Metering Equipment.

The CRA Project Team raised FAR #1 which addresses the discrepancy between the tolerable error allowed under Interconnection Agreement and the technical accuracy specifications for the meters. FAR #1 requires review during subsequent verifications of the Project Activity.

The CRA Project Team raised CAR #3 to request the calibration and testing records of the revenue and check meters to ensure that the equipment is calibrated in accordance with Section 3.16.5 of VCS Standard Version 3.3. CAR #3 was closed out following provision of calibration or testing certificates for the revenue and check meters, which are in accordance with the equipment specifications.

The following summarizes the testing of Metering Equipment:

Meter	Serial #	Manufacturer Calibration Frequency	Interconnection Agreement Acceptance Test Frequency	Initial Factory Calibration Date	Accuracy Testing Date
Revenue Meter Manufacturer: Power Logic Model: ION8600 Error Class: +/- 0.2 percent	LT-1107A404-1	Calibration not required (digital device). Manufacturer does not specify frequency of accuracy checks.	Typically Annually but required once every 2 years at minimum	Not Required	29 August 2011
AEP 230kV Check Meter Manufacturer: Power Logic Model: ION8600 Error Class:	LT-1107A405-1	Calibration not required (digital device). Manufacturer does not specify frequency of	In accordance with Good Utility Practice	Not Required	29 August 2011

Meter	Serial #	Manufacturer Calibration Frequency	Interconnection Agreement Acceptance Test Frequency	Initial Factory Calibration Date	Accuracy Testing Date
+/- 0.2 percent		accuracy checks.			
Project Proponent 230kV Check Meter Manufacturer: Power Logic Model: ION8600 Error Class: +/- 0.2 percent	LT-1109A072-01	Calibration not required (digital device). Manufacturer does not specify frequency of accuracy checks.	In accordance with Good Utility Practice	08 September 2011	N/A
Project Proponent 34.5 kV Check Meter Manufacturer: Power Logic Model: ION8600 Error Class: +/- 0.2 percent	LT-1109A071-01	Calibration not required (digital device). Manufacturer does not specify frequency of accuracy checks.	In accordance with Good Utility Practice	08 September 2011	N/A

Overall, the CRA Project Team has determined that the Project Proponent has provided sufficient documentation as requested though the findings stated above. While not required for this Project Activity, the use of the check meter in relation to the revenue meter provides a further level of redundancy in the calculation of emission reductions and electricity sales.

3.3.1 Sampling of Data and Re-Calculation of Emission Reductions

The CRA Project Team requested a full data sampling regime from the Project Proponent. Invoices for electricity supplied to the grid and electricity back-fed from the grid were provided during the verification process. Consolidated raw data of electricity meter readings was also provided to the CRA Project Team. The CRA Project Team then reviewed the provided emission reduction calculation spreadsheet against the requirements of ACM0002, Version 12.1.0. The CRA Project Team determined that the calculation spreadsheets were completed in compliance with the approved methodology. At the conclusion of the verification, the CRA Project Team was successfully able to replicate the emission reduction calculations based on data retrieved.

3.3.2 Comparison of Calculated Versus Projected Emission Reductions

The comparison between quantity of emission reductions calculated during the monitoring period and what was projected within the registered VCS PD are summarized in the table below:

Time Period (equivalent)	Registered VCS PD (tCO ₂ e)	Monitoring Report (tCO ₂ e)
01 January 2012 – 31 December 2012	312,658	202,924

The deviation in tCO₂e between the 2012 Monitoring Report and the projection in the Registered VCS PD is -35.1 percent. As the projected values in the registered VCS PD are based around many assumptions and other default inputs (i.e., wind patterns), it is difficult to accurately predict the emission reductions achievable during any given monitoring period. As a result, it is CRA's opinion that the Project Activity has been implemented and operated as per the registered VCS PD.

3.4 Management and Operational System

The CRA Project Team raised CAR #4 in order to obtain a copy of the executed Large Generator Interconnection Agreement for the Project Activity. CAR #4 was closed out following provision of the Large Generator Interconnection Agreement by the Project Proponent.

The Project Proponent operates the Project Activity on a daily basis and is responsible for the performance, maintenance, and calibrations as required by the methodology and the established interconnection agreement. Redundancy in terms of monitoring is observed via the inclusion of four electricity meters; one revenue meter and three check meters. AEP owns the revenue meter and one check meter, and the remaining two check meters are owned by the Project Proponent. Each meter monitors the net electricity generated as per the approved Monitoring Plan.

Ultimately, the management and operational system for the Project Activity is a robust and redundant system that leaves little room for error. Invoices are reviewed based on the records kept by each party involved and the discrepancies noted between the 230 kV revenue and check meter was 0.035 percent, which was within the 0.2 percent allowable error tolerance.

Accuracy testing required as per the interconnection agreement for the revenue meter are completed by qualified personnel employed by AEP.

It is the opinion of the CRA Project Team that the Project Activity and all parties involved have abided by the established procedures and responsibilities as laid out within the "Monitoring and Verification Manual for VCS Purposes" which establishes a sufficient management system as evidenced through the quality of reproducible and redundant data viewed during this verification.

4 VERIFICATION CONCLUSION

CRA was contracted by Dempsey Ridge Wind Farm, LLC. (Project Proponent) to perform the first verification of the Dempsey Ridge Wind Project in the State of Oklahoma, U.S.A.

As stated in Section 1.1, CRA as validator/verifier is responsible for reviewing the VCS Monitoring Report and any supporting documentation to ensure that the principles of VCS Program Guide, Version 3.4, and VCS Standard, Version 3.3 are met, specifically that the registered Project Activity has resulted in emission reductions that are:

- Relevant
- Complete
- Consistent

- Accurate
- Transparent
- Conservative

Verification Opinion

The verification was performed in accordance with the VCS Program Guide, Version 3.4, and VCS Standard, Version 3.3 in addition to the UNFCCC CDM methodology and associated methodological tools.

Through the construction of an 66 turbine wind power project with a total nameplate capacity of 132 MW, the registered Project Activity has resulted in a reduction of GHG emissions that are relevant, complete, consistent, accurate, transparent and conservative. Furthermore the emission reductions generated by the registered Project Activity have served to contribute to sustainable development, and resulted in long-term benefits to the mitigation of climate change.

Upon completion of the verification process it is the CRA Project Team's opinion that that all relevant VCS verification criteria have been satisfied. The registered Project Activity properly applies the criteria of ACM0002, Version 12.1.0. Within the VCS Monitoring Report it was demonstrated and confirmed by CRA that the Project Proponent has applied the Monitoring Plan as per the requirements of the registered VCS PD. Therefore, it is CRA's opinion that the emission reductions attributable to the registered Project Activity during the first monitoring period are stated in a manner that is materially correct and is a fair representation of implemented Project Activity as per the VCS PD.

All CARs and CLs raised by CRA have been satisfactorily closed by the Client/Project Proponent. The claimed emission reductions have been reviewed by CRA for completeness, accuracy, and consistency. No cumulative errors were noted by the CRA Project Team and therefore no material errors were noted.

Based on the verification assessment performed, CRA is issuing a Positive Verification Opinion in regards to this Project Activity and will therefore recommend/certify that the registered Project Activity has obtained the reported emission reductions as follows:

Reporting period: From 01 January 2012 to 31 December 2012

GHG Emission Reductions or Removals	tCO ₂ e
Baseline Emissions	202,924
Project Emissions	0
Leakage	0
Net GHG emission reductions or removals	202,924

Respectfully Submitted,

CONESTOGA-ROVERS & ASSOCIATES LIMITED



Brent Boss, P. Eng.



Valerie Chan, P. Eng.

ANNEX A: ABBREVIATIONS

ACM	Approved Consolidated Methodology
CAR	Corrective Action Request
CRA	Conestoga-Rovers & Associates
CDM	Clean Development Mechanism
CL	Clarification Request
CO ₂ e	Carbon Dioxide Equivalent
CRA	Conestoga-Rovers & Associates Limited
DOE	Designated Operational Entity
FAR	Forward Action Request
GHG	Greenhouse Gas
kV	Kilovolt
LIP	Locational Imbalance Price
MW	Megawatt
POI	Point of Interconnection
SCADA	Supervisory Control and Data Acquisition
SPP	Southwest Power Pool
UNFCCC	United Nations Framework Convention on Climate Change
VCS	Verified Carbon Standard
VCS PD	Verified Carbon Standard Project Document

ANNEX B: VERIFICATION CHECKLIST

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 Project Team: Brent Boss, Valerie Chan Date: 31 May 2013

Document (Desk) Review		Comments
(1) Ensure that the following documentation is in place and reviewed prior to the site visit:		
Monitoring report/documentation provided by the PP to ensure completeness and adequate frequency	☒	Monitoring Report Versions 1 and 2 received as per Findings Assessments.
The registered PDD, including the monitoring plan and the validation report	☒	Available on the VCS website. CRA downloaded and reviewed them accordingly.
Previous monitoring and verification reports, if any (VCS Website)	☒	Not Applicable. No previous monitoring and verification reports have been issued
The applied monitoring methodology	☒	Available on the UNFCCC website. CRA downloaded and reviewed them accordingly.
Relevant decisions, clarifications and guidance from the VCSA	☒	None found.
Assess the quality control system that is responsible for safeguarding data	☒	Provided in PDD and further assessed during Site Visit.
Monitoring records that sustain claimed emission reductions	☒	Calculations and backup documentation was provided by Project Proponent.
Any other information and relevant references on the project activity and project operator	☒	Interconnection Agreement and other documentation were provided both before and after the Site Visit.
(2) Ensure all FARs referenced in the validation report have been properly addressed during the monitoring period	☒	Not Applicable. No FARs were raised in the validation report
(3) Ensure that the Monitoring Report received from the PP is made publicly available	☒	Not Applicable in this stage with the VCS.
ON-SITE ASSESSMENT		
(1) Prepare for on-site assessment by :		

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Document (Desk) Review		Comments
Assessing relevant information and making a draft determination of the on-site audit activities	☒	Revised Scope of Work was prepared and issued prior to Site Visit.
Organizing the logistical aspects of the visit, including the agenda and whom to interview	☒	Completed by Brent Boss and the Project Proponent.
(2) On-site assessment will consist of the following:		
An introduction meeting and explanation of objectives of the verification	☒	Completed at beginning of Site Visit with the Project Proponent and Project Stakeholders specified in Section 2.4 of the Verification Report.
Interviews with relevant personnel at the site to determine whether the operational and data collection procedures are implemented in accordance with the monitoring plan in the PDD	☒	Site Visit was conducted on 20 March 2013. See Section 2.4 of the Verification Report for details.
An assessment of the implementation and operation of the proposed VCS project activity as per the registered PDD or any approved revised PDD	☒	See Section 3.1 of the Verification Report for details.
A review of information flows for generating, aggregating, and reporting the monitoring parameters	☒	See Section 3.4 of the Verification Report for details.
A cross-check between information provided in the monitoring report and data from other sources such as plant log books, inventories, purchase records, or similar data sources	☒	See Sections 3.2 and 3.3 of the Verification Report for details.
A check of the monitoring equipment including calibration certificates and performance and observations of monitoring practices against the requirements of the PDD and the selected methodology and the corresponding tool(s)	☒	See Section 3.3 of the Verification Report for details.
A review of calculations and assumptions made in determining the GHG data and emission reductions	☒	See Section 3.3.1 of the Verification Report for details.
An identification of quality control and quality assurance procedures in place to prevent or identify and correct any errors or omissions in the reported monitoring parameters	☒	See Section 3.4 of the Verification Report for details.

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Document (Desk) Review		Comments
Interviews with local project stakeholders, as applicable	☒	See Section 2.4 of the Verification Report for details.
Specific testing and calculation checks (done on high risk, material data sources, and data management issues)	☒	Most calculations were completed in CRA offices due to the nature of the monitoring parameters.
Close-out meeting presenting the results and findings	☒	Conducted at end of Site Visit.
Development of an agreement on next steps to close out CARs and FARs	☒	CRA completed this during the Site Visit and re-issued findings and Draft Verification Reports in conjunction with this timeline.
QUALITY OF EVIDENCE		
(1) Determine that there is a clear audit trail that demonstrates:		
Whether sufficient evidence is available, both in terms of frequency (time period between evidence) and coverage (in covering the full monitoring period)	☒	See Section 3.3 of the Verification Report for details.
The source and nature of the evidence (external or internal, oral or documented, etc.)	☒	See Section 3.3 of the Verification Report for details.
Cross-check the monitoring report against other sources such as comparable information, where available, from sources other than those used in the monitoring report to determine whether the stated figures are correct.	☒	See Section 3.3 of the Verification Report for details.
(2) The DOE shall assess that the data collection system meets the requirements of the monitoring plan as per the applied methodology including applicable tool(s).	☒	See Section 3.3 of the Verification Report for details.
(3) The DOE shall only certify emission reductions that are based upon verifiable evidence	☒	See Section 3.3 and the Verification Opinion of the Verification Report for details.
CAR/FAR/CL		
(1) Raise a CAR if any of the following occur:		

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Document (Desk) Review		Comments
Non-compliance with the monitoring plan or methodology are found in monitoring and reporting and has not been sufficiently documented by the project participants, or if the evidence provided to prove conformity is insufficient	☒	None raised/identified.
Modifications to the implementation, operation and monitoring of the registered project activity has not been sufficiently documented by the project participants	☒	None raised/identified.
Mistakes have been made in applying assumptions, data or calculations of emission reductions that will impair the estimate of emission reductions	☒	None raised/identified.
Issues identified in a FAR during validation to be verified during verification have not been resolved by the project participants	☒	None raised/identified.
(2) Raise a CL if information is insufficient or not clear enough to determine whether the applicable VCS requirements have been met	☒	One CLs was raised for regarding turbine downtimes. See Appendix C of the Verification Report for details.
(3) All CARs and CLs raised during verification shall be resolved prior to submitting a request for issuance	☒	All closed out. See Section 4 of the Verification Report for details.
(4) Raise a FAR during verification for actions if the monitoring and reporting require attention and/or adjustment for the next verification period	☒	FAR #1 raised for the next verification period. See Appendix C of the Verification Report for details.
VERIFICATION OF SPECIFIC REQUIREMENTS		
(1) The following requirements should be assessed by the DOE:		
Determine whether the project activity has been implemented and operated as per the registered PDD or any approved revised PDD, and that all physical features (technology, project equipment, and monitoring and metering equipment) of the project are in place	☒	Implementation as per PDD. See Sections 3.1 and 3.1.1 of the Verification Report for details.
Determine whether the monitoring report and other supporting documents provided are complete in accordance with the latest applicable version of the completeness checklist for requests for issuance of VCUs, verifiable, and in accordance with applicable VCS requirements	☒	Documents found complete following resolution of applicable findings.

