



**Verified Carbon
Standard**

DEMPSEY RIDGE WIND PROJECT



Document Prepared by 3Degrees Group, Inc.

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1 PROJECT DETAILS

1.1 Summary Description of the Implementation Status of the Project

The Dempsey Ridge Wind Farm, LLC is located in Beckham and Roger Mills counties, Oklahoma, on over 7,500 acres of agricultural and grazing land. The project has a capacity of 132 megawatts (MW), consisting of 66 Gamesa 2.0 MW turbines.

The project reached commercial operation on April 27, 2012. The facility delivers power into the Southwest Power Pool (SPP) Regional Transmission Organization (RTO) with interconnection at American Electric Power (AEP) AEP West, Sweetwater 230 kV substation. SPP is one of the nine RTOs in North America. As an RTO under the Federal Energy Regulatory Commission (FERC), SPP operates the market for electricity in the Southwest United States, ensuring reliable supplies and competitive wholesale prices of power. SPP started its real-time spot market operations in early 2007. The real-time market allows power generators to sell power into a wholesale market where it is purchased by load serving entities.

The project is 100% owned by Dempsey Ridge Wind Farm, LLC and Dempsey Ridge Wind Farm, LLC is 100% owned by Acciona Wind Energy USA LLC.

PROJECT OVERVIEW	
Nameplate Capacity	132 MW
Location	Beckham and Roger Mills Counties, OK
Commercial Operation Date	April 27, 2012
Project Area under Lease	>7,500 acres under easement agreements
Project Interconnection	SPP: AEP West, Sweetwater 230 kV substation
Turbine Technology	Gamesa G90/2000-IEC II A 2.0 megawatt wind turbine
Total GHG Reductions During Monitoring Period	223,436 MT CO ₂ e

Table 1: Project Overview

The project has 100% land control for the entire project including all the turbines, substation, and transmission line right-of-way. The point of interconnection land control is currently contemplated under the Large Generator Interconnection Agreement; however a separate easement agreement for this land may be executed in the future. Wind leases are currently on twenty-five year terms with a fifteen year extension. The

transmission easements are perpetual. The project substation and operations and maintenance building are on property owned by Dempsey Ridge Wind Farm, LLC.

1.2 Sectoral Scope and Project Type

The project activity is considered under UNFCCC – CDM category “Zero emissions – grid-connected electricity generation from renewable sources” with capacity greater than 15 MW. As per the scope of the project activity enlisted in the ‘list of sectoral scopes and related approved baseline and monitoring methodologies’, the project activity may be principally categorized as – Category: 1; Energy industries (renewable/non-renewable sources).

Approved consolidated baseline methodology **ACM0002¹ “Consolidated baseline methodology for grid-connected electricity generation from renewable sources”**; Version 12.1.0.

1.3 Project Proponent

Organization name	Dempsey Ridge Wind Farm, LLC
Contact person	Helen Kyritsis
Title	Settlement Specialist (Power Marketing)
Address	55 East Monroe Street, Suite 1925 Chicago, IL 60603
Telephone	312-673-3000
Email	hkyritsis@acciona.com

1.4 Other Entities Involved in the Project

Organization name	3Degrees Group, Inc.
Role in the Project	Offset credit management services
Contact person	Nick Facciola
Title	Director, Carbon Projects
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Telephone	415-762-4727
Email	nick@3degrees.com

¹ <http://cdm.unfccc.int/methodologies/DB/C505BVV9P8VSNNV3LTK1BP3OR24Y5L>

1.5 Project Start Date

The Project Start Date is April 27, 2012.

