DEMPSEY RIDGE WIND PROJECT

Project Title	Dempsey Ridge Wind Farm LLC
Version	Version nr. 3
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1 PROJECT DETAILS

1.1 Summary Description of the Project

The Dempsey Ridge wind project 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 is expected to reach commercial operation on December 15, 2011. Initiation of test energy will begin some weeks prior to commercial operation. The facility will deliver power into the Southwest Power Pool (SPP) Regional Transmission Organization (RTO) with interconnection with AEP West[1]. 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 Dempsey Ridge wind project's Net Capacity Factor (NCF) is currently projected to be 41.8% (at the project substation), based upon long term on-site data acquisition which commenced in October 2006. The NCF for a wind project is the actual energy output for the year divided by the energy output if the machine operated at its rated power output for every hour of the year.

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	December 15, 2011
Capacity Factor / MWh per year	41.8% / 483,342 MWh/year (at the project substation)
Wind Study	DNV Renewables (USA) Inc.
Project Area under Lease	>7,500 acres under easement agreements
Project Interconnection	SPP: AEP West, Sweetwater 230 kV substation

[1] Initially the project will connect to the Sweetwater-Elk City 230kV line until certain Network Upgrades are completed. Once the Network Upgrades are completed (expected Q1 or Q2 2012) the project will connect to the AEP West Sweetwater 230kV substation for the duration of the project life.

Turbine Technology	Gamesa G90/2000-IEC II A 2.0 megawatt wind turbine

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 **ACM0002[2] "Consolidated baseline methodology for grid connected electricity generation from renewable sources"**; Version 12.1.0.

1.3 Project Proponent

Dempsey Ridge Wind Farm, LLC is the Project Proponent

PROJECT PROPONENT CONTACT	
Organization:	Dempsey Ridge Wind Farm, LLC
Street/P.O.Box:	333 West Wacker Dr.
Building:	Suite 1500
City:	Chicago
State/Region:	IL
Postfix/ZIP:	60606
Country:	United States of America
Telephone:	(312) 673-3000
FAX:	(312) 673-3001
E-Mail:	cvickery@acciona-na.com
Title:	Power Originator
Salutation:	Mr.
Last Name:	Vickery
First Name:	Christopher
Department:	Power Marketing
Direct Telephone	(312) 673-3082
FAX:	(312) 673-3001
Personal E-Mail:	cvickery@acciona-na.com

Table 2: Project Proponent Contact Information

[2] http://cdm.unfccc.int/methodologies/DB/C505BVV9P8VSNNV3LTK1BP3OR24Y5L

1.4 Other Entities Involved in the Project

There are no other entities involved in the Project.

1.5 Project Start Date

The Project Start Date is the turbine supply agreement dated December 10, 2010.

1.6 Project Crediting Period

The starting date of the first crediting period for the project will be the date the wind farm begins commercial operation, which date is expected to be December 15, 2011. The expected operational lifetime of the project activity is 20 years and the project proponent expects to go for a renewable crediting period of 10 years. So, the first crediting period will go from December 15, 2011 to December 14, 2021; the second crediting period will go from December 15, 2021 to December 14, 2031.

1.7 Project Scale and Estimated GHG Emission Reductions or Removals

Project	X
Mega-project	

Years	Estimated GHG emission reductions or removals (tCO2e)
Year 1	312,658
Year 2	312,658
Year 3	312,658
Year 4	312,658
Year 5	312,658
Year 6	312,658
Year 7	312,658
Year 8	312,658
Year 9	312,658
Year 10	312,658
Total estimated ERs	3,126,586
Total number of crediting years	10
Average annual ERs	312,658

Table 3: Estimated GHG Emission Reductions

1.8 Description of the Project Activity

The Dempsey Ridge project activity is a zero emissions, grid-connected, electricity generation source. Wind energy is a clean energy source, and operations do not produce carbon dioxide, sulfur dioxide, mercury, particulates, or any other type of air pollution, as do conventional fossil fuel power sources. The electricity generated by the Dempsey project will displace electricity generated from existing fossil fuel plants in the Southwest Power Pool.

The Dempsey Ridge wind project will consist of 66 Gamesa G90 turbines. Each turbine will have a hub height of 78 meters (m) and a rotor diameter of 90 m, for a total height of approximately 123 m. The turbines will be accessed by public and constructed project roads and interconnected by communication and electric power collection cable within the wind farm.

Key characteristics of the turbines are described in the following table.

TURBINE CHARACTERISTICS	
Nameplate Capacity	2.0 MW
Design Life	Minimum of 20 years
IEC Design	IIA/IIIA
Drive Train	Main axis supported on two spherical bearings reducing the possibilities of breakdown as well as providing a longer service life
Optimal Reliability and Performance	Improved and increased mechanical capacity in yaw system, framework, main axis, and blade bearings guaranteeing maximum reliability and allowing larger rotors to increase power generation
Controlled Brake System	Joint action of aerodynamic brakes and mechanical emergency brake with a hydraulic control system allows controlled braking preventing damage due to excessive transmission load
Dynamic VAR Control System	0.95 lagging to a 0.95 leading power factor throughout the power range
FAA Lighting	Standard FAA Lighting

Table 4: Turbine Characteristics

Each wind turbine will be interconnected in series ("daisy chained") with other turbines. The collection system (34.5 kV electrical lines) will run underground to the project substation. Here the voltage will be increased to 230 kV and then sent via an overhead transmission line to the interconnection substation at the Point of Interconnect (POI) at the AEP West 230 kV Sweetwater substation.

The technical specifications of the project are as follows:

TECHNICAL INFORMATION	
Turbine Type	G90 2.0MW 60Hz
Number of Turbines	66
Nameplate Capacity	132 MW
Rotor Type	90 meter

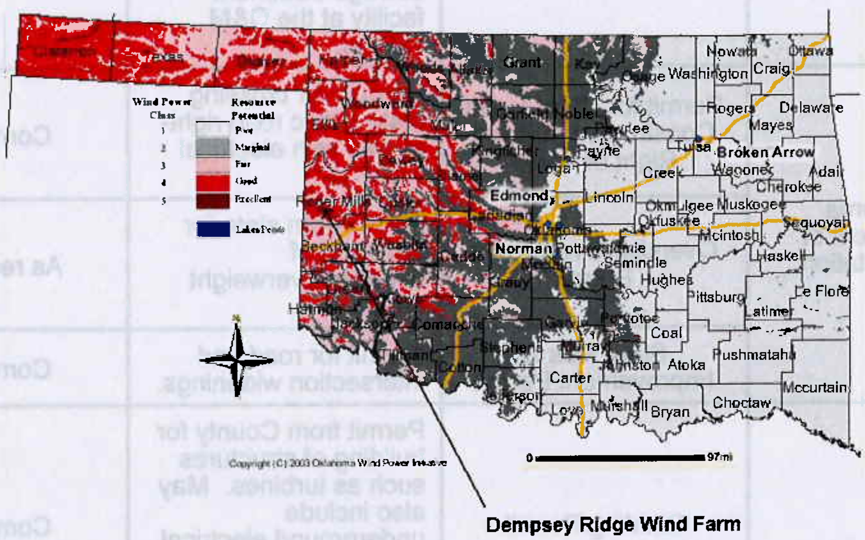
Table 5: Technical Information

The expected operational lifetime of the project is 20 years from the commercial operation date.

1.9 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.



1.10 Conditions Prior to Project Initiation

The project area and adjacent properties are located in a traditionally rural region where agriculture and mineral resource extraction are the principal economic pursuits. The project property consists of separate leased parcels of land totaling an area of approximately 11.7 square miles. Agricultural lands surround the project property in all directions and are dominated by livestock pasture with a few surface water bodies in the adjacent area. The land is owned and will remain under the ownership of several parties for agricultural use. Socio-economic activity in the project area will remain unchanged upon completion of the wind farm construction and throughout the operational life of the farm.

1.11 Compliance with Laws, Statutes and Other Regulatory Frameworks

The Dempsey Ridge wind project is in compliance with all applicable laws and regulations. The State of Oklahoma does not have state-wide wind farm permitting requirements, leaving permitting up to individual counties. The table below provides a description and status of applicable regulatory approvals.