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Document (Desk) Review		Comments
Determine whether actual monitoring systems and procedures comply with the monitoring systems and procedures described in the monitoring plan or any revised approved monitoring plan, and the approved methodology including applicable tool(s)	☒	Net electricity generation was monitored as per the requirements of the methodology and PDD.
Evaluate the data recorded and stored as per the monitoring methodology including applicable tool(s)	☒	See Sections 3.2.3 and 3.3.1 of the Verification Report for details.
PROJECT IMPLEMENTATION		
(1) Identify any concerns related to the conformity of the actual project activity and operation with the registered project design document and determine whether: (a) The implementation and operation of the project activity has been conducted in accordance with the description contained in the registered PDD; or (b) 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	☒	Project implemented exactly as per PDD. See Sections 3.1 and 3.1.1 of the Verification Report for details.
(2) By means of an on-site visit, assess that all physical features of the proposed VCS project activity proposed in the registered PDD are in place and that the project participants have operated the proposed VCS project activity as per the registered PDD. If an on-site visit is not conducted, the DOE shall justify the rationale of the decision	☒	Project implemented exactly as per PDD. See Sections 3.1 and 3.1.1 of the Verification Report for details.
MONITORING PLAN AND MONITORING COMPLIANCE		
(1) Check the following regarding the monitoring plan:		
The monitoring plan is in accordance with the approved methodology applied by the registered VCS project or an approved revised PDD.	☒	Confirmed by CRA during Site Visit. See Section 3.2.1 of the Verification Report for details.
Verify that the validated monitoring plan is in accordance with the approved methodology applied by the proposed VCS project activity.	☒	Confirmed by CRA during Site Visit. See Section 3.2.1 of the Verification Report for details.

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Document (Desk) Review		Comments
For monitoring aspects that are not specified in the methodology, particularly in the case of small scale methodologies (e.g., additional monitoring parameters, monitoring frequency and calibration frequency), the DOE should bring to the attention of the Board issues which may contribute in enhancing the level of accuracy and completeness of the monitoring plan.	☒	Not Applicable.
(2) Assess monitoring results to verify:		
The monitoring plan is properly implemented and followed by the project participants	☒	Confirmed by CRA during Site Visit. See Section 3.2.2 of the Verification Report for details.
All parameters stated in the monitoring plan and relevant Board decisions have been sufficiently monitored and updated as applicable, including: • Project emission indicators • Baseline emission indicators • Leakage indicators • Management and operational system: the responsibilities and authorities for monitoring and reporting are in accordance with the responsibilities and authorities stated in the monitoring plan	☒	Only Baseline Emissions in this project type. Management systems are reviewed in Section 3.4 of the Verification Report.
The accuracy of equipment used for monitoring is sufficient and regularly controlled and calibrated in accordance with the monitoring plan, the applied methodology, the Board guidance, local/national standards, or as per the manufacturer's specifications	☒	Accuracy of electrical meters was confirmed. See Section 3.3 of the Verification Report for details.
Monitoring results are consistently recorded as per approved frequency	☒	Confirmed by CRA during Site Visit.
Quality assurance and quality control procedures have been applied in accordance with the monitoring plan	☒	See Section 3 of the Verification Report.
(3) Bring to the attention of the VCSA issues which may contribute in enhancing the level of accuracy and completeness of the monitoring plan, for monitoring aspects that are not specified in the methodology, particularly in the case of small-scale methodologies	☒	None noted.

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Document (Desk) Review		Comments
COMPLIANCE WITH CALIBRATION FREQUENCY REQUIREMENTS		
(1) Determine whether the calibration of those measuring equipments that have an impact on the claimed emission reductions is conducted by the project participants at a frequency specified in the applied monitoring methodology and/or the monitoring plan	☒	Nature of electrical meters is digital and is only required to be "meter tested". No actual calibrations performed. See Section 3.3 of the Verification Report for details.
(2) If it is identified that the calibration has been delayed and the calibration has been implemented after the monitoring period in consideration (i.e., the results of delayed calibration are available), the DOE may conclude its verification, provided the following conservative approach is adopted in the calculation of emission reductions: (a) 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, 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, or (b) Applying the error identified in the delayed calibration test, if the error is beyond the maximum permissible error of the measuring equipment	☒	Calibration was not identified to be delayed.
(3) Confirm that the error has been applied		
In a conservative manner, such that the adjusted measured values of the delayed calibration shall result in fewer claimed emission reductions	☒	Meter Test Reports shows that meter is reading within the equipment tolerable error of 0.2 percent.
For all measured values taken during the period between the scheduled date of calibration and the actual date of calibration	☒	Not Applicable.
(4) In cases where the results of the delayed calibration are not available, or the calibration has not been conducted at the time of verification, request, prior to finalizing verification, the project participants to conduct the required calibration and shall determine whether the project participants have calculated the emission reductions conservatively	☒	Not Applicable.

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(5) In cases where it is determined 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 registered monitoring plan due to reasons beyond the control of project participants, follow the requirements for post registration changes	☒	Not Applicable.
(6) In cases where neither the monitoring methodology nor the monitoring plan specify any requirements for calibration frequency for measuring equipments, determine whether the equipments are calibrated either in accordance with the specifications of the local/national standards, or as per the manufacturer's specification. If neither local/national standards nor the manufacturer's specification are available, international standards may be used	☒	Not Applicable.
ASSESSMENT OF DATA AND CALCULATIONS OF GHG DATA		
(1) Assess the data and calculations of GHG emission reductions achieved by/resulting from the project activity by the application of the selected approved methodology.	☒	Working paper re-calculation was completed by CRA. See Section 3.2.3 of the Verification Report for details.
(2) Determine during verification that:		
A complete set of data for the specified monitoring period is available. If only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, opt to either raise a CAR for the project participants to comply with the requirements of appendix 1 of the Project standard or submit a request for deviation prior to submitting request for issuance, if applicable.	☒	Annual data of net electricity generated was supplied as per findings assessments.
Information provided in the monitoring report has been cross-checked with other sources such as plant log books, inventories, purchase records, laboratory analysis.	☒	Confirmed during Site Visit check of the SCADA system, and document review of electricity invoices.
Calculations of baseline emissions and proposed project activity emissions and leakage, as appropriate, have been carried out in accordance with the formulae and methods described in the monitoring plan and the applied methodology document.	☒	Working paper re-calculation was completed by CRA. See Section 3.2.3 of the Verification Report for details.
Any assumptions used in emission calculations have been justified	☒	No assumptions made.

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Document (Desk) Review		Comments
Appropriate emission factors, IPCC default values and other reference values have been correctly applied.	☒	Confirmed the appropriate use of the approved emission factor in accordance with the "Tool to calculate the emission factor for an electricity system" Version 03.0.0.
ACCURACY		
(1) Checking for accuracy involves:		
For quantitative data and information: minimizing bias and uncertainty in the measurement process and the processing of data.	☒	Only electricity meters used. Accuracy confirmed as per comment above.
For non-quantitative information: minimizing bias in favour of a particular result.	☒	Only quantitative data assessed.
(2) Ensure that the level of accuracy and completeness in the monitoring and verification process will not be reduced as a result of the proposed revision. Using objective evidence, assess the accuracy and completeness of each proposed revision to the monitoring plan including the frequency of measurements, the quality of monitoring equipment (e.g., calibration requirements, and the quality assurance and quality control procedures).	☒	Revision to the methodology provide clarity on how the quantity of net electricity generation supplied to the grid shall be monitored. The Project Proponents already complete the required monitoring using electricity meters. No update required.
POST-REGISTRATION CHANGES		
(1) Determine whether the changes do not require prior approval by the Board in accordance with appendix 1 of Project standard	☒	None noted.
(2) Determine whether the changes are solely of a type(s) listed in appendix 1 of the Project standard and: (a) In such cases, the DOE shall submit the changes as part of the request for issuance in accordance with the Project cycle procedure (b) In all other cases, the DOE shall submit the changes via the request for approval of post registration changes process of the Project cycle procedure	☒	Not Applicable.

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Document (Desk) Review		Comments
(3) Where the changes are submitted to a DOE prior to the commencement of verification, the DOE shall submit the changes via the request for approval of post registration changes process of the Project Cycle Procedure	☒	Not Applicable.
(4) Determine whether there are deviations from the registered monitoring plan and/or methodology		
If it is identified that the project participants have deviated from the registered monitoring plan and/or methodology, and where the provisions of appendix 1 of the Project standard do not apply, the DOE shall seek prior approval from the Board with respect to the acceptability of the deviations in accordance with the Project cycle procedure	☒	Not Applicable.
Determine whether the deviation is likely to lead to a reduction in the accuracy of the calculation of emission reductions. In cases where the DOE considers that the deviation will lead to a reduction in the accuracy of the calculation of emission reductions, the DOE shall request the project participants to apply conservative assumptions or discount factors to the calculations to the extent required to ensure that emission reductions will not be over-estimated as a result of the deviation	☒	Not Applicable.
For cases where a deviation from the monitoring plan may be applicable to the monitoring period under verification, and part of the subsequent monitoring period, verify the exact period to which the deviation applies.	☒	Not Applicable.
(5) Determine whether there are corrections to project information or parameters		
Verify that any corrections to project information or parameters fixed at validation, as described in the registered PDD, made by project participants in a revised PDD comply with the requirements of the Project standard	☒	Not Applicable.
If it is identified that the project participants have made corrections to project information or parameters determined at validation, determine whether: (a) The corrected information is an accurate reflection of actual project information; and/or (b) The corrected parameters are in accordance with the applied methodology and/or selected monitoring plan	☒	Not Applicable.

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Document (Desk) Review		Comments
(6) If the project participants wish to change the start date of the crediting period in accordance with section 12.8 of the Project standard, the DOE shall determine whether the proposed changes result in a less conservative baseline	☒	Not Applicable.
Indicate if the requirements in the Project standard have been met and shall submit a request for post registration changes in accordance with the Project cycle procedure.	☒	Not Applicable.
(7) Verify whether there are permanent changes from the registered monitoring plan and/or methodology		
Determine whether the changes to the monitoring plan contained in the registered PDD proposed by the project participants are in compliance with the applied methodology and do not reduce the level of accuracy of the monitoring compared with the requirements contained in the registered monitoring plan	☒	Not Applicable.
In cases where the proposed changes refer to a later version of the applied methodology in the registered PDD, determine whether the application of any later version of the applied methodology and tools does not impact the conservativeness of the monitoring and verification process, including the related emission reduction calculations.	☒	Not Applicable.
If it is identified that the project participants are unable to implement the monitoring plan contained in the registered PDD and it will not be possible to monitor the registered VCS project activity in accordance with a monitoring plan that would comply with the applied methodology and any applicable tools or the relevant provisions of appendix 1 of the Project standard, the DOE shall request guidance from the Board concerning the acceptability of the permanent changes in accordance with the section on post registration changes in the Project cycle procedure	☒	Not Applicable.
Determine whether the permanent changes are likely to lead to a reduction in the accuracy of the calculation of emission reductions. In cases where the DOE considers that the permanent changes will lead to a reduction in the accuracy of the calculation of emission reductions, the DOE shall request the project participants to apply conservative assumptions or discount factors to the calculations to the extent required to ensure that emission reductions will not be over-estimated as a result of the permanent change	☒	Not Applicable.
(8) Determine whether there are proposed or actual changes to the project design of a registered VCS project activity		

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Document (Desk) Review		Comments
If it is identified that the project design in the implementation or operation of the project activity does not conform with the description contained in the registered PDD or the relevant provisions of appendix 1 of the Project standard, the DOE shall request guidance from the Board concerning the acceptability of the proposed or actual changes in accordance with the section on post registration changes in the Project cycle procedure	☒	Not Applicable.
In case of actual changes, the DOE shall, by means of an on-site visit and review of the submitted revised PDD by the project participants, which describes the nature and extent of the actual changes, determine whether this description accurately reflects the implementation, operation and monitoring of the modified project activity	☒	Not Applicable.
Conduct an on-site inspection to assess the impacts of the actual changes on the compliance of the monitoring plan, the applied monitoring methodology and tools and/or the level of accuracy of the monitoring activity.	☒	Not Applicable.
Determine, by means of reviewing the revised PDD against applicable additionality and methodological requirements, whether the proposed or actual changes would adversely affect the conclusions of the validation report of the registered PDD with regard to: (a) Additionality of the project activity (b) Scale of the project activity (c) Applicability and application of approved baseline methodology under which the project activity has been registered, or (d) The compliance of the monitoring plan with the applied monitoring methodology	☒	Not Applicable.