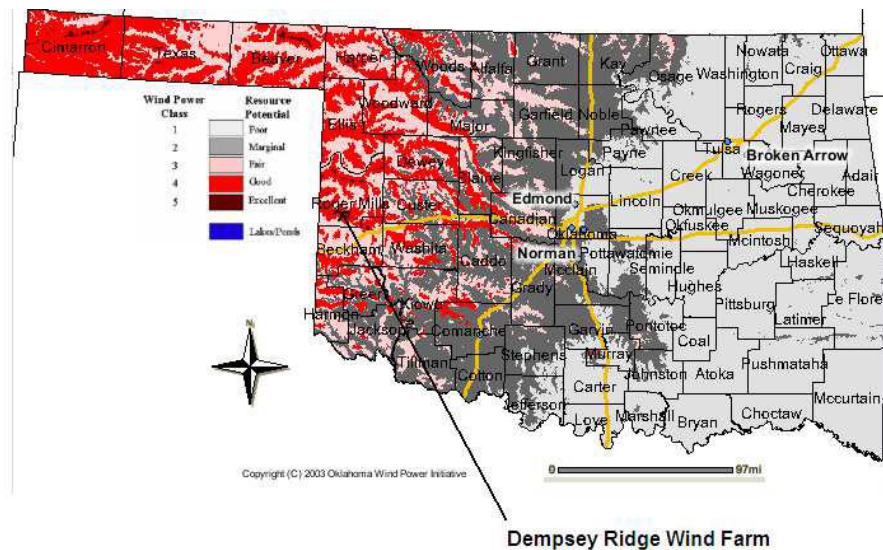
1.6 Project Crediting Period

The PDD stated the crediting period would start at the beginning of commercial delivery, projected as 12/15/2011. However, construction delays caused test power to begin production in January 2012, and commercial operation to begin in April 2012. Therefore, the crediting period began January 1, 2012 and will run for ten (10) years until December 31, 2021.

1.7 Project Location

The project is located about 10 miles southwest of Cheyenne and 30 miles northwest of Elk City in Western Oklahoma at grid coordinates: Latitude: 35.5 °N Longitude: -99.48 °W

The project is divided between two counties: All turbines, the substation, and approximately 9.9 miles of overhead transmission line are located in Roger Mills County and the remaining approximately 5.2 miles of overhead transmission line and the interconnect point are located in Beckham County. The project is accessible via Oklahoma State Highway 6 and U.S. Route 283.



1.8 Title and Reference of Methodology

The methodology ACM0002 version 12.1.0 will be used: "Consolidated baseline methodology for grid-connected electricity generation from renewable sources".

This methodology also refers to the latest approved versions of the following tools:

- Tool to calculate the emission factor for an electricity system (ver. 2.2.0);
- Tool for the demonstration and assessment of additionality (ver. 5.2.1);
- Combined tool to identify the baseline scenario and demonstrate additionality (ver. 3.0.0);
- Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion (ver. 2.0).

1.9 Participation under other GHG Programs

The project does not participate in any other GHG emissions reductions programs.

1.10 Other Forms of Credit

The project is not seeking or receiving other forms of environmental credit.

1.11 Sustainable Development

The project contributes to SDG 7: Affordable and Clean Energy. The Project delivers ~343,000 MWh of clean energy. In the absence of this Project, the energy would have been delivered by the grid mix, which would have resulted in more emissions.

2 SAFEGUARDS

2.1 No Net Harm

No permit or approval by the Oklahoma Department of Wildlife Conservation or the United States Fish and Wildlife Service is required to build the Dempsey Ridge wind project since the project is located on private property and no federal nexus have been identified. Dempsey Ridge Wind Farm, LLC coordinated with both agencies throughout the development process, sharing the results of the project's preconstruction avian and bat surveys.

Several voluntary measures have been incorporated into the Dempsey Ridge Wind Farm Project. The Project has been designed to avoid all permanent impacts to water features. Temporary impacts to water/wetland features have been limited to less than 0.01 acres, resulting from trenching of the underground collection system. These temporary impacts will be minimized and restored. The turbines used for the Project will have tubular monopole structures that will inhibit perching by avian species. The Project lighting plan will use the minimum lighting necessary to meet Federal Aviation Administration lighting requirements, therefore minimizing avian related light impacts. The Project layout has minimized the use of overhead structures to the extent feasible. The collection system is all underground; the overhead structures only occur from the project substation to the interconnect substation, where the power is stepped up and it becomes economically infeasible to bury the transmission line. The overhead line will be marked at intervals with bird diverters along its entire length.