PERMITTING STATUS			
Agency	**Type of Approval**	**Description**	**Status**
Oklahoma Department of Environmental Quality	NPDES Storm Water General Permit for Construction Activities	OKR10 NOI – Construction General Permit Notice of Intent	Complete
	Operation Permit for Mobile Concrete Batch Plant	Approval for the operation of the mobile concrete batch plant	Complete
	On-site sewage treatment system approval	Inspection/approval for installations of on-site sewage treatment systems (to be completed upon installation of the sewage treatment facility at the O&M facility).	Future
Oklahoma Department of Transportation	Permit for Utility Lines Constructed in Road Right of Ways	Permits for crossing state public road right-of-way with electrical lines.	Complete
	Oversize/Overweight Permit	Permit from state for transport of oversize/overweight cargo.	As required
	State Roads Improvement Permit	Permit for road and intersection widenings.	Complete
Roger Mills County	Building Permit	Permit from County for building of structures such as turbines. May also include underground electrical, overhead electrical, substation, and O&M building.	Complete
	Permit for Utility Lines Crossing Road Right of Ways	Permit for crossing county public road right-of-way with underground electrical lines.	Complete
	Permit for Utility Lines Constructed over Road Right of Ways	Permit for crossing county public road right-of-way with overhead electrical lines.	Complete

	Driveway/Access Right of Way Permits	Right of way permit for access roads and/or driveways that connect to County roads.	Complete
Beckham County	Permit for Utility Lines Constructed in Road Right of Ways	Permit for crossing county public road right-of-way with electrical lines.	Complete
Environmental Protection Agency (EPA)	Phase I Environmental Site Assessment Report	None Required	Complete
Oklahoma Department of Wildlife Conservation/United States Fish and Wildlife Service	Environmental Studies: Avian, Cultural Resources, and Wetlands	None Required	Field studies have been completed and draft reports have been issued for all studies
Federal Aviation Administration (FAA)	Notification of No Hazard to Aviation		Complete
U.S. Army Corp. of Engineers			Not Required

Table 6: Dempsey Ridge Permitting Matrix

1.12 Ownership and Other Programs

1.12.1 Proof of Title

As per the U.S. Department of Energy Information Agency, ownership of the Dempsey Ridge wind project was established with the filing of the EIA form 860. As per the Federal Energy Administration Act of 1974 (Public Law 93-275), this report is mandatory for all grid connected electricity providers.

1.12.2 Emissions Trading Programs and Other Binding Limits

Not applicable. There is no emissions trading program or binding limits on GHG emissions in Oklahoma.

1.12.3 Participation under Other GHG Programs

Dempsey Ridge wind project is not seeking registration under any other GHG programs at the moment. If Dempsey Ridge wind project decides in the future to seek registration under any other GHG programs the project owner will take the necessary steps to assure that VCUs are not claimed for electricity generation to avoid “double-counting”.

1.12.4 Other Forms of Environmental Credit

As a generation source of GHG-free renewable energy, the Dempsey Ridge wind project is eligible to receive voluntary Renewable Energy Credits (RECs). Although eligible, the Dempsey Ridge wind project does not plan to generate RECs upon generation commencement. Should this change, the project owner will take the necessary steps to assure that VCUs and RECs are not claimed for electricity generation.

The project owner embraces its responsibility to protect the integrity of the environmental programs to which it applies and understands that it cannot generate carbon credits and RECs simultaneously as this is considered "double-counting".

1.12.5 Projects Rejected by Other GHG Programs

The Dempsey Ridge wind project has neither applied for nor been denied acceptance under any other GHG program.

1.13 Additional Information Relevant to the Project

Eligibility Criteria

Not applicable.

Leakage Management

Not applicable.

Commercially Sensitive Information

Section 2.5, Sub-Step 2c (Dempsey Ridge Returns)
Section 2.5, Sub-Step 2d (Dempsey Ridge Returns)
Section 2.5, Sub-Step 4b (Dempsey Ridge Interconnection Cost)

Further Information

All relevant information for the eligibility of the project activity and the quantification of emissions has been provided within this project description. No additional information is necessary for the determination of project eligibility or emission reduction quantification.

2 APPLICATION OF METHODOLOGY

2.1 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).

2.2 Applicability of Methodology

The Project activity is a wind based renewable energy source, zero emission power project connected to the Southwest Power Pool (SPP) Regional Transmission Organization (RTO) with interconnection at the AEP West, 230 kV Sweetwater Substation. The Project will displace fossil fuel based electricity generation that would have otherwise been provided by the operation and expansion of the fossil fuel based power plants in the SPP regional electricity grid.

ACM0002 – Applicability Conditions	Project Applicability
The project activity is the installation, capacity addition, retrofit or replacement of a power plant/unit of one of the following types: hydro power plant/unit (either with a run-of-river reservoir or an accumulation reservoir), wind power plant/unit, geothermal power plant/unit, wave power plant/unit or tidal power plant/unit	The project activity is an installation of new wind power project; hence the project activity meets the applicability criterion.
In the case of capacity additions, retrofits or replacements (except for wind, solar, wave or tidal power capacity addition projects which use Option 2: on page 11 to calculate the parameter $EG_{PJ\ y}$): the existing plant started commercial operation prior to the start of a minimum historical reference period of five years, used for the calculation of baseline emissions and defined in the baseline emission section, and no capacity expansion or retrofit of the plant has been undertaken between the start of this minimum historical reference period and the implementation of the project activity.	The project activity is a newly grid connected wind power project. Hence this criterion is not applicable.
In case of hydro power plants, one of the following conditions must apply: • *The project activity is implemented in an existing reservoir, with no change in the volume of reservoir, or* • *The project activity is implemented in an existing reservoir, where the volume of reservoir is increased and the power density of the project activity, as per definitions given in the Project Emissions section, is greater than 4 W/m^2; or* • *The project activity results in new reservoirs and the power density of the power plant, as per definitions given in the Project Emissions section, is greater than 4 W/m^2.*	The project activity is a new wind power plant; hence these conditions are not applicable.
The methodology is not applicable to the following: • *Project activities that involve switching from fossil fuels to renewable energy sources at the site of the project activity, since in this case the baseline may be the continued use of fossil fuels at the site;* • *Biomass fired power plants;* • *Hydro power plants that result in new reservoirs or in the increase in existing reservoirs where the power density of the power plant is less than 4 W/m^2.*	Project activity does not involve: • Switching from fossil fuels to renewable energy sources at the site of the project activity. • Biomass fired plants. • Construction of new reservoir or increase in an existing reservoir.
In the case of retrofits, replacements, or capacity additions, this methodology is only applicable if the most plausible baseline scenario, as a result of the identification of baseline scenario, is the continuation of the current situation, i.e to use the power generation equipment that was already in	This project activity is a newly grid connected wind power project.

use prior to the implementation of the project activity and undertaking business as usual maintenance	

Table 7: ACM0002 Applicability Matrix – Dempsey Ridge

The project generates and exports renewable electricity to the grid system, hence the choice of project type and category is justified.

2.3 The project activity is applicable as it fits in one of the types of power plants included in the methodology.

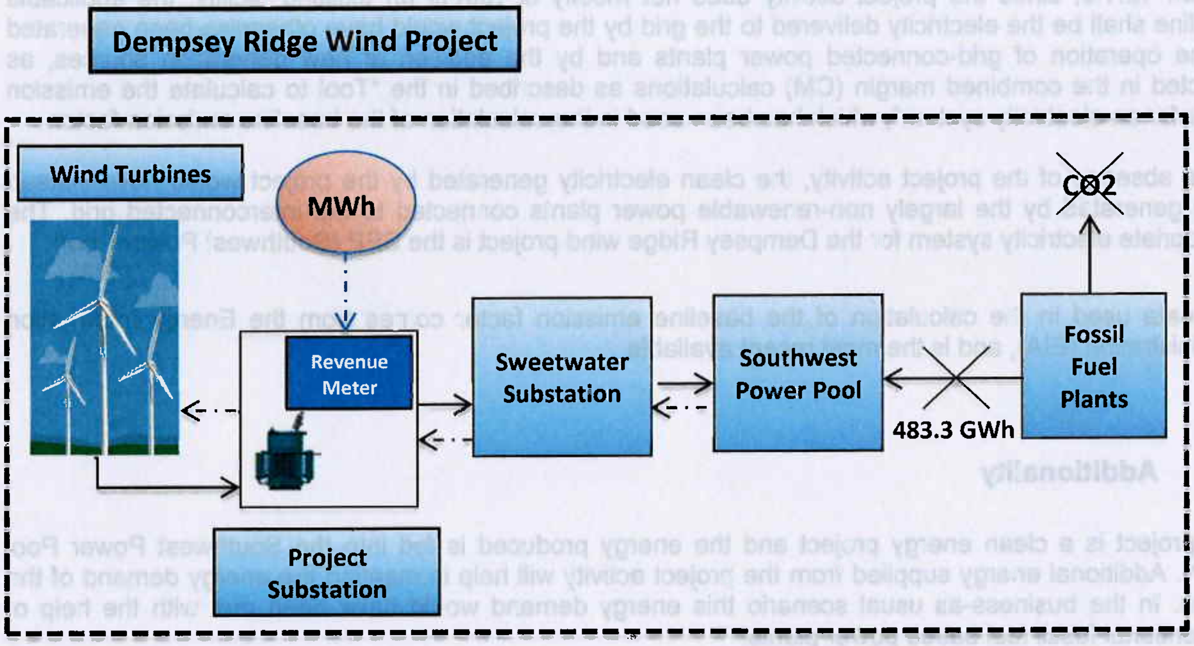
The greenhouse gases included in the project boundary according to the methodology ACM0002 v. 12.1.0 are shown in the table below:

Source		Gas	Included?	Justification/Explanation
Baseline	CO_2 emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity.	CO_2	Yes	Main emission source.
		CH_4	No	Minor emission source.
		N_2O	No	Minor emission source.
Project Activity	For geothermal power plants, fugitive emissions of CH_4 and CO_2 from noncondensable gases contained in geothermal steam.	CO_2	No	Not applicable to the proposed project activity
		CH_4	No	Not applicable to the proposed project activity
		N_2O	No	Not applicable to the proposed project activity
	CO_2 emissions from combustion of fossil fuels for electricity generation in solar thermal power plants and geothermal power plants.	CO_2	No	Not applicable to the proposed project activity
		CH_4	No	Not applicable to the proposed project activity
		N_2O	No	Not applicable to the proposed project activity
	For hydro power plants, emissions of CH_4 from the reservoir	CO_2	No	Not applicable to the proposed project activity
		CH_4	No	Not applicable to the proposed project activity
		N_2O	No	Not applicable to the proposed project activity

Table 8: Project Boundary Greenhouse Gas Sources

Baseline emissions are from fossil fuel power plants interconnected to the Southwest Power Pool; according to the methodology ACM0002 v. 12.1.0 the project activity does not consider source of emissions.

The flow diagram for the project is shown in the figure below:



MWh = Electricity production and consumption measured at this point

<- - = Consumption

——> = Production

The electricity generation of the project is measured at the project substation. The point of interconnection with the SPP grid is the Sweetwater Substation. In order to avoid counting MWh that do not reach the SPP grid, the meter at the project substation will be programmed to correct for any electricity losses between the project substation and Sweetwater substation (loss compensation). The loss compensation factor (0.028%) has been included in the calculation of Estimated GHG Emission Reductions.

The methodology ACM0002 Ver. 12.1.0 mentions the following statement about the project boundary: *'The spatial extent of the project boundary includes the project power plant and all power plants connected physically to the electricity system that the CDM project power plant is connected to'*. For that reason in the figure the project boundary includes the power plant and the Southwest Power Pool.

2.4 Baseline Scenario

As this project installs a new grid connected renewable power plant, the baseline scenario is defined according to the methodology ACM0002, version 12.1.0.

Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid connected power plants and by the addition of new generation sources, as reflected in *the combined margin (CM) calculations described in the "Tool to calculate the emission factor for an electricity system"*

The most plausible baseline scenario identified for the project activity is continuation of current practice i.e. operation of grid connected power sources. As per the approved consolidated methodology ACM0002 version 12.1.0, since the project activity does not modify or retrofit an existing facility, the applicable baseline shall be the electricity delivered to the grid by the project would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations as described in the "Tool to calculate the emission factor for an electricity system", which has been used in the calculation of the baseline emission factor.

In the absence of the project activity, the clean electricity generated by the project would have instead been generated by the largely non-renewable power plants connected to the interconnected grid. The appropriate electricity system for the Dempsey Ridge wind project is the SPP (Southwest Power Pool).

The data used in the calculation of the baseline emission factor comes from the Energy Information Administration (EIA), and is the most recent available.

2.5 Additionality

The project is a clean energy project and the energy produced is fed into the Southwest Power Pool (SPP). Additional energy supplied from the project activity will help in meeting the energy demand of the region. In the business-as usual scenario this energy demand would have been met with the help of conventional fossil fuel based power plants.

As per the selected methodology ACM0002, the project developer is required to establish that the GHG emission reductions due to the project activity are additional to those that would have occurred in the absence of the current project activity as per the "Tool for the demonstration and assessment of additionality", version 05.2.1, by employing following steps:

Step 1: Identification of alternatives to the project activity
Step 2: Investment analysis (OR)
Step 3: Barrier analysis
Step 4: Common Practice analysis

Project proponent establishes additionality on the ground of Steps 1, 2 & 4.

Step 1. Identification of alternatives to the project activity consistent with current laws and regulations
In sub-step 1a and 1b, it is required to identify realistic and credible alternative(s) that were available to the project participants or similar project developers that provide output or services comparable with the project activity. These alternatives are required to be in compliance with all applicable legal and regulatory requirements.

Sub-step 1a: Define alternatives to the project activity
The following alternatives are considered:

<u>Alternative 1</u>. <u>The proposed project activity undertaken without being registered as a VCS project activity</u>. However, as shown in the investment analysis (step 2), the proposed project with only energy sales income and without VCU income, is not financially attractive.

Alternative 2. Other realistic and credible alternative scenario to the proposed VCS project activity scenario that deliver services with comparable quality, properties and application areas. Acciona's business objective is to generate renewable energy, the implementation of a similar scale renewable energy project, such as solar power, is a realistic and credible alternative. However, compared to wind energy, a solar power project would be much more expensive[3] relative to the solar resource available in Oklahoma[4] and therefore, the project would not be financially attractive for potential investors.

Alternative 3. Continuation of the current situation with no project activity. In this alternative, project activity is not implemented resulting in the continued current grid mix of the SPP i.e. the equivalent amount of energy would have been produced by the project grid electricity system through currently running power plants and by new capacity additions. Equivalent amount of carbon dioxide would be generated at the thermal power generation end predominantly by fossil fuel based power plants.

Outcome of step 1a: Continuation of present scenario of grid-supplied power would be a conservative approach to baseline establishment.

Sub-step 1b: Consistency with mandatory laws and regulations
Based on the assessment of regulatory requirements, each of the identified alternatives (1, 2, and 3) is equivalent. There are currently no regulatory requirements that compel the implementation of either Alternative 1 or Alternative 2 (such as a binding state Renewable Portfolio Standard) in Oklahoma. Given continued production, electrical generation activities under Alternative 3 are reasonably assumed to be in compliance with relevant laws and regulations.

Outcome of Step 1b: The alternative scenario, as per Step 1a, to project activity is in compliance with mandatory legislation and regulations.

Step2: Investment Analysis
Determine whether the proposed project activity is economically or financially less attractive than other alternatives without the revenue from the sale of verified emission reductions (VERs). To conduct the investment analysis, use the following sub-steps:

Sub-step 2a: Determine appropriate analysis method
Since the project activity shall generate financial income from sale of power to the grid, we shall rule out Option I (simple cost analysis) and apply either Option II (Investment comparison analysis) or Option III (Benchmark analysis).

Sub-step 2b: Option III - Apply Benchmark analysis
According to the paragraph 19 of the Guidance on the Assessment of the Investment Analysis, version 04, Annex 13, EB 61, *"if the alternative to the project activity is the supply of electricity from a grid this is not to be considered an investment and a benchmark approach is considered appropriate".*

In line with the guidance, Benchmark Approach is considered the appropriate benchmark for this project activity.

The purpose of the investment analysis is to determine whether the proposed project activity is financially attractive or not without the revenue from the sale of verified emission reductions (VERs). This is done by comparing the financial returns from the project to that of a suitable benchmark and if the returns of the project activity are less than the benchmark, it can be said that the project is not a financially viable option.

[3] See IEA "Energy Technology Perspectives 2010" IEA for guidance on renewable technology costs. The range for Concentrated Solar Power investment costs is 4,500-7,000 US$/kW (page 134).