Project No.: 074496-02 Project Title: Dempsey Ridge Wind Project
 Project Team: Brent Boss, Valerie Chan Date: 31 May 2013

Document (Desk) Review		Comments
If the proposed or actual changes affect the additionality of the project activity then confirm that: (a) In the case of investment analysis, project participants have only modified the key parameters in the original spreadsheet calculations affected by the proposed or actual changes to the project activity (b) In the case where only barriers have been claimed to demonstrate additionality, project participants have demonstrated that the barriers are still valid under the new circumstances	☒	Not Applicable.
In cases where the proposed or actual changes impact the implementation of the project activity and where the original methodology would no longer be applicable, and where the project participant applies a later version of the methodology or another methodology that is applicable to the project activity, the DOE shall confirm that the applied methodology and tools do not impact the conservativeness of the monitoring and verification process and the related emission reduction calculations	☒	Not Applicable.
Assess whether the revised PDD complies with the applied monitoring methodology and tools or any later version of the methodology or the requirements of another methodology that is applicable to the project activity	☒	Not Applicable.
VERIFICATION REPORT		
(1) The final verification report will include:		
A summary of the verification process and the scope of verification	☒	See Section 1.2 of the Verification Report.
Details of the verification team, technical experts, internal reviewers involved, together with their roles in the verification activity and details of who conducted the on-site visit	☒	See Section 2.2 of the Verification Report.
Findings of the desk review and site visit	☒	See Section 3 of the Verification Report.

Project No.: 074496-02 Project Title: Dempsey Ridge Wind Project
 Project Team: Brent Boss, Valerie Chan Date: 31 May 2013

Document (Desk) Review		Comments
Project Team's findings and conclusions as to whether: (a) The project activity has been implemented in accordance with the registered PDD or any approved revised PDD (b) The monitoring plan complies with the monitoring methodology and the actual monitoring complies with the monitoring plan, including compliance with any guidance provided by the Board regarding deviations from the provisions of a registered plan and/or methodology (c) The data and calculation of GHG emission reductions have been assessed to correctly support the emission reductions being claimed	☒	See Sections 3 and 4 of the Verification Report.
A list of each parameter specified by the monitoring plan and a statement on how the values in the monitoring report have been verified	☒	See Section 3.2.1 of the Verification Report.
A statement that identifies any changes to the registered PDD, and their date of approval by the VCSA	☒	None made.
Assessment and close out of any CARs, CLs, or FARs issued to the project participants	☒	See Sections 3 and 4 of the Verification Report.
Assessment of remaining issues from the previous verification period, if appropriate	☒	Not Applicable. See Section 3.1.2 of the Verification Report.
Conclusion on the verified amount of emission reductions achieved	☒	See Section 4 of the Verification Report.

ANNEX C: CURRICULA VITAE

EDUCATION

B.Eng. Environmental Engineering (Co-op), University of Guelph, 2008

EMPLOYMENT HISTORY

2008-Present Conestoga-Rovers & Associates, Waterloo, ON
2007 Student Engineering Assistant, Conestoga-Rovers & Associates (8 months)
2006 Student Engineering Assistant, Conestoga-Rovers & Associates (8 months)
2005 Student Biomonitoring Technician, Ontario Ministry of the Environment (4 months)

PROFESSIONAL REGISTRATIONS/AFFILIATIONS

Registered Professional Engineer: Ontario

PROFILE OF PROFESSIONAL ACTIVITIES

Greenhouse Gas Validation/Verification Projects

- Listed as a Key Team Member and Project Manager in the Greenhouse Gas Assurances (GGAS) Group and assisted in the successfully obtaining CRA's Designated Operating Entity (DOE) status with the UNFCCC effective as of May 28, 2010, the Verified Carbon Standard as of August 3, 2010, and the American National Standards Institute (ANSI) as of November 14, 2011.
- Performed roles of Lead Auditor and/or Auditing Team Member for the following CDM Projects:
 - CO₂ Removal and Liquefaction from the H₂ Production Plant in Campana, Argentina - Validation (Sectoral Scope 5)
 - Bionersis LFG Project Chile 4 (Los Angeles, Chile) - Validation (Sectoral Scope 13)
 - Bionersis LFG Project Argentina 2 (Tucumán, Argentina) - Validation (Sectoral Scope 13)
 - Bionersis LFG Project Colombia 2 Verification Bucaramanga, Colombia 13
 - Bionersis LFG Project in Pasto, Colombia - Verification (Sectoral Scope 13)
 - Bionersis LFG Project in Duquesa, Dominican Republic - Verification (Sectoral Scope 13)
 - Malaysia Biogas Projects Programme of Activities (PoA) - Validation of Multiple Sites (Sectoral Scopes 1 and 13)
 - Bionersis Landfill Gas Flare & Energy Program in Chile (PoA and CPA) - Validation (Sectoral Scope 13)
 - Bionersis Landfill Gas Flare & Energy Program in Argentina (PoA and CPA) - Validation (Sectoral Scope 13)
 - San Jacinto Geothermal Power Project in Nicaragua - Validation (Sectoral Scope 1)
 - Recovery and Utilization of Gas Normally Flared in Petroleum Production Fields in Colombia (PoA and CPA) - Validation (Sectoral Scope 1)
 - Biomass Based Thermal Energy Projects Malaysia (PoA and CPA) - Validation (Sectoral Scope 1)
 - PoA for Electricity Generation using Natural Gas in Colombia - Validation (Sectoral Scope 1)

- Performed roles of Lead Auditor and/or Auditing Team Member for the following VCS Projects:
 - Dempsey Ridge Wind Farm Project in Oklahoma - Validation/Verification (Sectoral Scope 1)
 - MRO Grouped Wind Projects in Iowa - Validation (Sectoral Scope 1)
 - Red Hills 123 MW Wind Power Project in Oklahoma - Verification (Sectoral Scope 1)
- Lead Auditor for the VCS Methodology Assessment of changes from the CDM Methodology entitled "Methane Avoidance through Separation of Solids from Wastewater or Manure Treatment Systems" (AMS.III-Y).
- Lead Auditor for several other GHG Assurance projects under the DOE Accreditation including the Verification of the Recycling of Refrigerators, Freezers, and Metal-Containing Foam Insulation Panels in the South- East of Brazil (Sectoral Scope 13) under the Swiss Charter and the Validation of the 50 MW Dinar Wind Power Project in Turkey (Sectoral Scope 1) under The Gold Standard
- Performed Lead Auditor and Peer Review Roles for nine projects within Ontario for the 2011 reporting period. This work was completed under CRA's ANSI Accreditation.
- Conducted greenhouse gas verification assessments as a Lead Auditor in Training for three projects for Alberta Environment; a liquid natural gas plant in Boyle, Alberta (2011), a pulp mill (2011) in Fort Saskatchewan, Alberta, and a static-pile aerobic composting site (2009) in Edmonton, Alberta under the Alberta Offset System which included a site visit, review of the overall processes, record keeping practices and techniques, emission reduction calculations compliance, and a report on findings.
- Experience with the validation process in preparation of Project Design Documents (PDD) and Monitoring Plans for emission reduction projects related to landfill gas destruction under the Clean Development Mechanism (CDM) for the Manaus landfill (Manaus, Brazil).
- Performed greenhouse gas emission reductions calculations and prepared the Monitoring Report for the Aurà and CEAMSE landfill sites in Brazil and Argentina respectively. The reports were completed to UNFCCC standards and included a review of the overall process, record keeping practices and techniques and emission reduction calculation compliance.
- Performed greenhouse gas emission reduction calculations using a modified first order kinetic landfill gas model for a municipal solid waste anaerobic digester under CDM requirements for various sites across the Canada and the USA as well as in Egypt. All of these sites also included an assessment of emission reductions associated with cogeneration.
- Completed assessment for emission reduction credits for a large-scale operation green-packaging project using sugar cane bagasse in Brazil under CDM biomass methodology AM0057 requirements. The project additionally generates electricity using the bagasse material.
- Prepared detailed assessment of transferability of Alberta Offset System protocols to CDM protocols in relation to both cement and asphalt methodologies for Shell.
- Conducted a greenhouse gas verification report for the Eastview Landfill Site in Guelph, Ontario. The report was compiled in accordance with the requirements of the PERRL Initiative.
- Developed a Project Information Note (PIN) for the emissions avoided through aerobic composting at the Orgaworld London and Ottawa, Ontario composting facilities as well as the City of Guelph Wet/Dry composting facility. Preparation of this document includes the quantification of emission reduction using the Alberta Offset System Protocols.
- Developed several project documents under various emissions reporting standards for landfill operations in British Columbia including the Nanaimo Landfill and the Salmon Arm Landfill Sites and in Ontario at the Eastview Landfill Site. These reports have been prepared in accordance with ISO-14064 Part 2 standards using various GHG methodologies to quantify the emissions such as those from the UNFCCC and CAR.

Design and Operations

- Performed tender administration, contract administration and construction oversight roles for the design and installation of a landfill gas collection and control system at the Stratford Landfill Site.
- Developed a detailed design and design and operations report for the landfill gas collection and control system for the Humberstone Landfill, Welland, Ontario, and the Stratford Landfill, Stratford, Ontario including the well field design, specification drawings including all relevant hydraulics, buried pipe and condensate trap sizing calculations.
- Provided operational assistance for the Eastview Landfill including balancing of the well field, assessments of the leachate collection system and the operations of the utilization facility.
- Provides operational support for organics processing facilities in London and Ottawa, Ontario including odour assessments involving the odour abatement equipment efficiencies and operations improvements to minimize fugitive odours.
- Developed the model package (Design and Operations Report) for the Application for Amendment to Provisional Certificate of Approval for a Waste Disposal Site, for landfill sites which apply under amended Ontario Regulations 232/98 and 347 for the Ontario Ministry of the Environment.
- Assisted in preparation of a study regarding applicable wastewater treatment technologies and disposal options for an organics processing facility in Ontario.
- Assisted with the submission of applications for Amendments Certificate of Approval for Air, Waste Disposal Site and Section 53 (Industrial Sewage Works) under the Environmental Protection Act (including formulation of a Design and Operations Report for the site) for source-separated organics aerobic composting facilities in London, Ontario and Ottawa, Ontario.

Computer Aided Design

- Performs day-to-day Auto-CAD drawings including process flow diagrams, general and civil scale drawings related to a variety of composting and landfill projects.

Solid Waste Management:

- Prepared cost estimates for the installation of landfill gas collection and control systems using both flaring and utilization technologies for international and Canadian landfills: Manaus landfill (Manaus, Brazil), and the Eastview landfill (Guelph, Ontario).
- Assisted with the preparation of successful proposals for a 5-year contract to haul and process source-separated organics for the City of Toronto and a 20-year contract to process source-separated organics for the City of Ottawa.
- Assisted in the completion of a 2007 Baseline Study of Canadian Landfills based on waste filing practices and leachate management considering nearly 90 landfill sites for Environment Canada.

Modelling and Assessment:

- Experience with Scholl-Canyon and Rettenberger first-order landfill gas generation models for the prediction of landfill gas generation at several landfills in Canada, the United States of America (U.S.A.) and South America.
- Experience with Scholl-Canyon and Rettenberger first-order landfill gas generation models as they apply to anaerobic municipal solid waste digesters for projects in the U.S.A.

- Performed landfill gas modelling and assessment for international landfills: Gonzàlez Catàn landfill and Ensenada landfill (Buenos Aires, Argentina), Aurà landfill (Belém, Brazil), Manaus landfill (Manaus, Brazil).
- Performed greenhouse gas emission reductions calculations and reporting for the Eastview landfill (Guelph, Ontario) and assisted with emission reductions calculations for the Merrick landfill (North Bay, Ontario) under the Pilot Emission Reductions, Removals, and Learnings (PERRL) initiative.

Agricultural Engineering

- Developed and assisted in implementing a monitoring methodology under the Climate Action Reserve (CAR) for the collection and utilization of methane gas produced in anaerobic dairy manure digesters for various projects in California, U.S.A.
- Assisted in approvals process for Provincial certificates of approval for the utilization of leachate and ammonium sulphate as a non-agricultural source material (NASM) on agricultural lands for a composting facility's in both London and Ottawa, Ontario.