2.2 Local Stakeholder Consultation

ACCIONA participated in an extensive county permitting and review process during the project development phase. The company also conducted biological assessments, bird and bat impact studies, and wetland delineation to address wildlife concerns. Public meetings allowed local communities the opportunity to review the wind farm maps and pose questions regarding the results of environmental impact studies. Following these meetings, estimated to have occurred in 2009 and 2010, ACCIONA secured the permits required to begin construction.

ACCIONA held a wind farm dedication and community open house on May 25, 2012 to offer tours of the wind farm to local stakeholders and project neighbors.

The Dempsey Ridge Scholarship Fund awards two \$5,000 scholarships each year to graduating students from local high schools.

The site manager / O&M maintain a contact log to record any question or complaint from local stakeholders and the action Acciona took to respond (O&M should be able to confirm / provide a copy of the log)

In addition to the contact log, the site manager maintains direct contact with local landowners, officials and stakeholders. Community members can contact the wind farm site and Acciona via phone and email.

During development, the company conducted biological assessments, bird and bat impact studies, and wetland delineation to address wildlife concerns. Acciona's operations team documents all stakeholder inquiries and the company's response – this information is communicated to upper management on a regular basis.

2.3 AFOLU-Specific Safeguards

This is not an AFOLU project.

3 IMPLEMENTATION STATUS

3.1 Implementation Status of the Project Activity

- The start of operations was marked by the start of commercial operations on April 27, 2012. However, the crediting period will begin on January 1, 2012 as the project produced test power during the commissioning phase of the project prior to the commercial operation date.
- The purpose is to report the emissions reductions generated by the 132 MW wind power project in Oklahoma, USA (VCS Project ID 780, with validation report dated December 19, 2011) during the period January 1, 2020 through December 31, 2020.
- According to ACM0002, the main emissions potentially giving rise to leakage in the context of electric sector projects are emissions arising due to activities such as power plant construction, fuel handling (extraction, processing, and transport), and land inundation (for hydroelectric projects). Project participants do not need to consider these emission sources as leakage in applying this methodology. Project activities using ACM0002 shall not claim any credit for the project on account of reducing these emissions below the level of the baseline scenario. Thus the leakage emissions are zero. There is no leakage to this project so $L_y=0$. Thus $ER_y = BE_y$. i.e. the emission reductions are the baseline emissions in this project.

3.2 Deviations

2.3.1 Methodology Deviations

No methodology deviations were applied to the project during this monitoring period.

2.3.2 Project Description Deviations

At the time the PDD was written the commercial operation date (COD) for the project was anticipated to be December 15, 2011. However, due to delays during the construction and commissioning of the project commercial operation was not reached until April 27, 2012. Before commissioning, the project began producing test power in January 2012, which is when the crediting period began, but did not begin to displace grid power with renewable power until the COD. Section 3.7 of the VCS Standard Version 4.1 states that the project start date is “the date on which the project began generating GHG emission reductions or removals.” The project start date, thus, is updated to April 27, 2012.

Additionally, the PDD specifies that the revenue meter owned by AEP would be tested every two years after the construction of the project. The project operators did not retain evidence that calibrations occurred on this frequency over the entire reporting period. The records indicate that both the primary and backup meters were tested in 2018, and not again until January 2021. However, the testing in 2021 showed that both meters were operating within acceptable accuracy. Furthermore, the manufacturer states that the digital meter is “tested for accuracy at the factory and remains accurate for the life of the meter.” Thus, taken with the acceptable as-found reading in 2021, it can be reasonably concluded that the meter was functioning properly from its last calibration in 2018 through the end of this reporting period.

3.3 Grouped Projects

The Dempsey Ridge Wind Farm, LLC is not a grouped project.