[4] http://www.nrel.gov/gis/solar.html

Selection of financial indicator:

IRR is a widely accepted financial metric used by many corporations and financial institutions for investment decision-making and is a long established benchmark for investment decisions in the power sector. Since tax incentives play a role in the valuation of the IRR of a renewable energy project in the US, a post-tax project IRR is the appropriate financial indicator for carrying out the investment analysis.

According to paragraph 12 of the Guidance on the Assessment of the Investment Analysis, Version 04, Annex 13, EB 61, *"in cases where a benchmark approach is used the applied benchmark shall be appropriate to the type of IRR calculated. Local Commercial lending rates or weighted average cost of capital (WACC) are the appropriate benchmarks for a project IRR"*.

In line with the guidance, the Weighted Average Cost of Capital has been chosen as the appropriate benchmark for this project activity. A post-tax WACC has been chosen since the appropriate financial indicator used is a post-tax project IRR.

WACC has been calculated as the weighted average cost of equity and cost of debt using the following formula and Ventyx Capital Structure Characteristics, Spring 2010[5].

$$WACC = (E/I)*Re + D/I * Rb * (1-Tc)$$

Where

Re is the cost of equity
Rb is the cost of debt
I is the Total Investment
E is the Equity component of investment
D is the Debt component of investment
Tc is the marginal tax rate (blended state and federal income tax rate)

Outcome of Step 2b: The post-tax WACC for this project activity is 8-10% calculated from the above mentioned formulae and this is considered as the benchmark for the post-tax project IRR.

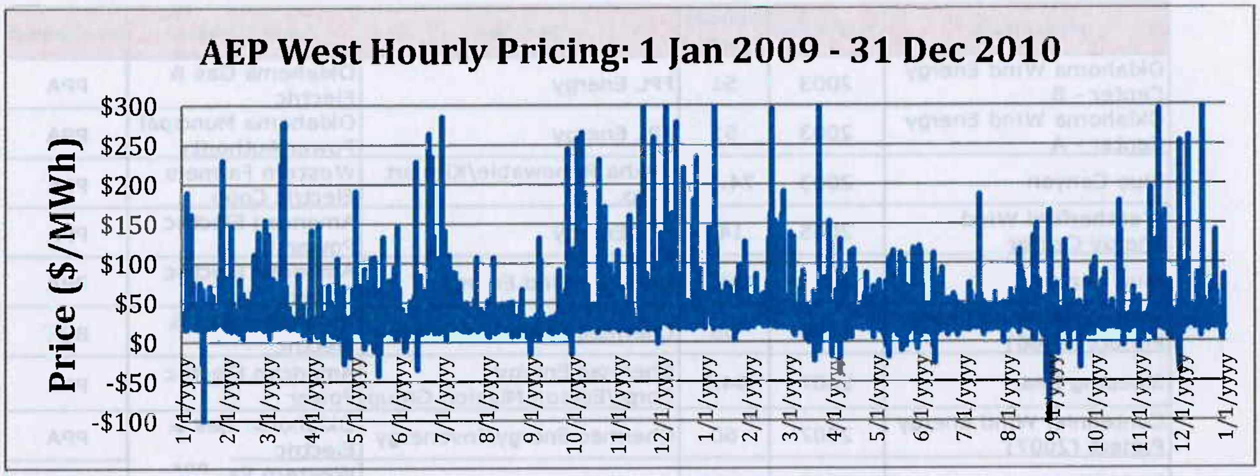
Sub- Step 2c: Calculation and comparison of financial indicators

A wind project in SPP has two main options for selling the renewable energy that it generates:

- Market sales, selling into the real-time market and taking the market price.

In the first option, selling the power on the SPP merchant market without a long term contract in place is a risky strategy. Hourly average prices in SPP American Electric Power West (where the Dempsey Ridge project is located) ranged from negative ($133) to $483 from January 1, 2009 to December 31, 2010 of the real time spot market operation.

[5] See Ventyx "Power Reference Case Electiry & Fuel Price Outlook, Midwest Region, Spring 2010" (page A-5)



This significant volatility makes the revenues from selling power into the market very unstable. Dempsey would have significantly reduced financing opportunities because lenders will be less certain of future project revenues if all energy is sold on a merchant basis.

If market conditions allow, the intention will be to move, at least partly, to a PPA in order to increase the types of financing structures available to the project.

- PPA, a Power Purchase Agreement with a utility or other load supplier.

To evaluate this option a survey of the market for such contracts in Oklahoma is required. PPA information from the Minco Wind Farm was used because it was the most recent PPA signed for a project of similar characteristics in Oklahoma. Other projects are either from an earlier time period when market characteristics were very different, are of a different size, were contracted under a Build-Operate-Transfer (BOT) agreement instead of a PPA, or have a much different cost structure. At the time of the Project Start Date, the Minco Wind Farm PPA was the most recent representation of the Oklahoma PPA market for wind farms and therefore the most relevant information available for comparison from the FERC Electric Quarterly Reports database[6].

[6] http://www.ferc.gov/docs-filing/eqr.asp

Project Name	Year Online	Capacity (MW)	Developer	Power Purchaser	Arrangement
Oklahoma Wind Energy Center - B	2003	51	FPL Energy	Oklahoma Gas & Electric	PPA
Oklahoma Wind Energy Center - A	2003	51	FPL Energy	Oklahoma Muncipal Power Authority	PPA
Blue Canyon	2003	74.25	Zilkha Renewable/Kirmart Corp.	Western Farmers Electric Coop	PPA
Weatherford Wind Energy Center	2005	147	FPL Energy	American Electric Power	PPA
Blue Canyon II	2005	151.2	Horizon Wind Energy	American Electric Power	PPA
Centennial Wind Energy Project (2006)	2006	60	Chermac Energy/Invenergy	Oklahoma Gas & Electric	BOT
Sleeping Bear	2007	94.5	Chermac Energy Corp./Edison Mission Group	American Electric Power	PPA
Centennial Wind Energy Project (2007)	2007	60	Chermac Energy/Invenergy	Oklahoma Gas & Electric	PPA
Red Hills	2008	123	Acciona	Western Fa[illegible] Electric Coop	PPA
Buffalo Bear	2008	18.9	Edison Mission Group	Western Farmers Electric Coop	PPA
Blue Canyon V	2009	99	Horizon-EDPR	American Electric Power	PPA
OU Spirit	2009	101.2	CPV/OG&E	Oklahoma Gas & Electric	PPA
Elk City	2009	98.9	NextEra Energy Resources	American Electric Power	PPA
Minco Wind	2010	99.2	NextEra Energy	American Electric Power	PPA
Keenan II	2010	151.8	CPV Renewable Energy	Oklahoma Gas & Electric	PPA
Elk City II	2010	100.8	NextEra Energy	Merchant	Merchant

Table 9: Oklahoma Wind Projects

Minco Wind, LLC ("Minco"), is a 99.2 MW wind project located near Minco in Grady County, Oklahoma. Minco contracted to sell power to Public Service of Oklahoma (PSO) commencing on August 30, 2010 for 20 years at the price of $ /MWh escalating at %/year.

An analysis was done to estimate the returns for the Dempsey Ridge project based on this price structure. The resulting returns from using this PPA price in the investment analysis were then compared to typical industry benchmark returns:

DEMPSEY RIDGE INVESTMENT ANALYSIS (PPA)		
	Dempsey Ridge Returns (PPA)	Benchmark
After-Tax Project IRR	%	8 – 10%

Table 10: Dempsey Ridge Investment Analysis (Minco PPA Scenario)

Benchmark ranges have been utilized to accurately reflect the fluctuations that have been observed in the market and previous internal project activities. The required project return is a typical industry hurdle rate for renewable energy projects[7]. As demonstrated in the above table, the project returns are insufficient to justify the development of the Dempsey Ridge project. Moreover, the returns generated would not be sufficient to satisfy investors in the project.

Based on the fact that current PPA market conditions are too low to support the project, the baseline scenario is a 100% merchant sales strategy.

[7] See Ventyx "Power Reference Case Electiry & Fuel Price Outlook, Midwest Region, Spring 2010" (page A-5)

The financial implications of building a merchant project are different from those of a project with a long-term PPA. An analysis was done to estimate the project IRR under a 100% merchant sales strategy. The resulting after-tax project IRR was %.