Presentations

- Prepared and delivered a presentation entitled "Understanding the Clean Development Mechanism (CDM) Project Development Process" to the CRA community through a recorded webinar conference. The presentation covered all aspect of project validation and verification from the perspective of a project developer as well as an independent party conducting validations or verifications of project activities.
- Prepared a presentation on the current and future odour management at a composting facility operation within Ontario. The presentation was presented to local stakeholders, members of the MOE and the local Municipality.

EDUCATION

B.Sc. Eng. Engineering Chemistry, Queen's University, 2004

Other Training

WHMIS/Hazard Communication Training, 2005

Transportation of Dangerous Goods Training, 2008

Environmental Site Assessment and Remediation, EPIC Learning Centre, 2006

EMPLOYMENT HISTORY

2007-Present Conestoga-Rovers & Associates, Waterloo, ON

2004-06 Environmental Analytical Chemist, Conestoga-Rovers & Associates, Waterloo, ON

2003-04 Student Research Assistant, Analytical Services Unit, Queen's University, Kingston, ON

PROFESSIONAL REGISTRATIONS/AFFILIATIONS

Registered Professional Engineer: Ontario

PROFILE OF PROFESSIONAL ACTIVITIES

United Nations Framework Convention on Climate Change Clean Development Mechanism Validation Projects

- Performed role as Validation Team Member on the following CDM Projects:
 - Biomass Based Thermal Energy Project Malaysia (PoA and CPA) – Sectoral Scope 1
 - Electricity Generation with Methane Gas normally flared in petroleum production fields, Colombia (PoA and CPA) in Colombia – Sectoral Scope 1

Environmental Site Assessment and Due Diligence

- Conduct investigative and remedial activities for a chemical manufacturing facility in Ontario including:
 - Project Engineer for Annual Monitoring Reports
 - Primary author of monthly Progress Reports, consisting of assessment and management of analytical data
 - Field support relating to the remediation of contaminated off-Site Municipal Aquifer
 - Develop and maintain site monitoring specifications
- Project coordinator for ongoing Remedial Investigation/Feasibility Study (RI/FS) activities at a Superfund Landfill Site in Ohio.
- Project coordinator and on-site environmental supervisor for Phase II Environmental Site Assessments at sites throughout Canada and USA. Responsibilities include coordination and

scheduling of field activities, contractor procurement, drilling oversight, and collection of soil and groundwater samples.

- Field support for a large multi-site due diligence project at pulp and paper, and mining facilities in the Province of Newfoundland and Labrador.
- Preparation of proposals and reports for activities including Phase I and II Environmental Site Assessments (ESAs), Decision Support Packages, due diligence investigations, soil and groundwater investigations, and site closures. Proposal preparation includes review of previous site history, work plan development, and costing preparation.
- Participation in groundwater remediation activities including well development, water level monitoring, and sampling events at industrial and agricultural facilities in Ontario and Texas.
- Prepared and submitted National Pollution Release Inventory (NPRI) Reports to the Ontario Ministry of the Environment and Environment Canada, on behalf of multiple companies.
- Responsible for proper classification of various types of waste materials in accordance with appropriate RCRA, and state environmental regulatory compliance requirements in order to prepare waste characterization profiles, and waste shipping manifests required to ensure proper disposal of waste at a permitted treatment, storage, and disposal facility.
- Project coordinator for environmental assessment projects for an oil company in Texas.

Project Chemist/Quality Control Officer

- Project coordinator for analytical aspects of projects including the preparation of laboratory contracts, review of laboratory results for completeness, and invoicing.
- Responsible for providing chemical advice to CRA field staff, for both Canadian and American projects, to ensure that appropriate sampling and QA/QC procedures are followed.
- Responsible for monitoring analytical data generated by subcontract laboratories, and ensuring that all aspects of sample processing are conducted in accordance with CRA's rigorous QA/QC program.
- Responsible for coordination and management of analytical requests and subcontract laboratories including cost control and invoice administration.
- Review and validation of analytical results for jobs in accordance with United States Environmental Protection Agency (USEPA) Contract Laboratory Programs (CLP) documents entitled, "National Functional Guidelines for Organic Data Review" and "National Functional Guidelines for Inorganic Data Review".
- Texas Risk Reduction Program understanding and rule application skills.

PUBLICATIONS AND PRESENTATIONS

- Smith, D.B., Loney, A.C., and Chan, V. 2009. *Quantifying Environmental Performance Using an Environmental Footprint Calculator*. Climate Change and Technology Conference, May 2009, Hamilton, Ontario.

EDUCATION

Ph.D. Environmental Engineering, University of Guelph, 2003
M.Sc. Environmental Engineering, University of Guelph, 1997
B.Sc. (Eng.) Environmental Engineering, University of Guelph, 1995

EMPLOYMENT

2004- Present Principal
Conestoga-Rovers & Associates, Waterloo, ON
Named CRA Principal, 2013
Named CRA Associate, 2009
1995-03 Graduate Teaching Assistant, School of Engineering, University of Guelph (Soil Mechanics, Fluid Mechanics, Thermodynamics, Network Theory, Engineering Design, Statics and Dynamics)
1995-03 Graduate Research Assistant, School of Engineering, University of Guelph
1999 Sessional Course Instructor: Mass Transfer Operations

PROFILE OF PROFESSIONAL ACTIVITIES

Waste Processing and Transfer Technologies

- Project Manager for the City of Toronto's new source-separated organics (SSO) facilities for the pre-design and request-for-proposal development for two 75,000-tonne/year SSO Anaerobic Digesters (Disco Road Transfer Station and Dufferin Waste Management Facility), including performance and system specifications (building, biofilters, containment, site design), design review, contract administration and site inspection responsibilities.
- Project Director for site inspection, design review and contract administration of the City of Guelph's new Source-Separated Organic Waste Processing Facility, utilizing Composting technology.
- Project Director for the development of two 150,000-tonne/year source-separated organics Composting facilities in Ontario (London and Ottawa), including site selection, pre-design, permitting, design support, feedstock procurement, regulatory liaison, and design and operations support.
- Technical Lead for waste permitting activities for a 200,000-tonne/year waste Gasification plant in Port Hope, Ontario.
- Technical expert for a pilot waste Gasification plant located in Sault Ste. Marie, Ontario.
- Project Director for the implementation of a 150,000-tonne/year mechanical-shear Biosolids processing technology in Dundalk, Ontario, intended to produce Class A CFIA-certified fertilizer product, including biofilter design.
- Project Director for the technical, regulatory and siting development of a 250,000-tonne/year Mechanical-Biological Treatment project for a private client in New York City.
- Technical expert for a large-scale Microwave technology for the processing of tires into oils for a facility in Sault Ste. Marie, Ontario.

- Technical Lead for the design basis and economic consideration of converting municipal wastewater digesters to receive source-separated organics, on behalf of the City of Hamilton.
- Technical Lead for the development of the guidance submission manual for Anaerobic Digestion projects on behalf of the Ontario Ministry of the Environment.
- Managed successful feedstock procurement proposals for: a 10-year contract to haul and process source-separated organics utilizing aerobic composting for the Region of York, a 5-year contract to haul and process source-separated organics for the City of Toronto, and a 20-year contract to process source-separated organics for the City of Ottawa.
- Involved in the design and permitting of leaf and yard waste composting sites in Ontario.
- Due diligence review of composting and anaerobic digestion facilities in Canada and the United States on behalf of feedstock originators.
- Technical support for a large-scale municipal solid waste incinerator in Ontario.
- Project Director for the development and design of a modular transfer station technology intended for North American roll-out.
- Technical Lead for due diligence review on behalf of Sustainable Development Technologies Canada under the NextGen Biofuels Fund for municipal solid waste and woody fibre to biofuels technologies.
- Technical Lead for two wood-chip-to-pellet operations located in Ontario.
- Technical Lead for the development of a 50,000-tonne/year organics transfer station on behalf of the City of Vancouver, including transfer station specifics and biofilter design.
- Project management for the investigation of odour issues at a large-scale transfer and processing facility on behalf of the Region of Peel.
- Technical expert for the development of small-scale transfer stations for rural First Nations communities for Indian and Northern Affairs Canada (INAC).
- Feasibility study for the Town of Jasper, Alberta to assess viable management strategies for source-separated organics and biosolids.
- Project Director for the development of the Commissioners Street community recycling centre on behalf of the City of Toronto.
- Project Manager for a construction and demolition transfer station in Woodstock, Ontario.
- Managed a project for Natural Resources Canada to assess the state-of-the-art in biogas pre-treatment technologies for a range of utilization options and incorporating technical and economic factors to yield guidance with respect to overall technology selection.

Life Cycle Analysis

- CRA lead for environmental quantification (lifecycle greenhouse gas analysis) under Sustainable Development Technologies Canada with project reports completed for the following areas:
 - Fuel cells, solar power, wind power, biofuels, tailings pond remediation, aquaculture and wastewater projects
- Project Manager for the life cycle greenhouse gas and economic assessment of the Alberta beef sector, and development of management practices to reduce greenhouse gases emissions.
- Technical expert in the life cycle evaluation of recycled oil for the British Columbia Used Oil Association and the Alberta Used Oil Association.
- Managed a technical report for Natural Resources Canada under the Technology Early Action Measures (TEAM) initiative to study the greenhouse gas emission reductions associated with a borehole thermal energy and direct seawater cooling system located in Halifax, Nova Scotia.

- Technical expert for a project for Environment Canada to study the life cycle ecological and environmental effects of converting coal-fired power plants to biomass feedstocks.
- Lead author of technical papers discussing the life cycle greenhouse gas comparison of waste processing activities such as composting and anaerobic digestion to landfill, and the comparison of landfill gas utilization to wind power.

Landfill Gas – Active Control Systems and Migration Prevention

- Project Director for the development of the Stratford Landfill Gas Collection and Control system, City of Stratford.
- Project Director for the development of the Humberstone Landfill Gas Collection and Control system, Regional Municipality of Niagara.
- Project Manager for evaluation and recommendations for upgrading the landfill gas collection system at the Mohawk Landfill in Brantford, Ontario.
- Technical Lead for the successful issuance of a no-significant gas report for the NR-12 landfill on behalf of the Regional Municipality of Niagara.
- Technical design considerations for the development of methane oxidation beds at landfills, on behalf of Progressive Waste Solutions (BFI Canada).
- Prepared a research brief for the Alliance landfill concerning oxidation of methane in cover soils; engaged in field investigation and performed an analysis for the same landfill to determine means of optimizing landfill gas quality for potential utilization.
- Engaged in calculations for a report to the Greater Vancouver Regional District concerning increases in landfill gas production as a result of the addition of sewage sludge biosolids.
- Performed a landfill gas collection assessment report for the Eastview Landfill in Guelph, Ontario relative to existing and future quantities of landfill gas available for utilization.
- Performed a feasibility study for soil vapour extraction at the A1 landfill site, including analysis of analytical results and field results for determination of residual contaminant levels and potential for air-phase stripping.
- Project Manager for three projects for British Columbia Ministry of the Environment including:
 - Development of new modeling formulations to predict greenhouse gas emissions from landfills in the Province in support of regulations
 - Landfill Gas Design Guidelines document
 - Best Management Practices guidance document for additional greenhouse gas reductions.
- Project Manager for a report entitled "Assessment of Greenhouse Gas Generation and Potential Reductions for Select Landfills in Ontario" for the Ministry of the Environment.
- Project Manager for an Environment Canada assignment to estimate greenhouse gas emissions from unmanaged landfills in Canada for purposes of reporting Canada's greenhouse gas inventory under the Kyoto Protocol.
- Several soil gas and landfill gas field activities related to field characterization of gas (field equipment) and obtaining samples for laboratory analysis (Tedlar bags and SUMA canisters); additional indoor air characterization work for combustion products such as NO₂, NO, and CO using a variety of equipment and lab analytical method.
- Project Director for the evaluation of off-site migration of landfill gas components from the Kitchener Landfill (Regional Municipality of Waterloo), including assessment of the existing active migration control system. Further work in designing and installing a mitigation system.

- Assessed methane generation potential and potential risks associated with methane migration for a large site in Pontiac, Michigan based on field results; developed a conceptual design for a passive venting system for the building footprint and interpreted results of additional gas probe data.
- Conceptual design and construction support for the conversion of a passive venting system into an active gas collection system at the Highway 48 landfill as part of a perimeter migration control system.
- Conceptual design for a perimeter gas monitoring system for the Boldenar Park landfill in Elmira, Ontario.
- Performed an assessment regarding landfill gas generation potential and migration/end-use risk for a landfill in Calgary (Blackfoot Landfill).
- Performed field monitoring and overall landfill gas management support for the following Waste Management landfill sites: Highway 48 (Stouffville, Ontario), Storrington (Kingston, Ontario), and East Gwillimbury (East Gwillimbury, Ontario).