4 DATA AND PARAMETERS

4.1 Data and Parameters Available at Validation

Data / Parameter	EF _{grid,CM,y}
Data unit	tCO ₂ /MWh
Description	Combined margin CO ₂ emission factor for grid connected power generation in year y calculated using the latest version of the “Tool to calculate the emission factor for an electricity system”
Source of data	EIA Data (Appendix H of the Form EIA-1605 Instructions, released November 18, 2010 and Forms EIA-906/920/923 and EIA-860)
Value applied	0.647
Justification of choice of data or description of measurement methods and procedures applied	Once for each crediting period using the most recent three historical years for which data is available at the time of submission of the PD to the DOE for validation (ex ante option).
Purpose of Data	Calculation of baseline emissions
Comments	Provide any additional comments

Data / Parameter	FC_{i,y}
Data unit	MMBTU
Description	Amount of fossil fuel type <i>i</i> consumed by power plant in year <i>y</i>
Source of data	Forms EIA-906/920/923 and EIA-860.
Value applied	Around 1,800 data points are used for this Data Unit since fuel consumption for around 600 power plants are monitored over a three year period. It is not practical to list 1,800 data points here.
Justification of choice of data or description of measurement methods and procedures applied	Once for each crediting period using the most recent three historical years for which data is available at the time of submission of the PD to the DOE for validation (ex ante option).
Purpose of Data	Calculation of baseline emissions
Comments	

Data / Parameter	EFCO_{2,i,y}																																
Data unit	kgCO ₂ /MMBTU																																
Description	CO ₂ emission factor of fossil fuel type <i>i</i> in year <i>y</i>																																
Source of data	Appendix H of the Form EIA-1605 Instructions, released November 18, 2010																																
Value applied	<table border="1"> <thead> <tr> <th colspan="2">Carbon Emission Factor (kgCO₂/MMBTU)</th></tr> </thead> <tbody> <tr><td>Anthracite</td><td>103.69</td></tr> <tr><td>Bituminous Coal</td><td>93.28</td></tr> <tr><td>Sub-bituminous</td><td>97.17</td></tr> <tr><td>Lignite Coal</td><td>97.72</td></tr> <tr><td>Coking Coal</td><td>93.71</td></tr> <tr><td>Crude Oil</td><td>74.54</td></tr> <tr><td>Kerosene</td><td>72.31</td></tr> <tr><td>Gas / Diesel Oil</td><td>64.20</td></tr> <tr><td>Natural gas</td><td>53.06</td></tr> <tr><td>Propane</td><td>63.07</td></tr> <tr><td>Tire Derived Fuel</td><td>85.97</td></tr> <tr><td>Distillate Fuel Oil</td><td>73.15</td></tr> <tr><td>MSW</td><td>41.70</td></tr> <tr><td>LPG</td><td>62.28</td></tr> <tr><td>Other fuels</td><td>96.00</td></tr> </tbody> </table>	Carbon Emission Factor (kgCO ₂ /MMBTU)		Anthracite	103.69	Bituminous Coal	93.28	Sub-bituminous	97.17	Lignite Coal	97.72	Coking Coal	93.71	Crude Oil	74.54	Kerosene	72.31	Gas / Diesel Oil	64.20	Natural gas	53.06	Propane	63.07	Tire Derived Fuel	85.97	Distillate Fuel Oil	73.15	MSW	41.70	LPG	62.28	Other fuels	96.00
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Data / Parameter	EG_y
Data unit	MWh
Description	Net electricity generated by the project electricity system in year <i>y</i>
Source of data	Forms EIA-906/920/923 and EIA-860.
Value applied	214,717,205 MWh – 2009 220,288,792 MWh – 2008 217,317,487 MWh – 2007
Justification of choice of data or description of measurement methods and procedures applied	Once for each crediting period using the most recent three historical years for which data is available at the time of submission of the PD to the DOE for validation (ex ante option).
Purpose of Data	Calculation of baseline emissions
Comments	