DEMPSEY RIDGE INVESTMENT ANALYSIS (Merchant)		
	Dempsey Ridge Returns (Merchant)	Benchmark
After-Tax Project IRR	%	8 – 10%

Table 11: Dempsey Ridge Investment Analysis (Merchant Scenario)

Outcome of Step 2c: Based on the above assumptions, the post-tax Project IRR for this project activity is % which is below the Benchmark of 8-10%. These financial calculations include all the relevant revenues and the cost associated with the project. As can be seen from the above mentioned information, the project IRR is less than the benchmark IRR and hence it can be said that the project is not financially attractive.

Sub-Step 2d: Sensitivity analysis

The purpose of sensitivity analysis is to conclude that financial un-attractiveness is robust to reasonable variations in the critical assumptions.

The sensitivity analysis has been done in accordance with EB 61, Annex 13 *'Guidance on the Assessment of Investment Analysis'* paragraph 20 and 21. The purpose of the sensitivity analysis is to examine whether the conclusion regarding the financial viability of the proposed project is sound and tenable with those reasonable variations in the assumptions.

DEMPSEY RIDGE SENSITIVITY ANALYSIS		
Variable	Scenario	After-Tax Project IRR (%)
	Base Case	
Production	-10%	
	+10%	
Capital Cost	-10%	
	+10%	
Operating Expenses	-10%	
	+10%	
Energy Prices	-10%	
	+10%	

Table 12: Dempsey Ridge Sensitivity Analysis (Merchant Scenario)

Outcome of Step 2c: Based on the information related above, we can conclude the financial un-attractiveness is robust to reasonable variations in the critical assumptions.

Step 4: Common practice analysis

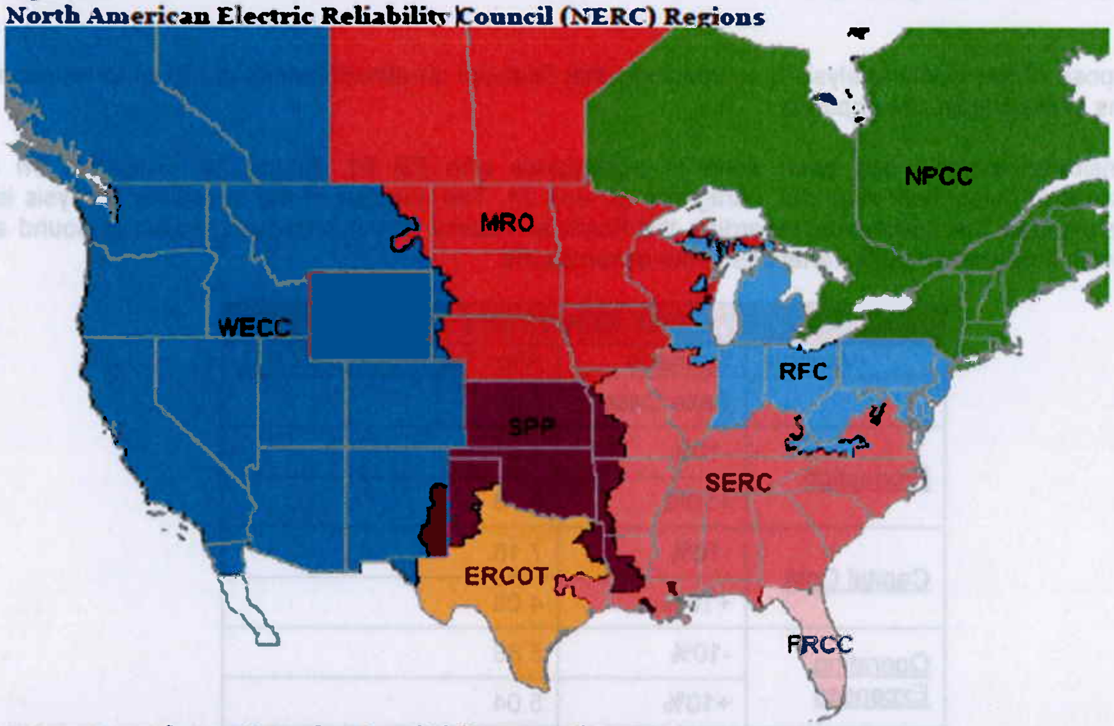
As per the tool[8], *this test is a **credibility check** to complement the investment analysis (Step 2) or barrier analysis (Step 3).*

Sub-step 4a: Analyze other activities similar to the proposed project activity:

In the SPP, electricity generation is dominated by fossil fuels (87.3% of the generation is made from coal and natural gas. Specifically, coal accounted for 64% of the electricity generation and natural gas accounted for 23.3% of the electrical power in the SPP. At the end of 2009, wind power represented only 4.2% of the total electricity generation[9]. Natural gas represents the largest fuel source by capacity in the SPP as it represents over 49% of the total power capacity for the SPP[10].

The SPP region is spread over seven states with different conditions:

Figure 1-1
North American Electric Reliability Council (NERC) Regions



SOURCE: North American Electric Reliability Council (NERC).

Arkansas and Louisiana do not have any renewable & alternative Energy Portfolio Standards, however the SPP only encompasses a portion of these states. In the remaining states the situation is as follows:

- Texas. On August 1, 2005, Texas Governor Rick Perry signed a bill increasing the amount of renewable generation required in the state. The law requires that 5,880 megawatts of new renewable generation be built in the state by 2015, which will meet about 5 percent of the state's

[8] Tool for the demonstration and assessment of additionality, EB 39, Version 5.2.1

[9] 2009 State of the Market Report Sothwest Power Pool Inc, May 26, 2010.

[10] Power reference case electricity & fuel Price Outlook. Midwest Region. Spring 2010

projected electricity demand. The legislation also sets a cumulative target of installing 10,000 megawatts of renewable generation capacity by 2025.

- New Mexico. On March 5, 2007, New Mexico Governor Bill Richardson signed into law the Senate Bill 418, which established a renewable portfolio for the state. SB 418 mandates that by 2020, 20 percent of an electric utility's power come from renewable sources.

- Missouri. On November 4, 2008, M, Missouri voters approved the Missouri Clean Energy Initiative, creating the nation's third state Renewable Portfolio Standard (RPS) to be adopted by ballot initiative. It requires that investor-owned utilities increase renewable electricity generation to two percent of total output by 2011, five percent by 2014, 10 percent by 2018, and 15 percent by 2021. In order to protect rate-payers, utilities are prevented from increasing power prices more than one percent.

- Kansas. On May 22, 2009, Kansas Governor Mark Parkinson signed into law the Senate Substitute for H.B. 2369, which includes a renewable energy standard, net metering provisions, and various other energy efficiency and energy-related provisions. The Renewable Energy Standard mandates that utilities (excluding municipal utilities) obtain 10 percent of their energy from renewable sources by 2011, 15 percent by 2016, and 20 percent by 2020.

Narrowing in on Oklahoma, on May 27, 2010, Oklahoma enacted a bill (HB 3028) creating a renewable energy goal. The goal, which unlike the others is indicative, calls for 15 percent of the electricity generated in Oklahoma to be derived from renewable sources by 2015. Eligible resources include wind, solar thermal, solar PV, anaerobic digesters, biomass, landfill gas, hydro, and fuel cells. Up to 25% of the goal can be met using energy efficiency[11]. It is clear, therefore, that most of the states in SPP region have been more aggressive. Since Oklahoma is different than other states in this respect, including some states in the SPP, the analysis for common practice should be demonstrated at the Oklahoma state level.

The U.S. Department of energy (DOE) published a report that examines the technical feasibility of using wind energy. Wind resource potential that would be possible from development of the available windy land areas after excluding areas unlikely to be developed, is shown in the report. The potential wind installed capacity for the state of Oklahoma is 400,674.3 MW[12]. As explained in section sub-step 2.c, there are only 1481.75 MW of wind capacity installed, which represents only 0.37% of the potential capacity.

Outcome of Step 4a: Wind power in Oklahoma shows a continuously low contribution to the overall generation capacity of the state, and a low installed capacity relative to the overall potential for wind. Interest in promoting renewable energy in the state is also low compared to other states. Based on these facts, wind power is not a predominant technology and has not penetrated the market, and therefore is clearly not common practice in Oklahoma. The project adheres to the requirements for common practice as stated in the VCS rules.

[11] http://www.pewclimate.org/what_s_being_done/in_the_states/rps.cfm.

[12] http://www.windpoweringamerica.gov/wind_maps.asp#us. Considers 35% capacity factor at 80-meters.