Greenhouse Gas Work and Carbon Credits

- Performed greenhouse gas emissions reduction calculations and reporting for the Eastview landfill in Guelph, Ontario and assisted with emissions reduction calculations for the Peterborough landfill in Peterborough, Ontario, and the Merrick landfill in North Bay, Ontario, under the Pilot Emission Reductions and Removals Learning (PERRL) initiative for monetization of carbon credits.
- Assistance with the monetization and sale of greenhouse gas credits for the Cities of Guelph and North Bay, Ontario in the post-PERRL voluntary carbon market.
- Senior Peer Reviewer for greenhouse gas assurance (validation and verification) under Conestoga-Rovers & Associates' Designed Operational Entity designation through the United Nations.
- Senior Peer Reviewer for re-verifications of projects listed under the Specified Gas Emitters Regulation in Alberta, Canada.
- CRA lead for the formulation of Project Design Documents (PDDs) for emission reduction projects related to landfill gas destruction under the Clean Development Mechanism (CDM) for five landfills: Canabrava Landfill (Salvador, Brasil), Aura Landfill (Belem, Brasil), Manaus Landfill (Manaus, Brasil) and Gonzalez-Catan and Ensenada Landfills (Buenos Aires, Argentina).
- Experience with Designated National Authority procedures under the United Nations Framework Convention on Climate Change for the following countries: Brasil, Argentina, United Kingdom and Canada; submitted applications for host country approval in Brasil and Argentina.
- Project Manager for carbon credit generation pre-feasibility for ten landfill gas projects on behalf of the World Bank.
- Performed landfill gas assessment for carbon capture for six landfills in Mexico, including economic assessment of developing Clean Development Mechanism projects at these sites for a private waste management company.
- Managed a report entitled "Assessment of Greenhouse Gas Generation and Potential Reductions for Select Landfills in Ontario" for the Ministry of the Environment.
- Engaged in a greenhouse gas quantification for two farm level anaerobic digesters under the livestock reporting protocol through the California Climate Action Registry.
- Technical expert for the verification of greenhouse gas emissions from large-scale oil sands tailing ponds.

- Project Manager for an Environment Canada assignment to estimate greenhouse gas emissions from unmanaged landfills in Canada for purposes of reporting Canada's greenhouse gas inventory under the Kyoto Protocol.
- Assessment of greenhouse gas emission reduction potentials for numerous landfill gas projects including utilization, source-separated organics composting facilities, anaerobic digesters incorporating source-separated organics, biomass (wood) combustion facilities, municipal waste incinerators, cement additives (phosphate cement) and afforestation/reforestation.

Auditing and Affiliations

- Internal ISO auditor under Conestoga-Rovers & Associates quality system.
- CRA lead under the Ontario Waste Management Association

PUBLICATIONS AND PRESENTATIONS

Published Refereed Papers

- Gidda, T., Stiver, W.H., and Zytner, R.G. Measuring Aqueous-Air and Sorbed-Aqueous Mass Transfer Coefficients for Application in Soil Vapor Extraction. *Journal of Environmental Engineering*, 137(10): 880-888.
- Gidda, T., Bogoslawski, T., Mosher, R., and Millar, D. Life Cycle Greenhouse Gas Assessment for Landfill Gas Utilization. Presented in the peer review track for the 13th Annual Landfill Symposium of the Solid Waste Association of North America in June 2008.
- Gidda, T., Cann, D.P., Stiver, W.H., and Zytner, R.G. 2004. Airflow Dispersion in Unsaturated Soil. *Journal of Contaminant Hydrology*. 82: 118-132.
- Gidda, T., Stiver, W.H., and Zytner, R.G. 2000. The Passive Volatilization of Gasoline from Unsaturated Soil. *Journal of Contaminant Hydrology*. 39: 137-159.

Conference Papers and Presentations

- Gidda, T. 2013. Anaerobic Digestion and Composting of Organic Waste, presented January 16, 2013 for the Sustainable Packaging Coalition Open Forum Presentation.
- Gidda, T., Bogoslawski, T., Radulescu, M., Islam, M., and Boss, B. 2011. A Life-Cycle Greenhouse Gas Comparison of Anaerobic Digestion versus Composting of Source-Separated Organics, presented September 20, 2011 at the Compost Council of Canada's annual conference in Charlottetown, Prince Edward Island.
- Gidda, T. and Stroeder, D. 2009. Large-Scale Composting of Source-Separated Organics: A Case Study, presented June 2, 2009 at the 14th Annual SWANA Landfill Symposium in Savannah, Georgia.
- Gidda, T. 2008. Gas Collection Systems, presented March 26, 2008 at the Liners and Covers for Agricultural Waste Storage conference in Fresno, California.
- Gidda, T. 2007. Greenhouse Gas Management: An Overview of the Carbon Credit Market. Presented at the Municipal Waste Integration Network's (MWIN's) Annual General Meeting, Cobourg, Ontario.
- Gidda, T. and Leehane, N. 2007. Greenhouse Gas/Carbon Emission Reductions and Trading. Presented for the CRA Sustainable Solutions Group, March 28.
- Gidda, T., Treadwell, G., Mosher, F., and Rovers, F. 2007. Carbon Credit Trading at the Canabrava Landfill Site: Challenges and Opportunities under the Kyoto Protocol. Submitted and accepted at the

Solid Waste Association of North America's 30th Annual Landfill Gas Symposium, March 4-8, 2007, Monterrey, California, United States.

- Gidda, T. and Moffat, B. 2007. Carbon Credits – The Future has Arrived. Presentation delivered at the 2007 Annual Business Conference of the Professional Dairy Producers of Wisconsin (March 13-14, 2007) in Madison, Wisconsin, United States.
- Gidda, T. 2007. Carbon Credit Trading: Challenges and Opportunities under the Kyoto Protocol. Presentation delivered at the Americana conference (March 20-22, 2007) in Montreal, Quebec, Canada.
- Gidda, T. 2006. CDM Project Development: South America. Presentation delivered on behalf of Canada's Clean Development Mechanism and Joint Implementation Office on March 28, 2006 in Vancouver, British Columbia, Canada.
- Gidda, T. 2006. Host Country Approvals: Brasil and Argentina. Presentation delivered on behalf of Canada's Clean Development Mechanism and Joint Implementation Office on March 27, 2006 in Vancouver, British Columbia, Canada.
- Gidda, T. 2006. CDM Project Development: South America. Presentation delivered on behalf of Canada's Clean Development Mechanism and Joint Implementation Office on March 1, 2006 in Winnipeg, Manitoba, Canada.
- Gidda, T. 2006. CDM Project Development. Presentation delivered on behalf of Canada's Clean Development Mechanism and Joint Implementation Office on March 1, 2006 in Winnipeg, Manitoba, Canada.
- Gidda, T. 2006. Landfill Gas and Emission Trading under the UNFCCC. Presentation delivered on behalf of the Air and Waste Management Association's speaker series on April 19, 2006 in Waterloo, Ontario, Canada.
- Gidda, T. 2006. Landfill Gas Collection in Developing Countries. Submitted and accepted at the Solid Waste Association of North America's 11th Annual Landfill Symposium, June 5-8, 2006, Nashville, Tennessee.
- Mosher, R., Gidda, T., and McBean, E.A. 2006. Landfill Bioreactors: A New Perspective on Solid Waste Management in the Caribbean. Submitted and accepted at the Third Caribbean Environmental Forum and Exhibition, June 5-9, 2006, Antigua.
- McBean, E.A., Gidda, T., Mosher, F., Rovers, F., and Vaccariello, H. 2006. Landfill Gas Collection in Developing Countries. Submitted and accepted at the Solid Waste Association of North America's 11th Annual Landfill Symposium, June 5-8, 2006, Nashville, Tennessee.
- Gidda, T., Millar, D., McBean, E.A., Mosher, F., and Varghese, B. 2005. Landfill Gas Collection and Utilization: Energy from Waste and Links to Kyoto. Submitted and accepted at ChemCon 2005, December 14-17, 2005, New Delhi, India.
- Gidda, T. 2005. Development of CDM Projects. Presentation delivered on behalf of Canada's Clean Development Mechanism and Joint Implementation Office on December 14, 2005 in Toronto, Ontario, Canada.
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- McBean, E.A., Ritchie, S., and Gidda, T. 2005. Landfill Gas Collection for Greenhouse Gas Credits: An Argentinean Case Study. Submitted and accepted at the Sardinia 2005 Tenth International Waste Management and Landfill Symposium, October 3-7, Cagliari, Italy.

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- Gidda, T., Mosher, F., McBean, E.A., and Stafford, K. 2005. Aspects of Landfill Gas Collection and Utilization: Energy from Waste. Presented by T. Gidda at the American Association of Petroleum Geologists Convention, June 19-22, Calgary, Alberta.
- Mosher, F., McBean, E.A., Rovers, F.A. 2005. Landfill Gas and Renewable Energy in Developing Countries: Links to Kyoto. Presented by T. Gidda at the American Association of Petroleum Geologists Convention, June 19-22, Calgary, Alberta.
- Gidda, T., Stiver, W.H., and Zytner, R.G. 2002. Mass Transfer Behaviour in the Soil Vapour Extraction of Gasoline from Unsaturated Soils. Joint CSCE/EWRI of ASCE International Conference on Environmental Engineering, July 21-July 24, Niagara Falls, Ontario.
- Cann, D.P., Gidda, T., Stiver, W.H., and Zytner, R.G. 2002. Estimate of Air Flow Dispersion and Dispersivity for Five Soils. Joint CSCE/EWRI of ASCE International Conference on Environmental Engineering, July 21-July 24, Niagara Falls, Ontario.
- Gidda, T., Stiver, W.H., and Zytner, R.G. 2000. Soil Vapour Extraction: Experimental and Modeling Study for the Determination of Mass Transfer Coefficients. Annual CSCE Conference, June 7-10, London, Ontario.
- Gidda, T., Stiver, W.H., and Zytner, R.G. 1999. Formulation of a Better Synthetic Gasoline for Use in SVE Experiments. ASCE-CSCE National Conference on Environmental Engineering, July 25-28, Norfolk, Virginia.
- Gidda, T., Stiver, W.H., and Zytner, R.G. 1997. Volatilization Behaviour of Gasoline from Unsaturated Clay Loam Soil. Air & Waste Management Association's 90th Annual Meeting & Exhibition, June 8-13, Toronto, Ontario.
- Gidda, T., Stiver, W.H., and Zytner, R.G. 1996. Passive Volatilization of Gasoline from Unsaturated Soil. Chapter 33, Contaminated Soils Volume 2. Chapter 33: 447-461.

Published Reports

- Gidda, T., Stiver, W.H., and Zytner, R.G. Gasoline Volatilization from Wet Soil. A Report submitted to Imperial Oil Limited, August 1997. 245 pages.

Theses

- Ph.D. Thesis: Mass Transfer Processes in the Soil Vapour Extraction of Gasoline from Unsaturated Soils.
- M.Sc. Thesis: Passive Volatilization Behaviour of Gasoline in Unsaturated Soils.

EDUCATION

B.Sc. Eng. Environmental Engineering, University of Guelph, 1996

Other Training

Testing Industrial Air Emissions, 2000

Chemical Hydrogeology, University of Waterloo, 2002

Environmental Microbiology, 2002

Industrial Processes, 2004

Environmental Economics, 2006

Industrial Ecology, 2007

ISO 14064 Part 1 – Greenhouse Gas Inventories, 2008

ISO 14064 Part 2 – Greenhouse Gas Projects, 2008

ISO 14064 Part 3 – Greenhouse Gas Verification, 2010

EMPLOYMENT HISTORY

1998-	Principal/Vice-President
Present	Conestoga-Rovers & Associates, Waterloo, Ontario
	Named CRA Principal/Vice-President, 2013
	Named CRA Associate, 2006
1998	Research Assistant, Agriculture and Agri-Food Canada
1996-97	Environmental and Quality Assurance Technician, Golden Town Apple Products

PROFESSIONAL REGISTRATIONS/AFFILIATIONS

Registered Professional Engineer: Ontario

Michigan Board of Professional Engineers Fundamentals of Engineering Exam, April 1999

PROFILE OF PROFESSIONAL ACTIVITIES

Greenhouse Gas Emissions Reporting, and Validation, and Verification and Life Cycle Assessment

- Manager of CRA's Greenhouse Gas Assurance Services group responsible for coordinating and managing all greenhouse gas validation and verification projects under programs administered by the United Nations Framework Convention on Climate Change Clean Development Mechanism, The Gold Standard, Verified Carbon Standard, The Climate Registry, Carbon Disclosure Project, and the governments of Alberta, British Columbia, Massachusetts, Ontario, and Quebec.
- Project Manager and technical advisor for the preparation and verification of applications for funding to Sustainable Development Technology Canada for various clients, including the preparation of life cycle assessments.

- Project Manager for the preparation of a web-based, database-driven Environmental Footprint Calculator for a large cement, aggregate, and construction company in Canada.
- Lead verifier, verification team member, and independent peer reviewer for over 50 validation and verification audits of greenhouse gas inventories and projects in Alberta, Argentina, British Columbia, Colombia, Malaysia, Massachusetts, and Ontario and under several voluntary carbon markets.
- Project Manager for review and assessment of greenhouse gas emissions from the upstream oil and gas industry for Environment Canada.
- Peer Reviewer for the preparation of a Greenhouse Gas Inventory for a large North American potato chip producer, a large North American waste company, and several other clients.
- Senior Technical Advisor for the assessment of reporting requirements under the USEPA Mandatory Greenhouse Gas Reporting Rule for clients in the petroleum industry.