Data / Parameter	EG_{m,y}
Data unit	MWh
Description	Net electricity generated by power plant <i>m</i> in year <i>y</i>
Source of data	Forms EIA-906/920/923 and EIA-860.
Value applied	Around 1,800 data points are used for this Data Unit since fuel consumption for around 600 power plants are monitored over a three year period. It is not practical to list 1,800 data points here.
Justification of choice of data or description of measurement methods and procedures applied	BM: Ex ante, following the guidance in Step 5 of the Tool to calculate the emission factor for an electricity system.
Purpose of Data	Calculation of baseline emissions
Comments	

4.2 Data and Parameters Monitored

Data / Parameter	EG_{facility,y}
Data unit	MWh/yr
Description	Quantity of net electricity generation supplied by the project plant to the grid in year <i>y</i>

Source of data	Project activity site, project substation
Description of measurement methods and procedures to be applied	Electricity meters installed at the project substation. The revenue meter programming will include a loss compensation factor (0.028%) so that any energy losses between the project substation and the Point of Interconnection are not included as energy delivered to the SPP.
Frequency of monitoring/recording	Continuous measurement and at least monthly recording. The metering equipment complies with the interconnection agreement specifications and requirements.
Value monitored	345,341.68 MWh in 2020
Monitoring equipment	Electricity will be monitored by an ION 8600 meter of accuracy class 0.2. The serial number is LT-1107A404- 01.
QA/QC procedures to be applied	The revenue meter will be calibrated during the construction phase of the Dempsey Ridge wind project and tested at least once every two years thereafter, per the LGIA. A back-up meter (“check meter”) will also be installed at the same location as the revenue meter. The Check meter will be maintained in accordance with good utility practice, per the LGIA. Both meters shall be examined and tested before installation; only acceptable meters will be installed.
Purpose of the data	Calculation of baseline emissions
Calculation method	Net electricity generation is calculated by generation minus consumption
Comments	The data will be archived electronically. Archived data will be kept during the crediting period and at least for two years later.

4.3 Monitoring Plan

According to approved monitoring methodology ACM0002 Version 12.1, Sectoral Scope 1, “Consolidated Monitoring Methodology for Zero Emissions grid-connected electricity generation sources” is proposed to be used to monitor the emission reductions.

The monitoring plan will include data monitoring, regular equipment maintenance and calibrations, and data management/archiving. Overall responsibility for the accurate measurement and archival of generation information is managed by Acciona Energy USA Global LLC, though some contractors are employed to complete some of the work.

Monitoring Plan: Electricity generated by the wind project will be measured by the AEP-owned revenue meter located at the project substation. The Point of Interconnection (POI) as defined by the Large Generator Interconnection Agreement is at the AEP Sweetwater Substation. To account for the revenue meter not being

located at the 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. Another revenue meter owned by Dempsey Ridge is also located at the project substation for reconciliation purposes. Two back-up meters (“check meters”) will also be installed at the same location as the revenue meters, owned and operated by AEP and Dempsey Ridge, respectively. During periods where the project consumes electricity from the SPP grid, the consumption will also be recorded by the revenue meter.

AEP will aggregate and record the metered electricity delivered/consumed by the plant. Data from the revenue meter will be sent via remote telemetry to AEP as well as to Dempsey Ridge. AEP will collate the data daily and send it to the Southwest Power Pool on a daily basis for settlement and invoice creation. Invoices will be generated by Southwest Power Pool and sent to Dempsey Ridge on a weekly basis. Dempsey Ridge uses their view into the SCADA system to verify the invoices from SPP are correct. If discrepancies are found, a dispute is raised with SPP and a satisfactory conclusion is reached according to SPP tariff procedures. The revenue meter alone is adequate for the purposes of monitoring, recording, and billing. However, if the revenue meter fails to register, then AEP will adjust the measurements with data recorded by the check meter.