Sub-step 4b: Discuss any similar Options that are occurring

As an emission-free generation source, renewable wind projects shown in sub-step 2c are eligible to receive voluntary Renewable Energy Credits (RECs). As detailed in 1.12.4, these projects can alternatively consider the possibility of claiming VERs.

The only project in Oklahoma which we know has been registered under a voluntary carbon registry is the Red Hills project, but that does not mean other projects are not pursuing registration under the VCS, as the validation process can happen at the same time as the verification process, and there is no way to see projects under validation on the registry.

This does not mean that the other wind projects in the state are business as usual, as these projects also depend on the environmental attributes, which are RECs in the case of projects not registered under a voluntary carbon standard, and therefore all wind projects in Oklahoma are using incentive mechanisms to ensure viability.

The project proponent does not rely on the future price of RECs because there is no national initiative at the moment that could build a market with enough liquidity to make the future price stable and predictable (so financeable). This is significant in a state such as Oklahoma, which unlike other states has not put in place a Renewable Portfolio Standard requiring utilities to buy renewable energy (which could lead to an increase in PPA prices).

On the other hand, the project proponent believes that the carbon market has shown itself to be a good tool to mobilize investment, as the CDM has shown, so this is the reason it is contemplated in our investments.

Global conditions have changed significantly since 2008, due largely to the impact of the financial crisis, and wind investments, which are very capital intensive, have suffered big changes. In addition, energy prices have come down, PPA prices are low and it is interesting to see another merchant project in 2010 waiting for a better future.

The financial implications of building a merchant project are different from those of a project with a long-term PPA. Project activities which signed a PPA before market conditions changed are different than those that are selling merchant energy. In order to be conservative, and because Dempsey Ridge cannot rely on closing a PPA at a reasonable price in the short term, we understand that it is more appropriate to compare ourselves to other merchant energy projects, which are the most similar activities to the project activity. Specifically, the comparison is to Elk City II.

Minimal information about the Elk City II project is publicly available. It is confirmed by the FERC Electric Quarterly Reports that the project is selling power on a merchant basis. It is not known what the investment cost of the Elk City II project was but it is known that Dempsey Ridge had to pay for over $ of interconnection costs. Some projects are able to connect to the grid for much cheaper than that and Elk City II may have a cheaper interconnection than Dempsey Ridge. Elk City II is also an expansion of the previously built Elk City project and was likely able to take advantage of previously constructed and paid for interconnection facilities installed during the construction of Elk City, thus further reducing the investment cost of Elk City II. Other possible economic differences between the Elk City II project and Dempsey Ridge could include lower balance of plant costs, lower operating costs (e.g. better land lease terms), or a more favorable wind resource. Additionally, NextEra estimates the useful life of their wind farms to be 30 years[13], while Acciona values projects on a 20 year basis, which is the sector standard. The extra 10 years of project cash flows has a material effect on the financial view of a project. The potentially lower investment cost along with the extra ten years of modeled project revenues clearly show significant differences between the conditions of the Dempsey Ridge and Elk City II projects.

As previously explained, all wind projects in Oklahoma rely on environmental attributes, and there is no reason to suppose Elk City II is an exception. It is not known if Elk City II is relying on voluntary RECs or carbon offsets, but given NextEra's previous experience with the VCS it is possible they are also pursuing VCS registration for this project[14]

Outcome of Step 4.b. As discussed above, wind projects are not commonly financed by selling energy on a merchant basis. The existence of the Elk City II project does not contradict the claim that the investment decision for Dempsey Ridge is financially unattractive.

2.6 Methodology Deviations

There is no methodology deviation in this project.

3 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

3.1 Baseline Emissions

Emissions reductions
Formula used to calculate the net emission reduction for the project activity is:
$ER_y = BE_y - PE_y$

Where,

ER_y	-	Emission Reduction in year y (tCO_{2e}/year)
BE_y	-	Baseline emission in year y (tCO_{2e}/year)
PE_y	-	Project emissions in year y (tCO_{2e}/year)

Project Emission:
This project activity is a grid connected wind power generation. Hence there is no project emission from the project activity.
$PE_y = 0\ tCO_2$/year

There is no GHG emission within the project boundary. So the above equation is simplified to
$ER_y = BE_y$

Baseline emissions
Include only CO_2 emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity. The methodology assumes that all project electricity generation above

[13] "NextEra Planning to Expand Wind Capacity by 24 Percent by End of 2012", Bloomberg, 4/29/2011, http://www.bloomberg.com/news/2011-04-29/nextera-plans-to-expand-wind-capacity-by-24-percent-by-2012.html

[14] https://vcsprojectdatabase1.apx.com/myModule/Interactive.asp?Tab=Projects&a=2&i=468&lat=31%2E900878&lon=%2D100%2E817413&bp=1

baselines levels would have been generated by existing grid-connected power plants and the addition of new grid-connected power plants. Accordingly the baseline emissions are given as:

$BE_Y = EG_{PJ,y} * EF_{grid, CM,y}$

Where

BE_y = Baseline Emissions in year (tCO_2/yr)

$EG_{PJ, y}$ = Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year y (MWh/yr)

$EF_{grid, CM,y}$ = 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" (tCO_2/MWh)

If the project activity is the installation of a new grid-connected renewable power plant at a site where no renewable power plant was operated prior to the implementation of the project activity, then:

$EG_{PJ,y} = EG_{facility,y}$

$EG_{PJ,y}$ = Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year y (MWh/yr)

$EG_{facility,y}$ = Quantity of net electricity generation supplied by the project plant to the grid in year y (MWh/yr)

Baseline Emission are calculated by multiplying the net quantity of electricity supplied by this project activity (EG_Y) with the CO_2 baseline emission factor for the electricity displaced due to the project ($EF_{grid, CM,y}$) as follows:

$BE_Y = EG_{facility,y} * EF_{grid, CM,y}$

Baseline emission factor ($EF_{grid, CM,y}$)
A combined margin (CM), consisting of the combination of operating margin (OM) and build margin (BM) according to the procedures prescribed in the 'Tool to calculate the emission factor for an electricity system' based on that baseline emission factor has been calculated ex-ante.

According to the "Tool to calculate the emission factor for an electricity system", version 02.2.0[15], the following steps are used to calculate the baseline emission factor.

Step 1. Identify the relevant electricity systems.
The tool defines the electric power system as the spatial extent of the power plants that are physically connected through transmission and distribution lines to the project activity and that can be dispatched without significant transmission constraints.

Given that the United States has published clear delineations for electricity systems, the SPP has been chosen as the most relevant electricity system for the Dempsey Ridge project.

[15] http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v2.2.0.pdf

Step 2 Choose whether to include off-grid power plants in the project electricity systems (Optional)

Project participants may choose between the following two options to calculate the operating margin and build margin emission factor:

Option I: *Only grid power plants are included in the calculation.*

Option II: *Both grid power plants and off-grid power plants are included in the calculation.*

Option I corresponds to the procedure contained in earlier versions of this tool. Option II allows the inclusion of off-grid power generation in the grid emission factor. Option II aims to reflect that in some countries off-grid power generation is significant and can partially be displaced by CDM project activities, e.g. if off-grid power plants are operated due to an unreliable and unstable electricity grid. Option II requires collecting data on off-grid power generation as per Annex 2 and can only be used if the conditions outlined therein are met. Option II may be chosen only for the operating margin emission.

The Project Participant chooses the grid power plants (Option I) to calculate the operating margin and build margin Emission Factor.

STEP 3: Select a method to determine the operating margin (OM) method

The calculation of the operating margin emission factor ($EF_{grid,OM,y}$ is based on one of the following methods:

(a) Simple OM, or
(b) Simple adjusted OM, or
(c) Dispatch data analysis OM, or
(d) Average OM

Any of the four methods can be used. However, *the simple OM method (option a) can be used if low-cost/must-run resources constitute less than 50% of total grid generation in: 1) average of the five most recent years, or 2) based on long-term averages for hydroelectricity production.*

Years	**2005**[16]	**2006**[17]	**2007**[18]	**2008**[19]	**2009**[20]	**2010**[21]
SPP	8.0%	7.8 %	10.1%	9.1%	12.8%	14.9 %

Table 13: Percentage of Low-Cost/Must-Run Resources in SPP

The above table clearly shows that the percentage of total grid generation by low-cost/must-run plants (on the basis of average of five most recent years) for the SPP grid is only 10.9% which is much less than 50% of the total generation. Thus, Simple OM method can be used for calculating the emission factor.