Air Emissions Sampling, Permitting, and Reporting

- Project Manager for numerous air emissions assessments for clients in Canada reporting under the National Pollutant Release Inventory (NPRI) and the Greenhouse Gas Reporting Program.
- Project Manager, Project Coordinator, and project engineer on numerous air permit applications and air emissions reports for numerous clients throughout Ontario.
- Project Coordinator for the Ontario Ambient Air Monitoring Sites for Environment Canada's Canadian National Air Toxics Measurement Program in 2004/2005. Responsible for coordination of all aspects of the sampling and reporting activities for over 10 ambient air monitoring sites in Ontario.
- Conducted sampling and reporting for numerous air emission source testing projects in Canada, the United States, and Puerto Rico, including specialized field gas chromatography sampling.
- Lead technical advisor for ambient air monitoring programs at multiple sites in Ontario and New Brunswick.
- Project Manager and Coordinator for air emissions activities associated with multiple facilities for an automotive parts manufacturer in Ontario, including preparation of Ontario Ministry of the Environment Director's Order appeal documents, Certificate of Approval (Air) Applications, Ontario Regulation 127 and National Pollutant Release Inventory reporting, and source sampling.

Agriculture-Related Experience

- Primary researcher for preparation of a paper regarding the evaluation of swine manure treatment processes for Agriculture and Agri-Food Canada.
- Researcher for the evaluation of a prototype cattle manure treatment technology for Agriculture and Agri-Food Canada.
- Project Manager for assessment of environmental issues associated with an aerobic composting operation.
- Technical Advisor for project to revise a greenhouse gas project protocol related to cattle manure emission reductions under the Verified Carbon Standard.

Environmental Due Diligence and Remediation

- Project Manager for ongoing Remedial Investigation/Feasibility Study (RI/FS) activities at a Superfund Landfill Site in Ohio.
- Project Manager for RCRA corrective action and Ohio Voluntary Action Program activities at a former refractory manufacturing facility in Ohio.

- Conduct investigative and remedial activities for a chemical manufacturing facility in Ontario including:
 - Project management, technical and field support relating to the remediation of contaminated off-site Municipal Aquifer
 - Project Manager for the design and construction of a \$4.2 million dollar ammonia treatment system for contaminated groundwater
 - Project Coordinator for annual ambient air monitoring program downwind of the site
 - Supervise and conduct field activities such as groundwater sampling, groundwater elevation monitoring, surface water sampling, surficial soil sampling, and waste water sampling air and odour sampling
- Project Manager for a large indoor contaminated soil excavation and groundwater collection trench installation at a former wallpaper manufacturing facility in Ontario.
- Project Manager and Project Coordinator for a large site assessment, plant demolition, and contaminated soil and groundwater remediation project at a former airplane manufacturing facility in Ontario.
- Project Manager and Phase I auditor for a large multi-site due diligence project at pulp and paper, mining, and port facilities in the Province of Newfoundland and Labrador.
- Project Manager and Project Coordinator for several litigation support projects in the United States, including preparation of expert reports, expert witness support, and completion of potentially responsible party searches.
- Project Manager and Assessor for numerous Phase I and II Environmental Site Assessments and Environmental Compliance Audits in the United States and Canada.
- Project Manager for activities at a large chemical manufacturer in Ontario, including wastewater treatment system optimization, compliance audit, Certificate of Approval (Air) Application preparation, asbestos survey, and ongoing compliance assistance.
- Project Manager for an AS/SVE and bioremediation project at an industrial site in New Jersey.
- Project Manager/Coordinator for facility-wide environmental and health and safety compliance audits and environmental monitoring programs for two large automotive manufacturing sites in Ontario.
- Project engineer for an Engineering Evaluation and Cost Assessment (EE/CA) for the remediation of a lead-acid battery disposal area in Michigan.

ANNEX D: FINDINGS ASSESSMENT



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651 Colby Drive, Waterloo, Ontario, N2V 1C2
Telephone: (519) 884-0510 Fax: (519) 884-0525
www.CRAworld.com

June 12, 2013

Reference No. 074496-02

Mr. Chris Vickery
Acciona Energy North America
333 W. Wacker Drive, Suite 1500
Chicago, Illinois
60606

Dear Mr. Vickery:

Re: First Verification Findings Assessment – Version 5
Big Smile Wind Farm at Dempsey Ridge
Acciona Wind Energy USA LLC., Oklahoma, United States

Conestoga-Rovers & Associates Limited (CRA) is pleased to submit the following Verified Carbon Standard (VCS) Verification Findings Assessment (Assessment) to Dempsey Ridge Wind Farm, LLC. (Dempsey Ridge, Project Proponent) in regards to the verification of the Dempsey Ridge Wind Project (also known as the Big Smile at Dempsey Ridge) located in Oklahoma, United States (Project Activity). The Assessment was completed based jointly on the Site Visit completed by the CRA Project Team on 20 March 2013, the First Monitoring Report, Version 1, dated 15 March 2013 supplied by the Project Proponent on 16 March 2013, and the following materials supplied by the Project Proponent:

<i>Issued to CRA Date</i>	<i>Type of Document</i>
15 March 2013	• Current Transmission Line Layout, dated 24 May 2012 • Dempsey Ridge Wind Farm Grid Coordinates, EWI-4470-03, Rev. A • Dempsey Ridge Wind Project Site Map, Rules and Information, dated 28 March 2011
16 March 2013	• VCS Monitoring Report, "First Monitoring Report" Version 1, dated 15 March 2013
26 April 2013	<u>Response to CAR #1</u> • AEP 230kV Main Meter Data – Hourly, Microsoft Excel file <u>Response to CAR #2</u> • Acciona 34kV Check Meter Data – 15 Minute, Microsoft Excel file • Acciona 230kV Check Meter Data – 15 Minute, Microsoft Excel file • AEP 230kV Check Meter Data – 15 Minute, Microsoft Excel file • AEP Check Meter Picture, JPG File



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<i>Issued to CRA Date</i>	<i>Type of Document</i>
	• AEP Main Meter Picture, JPG file <u>Response to CAR #3</u> • Acciona 34.5kV Check Meter Calibration Certificate, PDF • Acciona 230kv Check Meter Calibration Certificate, PDF • AEP 230kV Check Meter Calibration Certificate, PDF • AEP 230kV Main Meter Calibration Certificate, PDF <u>Response to CAR #4</u> • Interconnection Agreement, dated 26 May 2009 (file name 1810_Dempsey Ridge Wind Farm_LGIA_2009-05-26.pdf) • Revised Appendices A – C and E – F to GEN-2006-035 LGIA, dated 4 March 2011 (file name 20110329 Amended Fully Executed Dempsey Ridge LGIA SA 1810R1.pdf) <u>Response to CAR #6</u> • SCADA Report Detailed Dempsey Ridge Wind Farm Production from 01 January 2012 to 31 December 2012 <u>Response to CAR #7</u> • Dempsey Northfork 10.27-11.27.12 Invoice • Dempsey Northfork 2012 Invoices • PSO Invoice – August 2012 • PSO Invoice – December 2012 • PSO Invoices 2012 – All but August and December • SPP.2012.Invoices <u>Response to CL #2</u> • Meter Correction Factor Calculations, dated 8/2/2011 • LC Dempsey Ridge 08-02-11, Microsoft Excel file
16 May 2013	• 2012 DEMP Settlement Files
21 May 2013	• PSO Invoice – October 2012, Bill Date 7 November 2012

This Project Activity was assessed by CRA's Project Team against the Approved Consolidated Large-Scale Methodology ACM0002 "Consolidated baseline and monitoring methodology for electricity generation from renewable sources" Version 12.1.0, the associated methodological



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tools, and any relevant Clean Development Mechanism (CDM) and VCS guidance documentation.

The Assessment findings are categorized as either a Corrective Action Request (CAR), Forward Action Request (FAR), or as a Clarification Request (CL).

CARs are raised within this Assessment if:

- The VCS Project Proponent has made mistakes in assumptions or in the project documentation that will directly influence project results
- The CDM/VCS requirements deemed relevant for verification of a project with certain characteristics have not been met
- There is a risk that the project would not be allowed issuance of emission reductions by the VCS or that emission reductions cannot be monitored, calculated, verified, and/or certified
- The VCS Project Proponent has made mistakes that will influence the ability of the project activity to achieve real, measurable additional emission reductions
- The relevant CDM/VCS requirements have not been met

FARs are issued to highlight issues related to project implementation that require review during the subsequent verifications of the Project Activity. FARs will not relate to the VCS requirements for issuance and thus do not require any formal response from the VCS Project Proponent.

CLs are issued to the VCS Project Proponent if the Project Team determines that the information provided by the VCS Project Proponent is insufficient, unclear, or not transparent enough to establish whether the applicable requirements are met.

CRA further notes that this Assessment is an open list and additional findings may be added as the verification process progresses. In all cases, it is the responsibility of the VCS Project Proponent to respond in an accurate and timely manner, when required, within the established timelines within this Assessment. Formal responses are to be delivered from the VCS Project Proponent to the Project Team in one complete submission.

CRA reserves the right to review the associated fees and timelines presented within the original proposal dated 10 January 2012 and the revised scope of work dated 14 January 2013 should numerous response submissions be received from the VCS Project Proponent or if a finding (CAR/CL) raised by the CRA Project Team not be closed within 30 days of notification to the VCS Project Proponent by CRA.



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Each CAR, FAR, and CL is presented in individual tables below. The VCS Project Proponent is required to complete only the cells with text that is highlighted in blue italics in response to each item.

A summary of the results of the Assessment is presented as follows:

<i>Finding Category</i>	<i>Number of Findings</i>
CAR	10
FAR	1
CL	2
TOTAL	<u>13</u>

Date:	20/03/2013	Raised by:	Brent Boss/Valerie Chan		
Type:	CAR	Number:	#1	Reference:	1.18
Lead Auditor Comment:					
In order to ensure that the calculation principles established within the registered methodology ACM0002 Version 12.1.0 are maintained consistently throughout the Monitoring Period, the CRA Project Team is requesting that the Project Proponent provide all detailed calculation spreadsheets/programs including, but not limited to, the emission reduction calculations.					
Project Proponent Response:				Date: 04/25/2013	
The calculation of emission reductions using the conversion factor of 0.647 calculated in the PDD and metered net production in MWh from the AEP owned main revenue meter is provided.					
Documentation Provided by Project Proponent:					
AEP 230kV Main Meter Data – Hourly.xls					



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Date:	20/03/2013		Raised by:	Brent Boss/Valerie Chan	
Type:	CAR	Number:	#1	Reference:	1.18
Information Verified by Lead Auditor:					
The CRA Project Team recalculated the emission reductions based on the data presented in the AEP 230kV Main Meter (revenue meter) Data Excel spreadsheet. The CRA Project Team calculated emission reductions of 202,923.79 tCO ₂ , which is -0.0001 percent different from the emission reduction of 202,924 tCO ₂ stated in the Monitoring Report. This -0.0001 percent difference is attributed to rounding of the value. The grid emission factor of 0.647 was confirmed to be consistent with the approved ex-ante calculation methodology utilized by the Project Proponent in the VCS PD.					
Reasoning for Acceptance and Close Out:				Date: 10/05/2013	
Based on the finding raised and response provided by Project Proponent (based on the above evidences), the finding was closed out. The CRA Project Team received the data from the AEP 230kV main meter, and calculated emission reductions, and confirmed the reductions claimed.					
<u>CAR#1 is Closed Out.</u>					
Acceptance and Close out by Lead Auditor:				Date: 13/05/2013	

Date:	20/03/2013		Raised by:	Brent Boss/Valerie Chan	
Type:	CAR	Number:	#2	Reference:	3.3
Lead Auditor Comment:					
In Section 3.16.1 of the VCS Standard Version 3.3, it states that "<i>Data and parameters used for the quantification of GHG emission reductions and/or removals shall be provided in accordance with the methodology.</i>" During the site visit conducted on 20 March 2013, CRA noted that there was one American Electric Power (AEP) revenue electricity meter, and one AEP check meter in use, and two Acciona back-up (check) meters in use. The CRA Project Team requests that the Project Proponent provide a complete list of the raw data collected from each of the check meters in order to check the accuracy of the calculations. Additionally, the CRA Project Team requests that the Project Proponent provide the serial numbers of both AEP revenue meters, as the CRA Project Team was unable to view the serial numbers during the Site visit.					



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Date:	20/03/2013	Raised by:	Brent Boss/Valerie Chan		
Type:	CAR	Number:	#2	Reference:	3.3
Project Proponent Response:				Date: 04/25/2013	
AEP has one Main meter located on the 230kV side of the substation that is used for purposes of billing. AEP also has a Check meter located on the 230kV side of the substation. Acciona has a Check meter on the 230kV side of the substation and another Check meter located on the 34.5kV side of the substation. Only the AEP Main meter is necessary for revenue requirements and the AEP and Acciona Check meters are only installed for redundancy. The AEP Main meter serial number is: LT-1107A404-01 The AEP Check meter serial number is: LT-1107A405-01					
Documentation Provided by Project Proponent:					
Acciona 34kV Check Meter Data - 15 Minute.xls Acciona 230kV Check Meter Data - 15 Minute.xls AEP 230kV Check Meter Data - 15 Minute.xls AEP Check Meter Picture.jpeg AEP Main Meter Picture.jpeg					
Information Verified by Lead Auditor:					
The CRA Project Team reviewed the Project Proponent Response and revised the lead auditor comment to match with the information presented with respects to the ownership and locations of the check meters. The CRA Project Team reviewed the documentation provided and confirmed that the data from the revenue (main) and check meters were provided, in 15 minute increments. The documentation provided satisfies the requirements of Section 3.16.1 of the VCS Standard Version 3.3. The CRA Project Team calculated the emission reductions using data from the Acciona 230kV Check Meter, provided in 15 minute increments, and the resulting value was 202,994.57 tCO₂, which was +0.035 percent greater than the emission reduction value of 202,924 tCO₂ claimed in the Monitoring Report. Additionally, the CRA Project Team noted several instances of missing data for the Acciona 230kV Check Meter for all months in the monitoring period, with the exception of April and May.					