The primary revenue meter is owned and maintained by AEP. It will be calibrated during the construction phase of the Dempsey Ridge wind project and tested at least once every two years thereafter, per the LGIA. The other revenue meter is owned and operated by Dempsey Ridge and will be tested at least once every five years. One check meter is owned and maintained by AEP while the second is owned and maintained by Dempsey Ridge. All meters will be maintained according to good utility practice.

Data storage: Electricity generation data will be stored in electronic format during the life of the project and for a minimum of two years after the end of the crediting period or the last issuance, whichever is later.

Organizational structure: The following management structure is implemented for monitoring of the project activity.

Role	Responsibility
Director, Operations & Maintenance	Responsible for the overall operation of the wind project
Settlement Specialist	Responsible for monitoring data supplied by AEP to SPP
Settlement Specialist	Responsible for checking accuracy of invoices generated by SPP
Accounts Payable Supervisor	Responsible for ensuring proper payment of invoices by SPP
American Electric Power	Responsible for ensuring proper data recording and calibration of relevant meters as per the defined frequency.

ISO 9001, ISO 14001 and OHSAS 18001 certification are global initiatives for ACCIONA. The certifications have resulted in well-defined operating processes that are improving the quality of work we produce as a company while we continue to emphasize the importance of worker health and safety and environmental responsibility in our daily operations.

ACCIONA Energy USA Global LLC is certified under three different international standards that define a minimal set of requirements for a company's business operating system. Specifically, ISO 9001 provides requirements for a Quality Management System that focuses on operations, customer satisfaction, and continual improvement. ISO 14001 provides requirements for an Environmental Management System that focuses the company on pollution prevention and reducing its environmental footprint. OHSAS 18001 provides requirements for an Occupational Health and Safety Management System that continually focuses the company on injury prevention & worker health and safety.

5 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

5.1 Baseline Emissions

The baseline emissions (BE_y in tCO_2) are the product of the baseline emissions factor (EF_y in tCO_2/MWh) times the electricity supplied by the project activity to the grid (EG_y in MWh).

$$BE_y = EF_y * EG_y$$

Auxiliary power supply will be required for operation of equipment like hydraulic motors and yaw systems for which active power will be drawn from the grid. The metering of the drawn power will be done by the same import-export meter.

Net electricity supply to the grid (EG_y) is the total electricity produced by the project activity (TEG_y) minus the electricity consumed from the grid.

Baseline emission factor (EF_y) has been calculated ex-ante and will not be updated during the crediting period of ten years. As per the PD registered, $EF_y = 0.647 tCO_2/MWh$.

Net electricity supplied to the grid by the project (EG_y) is measured by the meters.

The meter reading of the Meter of Record with the related invoices and payment details during the monitoring period were provided to the verifier.

5.2 Project Emissions

According to methodology ACM0002 v.12.1.0, project emissions are calculated as follows:

$$PE_y = PE_{FF,y} + PE_{GP,y} + PE_{HP,y}$$

Where:

- PE_y = Project emissions in year y (tCO_2e/yr)
- $PE_{FF,y}$ = Project emissions from fossil fuel consumption in year y (tCO_2/yr)
- $PE_{GP,y}$ = Project emissions from the operation of geothermal power plants due to the release of non-condensable gases in year y (tCO_2e/yr)

$$PE_{HP,y} = \text{Project emissions from water reservoirs of hydro power plants in year } y \text{ (tCO}_2\text{e/yr)}$$

This project activity is a grid-connected wind power generation. Hence there is no project emission from the project activity, and $PE_y = 0$.

5.3 Leakage

As per methodology ACM0002 approved from 25 May 2009 (EB 47, Annex 7): No leakage emissions are considered. The main emissions potentially giving rise to leakage in the context of electric sector projects are emissions arising due to activities such as power plant construction and upstream emissions from fossil fuel use. These emissions sources are neglected.

5.4 Net GHG Emission Reductions and Removals

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
2020	223,436	0	0	223,436
Total	223,436	0	0	223,436