For the simple OM... the emissions factor can be calculated using either of the two following data vintages:

[16] Energy Information Administration Forms 906/920 and 860

[17] *Ibid*

[18] 2009 State of the Market Report, Southwest Power Pool, p. 52.

[19] *Ibid*

[20] *Ibid*

[21] 2010 State of the Market Report, Southwest Power Pool, p. 50.

• Ex ante option: A 3-year generation-weighted average, based on the most recent data available at the time of submission of the CDM-PDD to the DOE for validation, without requirement to monitor and recalculate the emissions factor during the crediting period,

Or

• Ex post option: The year in which the project activity displaces grid electricity, requiring the emissions factor to be updated annually during monitoring. If the data required to calculate the emission factor for year y is usually only available later than six months after the end of year y, alternatively the emission factor of the previous year (y-1) may be used. If the data is usually only available 18 months after the end of year y, the emission factor of the year proceeding the previous year (y-2) may be used. The same data vintage (y, y-1 or y-2) should be used throughout all crediting periods.

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.

Step 4 Calculate the Operating Margin emission factor according to the selected method.

The simple OM emission factor is calculated based on the net electricity supplied to the grid by all power plants serving the system, not including low-cost / must-run power plants / units, and based on the fuel type(s) and total fuel consumption of the project electricity system, as follows:

$$EF_{grid,OMsimple,y} = \frac{\sum_{i,m} FC_{i,m,y} * NCV_{i,y} * EF_{CO2,i,y}}{\sum_{m} EG_{m,y}}$$

Where:

$EF_{grid,OMsimple,y}$ = Simple operating margin CO_2 emission factor in year y (tCO_2/MWh)
$FC_{i,m,y}$ = Amount of fossil fuel type i consumed by power plant/unit m in year y (mass or volume unit)
$NCV_{i,y}$ = Net calorific value (energy content) of fossil fuel type i in year y (GJ / mass or volume unit)
$EF_{CO2,i,y}$ = CO_2 emission factor of fossil fuel type i in year y (tCO_2/GJ)
$EG_{m,y}$ = Net electricity generated and delivered to the grid by power plant/ unit m in year y (MWh)
m = All power plants/units serving the grid in year except low cost must run power plants/units
i = All fossil fuel types combusted in power plant/unit m in year y
y = The three most recent years for which data is available at the time of submission of the CDM-PDD to the DOE for validation.

The calculation has been altered slightly to allow for the use of the most readily available data in the U.S. The modified equation is below:

$$EF_{gridOM,simple,y} = \frac{\sum_{i,m} FC_{i,m,y} \cdot EF_{CO2,i,y}}{\sum_{m} EG_{m,y}}$$

Where:

$EF_{grid,OMsimple,y}$ = Simple operating margin CO_2 emission factor in year y (tCO_2/MWh)
$FC_{i,m,y}$ = Amount of fossil fuel type i consumed by power plant/unit m in year y (MMBTU)

$EF_{CO2,i,y}$	=	CO_2 emission factor of fossil fuel type i in year y ($kgCO_2$/MMBTU)
$EG_{m,y}$	=	Net electricity generated and delivered to the grid by power plant/unit m in year y (MWh)
m	=	All power plants/units serving the grid in year except low cost must run power plants/units
i	=	All fossil fuel types combusted in power plant/unit m in year y
y	=	The three most recent years for which data is available at the time of submission of the CDM-PDD to the DOE for validation.

Operating Margin	2007	2008	2009	Weighted Average
Operating Margin (tCO_2/MWh)	0.760	0.750	0.744	0.752

Table 14: SPP Operating Margin Emission Factor

$EF_{CO2,i,y}$ (in kg_{CO2}/MMBTU) can be found in Appendix H of the Form EIA-1605 Instructions, released November 18, 2010. Data for FCi,m,y can be found in MMBTU in Forms EIA-906/920/923 and EIA-860.

Step 5 Identify the group of power units to be included in the build margin

In terms of vintage of data, project participants can choose between one of the following two options:

Option 1

Calculate the Build Margin emission factor EFBM, y ex-ante based on the most recent information available on plants already built for sample group m at the time of PD submission. The sample group m consists of either the five power plants that have been built most recently or the power plant capacity additions in the electricity system that comprise 20% of the system generation (in MWh) and that have been built most recently. Project participants should use from these two options that sample group that comprises the larger annual generation.

Option 2

For the first crediting period, the Build Margin emission factor EFBM, y must be updated annually ex-post for the year in which actual project generation and associated emissions reductions occur. For subsequent crediting periods, EFBM, y should be calculated ex-ante, as described in option 1 above. The sample group m consists of either the five power plants that have been built most recently or the power plant capacity additions in the electricity system that comprise 20% of the system generation (in MWh) and that have been built most recently. Project participants should use from these two options that sample group that comprises the larger annual generation.

Option 1 as described above is chosen in the project activity. Build Margin is calculated ex-ante based on the most recent information available at the time of submission of PD and is fixed for the entire crediting period.

The sample group of power units m used to calculate the build margin should be determined as per the following procedure, consistent with the data vintage selected above:

a) *Identify the set of five power units, excluding power units registered as VCS project activities, that started to supply electricity to the grid most recently ($SET_{5\text{-units}}$) and determine their annual electricity generation ($AEG_{SET\text{-}5\text{-units}}$, in MWh);*

b) *Determine the annual electricity generation of the project electricity system, excluding power units registered as VCS project activities (AEG_{total}, in MWh). Identify the set of power units, excluding power units registered as VCS project activities, that started to supply electricity to the grid most* *recently and that comprise 20% of AEG_{total} (if 20% falls on part of the generation of a unit, the generation of that unit is fully included in the calculation) ($SET_{>=20\%}$) and determine their annual electricity generation ($AEG_{SET>=20\%}$, in MWh)*

c) *From $SET_{5\text{-units}}$ and $SET_{>=20\%}$ select the set of power units that comprises the larger annual electricity generation (SET_{sample}).*

Identify the date when the power units in SET_{sample} started to supply electricity to the grid. If none of the power units in SET_{sample} started to supply electricity to the grid more than 10 years ago, then use SET_{sample} to calculate the build margin. Ignore steps (d), (e) and (f).

Otherwise

d) *Exclude from SET_{sample} the power units which started to supply electricity to the grid more than 10 years ago. Include in that set the power units registered as VCS project activity, starting with power units that started to supply electricity to the grid most recently, until the electricity generation of the new set comprises 20% of the annual electricity generation of the project electricity system (if 20% falls on part of the generation of a unit, the generation of that unit is fully included in the calculation) to the extent possible. Determine for the resulting set ($SET_{sample\text{-}VCS}$) the annual electricity generation ($AEG_{SET\text{-}sample\text{-}VCS}$, in MWh);*

If the annual electricity generation of that set comprises at least 20% of the annual electricity generation of the project electricity system (i.e. $AEG_{SET\text{-}sample\text{-}VCS} \geq 0.2 \times AEG_{total}$), then use the sample group $SET_{sample\text{-}VCS}$ to calculate the build margin. Ignore steps (e) and (f).

Otherwise

e) *Include in the sample group $SET_{sample\text{-}VCS}$ the power units that started to supply electricity to the grid more than 10 years ago until the electricity generation of the new set comprises 20% of the annual electricity generation of the project electricity system (if 20% falls on part of the generation of a unit, the generation of that unit is fully included in the calculation);*

f) *The sample group of power units m used to calculate the build margin is the resulting set ($SET_{sample\text{-}VCS\text{-}>10yrs}$).*

$SET_{>=20\%}$ is greater than $SET_{5\text{-units}}$ but it includes plants that began to supply electricity to the grid more than 10 years ago. $SET_{sample\text{-}VCS}$ does not comprise at least 20% of the annual electricity generation of the project electricity system. Therefore, following the tool's instructions, we have selected the $SET_{sample\text{-}VCS\text{-}>10yrs}$ as the appropriate sample group.