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Date:	20/03/2013	Raised by:	Brent Boss/Valerie Chan		
Type:	CAR	Number:	#2	Reference:	3.3
Reasoning for non-Acceptance:				Date: 13/05/2013	
Based on the finding raised and response provided by Project Proponent (based on the above evidences), the finding was not closed out. The CRA Project Team requests that the Project Proponent respond to the discrepancies between the quantity of electricity recorded between the Main AEP Revenue meter and the check meters, and the data missing from check meter data to ensure accuracy and consistency of the emission reduction calculations. <u>CAR#2 Remains Open.</u>					
Project Proponent Response:				Date: 20/05/2013	
Discrepancies from the Check Meters are within the 2% band allowable by the LGIA. The check meters are not used for billing and the Main meter values are more conservative. For these reasons, Project Proponent recommends using the 202,924 value calculated using the Main Meter (which is the only meter required for billing).					
Documentation Provided by Project Proponent:					
None					
Information Verified by Lead Auditor:					
The CRA Project Team reviewed the Project Proponent response and verified that the discrepancy between the Acciona 230kV Check Meter and the AEP Main meter was 0.4 percent, which was within the 2 percent allowed by the Interconnection Agreement, and less than the 5 percent materiality threshold.					
Reasoning for not Acceptance or Acceptance and Close Out:				Date: 30/05/2013	
Based on the finding raised and response provided by Project Proponent (based on the above evidences), the finding was closed out, because the discrepancy between the emission reductions calculated based on the data from the AEP Main Meter and Acciona 230 kV Check Meter was less than the threshold limit of 2 percent that is specified in the Interconnection Agreement, and less than the 5 percent materiality threshold. <u>CAR #2 is Closed Out</u>					
Acceptance and Close out by Lead Auditor:				Date: 30/05/2013	



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Date:	20/03/2013	Raised by:	Brent Boss/Valerie Chan		
Type:	CAR	Number:	#3	Reference:	1.14
Lead Auditor Comment:					
In Section 3.16.5 of the VCS Standard Version 3.3, it states that "<i>Where measurement and monitoring equipment is used, the Project Proponent shall ensure the equipment is calibrated according to the equipment's specifications and/or relevant national or international standards.</i>" In order to ensure the accuracy of the metered readings, the CRA Project Team is requesting that the Project Proponent provide complete documentation of the calibration records for each of the revenue and check meters which is consistent with the VCS Standard listed above. Section 1.14 of the Monitoring Report text states the calibration frequency of only one revenue meter. The CRA Project Team requests that the Project Proponent revise the Monitoring Report to detail the required calibration frequency of each of the revenue and check meters.					
Project Proponent Response:				Date: 04/25/2013	
The Large Generator Interconnection Agreement only specifies calibration frequency for the AEP Main meter. The other three meters are voluntarily installed and do not have a required calibration frequency. Section 3.2 of the Monitoring Report explains this under "QA/AC procedures to be applied".					
Documentation Provided by Project Proponent:					
AEP 230kV Main Meter Calibration Certificate.pdf AEP 230kV Check Meter Calibration Certificate.pdf Acciona 230kV Check Meter Calibration Certificate.pdf Acciona 34.5kV Check Meter Calibration Certificate.pdf					



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Date:	20/03/2013	Raised by:	Brent Boss/Valerie Chan		
Type:	CAR	Number:	#3	Reference:	1.14
Information Verified by Lead Auditor:					
The CRA Project Team has verified that the check meters (PowerLogic™ ION8600 meters) do not require calibration, only accuracy testing, according to the PowerLogic Technical document 70072-0119-05,titled Verifying Accuracy, dated 08/2006. The document does not specify the frequency of accuracy checks.					
However, the CRA Project Team reviewed the Large Generator Interconnection Agreement and observed Article 7.4 which states: <i>7.4 Testing of Metering Equipment. Transmission Owner shall inspect and test all transmission Owner-owned Metering Equipment upon installation and at least one every two (2) years thereafter. If requested to do so by Interconnection Customer, Transmission Owner shall, at Interconnection Customer's expense, inspect or test Metering Equipment more frequently than every two (2) years.</i>					
The CRA Project Team reviewed the documentation provided by the Project Proponent and verified that:					
• The Acciona 230kV check meter serial # LT-1109A072-01 was factory calibrated on 08 September 2011. • The AEP 230kV main meter serial # LT-1107A404 was tested on 29 August 2011 • The AEP 230kV check meter serial # LT-1107A405 was tested on 29 August 2011 • The Acciona 34.5kV check material serial #LT-1109A071-01 was factory calibrated on 08 September 2011					
The file titled "AEP 230kV Main Meter Calibration Certificate" did not appear to present confirmation of factory calibration similar to other files provided. The file information was titled "Meter Test Report" and did not include a statement about calibration.					
Reasoning for non-Acceptance:				Date: 13/05/2013	
Based on the finding raised and response provided by Project Proponent (based on the above evidences), the finding was not closed out, as proof of (factory) calibration of the AEP 230kV Main Meter was not verified.					
<u>CAR#3 Remains Open.</u>					



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Date:	20/03/2013	Raised by:	Brent Boss/Valerie Chan		
Type:	CAR	Number:	#3	Reference:	1.14
Project Proponent Response:				Date: 20/05/2013	
AEP has informed me that they do not rely on the factory test. Instead they test themselves when the meters are installed. The test files from installation were provided during the last turn of the Findings Assessment. The contact at AEP to get verification of the AEP meter serial numbers and testing procedures is Scott Dillard (bsdillard@aep.com).					
Documentation Provided by Project Proponent:					
None					
Information Verified by Lead Auditor:					
The CRA Project Team reviewed the Project Proponent responses and documentation provided, which include calibration or testing reports for the electricity meters. As previously stated, the CRA Project Team has verified that PowerLogic™ ION8600 meters (i.e. revenue meter) do not require calibration, only accuracy testing, according to the PowerLogic Technical document 70072-0119-05, titled Verifying Accuracy, dated 08/2006. The CRA Project Team concludes that the revenue and check meters were calibrated and/or tested in accordance with the equipment specifications, which meet the requirement of Section 3.16.5 of the VCS Standard Version 3.3					
Reasoning for not Acceptance or Acceptance and Close Out:				Date: 30/05/2013	
Based on the finding raised and response provided by Project Proponent (based on the above evidences), the finding was closed out. The Project Proponent provided documentation regarding calibration or testing for the revenue and check meters. The CRA Project Team confirmed that the meters were calibrated or tested in accordance with equipment specifications. <u>CAR #3 is Closed Out</u>					
Acceptance and Close out by Lead Auditor:				Date: 30/05/2013	



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Date:	20/03/2013	Raised by:	Brent Boss/Valerie Chan		
Type:	CAR	Number:	#4	Reference:	1.1
Lead Auditor Comment:					
The CRA Project Team requests that the Project Proponent provide a copy of the executed Large Generator Interconnection Agreement. The CRA Project Team also requests that the Project Proponent provide an explanation regarding the electricity production and consumption agreement between Acciona and Southwest Power Pool.					
Project Proponent Response:				Date: 04/25/2013	
The original and amended LGIA are provided. As a merchant generator in SPP there is no explicitly executed agreement between Southwest Power Pool (SPP) and Dempsey Ridge. SPP operates an imbalance market and pays Dempsey Ridge for its production at the Locational Imbalance Price (LIP) calculated hourly for the project. The funds to pay Dempsey Ridge come from the aggregate pool of funds collected by SPP from other market participants that need to purchase energy. Therefore there is not a bilateral transaction that takes place. Instead SPP operates the aggregate imbalance market as a whole.					
Documentation Provided by Project Proponent:					
1810_Dempsey Ridge Wind Farm_LGIA_2009-05-26.pdf 20110329 Amended Fully Executed Dempsey Ridge LGIA SA 1810R1.pdf					
Information Verified by Lead Auditor:					
The CRA Project Team reviewed the documentation provided and confirmed the Large Generator Interconnection Agreement and amendment were provided. The Project Proponent response includes an explanation regarding electricity production and energy purchase transactions between Acciona and SPP, as requested.					
Reasoning for Acceptance and Close Out:				Date: 06/05/2013	
Based on the finding raised and response provided by Project Proponent (based on the above evidences), the finding was closed out given the documentation provided to the CRA Project Team was complete and consistent with the finding issued. CAR #4 is Closed Out.					
Acceptance and Close out by Lead Auditor:				Date: 06/05/2013	



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Date:	20/03/2013	Raised by:	Brent Boss/Valerie Chan		
Type:	CAR	Number:	#5	Reference:	1.6, 1.9
Lead Auditor Comment:					
The Project Proponent indicates that the project reached commercial operation on 27 April 2012, and the crediting period is from 1 January 2012 to 31 December 2012. The CRA Project Team request that the Project Proponent provide details regarding the data and parameters monitored from 1 January 2012 to 27 April 2012, the quality of the data, and provide supporting documentation.					
Project Proponent Response:				Date: 04/25/2013	
The data from 1/1/2012 to 4/27/2012 come from the same meters installed at the substation that have been discussed in CAR1, CAR2, and CAR3. The data has been provided in the previous CAR responses. Although the project did not achieve official commercial operation until 4/27/2012, the project was producing test power during commissioning prior to this date (between 1/1/2012 and 4/27/2012).					
Documentation Provided by Project Proponent:					
None					
Information Verified by Lead Auditor:					
The CRA Project Team reviewed the data provided in response to previous CARs and confirmed the data available for the period of 1 January 2012 to 27 April 2012 is from the same sources and of the same quality as the data from 27 April 2012 to 31 December 2012, the crediting period following the start of commercial operations.					
Reasoning for Acceptance and Close Out:				Date: 06/05/2013	
Based on the finding raised and response provided by Project Proponent (based on the above evidences), the finding was closed out. Evidence was utilized from several other findings (CAR1, CAR2, and CAR3) in relation to raw data provided. The data provided was found to be transparently traceable to the same source and thus the finding was closed. <u>CAR #5 is Closed Out.</u>					
Acceptance and Close out by Lead Auditor:				Date: 06/05/2013	



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Date:	20/03/2013	Raised by:	Brent Boss/Valerie Chan		
Type:	CAR	Number:	#6	Reference:	1.12
Lead Auditor Comment:					
In order to maintain transparency, the CRA Project Team request that the Project Proponent provide the Supervisory Control and Data Acquisition (SCADA) System reports regarding project activity availability and capacity for the following periods: • 1 January 2012 to 27 April 2012 • 1 January 2012 to 31 December 2012					
Project Proponent Response:				Date: 04/25/2013	
A SCADA system report is provided. Please note that this covers all of 2012 which included the commissioning phase of the wind farm prior to commercial operation as well as a 3 week outage in February (prior to commercial operation). These facts have negative effects on availability and capacity factor.					
Documentation Provided by Project Proponent:					
SCADA Report.pdf					
Information Verified by Lead Auditor:					
The CRA Project Team reviewed the documentation provided and confirmed that the SCADA report for 1 January 2012 to 31 December 2012 was provided. The SCADA report summarizes the production details for each Acciona Dempsey Ridge turbine, as well as the total overall production. A SCADA Report for the period of 1 January 2012 to 27 April 2012 was not provided; however, in accordance with CAR #5, the data available for the period prior to commercial operation on 27 April 2012 is the same as the data for the remainder of 2012.					
Reasoning for Acceptance and Close Out:				Date: 06/05/2013	
Based on the finding raised and response provided by Project Proponent (based on the above evidences), the finding was closed out. While the SCADA data was not entirely complete, the CRA Project Team was able to utilize additional credibility checks to ensure completeness of the data provided. <u>CAR #6 is Closed Out</u>					
Acceptance and Close out by Lead Auditor:				Date: 06/05/2013	



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Date:	20/03/2013	Raised by:	Brent Boss/Valerie Chan		
Type:	CAR	Number:	#7	Reference:	1.14
Lead Auditor Comment:					
The CRA Project Team requests that the Project Proponent provide the monthly invoices for the period of 1 January 2012 to 31 December 2012 that detail the net electricity supplied to the SPP grid; the electricity consumed by the project activity; and the electricity consumed by Dempsey Ridge project substation building operations. The CRA Project Team are requesting invoices including, but not limited to, AEP and Northfork invoices.					
Project Proponent Response:				Date: 04/25/2013	
SPP invoices Dempsey Ridge for electricity supplied to the grid on a weekly basis. Those weekly invoices have been provided. The project activity consumes power through the project substation and is billed for that consumption by Public Service Company of Oklahoma (AEP). The monthly invoices from them are provided. The project building operations are served by Northfork Electric Cooperative. The monthly invoices from Northfork are provided.					
Documentation Provided by Project Proponent:					
SPP.2012.Invoices.zip PSO Invoices 2012 - All but August and December.pdf PSO Invoice - December 2012.pdf PSO Invoice - August 2012.pdf Dempsey Northfork 2012 Invoices.pdf Dempsey Northfork 10.27-11.27.12 Invoice.pdf					