Step 6 Calculate the build margin emission factor

The build margin emissions factor is the generation-weighted average emission factor (tCO_2/MWh) of all power units m during the most recent year y for which power generation data is available, calculated as follows:

$$EF_{grid,BM,y} = \frac{\sum_m EG_{m,y} * EF_{EL,m,y}}{\sum_m EG_{m,y}}$$

Where:

$EF_{grid,BM,y}$	=	*Build margin CO_2 emission factor in year y (tCO_2/MWh).*
$EG_{m,y}$	=	*Net quantity of electricity generated and delivered to the grid by power unit m in year y (MWh).*
$EF_{EL,m,y}$	=	*CO_2 emission factor of power unit m in year y (tCO_2/MWh)*
m	=	*Power units included in the build margin.*
Y	=	*Most recent historical year for which power generation data is available.*

Build Margin	
Build Margin (tCO_2/MWh)	0.333

Table 15: SPP Build Margin Emission Factor

Step 7 Calculate the combined margin emissions factor

The calculation of the combined margin (CM) emission factor ($EF_{grid,CM,y}$) is based on one of the following methods:

a) Weighted average CM; or

b) Simplified CM.

The weighted average CM method (option a) should be used as the preferred option.

The simplified CD method (option b) can only be used if:

- *The project activity is located in a Least Developed Country (LCD) or in a country with less than 10 registered projects at the starting date of validation; and*
- *The data requirements for the application of step 5 above cannot be met.*

For this project, the project participant uses the weighted average CM for the combined margin calculation.

The combined margin emissions factor is calculated as follows:

$$EF_{grid,CM,y} = (EF_{grid,OM,y} * w_{OM}) + (EF_{grid,BM,y} * w_{BM})$$

Where:

$EF_{grid,BM,y}$	=	*Build margin CO_2 emission factor in year y (tCO_2/MWh)*
$EF_{grid,OM,y}$	=	*Operating margin CO_2 emission factor in year y (tCO_2/MWh)*
W_{OM}	=	*Weighting of operating margin emissions factor (%)*
w_{BM}	=	*Weighting of build margin emissions factor (%)*

For wind and solar projects, the default weights are as follows: W_{OM} = 0.75 and W_{BM} = 0.25 (due to their intermittent and non-dispatchable nature of the resources).

EF_{OM} = 0.752 tCO_2/MWh

w_{OM} = 0.75

EF_{BM} = 0.333 tCO_2/MWh
w_{BM} = 0.25

$EF_{CO2\ elec,y}$ = 0.752 * 0.75 + 0.333 * 0.25

= 0.647 tCO_2/MWh

3.2 Project Emissions

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

$$PE_y = PE_{FF,y} + PE_{GP,y} + PE_{HP,y} \tag{7}$$

Where:

PE_y	Project emissions in year *y* (tCO2e/yr)
$PE_{FF,y}$	Project emissions from fossil fuel consumption in year *y* (tCO2/yr)
$PE_{GP,y}$	Project emissions from the operation of geothermal power plants due to the release of non-condensable gases in year *y* (tCO2e/yr)
$PE_{HP,y}$	Project emissions from water reservoirs of hydro power plants in year *y* (tCO2e/yr)

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

3.3 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.*

3.4 Summary of GHG Emission Reductions and Removals

The quantification of net GHG emission reductions from the project has been done according to methodology ACM0002 v.12.1.0.

As described in section 3.1 above, the formula used to calculate the net emission reduction for the project activity is:

$$ER_y = BE_y - PE_y$$

Where,

ER_y	-	Emission Reduction in year y (tCO_{2e}/year)
BE_y	-	Baseline emission in year y (tCO_{2e}/year)
PE_y	-	Project emissions in year y (tCO_{2e}/year)

Project Emission:
As described in section 3.2, this project activity is a grid connected wind power generation. Hence there are no project emissions from the project activity and PE_y =0 tCO_2/year

There is no GHG emission within the project boundary. So the above equation is simplified to $ER_y = BE_y$

Years	Estimated baseline emissions or removals (tCO2e)	Estimated project emissions or removals (tCO2e)	Estimated leakage emissions (tCO2e)	Estimated net GHG emission reductions or removals (tCO2e)
Year 1	312,658	0	0	312,658
Year 2	312,658	0	0	312,658
Year 3	312,658	0	0	312,658
Year 4	312,658	0	0	312,658
Year 5	312,658	0	0	312,658
Year 6	312,658	0	0	312,658
Year 7	312,658	0	0	312,658
Year 8	312,658	0	0	312,658
Year 9	312,658	0	0	312,658
Year 10	312,658	0	0	312,658
Total	3,126,586	0	0	3,126,586

Table 16: Dempsey Ridge Emission Reductions

4 MONITORING

4.1 Data and Parameters Available at Validation

Data Unit / Parameter:	$EF_{grid,CM,y}$
Data unit:	tCO_2/MWh
Description:	Combined margin CO2 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:	
Justification of choice of data or description	Once for each crediting period using the most

of measurement methods and procedures applied:	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).
Any comment:	

Data Unit / Parameter:	**$FC_{i,y}$**
Data unit:	MMBTU
Description:	Amount of fossil fuel type *i* consumed by power plant in year *y*
Source of data:	Forms EIA-906/920/923 and EIA-860.
Value applied:	
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).
Any comment:	

Data Unit / Parameter:	**$EF_{CO2,i,y}$**
Data unit:	$kgCO_2/MMBTU$
Description:	CO2 emission factor of fossil fuel type *i* in year *y*
Source of data:	Appendix H of the Form EIA-1605 Instructions, released November 18, 2010
Value applied:	
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).
Any comment:	

Data Unit / Parameter:	**EG_y**
Data unit:	MWh
Description:	Net electricity generated by the project electricity system in year *y*
Source of data:	Forms EIA-906/920/923 and EIA-860.
Value applied:	
Justification of choice of data or description	Once for each crediting period using the most

of measurement methods and procedures applied:	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).
Any comment:	

Data Unit / Parameter:	**$EG_{m,y}$**
Data unit:	MWh
Description:	Net electricity generated by power plant *m* in year *y*
Source of data:	Forms EIA-906/920/923 and EIA-860.
Value applied:	
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*.
Any comment:	

4.2 Data and Parameters Monitored

Data Unit / Parameter:	**$EG_{facility,y}$**
Data unit:	MWh/yr
Description:	Quantity of net electricity generation supplied by the project plant to the grid in year y
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 applied:	483,342 * (1-0.028%) = 483,206 MWh/yr
Monitoring equipment:	Electricity will be monitored by an ION 8600 meter of accuracy class 0.2. The serial number is not yet known.
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.
Calculation method:	Net electricity generation is calculated by generation minus consumption
Any comment:	The data will be archived electronically. Archived data will be kept during the crediting period and two years later.

4.3 Description of the 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 North America, though some contractors are employed to complete some of the work.

Monitoring Plan: Electricity generated by the wind project will be measured by the 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. Two back-up meters ("check meters") will also be installed at the same location as the revenue meter. During periods where the project consumes electricity from the SPP grid, the consumption will also be recorded by the revenue meter.

American Electric Power (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 on a weekly basis. The revenue meter alone is adequate for the purposed 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 meters.

The 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. 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.

Organisational structure: The following management structure is proposed to be implemented for monitoring of the project activity. There may be changes in this structure in terms of roles however the responsibilities undertaken by the roles would always be maintained.

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.

5 ENVIRONMENTAL IMPACT

No permit or approval by the Oklahoma Department of Wildlife Conservation of 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 has been identified. Dempsey Ridge Wind Farm, LLC coordinated with both agencies throughout the development process, sharing the results of the project's pre-construction 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.

6 STAKEHOLDER COMMENTS

Throughout the course of the development of the Dempsey Ridge wind project, local regulators and landowners have been engaged through individual meetings, phone discussions, letter updates and group meetings. Project members have also participated in informal community events, such as attending a community dinner at which they spoke with several locals about the project. The community has been supportive of the project. As part of the development process an informational brochure regarding the project was sent to all landowners within 5 miles of the project that also contained contact information for any follow up questions. Calls received from community members in response to the brochure were related to jobs or a desire to participate in the project. A public hearing was held by Roger Mills County to review the Building Permit application for the project at which the application was approved. Prior to construction, landowner meetings were held in October and November of 2010 to give landowners the opportunity to ask questions regarding the construction process and present them with a timeline and general overview of the construction process. A publicly advertised presentation regarding the project with a question and answer period was given to the Cheyenne Chamber of Commerce and public attendees in May 2011.

After construction was initiated, periodic newsletters have been distributed to landowners to update them on the project's progress. These newsletters will continue to be sent to landowners until the project is commissioned. After the project is commissioned, a community project dedication ceremony will be held. During operations, annual scholarships will be made available to local schools encouraging choices in courses of study leading to careers of a sustainable nature.