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Date:	20/03/2013	Raised by:	Brent Boss/Valerie Chan		
Type:	CAR	Number:	#7	Reference:	1.14
Information Verified by Lead Auditor:					
The CRA Project Team reviewed the documentation provided and confirmed that the Project Proponent provided monthly 2012 invoices for the electricity supplied to the SPP grid, the electricity consumed by the project substation and building operations. The file "Dempsey Northfork 10.27-11.27.12 Invoice.pdf" contained proof of payment of the November 2012 invoice; however, the documentation does not include the usage in kWh for the specified period. An AEP Public Service Company of Oklahoma invoice for 31 October 2012 for Meter 1107A404 was not provided. The CRA Project Team based the electricity usage on the final and initial meter readings from the 30 September 2012 and 30 November 2012 invoices, respectively. The SPP invoices provided detail only the amount of funds that SPP owes to Dempsey Ridge for electricity supplied to the grid. The CRA Project Team request supporting documentation that includes amount of supplied/consumed electricity in KWh. Do the "EIS_SUMMARY_1-2MPOG_DD-MM-YYY" files specified in the SPP weekly invoices include the requested detail?					
Reasoning for non-Acceptance:				Date: 13/05/2013	
Based on the finding raised and response provided by Project Proponent (based on the above evidences), the finding was not closed out. The CRA Project Team requests that the Project Proponent address the issues noted in the preceding section. <u>CAR#7 Remains Open.</u>					
Project Proponent Response:				Date: 20/05/2013	
Per Valerie Chan's instruction, Project Proponent provided daily SPP settlement files for 30 randomly selected dates.					
Documentation Provided by Project Proponent:					
2012 DEMPS Settlement Files.zip PSO Invoice - October 2012.pdf					



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Date:	20/03/2013		Raised by:	Brent Boss/Valerie Chan	
Type:	CAR	Number:	#7	Reference:	1.14
Information Verified by Lead Auditor:					
The CRA Project Team reviewed the documentation provided and confirmed that the AEP Public Service Company of Oklahoma invoice for 31 October 2012 for Meter 1107A404, and the SPP settlement files for 30 randomly selected dates was provided. The quantity of electricity detailed in the SPP settlement files matched the data from the AEP Main Meter, and therefore the data from 30 random dates met the 95/10 confidence /precision reliability specification of the "Standard for Sampling and Surveys for CDM Project Activities and Programme of Activities" Version 03.0.					
Reasoning for not Acceptance or Acceptance and Close Out:				Date: 30/05/2013	
Based on the finding raised and response provided by Project Proponent (based on the above evidences), the finding was closed out. The CRA Project Team confirmed that the Project Proponents provided clear and transparent documentation regarding net electricity supplied to the SPP grid; the electricity consumed by the project activity; and the electricity consumed by Dempsey Ridge project substation building operations.					
<u>CAR #7 is Closed Out</u>					
Acceptance and Close out by Lead Auditor:				Date: 30/05/2013	

Date:	20/03/2013	Raised by:	Brent Boss/Valerie Chan		
Type:	CAR	Number:	#8	Reference:	2.3
Lead Auditor Comment:					
During the Site Visit, the CRA Project Team was informed of the possibility of a Phase 2 to the Big Smile Wind Farm and Dempsey Ridge, and shown the possible locations of additional wind turbines on a map. In Section 2.3 of the Monitoring Report Version 1, the Project Proponent states "the Big Smile Wind Farm at Dempsey Ridge is not a grouped project."					
Paragraph 3.4.1 of the VCS Standard Version 3.3 states "Grouped projects are projects structured to allow the expansion of a project activity subsequent to project validation".					
The CRA Project Team request that the Project Proponent revise Monitoring Report Version 1 to provide details supporting the non-group project nature of the Big Smile Wind Farm at Dempsey Ridge.					



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Date:	20/03/2013	Raised by:	Brent Boss/Valerie Chan		
Type:	CAR	Number:	#8	Reference:	2.3
Project Proponent Response:				Date: 04/25/2013	
At one time Acciona contemplated building an expansion of the Dempsey Ridge project. However, no project company was set up for the expansion project and the land options are expiring beginning in late 2013. Acciona does not anticipate extending those land options or building an expansion project. Therefore, this is not a Grouped Project.					
Documentation Provided by Project Proponent:					
None					
Information Verified by Lead Auditor:					
The CRA Project Team reviewed the Project Proponent Response and confirmed the Big Smile Wind Farm at Dempsey Ridge is not a grouped project as expansion and installation of additional wind turbines is not planned.					
Reasoning for Acceptance and Close Out:				Date: 06/05/2013	
Based on the finding raised and response provided by Project Proponent (based on the above evidences), the finding was closed out. The CRA Project Team was provided with sufficient evidence that the Project Activity is not a grouped project.					
<u>CAR #8 is Closed Out.</u>					
Acceptance and Close out by Lead Auditor:				Date: 06/05/2013	

Date:	20/03/2013	Raised by:	Brent Boss/Valerie Chan		
Type:	CAR	Number:	#9	Reference:	3.1
Lead Auditor Comment:					
The CRA Project Team request that the Project Proponent revise Section 3.1 of the Monitoring Report Version 1 to specify the 'value applied' for each parameter available at validation.					
The CRA Project Team also request that the Project Proponent provide copies of the sources of data listed for the Section 3.1 parameters.					



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Date:	20/03/2013	Raised by:	Brent Boss/Valerie Chan		
Type:	CAR	Number:	#9	Reference:	3.1
Project Proponent Response:				Date: 04/25/2013	
The Monitoring Report does not have a Section 1.12. It is assumed that CRA meant Section 3.1. The Monitoring Report Section 3.1 has been updated to include 'values applied' as appropriate. As shown in the Monitoring Report, some Data Units have thousands of data points that went into the calculation so it is not practical to include a value applied for those Data Units.					
Documentation Provided by Project Proponent:					
None					
Information Verified by Lead Auditor:					
The CRA Project Team corrected the section references in the Lead Auditor Comment. The CRA Project Team reviewed Monitoring Report Version 2 and confirmed the Values Applied field in Section 3.1 was updated, where applicable.					
Reasoning for Acceptance and Close Out:				Date: 05/06/2013	
Based on the finding raised and response provided by Project Proponent (based on the above evidences), the finding was closed out. All necessary fields were updated and are now consistently applied throughout.					
<u>CAR #9 is Closed Out.</u>					
Acceptance and Close out by Lead Auditor:				Date: 05/06/2013	

Date:	20/03/2013	Raised by:	Brent Boss/Valerie Chan		
Type:	CAR	Number:	#10	Reference:	1.18
Lead Auditor Comment:					
During the Site Visit, the CRA Project Team observed a line item in documentation regarding Renewable Energy Credits (RECs), and was informed that no RECs were received.					
The CRA Project Team is requesting that the Project Proponent provide invoices related to the timeframe, and total number of RECs generated and sold during the Monitoring Period, if any.					
Project Proponent Response:				Date: 04/25/2013	
No RECs were generated during the Monitoring Period. Therefore no invoices exist.					



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Date:	20/03/2013	Raised by:	Brent Boss/Valerie Chan		
Type:	CAR	Number:	#10	Reference:	1.18
Documentation Provided by Project Proponent:					
None					
Information Verified by Lead Auditor:					
The CRA Project Team reviewed the Project Proponent response and confirmed that RECs were not generated, nor sold, during the Monitoring Period.					
Reasoning for Acceptance and Close Out:				Date: 05/06/2013	
Based on the finding raised and response provided by Project Proponent (based on the above evidences), the finding was closed out. No evidence of RECs being sold or otherwise traded for this Project Activity was found.					
<u>CAR #10 is Closed Out.</u>					
Acceptance and Close out by Lead Auditor:				Date: 05/06/2013	

Date:	20/03/2013	Raised by:	Brent Boss/Valerie Chan		
Type:	CL	Number:	#1	Reference:	General
Lead Auditor Comment:					
The CRA Project Team request that the Project Proponent provide documentation regarding Dempsey Ridge wind turbine downtimes (e.g., maintenance, substation outages, lightening strikes, etc.) and curtailment in 2012.					
Project Proponent Response:				Date: 04/25/2013	
The table below summarizes project downtime in 2012. Substation downtime is included under Preventative Maintenance.					
Category		Lost Production (MWh)			
Corrective Maintenance		34,846			
Economic and Reliability					
Curtailments		79,333			
Preventative Maintenance		7,227			
Total		121,407			



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Date:	20/03/2013	Raised by:	Brent Boss/Valerie Chan		
Type:	CL	Number:	#1	Reference:	General
Documentation Provided by Project Proponent:					
None					
Information Verified by Lead Auditor:					
The CRA Project Team reviewed the Project Proponent response and confirmed that amount of lost production, in units of MWh, due to turbine downtimes (corrective and preventative maintenance, and curtailments) was provided.					
Reasoning for Acceptance and Close Out:				Date: 06/05/2013	
Based on the finding raised and response provided by Project Proponent (based on the above evidences), the finding was closed out. The evidence provided by the Project Proponent in the response to this finding was concurrent with that reviewed by CRA during the Site Visit.					
<u>CL #1 was Closed Out</u>					
Acceptance and Close out by Lead Auditor:				Date: 06/05/2013	



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Date:	29/03/2013	Raised by:	Brent Boss/Valerie Chan		
Type:	CL	Number:	#2	Reference:	3.3
Lead Auditor Comment:					
In Section 3.3 of the Monitoring Report, the Project Proponent states, "to account for the revenue meter not being located at the [point of interconnection] POI, the revenue meter programming will include a corrective factor so that any energy losses between the project substation and POI are not included as energy delivered to the SPP. The CRA Project Team request that the Project Proponent provide documentation regarding the calculation and determination of the correction factor for energy losses. The CRA Project Team request that the Project Proponent provide further explanation on how the correction factor for energy losses has been incorporated into the revenue meter programming. The CRA Project Team also request that the Project Proponent detail if both revenue meters, and both check meters are programmed with a corrective factor for energy losses.					
Project Proponent Response:				Date: 04/25/2013	
The Monitoring Report does not have a Section 1.14. It is assumed CRA meant Section 3.3. The meter correction factor calculations are provided. The project has one revenue meter (as previously explained). The correction factor is programmed into the AEP Main meter and AEP Check meter but is not programmed into either of the Acciona check meters.					
Documentation Provided by Project Proponent:					
Meter Correction Factor Calculations.pdf					
Information Verified by Lead Auditor:					
The CRA Project Team reviewed the documentation provided and confirmed that the corrective factor for energy losses was based on actual project conditions. The CRA Project Team confirmed that the corrective factor was conservative.					



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Date:	29/03/2013		Raised by:	Brent Boss/Valerie Chan	
Type:	CL	Number:	#2	Reference:	3.3
Reasoning for Acceptance and Close Out:				Date: 10/05/2013	
Based on the finding raised and response provided by Project Proponent (based on the above evidences), explain why the finding was closed out. The CRA Project Team reviewed the Meter Correction Factor calculations and confirmed the values were based on actual project conditions and the meter correction factor is conservative.					
<u>CL #2 was Closed Out.</u>					
Acceptance and Close out by Lead Auditor:				Date: 10/05/2013	



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Date:	31/05/2013	Raised by:	Brent Boss/Valerie Chan		
Type:	FAR	Number:	#1	Reference:	Section 3.2 and LGIA
Lead Auditor Comment:					
Section 7.4 of the Interconnection Agreement dated 26 May 2009 states "if metering equipment fails to register, or if the measurement made by Metering Equipment during a test varies by more than two percent from the measurement made by the standard meter used in the test, Transmission Owner shall adjust the measurements by correcting all measurements for the period during which Metering Equipment was in error by using Interconnection Customer's check meters, if installed. As detailed in Section 3.2 of the Monitoring Report, the monitoring equipment is an ION 8600 meter, of accuracy class 0.2. The PowerLogic brochure for the ION8600 meter specifies the accuracy of energy measurements is ANSI C12.20 class 0.2. The technical specification for the revenue and check meters is 0.2 percent, which differs from the 2 percent allowable error specified in the Interconnection Agreement. The CRA Project Team notes that the Metering equipment test measurements has not varied by more than 0.2 percent from the measurement made by the standard meter used in the test. In order to maintain transparency, the CRA Project Team request that for future verifications, if the error identified during accuracy tests is greater than 0.2 percent (the accuracy of the meters), then the appropriate corrective actions must be taken irrespective of the Interconnection Agreement terms.					

Should you have any questions regarding any of the CARs, FARs, or CLs provided above please do not hesitate to contact the undersigned.

Yours truly,

CONESTOGA-ROVERS & ASSOCIATES LIMITED

Brent Boss, P. Eng.

VC/cb/4
Encl.

cc: Valerie Chan, CRA